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What is Cooking with Kererū/Kūkupa Management in New Zealand?

A historical review using tools from Actor Network Theory

A thesis submitted in partial fulfilment of the requirements for the Degree of Master of Natural Resource Management and Ecological Engineering at Lincoln University by Jordan Adkins

Lincoln University 2016

What is Cooking with Kererū/Kūkupa Management in New Zealand? A historical review using tools from Actor Network Theory

by

Jordan Adkins

This thesis reviews the history of the management of an endangered New Zealand native bird species. It builds on earlier narratives, especially the social construction-based thesis of Renganathan (2004), periodising the history of management into three key phases, or moments of “translation” in the terminology of Actor-Network Theory (ANT): Maori colonisation around 1300 AD; European colonisation circa 1800 AD, and the post-colonial present. In line with Renganathan’s earlier analysis it is argued that management of Kererū remains contested depending upon differing cultural views and differing locations, populations and habitat health. However, this thesis also deploys key concepts associated with Callon’s “A Sociology of Translation” (1986) to both show the mechanisms and processes that have led to the dominance of particular perspectives at given points in history and to set out three future management scenarios that reflect what could happen if particular actors or actants were to exert pressure or influence on the existing management network. Furthermore, and whereas previously ANT has tended to be applied to technological and engineering domains, the thesis adds to the growing body of natural resource management literature which uses the principles of the theory to shed new light on environmental problems.

Keywords: Kererū, Kūkupa, Cultural Harvest, Natural Resource Management, Cross-Cultural, Actor-Network Theory
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Chapter 1: Introduction

1.1 Problem Statement

New Zealand is a small country in the Pacific that has a relatively low human population and a perceived abundance of natural resources. It is regarded as a country of natural beauty with unique native fauna. What is less well known is the degree to which the native fauna has been rendered extinct or endangered over the past 700-800 years since the arrival of humans and the resulting significant ecological disruptions. Endemic bird species in particular have experienced these pressures and there is continuing debate as to how best to manage the species that remain. In 2004 Renganathan wrote a thesis entitled *Feathers of Contention: Social Constructions of the New Zealand Pigeon/Kereru*, which, as the title suggests, pointed to controversies about the management of this species, specifically Renganathan claims:

“Customary harvesting is a sensitive issue most New Zealanders are uncomfortable in discussing...[but it] is an issue that needs to be discussed”

(Renganathan, 2004, p.119)

Ten years on from that work, this thesis opens the questions: is there continuing controversy and what trends can be seen? Renganathan claims that there was controversy then used social theory to try to explore the problem in 2004. Is the management of this species still contentious today and is this a unique case or typical of endangered species management in New Zealand? Kererū management has been divisive because the issues at play are not just in terms of managing an endangered indigenous species in New Zealand but also as an important cross-cultural issue. The issue as it is often presented is Māori are trying to control management in order to allow a return to hunting and consumption of Kererū while conversely Pakeha are trying to control the management of Kererū for the sustainability of the species, not to eat it. However this explanation belittles the complexity of the management and neatly categorizes participants while obscuring intersecting perspectives such as some Māori actively promote against any return to harvest while others ignore the current management regulations and undertake illegal harvesting. In addition, this duality of Māori versus Pakeha, even used by Renganathan (see Fig. 1.3), obscures a range of other participants who have different perspectives and desired outcomes such as the Department of Conversation and Forest and Bird who will need to be considered to understand fully this complex management issue. Kererū currently are considered in-between endangered and common, not unlike a number of species in New Zealand.
Avifauna is a prominent feature of biodiversity in New Zealand, having evolved in an exceptional evolutionary process without the presence of mammals. Human occupation of New Zealand has resulted in significant losses for indigenous birds, predominately due to the introduction of predatory land mammals, and the conversion of forest to other land uses. It would be easy to ignore Kererū in terms of management and only to give attention to their management when they are critically endangered like many New Zealand species such as Kakī, Kākāpō, New Zealand Fairy Tern, Takahē and the Ōkārito Brown Kiwi. New Zealand has 378 native terrestrial, coastal and oceanic species of birds. Since the arrival of humans 700 years ago 47% of terrestrial birds have become extinct. Currently 77 bird species are listed as threatened “in categories of nationally critical (25), nationally endangered (18), and nationally vulnerable (34)” while 92 are recorded as “risk-recovering (17), declining (13), relict (17), and naturally uncommon (45)” (TerraNature, 2016). Only thirty-eight species are registered as not threatened. Actor-Network Theory (ANT) will be used in this research as a new analytical tool in approaching Kererū management, which avoids predefined concepts of the problem and offers to acknowledge and embrace the complexity of environmental problems rather than to over-simplify and categorise as conventional research seems to have done in the past.

1.2 Kererū / Kūkupa / New Zealand pigeon management to date – an overview

![Kererū images](Torr, 2015)

Kūkupa, Kererū¹, and Kūkū are all names for an organism culturally significant to tangata whenua².

---

¹Kererū is capitalized specifically in the spirit of ANT’s “free association” which demands the abandonment of all a priori distinction between natural and social (Callon, 1986a). This was done in a similar rationale to Laing (2011) who reasoned Nature should be capitalized as an entity to remove “antiquated religious bigotry of
They are Bush pigeon, wood pigeon, New Zealand pigeon, or simply pigeon to Europeans and *Hemiphaga novaeseelandiae* to ornithologists (Feldman, 2001). These are all names and terms’ referring to a unique native pigeon in New Zealand but Kererū, as the generalized name in the public domain, is the singular term it will herein be referred to as. Kererū, distinct from the wood pigeon (*Columba palumbus*) of the Northern Hemisphere, which belongs to a different genus, does however have a similar morphology to the European pigeon (explaining why it was called the New Zealand pigeon). It has “a small head, a straight soft-based bill and loosely attached feathers” (Awasthy, 2010, p. 37). It is distinguishable through its large iridescent green and purple plumage, red eyes, legs and bill and a white ‘bib’ on front (Heather & Robertson, 2005 - see Fig. 1.1). The Kererū can grow to about “50 centimetres long and 650 grams in weight” and live to over 20 years of age (ibid).

Figure 1.2: Distribution of Kererū from September 1969 to December 1979 in the North and South Island. Source: Bull et al (1985, p. 140-141)

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1 The historical Christian clerics who maintained a policy of decapitalization of the names of entities”, such as Nature, Earth, Sun, and Moon which were objects of Pagan worship.

2 A Māori term for the indigenous peoples of New Zealand which translates as "people of the land" (Magallanes, 2011)

3 Unless specifically referred to otherwise in citations
Kererū are members of the pigeon genus *Hemiphaga* that is endemic to the New Zealand archipelago and is found in lowland native laurel forests, scrub, rural and urban gardens throughout the North and South Islands, Stewart Island and other large offshore islands (Scofield & Stephenson, 2013 - see Fig 0.2). The largest Kererū populations are most commonly found in the lowland forests of Northland, the King Country, Nelson and the West Coast (ibid). Sub-species of the Kererū, the Norfolk Island pigeon, used to inhabit Norfolk Island but went extinct due to human pressures in the early 20th century. Recently a bone belonging to *Hemiphaga* has been found on Raoul Island in the Kermadec Islands suggesting a wider extent historically than previously thought (Worthy & Brassey, 2000). The Chatham Island pigeon (*Hemiphaga chathamensis*) has been conventionally considered a subspecies of Kererū but is now considered here as a separate species due to it having evolved differently from mainland Kererū to be a larger size, colour and different breeding season (Millener & Powlesland, 2001, p. 365).

Kererū are considered frugivorous, predominantly eating fruits from native plants such as “miro, tawa, pūriri, taraire,kahikatea, nikau and coprosma” but when fruit is scarce they resort to eating leaves “favouring kōwhai, tree lucerne, willow and poplar” (Campbell, Schotborgh, Wilson, & Ogilvie, 2008, p. 12). Kererū plays a crucial ecological role of seed dispersal and native forest generation, as after the extinction of the Moa, the Kererū is now the only native bird large enough to swallow fruit with large seeds (greater than 1cm) and distribution of native trees such as tawa, miro, karaka and nikau (Mander, Hay, & Powlesland, 1998). Kererū can fly significant distances in search of food, having been known to cross the 30-kilometre Foveaux Strait, between Stewart Island and Invercargill, which is significant in their ecological role of seed dispersal. However general daily movements are limited to less than 500m (Schotborgh, 2005).

Since the arrival of Europeans in New Zealand the Kererū has adapted and even thrived in the urban environment and is observed to also favour feeding off the fruits of introduced plant species such as “privet, elderberry and plums” (Campbell *et al*., 2008, p. 23). As expected with long-lived birds Kererū breed somewhat slowly, only laying a single egg at a time, which both adults incubate for a month (Schotborgh, 2005). Breeding largely depends on the availability of fruit, which varies seasonally, annually and by location. In the northern half of the North Island, because of the warmer climate there is more available fruit and Kererū are observed nesting year round while in the south fewer subtropical tree species grow restricting the breeding season (Powlesland, Dilks, Flux, Grant, & Tisdall, 1997). When there is a bumper crop of fruit available some Kererū may even have a chick in one nest while incubating another egg nearby.

Conversely in years where fruit is in short supply a more limited breeding season occurs (ibid). Kererū are reputed for their mating displays that involve flying high, then diving steeply before pulling up
quickly in order to attract partners. Conversely their nest is rather non-descript compared to some other bird species being simply a temporary platform of untidy sticks in a tree fork or among vines (Schotborgh, 2005). Such easily accessible nesting locations mean the introduced species such as Australian common brush tail possum and both European and Polynesian rats, are able to prey on eggs and nestlings while these introduced species also feed on fruit reducing the overall amount of fruit available to the Kererū contributing to the species population decline in some areas (Powlesland, Wills, August, & August, 2003). As with much of New Zealand’s native flora and fauna, the Kererū is adversely affected by introduced predators such as stoats, domestic cats, ferrets and possums (King, 1984). Having evolved in a non-mammalian environment with threats from aerial predators like the New Zealand falcon, the Kererū seems "slow to recognize introduced predators" (Renganathan, 2004, p. 158). Schotborgh’s (2005) thirteen-month research into Kererū breeding at a rural-urban site in Banks Peninsula found Kererū were especially exposed to predation during summer while incubating or brooding. He also observed Kererū are at risk when foraging in low scrub and during his research observed that “five of 20 nests were preyed upon; four eggs and one chick were preyed upon” (p. 15).

Kererū population declined extensively after the arrival of humans in New Zealand, a trend that continues to occur today, especially in the North Island (Robertson et al., 2013). Currently they are considered somewhere between common and endangered and their study offers the opportunity to address their management before they become critically endangered like many other endemic birds. Large flocks of Kererū were still regularly observed congregating in fruiting trees to feed up until the 1860s but the population decline occurred rapidly during this period due to land clearance by new European settlers and extensive hunting for sport by Europeans as well as the continuance of traditional Māori hunting for food (Best, 1942; Feldman, 2001). The shooting of Kererū was restricted from 1864 with a complete ban on hunting since 1921 (Falla, Sibson, & Turbott, 1979), however enforcement of legislation was, and continues to be inconsistent (Dargaville News & District, 2015; Lyver, Jones, & Doherty, 2009; J. R. Taylor, 1996). Some Māori protest this ban, claiming a traditional right to hunt Kererū under the Treaty of Waitangi however the Kererū is afforded absolute protection from hunting under the Wildlife Act of 1953 with no exceptions or provisions (Feldman, 2001; Wright, Nugent, & Parata, 1995).

Kererū population decline is largely attributed currently to illegal hunting, habitat degradation or removal, competition and predation from introduced species and poor reproductive success (Clout, 1990; Clout, Denyer, & James, 1995; Craig et al., 2000; “The Great Kereru Count,” 2015). As previously mentioned possums compete with adult Kererū for food (leaves, flowers, fruit) and ravage trees by eating new shoots, while predators eats their eggs and young. Introduced cats, stoats and weasels will hunt and kill adult Kererū (King, 1984). While the most serious threat to Kererū as
considered by Innes, Kelly, Overton and Gillies (2009) is introduced species continuing forest clearance and poaching also threatening their survival. Although still widespread in areas with intact tracts of native forest nationally Kererū population is considered to be in gradual decline (Innes, Kelly, Overton, & Gillies, 2010b; Kirikiri & Nugent, 1995; Lyver, Taputu, & Tahi, 2008). In Northland specifically, the Kererū is considered most in danger of becoming locally extinct through these combined effects of predation, competition and continued hunting which predominately occurs here (Clout et al., 1995; Pierce & Graham, 1995; Pierce, Atkinson, & Smith, 1993). Barrington (1995, 1996) also considers other possible causes for Kererū decline and suggests harassment by Magpies may be a factor in some areas but Innes (2004) implies that this is not a limiting population factor. Instead Innes suggests that interaction with human infrastructure may in some (predominantly urban) areas be the limiting population factor and provides evidence that shows flying into power lines and windows are significant factors in Kererū mortality. In one year the Whangarei Bird Rescue Group reported 22 incidents of Kererū flying into windows (Pierce & Graham, 1995) while at North Shore Bird Resource Centre 50% of reported Kererū cases involved windows or car strike (Harwood, 2002). Clout et al (1995) also reported at least four Kererū fatalities due to car strike during their research into Kererū breeding at Pelorus Bridge, Marlborough. Such reports however are ambiguous evidence of scarcity or threat similar to the case of hedgehogs, whereby the number of dead hedgehogs visible on the roads often concerns people, which while bad for individual hedgehogs is actually indicative of a healthy population. The abundance of Kererū incidents may actually suggest a sizeable population in order to sustain such losses, and a decrease in reported Kererū cases would then, ironically, be cause for alarm.

Kererū management presents a significant source of tension due to the divergent perspectives and values held by different involved stakeholders. Kererū has traditionally been utilised as a food resource and ceremonial clothing by tangata whenua. It is considered a taonga, or treasure. Following the mass arrival of Europeans and colonization of New Zealand in the 1800’s, the traditional management system that had been used by tangata whenua was overturned through suppression of culture, changes in power and key pieces of legislation, the most significant of which was the 1840’s Treaty of Waitangi4. Disagreement has ensued ever since, although at varying levels in the public domain most recently garnering national attention due to the aforementioned arrest of Ngapuhi leader Sonny Tau and the serving of Kererū to Government Ministers at a 2013 iwi leaders' meeting.

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4 The Treaty of Waitangi was an agreement signed between the British Crown and 500 signing rangatira (Māori leaders) around New Zealand. "Article 1 gives the kāwanatanga of New Zealand to the British Government. Article 2 confirms the "tīno rangatiratanga" of the chiefs and hapu and all the people of New Zealand over their lands and villages, but gives the queen or her representatives the buying of those pieces, which they might wish to sell. Article 3 as a quid pro quo, allows the people of New Zealand exactly the same tikanga (rights, privileges, customs) as the people of England" (University of Auckland Library, 2006). Other significant legislative acts involving Māori in this time period included 1865 Native Lands Act (and later amendments), 1900 Maori Lands Administration Act, the 1905 Maori Land Settlement Act and the 1953 Maori Affairs Act. See University of Auckland Library (2006) for a more comprehensive overview.
Renganathan’s research finds that both Māori and Pakeha, have a long, intertwined history with Kererū and that this influences the way Kererū is thought of today. She summarizes that “Kererū are seen as endangered native birds which need stricter protection and as a food resource (generally by Māori)” (2004, p. 78) but through her research finds five different historical social constructions which are Kererū as taonga (treasure) and food, Kererū as a game bird, Kererū as an absolutely protected native bird, Kererū as a declining species and finally Kererū as a cultural icon (see fig 0.2). Renganathan’s research concludes that a greater understanding of different peoples constructions of Kererū, along with scientific information, traditional ecological knowledge (TEK)\(^5\), and local knowledge will allow for better and more accepted management strategies for Kererū. This thesis will therefore consider what, if any, evidence of progress in the management of Kererū since it was last extensively studied by Renganathan (2004).

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<table>
<thead>
<tr>
<th>Approximate appearance of frame</th>
<th>Constructions of nature and natural resources (refer to appendix 5a)</th>
<th>Kererū frame</th>
<th>Legislation (refer to table 4.1 for details)</th>
</tr>
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<tr>
<td>Polynesian settlement</td>
<td>exploitation</td>
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</tr>
<tr>
<td>Pre-European settlement</td>
<td>sustainable use ethic?</td>
<td>Taonga?</td>
<td>none</td>
</tr>
<tr>
<td>Pre-1800</td>
<td>sustainable use ethic</td>
<td>Taonga</td>
<td>none</td>
</tr>
<tr>
<td>1800-1860</td>
<td>sustainable use ethic/ erosion of rights</td>
<td>Pretty bird and pigeon pie</td>
<td>none</td>
</tr>
<tr>
<td>1860-1922</td>
<td>sustainable use ethic/ erosion of rights</td>
<td>Gamebird</td>
<td>Various legislation – kereru seen as game and native game (beginning with the Wild Birds Protection Act 1864, to the Animals Protection Amendment Act 1910).</td>
</tr>
<tr>
<td>1922-present</td>
<td>preservation</td>
<td>Absolutely protected native bird</td>
<td>Kereru as totally protected bird (Animals Protection and Game Act 1921- 1922)</td>
</tr>
<tr>
<td>1900-present</td>
<td>erosion of rights to regaining of rights</td>
<td>Endemic species and declining population</td>
<td>Kereru as totally protected native bird (Animals Protection and Game Act 1921- 1922 to Wildlife Act 1953)</td>
</tr>
<tr>
<td>? - present</td>
<td>erosion of rights to regaining of rights</td>
<td>preservation to conservation trend</td>
<td>Icon</td>
</tr>
</tbody>
</table>

Figure 1.3: Kererū frames and corresponding constructions of nature through time identified from research in Renganathan (2004, p. 80)

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\(^5\) A hui is a Māori term for a social gathering or assembly. It was used by Europeans as early as 1846 to refer to exclusively Māori gatherings but is now increasingly used in New Zealand English to describe events that are not exclusively Māori. (Orsman, 1997)

\(^6\) Traditional Ecological Knowledge (TEK) is roughly defined as a people’s recognizing and classification of environmental processes in a particular area that is practiced by communities, both indigenous and local non-indigenous who have evolved knowledge systems based on generations of familiarity in specific environments (Lewis, 1993).
Kererū management today is divisive because of the various conflicting viewpoints involving the management of an endangered indigenous species in New Zealand as well as representing an important cross-cultural issue. The duality of Māori versus Pakeha often seen in texts, even used by Renganathan (see Fig. 1.3), obfuscates a range of other members who have different viewpoints and preferred outcomes. An example of this is the Northland Conservation Board Chairman and Ngapuhi tribal member, Mita Harris, who has campaigned for Māori hunters to stop the illegal poaching of the Kererū in an address covered by many regional and national news sources:

“Are we lost? Are we short on knowledge about sustainability? Are we simply living for the day? I humbly put it to members of our many Hapu in Taitokerau to ask one’s self before the urge takes over: Are we selfish? Are we thinking enough of those to come?”

(Harris quoted in 3 News, 2012)

The killing of a native wood pigeon in New Zealand is punishable by a fine of up to $100,000 or six months in prison. However, Harris believes Government legislation has “taken the place, sadly, of the responsibility we should have, and now the inability to awhi [embrace and support] our most vulnerable species” (ibid). However not all participants agree with Mr Harris with many Māori asserting there should be an allowance for cultural harvest of Kererū, and that it would indeed be sustainable. Robert Cassidy, of Ngati Hine tribe, who was convicted of harvesting six Kererū in a Northland forest maintained:

“As long as there is one alive we will have a feed. It's our right under the Treaty. [The bush and sea are] our fridge and freezer”

(Cassidy quoted in Fisher, 2004)

At Mr Cassidy’s court hearing ecologist Ray Pierce gave evidence that the “hunting was a major contributor to the danger of extinction and even the shooting of a few adults could significantly affect the population” theorizing that extinction of the bird my already be the case in some Northland forests, an assertion which Cassidy dismissed and claimed; “There's more up there. There's heaps” (Fisher, 2004). Cassidy at trial declared his rights to take Kererū under the Treaty of Waitangi and spoke of the unique cultural and spiritual association Maori has with Kererū, and thus their right to harvest. This view is also shared by southland tribe Ngāi Tahu CEO, Mark Solomon.
However Solomon also believes that cultural harvest of Kererū would be unjustifiable currently:

“Yes, at some time in the future when stocks build, we would like to exercise a customary take, but unless those stocks build to a sustainable level, leave them alone"

(Solomon quoted in Forbes, 2015, p. 23)

Cassidy and Solomon appear to exhibit what Renganathan (2004) identifies as a ‘Maori’ perception of the controversy through their “claim the rights to manage and harvest kereru [that] have been guaranteed to them under the Treaty of Waitangi” (p. 119). By comparison, current Conservation Minister Maggie Barry appears to show the “Pakeha New Zealander” viewpoint in her recent claim regarding the rights of Māori to harvest Kererū:

“Maori ate moa as well ... we don't want to eat birds to the brink of extinction, it's not appropriate in this day and age. These are birds that are under threat. What next, eat the kiwi? I don't think so.”

(Barry quoted in Nicholas, 2015, p. 45)

However her comments were in this case quickly contested by Maori Party7 co-leader Marama Fox, who claimed that deforestation and the impact of the resulting agriculture, rather than cultural harvest was the main reason for the decline of Kererū and other native species in New Zealand:

"I think it's more important to understand that 86 per cent of our country has been clear-felled for farming, and that might have had something to do with the extinction of a lot of our flora and fauna ... it's not helpful for a lot of comments to be made, but we're not going to take offence over little things like that."

(Fox quoted in Nicholas, 2015, p. 46)

In 2015 the debate surrounding Kererū management was made more visible through extensive media coverage of the arrest of Northland iwi leader Sonny Tau for allegedly harvesting Kererū in Southland (3News, 2015; Radio New Zealand, 2015; Weber, 2015), and the revelation that Kererū was served to Government Ministers at a iwi leaders' hui in 2013 (Forbes, 2015b; Jones, 2015; 7 A key coalition party for the current National-led Government operating with a confidence and supply agreement.
Nicholas, 2015). Until these events it has otherwise generally been an issue avoided by the mainstream media. It is likely that very few people in the New Zealand general public would have been concerned about Kererū management prior to the aforementioned events of 2015 since if they knew anything at all about Kererū they would have assumed a relatively stable approach to their management and that the Kererū at risk were being managed by the Department of Conservation (DoC). However while the events of 2015 brought the issues of Kererū management into the public domain it still remains unknown how much of the Kererū controversy is hidden in remote forests in Northland. Events that occur in these remote forests are scarcely reported in the media as they are largely unseen however the accessible insight does allow us to begin to glimpse into an issue that is by no means resolved.

The Northland region has by far the highest total number of court cases and convictions related to illegal Kererū ‘poaching’ (Collins, 2015) and is where DoC currently claims:

“The Kererū is in danger of becoming locally extinct through the combined effects of predation, competition and continued hunting”

(Department of Conservation, 2015b)

A rahui [ban] on Kererū hunting has currently been put in place by a local iwi in Northland (Wall, 2010) and a dedicated DoC target patrol program has been initiated in order to monitor poaching in addition to an existing DoC program which aims to educate “young Māori about the disastrous effect this [Kererū hunting] activity is having on the birds survival rate” (Department of Conservation, n.d.).

It could be argued, given the recent controversy, that Kererū management is not clear-cut and that recently tension has been growing as evidenced by the action of the (recently resigned) Northland Conservation Board Chair, Mita Harris. Harris launched a ‘Save the Kukupa’ campaign and urged hunters to stop illegal poaching of Kūkupa/Kererū claiming a moral right to protect the birds and that the bird is under threat “having declined dramatically because of illegal hunting, habitat loss, competition and predation” (Dargaville News & District, 2015). Kererū management still remains challenging and fraught with divergent perspectives today with the events of 2015 and this exceedingly simplified ‘Māori versus Pakeha’ view of the issue hinders a complete understanding of the complex matter and thus an agreeable pathway from management. While Renganathan (2004) focuses on investigating the different perceptions New Zealanders had of then contemporary Kererū management, this thesis will instead focus on historical and current relationship within Kererū management since the arrival of humans to New Zealand to conceptualise all involved participants, provide a historical overview of Kererū management and provide insight into its contemporary management since it was last provided over a decade ago in the work of Renganathan (2004).
1.3 Research Questions

The aim of this research is to provide a historical overview of Kererū management since the arrival of Māori in New Zealand and to explore the current management issues as last extensively considered by Renganathan in 2004. This research will investigate how Kererū management has developed and to explore what, if any, new insight can be added to the social constructivist approach used by Renganathan or reports provided periodically by natural scientists to shed more light on how the Kererū species should be managed. The research questions are:

- How has the management of Kererū progressed, if at all, since it was last extensively studied by Renganathan in 2004?
- What analytical insight can undertaking a historical analysis provide to current Kererū management?
- What understanding can the tools of Actor-Network Theory add to cross-cultural issues such as Kererū management?

This thesis utilizes particular analytical tools associated with Actor-Network Theory provided by Callon (1986a) in Sociology of Translation, specifically his tools of translation and obligatory passage points alongside the principles of generalized symmetry, agnosticism and free association (defined and explained in Chapter 2) in order to identify historical and current relationship within Kererū management and provide a historical overview of Kererū management. Historical documents are used to identify ‘four moments of translations’ (Callon, 1986a), the process through which the issue can come to be represented by a single entity, in the historical network from which is drawn the rich nature of the contemporary network. Focussing on relationships and interactions between collectives and individuals, rather than opinions held by preconceived groups, offers an opportunity to further dissolve the ‘Māori versus Pakeha’ perceptions of Kererū management. Renganathan’s (2004) social construction-based approach offers valuable insight in terms of making sense of perceptions and this thesis will attempt to complement Renganathan’s work and extend the understanding of Kererū management. This application of ANT principles arguably allows for a wider range of involved groups to be revealed, and then the probing of said groups to understand if they are homogenous in their goals or perhaps consist of smaller assemblages who may have contrasting goals, which may have implications in terms of successful management. In addition by focusing on interactions ANT may allow for previously hidden members of the networks to be recognized, whose aims and influences within Kererū management might not have been considered thus far.

In summary, this research will use ANT to explore the interactions and relationships of individuals and collectives within the Kererū Management network to understand how it has been enacted and
evolved through different historical phases. This will enable insight into the multiplicity of Kererū management as it appears today.

The research objectives are:

1. To review the literature on ANT to develop a framework for the analysis as follows:
   a. To review the history of ANT and synthesise the core approaches for application to the Kererū case study.
   b. To review studies that used ANT within natural resource management in order to consider potential benefits and pitfalls of the ANT approach within natural resource management.

2. To study the contextual information available regarding the history of Kererū management and current developments as follows:
   a. To review historical relations between the involved parties to understand how this informs the present situation.
   b. To examine current and historical claims and inscriptions within the network to understand their role in the management of Kererū.

3. To determine the current state of perspectives in Kererū management and to see whether perspectives have changed since Renganathan carried out her study.

4. To suggest actions that may assist with improvements to management in light of any changes in perceptions over the past decade.

1.4 Methodology

The methodology used in this thesis focused on historical analysis, which relied on analysing historical texts, archival and media sources. These historic texts are taken from a wide variety of sources including published journal reports, court case notes, newspaper articles and editorials, scientific work including thesis’s and conference papers, blog post’s and websites, video, artwork, social media postings and books. These texts were then used to construct a chronology informed by Actor-Network Theory principles as set out in Chapter Two and previous ANT case study research. While ANT is most frequently allied with the case study approach by practitioners currently no unified format is used which typifies it. Therefore I have used a modified snowball ‘exchange’
technique\(^8\) (Atkinson & Flint, 2001; Biernacki & Waldorf, 1981) as the specific method of data for this research.

This thesis establishes a historical overview of Kererū management beginning at the arrival of Māori in New Zealand and attempts to provide insight into the current management of Kererū using ANT principles. This research uses a different analytical lens to the work of Renganathan (2004) who more than a decade ago used a social construction-based approach to understand Kererū management. Beyond the work of Renganathan there is no historical study that follows the management of Kererū from the arrival of Māori through to the current time. Previous reports or studies largely focus either on a specific time period or very briefly re-summarize its history, without interrogation, before hurrying to examining the present. As well as focussing on the current construction of the Kererū management network, this thesis also explores how it has been enacted and how it has evolved through different historical phases. This allows for the exploration of the multiplicity of the Kererū controversy as it appears today — a decade on from the work of Renganathan (2004). This is a necessary process in exploring complexity as the present is built on top of previous constructions causing “the past to imprison the present” (La Barre, 1970, p. 112).

Strathern (2013) argues that examining the sequence and timing of historical events is often taken for granted in academia with the implication being that without an adequate understanding of change in the past one cannot develop a proper appreciation for the present situation. This idea is critical for appreciating complexity; the result of continuous changes in Kererū management since its inception, with various stakeholders evolving, changing goals and aims, perspectives and claims. This research will largely focus on events and actants involving Kererū management in New Zealand’s Northland region where the controversy is at its highest, having the highest total number of court cases and convictions related to illegal Kererū ‘poaching’ (Collins, 2015) and where “Kererū is in danger of becoming locally extinct through the combined effects of predation, competition and continued hunting” (Department of Conservation, 2015b). This, in conjunction with the areas significant Kererū population, mean that Northland is the ideal location to explore this issue at a tangible level, specifically the remote Northland areas such as Utakura, Horeke and Omahuta Forest where DoC has focused its patrol program and claims the most arrests (Collins, 2015). While Northland seems particularly contentious as a region at present, the thesis will include other parts of the country, extending to the national level and into other regions such as the Te Urewera National Park where documented controversy is high and may provide relevant insight to understanding of the overall issue.

\(^8\) Re-named to allow for usage with both human and non-human actants in the spirit of agnosticism.
Literature includes academic and non-academic works available through the Lincoln University library, relevant regional archives, court reports, journals, photographs, Internet sources, legislation and DoC publications. Such documentation may help in understanding the stages of translation and perhaps in revealing a wider network of actants through their relations and interactions. I will seek to allow actants to identify and define their own relationships rather than have an *a priori* description imposed on them and as such a modified snowball ‘exchange’ technique (Atkinson & Flint, 2001; Biernacki & Waldorf, 1981) will be used, where a central text is chosen to begin research, in this case Renganathan’s Masters Thesis (2004) and texts are identified from here, and then further texts from those texts until the network is revealed. Renganathan has been chosen as a central text as it represents the most comprehensive research to date in Kererū management thus providing the most connections to other significant texts. It is realized that any texts published after 2004 will not be mentioned by, therefore connected to, Renganathan, consequently more supplementary inscriptions will be established through key word searches from online and library resources, and linkages from these found texts. Actants are identified and linked from their relationship to the initial actants through similar key terms and references to actants and other text, with this continuing until a richer network emerges. Many texts were identified in circulation in the network and used to develop the networks however some key texts were more salient and include:

- Monitoring and management of kereru (Hemiphaga novaeseelandiae) (Mander *et al*., 1998)
- Ko Aotearoa tēnei: A report into claims concerning New Zealand law and policy affecting Māori culture and identity (Waitangi Tribunal, 2011)
- Conservation Act (1987)
- Wildlife Act (1953)
- Northland Conservation Management Strategy (CMS) 2014-2024 (Department of Conservation, 2014)

Through this ANT analysis the Kererū Management Case Study is divided in eight components in four historical management categories, one contemporary and three future management scenarios. Although it is recognized that each stage is not discrete from the other, and that network shifts are not precise events, it is useful to draw such distinctions for considering historical progression and has focused on key events, actants, objects and visible changes as outlined through historical artefacts (Nimmo, 2011) and the key texts previously identified in circulation in the network. At each stage the four ‘moments’ of translation (as outlined in Callon, 1986a) are explored through inscriptions and key texts in order to establish what and how each was able to occur, providing an insight into the past that would not otherwise be possible.
1.5 Structure of thesis

This thesis is organized into seven Chapters. Chapter 1 has presented the background of the research, research goals and objectives and established the methodology. Chapter 2 scrutinises ANT through a literature review and establishes its relevance to NRM. Chapter 3 examines the historical developments in Kererū Management. Chapter 4 presents the case study in depth applying ANT to be followed by Chapter 5 that considers three future change scenarios in Kererū Management through an ANT lens. Chapter 6 synthesises analysis and discussion of findings and finally, Chapter 7 will conclude the research.
Chapter 2: Actor-Network Theory

2.1 Free Association: Using Actor-Network Theory

ANT as developed by Michel Callon and Bruno Latour (Callon, 1986a, 1986b; Callon & Latour, 1981) was originally established in the field of science and technology studies (STS) in the 1980’s in Paris. It is now most frequently associated with these two writers and John Law, a British author who began using ANT shortly thereafter and later collaborated with Callon. ANT in its developmental years was focused on following power relations and was established through Callon’s work on the electric car (1986b, 1987) and St. Brieuc Bay Scallops (1986a; Callon & Law, 1989); Latour’s studies of the pasteurization of France (1993b) and the sociology of technology (1992, 1987, 1990), and Laws studies of the TSR 2 aircraft (1988, 1991) and the Portuguese expansion in the 17th century (1986, 1987). These early studies largely use STS, except Callon’s St. Brieuc Bay Scallops (1986). However in the early 1990’s ANT was being used in a diversity of other areas of research such as medicine (Afarikumah & Kwankam, 2013), accounting (Fallan, 2008) and architecture (Justesen & Mouritsen, 2011). Latour (2005) reflects on this shift as a process by which to solve ‘new puzzles’ which where revealed through their work in STS. He earlier explains:

“ANT started with research into the history and sociology of science, tried first to provide a ‘social’ explanation of scientific facts, failed to do so, and then, from this failure, it drew the conclusion that it was the project of a social explanation of everything that was itself wanting”

(Latour, 2003, p. 35)

With this application beyond STS it was no longer possible to describe ANT in the abstract, which has proven problematic as ANT is notoriously difficult to define and as Law claims, “there is no ‘it’” (2008, p. 142). ANT can be over-simplified and described as a relational ontology, which aims to describe a network of connections built by actants to achieve a goal. An actant is defined here as

10 While all attempts are made here to explain in full, ANT is “something that is performed rather than something that is summarized” (Cressman, 2009), and it is well known that “one person’s use, or reading, of ANT may differ considerably from others” (Cressman, 2009). Therefore there are as many interpretations of ANT as researchers using it.

11 “ANT defines a specific ontology using the concepts of actor, network and translation. This is a thoroughly relational ontology: ANT claims that any actant is entirely defined by its network relations. There is nothing but networks: no essences, no underlying factors, and no contexts. ANT thus describes the world as a multitude of points and connections (and nothing else)” (Blok & Jensen, 2011, p. 49)

12 Latour’s thoughts on describing: “You think description is easy? You must be confusing description, I guess, with strings of clichés. For every hundred books of commentaries, arguments, glosses, there is only one of description. To describe, to be attentive to the concrete states of affairs, to find the uniquely adequate account of a given situation—I have, myself, always found this incredibly demanding” (Blok & Jensen, 2011, p. 49)
any agent, collective or individual, that has the ability to associate and disassociate with other agents\textsuperscript{13}. Through building a network ANT seeks to see past the divisions of classic sociology and ignore what it claims are the ingrained dichotomies between macro and micro, human and non-human and nature and society.

ANT emphasises that associations are continuously formed, re-formed and destroyed between human and non-human actants who are involved in a given context. It describes how such associations result in the evolution of distinct, new actants within a network that may differentiate significantly from the attributes of its origin actants (Dankert, 2010). An example of this would be a chemist who puts together two chemicals, or the exemplar used by Latour (1999) of the gun and a man which are both transformed to form a hybrid entity, “the gunman”. In both cases the whole is greater than the sum of the parts and a new distinct actant is formed. In this case it is the relationship that matters yet arguments ensue over whether it is the gun or the gunman that is the problem. ANT seeks to break down traditional borders that obscure by extending inquiry into traditionally fixed concepts and forced divisions, or the so called “underlying structures” (Waltz, 2006, p. 23). ANT inquiry requires investigatory techniques such as participatory observation, document analysis or comprehensive interviews, which allow the connections between actants to be followed. Established connections might only be revealed through research, and only connections traced from empirical data can be described. As Dankert (2010) declares, “Existence is first, essence is second” (p. 1), meaning ANT does not concentrate on the fundamental nature of an actant but rather the connections which form and shape actants.

ANT is not the first body of work in the field of ‘boundary-breaking’, with one of the earliest developments coming from Charles Darwin’s theory of natural selection with its idea that select ‘social’ characteristics play a part in the persistence of groups, including humans, in the natural environment (Dunlap et al., 2002). This idea was then expanded upon much later in critiques by non-sociologists towards traditional sociology such as Webb (1952), Bookchin (1972) and Wilkinson & Boulding (1973) who probed traditional inquiry and criticized the wilful ignorance of the biophysical environment within sociological interests, “both classic and contemporary”, as a phenomena unworthy of concern (Buttel as cited in Dunlap, 2002, p. 36). This new wave of ‘boundary-breaking’ thinking was elaborated and expanded upon to be termed the “new ecological paradigm” by Catton & Dunlap (1978) who claimed that conventional twentieth-century sociology, despite its internal debates, shared a commonality in its presumption that humans and societies are fundamentally exempt from the laws of the biosphere, now termed ecological limits (Brown et al., 2002). From this

\textsuperscript{13} Importantly this means actants can be either human or non-human and the key requirement is the ability to associate or disassociate.
beginning these works have been built upon and proliferated into a variety of works including that of social constructionists such as Castree with his concept of a ‘social nature’ (Braun & Castree, 2005; Castree, 2001, 2002, 2013; Castree & Braun, 1998) and those of Bruno Latour and Michael Callon who envisaged ANT as a tool to overcome this conventional divide between ‘Nature’, ‘Society’, and written and spoken communication - ‘Discourse’ (Callon & Latour, 1981; Latour, 1992, 1996, 2005).

Callon and Latour claim this nature/culture divide is the result of modernist philosophy, which inspired the slicing of ‘reality’ into ‘logical’ categorizations which was then accentuated by postmodernists such as Derrida (1982) who declared language as a distinct middle ground separating ‘Nature’ and ‘Society’, being “self-referential” and having no static meaning in the world. Latour in his book “We Have Never Been Modern” (1993) denounces this postmodernist perspective that defines Nature as being only perceived, never man-made and Society as only involving humans. Latour claims that postmodernism is artificial by extension of the fact that the modernist division of reality was itself never real, countering that reality is and always has been “simultaneously real, like nature, narrated, like discourse, and collective, like society” (ibid, p. 6). As a result of the false divisions of modernity ANT was developed to provide a corrective, to retie “the Gordian knot” (Callon, 1986, p.1) through an interrogation of the underlying interconnectedness of nature, language and society. ANT represents the development of a language and methodology which removes “the distinction between humans and non-humans, embodied or disembodied skills, impersonation or ‘machination’” (Latour, 1993b, p 165), the abolition of any a priori categorization and as such simply describes a network of assimilated human and non-human actants, each capable of equal agency in a network assembled and sustained to realize a specific aim.

ANT has developed extensively since it was established and many recent applications now resemble ANT as described originally by Callon and Latour in name only (Durepos & Mills, 2012; Lawlor & Kavanagh, 2015; Sørensen, 2013). That said, the original frameworks still retain credibility and therefore will be used as the analytical framework for this thesis. In this thesis the methodological practices is mainly guided by Callon’s “Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay” (1986a) as a framework. This study by Callon examines how “scientific knowledge” on the St Brieuc Bay scallops produced a network around a problem of deteriorating scallop populations. Callon studies this empirical case in which researchers are trying to find ways to conserve and cultivate scallops. Through Callon’s work the actants are

14 Latour describes this division and the rise of a separate discourse in sociology as “Nature ‘out there’ and Society ‘up there’ - what remains is, in a first approximation, meaning production, or discourse, or, text. This is the major achievement of the sixties and of their ‘linguistic turn’ or ‘semiotic turn’. Instead of being means of communications between human actants and nature, meaning productions became the only important thing to study.” (2010, p. 6)
revealed, including the researchers, fisherman (who are tempted to overharvest the scallops) and the scallops themselves. Callon finds a momentarily stabilized network in which the researchers hold power but here his work exhibits how alliances and consensus can always be contested, for example the scallops initially attached themselves to the towlines but later refused to; fisherman initially agreed to restrict their activities but one Christmas Eve gave in to temptation to harvest the scallops in a “miraculous catch” (p. 220). Through this study Callon examines historic power dynamics and how the development of novel relationships between both human and non-human actants altered these dynamics. Also through this research Callon sets out his much-cited steps of translation, examined later, to describe how the identities of actants and their interactions are constructed and negotiated to create a stable or seemingly stable actant-network. Callon’s work is one of the founding works of ANT and the only early work in which ANT was applied to a NRM issue (scallop management). In addition it set out and described the process of translation clearly and established the three core concepts of ANT. This makes Callon’s “Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay” (1986a) adaptable into a framework for ‘doing ANT’. Callon (1986a) also established the three core principles of ANT: agnosticism, generalised symmetry and free association. These principles were designed to overcome the privileged methods of sociological analysis, which systematically ignore the role of nature and non-human actants, and must be adhered to when conducting ANT research.

![Figure 2.1: ANT key concepts and translation moments](Rhodes, 2009, p. 6, as adapted from Hassard, Law, & Lee, 1999; Callon, 1991, 1999; Latour, 1987)
Agnosticism is described as “analytical impartiality [which] is demanded towards all the actors involved in the project, whether they be human or non-human” (Callon, 1986a, p. 4). A priori assumptions as to the nature of the network, causal condition and the accuracy of actant’s accounts must be abandoned (Ritzer, 2004). The researcher must impose impartiality, and no interpretations may be privileged. Importantly, this means an actant may be not only human, but also an organism; entity or idea as long as it undertakes or realizes an act, also described as ‘agency’, and all must be treated equally. The importance of this equality of actants and their dynamic interaction is paramount in understanding that the interplay process mutually shapes actants and that “one does not deterministically shape the other”, but rather it is the connection that counts (Cordella & Shaikh, 2006, p. 7). ANT has been criticised in this analytical impartiality for dismissing or ignoring such basic social factors as race, class, gender, and post-colonialism (Harding, 1992, 1998, 2008). It is also claimed (by Bloor, 1999; Restivo, 2010) that its vocabulary and analytical tools result in a method that cannot challenge a power structure such as racism, oligarchy and patriarchy but is left merely “describing them” (ibid). Dankert (2010) explains that this criticism is largely the result of incorrect interpretation of ANT, in that the differences between actants “are not neglected, but have no a-priori relevance for ANT driven studies” (ibid). There may be large variations between actants; however, no relationships should be pre-assumed in ANT and must be found during the research. Specifically when analysing the Kererū network this reminds us to be weary of assuming relationships and meaning to actants before they have been discovered – we cannot know of any relationship between Kererū and huntsman until it is revealed, nor can we assume how any other actants interact.

Generalised symmetry is the “commitment to explain conflicting viewpoints in the same terms” (Callon, 1986a, p. 6). It maintains that the use of a neutral and abstract vocabulary is required that works interchangeably for both human and non-human actants. A single explanatory frame is required in the interpretation and an ANT researcher must never change terms in examining both different or related individuals or organizations e.g. fisherman or fish, buildings or their inhabitants. As Callon explains, this means:

“not chang[ing] registers when we move from the technical to the social aspects of the problem studied”

(1986a, p. 200)

This concept of generalised symmetry can also be understood through Dankert’s (2007) assertion that “humans first shape buildings and then are shaped by the same buildings” which illustrates that
human and building actants have the ability to ‘shape’ each other, an abstract terminology which can equally be applied by both interconnected actants and reminds and re-enforces the recognition that everything is heterogeneous. This symmetry in terminology enforces the status of non-humans as playing an active role in network dynamic, helping the researcher to avoid “bracket[ing] off non-human materials, assuming they have a status which differs from that of a human” (Callon & Law, 1997, p. 168). Such terminology avoids imposing asymmetry on the network before it has even formed. Indeed it is recognized there are “differences between conversations, texts, techniques and bodies” (ibid) but they cannot be assumed. ANT studies associations not between ‘passive’ and ‘active’ actants but between heterogeneous actants. Associations are offered and endeavoured, fail or succeed, but all must be explained in the same terms if the network is to be described correctly.

Lastly, the principle of free association demands the exclusion and “abandonment of all a priori distinctions between the technological or natural, and the social” (Callon 1986a, p. 1). There is no distinction between phenomena that are not the result of existing networked activity, and as a result there is no phenomenon that is ‘causal’ and cannot be explained. Free association seeks to remove divisions between the natural and the social; as Callon (1986a, p. 201) explains [it seems] so simply:

“follow the actors .....[ to see how they]... “build and explain their world”

Latour (1993b, p. 12), however, recognized that to ‘follow the actors’ is not as easy as it is often set forward and offers this further explanation as to what is involved:

“that is try to catch up with their often wild innovations in order to learn from them what the collective existence has become in their hands, which methods they have elaborated to make it fit together, which accounts could best define the new associations that they have been forced to establish.”

From this more significant explanation following the actors can then be understood as looking for connections, exploring the how and why new associations are made. Key to this is moving slowly, not simply accepting the most straightforward conclusions and looking for other actants behind the scenes. Following the actants also involved developing a detailed view of events, generalizations obscure the network and through closer examination new actants, details and circumstances are likely to emerge, ”enriching the narrative”(Fioravanti & Velho, 2010, p. 4). Finally following the actants, means not jumping around, and building up the network as completely as possible before moving on to explore further. Simply put, following the actants is a necessary step in order for a

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In designating the non-human actants as different they become “resources or constraints; they are said to be passive; to be active only when they are mobilized by flesh and blood actors” (Callon & Law, 1997, p. 168)
complete and detailed network to emerge, rather than allowing a mis-matching of actants, connections, and spaces to take place which is not a reflection of the true narrative.

Free association is an outcome of the earlier mentioned assertion that reality is simultaneously social, natural and discourse all in one, implicating a “flat ontology” (Collinge, 2006, p. 1). Latour’s preferred term is the “sociology of associations” (2005, p. 9) which posits that social order should not be completely disregarded but recognizes that the social dimension of a phenomenon does not exist a priori and, therefore, cannot be utilised as a starting point for research. In short for a researcher doing ANT it implies that a problem may be wholly ‘social’ or ‘natural’ however it cannot be claimed to be such as an objective reality prior to the research being done. From this perspective the divisions between the social, natural and technological are imposed over the real world and it is the researchers role to recognize that actants are not simply objects, but rather are associations of differing connections themselves constituting a network. Consequently, the ANT researcher’s role is not as attributor of a hidden social force or context, but simply to trace the associations between heterogeneous entities and to follow their lead.

While ANT can and has been represented as many things by many people, at its core ANT can be thought of as a method for the study of power, through the utilization of its translation concept (Law, 1992a; Whittle & Spicer, 2008). Translation is the practice of adapting actants, of making them analogous, through substitution, or simplifying by ‘black-boxing’ or turning “network elements into a single block” (Ritzer, 2004, p. 2). In this sense translation is both a “betrayal, of solidarity and origins” (ibid), by which a network can achieve a high level of convergence with agreement. That is where the network is aligned around a common history and shared space. Translation must, therefore, be known in terms of the “translator, the translated and the translation medium” (Ritzer, 2004). Tightly converged networks are simply put: those that are simplified through translation. When a network is simplified to a resulting single actant ‘spokesman’ (Callon & Latour, 1981), it can be said to be ‘punctualized’, a ‘black-box’. A ‘black-box’ is a system or object when it is perceived purely in terms of its inputs and outputs without any consideration required of its internal workings. When something has been ‘black-boxed’ it is fixed and inflexible, used without interrogation. The concept is integral to ANT as networks are simply a collection of ‘black boxes’, systems created and gathered together as discrete entities to manage a reality that it is, theoretically, infinite. ANT focuses on breaking down ‘black-boxes’ to examine the internal workings of a network, which are often ignored, but even this still requires a limit. Complex systems broken down by examining their “black boxes”

16 A similar idea is proposed by Law (1999) in “relational materiality”, where actants gain their form and characteristics as a result of their relational interactions with other actants. Here actants of interplays “do not pre-exist the relationship; the actants are generated in and by these relationships” (Cordella & Shaikh, 2006)
creates a “swarm of new actors” (Callon, 1986b, p. 12) and in order to be effective ANT must simplify networks down to individual actants and connections where necessary while still providing an effective analysis with this new ‘swarm’.

A black box contains that which no longer needs to be considered, those things whose contents have become a matter of indifference.


Almost anything may be ‘black-boxed’ given different scenarios and levels of complexity. Examples of such networks could include a home computer, despite its internal complexity; a company, despite the expanse of actants enrolled; or a house, despite the various objects within. Black boxes, however, can always be re-opened, as networks require continual adjustments to perpetuate. The nature of a single actant ‘spokesperson’ representing other entities results in the possibility of challenges from both outside and within the network; thus domination and punctualization is always contestable and reversible, never static or guaranteed. Neither actants nor their network can embody stable traits and therefore may only reflect an “unstable misaligned relationships” (Cordella & Shaikh, 2006, p. 11) or combine in a process of “multiple trajectories” (p. 11) in dynamic equilibrium which is only perceived as stable from the outside.

Callon (1986a) introduces and summarizes the four phases of translation: problematization, intéressement, enrolment and mobilisation (see Fig. 2.1 above). Problematization is the act of defining and identifying the nature of the problem, recognizing the actants involved and the posturing of a solution, which creates an indispensable position for the problematizer who now...
attempts to hold power. The consequent three moments are all focused on realizing this problematized solution through the manoeuvring of other actants and intermediaries. Next is intéressement when the problematizer seeks to strengthen the relationships between actants and ‘locks’ them into a role they have been offered by the problematizer within the network structure. Callon, Law, and Rip (1986, p. xvii) describe it as involving “one entity attracting a second by coming between that entity and a third”. Fig. 2.2 for example shows actant A intéressed actant B by removing or undermining all other associations between actant B and the other visible, or invisible, actants such as C, D and E who may want to link themselves to B and attempts to give B another definition. As a result the properties and identity of actant B is amalgamated and/or redefined through intéressement - “B is a ‘result’ of the association which links it to A” (Callon, 1986b, p. 208).

This link disallows all other actants the opportunity to give B another definition. Callon describes this ‘elementary relationship’ as a social link through a triangle of intéressement, where the strongest problematizer in one corner is able to exhibit more ‘pull’ thereby shaping and consolidating relationships. There could be numerous problematizers in any give network, however one will exhibit a greater attraction and link more actants to its cause through coherence of the solution, alignment of interests, ease of application or shifting itself to make the problematization more attractable: in a stable network only one problematizer can achieve success. There is an unlimited range of strategies and mechanisms to achieve this interruption. Seduction, simple solicitation, pure and simple force, pre-existing links and closely aligned problematizations are all factors in the process of intéressement. In all but the rarest of cases, when the shaping of an actant “coincides perfectly with the proposed problematization” (Callon, 1986b, p. 209), there is significant modification of identity or ‘geometry’ of the intéessed actants.

The third stage is enrolment and encompasses the redefinition and interrelation of roles by the problematizer to allow for their acceptance by the other actants. For translation to be successful the problematizer demands the cooperation of other actants who must abide by the roles assigned to them through a series of “multilateral negotiations, trials of strength and tricks” (Callon et al., 1986, p. 211). These negotiations are only carried out by a select few representatives of each actant to be enrolled which leads to the final stage: Mobilisation. This occurs when the problematizer seeks to guarantee all actants have legitimate speakers to act for the group and avert betrayal of such speakers by the group (Gunawong & Gao, 2010). Here the collaboration between actants is obligatory to form and maintain the associations between themselves (Dankert, 2010). This creates the obligatory passage point (OPP), a position that is mandatory in order for all actants to meet the interests that have been attributed to them by the problematizer. The problematizer defines the OPP through which the other involved actants must pass; making the OPP becomes the only passable route through which problem resolution can be achieved through the network structure. This also
results in the problematizer becoming indispensible in the network. Actants must be transferred and converted in order to make themselves fit an ‘actant-network’ (ibid). Actants that do not allow themselves to be translated (or refuse to translate themselves) cannot be part of the actant-network. As John Law has declared: “interaction is all that there is” (1992a, p. 1) 

2.2 The Ontological Divide: ANT Perspective

The realist–social constructivist debate, or the so-called ‘science wars’, have been argued within the social sciences since the rise of postmodernism in the 1980’s. ANT has been drawn into and fuelled the debate as at its foundations are claims that nature is a ‘social construct’ rather than having a material existence (Latour, 1999). The debate, while far too complex to detail here, pits social constructivists, who explain knowledge to be ‘constructed’ through humans when new information comes into contact with existing knowledge and experiences (i.e. knowledge is subjective), against realists, who state that reality is independent of the observer (i.e. knowledge is objective) (Oulasvirta, Tamminen, & Höök, 2005). This view of nature as a purely social construct has been termed the ‘hard constructivists’ view, as it necessitates knowledge of nature to be constructed through humans before it can be known (Burningham & Cooper, 1999). Therefore a problem cannot become a problem without awareness by society or claim-makers (Colwyn Jones & Dugdale, 2002). The counter argument to this is the realist perspective in which environmental problems are real and exist independent of whether or not society is aware of them (Burningham & Cooper, 1999). This argument has embroiled ANT in concerns that it is being used as an interpretative lens instead of a distinct ontological basis to advise research (Cordella & Shaikh, 2006). Cordella and Shaikh (2006) sum up this argument by explaining how ANT has been constrained by an enforced “ontology of interpretivism” (p. 17), thus suppressing its own unique ontology. They consider this detrimental not only to an understanding of ANT, but also in its capacity to “frame problems” (p. 3). This is because interpretivism grants the observer a privileged position in constructing reality through the observer’s

17 “No matter how constraining the trapping device, no matter how convincing the argument, success is never assured” (Callon, 1986a, p. 211)

18 Or lack of debate as characterised by Zehfuss (2002)

19 An argument best understood through ‘Is a river polluted if no one noticed’.

20 Understood through Lincoln and Guba’s (2001) definition that through an interpretative lens “Events, persons, objects are indeed tangible entities. The meanings and wholeness derived from or ascribed to these tangible phenomena in order to make sense of them, organize them, or recognize a belief system, however, are constructed realities”. This places interpretive epistemology as constructivist in nature as it judges knowledge within a constructivist ontology, while the use, design and study of such information is seen as hermeneutic in which the construction is interpreted as text via reading (Walsham, 1993)

21 In so far as it seeks to remove all distinctions between social, natural and discourse. It does not argue ‘reality’ is constructed through society, nor that a reality exists in ‘nature’. Reality is simultaneously all and nothing, social, natural and discourse in one. See Collinge’s (2006) and Manuel’s (2002) ideas of a ‘flat ontology’.
own perspective, while ANT maintains that reality results from the interplay of actants and therefore reality develops outside any individual. As a result interpretivist ontological claims are produced ‘in there’ – through the observers own reality, contradictory to ANT where reality forms ‘out there’, through the interplay of actants. As a result using ANT “reality only becomes real when actors interact” (Cordella & Shaikh, 2006, p. 12). Therefore while ANT can be used within interpretivist research, interpretivism could be a constricting lens in comparison to potential use with its own ontology, which conceives no a priori division between actants and culture – the seemingly distinct categories of society and nature are constructed simultaneously through connections and disconections between actants and the real world (Latour, 1992, p. 281).

Latour, in his work “Pandora’s Hope. Essays on the Reality of Science Studies” (1999) re-examines the association between humans, nature and “artefactual” objects after continual allegations over his social constructivist agenda and by extension ANT (p. 112). Within it he fervently denies such claims but admits that humans have never, and will never, be distinct from their creations. Latour in his work asserts his alternative to the current warring ontologies, termed ‘realistic realism’. He argues both realist and constructivist ontologies are based on a flawed assumption about the existence of an “absolute ontological gap [that] separates language from the world”22 (p. 1). Therefore realistic realism claims there is no gap between the cognitive subject, and the ‘outside world’ that actually does not exist per se, but is only realized with the interplay of various actants, both human and non-human, with equal power to act (Bruno Latour, 1987; Law, 1992a, 1999). On this basis reality is a nascent spectacle that cannot be assumed through examining current stability and objects, but rather is a product of the “interaction of heterogeneous elements that are shaped and assimilated into an open ended network” (Law, 1987, p. 1).

2.3 Actor-Network Theory in Natural Resource Management

There are numerous examples of analytical frameworks that can be considered when thinking about a vast range of things such as machines, corporate systems or NRM. With recent works in other fields and methodologies towards integration and interdisciplinarity when considering the natural/social boundary (which ANT argues does not exist) it must be questioned what can ANT add to our understanding of particular NRM issues that cannot be gained elsewhere?

Significant works which will be reviewed in-depth to establish the benefits ANT may offer NRM include Callon (1986a), Steins (2001), Castree & MacMillan (2001), Whatmore (2002), Jay (2004) and

22 “Once this gap is accepted, the question boils down to is it possible to build a reliable bridge across this gap?” “Yes”, the realist claims, "science is that bridge". "No", the relativist says, "science is just another language game" (Stalder, 1997).
Cloke & Perkins (2005). Most of these works can be considered largely descriptive, except Callon (1986a) and Steins (2001), which will be used for their framework of applying ANT to NRM. Whatmore (2002) and Rodger et al. (2009) are scrutinised for their application of ANT to NRM while Cloke & Perkins (2005) and Jay (2004) are considered for their application of ANT in a New Zealand context.

As previously stated Callon’s “Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay” (1986a) was one of the original works in establishing ANT and the only one of the early works produced by Callon, Latour and Law to interrogate a NRM issue – namely the decline in the population of scallops in St. Brieuc Bay and subsequent attempt to develop a conservation strategy by three marine biologists. The approach used in this paper has come to have an enduring and far-reaching influence on later ANT studies, especially in considering NRM issues as it advocates a different symmetry to that of the sociology of scientific knowledge tradition (SSK). SSK is the study of science as a social activity, used by sociologists to consider the scientific and technical aspects of controversies and teaches that all scientific knowledge claims should be subject to the same approach and “explained by use of the same resources” (Asdal & Ween, 2014, p. 2). Callon (1986a) finds this approach problematic as it replaces the asymmetry of science it sought to purge with another, that of social categories (also see Latour 1999a; Latour & Callon 1992). Through SSK the agnosticism taken towards natural science (and technology) was not extended towards society. Social categories were privileged and unquestioned in the explanation of science, the product of which was “kind of chauvinism on behalf of the social sciences: a social constructivism” (Asdal & Ween, 2014, p. 2). Or as Callon (1986a) explains SSK produced a paradoxical situation in which “nature is uncertain but Society is not” (p. 2). Callon’s (1986a) approach provides an alternative to this in which “Nature” is considered on an equal footing to “Society” and the researcher was not to preordain who or what could have agency. This approach meant “Nature” could influence the outcome of events, and proved controversial for its implication that nature, animals and non-humans had agency.

Callon (1989a) provides a blueprint for doing ANT specific to a NRM issue through his application of agnosticism, generalized symmetry and free association. For example through Callon’s application of agnosticism the researcher’s confidence in the anchorage of scallops or a uniform group of fisherman with equal interests was never represented as false or a misconception. The existence of the nature of the networks and the accuracy of actant’s accounts was discovered only through the analysis by the actions of the actants. Callon shows us how to apply the principle of generalized symmetry to

\[23\] As Asdal & Ween (2014) explain the controversy this principle created: “How ridiculous even to suggest that animals could have agency! Was this to say that there were no intrinsic differences between humans and non-humans?” (p. 2)
create a constant grid of analysis through using the same vocabulary. He examines fisherman, scallops and researchers equally and without discrimination through problematization, intéressement, enrolment and mobilization. He successfully applies symmetry in explaining the controversy and does not resort to allowing society to have the balance of power, “to establish, urbi et orbi, that larvae anchor, the complicity of the scallops is needed as much as that of the fishermen” (p. 17). Callon also exhibits how free association allowed him to identify unpredictable relationships that might otherwise have been missed by traditional NRM analysis. By allowing the identity of actants, intermediaries and spokesmen to fluctuate Callon’s analysis demonstrates a methodology in which relationships only become know after the event avoiding fixed roles of ‘natural’ or ‘social’ and imposing a-priori categories. As Callon claims:

“Who at the beginning of the story could have predicted that the anchorage of the scallops would have an influence on the fishermen? Who would have been able to guess the channels that this influence would pass through?”

(1986a, p. 18)

While Callon helps to establish ANT as a credible, new methodological approach for examining NRM the early focus of ANT scholarship was quick to turn to STS. The potential application of ANT in NRM was largely ignored at this early stage and it was not until the late 1990’s when some scholars began to apply ANT in analysis of NRM issues, beginning with Murdoch’s largely theoretical work “Inhuman/nonhuman/human: actor-network theory and the prospects for a nondualistic and symmetrical perspective on nature and society” (1997). Within this work Murdoch considered the development of ANT and emphasises “its transgression of the nature-society distinction” (p. 4), attempting to demonstrate how it may be applicable to inquiry outside of STS claiming it is ‘exemplary’ in respect to its ability to link the domains of nature and society which have been pushed apart by both natural and social sciences.

This paved the way for ANT case studies in the late 1990s which specifically examined NRM issues including Thorne (1998) review of the international trade in kangaroo skin and meat, De Sousa & Busch (1998) analysis of soybean production and consumption in Brazil, Bowler (1999) examination of alternative disposal methods available to UK water companies and Kortelainen (1999) Thorne (1998) study of the Finnish forest industry utilization of lake and river systems. Murdoch (1997) did however raises significant questions about ANT’s use as a symmetrical analysis, citing “practical problems associated with description and simplification” (p. 751), lingering abstract issues with the definitions of agency still disputed since Callon (1989a) and questioned where legitimate roles for the tools of ANT could be found. Steins (2001) “New Directions in Natural Resource Management: The
Offer of Actor-Network Theory” picks up on this line of inquiry and specifically applies it to NRM offering theoretical insight into how NRM may benefit from ANT. Steins examines how ANT’s abolishment of predefined categories and principles improves analysis of the construction of resource management processes and how actants use these constructions. Specifically she describes how any NRM outcome is always uncertain, a result of the dynamic relationship between actants and the possible mobilizations in order for actants to achieve their goals. This idea was built upon Callon’s (1989a) proposition that actants unpredictable relationships can only become known after the event, which Steins (2001) develops specifically in an NRM context to claim that there is a need to focus on how past outcomes have been achieved in order to progress our “understanding of the constructed, contingent and complex nature of NRM processes” (p. 24). Steins (2001) largely theoretical article is founded on empirical examples of coastal management from within her PhD thesis: “All hands on deck: an interactive perspective on complex common-pool resource management based on case studies in the coastal waters of the Isle of Wight (UK), Connemara (Ireland) and the Dutch Wadden Sea” (1999).

Steins (2001) takes the original principles of ANT proposed by Callon (1989a) and argues two principles of ANT are especially useful for examining NRM processes and issues. Steins described how agnosticism demands the abandonment of a priori categorization and design principles, thus a stakeholder construction of the problem, and focuses instead on how the actants are mobilized and enrolled in the management network. The principle of symmetry critically demands that everything in NRM needs to be explained to be understood, and therefore ‘success’ of a situation cannot be an end point and as such ‘success’ must be understood on a case-by-case basis. This is an innovative approach to NRM as success is normally a self-understood goal but an ANT approach would instead demand analysis and a deeper appreciation of the situation. Steins (2001) also finds that “the static model of bounded rationality underlying mainstream views of NRM hinders our understanding of the complex processes inherent in NRM scenarios” (p. 20) and therein exists the need for a tool which develops alternative perspectives, specifically ANT. Bounded rationality is an idea developed by Herbert Simon (1956) that it is impossible to comprehend and analyse all of the potentially relevant information in making choices. It recognizes that rationality is limited by the available information and the cognitive limitations of our mind, along with the time required in making decisions. Therefore in order to cope with the complexity of decision-making it was necessary for techniques, conventions and standard operating procedures to be created to facilitate decision-making. Bounded rationality asserts that decision-makers are only able to seek satisfactory solution as they are lacking in capacity and resources to arrive at the optimal one, and as “because of human cognitive and emotional architecture, they sometimes fail, occasionally in important decisions” (Jones, 1999, p. 3). The problem therefore with bounded rationality in NRM is that people do not have unlimited
capacity to utilize information and arrive at the optional choice so use short-cuts or ‘rules of thumb’ to arrive at less than optimal decisions. Importantly bounded rationality teaches that more information does not necessarily result in better management decisions but rather that decision-makers “can't process all the information even if they had it” (Faggini & Vinci, 2010, p. vii)

Steins argues that NRM is restricted by this bounded rationality and conventional scientific belief in categorization to even more successful management models, therefore only the current prescriptive models will exist which is insufficient for understanding how actants construct NRM. Models and categories imposing a one size fits all approach in a management setting do not allow for uniqueness of scenarios and may lead to “erroneous judgments” (Steins, 2001, p. 22). It is increasingly recognized within NRM that the analysis of the management regime itself is not enough to increase understanding and that the “institutional framework governing resource use has to be renegotiated” (Edwards & Steins, 1999, p. 1). Furthermore ‘contextual factors’ such as what is “is physically, legally, economically and socially feasible” and “desirable” need to be considered, (ibid) to determine how actants make resource decisions.

ANT offers the opportunity to approach NRM without a standardized format; social constructed judgments; or perceptions of success, failure and rational behaviour that are applied in traditional NRM research (Acheson, 2006). NRM research has a tendency to approach issues from a stakeholder perspective, an exclusive approach that focuses issues on the human actants without considering ‘external’ actants or processes which may play key roles. To understand the relevance of this Steins (2001) uses the example of an Irish Oyster fisherman co-operative which privatized their common property fisheries, which had previously been regulated by informal agreement. After two years, two-thirds of the fisherman had become ‘free-riders’ and were no longer contributing as agreed. Steins showed how traditional NRM thinking would label this endeavour as failure, and that through the logic of rationality, that it was more rewarding for an individual to work in tourism, had led to a collectively irrational outcome – individuals no longer co-operating in the fisheries. Steins (2001) uses ANT to examine the collective deeper, and without conditions or boundaries, and found collectives hidden objective was to mobilize the Oyster fisherman through the resource consent process to “create property rights to parts of the local bay to prevent a salmon farm from expanding in the fishing grounds” (p. 21). As a result it was irrelevant many of the collective had then chosen to participate in other activities in the tourist season as they had already secured their fishing grounds through collective actions. Steins (2001) analysis exhibits the usefulness of ANT in NRM situations for removing preconceptions and labels of success and failure and shows the benefits of simply examining what exists. By not adopting pre-defined categories of ‘successful’ and ‘unsuccessful’ Steins was able to focus on collective action amongst multiple stakeholders and the resulting outcome, rather than consider each action individually.
In her analysis, Steins (2001) also found that within NRM there is always one certainty: NRM always has an outcome, therefore she proposes the true contest exists not within a management plan but in understanding how the outcome was achieved. This allows for the understanding that traditional NRM methodologies take a ‘snapshot’ (ibid) approach, describing affairs at a specific point rather than the offer of ANT which can make visible the interactions involved in reaching that point in the management process (ibid). This advantage comes because ANT conceives NRM beyond an isolated human process to involve consideration of resources, technology, institutions, paperwork and many other involved actants. By examining the collective rather than “rational, atomized” individuals Steins (2001, p. 21) claims our construction of NRM will change, a necessity in achieving and understanding decisions which account for involved non-human actants and so-called ‘irrational’ or ‘dynamic’ forms of agency.

![Figure 2.3: The transformation of a leopard in Africa to a leopardus in the Roman arena through circulation in a network](Whatmore, 2002, p. 26)

Sarah Whatmore, a geographer criticises the traditional materialist approaches of her field in favour of a ANT inspired approach termed “Hybrid Geographies” summarized in her 2002 book of the same name. *Hybrid Geographies* is an attempt from within geography to bridge the social and natural
divide and develop a "more than human" inquiry, and at its core is about relationships and examines what is often considered ‘wildlife’ from an ANT perspective. Whatmore explains that utilizing ANT involves viewing nature, wilderness, and wildlife as “a relational achievement spun between people and animals, plants and soils, documents and devices in heterogeneous social networks which are performed in and through multiple places and fluid ecologies” (2002, p. 14) Within her book Whatmore specifically looks at the relationships that construct wildlife, connecting and juxtapositioning for example leopards which fought in the ancient Roman amphitheatres with elephants offered in British zoos. Whatmore considered how “wild” or “endangered” animals were constructed as a result of an actor-network, which enrolled a range of human and non-human actants spanning from a local to global scale. The leopard used in gladiatorial exhibitions in a Roman arena was just one piece in an intricate procurement network, which connected Rome with far-flung locales like China, Africa and India. Through political benefaction and military conquests and supply chains a leopard from somewhere in Africa was incarnated into the leopard spectators enjoyed in a Roman arena. This leopard on show was often starved or diseased, its characteristics transformed through circulation in a network involving tracking and imprisonment, transport in mule drawn wooden crates and in Roman merchant vessels, preparation, and storage in dens beneath the arena where animals awaited their performance. Travelling with the leopard “many hands, devices and places left their mark on the creatures” (Whatmore, 2002, p. 24) and as a result of circulation in this network the leopard becoming what the Romans termed 'leopardus' —a performance of wildlife (see Fig. 2.3)

Whatmore in her analysis claimed the world as relational, and provides a tool for making sense of it: hybrid geographies. The author insists that the relationships which constructs things we simply have to follow the journeys these things take, either like the literal journey of the leopard to the Roman arenas or figurative such as the drawing up of a Government bill or examining data on breeding stock. As a consequence a study in hybrid geographies is not confined to one specific locale and travels freely across the globe and through history in tracing these relations. This approach borrows from ANT that attempts to explain the world by following actants in a network of associations, and teaches to examine circulations and flows. Whatmore’s unique application of ANT to contemporary human geography was well received and embraced by many within the field and is described as having “(re) invigorating geography and making it relevant to interdisciplinary work” (O’Brien, 2004), providing a critical work for considering the relational co-constitution of nature and society, and is especially useful for considering the role of ANT in NRM issues such as wildlife management. In its reconceptualization of the social Hybrid Geographies supports Latour’s (2005) assertion of a world of flat interactions, a novel cartography of two dimensional understanding. Latour (2005) illustrates this
concept by describing a crumpled paper map (therefore a three-dimensional object), which only becomes functional after it has been flattened out and restored to its two dimensional design.

“we have to flatten (the maps) out on a table with the back of our hand ... this ironing out may seem counterintuitive (but) it is the only way to measure the real distance every social connection has to overcome to generate some sort of tracing”

(Latour, 2005, p. 172)

ANT shares very few comparisons with the traditional spatial analysis practiced in geography, however ANT exponents such as Law and Latour have frequently used discourse and metaphors drawn from within geography and cartography to explain ANT. Sarah Whatmore and others who have used ANT within geography have taken the metaphors used and invoked in ANT as cues to explore ANT geography further. They found the non-linear and non-representation approach of ANT offered to provide a “more comprehensive relational approach to help uncover the complex relations that shape our hybrid human and non-human world” (Thrift & Dewsbury, 2000, p. 18) and either developed a explicit spatiality of ANT or taken ANT as inspirations for relational geographies, such as Whatmore (2002). In this development of ANT geographers added to ANT, specifically in NRM, by demonstrating that there is a specific spatiality embedded in networks, and that acknowledging this is crucial to understanding the rise of network actants through associations and circulation. For example, the leopardus actant (Fig. 2.3) is dependant on the specific geographic setting (the Roman arena) where it performs or a protected elephant to a setting in a nature reserve – the spatiality of an actant is part of their presence, and cannot be separated from its setting or conceptualized outside of its network (Murdoch, 1997). ANT within geography, such as Hybrid Geographies, has helped to show that space is not an absolute, but instead a consequence of associational activity that develops from within heterogeneous networks – space is no longer considered through the strict hierarchical notions of geographical scale, but instead takes the form of the given actant network, a flat ontology of interactions (Murdoch, 2005).

Castree & MacMillan (2001) in “Dissolving dualisms: actor-networks and the reimagination of nature” evaluates ANT’s ability to provide us with an alternative to dualism of natural realism and social constructionist. The authors specifically consider and analyse the work of Eden, Tunstall, & Tapsell (2000), British geographers who use ANT to investigate a project to make a portion of southern England’s Cole river ‘more natural’ - a so-called ‘river restoration project’. Castree and MacMillan consider the outcomes of the research (and therefore ANT) in its ability to theorize the human-nature relations and make sense of an “array of environmental practices” (p. 214). Castree & MacMillan (2001) appear persuaded by some the core tenants of ANT, but through their analysis
consider social construction’s thinking (utilized in the research of Renganathan, 2004) to have value, which is too easily dismissed by ANT. The authors discuss how “the flattening process [of ANT] leads to an obscuring of differences between different ...‘noun chunks’ of reality” (p. 1014), suggesting that by perpetuating an indifference of things they end up being portrayed as all the same (an idea borrowed from Laurier & Philo (1999, p. 1016)). Castree & MacMillan (2001) also find problem with the idea that each actor-network is ‘unique and qualitatively distinct” (p. 216) and consider that even if details vary the process of some actor-networks must be similar and therefore there is space for a theory to abstract general processes rather than starting “afresh each and every time” (p. 222). Their finding also supports some of the major critiques of ANT, in that theoretical commitment is often lacking in ANT research and through focusing on the actor-network it must be questioned:

“Can...we ever do anything more than describe, in prosaic fashion, the dangerous imbroglios that enmesh us?”


Castree & MacMillan (2001) concede that ANT offers a powerful critique of all dualistic forms of nature-society thinking yet consider ANT to have failed in its approach to non-human actants, claiming they count for little if they are only “described in their subjugation to others” (p. 222). They suggest that while social constructionist arguments often fail to account for the myriad non-human actants ANT goes too far in its refusal to acknowledge the possibility that some actants “marshal the power of many and, in so doing, limit the latter’s agency and circumscribe their existence” (p. 222). Castree & MacMillan (2001) summarize that a ‘weaker’ version of ANT might be best as it allows the tool to remain “critical of binaries thinking, of asymmetry, of limited conceptions of agency and of centered conceptions of power” (p. 223) while allowing for the recognition that actor-network processes are driven by the social and natural in unequal measure, claiming the social is disproportionately directive, and power can be dispersed and directed more effectively by social actants. Castree & MacMillan (2001) provides a insightful analysis of the role of ANT in NRM, and allow for better comprehension of the benefit ANT research may have over the pre-dominantly social constructionist research undertaken by Renganathan (2004). There are potential drawbacks however of this work. Notwithstanding Castree and MacMillan’s human geography background bias, in that it relies heavily in its critique of one piece of ANT research Eden et al (2000) which was itself undertaken by geographers, a flaw which shows in the authors insistence on attributing a priori unequal power to social actants. A core principle of ANT is agnosticism, which demands the abandonment of any a priori assumptions as to the nature of networks or causal conditions. As Latour (1996b) explains power in each network is not foundational, but relational, and to assume any power relations to the contrary beforehand would jeopardize the integrity of the ANT investigation.
Latour (ibid) explains that indeed the power of human actants may be unequal to that of non-human actants but that can only be revealed through interrogation of the network, dependant on what boundaries are put on the network and time constraints in mapping it out completely.

2.4 Actor-Network Theory and Natural Resource Management in New Zealand

In reviewing the available literature for ANT it is important to not only focus on international works but to examine how ANT has been applied in a New Zealand setting. Cloke & Perkins (2005) paper “Cetacean performance and tourism in Kaikoura, New Zealand” provides an example, a significant work exploring the use of non-human agency in a New Zealand research context. The authors focus on ecotourism activities in Kaikoura. While they do not offer or conduct a specific ANT methodology they “push against the limits of actor-network theorisation” (p.920). The piece provides a relevant example in describing the agency of non-human actants, in this case whales and dolphins, and the ability of nature to influence an outcome in a given network. They find that Kaikoura is a town that has effectively been built by relational accomplishments involving cetaceans, having been transformed from “a coastal backwater into an international travel destination” as a result of high-profile eco-tourism based on the abundance of cetaceans in the nearby waters. They find that Kaikoura as a place was transformed by an assemblage of whales and dolphins, the devices of ecotouristic infrastructure, paraphernalia related to onshore cetaceanism and people to create a unique actant network of “hybrid geographies” (as understood from Whatmore, 2002). Cloke & Perkins (2005) quote Grzelewski (2002, p. 8) who states “the Kaikoura coast is a Sea World without walls, a maritime Serengeti, a feast for all senses”.

In this network the cetaceans are both enrolled and enrol and were it not for their attendance and routine, the tourist operation would be unnecessary. Cloke & Perkins (2005) research presents criticism of ANT’s ability to “capture fully the power of the nonhuman to evoke sublime emotional and aesthetic relations with humans”. This is a curious criticism of ANT given that non-human actants even being capable of agency is one the most controversial principles of ANT. This work suggests that this agency does not extend far enough. The presence of cetaceans in this network is found to be crucial to any outcome and the staging of tourists operators is revealed to not be as crucial as first considered. Therefore non-human agency here has a very real influence on network outcomes. The unpredictability of cetacean agency is a major challenge in this case and a focus on past outcomes

24 “onshore cultural paraphernalia of video and photographic displays, informational and education narratives, and iconographic hegemony suffuses Kaikoura with virtual performances of cetaceans, which are sufficient for many to make the visit worthwhile. To visit Kaikoura is, then, at least in part an opportunity to collect virtual images and to accumulate virtual experiences in situ, and to engage in place performances in an onshore theatre that is rendered meaningful by offshore encounters.” (Cloke & Perkins, 2005, pp. 913–914)
and actions in the network would allow for a better understanding of future network processes, an idea earlier found in Steins (2001).

The PhD thesis of Jay (2004) entitled “Symbolic order and material agency: A cultural ecology of native forest remnants on Waikato dairy farms” utilizes ANT to explore the development and intensification of farming in the Waikato region, in part exploring the rationale for the loss of native forest and why native forest fragments still remain. For Jay ANT represents only one of the multiple methodologies she employed to ensure “robustness of research” and allow her to make “inferences from each method to be tested against the others” (p. 116). Her application of ANT shows that the milk production network includes cows and milk tankers as well as farmers and tanker drivers, and in exploring the influence of actants on each other shows how farmers spend their day responding to the requirements of the cows just as tanker drivers spend time reacting to “the servicing and repair needs of the tanker” (p. 97).

![Figure 2.4: ANT relational diagram found in Jay (2004, p. 89) showing farmer and farm as entities in a larger network of relations between human and non-human](image)

ANT produces two key insights within Jay’s work; that no clear division exists between farmers and their farm (or the natural environment), and that dairy farming is a hybrid network, a summation of the human and non-human actants. Jay (2004) applies ANT as a set of ideas rather than a methodology, and is used in conjunction with social constructionism and discourse analysis, but still
offers some remarkable findings for understanding the application of ANT in a New Zealand NRM context. As a result of her thesis style and combination of approaches it is difficult to discern where ANT analysis stops and other tools begin, in many areas she appears to merge ideas of the ecological anthropologist Tim Ingold (1992) and ecological psychologist J.J. Gibson (1978), who wrote about the sensory-physical engagement of humans with the world. This approach appears to dilute the effectiveness of a purely ANT approach and in some ways seems contradictory however still leads to a fascinating analysis using ANT which should not be ignored. Her summation that farm and farmers themselves are best viewed as hybrids of network relationships, rather than a single actant, is stimulating and offers insight into how this relational interconnected system is made to look separate. Fig. 2.4 shows that these hybrids are defined by their interaction in this dense network, becoming neither human nor non-human, but both. Jay also discusses the implications of Fig. 2.4 in its illustration of relationships, claiming that the “dairy industry is not all-powerful; it cannot control all the communicative interaction” (p. 106) or ‘discourse’ between farmers, therefore actants are able to each interact with each other and be defined by this process.

Jay also suggests that there is a larger biophysical ‘discourse’ within the farm, between all actants “biological, physical and material” which are interlinked in the definition of the farm network; describing the farmers daily negotiations with the environment. In one example she describes how a farmer “decided to leave an area in wetland when he learned that no matter how many times he tried to drain it, the water came seeping back from another direction” (p. 111), an interaction which ANT allows us to see that actions are not only shaped by what other people tell us to do, but by what objects and the non-human physical world allow or require us to do. Jay describes how a farmers milking shed may allow him to milk a high or low number of cows per hour, and a farm that has a high or low productivity in terms of “contour, soil, drainage and aspect” (p. 237) leading to multiple possibilities for management. What the farmer decides to do however is ultimately dependant on his interactions with the farm network e.g. is the farmer a sharemilker or owner, do they expect to inherit, what will machinery allow and how will the farm co-operate? Thus Jay (2004) extends our understanding of decision-making and network relations using ANT in NRM, arguing that the details of place and interaction in a network are important to understand actions and showing the role non-human agency plays in the decision-making and outcome of NRM.

In considering the previous work in applying NRM to ANT it can be seen that most of the recent activity has been of geographers at the interface of ‘nature’ and ‘human’. These works have all been mainly descriptive in their research, a common trend in ANT research as identified by Castree & MacMillan (2001) and have focused on the agency of non-human actants. In these cases ANT appears to be viewed as a significant tool in approaching NRM issues, but is most often used in conjunction with other more traditional research methodologies, or ‘softened’ in order to make the ideals of ANT
compatible with the researchers background. This is seen in the case of Jay (2004) who even goes so far as to take what she deems to be desired traits of ANT and create a new tool more compatible with her geographical persuasion, something akin to what Castree & MacMillan (2001) suggested with the use of a ‘soft’ ANT approach with social constructionist overtones. The benefits of ANT however to NRM are proven to be significant in all cases, offering new insight into management issues by avoiding the defining of social and natural actants and simply examining the network as it appears.

2.5 Actor-Network Theory as a Research Methodology

ANT as is most commonly practised, is unable to provide strong accounts and is “descriptive rather than foundational in explanatory terms” (Law, 2009, p. 2) in contrast to a typical theory, which typically tries to explain why something is as it is. Instead ANT focuses on drawing out the story of “how relations assemble or don’t” (ibid), a workbox for telling narratives about, and interfering in, such relations in a given network. As reviewed earlier, ANT is built on a relational ontology, which aims to describe a network of connections built by actants to achieve a goal. However, the network metaphor does not only apply to the mapping of reality but also “the processes undertaken by the researcher” (Edwards, 2015, p. 73). As Latour explains:

A network, to prevent any objection from people not familiar with our use of the word, being not a thing in the world but the path traced by the researcher equipped with an ANT methodology during his explorations.

(2003, p. 36)

This helps in the appreciation of ANT as a guideline for study, as distinguished from a methodology to be followed unwaveringly. Gad & Jensen, somewhat supportively, find:

“reading ANT texts for their methodology is often quite disappointing. Most texts by Mol and Strathern, Law and Latour do not say much about how to go about doing ANT, practically speaking”

(2010, p. 73)

Gad & Jensen appear to fail to recognize that the main demand made by ANT is to “follow an actor through his construction-deconstruction of Nature and Society.” (Callon, 1986b, p. 203) and simply

25 More profoundly Law (2009, p2-3) advocates ANT as “a sensibility to the messy practices of relationality and materiality of the world” and states that “along with this sensibility comes a wariness of the large-scale claims common in social theory: these usually seem too simple”.

38
“stick to the actors” (Latour, 1996, p. 94). The simplicity of this instruction denies the complexity of ANT in action and while it is possible to describe it in the abstract, as I and many others have previously done, it is only superficially abstract and is specifically and verifiably “grounded in empirical case-studies” (Law, 2009, p. 2). An ANT approach can only be understood in context of its particular case study and how it works in practice as explained by Law & Singleton:

> ANT theory isn’t reified, separate or abstract. It doesn’t pre-exist, waiting to be applied. Instead it is created, recreated, explored and tinkered with in particular research practices. Perhaps ANT is best understood as a sensibility, a set of empirical interferences in the world, a worldly practice or a craft.

(2013, p. 2)

This research practice is not an entirely unorthodox concept. Law (2009) demonstrates that parts of social theory, such as symbolic interactionism, work similarly and argues, more controversially, that natural sciences follow the same path in that “theory is embedded and extended in empirical practice, and practice itself is necessarily theoretical” (p.3). Therefore if this methodology is not to betray its ANT principles it needs to translate ANT sensibilities into a set of ‘empirically-grounded practices’ (Law, 2009, p. 3) which exhibit ANT sensibilities specific to negotiating the many events of a cross-cultural NRM research project.

Compared to conventional forms of document-based research ANT research uses a wider variety of archival, published and unpublished texts i.e., notes and “scraps” of various kinds, to explore a controversy which allows for a historical analysis that "grasps the real messiness and complexity [of the issue]... which is now all but invisible" (Nimmo, 2011, p. 110). This option alleviates the logistical, theoretical and political concerns with undertaking qualitative interviews, for example see Nunkoosing (2005). Utilizing ANT the texts can be seen as inscriptions of a complex reality, not simply representations but rather tools of translation and mediation, or "mobilisations of the word" (ibid, p. 114). Such an approach avoids the commonly utilized or "lazy" (ibid, p. 114) ethnological approach which inevitably is human-centred and therefore un-ANT-ish. An ANT analysis takes seriously the position of varied artefacts, technologies and organisms, allowing them agency and to be seen as an actant in their own right. This is achieved by reading second-hand works with a deep level of scrutiny therefore following the path of actors through inscriptions rather than physically entering the network.
Figure 2.5: The Four Moments of Translation as developed by Callon (1986a) to serve as the core model for the ANT methodology and process.

To address the research questions, I have adapted an ANT framework as a theoretical stance on methodological practices such as generalized symmetry, obligatory passage points, translation and ‘following the actants’ based on Callon’s “Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay,” (1986a) and shown in Fig. 2.5. This framework will then be assisted with the techniques of historiography and source criticism as set out in Nimmo (2010). Historiography is the critical examination of the way history has been written - an interpretation of the events inscribed in text while taking into consideration the source and the author, their position or potential bias and how history was written at the time. Source criticism is then the process of evaluating the text presented and considering its integrity and reliability ability to form an account of the past (Garraghan, 1946).

The Kererū management network is inter-relational and connected therefore it is expected that a variety of other actants will emerge and using this technique ensures all actants have a possibility to participate. Latour (1987, p. 11) provides advice for how he undertook this process of actant definition: “For each of the relevant articles, I sketched the interdefinition of the actors and the translation chains, without trying to define a-priori how the actors were made up and ranked”. As such the actants which are relevant to the Kererū cultural harvest network will only become known in situ, however the networks are expected to include artefacts, technologies and organisms as varied as guns, international treaties, YouTube, video cameras, hunting licenses, social media, horses, surveillance equipment and permits as exhibited by one recent news article.

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**26** “The burning desire to have new entities detected, welcomed and given shelter is not only legitimate, it’s probably the only scientific and political cause worth living for” (Bruno Latour, 2005)
In investigating the history and development of Kererū management in New Zealand, this research has utilized archival and published texts to explore the controversy as documented through time. The combination and application of Latour’s ANT with historiography and source criticism is tested in Nimmo’s existing work with historical ANT analysis of milk production entitled “Milk, modernity and the making of the human: purifying the social” (2010), which itself is drawn from Prior’s "Repositioning Documents in Social Research" (Prior, 2008). This combination of extensive historical analysis and ANT principles was shown to be successful in such works for unearthing and understanding historical changes, often in a new and vastly different manner than had been previously thought of. Bruno Latour’s well known study, the "Pasteurization of France" (Latour, 1993a), relied on texts to show the transformation and emergence of modern bacteriology as simultaneously scientific, socio-political and material in nature. Within Nimmo’s 2010 work he undertakes a historical study of dairy milk in the United Kingdom, following the ‘hybrid’ milk from 1865 to 1940—a time period over which, he revealed, great change in the milk network from the simple urban cowsheds to what he described as the modernised milk industry.

ANT is not often associated with historical research, largely due to the perceived methodological problem in committing to generalised symmetry – reading texts ‘symmetrically’ while avoiding placing the authors on theoretical preconceptions on each text. However Nimmo shows that this is due to a fundamental misunderstanding of the nature of texts, which when viewed as inscriptions become “enactments of reality” (Nimmo, 2010, p. 114); a means by which to view past complex reality that no longer exists to be interrogated by traditional methods of inquiry. In practical terms hybrid ANT with historiography and source criticism methodology would involve analysing texts twice, once from their empirical content and again for their historical agency to consider how it defines, constitutes and relates subjects, objects and domains. This results in any given article being an account of real events and developments within the network as well as an inscription, a path used by actants through which to "gain credibility in enrolment and cooptation processes during translation" (Latour, 2005, p. 67). As Latour and Woolgar define it: “writing is not so much a method of transferring information as a material operation of creating order” (1986, p. 245). Therefore texts

27 “Milk is at first glance a highly banal substance, consumed unreflexively by millions of people every day as a part of highly routinised consumption practices; it could not be more ordinary. Yet beneath this mundane appearance milk is also deeply hybrid: On the one hand the milk consumed by humans on a daily basis is very much a product of modernity, inseparable from modern forms of social organisation, production and distribution, as well as modern techno-social arrangements, from mechanical milking technologies and pasteurization plants to transport and retail infrastructures. But milk is also a substance produced by cows to feed their calves, and remains in that sense deeply „natural”; the milk we consume is not just a manufactured article and a commodity but is also a product of particular sorts of inter-species relations. This nonhuman side of milk is both visible and invisible. The „naturalness” of milk has long been emphasised in milk advertising, and yet the „nature” presented in these discourses is little more than a commercial spectacle, a romantic idea of purity which has more to do with the logic of commodities and consumerism than with the real materiality and corporeality of inter-species relations of production.” (Nimmo, 2011, pp. 109–110)
are mediators of relations between subjects, intrinsic to practices of the modern world "without which the practice would be deprived of the oxygen of its networks" (Nimmo, 2011, p. 114).

Figure 2.6: Callon’s network diagram of the forging of alliances between different actants that each have different goals (Callon, 1986a, p. 207, Figure 2)

Inscriptions are the technologies of translation through which power is consolidated and the network can come to be represented by an actant, and used as ‘representations’ of a complex reality. Inscriptions are not simply “sedimentations” of practice (May, 2011, pp. 157–158) but rather “mobilisations of the world” (Bruno Latour, 1999b, pp. 99–100) which allow texts to represent an active agent in building of networks. As such, they become the only enduring evidence of what once was and would represent a crucial component in the accuracy of any historical case study. For any accurate historical reality to present as wide range of sources as possible would need to be gathered—published reports, court case notes, newspapers, scientific work, media reports. All inscriptions are “active agents which assemble, shape and connect practices, and in doing so enact objects, constitute subjects, and inscribe relation” (Nimmo, 2011, pp. 114) and as such have validity. No a-priori definition can be afforded to inscriptions of ‘what is strong and what is weak’ (Bruno Latour, 1993a, p. 9) and all inscriptions must be treated with agnosticism. Specifically this process involves using the sources to establish what has occurred in the past to lie across the top of an ANT analysis. On this basis a text-based methodology is not only viable, but also preferable as text becomes an active agent, capable of assembling, shaping and connecting the network and allow us to
envisage how objects are enacted, subjects constituted and relationships inscribed. From here ANT would seek to identify actants and connections and establish their role in the network using the core principles of agnosticism, generalised symmetry and free association and identifying the four phases of translation; problematization, intéressement, enrolment and mobilisation. This construction of the network will allow for an understanding of the dominant problematization in the Kererū Management network as it stands and to explore the scenarios for change in the future. This network construction will be displayed in a diagram similar to Fig. 2.6.

The schematic diagram used by Montgomery (Fig. 2.7, personal communications, 2008) in his ANT research into how Pacific Salmon from the tributaries of Sacramento River was translated to the NZ Government Quinnat Commercial Salmon of the Waitaki provides a useful illustration of how I am going to use these tools ANT analytically. I will adapt this diagram in order to visually describe the changing translation of Kererū through the historic network analysis.

![Figure 2.7: Montgomery (personal communication, 2008) schematic diagram showing the cultural translation of tribal salmon to Government salmon.](image)

### 2.6 Summary

Major criticisms of ANT involve its major concepts of amorality, agency of non-humans and equality of actants however much critique also focuses around its vague methodology, entirely descriptive findings and, especially with more recent developments, its increasingly esoteric forms of analysis which diverge from its original core principles. Notwithstanding its criticism ANT provides a useful alternative set of tools, both theoretical and methodological, that can be used in examining controversy. It is historically associated with attempting to provide a corrective to binary descriptions of the “natural” and “social” worlds in terms of heterogeneous networks traced via network analysis, a challenge that has yet to be applied to a cross-cultural NRM controversy in a New Zealand context.
In this thesis I employ a range of concepts that have been developed in ANT scholarship, most commonly those established in Callon’s “Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay” (1986a) such as the four moments of translation and obligatory passage points. By utilizing Callon’s (1986a) tools of translation and obligatory passage points alongside the principles of generalized symmetry, agnosticism and free association I will explore the interactions and relationships in the Kererū Management network to understand how it has been enacted and evolved through different historical phases, using this to explore the multiplicity of the Kererū controversy as it appears today.
Chapter 3: Background to Kererū Management: A Conventional Narrative

Before undertaking ANT analysis of the Kererū management network it is important to consider the established background on Kererū management for comparison to the ANT analysis. In this Chapter I briefly summarize the history of Kererū management using materials from statutes, events and organizations including Renganathan (2004). While Northland seems particularly contentious as a region at present and therefore is focussed on, the case study will also include other parts of the country, extending to the national level and into other regions such as the Te Urewera National Park.

3.1 The Legal and Institutional Context of Kererū Management

The arrival of tangata whenua in New Zealand around 1300 AD (Sinclair & Sinclair, 1980) marked the entrance of the first human actants in the Kererū management network. Extensive stories were developed about the Kererū by the tangata whenua and the birds were incorporated into their myths, legends and lore. The Kererū was and remains described as a taonga by tangata whenua; however, the birds were also a critical source of dietary protein and their feathers were highly valued which presented an overharvesting danger to Kererū. Kawharu (2000, p. 1), in the context of Māori ethics and resource management, describes how Kaitiakitanga or “guardianship principles” derived from a genealogy that traces the descent of everything back to the Atua or ‘gods’. In other words Kererū were to sustain the tangata whenua but not be misused. This claim is a focal point of the tangata whenua cosmogony and describes a ‘responsible use’ ethic that provided practices by which the tangata whenua were guided in their day-to-day life (Hongi, 1907). While it is uncertain how dominant the Kaitiakitanga principles were in the time before the arrival of Europeans they persist today with current use of Kaitiakitanga emphasizing conservation and protection while embracing the “social and environmental dimensions” of decision making as one (Kawharu, 2000, p. 2).

Kaitiakitanga is increasingly being used by Māori tribal groups in political discourse to claim certain rights under the 1840 Treaty of Waitangi on the basis of being tangata whenua, with the most high profile claim recently being the “Wai 262” claim made through the Treaty of Waitangi Tribunal as to rights in respect of mātauranga Māori or Māori knowledge, and indigenous flora and fauna, which has still not been settled (Waitangi Tribunal, 2006).

The initial waves of colonial Europeans arriving in the beginning in the 1800’s to New Zealand resulted in many dramatic changes, which affected Kererū management, including the loss of 90% of

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28 The Moa (nine species of the order Dinornithiformes), now extinct, is an example of overharvesting causing irreversible decline (Anderson, 2000)
all wetlands and half of all remaining forests between 1800-1950 (Wilson, 2004, p.7). Lyver, Jones, & Doherty (2009) explain how traditional Māori management strategies for Kererū did not evolve with “specific ecological framework or with conservation outcomes in mind” (p. 10) but rather the approach of not ‘plucking’ all Kererū in the forest was simply fostered around respect for the prestige of the bird. In general much academic debate has focussed on whether indigenous societies enacted deliberate management strategies or if sustainable population benefits were a passive by-product of strategies driven by benefits to hunters alone (Cornell, 2006; Flannery, 2005; Gadgil, Berkes, & Folke, 1993; Head, 2000). Specific to indigenous Kererū Management the argument has been made that prior to the arrival of Europeans there was a preference for the harvesting of juvenile Kererū rather than breeding adults, a strategy which promoted sustainability in their harvests (also see Lyver, Te Motoi Taputu, & Tahi, 2008). After the arrival of Europeans in New Zealand the Treaty of Waitangi was enacted in 1840 and used to shift governance and power from the tangata whenua to the British, and then to the New Zealand Government after 1854 (Brooking, 2004).

The New Zealand Government chose to classify Kererū as a “game bird” rather than a food source under the Wild Birds Protection Act 1864. It later enacted laws in response to views that cultural harvest of Kererū was responsible for declining populations (see Table 1). Section III declared that “No wild duck, paradise duck or pigeon indigenous to the colony shall be hunted, taken or killed except during the months of April, May, June and July of any year”. Gibbs (2003) comments that this legislation enforced the Government’s view that responsible use was no longer enough to ensure the necessary continuation of Kererū as a game species during a time when hunting had become increasingly popular with Europeans. This measure, however, proved ineffective as disputes grew over the signing and interpretation of the Treaty of Waitangi (Lyver, Jones, & Doherty, 2009) and the restriction imposed by Government on the Kererū harvest were disregarded with many tangata whenua undertaking ‘illegal’ harvesting as the Government termed it (Ducker, 1994). Challenge of the Wild Bird Protection Act 1864 (Gibbs, 2003) resulted in numerous changes to the legislation affecting Kererū (see Table 1) and additional limitations were later enforced under The Animal Protection Act 1908 (ibid).

29 Tim Flannery is the most notable writer on this in public discussion/popular writing terms, with his book "The Future Eaters: An Ecological History of the Australasian Lands and People” (2005). He has written about Māori and many other indigenous peoples. It is his view that we arrive at sustainable management through trial and mostly error.

30 Mander, Hay and Powlesland (1998) explain that every third season was shut and the remaining seasons were limited to May to July.
<table>
<thead>
<tr>
<th>Date</th>
<th>Legislation</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1864</td>
<td><em>Wild Birds Protection Act 1864</em></td>
<td>• Season on Kererū: April–July</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cannot sell Kererū during closed season</td>
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<tr>
<td></td>
<td></td>
<td>• Seasons only apply in areas specified by the Governor</td>
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<tr>
<td>1865</td>
<td><em>Protection of Certain Animals Act 1865</em></td>
<td>• Season on Kererū: May–August</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Seasons only apply in specified areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cannot kill birds by non-shooting methods</td>
</tr>
<tr>
<td>1866</td>
<td><em>Protection of Certain Animals Act Amendment Act 1866</em></td>
<td>• Kererū classified as ‘game’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Licence required to shoot game</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Season on game: May–August</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Act only applies in specified areas</td>
</tr>
<tr>
<td>1867</td>
<td><em>Protection of Animals Act 1867</em></td>
<td>• Kererū classified as ‘native game’</td>
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<tr>
<td></td>
<td></td>
<td>• Season on native game: April–July</td>
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<tr>
<td></td>
<td></td>
<td>• Governor may exempt certain areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Restriction on trapping and snaring native game lifted</td>
</tr>
<tr>
<td>1868</td>
<td><em>Protection of Animals Act Amendment Act 1868</em></td>
<td>• Kererū removed from native game schedule</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• No restrictions on taking Kererū</td>
</tr>
<tr>
<td>1872</td>
<td><em>Protection of Animals Act 1872</em></td>
<td>• Kererū classified as native game</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hunting only in season</td>
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<td></td>
<td></td>
<td>• Native game season set by Governor</td>
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<td></td>
<td></td>
<td>• Governor may declare districts affected by the Act</td>
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<tr>
<td>1873</td>
<td><em>Protection of Animals Act 1873</em></td>
<td>• Kererū classified as native game</td>
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<tr>
<td></td>
<td></td>
<td>• Native game season set by Governor</td>
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<td></td>
<td></td>
<td>• Season not to exceed four consecutive months</td>
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<td></td>
<td></td>
<td>• Superintendent may exempt certain provinces</td>
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<tr>
<td>1880</td>
<td><em>Animals Protection Act 1880</em></td>
<td>• Kererū classified as native game</td>
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<td></td>
<td></td>
<td>• Season for native game set by notification</td>
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<td></td>
<td></td>
<td>• Season not to exceed four consecutive months</td>
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<td></td>
<td></td>
<td>• Governor may exempt certain districts</td>
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<tr>
<td>1881</td>
<td><em>Animals Protection Act Amendment Act 1881</em></td>
<td>• Governor may extend, limit, or modify native game season</td>
</tr>
<tr>
<td>1889</td>
<td><em>Animals Protection Act Amendment Act 1889</em></td>
<td>• Provisions to restrict market sale of game and native game</td>
</tr>
</tbody>
</table>

*Repealed Earlier Acts

Table 1: Legislation affecting Kererū 1864 - 1889 (Source: Feldman 2001, p. 7)
At the beginning of the Twentieth Century the Government’s management strategy began to unravel as tensions between tangata whenua and European sportsperson could no longer be managed when the once ‘abundant’ game bird, Kererū’s diminishing population no longer made it easily available to harvest by either actant. In response, the Government enacted increasingly strict seasons and hunting requirements on the Kererū, closing seasons in many years when considered by the Government’s Department of Internal Affairs that the Kererū population could not sustain hunting effort (see Table 2 for the seasonal status of Kererū hunting after 1895). European sportsperson began speaking out against native districts designated for tangata whenua hunting while many tangata whenua became increasingly uneasy with the restrictions placed on their hunting by the Government. Renganathan considers this in her review of the changing European management of Kererū from open-season to absolute protection and explains:

Conflict between Maori and Europeans remained manageable as long as kereru continued to be managed as game. However many European sportsmen considered it unfair that Maori could be given special dispensation (e.g. in native districts) to hunt birds, otherwise prohibited [see Feldman (2001)] ... Maori access to kereru came under threat and Maori representatives began to speak out against the restrictions. Beginning in 1895, various steps were taken by Parliament towards the preservation of kereru, firstly by imposing a closed season on kereru for six years.

(2004, p. 57)

Feldman (2001) examines this tension further and describes how tangata whenua claim to have retained their right to hunt Kererū on their land whereby Europeans had cut down their own forests or trees and forfeited that right. Mohi Te Atahikoia, a Māori politician, explained this perspective in an open letter to the Minister of Internal Affairs in 1918:

Friend, I greet you and your colleagues amongst whose duties are included that of prohibiting the shooting of Native birds, such as the Pigeon, the Kaka and the Koko; lest these birds become extinct. The idea seems to be kindly towards the birds; but it should include the prohibition of destroying the bush-trees on fruits of which the birds feed. These trees are being felled by Pakeha and the land is being grassed for the feeding of stock. This is a system of murdering (kohuru) the birds, for their foods are becoming scarcer. Better to kill the birds in the ordinary way, than to thus murder them [by] starvation. It may be right to claim that birds should not be shot on lands, which have become Pakeha lands; but Maoris should be allowed
to take their native birds on their own Native lands. It is not that we shoot birds for sale; we do so merely for food. At our Native meetings these were a staple food when the Pakeha first came to this country. So it is that Queen Victoria (Treaty of Waitangi) expressly declares that the Maoris should be allowed to enjoy their forests and fisheries. Therefore this prayer to you, that parts of Maori bush still held by us Maoris be open . . . to them for bird-taking. Many Maoris have been caught for shooting birds on their own lands. Let this law rest lightly on your Maori people in places that they still own the bush.

(Mohi Te Atahikoia to Dr Pomare, 1918 in Feldman, 2001, p. 58)

The Department of Internal Affairs in this period responded to such inquiries and petitions the same way for tangata whenua, sportsperson or acclimatisation societies - by refusing to negotiate on its decision for the season. In 1917, the then Minister for Internal Affairs, G. W. Russell, replied to an acclimatisation society that had petitioned for an open season on Kererū that year:

_Doubtless you are aware that the native pigeon is a bird endemic to New Zealand and it is well known that with the gradual destruction of the bush the native pigeon will eventually become extinct, and in view of this it must, I think be admitted that it is most undesirable to in any way help to facilitate the extinction of this magnificent bird._

(G W Russell to A F Lowe, 1917 in Feldman, 2001, p. 60)

This letter reveals a growing opinion in New Zealand at the time that Kererū and other native birds would become extinct as settlers converted bush to farm (Feldman, 2001, p. 36). However despite this observation from within the Ministry of Internal Affairs the Government continued to focus on hunting limitations and seasons while little was done to stop the clearance of land. In the face of mounting pressure in its problematization, the Government opened up and engaged with European Preservationists, most notably Henry Ell, negotiating that the taking of any Kererū resource was unacceptable and declared Kererū a scarce resource (Miskelly, 2014). This resulted in the total protection of Kererū, along with the majority of other indigenous birds, being granted by the Animals Protection and Game Act 1921–22 (Mander, Hay, & Powlesland, 1998).
<table>
<thead>
<tr>
<th>Date</th>
<th>Season Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1895</td>
<td>• Open</td>
</tr>
<tr>
<td>1896</td>
<td>• Closed by Animals Protection Act 1895</td>
</tr>
<tr>
<td>1897-1900</td>
<td>• Open</td>
</tr>
<tr>
<td>1901</td>
<td>• Closed by Animals Protection Act 1900; exceptions for some native districts</td>
</tr>
<tr>
<td>1902-1903</td>
<td>• Open</td>
</tr>
<tr>
<td>1904</td>
<td>• Closed by Animals Protection Act 1900;</td>
</tr>
<tr>
<td>1905-06</td>
<td>• Open</td>
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<tr>
<td>1907</td>
<td>• Closed by Animals Protection Act 1900;</td>
</tr>
<tr>
<td>1908-09</td>
<td>• Open</td>
</tr>
<tr>
<td>1910</td>
<td>• Closed by Animals Protection Act 1908; exceptions for some native districts</td>
</tr>
<tr>
<td>1911</td>
<td>• Open</td>
</tr>
<tr>
<td>1912</td>
<td>• Closed by directive from Internal Affairs</td>
</tr>
<tr>
<td>1913</td>
<td>• Closed by Animals Protection Act 1908</td>
</tr>
<tr>
<td>1914-15</td>
<td>• Closed by directive from Internal Affairs</td>
</tr>
<tr>
<td>1916</td>
<td>• Closed by Animals Protection Act 1908</td>
</tr>
<tr>
<td>1917-18</td>
<td>• Closed by directive from Internal Affairs</td>
</tr>
<tr>
<td>1919</td>
<td>• Closed by Animals Protection Act 1908</td>
</tr>
<tr>
<td>1910-21</td>
<td>• Closed by directive from Internal Affairs</td>
</tr>
<tr>
<td>1922</td>
<td>• Absolutely protected by Animals Protection Act 1921-22</td>
</tr>
</tbody>
</table>

*Repealed Earlier Acts*

Table 2: Seasonal Status for Kererū Hunting from 1895 - 1922 (Source: Feldman 2001, p. 8)

In the 1960’s and 70’s two distinct new ideas were gaining momentum within New Zealand, and both presented a significant departure from the previous views on Kererū management and NRM. The first of these growing ideas, conservationism, involved a differing understanding of the way humans interacted with ‘Nature’ and was epitomized by the 1970’s conservation movement, loudly expressed through the "Save Manapouri" campaign (Mills, 2009, p. 679). Here ‘conservation’ is

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31 Belich (2013) significantly describes this event: "In 1960, the state had struck a deal with an Australian company to produce aluminium using cheap power generated from Lake Manapouri in Fiordland National Park. This was originally planned to raise the level of the lake by up to 30 metres, with obvious impact on the lake itself and the
understood as the sustainable use of natural resources, actively protecting and managing them to ensure they continue to be available at the same or greater quantities than they exist today\textsuperscript{32}. This allowed for a re-examination of the current Kererū management regime by Scientists who declared the larger issue was that of an unknown Kererū population. Consequently population management and scientific monitoring techniques were employed by Scientists who argued these were essential to achieving management goals.

The other idea gaining currency at the time was the previous Kaitiakitanga or ‘responsible use’ ethic from pre-European times, brought about by the ‘Māori renaissance’\textsuperscript{33} (Taiepa et al., 1997). This ‘renaissance’ saw many tangata whenua re-engage with their culture and whakapapa in seeking a return to the sustainable harvest and management of their resources. These ideas challenged the long standing ‘no-take’ stance towards Kererū employed through legislation enacted by the New Zealand Government (who delegating authority to the Department of Conservation after 1987), who agreed to change goals from preservation to conservation of Kererū, which could theoretically allow for a sustainable harvest of Kererū if it was deemed sustainable (Lyver et al., 2009). With growing Kererū abundance in urban areas, the “Intéressed Public” [an ANT-specific term explained on p. 54] has also become more involved through increased interactions with Kererū in their gardens as well as through campaigns such as the “The Great Kererū Count” (2015).

This conservation focussed management of Kererū remains in place today, though there is growing criticism that science should no longer be accepted as the only means by which to ‘conserve’ Kererū. For example, “Flavor or Forethought: Tūhoe Traditional Management Strategies for the Conservation of Kererū (Hemiphaga novaeseelandiae) in New Zealand” (Lyver et al., 2009) is the most prominent recent work arguing for a harvesting strategy which endorses traditional knowledge which may allow for a sustainable harvest management strategy for Kererū. Events such as the Sealord Settlement Act (1992) recognised tangata whenua rights to manage resources under the Treaty of Waitangi. DoC claim it is “highly relevant to future policies for science and research” to include tangata whenua surrounding countryside. There were petitions against this in 1960 and 1965, but the protests really took off in 1969 and peaked in 1971, with Save Manapouri committees ‘all over the country’, and a petition of 264,000 signatures. The National Government backed down in late 1971, and the incoming third Labour Government confirmed the decision the following year”\textsuperscript{34}.

This is different from preservation which often implies an intrinsic or aesthetic rationale that things simply have the right to exist and should be reserved or protected in order to continue existing (Ilitis, 1967).

\textsuperscript{33} The ‘Māori renaissance’ is a term for the revival of fortunes of Māori beginning in the 1970s after a long period of political, cultural and artistical decline, to the point of being termed a “dying race” (Stafford & Williams, 2006). The ‘renaissance’ is defined by such key events that occurred since the 1970s: “major claims regarding the historical dispossession of tribal estates have been brought before the Waitangi Tribunal; the management of tribal or Māori-owned assets has been rearranged; a Māori-language education system has been established; and Māori have started major industry initiatives including fishing, aquaculture and farming.” (T. A. C. Royal, 2015)
knowledge. In 2011 the Waitangi Tribunal released the “Ko Aotearoa Tēnei report” which states, “unless Māori culture and identity are valued in everything Government says and does...nothing will change” (p. xviii). However, to date there has been no move by Government to negotiate on its position of absolute protection likely because it is currently politically too contentious to change it at a high level.

Taken from a variety of sources this is what we can understand as the conventional terms and understandings about the history of Kererū management. In the next Chapters I reinterpret this historical account of Kererū management, drawn from existing key documents, using specific ANT tools as set out in Chapter 2 and identify five distinct networks of varying degrees of stability.

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34 An inquire into the “Wai 262” claim which relates to the ownership of, and rights to, mātauranga (Māori knowledge) in regards of indigenous flora and fauna (Feldman, 2001).
Chapter 4: ANT Analysis of Kererū Management

4.1 Introduction

In undertaking an ANT Analysis of Kererū Management in New Zealand five distinct networks are identified, through examination of texts and “inscriptions”, since the arrival of humans in New Zealand. Each network stage represents a significant shift in power and relationships within the Kererū network and was examined further through ANT. The first network which was formed with the arrival of tangata whenua in New Zealand, termed the “Archaic” period, is examined briefly due to lack of remaining inscriptions from this period before examining in-depth the second network, termed the “Classic” period which arose after a mega-avian extinction driven by hunting pressures forced the need for a new management paradigm on tangata whenua. The third network ‘The Colonial Development’ arose with the arrival of Europeans actants in New Zealand in the early 1800’s and was characterised by a significant power shift. The fourth network is termed the ‘Preservation’ network and developed in the early 1900’s while the final network, the ‘Conservation’ network developed in the 1960’s with the rise of the authority of science. It was considered that the ‘Conservation’ network is still largely intact today so no further networks were identified however the analysis then extends to consider current concerns and threats to the network’s stability. Before investigating how the “Archaic” and “Classic” stages of Kererū management came into being, it must first be established who or what makes up the network, or in ANT terms, the interdefinition of actants is needed. The Kererū management network is assembled from heterogeneous elements. The actants are constrained: they cannot attain what they want independently; they must align behind a single problem definition to form a stable network thereby creating the role for the problematizer to posture a solution. However before we examine the distinct networks it is first prudent to provide an ANT overview of the macro-actants, which will appear throughout the historical chronology. This is in order for the reader to understand their structure and inner workings more completely, and thus their role in the described network.

4.2 Examining the Macro-Actants

Within ANT’s ‘flat ontology’ every actant is known to represent a scalable network meaning that any one actant could be both expanded into a new, complete actor network, or conversely could have its network collapsed into a single actant. Every actant is therefore black-boxed and both “macro-actors and micro-actors [are] seated on top of many boxes” (Callon & Latour, 1981, p. 286). There is no structural disparity between ‘large’ and ‘small’ actants however in analysis of a network the researcher is obligated to choose the most convenient ‘size’ at which to represent an actant relative to the direction of analysis (Latour, 1992) be it as an institution, individual, or entire community. For
consistency of analysis the actant should be referred to in this term throughout, however the researcher is also encouraged to zoom ‘in and out’ of these networks-within-networks so as not to “close off the most interesting questions about the origins of power and organization” (Law, 1992b, p. 380). The most prominent actants found throughout this ANT analysis are defined as discrete entities in order to manage their infinite internal reality, but their ‘black-boxes’ are broken down here in an attempt to examine their internal working, to consider the ‘swarm’ of new actants and then package them back into a black boxed term in order to provide an effective analysis. These ‘macro-actants’ however within the general body of work need to be referred to in their black-boxed terms in order to not detract from the overall analysis through over-complication but it is essential to recognize that they are far more complex than their black-box identifier can explain.

4.2.1 Conservation Scientists

When exploring the role in which scientists take within a network it is easiest to understand and describe their role at the macro-level, black-boxed into a singular entity ‘Conservation Scientists’, a sizeable actor where somehow “men [sic] act like one man [sic]” (Callon & Latour, 1981, p. 279). Obviously there is not just one entity ‘Conservation Scientists’ but rather a myriad of actors linked together to other actors in a stabilized set of relations founded through their connection within ‘science’. The ‘Conservation Scientists’ macro-actor is an interaction of scientists involved in research or management into the Kererū and/or its environment and can either simply present information or work with the Government and other actants to devise ways to improve Kererū management. When exploring this macro actant it can be seen through tracing these connections that there are indeed at least 20-30 different types of scientists within the Earth sciences involved including ornithologists; avian ecologists; microbiologists; population ecologists and mustelid ecologists all interacting together through internal debate, funding processes and inscriptions in peer-reviewed scientific articles, thesis works and publication networks such as the New Zealand Journal of Ecology or NOTORNIS\textsuperscript{35}. The actants that make up the macro-actant debate and co-ordinate internally. Their thoughts, habits and objects are designed to be used only between themselves and are foreign to the remainder of the network. Through this the individual scientists actants are black-boxed and the ‘Conservation Scientists’ macro-actant is born, a collective which produces inscriptions to distribute within the wider network – works of scientific authority aimed for the wider network to inform and enforce the authority of science as known and beyond arguments. The internal disagreement of the scientific process and structure is hidden away within the academic arena; model parameters, methodologies and conclusions are questioned but only within the black box. The macro-actant is only visible to other actants in terms of its inputs and outputs, its interactions in gathering research and the statements of scientific fact it disseminated within the

\textsuperscript{35} The scientific journal for The Ornithological Society of New Zealand
network. The processes or internal complexity of the scientists are not commonly seen and while it is obvious the term ‘Conservation Scientists’ obscures the internal complexity of the group it does however accurately reflect how ‘Conservation Scientists’ present themselves and are perceived in the wider network by other actants.

4.2.2 Intéressé Public

The term ‘Intéressé Public’ is used to define a macro-actant, which represents ordinary people in general. It is a ‘catch-all’ term for those who are interested in Kererū’s management but are not easily identifiable as any other actant. The term packages up and refers to those member of the public who interact with Kererū in their gardens, follow the conservation issues, vote on issues and otherwise have any curiosity in the management of Kererū in New Zealand. This is clearly the most diverse actant identified in the study which, when broken-down, is composed of a ‘swarm’ of smaller actants with varying interests and little in common besides being intéressé in the management. Being defined by this term does not mean individuals are labelled as for or against any management outcomes or as having a specified interest. However simply its recognized there is a large group of individuals who do not make themselves clearly heard through any spokesperson (if they did they would be defined as a separate actant) but have a large influence in the network. Examples are voting for the appointments to the New Zealand Conversation Agency to leaving food sources out for Kererū around their homes. The Intéressé Public has associations within the network, and influence, which while hard to identify specifically has flow-on effects throughout the entire network. There is also therefore a Disintéressé Public, those who don’t think of or consider Kererū’s management at all which likely represents the vast majority of New Zealanders. It is inherently difficult to position the Disintéressé Public within the network as they cannot be translated without being intéressé, but their existence as a macro-actant likely has implications for the current management network.

4.2.3 Tangata whenua

Tangata whenua literally translates to the ‘people of the land’ (King, 1985) and has been chosen as the term to define the indigenous peoples of New Zealand in this research. This term has been chosen over ‘Māori’, which translates to ‘ordinary’ or ‘normal’, as the usage of the term ‘Māori’ only came about in relation to the groups contact with Europeans (ibid). Before the time of the arrival of Europeans, tangata whenua had no name for themselves as a nation, only a number of tribal names (Henare, 1988). When considering what makes up the tangata whenua actant it can be seen to consist of individual Māori, Marae, hapū and iwi. At a community level Māori society is most visible at the marae which in pre-European times was the central meeting space in a village but today compromises a group of buildings that host events such as funerals, weddings and other large gatherings (Nikora, 1995). Marae’s serve as a base for one or sometimes several hapu, an extended
family group determined by genealogical descent (whakapapa) generally consisting of several hundred individuals. Several hapu can make up the largest group within tangata whenua – iwi. Iwi groups trace their ancestry back to the original Polynesian migrants who arrived in New Zealand. Each iwi has a commonly accepted territory (rohe – see Fig 4.1), but this can overlap adding a layer of complication to disputes such a historical Treaty claims (Taonui, 2012b).

Before European contact Māori society was organized into three social standings based on seniority of descent from the founding ancestors: “the rangatira or kāhui-ariki (leaders), tūtūā (commoners), and taurekareka or mōkai (slaves)” (Taonui, 2012a). Rangatira typically traced tuakana (senior) lineage from the founding ancestors, whereas tūtūā traced teina (junior) desecent. Typically the most important spokespersons for tangata whenua were rangatira (leaders), tohunga (learned experts) and Kaumātua (elders).

Tohunga were a unique group that were selected from birth, customarily (but not always) from the rangatira class, and functioned as priests (Sachdev, 1989). The most esteemed of the tohunga were the “tohunga ahurewa who were trained in a whare wānanga (school of learning) and whare tātai
They possessed detailed knowledge of genealogy, oral history and natural lore and a sizeable collection of karakia (prayers and incantations). Tohunga responsibility was to ensure tikanga (customs) were observed as well as to guide the people, advising them on proper rituals (including for hunting) and to protect them from spiritual forces.

Elders in Māori society are known as kaumātua. As age and seniority were significant to leadership in traditional Māori society kaumātua were held in high esteem for their life experience and knowledge accumulated (Taonui, 2012a). Kaumātua were the “storehouses of tribal knowledge, genealogy and traditions” (ibid). Kaumātua advice was often sought out and followed in many areas of life within the wider family and tribal community. Kaumātua also had key leadership positions as heads of the whānau and would often represent whānau in tribal councils.

When unpacking the tangata whenua macro-actant ‘black-box’ specific attention should be drawn to actants in Northland for the purpose of this study. Cultural harvest persists illegally in Northland, but also in other remote areas including the West Coast and the Urewera (Feldman, 2001). Collins (2015) reported that since DoC was established in 1987 89 per cent of all convictions for “the illegal hunting or possession of Kererū were for offences occurring in Northland”, 50 of the 56 convictions in the last 28 years. Significantly the last conviction was in 200736, which would suggest levels of illegal hunting had diminished. However DoC claims “reports from the public and evidence of illegal hunting indicated the crime was still a problem for the region” (Northland Age, 2015) when questioned further explained that in the past three years DoC compliance rangers with police responded on at least two occasions to information provided by the general public, but as events occurred in remote locales alleged offenders had already moved on and were not prosecuted. 7.5% of all tangata whenua individuals live in Northland (Te Tai Tokerau), comprising one-third of the region’s population versus 15% at the national level (Northland Regional Council, 2007). Nine iwi have tribal boundaries which fall within the Northland region (see Fig. 4.2); Te Aupouri, Ngati Kuri, Ngati Kahu, Te Rarawa, Ngai Takoto, Ngati Kahu/Ngapuhi ki Whangaroa, Ngapuhi, Ngatiwai and Ngati Whatua (ibid).

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36 “The last two men convicted of hunting, killing and possessing Kererū were jailed in 2008 for six weeks. Michael Stanley Sampson, then 36, and Murray William Ogle, then 33, of Horeke pleaded guilty in the Kaikohe District Court on February 21 that year to hunting, killing and possessing Kererū in the Omahuta Conservation Forest on May 24, 2007.” – Northland Age (2015)
4.2.4 New Zealand Central Government

The final macro-actant identified for “unpacking” is that of the New Zealand central Government, referred to here as simply the ‘Government’. There are three distinct branches of government within New Zealand: the legislature, the executive and the sovereign Head of State (currently Queen Elizabeth II, represented by The Governor-General in New Zealand). In this thesis the ‘Government’ is focussed on the executive branch, which acts as the spokesperson for this macro-actant. The executive branch consists of Ministers of the Crown who serve as members of the Cabinet of New Zealand, focussing on policy and decision-making, and is led by the Prime Minister of New Zealand who is New Zealand’s head of government, and supported by Government agencies (Palmer & Palmer, 2004). As the executive branch is elected, its spokesperson changes.

Within the Government one Government agency have interacted considerably and directly with other actants in the Kererū Management network to be considered as ‘un-black-boxed’ - the Department of Conservation (DoC). While DoC is a public service department of Government its direct interactions with other actants in the network remove it from the ‘Government’ macro-actant, it is made visible within the ‘Government’ black box of only inputs and outputs. DoC has its own
inscriptions and interactions and is therefore designated as a distinct actant that exists within the ‘Government’ macro-actant, answering to and providing advice to the executive branch. DoC has several important predecessors, and is itself an assemblage of networks. DoC was formed through the Conservation Act 1987 with the amalgamation of duties from Department of Lands and Survey, the Forest Service and the Wildlife Service [a now defunct Government department that is a significant actant in the historical analysis] in what was then part of a series of contentious reforms of the public services. DoC therefore is not just a random assemblage but a purposely designed macro-actant which was meant to do a better job of species management and protecting natural heritage that was the case prior to 1987. Its creation was debated as being either a good or bad merger and has been highly criticised since its inception as a macro-actant with many believing its polices are too favourable to environmentalists at the expense of farmers and other industry, while its use of 1080 poison to control possums over large areas remains contentious, largely among hunters and animal rights activists. The Wildlife Service, which existed within the Department of Internal Affairs, was formed in 1945 and was tasked with overseeing the management of native and some introduced animals, but not the land that they were found on. The Wildlife Service was founded as a result of a call for “unity of control” with conservation work having been largely nominal up into that point and undertaken by the Minister for Internal Affairs and his Department (Galbreath, 1993, p. 235). Currently DoC is responsible for managing public land in New Zealand designated protected for either “scenic, scientific, historic and cultural reasons, or set aside for recreational purposes” which represents around 30% of New Zealand’s land area (LLC Books, 2010, p. 49). In addition to managing land and providing for recreation DoC works to preserve its natural heritage including goals of saving native threatened species, managing threats like pests and weeds, environmental restoration and assisting landowners to effectively preserve natural heritage (Evans, 2008).

4.3 The Archaic and Classic Period – Arrival of tangata whenua and the Emergence of a Kererū Management Network

Few conventional written records are available from this pre-European time period but the status of the network can still be inferred from the few remaining inscriptions and the records of early European colonists, such as explorers, settlers and clergymen, and Government office’s, such as

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37 Timoti Karetu describes in his work "Language and Protocol of the Marae" (p. 32, 1975) how before “the coming of the Pakeha [European] to New Zealand with his superior technology, all literature in tangata whenua was oral. Its transmission to succeeding generations was also oral and a great body of literature, which includes haka [dance], waiata [song], tauparapara [chant], karanga [chant], poroporoaki [farewell], paki waitara [stories], whakapapa [genealogy], whakatauki [proverbs] and pepeha [tribal sayings], was retained and learnt by each new generation."
Edward Jerningham Wakefield (1845) and Ensign Best (1922, 1942), immediately preceding colonization. This problem is not unique to this thesis as was also identified by Renganathan who found:

“Historically, information on kereru numbers is scarce and in some cases quite vague... Information available in print probably reflects only a tiny percentage of what [Kererū] was actually killed, but there is no way of accurately telling how many kereru there actually were before numbers were first found to be in decline.”

(2004, p. 36)

Using accounts from this early European period it is assumed the network as documented still represented the pre-European landscape in most aspects. In addition, recent scientific findings, sociological accounts, traditional story telling and recorded oral accounts will all act as important components in piecing together the longest and yet least recorded period in network history – From the arrival of tangata whenua in New Zealand around 1300 AD to the arrival of the first European settlers in the 1800’s. Historical inscriptions allow us to understand the original problematization in the Kererū network after the arrival of tangata whenua around 1300 AD as one of a need for hunting and consumption of local fauna to grow the tangata whenua population (Flannery, 2005; King, 1984; McGlone, 1989).

Limited inscriptions which collate written and oral history evidence to describe this time period (Anderson, 2003; Clark, O’Connor, & Leach, 2008; Theunissen, 2003) lead to the conclusion that a relatively un-complicated network developed very quickly after the arrival of tangata whenua in New Zealand. The tangata whenua interacted with actants in their environment such as Kererū, the forest and other huntable species, locking them into their problematization enforced by their own OPP as seen in Fig. 4.3. Huntable species in this stage were any animal caught and consumed by tangata whenua as a food source and included huntable birds such as Kererū, eka, tūi, whio (native ducks), takahē, Moa, native geese, and numerous seabirds and the kiore (Polynesian rat) on land (Royal & Kaka-Scott, 2013) In the ocean and waterways tangata whenua where also known to eels, shellfish, fish, seals, whales and dolphins all of which can be considered as part of this ‘huntable species’ macro-actant. The silent actants' enrolment and acceptance of their roles was assumed through their abundance and availability to be harvested.

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38 This is a similar approach as was taken by Renganathan (2004) in her recognition of the lack of direct written accounts of the period. She also noted that “traditional ecological knowledge generally did not collect quantitative data” and most accounts were passed on verbally resulting in her heavy reliance on works such as Elsdon Best’s “Forest Lore of the tangata whenua” (1942) – a record of bird hunting in pre-European tangata whenua Society.
These actants are mobilised in the network through their silent agreement defined by merely being an available, huntable species. While it is unclear how long this network persisted and what degree of alignment it achieved it would appear to have unravelled prior to 1500 when the last of the major pre-European extinctions took place (Cassels, 1984; Duncan & Blackburn, 2004; M. S. McGlone, 1989). Renganathan (2004) explains that species of bird first began to “disappear first about 100 years after settlement” citing Wilson (2004) however admits this is an estimate and is impossible to know for sure with no records of this time period existing as tangata whenua had only oral histories. What can be known is by the arrival of Captain Cook in 1769 at least 40 species of birds in New Zealand had gone extinct Wilson (2004). A betrayal in the previously ‘black-boxed’ huntable species entity had occurred due to the pressure from tangata whenua hunting resulting in a divergence into what can best be termed ‘adaptable’ and ‘rigid’ species and shown in Figure 4.3. Adaptable species where those that were able to adapt to this new tangata whenua hunting pressure and survive, including most sea and river species and small bird species including Kererū. Rigid species, which largely consisted of mega fauna such as the Moa, New Zealand geese, Adzebills and Haast’s eagle, where those that are known not to have survived the new hunting pressure and became less and less available for hunting, gradually dis-enrolled in the original problematization as they became extinct.
The rigid species had been ‘black-boxed’ by the tangata whenua and were either ignored in the problematization or it was assumed by tangata whenua that all species could withstand the same hunting pressures (Holdaway & Jacomb, 2000; Matthew S. McGlone, Anderson, & Holdaway, 1994; M. S. McGlone, 1989). The rigid species that were unable to adapt to the OPP of availability for hunting were forced to diverge from the network and eventually became extinct as can be seen in Figure 4.3 they were unable to continue being available for hunting. This divergence in the network forced the tangata whenua to listen to the once silent actants and to reconsider the network. This resulted in a new problematization, which persisted more or less until the arrival of Europeans.

4.3.1 Problematization of a Secondary Network

It is difficult to pinpoint an exact time in which the tangata whenua began to accept the break-down of their original problematization but the works of Best (1922) and Feldman (2001) suggest that it occurred over a significant length of time, likely on the scale on centuries rather than decades. Over this time the extinction of larger, easily hunted birds forced the tangata whenua to re-consider a network which no longer allowed for “seemingly endless marine and terrestrial resources” (Renganathan, 2004, p. 62). When species were abundant and easily hunted it is easy to understand how much could have been wasted but as time progressed the tangata whenua population expanded rapidly while the ‘black-boxed’ harvestable species became harder to obtain and required more effort. Taylor (1996) suggests tangata whenua started to make connections between the bird’s abundance and seasons, and realised they needed to control hunting to ensure enough birds for the next season. Best (1977) suggests that around the time of this realization tangata whenua harvesting practices began to include rituals and lore’s, which slowly transformed the interdefinition of actants from tangata whenua as separate from all other actants to one in which tangata whenua were entwined with ‘nature’ as guardians. This implies that it was only as resources became scarce that rituals and lore’s became established. From this transformation came the affirmation that tangata whenua were to be sustained by, but not to misuse Kererū (and other

38 bird extinctions during human settlement of New Zealand (prior to the arrival of Europeans) are attributed to tangata whenua hunting pressures, indiscriminate forest burning and the introduction of kiore (Polynesian rat) and dogs (Boessenkool et al., 2009; TerraNature, 2016)

40 Kirikiri & Nugent (1995) and Norton and Mitchell (1994) suggest that a sustainable system of use must have been in place prior to the time of European settlement. However, these authors have noted that its persistence would have depended on the continuing adaptability of the remaining species, human population levels and technologies developed.

41 Best was one of New Zealand’s earliest anthropologists and ethnologists, who spent 30 years in close contact with the Tūhoe tribe in the Urewera region allowing him to win their trust. “Forest Lore of the Maori” (Best, 1942) is a composite of material gathered from his time there, recording the culture and traditions of an iwi that had little direct contact with the early Europeans (Belich, 2013)

42 As King (1984) found when excavating midden remains filled with various species such are geese, swans, kiwi, moa, dolphins, whales, tuatara and fish, of which most appears to have been wasted.

43 Flannery (2005) and McGlone (1989) shows that there were likely to have been several colonization’s and with the seemingly endless marine and terrestrial resources, as different from their previously limiting Polynesian islands, the population in New Zealand was likely to have risen rapidly by tens of thousands within 400 years.
harvestable species) leading to a second problematization of the network as seen in Fig. 4.4. It has been suggested by Feldman (2001) that this idea of responsible use of Kererū was incorporated into tangata whenua myth, legends and lore as a result of Kererū’s role as a food source and as a cultural treasure. Riley (2001) explains further in that “basic myths and traditions came with the immigrants from legendary Hawaiki, the original homelands in the Pacific” however tangata whenua in New Zealand needed to alter these legends over time to give them relevance, to make them understandable in their new environment and to adapt to the conditions – in this case the increasing scarcity of harvestable species.

Figure 4.4: The second iteration of the Actant Network after the divergence of rigid species and development of Kaitiakitanga principles

Renganathan (2004, p. 69, 157) also examines the role of mythology in pre-European Kererū management but does not consider the evolving nature of the mythology, presenting it as fixed over time. She does not consider it as a response to the decline in abundance or extinct of species that followed the arrival of tangata whenua in New Zealand but still provides a useful over-view of the commonly accepted mythology and historical hunting practices surrounding Kererū as understood today:

Maori believed they shared a common ancestry with the birds and forests through descent by Tane, god of the forest who fathered birds, trees and
humans by different mothers. Many creation songs and myths told by different iwi, describe the beginnings of plants, animals, and habitats of New Zealand. Tane’s protection was essential to ensure birds remained abundant during harvesting seasons. As kereru were hunted in large numbers using a variety of methods, hunters had to intimately understand kereru ecology and behaviour and appease the spirits with appropriate rituals. The first bird taken would be left as an offering to Tane. While in the forest, hunters would refrain from eating pigeons they had caught as this would scare away other birds. Certain words could not be spoken. Charms were used to ensure that birds remained in the area and also used to call birds into the traps (Best, 1977).

(Renganathan, 2004, p. 69)

Since no actant in this network contradicts this assertion that responsible use was the key to maintaining Kererū’s role as a food source and as a cultural treasure the tangata whenua’s problematization was uncontested as far as we know. The rate of hunting was defined as the problem, rather than the hunting itself. The solution to this was instituted by tangata whenua through the development of Kaitiakitanga as an OPP (M. Smith, 2004). This instituted solution involved managing the harvesting to ensure protection of resources from over-exploitation, creating a OPP in the network which all actants had to accept in order for the network to remain. This “double movement” (Callon, 1986a) of problem definition and a resultant solution, rendered the tangata whenua, and their problematization indispensable in the network.

4.3.2 Intéressement

With the development of its second problematization (from abundance and availability of resources to be harvested to the development of Kaitiakitanga and management of exploitation) the tangata whenua needed to strengthen relationships between it and other actants and lock them into their roles in this new network. The actants were only vaguely defined and the alignment to the network was loosely coupled – The tangata whenua needed to join forces with Kererū and the other huntable species to attain its goal of creating a new network problematization. Although each actant enlisted

There may have been rival problematizations up and down the country for all we know with some iwi practicing restraint in harvest more than others.

Kaitiakitanga translates to guardianship and protection. It is a practice of managing resources, “based on the Māori world view” (Marsden & Henare, 1992; Roberts et al., 1995). A kaitiaki can be considered a guardian. Such a role is bestowed by the tribe and involved caring for a specific area such as a forest or lake.

Callon describes the double movement of problematization as the way in which the focal actant defines a group of actants and determines their characteristics in order to establish itself as an OPP in the network.
in the problematization could have submitted, some may have refused by defining their own identity, goals, and motivations or by simply by becoming unavailable. The divergence of the megafauna lead to the birth of the current problematization however its survival required an alliance of actants, a high level alignment in which every actant had a stronger interest to integrate than to give loyalty to a rival network. In a network proliferated with ‘silent’ actants tangata whenua cultivated and negotiated a genealogical ‘device’, their whakapapa, which permeates tangata whenua culture today. This device was deployed between tangata whenua and all actants they chose to define within their network structure.

The tangata whenua, guided by the translations of their whakapapa, developed extensive stories about the Kererū, as well as other species that were incorporated into their myths, legends and lore. One such story, which is still popular today, is that of the trickster demi-god Maui who would delay his mother Taranga every day at dawn by hiding her clothes. She would search for them but eventually leave without them which is when Maui would turn himself into a Kererū and wear his mother’s skirt, explaining how the Kererū got its beautiful plumage – “their feathers are iridescent green; the head is bronze, and they have a white vest” (Wycksted, 2013, p. 1). In another legend, Maui turned himself into a Kererū when performing magic tricks and on another occasion to find his father in the underworld (Crimmens, 2006; N. Robertson, 2008; J. White, 1856). Through these actions, tangata whenua attempted to stabilize the alignment and bring involved actants including other harvested species closer into its problematization through the interdefinition of actants. The actants had their relationship with tangata whenua strengthen through the whakapapa device and the intéressement helped corner actants to be enrolled. The device disrupted any potential competing associations with rival networks and consolidated the network. A favourable balance of power was lent to the tangata whenua and Kererū and other birds were beginning to be negotiated into the roles they were offered within the network structure.

4.3.3 Enrolment

The device of intéressement does not necessarily result in successful alignment between actants. For effective enrolment to occur there is a need to turn questions into statements with the definition of interrelated roles and their acceptance by actants. As Callon explains – “Intéressement achieves enrolment if it is successful” (1981, p. 211). The Kererū was, and often still, is described as a taonga

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47 Māui is a culture hero famous in Māori mythology for his exploits and his trickery.
48 One imagined rival network could have been a scenario in which the Kererū dis-enrolled from the network and made itself unavailable to hunting similar to the Takahē, which evidence showed was subject to the pressures of Māori hunting, destruction of forest by fire and the pressure of Kiore and Polynesian dogs (Mills, Lavers, & Lee, 1988). The Takahē was assumed to be extinct until found in the 1940s living in remote Southland near Lake Te Anau, an area in which Māori did not regularay hunt so was able to enrol in its own network without any human actants.
by tangata whenua; however, the birds were also a critical source of dietary protein and their feathers were highly valued which presented an overharvesting danger to the Kererū resources and so the nature of the Kererū contributed to its enrolment – a coproduction of nature and culture.

Lyver et al. provides some useful insight into the role prescribed to Kererū as both taonga and a resource in their research into the Tūhoe traditional knowledge matrix:

_Elders reported that kereru were traditionally harvested between April and July, with the core time in May and June, depending on the degree of fruit development of the toromiro tree in that year. Harvesting occurred only during this period and coincided with the period at which kereru reached peak condition from feeding on toromiro fruit. It was widely believed among the elders that the kereru could sense the desecration of its mana (prestige) and mauri (life force or essence) when traditional tikanga (customs) was disregarded or inappropriate harvest practices were used. For example, elders stressed that kereru should be plucked and prepared for eating only when back in the community, so that hunters did not leave feathers or other traces of the harvested kereru in the forest. They believed that, if feathers or the remains of a harvested bird were left scattered beneath a toromiro tree or in the forest, the kereru would respond by vacating the area and making themselves unavailable to the hunters._

_All the elders reported that under Tuhoe customs it was considered appropriate that only women or rangatira (a chief or high-ranking male individual) should eat kereru, which was especially revered as a food for pregnant women because it was believed that the bird’s life force or essence would be passed to the unborn child. It was recognized that rangatira were permitted to eat kereru because of their status within the community. The sacredness of the kereru was considered to be appropriate nourishment for a chief because: Ko te kupu e puta ana i tona waha hei whakarangatira i ngā tangata ko te kupu e whakaora ana i tona tinana ko te kereru. [As it is the words that come from the chief that empower the people, so it is appropriate that the words that empower his own body are the kereru.]_  

_Kereru feathers were also highly prized by the Tuhoe for the ornamentation of korowai (cloaks), weapons, and the prows and sterns of waka (traditional_
water craft). One elder recounted that high-ranking women, i.e., women of tribal royalty, frequently did not eat kereru because they often wore a korowai made entirely from kereru feathers. Eating the kereru made it noa (common), whereas a cloak made of kereru feathers was tapu (sacred) because it touched the body. A woman of high-ranking status who wore a cloak of kereru feathers would not defile the sacredness or essence of the kereru by eating it.

(2009, p. 40)

This is important as it suggests a level of “interessement” within tangata whenua in that some people were persuaded to eat or not to eat Kererū by virtue of the definitions of correct protocol by tribal elites. Flannery (2005) would argue that as over harvesting became apparent social stratification within Māori allowed some to continue to enjoy Kererū as food but not others. Therefore within tangata whenua society it is problematized that the only way to manage Kererū is if only the chosen few partake. The tangata whenua were able to successfully claim their role as guardians through this identity of the Kererū, defining themselves as the protector of resources while the other species silently assumed their roles, avoiding rebellion in the network by continuing to provide resources.

A subtle yet effective negotiation over time allowed tangata whenua to succeed through trial in establishing a balanced approach to resource use and harvesting, allowing the Kererū to be enrolled in a role in which it was able to remain available to provide resources. Intermediaries such as nets, snares and spears where deployed by the tangata whenua and used to enrol the Kererū in its role. These intermediaries where developed with assistance from forest actants such as the tree Mānuka, which provided its bark to form part of a snare and Harakeke (a flax) which was bound and used as nets, or other animal actant such as whales whos bones were used for making spear points (Keane, 2012). Plant and animal networks which had long evolved together in a pre-human network were now being used to enrol the Kererū into its new role of providing resources, indeed even the Kererū’s evolution allowed for its own enrollment as its fat allowed it to be preserved in a taha huahua (preserved-bird container) for better storage and year-round consumption (ibid).

The most significant intermediary in the enrolment of the Kererū in its prescribed role however was arguably the waka kererū (a wood pigeon snare shown in Fig. 4.5) which consisted of a carved out block of wood, usually Tōtara, a pair of mānuka sticks at each end and harakeke snares hung between the sticks. The waka kererū would be filled with water and placed near the maire, uwha, houhou, miro, and mako trees whose berries the Kererū would feed on, and when the Kererū was thirsty and headed for the waka kererū, its nearest water source (Transactions and Proceedings of the New Zealand Institute, 1909). As the Kererū places its head down to drink through the Harakeke
loop the noose would tighten, ensnaring the Kererū. Renganathan (2004) also makes an important point in that traditionally knowing when and where not to hunt Kererū was just important as “when kereru were feeding on kowhai (Sophora spp.) shoots, they were not hunted as their flesh when ingested, would give people violent headaches” (p. 53). Following from ANT reasoning forest actants such as Harakeke, Tōtara and Mānuka worked with tangata whenua to create intermederies to enrol the Kererū, while native forest berries such as miro made the Kererū thirsty – These actants all worked together to ensure the Kererū’s enrolment in the network, while the kowhai attempted to bring the Kererū into a rival ‘non-harvestable’ species network was only successful in certain locales and season’s.

![Figure 4.5: Modern re-creation of a waka kererū](image)

Other actant bird species, including Kākā (parrots) and Tūī, were similarly enrolled by tangata whenua through their whakapapa device and the deployment of specific hunting resulting in the array of rich and specific legends and myths still held by Māori today about many indigenous species of birds. Through these stories each resource was seen as unique by tangata whenua and the relationships with each actant changed. No longer were the huntable species all represented as one actant but became species specific actants, diverging in to their own management network in which the problematization was similar, but the relationships with tangata whenua were each translated individually.

Evidence of these distinct translations can be seen in the different hunting practise, rites and rituals associated with different species at different times of year (Best, 1942). What had been a singular harvested network had proliferated into a multitude of different networks each connected and
linked but distinctly separate. Examples of these linkages that were maintained can be seen in that Kererū were not harvested after they have interacted with kowhai as the Kererū translated itself from a tasty meal into one that inflicted tangata whenua with violent headaches (Renganathan, 2004). Other examples include harvesting techniques for Kererū which varied based on forest features such as ripening fruit and falling leaves (Best, 1922; Riley, 2001). Specific evidence of this interconnect of networks can still be heard today in oral tales of Maui who set off to seek immortality with his forest companions: the Kererū, the Miromiro, the Robin, the Grey Warbler, and the Fantail who laughed and woke up Hine-nui-te-pō (Goddess of the Night), who killed Maui and caused all humans to forever be mortal (ibid). With these legends and its whakapapa device the tangata whenua translation had successfully enrolled the identified actants and negotiated separate but linked roles for every species in a now far more complex management network. One of these networks would become know as the Kererū Management Network and was ripe for mobilisation.

4.3.4 Mobilisation

“Who speaks in the name of whom? Who represents whom?”

(Callon, 1986a, p. 214).

The tangata whenua had to answer these crucial questions for their problematization to succeed as in reality through the process of translation only a “few rare individuals” or spokesperson (ibid) could speak for each actant, either Kererū or other hunted species. Tangata whenua, in contrast, have a very defined and hierarchical structure to their society where leadership rested largely upon age and seniority and spokespersons included rangatira (leaders), tohunga (learned experts) and kaumātua (elders) [as discussed in Section 4.2.3.]. In representing the Kererū it can be understandably questioned whether the tangata whenua really claimed it made itself available for hunting. Tangata whenua however had created a specific role in which the Kererū are there to be used and were not there accidentally. Their legends told that the forest god, Tāne Mahuta, had provided Kererū and if they were not utilised by humans they would be deemed superfluous and Tane would not replenish them (Lyver et al., 2009, p. 10) Still even with this translation it is impossible to know how representative the Kererū individuals which were available to hunting were of the entire anonymous population50. The tangata whenua had successfully negotiated the intéressement of each actant through only the segment of available individuals, silencing those who were not in agreement and ‘black-boxing’ them within the group defined as accepting the translation.

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50 Included silent or elusive population outside hunting ranges, subspecies in remote areas or those individuals, which remained uncounted and thus deemed unavailable.
This redefinition was successful and no other definition was proposed, the ‘invisible’ Kererū did not contradict the Kererū which were available\(^{51}\) therefore according to Callon “that which is true for a few is true for the whole population” (Callon, 1986a, p. 216). In a similar manner one could imagine opening the problematizers black-box and understanding how the chief and elders who perpetuated the oral mythology (Best, 1922) were spokespersons who successfully mobilized entire iwi and populations. The result of this is that individuals are able to represent the masses and even tangata whenua can be viewed as a ‘black-boxed’ and more simplified actant, not representative of the complexity of actuality in which tangata whenua were made up of tribes, iwi and hapu. As inscriptions largely perpetuate this ‘black-boxed’ tangata whenua identity, or examine only at an iwi level rather than individual level it can be understood that there was only minimal leakage of those who did not agree with the Kaitiakitanga concept and mythologies as no major rival network was able to be recorded or sustained for any discernable length of time\(^{52}\). However it is also important to recognize that there may have been disagreement between different iwi at the time on best practice i.e. eating more or less Kererū. Mobilisation in the network can be seen as a success as the masses (Kererū, tangata whenua and adaptable bird species) that did not betray their representation

By examining the abundance of available Kererū seasonally\(^{53}\) the tangata whenua wished to know they could rely on Kererū in their negotiations of harvest objects, but what remains unknown is how many Kererū made themselves available for harvest. Availability is the equivalent in ANT terms to a “vote”, and the counting of abundance corresponds directly to negotiations with the tangata whenua. Kererū that made themselves available were counted and the tangata whenua converted these numbers into an oral history and stories. This history was then later used in decision making, providing power to the tangata whenua to reduce harvest or imposes rahui (bans) in times of lower abundance and to validate increased takes in times of higher abundance. Renganathan explains how this concept of rahui was enforced:

\[\textit{During the bird hunting months, forests were placed under restriction to all but designated hunters. Different types of restrictions were enforced depending on what was to be achieved. A rahui or temporary ban on hunting could be enforced during breeding seasons. It could be set up in places for a few seasons to allow birds time to increase their numbers. A rahui was often marked by an object such as a post painted in red ochre}\]

\(^{51}\) In a similar manner in the previous network the unavailable Moa and other megafauna because more representative than those available – A successful mobilisation in a rival extinction network.

\(^{52}\) In fact only few examples exist of leakage from inscription – The tangata whenua tribe who was eaten for taking someone else’s Kererū. Thus the mobilisation was able to persist and a rival network was “thwarted”

\(^{53}\) Historically tribes had a qualitative knowledge of birds numbers harvested in the previous season and could it with current bird observations. Restrictions could result from smaller harvests in previous season (Renganathan, 2004).
along the boundary of the area. Rahui could be spread through word of mouth, and backed up by the mana of the chief who proclaimed it.

(2004, p. 53)

As a result the tangata whenua are authorized to speak legitimately for the Kererū, available or not, and were able to speak and act in their name. This notion of a spokesman, who doesn’t speak, while seemingly an oxymoron, in fact does not pose any problem as Callon explains “To speak for others is to first silence those in whose name we speak” (1986a, p. 216). While it is difficult to silence a human in a definitive manner (an idea to be explored further in future translations) it is in actuality altogether more difficult to silence, and by extension to speak for, an entity that does not present an articulate language. This results in the previous need for continuous adjustments and sophisticated devices of intéressement, as presented in the tangata whenua’s whakapapa. Originally the tangata whenua and Kererū were dispersed and not entirely accessible to each other for translation, however after mobilisation tangata whenua were able to define Kererū.

Through the designation of spokesman and settlement of similarities all actants can be displaced and reassembled in a particular place and time. Thus mobilisation, as claimed by Law (1986), is able to take on a “definitive physical reality” through a process of displacement and reassembly. This can be understood as the abundance of available Kererū being counted by the tangata whenua in situ and being displaced to their pā where the hunters to the tribe reassemble it, orally. The available Kererū are then displaced, again, to be recorded in the oral records of the tribe and reassembled in a different time, years later for a comparison of seasonal abundance. The Kererū is transported from its habitat and representation renders its displacement easier than the alternative of taking the entire tribe to participate in the count while established equivalences allow the hunters and oral record keepers to become spokesman for the available Kererū. The result of this is striking; a diverse population of Kererū is mobilized and have been displaced from their home in the forest to the tangata whenua pā. Fig. 4.6 summarizes this movement as well as the events discussed in Section 4.3. The initial problematization of Kererū as food and decoration was translated through these stages to a problematization in which Kererū is a Taonga. The translation is complete; a network is formed and remains largely punctualized until the entrance of European colonists (i.e. kept stable as shown in Fig. 4.4).

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54 This is to say they have first be displaced from their diverse population to be reassembled as available Kererū, then again to be reassembled through a count to the tangata whenua leaders then finally to be reassembled in a different time for comparison.
4.4 The Colonial Development – Arrival of European Actants and Power Shifts within the Network

“On the boughs of a small grove of trees, beneath which we lit our fire and disposed our beds and provisions, the pigeons settled in great numbers towards sunset. We had only to fire as quickly as the fowling-pieces were loaded by the natives, hardly stirring from one position, the death of one bird not disturbing the equanimity of his companions on the same branch.”

(Wakefield, 1845, p. 78)

The first European contact with Māori is thought to have been by Dutch explorer Abel Tasman in December 1642. It was a brief violent encounter off what Tasman named Moordenaers’ (‘Murderers’) Bay [now called Golden Bay] in what is now Abel Tasman National Park. Three Dutch were killed in an attack with unknown fatalities for Māori of Ngāti Tūmatakōkiri before the Dutch left New Zealand waters without ever going ashore (NZHistory, n.d.). The next documented contact was not until over 127 years later in 1769 when the British naval captain James Cook of the HMS Endeavour landed at Poverty Bay (Withey, 1989). While his first meeting with Māori resulted in a fight in which an unknown number of Māori were killed he later managed to have friendly contact with Māori, writing about the Māori people and drawing detailed maps of New Zealand, (ibid). Contact and exchanges increased quickly after this, and in the 1790s New Zealand waters were being visited by British, French and American whalers, sealers and trading ships who
traded European goods, most famously guns and blankets, with Māori for food, water, wood, flax and sex. A few famous conflicts are known from this time, such as the murder of French explorer Marc-Joseph Marion du Fresne in 1792 and the Boyd Massacre of 1809. While there were many more contests and disagreements that did not necessarily escalate to armed conflict, the conventional view is that European contact proceeded relatively peacefully. In the early 19th century missionaries arrived and began their attempt to convert Māori to Christianity and to bring ‘order’ to the European visitors.

European settlement increased significantly after this with many trading stations established, largely in the North of New Zealand where many Europeans brought land from Māori. This culminated in 1839 with the plans of the New Zealand Company to buy large tracts of New Zealand intending to follow the colonising principles of Edward Gibbon Wakefield and envisaging a new model English society in the South Pacific. This alarmed many including the British colonial society and missionaries, which called for British control of European settlers. Captain William Hobson was dispatched to New Zealand to convince Māori to cede their sovereignty to the British Crown and on the 6th of February 1840, Hobson and forty Māori chiefs signed the Treaty of Waitangi at Waitangi in Northland. Copies of the Treaty were subsequently taken around the country to be signed by other chiefs where a significant number refused to sign or were not asked but, in total, more than five hundred Māori eventually signed. The Treaty gave Māori sovereignty over their lands and possessions and all of the rights of British citizens. What it gave the British in return depends on the language-version of the Treaty that is referred to as the English version can be said to give the British Crown sovereignty over New Zealand but in the Māori version the British Crown receives kāwanatanga, which, arguably, is a lesser power. Disputes over the true meaning and the intent of the treaty continue and this contract remains highly contentious and relevant today (Belgrave, Kawharu, & Williams, 2004; Orange, 2011; Ward, 1993).

The arrival of Europeans in New Zealand, and rapid increase in populations in the early 19th century thrust new actants into the previously punctualized network, resulting in the leaking of earlier black-boxed groups and concepts such as the whakapapa and kaitiakitanga. The new actants refused to be enrolled in the “Archaic” problematization predominantly due to irreconcilable differences in the ideals of exploitation and responsible use, resulting in a divergence in the network. Among the new

55 Land deals between Europeans and Māori were often later plagued with conflict due to differing understanding of land ownership concepts.
56 “The New Zealand Company, a commercial enterprise formed in Britain and supported by the British Government, dispatched an expedition to establish its second New Zealand settlement, to be named Nelson, in 1841. New Zealand Company founder and director, Edward Gibbon Wakefield believed that a successful colony needed to attract a balance of capitalists and labour. The Treaty of Waitangi, signed by the British Crown and Māori chiefs on 6 February 1840, stated that Māori land could be purchased only when Maori wished to sell, and that only the Crown could buy Māori land. In October of that year, the New Zealand Company was recognised as a government instrument of colonisation with a right to deal in land.” (Joy, 2007)
Actants that were to be negotiated in this time period were the newly established Acclimatisation Societies, who played a significant role in the early European history of New Zealand and resulted in some of the most significant changes in the Kererū management history. Acclimatisation Societies formed, in part because many settlers who came to New Zealand in this early period of history desired a more egalitarian society, in contrast to the highly stratified British society from which they had come. One desirable attribute was access to sports hunting in New Zealand, something that was highly restricted in England. Most indigenous birds were initially deemed undesirable for colonial sporting interest so settlers established Acclimatisation Societies to release “suitable” game species from their homelands such as red deer, partridge and quail to establish self-sustaining populations in New Zealand. Walter Buller, one of New Zealand’s distinguished ornithologists at the time, defined the unsportsmanlike nature of hunting of Kererū:

\[
\text{Owing to the loud beating of its wings in its laboured flight it is readily found, even in the thickest part of the bush, and being naturally a stupid bird it is very easily shot; so that in a favourable locality it is not an unusual thing for a sportsman single-handed to bag fifty or more in the course of the morning.}
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(Buller as cited in McDowall, 1994, p. 293)

These societies grew considerably in the 1860’s and introduced a variety of plants and animals such as deer, ducks, trout, cats, dogs, possums, horses and birds and expanded activity to introductions for economic reasons, most famously possums for the fur industry, the effects of which are still being felt today as possums are regarded as the principal pest in the conservation estate\(^{57}\). To fund these activities the Acclimatisation Societies sometimes established license fees and established hunting seasons to manage their populations sustainably\(^{58}\). The effect of these actions on Kererū management is analysed throughout the translation (section 4.4.1 – 4.4.4.) but can be summarized as a negotiation fraught with controversy as the movements of these societies and influence on Government legislation clashed with the desires of Māori and other actants.

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\(^{57}\) Most Acclimatisation Societies garnered recognition and often financial aid from provincial Governments for their work originally however they were not officially encouraged and able to register with the Colonial office until 1867 with the passing of an Act “to provide for the Protection of Certain Animals and for the encouragement of Acclimatisation Societies in New Zealand” (McDowall, 1994). The only restrictions placed on them were that the introduction of “any fox, venomous reptile, hawk, vulture or other bird of prey” was forbidden and it was not until 1895 that it became mandatory to obtain consent to introduce “any animal or bird whatsoever” (ibid).

\(^{58}\) Acclimatisation Societies existed and retained their names for well over 100 years until a governmental review of sports fishing and game management re-organized their roles and they became know as regional fish and game councils – collectively called “Fish and Game New Zealand” (Osborne, 2000).
4.4.1 Problematization

With the arrival of Europeans the previous network began to change. Associations were shifting and the balance of power rapidly shifted after the signing of the Treaty of Waitangi from the once exclusive human actant, tangata whenua, to the New Zealand Government actant formed through the circulation of an intermediary, the “Treaty of Waitangi” in 1840. The Treaty provided the device for the transfer of power from Māori to Government who then used the treaty to define relationships and consolidate power and control over the network. There was no single defining moment in which the network changed but rather a transition in which the network shifted, slowly at first with the arrival of the first Europeans who utilized the birds as an important food source being high in protein and plentiful. The shift in the network can be seen in the travel writing of the 1840’s in which readers in England were regaled with tales of excess and abundant ‘delicious’ Kererū in a period where Kererū hunting for sport or sale was increasing among New Zealand Europeans. The transition progressed more rapidly from here as hunting for sport became popular and the New Zealand Government consolidated its power until a new network could been seen to have emerged with the passing of the Wild Birds Protection Act in 1864. This legislation, which was modified, redrafted and repealed (See Table 2 in Chapter 3), was the first game law that applied to both introduced and indigenous species. It prescribed a hunting season for Kererū and indigenous ducks, however only applied for specific areas. A key change in the network which occurred after the Government gained power in the network was the change of problematization from one of responsible use of a taonga to one in which the continuation of Kererū was necessary as a game species. Through this the Government also created an OPP (itself) in the network of the legislative restriction of Kererū Hunting in order to prevent over-harvesting, a non-negotiable constant that must be adhered to remain in the network (see Fig. 4.7). In doing this the Government identified roles for Māori, Acclimatisation Societies and Kererū in this new network structure while excluding a growing, predominantly European, Preservationist movement (Mander et al., 1998). The Government then proposed a solution to its problematization in that there was a need for regulation for the Kererū to continue to exist and, by extension; it was the only actant in a position to provide

59 Edward Wakefield recounts on the early settler days and the Kererū as an important, plentiful staple of their diet: “On the boughs of a small grove of trees, beneath which we lit our fire and disposed our beds and provisions, the pigeons settled in great numbers towards sunset. We had only to fire as quickly as the fowling pieces were loaded by the natives, hardly stirring from one position, the death of one bird not disturbing the equanimity of his companions on the same branch” (Wakefield, 1845, pp. 42–43)

60 Excerpt from an early travel writer Hodgskin (1841, p. 28) on the Kererū for an audience in England: “Wood pigeons are found in abundance every where – much larger, fatter, and more beautiful in plumage than our English pigeons. The flesh is delicious . . . These birds are easily shot, for they are so tame as to allow you to approach within a few yards” (Hodgskin, 1841, p. 28)

61 Feldman (2001) in his report commissioned by the Waitangi Tribunal for the Indigenous flora and Fauna claim (Wai 262). Could find no historical record for the original motivations behind the inclusions of the first native birds and claims “the laws are not mentioned in the parliamentary debates or in the papers of the Colonial Secretary’s office (which administered the Act). (p. 3)
This. Through this action the Government defined the Kererū as fit for hunting and did not significantly distinguish between introduced and indigenous animals in its original legislation (see Table 2 in Chapter 3). They simply intended to legislate to protect the Kererū from over-hunting, and had applied similar devices to protect introduced birds such as pheasant and quail in the same way (Feldman, 2001).

This problematization encouraged Acclimatisation Societies and European Hunters to hunt Kererū and any other birds as was defined to be their right in this new ‘egalitarian’ society while Māori were defined as the reason for the birds decline for using it as a food source. Māori hunting methods were labelled as unsustainable and the nine successive laws and amendments made by the Government between 1864 and 1875 to wildlife management in New Zealand gradually eroded Māori rights of access to Kererū, and other resources, as well as made illegal traditional hunting methods (Feldman, 2001). This “double movement” (Callon, 1986a) of the problem definition and a concurrent solution, secured the Government’s crucial role in the network and allowed it them to present the dominant problematization. However, this punctuated network was unstable and had vocal dissenting actants from the previous network (e.g. tangata whenua) who could not be silenced. The previous “Archaic” translation would need to be enrolled through a different technique in order for the Government to legitimize its position.

![Figure 4.7: The Third Iteration of the Actant Network after the Arrival of Europeans in New Zealand](image-url)
4.4.2 Intéressement

So far this problematization only appears to make sense on paper. However the actants have a real existence. There is a reality to the translation. This involved acclimatization societies using fees and licenses to interest and direct behaviour. We have identified the actants involved, and seen how the Government plans to have its relationship envisaged however this has not yet been tested. Intéressement is necessary because each actant needs to be enlisted and it may either submit or refuse in the transaction, the Government needed to take action to impose the identity of the other actants that it has defined in the problematization. The Government strengthened its relationships with other actants and locked them into their roles by offering concessions in the legislation to allow the actants to tolerate their role in the defined structure.

The Acclimatisation Societies were offered control over the bureaucratic framework of its legislation as they planned the importation of various exotic game species, the societies also instituted licence fees and were allowed to declare the open and closing of hunting seasons for the assorted species (Feldman, 2001). It was therefore in the Acclimatisation Societies self-interest to support this problematization as licensing fees and penalties were paid directly to the Acclimatisation Societies adopted the government problematization and then made themselves the OPP by shutting off or arresting further scrutiny and debate by other parties, acting on a very strong economic incentive. It took little intéressement on the Governments part as the Acclimatisation Societies and Legislators had the same view of Kererū as indigenous birds for hunting and their goals to define the Kererū as a game bird aligned to such a degree that they did not need to re-define each other. In comparison, Māori were offered very few concessions to take in their new role and the Government had removed the right to manage their own resources but Māori were still negotiated into locking in their roles through a carrot and stick approach: small concessions were made such as exempting some ‘native districts’ from the new wildlife laws while Māori were punished through fines for taking Kererū outside of season or using equipment such as snares which were prohibited. The Kererū were

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62 While the original Protection of Certain Animals Act in 1862 applied only to imported birds, a later amendment in 1866 placed “restrictions on the kereru by classifying the bird as ‘game’ for the purposes of the law. The Act also extended the licensing system, requiring permits to be purchased before any of the birds listed as ‘game’ – including the kereru – could be killed, the first license cost a hefty £5. In addition to broadening the license scheme, the 1866 amendment Act established a mechanism for enforcing the game laws. The Act provided for a fine of up to £20 for shooting game without a license. It also gave the Government power to appoint rangers to enforce the Act. Fines and penalties collected from violators contributed to the cost of ranging, and also went into the coffers of the Acclimatisation Societies in the districts concerned.” (Feldman, 2001, p. 4)

63 One example of such exemptions is for the Tauranga, Maketu, and Opotiki districts in a Governor posting from the 1868 New Zealand Gazette. This posting in conjunction with an 1868 letter to the Governor deploring the state of affairs validates the policy of providing exemptions in some cases: “we are deprived of the privilege of shooting on even our own land whilst the Natives do shoot at” (New Zealand Parliamentary Debates cited in Feldman, 2001, p. 5)

64 The 1865 Act prohibited the use of snares and traps in the taking of any native or introduced birds, native or introduced – “None of the animals or birds which are the subject of this Act shall be poisoned trapped or taken
again secured into their network position simply by remaining visible and available, however the difficulty in negotiating their availability increased overtime resulting in the multiple legislation changes in a short space of time as Kererū became less intéressed in the hunting. The arrival and proliferation of introduced species such as possums, stoats, cats and weasels which hunted and competed with the Kererū in a diminishing habitat space also placed pressure on Kererū while more and more forest was cleared by humans (Mander et al., 1998). All these factors combined to undermine the Kererū’s intéressement in this Colonial problematization.

4.4.3 Enrolment

The Government had now identified the actants in the network and deployed the devices of intéressement however, no matter how convincing the problematization this never assured enduring stability – continuous alliances, or actual enrolment is needed. Simultaneous negotiations, tricks and shows of strength were compulsory for enrolment to occur. The Government had used the Treaty of Waitangi device as an intermediary to negotiate power from Māori and then used the treaty to define relationships, show power and gain control over the network65 (Lyver et al., 2009). The Government used its new power as a show of strength to force Māori into enrolling in Government problematization that limitation through legislation was the way to protect Kererū. To strengthen this enrolment the Government relied on its intermediaries of laws and technology (such as the Wild Birds Protection Act 1864, guns and horses) to compel Māori in the translation however Māori’s response to these laws is largely unrecorded so the degree to which the largely Māori population accepted this position is unknown (Feldman, 2001). Māori were not then represented in New Zealand Parliament so there is little record of commentary on their behalf surrounding these laws. However, Major Harry Atkinson, a member of the House of Representatives, made a general objection to the Animals Protection Act of 1867 and this provides a clue as to how the game laws affected Māori. His major objection was that the game laws resurrected the English social order many Europeans had tried to escape. In his opposition he noted:

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by means of traps, nets, springes or by other means than hunting or shooting at any time”. This stipulation clearly had repercussions for Māori’ and their traditional hunting methods (Feldman, 2001)

65 There were a number of contentions surrounding the Treaty of Waitangi, the most relevant to this issue is the interpretation and implementation of the Article 2 which is to ensure Māori’s the right to manage treasured indigenous species, including the Kererū (Wright, Nugent, & Parata, 1995). For further reading consult: Feldman & Tribunal (2001)
“Any Māori in any part of the country, who at any time snared a pigeon, was liable to a fine of not less than £2, and not more than £20. Was the House going to endorse such a provision as that?”

‘In some parts of the country the Natives lived on wild ducks, which were invariably taken by snares. To prohibit it would only give rise to much difficulty.’

(Atkinson, 1865 cited in Feldman, 2001, p. 15)

His remarks disclose the problems Government was going to have not only in ‘black-boxing’ Māori to make them fit their prescribed role but also in enforcing their enrolment through power while showing that many Māori were likely to ‘leak’ from the translation and undertake hunting in a rival illegal hunting network. Atkinson provides little advice to remedy the situation but did suggest the Wild Birds Protection Act be translated into Māori so they could avoid violating the law out of sheer ignorance. The Government black-boxed Māori in their forced enrolment and rebuffed any attempt to renegotiate the problematization. It assumed that ultimately Māori would be “loyal” to the network as defined and refused to acknowledge any betrayal of the actants redesignated roles in the network. A useful example of this is the Governments complete non-response or even recognition to the Māori Parliament resolutions over game laws in 1879, in which over 300 representatives gathered to pass a resolution that demonstrated a clear concern for the loss of mana over the lack of access to Kererū and other indigenous birds. Arama Karaka Haututu offered a clear argument that many other Māori would continue to make throughout time in that the laws dealing with the protection of indigenous birds should not apply on Māori land, commenting the following in Parliament:

There has been a law passed to prohibit the shooting of pigeons, and I approve of it. It is quite right to prevent persons from shooting on the land of other people; but I think that the Māori’s should be allowed to shoot over their own lands without being compelled to pay licences.

(Arama Haututu speech to Parliament in 1879 cited in Feldman, 2001, p. 7)

Compared to Māori, Acclimatisation Societies were easily enrolled in the translation by the Government and each actant successfully negotiated each other in the transformation of their

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66 Resolution 11, negotiated on 4 March 1879 by the Maori Parliament insisted “on the mana of Iwi Maori over a number of native birds, including the Kererū: ‘Ma tenei runanga e whakamana ko nga peihana, kukupa tui me tahi atu, ki nga Iwi Maori ano te mana, kaua te raihana ki nga takiwa Maori.’ (A loose translation of this is: ‘[It is for] this runanga may have the power (authority) over pheasants, pigeons, tui and other birds, Iwi Maori also have that authority, but not the licences to the district Maori)’” (Feldman, 2001, p. 56)
intermediaries: the game laws. Many of the amendments to the game laws developed out of pressure from the Acclimatisation Societies who used their power in the negotiation to redefine and take power from the other actants. Many in the Acclimatisation Societies considered it unfair that Māori were originally given special exemptions to hunt indigenous birds (Feldman, 2001), and over time they negotiated more privileges into the Acts and more restrictions on Māori traditional hunting methods. The fifteen legislative changes of the Protection of Animals Act between 1861 to 1895 represented the Government’s desire to keep all actants within their network and to avoid betrayal. Māori were largely forced into their enrolment concessions to them and were limited as their betrayal was perceived as unlikely. So, concessions to Māori were reduced over time while concurrently the Acclimatisation Societies and European Hunters demanded more hunting rights and longer seasons, thus the Government found itself balancing demands between European Hunters, who wanted to be able to take more Kererū, and its need to keep the Kererū enrolled in this management network, who threatened to withdraw with the increasing level of hunting it was expected to sustain. The result was the constant definition and renegotiation of roles with the network to maintain the European Hunters ability to hunt, and the Kererū’s ability to be enrolled. The Government, while having somewhat successfully enrolled its involved actants, now had a network but it was weakly aligned. The continual modifications of the acts surrounding Kererū served to confuse actants and resulted in having to be continually renegotiated.

4.4.4 Mobilisation

The final stage of the translation is mobilisation, where the problematizer attempted to convince, seduce and force their constituents in the network to follow the translation on their behalf, to “solidify” the network and produce a successful translation. Of course not all transactions are successful, and in this case success is hard to define. The Governments translation produced an array of actants who were willing to be defined, who accepted their roles and accepted the Governments solutions however as Callon reminds us each actant “is relatively predictable, because any translation is constantly being undone” (1991, p. 152) and “the destiny of most spokes[persons] is thus to be brutally contradicted” (1986a, p. 25). No clear spokesperson emerged originally within Māori and many participants rejected the forced definition of themselves and their desires, instead dis-enrolling and undertaking ‘illegal’ harvesting as termed by the Government (Ducker, 1994).

This leakage of individuals to the rival illegal hunting network amplified over time as Māori access to Kererū came under increasing threat and Māori representatives began to speak out against the restrictions (see Māori Parliament meeting over game laws in 1879 in Feldman, 2001, p. 6-11,20). The circulation of any additional intermediaries in the network, specifically between the Kererū and

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67 Sir John Cracroft Wilson of Heathcoate commented in 1873 that “The people did not really know the position on which the law relating to the subject stood” (Feldman, 2001, p. 56).
the Government appears limited, as no trace remains today, and the alignment of Kererū and Māori actants in the translation was weak, only achieved through the authority the Government wielded in the network. Māori influence in the network had been greatly diminished following the earlier “Archaic” translation and now their spokesperson was obliged to accept the problematization that Kererū was a game bird rather than a food source, which the Government had employed to legislate against the cultural harvest of Kererū.

*Throughout the changing regulations Māori continued to highlight the differences between European views, which considered kererū a game bird, and Māori views, which considered it a food source. They also pointed out that kererū were decreasing due to habitat loss and predation by introduced animals*  

(Renganathan, 2004, p. 73)

The Government's refusal to renegotiate its problematization did not resonate among many Māori who could not align their views of Kererū as a taonga with its new translation as a game bird and mobilisation faltered. The black-box that had ‘lumped’ together all Māori in one group began to leak as independent members failed to follow the set itinerary. Disputes were made over the signing and interpretation of the Treaty of Waitangi (Lyver et al., 2009) and the restriction imposed by Government on the Kererū harvest through its OPP were often disregarded by Māori. The only group that could be considered to have been highly mobilized was the Acclimatisation Societies, which were successfully translated so that there was an overlap in goals with the Government to allow for their alliance to persist. Their desired outcome was largely compatible with its powerful Government ally, and the groups were well structured with an official representative to allow each of their spokesmen to speak on their behalf’s. Initially when the Animal Protection Act intermediary was focussed on games laws the definition of Māori and European use of Kererū was controllable, after all both groups wanted to kill the birds they just did not agree on the time or place. However as the Acclimatisation Societies alliance with the Government grew stronger, the Act began to favour the societies more and in the 1880’s and 90’s the setting of seasonal hunting destroyed any chance of the aligning of Māori and Europeans in Kererū management. Fig. 4.8 summarizes this complete movement through the events discussed in Section 4.4 showing the translation from the previous problematization of Kererū as taonga to the new problematization of Kererū as a game bird.

Parallel the Kererū began to exacerbate this tension as they rebelled against their own translation and no longer enrolled in the problematization. Kererū mobilisation ceased as the population decreased nationwide and the Kererū no longer made itself available to hunting in its previous abundance (Mander et al., 1998). Preservation became an increasing focus and threatened the
definition of both Acclimatisation Societies and Māori, as the role of Kererū, and indigenous birds in general, was about to be re-examined. The network failed to punctualize as challenges and changes were constantly made of and by the Government and its Wild Bird Protection Act (Gibbs, 2003). The actants begin to diverge and the network setting to disintegrate. The black-box’s imposed through the Governments power on network actants and intermediaries began to lose their integrity, the edges were becoming fuzzier and something needed to be done as the Government sought to remain indispensible in the management network.

Figure 4.8: Second Translation from Taonga to Game Bird

4.5 Convergence in the Network – Negotiation in the Translation and Rise of Preservation

“[The] beautiful New Zealand pigeon is a bird which we must all regret has almost passed away. It is rare, indeed, to see it anywhere even in places which used to be its favourite haunt . . . . No settlers [in the past] need ever want for a rich supper and the poor pigeons were slaughtered somewhat indiscriminately”

(Gillies, 1877)

As early as the 1870’s there were misgivings about the mounting scarcity of the Kererū which continued to grow over time and by the 1890’s it was becoming increasing recognized by some vocal actants that the Kererū was in decline and that something needed to be done. These attitudes
emerged primarily from the growing group of actants, and later the Royal Forest and Bird Protection Society (1923), who were determined to preserve New Zealand’s native flora and fauna. This movement developed into scenery preservation groups and led to the establishment of Tongariro National Park in 189469 and Egmont National Park shortly after. In a parallel fashion many individual New Zealanders expressed dismay over the disappearance of iconic indigenous birds such as the Kererū, Tui and Kiwi including William Rolleston, a New Zealand politician, who made comment over an early Animal Protection Act in 1871:

"One saw bundles of tuis hanging up for sale in shops, and heard of people dining off kiwis, which seemed to him to be a gross abuse of the present privilege to kill birds, and he would like to see some clause introduced into the bill which would have the effect of preventing the loss of birds which were characteristic of the country"

(NZPD, 1872 as cited in Feldman, 2001, p. 11)

This growing public sentiment culminated in the Government response to set aside islands as bird sanctuaries such as Resolution Island in 1891, Little Barrier Island in 1894, and Kapiti Island in 1897 (Feldman, 2001). Specific steps were also taken by Parliament towards the preservation of Kererū, firstly by imposing a closed season on the hunting of Kererū for six years and then subsequent amendments to legislation that affected the right of Māori to keep “huahua” or birds preserved in their own fat (ibid). The Government’s internal debates over animal protection legislation shifted to mirror the trend in national sentiment and what had begun as game management progressively adopted a new preservation focus, specifically the protection of indigenous birds (Miskelly, 2014). The ground was set in the late 1890’s and early 1900’s for a shift in the network, but the Government refused to cede, or felt bound not to delegate, power in the translation and began its work again in search of a new dominant problematization.

4.5.1 Problematization

At the beginning on the 20th century conflict and disenrollment began to characterize the network. The ostensibly manageable tensions between actants became intractable as the Kererū failed to comply with its translation as an ‘abundant’ game bird and its scarcity contributing directly to discontent in the network. Individual European Hunters began circumventing their traditional

69 The formation of Tongariro National Park was also largely due to gifting of the summits of Tongariro, Ngaruhoe and Ruapehu to the Government by Ngati Tuwharetoa chief Tukino Te Heuheu who was worried about the “division and desecration of tapu lands” (Thom, 1987, p. 91)
spokespersons, the heads of Acclimatisation Societies, and spoke out against hunting districts being designated specifically for native Māori use (Renganathan, 2004) and similarly many Māori became increasingly unhappy with the restrictions on hunting methods and confinement to specific hunting areas by the Government (Weaver, 1997).

Towards the end of the 19th century, another group of people began to seriously advocate the preservation of native bird species. Access to kererū by Māori, settlers, and sportsmen came under threat. As concerns about declining kererū populations grew, the Government began to use the Animals Protection Act and its amendments to shorten hunting seasons interspersed with closed seasons. Māori argued for a more flexible approach similar to the indigenous system where tohunga would judge appropriate seasons based on the birds’ condition, and the presence of ripe fruit. Sportsmen wanted to keep kererū hunting seasons open. Preservationists wanted stronger protection for kererū (Feldman, 2001). Māori were further restricted to kererū when the 1907 amendment prohibited preservation of birds harvested (huahua or preserved kererū were a prized delicacy). The issue of kererū protection had by then become a widely publicised topic bolstered by declining kererū populations, instances of illegally sold birds, and requests for bird protection by preservationists (Feldman, 2001).

(Renganathan, 2004, p. 73)

Network betrayal intensified with the Kererū’s scarcity and threatened the Governments privileged position of power, its OPP was challenged and its indispensability questioned. In the face of such pressure the Government opened up the network and engaged with European Preservationists, most notably Harry Ell70, in their problematization. Ell had made many claims over the years in support of preservation of indigenous birds and was especially critical of the current Māori position in the network, as evidenced by his letter to the Department of Internal Affairs in 1907:

Unless something is done and that at once to stop the wilful destruction of our Native birds, particularly by the Māoris, it is only a matter of a few years when many of the varieties will be absolutely exterminated on the Mainland. I think the time has come when the potting of tuis, pigeons and kiwis should be absolutely prohibited.

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70 Henry Ell was well known Conservationist and parliamentarian who successfully campaigned for, among other things, the creation of scenic reserves in the Christchurch Port Hills (Dingwall, 1981).
A redefinition of the problem definition was negotiated as a result of mounting pressure in order to co-opt the Preservationists story and enrol them in the network translation. The result of this co-opted story was a new problematization in which the Kererū was translated as a scarce resource, unable to withstand any hunting pressures, and as such the solution was to legislate that the taking of any Kererū resource at all was unacceptable and illegal. This problematization was a dramatic shift from the previous “Colonial” translation in which legislation was used to restrict the hunting of Kererū only so it might continue to be available for future harvesting. The entrance of the Preservationist actant required the re-structuring of the network, many actants would need to be intéressed again. The Government required support for its plan in order to be successful, significant betrayal of the problematization would only lead to a splintering of power. The Government needed to find a way to intéress previously involved actants in this new scenario and bring them back into the fold.

4.5.2 Intéressement

Figure 4.9: Fourth Iteration of the Actant Network after the Rise of Preservation

In this second moment of translation the Government was required to convene and strengthen the actants determination to accept the new problematization and move through the OPP of the legislative prohibition of any Kererū harvest in order for the new network to thrive (see Fig. 4.9). In order to achieve these goals voices of dissuasion needed to be excluded from the network and dissenting voices removed. The hunting and protection of Kererū was more intensely debated than...
any other bird species, both within Parliament and outside (Aramakutu, 1997; Feldman, 2001; Marr, Hodge, White, & Tribunal, 2001; Miskelly, 2014), outlining the interest and importance of the Kererū not only to Māori and settlers as a food source, but also its intrinsic value as an indigenous bird. The Governments choice to implement, and then amend the Animals Protection and Game Act intermediary seems superficially simple but was the only workable option in the face of plummeting Kererū numbers and surging pressure from Preservationists to protect indigenous flora and fauna. The Governments willingness to amend the Act importantly reflects a stabilising effort rather than a major shift in their effort to maintain power. The Act offered a clear-cut ‘no take’ message that avoided the ambiguity of previous laws and amendments and offered no room for misinterpretation.

The Government in its race to maintain power in its own network, neglected to adequately deliberate on the issue of cultural harvest by Māori. The issue was black-boxed with the Government silencing or ignoring any voices of dissent within Māoridom and imposed upon Māori a crude translation as wanting to protect their treasure at all costs. Māori required little intéressement into the nascent network as in general both Māori and Preservationists spokesperson agreed that something must be done however the solution that each group proposed was radically different. The heated exchange between Hone Heke and Thomas McKenzie (founding member and president of Native Bird Protection Society and later Prime Minister of New Zealand) that arose over the 1907 Amendments exposed the growing rift and tensions between Māori and Preservationists over a solution to the problematization:

**McKenzie:** What is desired to enlist is the sympathy of the Natives of this country. They ought to unite with the Europeans in protecting that which really is so delightful and beautiful, and makes so much towards the interesting fauna of this country. I think the Natives ought to support us in all our efforts.

**Heke:** What about the freeholders, who want to get the land in order to knock the bush down?

**McKenzie:** I thought the honourable member was one who would endeavour to protect the birds of this beautiful country – his native land – but from his interjection one would suppose that we had not that sympathy. . . . I say that, notwithstanding the Treaty of Waitangi, we have reached

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71 In one example on 11 September 1908 the house of representatives debated the subject of Kererū protection, unrelated to any bill, for over an hour with 20 members speaking (New Zealand Parliamentary Debates as cited in Miskelly, 2014)
that stage in this country that if the Natives will not assist in protecting that which is so beautiful, then the laws of this country will have to do so.

Heke: The Natives are the only ones who do it.

McKenzie: The Natives in some parts protect the birds, but in other parts they destroy them. I think that the people of the country, and also those who are represented by the Native members, would agree to what is being done by Parliament.

Heke: What is the area of bush that has been knocked down by the settlers?

McKenzie: We will not discuss the area that has been knocked down . . .

(Heke & McKenzie, 1907 as cited in Feldman, 2001, p. 28)

Māori claiming Europeans mismanaged New Zealand’s resources proposed a solution that was to protect habitat and allow for continuing harvest while Preservationists agreed resources had been mismanaged but call for the total ban on hunting on Kererū. These divergent evaluations of available solutions would come to represent the initial phases of a later conflict in the network between Environmentalists and Māori.

The Preservationists with whose help the Government had built its problematization were eager to join the network, and took little intéressement. The pervasive hunting and habitat clearance suffered by the Kererū lead them to welcome anything that would offer respite; consequently in this translation minimal effort was required to intéress the Kererū in their role as a scare resource. The Acclimatisation Societies and specifically the European Hunters however were viewed as dissuasive voices, superfluous to the networks current problematization and their pleas against the ban were largely ignored. They were forbidden from taking any Kererū even while Māori continued to hunt and when the Wanganui Acclimatisation Society contacted the Government in 1917 explaining their position and asking for a removal of the ban they were answered by G Russel, Minister for Internal Affairs:

Doubtless you are aware that the native pigeon is a bird endemic to New Zealand and it is well known that with the gradual destruction of the bush the native pigeon will eventually become extinct, and in view of this it must, I think be admitted that it is most undesirable to in any way help to facilitate the extinction of this magnificent bird.
Indeed the Government did very little to intéress the Acclimatisation Societies, and in general they were disregarded and assumed to fall in line. W.H. Hazard, chairman of the Auckland Acclimatisation Society, stated:

“the closing of the pigeon season had been sprung as a great surprise on the society, who had not even been consulted on the matter. Under the Act it was compulsory for every third year to be a closed one, but the next was not due until 1913. Telegrams containing vigorous protests had been received from several sporting bodies affiliated with the society, including those at Ohinemuri, Te Aroha, Karangahake, and Waihi. ... The Minister, in replying to a telegram from us on Saturday [20 April] stated that it was too late to alter the decision of Cabinet, which had only been come to after due inquiries. Well, no inquiries were made to our society, which has a membership of 800 members. I would like to ask what the functions of our Acclimatisation Society are if not to advise on matters of this nature.”

(’Preparing to shoot’, 1912 cited in Miskelly, 2014, p. 47)

By exerting its authority and legislative devices the Government was quickly able to fulfil its problematization of accepting Kererū as a ‘scarce resource’, and open discussion with all actants it considered relevant to the translation. However, many were still not convinced. The Government now had their attention but needed to successfully position the actants in the roles it had envisaged for them within the new network, a move that would require no small degree of co-operation.

**4.5.3 Enrolment**

Enrolment in this stage was very much a political process and required the Governments use of persuasion and maintenance of achieve a suitable level of stability and alignment in the network. Connections were strengthening with all actants through political persuasions and authority, an enrolment strategy that relied heavily on the intermediaries of law and legislation. Print media was utilized to enrol the Intéressé Public in the new problematization and over time the Acclimatisation Societies were successfully realigned in their support for the problematization by negotiating for the control of the regulating process, and right to collect revenue, for the remaining indigenous birds, such as Pukeko, Kuaka and Grey duck, which remained legal to hunt. This successful manoeuvre

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72 Feldman describes how the Government of the day realizing "that it had neither the manpower nor the funds to effectively prevent bird poaching, the Department of Internal Affairs reached an understanding with acclimatization societies to pick up the slack. The Government gave the societies the right to charge for licenses"
was also examined in Renganathan however she was unable to recognize it as an minor transfer of power from the Government to the Acclimatisation Societies in order to enrol them in the network:

*The Department of Internal Affairs had difficulty in enforcing the law due to a lack of funds and manpower. In 1922, the Department and acclimatisation societies came to an agreement. In return for charging licences to shoot native game, the societies would use the extra money to help enforce the laws to protect game birds and absolutely protected native species. Poaching, however, continued as some of the societies had no rangers to patrol areas, and in some cases were more concerned with the welfare of introduced animals*  

(2004, p. 74)

The Acclimatisation Societies were also encouraged to bring Māori back into the network through legal action as a result of their new role in enforcing the legislation. Actants were actively “translated” by Acclimatisation Societies and most agreed to their defined roles and established spokesman. However, many Māori refused to play the role the Government defined for them and spoke out. Māori tried to challenge the greater restrictions on resource use being imposed on them by the Government through the Animals Protection Act 1908, and invoked the Treaty of Waitangi intermediary in an attempt to protect their rights to resources, including Kererū. The Government rejected these claims and attempted to force Māori to align through its Crown Solicitor Redwards finding:

> “The provisions of the Animals Protection Act 1908 are general in their terms and apply to all persons whatsoever. There is no exception with respect to Māori s or half-castes and anything contained in the Treaty of Waitangi cannot affect this position. Whatever force or effect that the Treaty may have nothing therein can override the direct provisions of a statute”

(Redwards, 1917, in Feldman, 2001, p. 21)

To shoot native game (provided for in the Animals Protection and Game Act 1921–22) and the societies agreed to use the extra revenue to help enforce the provisions protecting native birds. Explained the Under-Secretary of Internal Affairs in 1925: one of the reasons for making provisions for a license to take or kill native game was with a view of providing additional funds for Acclimatisation Societies in order to enable them to better carry out the intention of the law, namely not only the protection of game birds, but also the protection of absolutely protected birds” (p. 44, 2001)
Redwards drew parallels with the *Waipapakura vs. Hampton Supreme Court* decision that found the 1909 Māori Affairs Act did not contain recognition of Māori fisheries, which were actually explicitly mentioned in Article 2 of the Treaty of Waitangi unlike indigenous birds or other food supplies. Redwards concluded the Animal Protection Act provided no general exception for Māori but rather mandated restrictions on access by both Māori and Pakeha. *Waipapakura vs. Hampton Supreme Court* decision, while non-binding in court, provided an intermediary between the Government and Māori that reinforced the Department of Internal Affairs policies of the day in regards to prosecuting Māori for harvesting Kererū and resulted in Māori’s claims for access to Kererū to be disregarded. Māori actants were again forcefully enrolled by having their position incorrectly defined as one of wanting to protect an important resource at all costs. The Government rebuffed any change to its problematization of Kererū protection in order to enrol them. The Department of Internal Affairs even had a standardized letter, which they dispatched as an intermediary in their regular refusal of Māori requests to hunt Kererū:

*I have the honour to acknowledge the receipt of the petition of your-self and other natives praying that pigeons may be allowed to be shot in your District. In reply, I am directed by the Minister to inform you that native pigeons must be protected if they are not to become extinct, and he regrets, therefore, that your request cannot be granted. Surely the Natives do not wish the Kererū to disappear from our land.*

(*Feldman, 2001, p. 37*)

This black-boxing of the Māori position and failure to acknowledge and enrol actants successfully resulted in the first major rival network forming from the leakage of these ignored actants, an illegal hunting network. The Government needed to succeed in its final stage of mobilisation to keep power and authority and would need to find a way to manage this leakage lest the overflow continue and threaten its hegemony.

### 4.5.4 Mobilisation

As the formation of the new network progressed the Government attempted a final moment of translation. It needed to maintain its commitment to the problematization, ensure its OPP remained intact and establish the legitimacy of the spokespersons. Henry Ell established his legitimacy quickly in speaking for the Preservationists which the Government acknowledged and consolidated though their association. The Acclimatization Societies continued to maintain their internal hierarchy making legitimate spokesperson easy to identify. However, Māori presented the largest challenge. The Government refused to acknowledge their claims or concerns and progressively eroded their
rights while Māori leaders that had provided the Governments network with legitimacy were marginalized and betrayal of the actants assigned role occurred. The Government committed itself to its problematization and in the beginning of the 20th century amended legislation to further restrict Māori right to harvest Kererū. The Department of Internal Affairs denied any special access to Māori and overruled any assertions under Treaty of Waiting rights seeking to silence Māori actants rather than establish a legitimate spokesperson.

In 1922 all hunting of Kererū was completely prohibited through a final amendment to the Animals Protection Act and the process of alienation that began in 1895 was completed. Māori were silenced and took on a role similar to the Kererū in which they were black-boxed and ignored by the Government. The Government’s translation was accomplished temporarily and Fig. 4.10 summarizes this complete movement through the events discussed in Section 4.5 showing the translation from the previous problematization of Kererū as a game bird to the new problematization of Kererū as a protected species. The rival illegal hunting network grew in power as Māori left the Preservation network and this rival network continues to present a threat to the Kererū management network today. The stability of the network and the OPP depended on the strengths of relations between actants; while the Preservation network did endure a solution would eventually be needed to stop the leakage, to bring in excluded actants, which weakened the spokesperson/agency dynamic and threatened to de-stabilize the management network if it continued.

![Figure 4.10: From Game Bird to Protected Species](image-url)
4.6 Conservation and Uncertainty – The Authority of Science and the opening of the Black Boxes

“Large numbers of native pigeons are shot by the Māori people, in nearly all bush areas I examined. The main areas shot are those that have a traditional background for tribal hunting and belong in a sense to the different localised sub-tribes. Shooting does occur occasionally throughout the year, coming to a head when the pigeons begin feeding on the miro berries. This is even before the berries ripen, the flesh being very palatable to Māori s when miro flavoured”

Except from two Government Rangers report investigating poaching allegations in Northland in 1959 (as cited in Feldman, 2001, p. 64)

Following the 1922 resolution to ban all harvest of Kererū the Government sought a way to enforce its legislation, as restrictions to harvesting proved hard to apply in practice. The Department of Internal Affairs was unable to enforce the policy of Kererū protection due to a lack of finance and labour, an over-reliance on Acclimatisation Societies for policing and having to negotiate its role in a complex and splintered wildlife management scheme. Continual claims by Māori regarding Treaty guaranteed rights to Kererū resources along with illegal hunting, complicated the issue. Land clearance and introduced pests resulted in an ever-decreasing Kererū population. However, little action was taken by the Government for decades. The system of Kererū preservation through legislation and enforcement remained in place until the 1950s and 1960s when critics began to call frequently for a restructuring of the system for managing wildlife claiming that the status quo was too fragmented and ineffective, with not enough focus on conservation. Conservation is different from preservation in that preservation is protection for its own sake with no use allowed while conservation is protection for continued use (Iltis, 1967) The growing conservation movement, epitomized by the 1970’s “Save Manapouri” movement demanded a different understanding of the way humans interacted with ‘Nature’ specifically that conservation involved the sustainable use of natural resources, actively protecting and managing them to ensure they continued to be available at the same or greater conditions in the future (Olver, Shuter, & Minns, 1995). This demanded a re-examination of the Kererū management network by a new actant, Conservation Scientists, as Wildlife Branch officers struggled to implement active conservation due to poor coordination between Government departments and a lack of ‘scientific’ knowledge about Kererū in particular. The scene was set for a new problematization, one in which power would be transferred for the first time since
the arrival of Europeans in New Zealand as the Government was unable maintain its network and a new problematization was needed as the Preservation network failed.

Figure 4.11: Poster published by Wildlife Services in 1967 as part of a campaign of Kūkupa conservation education in mid-20th century. Translated the poster reads:

“Wood pigeon - This bird is a remnant from the great forest of Tāne. The rationale for not hunting this bird is being published because of the unfortunate actions of some. It is known, amongst other names, as kūkū or kūkupa. It produces one offspring a year, unlike other birds which have a much higher fertility. This is a plea to all to respect this bird so that its population can return to its previous level.”


4.6.1 Problematization

Conservation Scientists were the major problematization protagonists in this new network that arose from the growing conservation movement in New Zealand and a perceived lack of ‘scientific’ knowledge about Kererū with which to manage the species sustainability. They entered the existing Preservation network where the actants were composed as previously identified and were well
defined and still attached to the previous problematization in general. On entering the network the Conservation Scientists proceeded to re-problematize Kererū resource management, promoting conservation as the key while harnessing the new international lexicon of 'environmentalism'. Their scientific realist\(^{73}\) claims that science would provide solution to management issues connected to wider societal shift towards conservation and scientific progression and influenced the Conservation Scientists to consider an alternative management scheme. The Conservation Scientists proposed a new problematization in which the issue was simply one of unknown Kererū populations (Mander et al., 1998).

The Conservation Scientists persuaded the other involved actants that solving the problem populations required a scientific management plan informed by science based population monitoring techniques. They achieved this through their publication network through which they dispatched intermediaries such as “Monitoring and management of kereru” (Mander et al., 1998), “Towards constructive ecological engineering; the biological control of pests for the restoration of mainland habitats” (Moller, 1989) and “Single species conservation in New Zealand: towards a redefined conceptual approach” (Towns & Williams, 1993) which supported their claim that Kererū populations could only be known through science and that a scientific management plan was needed to conserve the Kererū. While Renganathan (2004) does not examine how the Conservation Scientists managed to re-problematization the Kererū resource management originally, she does identify the OPP of uncertain Kererū populations in her work and the consequences of the claim:

“However, it is possible there is an underlying fear that the issue of customary harvest is held at bay only because the status of kereru populations is unknown. If science is continued to be thought of as the principle manner of data gathering, scientists will continue to have a monopoly on what data is considered acceptable. Anecdotal information will continue to take a "back seat"

\(^{73}\) At its essence, scientific realism is the claim that the world described by science is the real world, independent of our own experiences with it (McMullin, 1984). Craig (1998, p. 581) explains that “scientific realism asserts that the objects of scientific knowledge exist independently of the minds or acts of scientists and that scientific theories are true of that objective (mind-independent) world. The reference to knowledge points to the dual character of scientific realism. On the one hand it is a metaphysical (specifically, an ontological) doctrine, claiming the independent existence of certain entities. On the other hand it is an epistemological doctrine asserting that we can know what individuals exist and that we can find out the truth of the theories or laws that govern them.” As opposed to this is constructivism which claims knowledge is only created when information comes into contact with existing knowledge from experiences (Von Glasersfeld, 1989). “Constructivism maintains that scientific knowledge is socially constituted, that ‘facts’ are made by humans. Thus this challenges the objectivity of knowledge, as the realist understand objectivity, and the independent existence that realism is after” (Craig, 1998, p. 581). Constructivism considers the production of ideas and places science as among the manufacturing institutions. Science is seen as a form of human engagement, like other forms of knowledge production, “just people doing things as best they can” (Craig, 1998, p. 583). This is seen as a displacement of science by many, “demoting science from its privileged position as the paradigm of rational and objective inquiry” (ibid)
The power and authority of science at this time however had already allowed the publication network intermediaries to establish easily the Conservation Scientists problematization within the network. Renganathan (2004) through her own research methodology establishes how the Conservation Scientists had made themselves indispensable to addressing the problem as they alone had the authority to conduct science, but she does not identify how their intermediaries and associations allowed them to gain control of the network. The problematization forced the Government into a negotiation with the scientists in order to retain power in the network resulting in the creation of the Department of Conservation actant within the larger Government through its Conservation Act 1987 device (Napp, 2007). An advisory body, the New Zealand Conservation Authority (NZCA), was also established to advise DoC and its Ministers with Conservation Scientists who positioned themselves as a neutral arbiter with no prior agenda or opinions populated. As a result the Government via the Department of Conservation, still maintained authority over the network but this problematization and the subsequent negotiation shifted a large amount of power and authority to Conservation Scientists, and especially those on the NZCA. Over the course of the translation many of the original actants in the network were displaced within or outside the network. However, to first form a new network the Conservation Scientists and the Government had to intéress other actants in their problematization.

4.6.2 Intéressement

Obligatory passage point: Unknown Kererū population size and dynamic that can only be known through scientific inquiry

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74 Similar to the power re-distribution gained by Acclimatization Societies through negotiation in the Colonial translation.
In intéressement the actants assemble around the issue to strengthen the key actant or the OPP of population management and scientific monitoring (see Fig. 4.12), while the Conservation Scientists seeks to exclude any nonconforming voices. The Conservation Scientists work to convince actants to acknowledge their definition. The coalescing issues were conservation, declining Kererū number and the “Māori renaissance” (King, 1985) all of which helped validate a new OPP. This ‘renaissance’ saw many Māori people re-engaged with their culture and whakapapa which lead to these participants renewed interest in seeking a return to the sustainable harvest of many indigenous species, including Kererū and the management of their own resources (ibid). Many actants also desired independence from the previous regime of unquestioned Government authority and restriction of harvest without reasoned justification. The Conservation Scientists used the issue of population management, sustainable harvest and their position as ‘independent arbitrators’ as intéressement devices in their attempt to create a new translation.

Many actants were also intéessed by being offered a position of privilege in the network, namely an opportunity to influence the NZCA, which offers advise to DoC. The appointment process of the NZCA is explained by the Department of Conservation (2015):

- two members where appointed after consultation with the Minister of Maori Affairs
- two members where appointed after consultation with the Minister of Tourism
- one members is appointed after consultation with the Minister of Local Government
- one members is appointed on the nomination of Te Runanga O Ngai Tahu
- one members is appointed on the recommendation of the Royal Society of New Zealand
- one members is appointed on the recommendation of Forest and Bird
- one members is appointed on the recommendation of the Federated Mountain Clubs
- four members are appointed from public nominations

By opening up the appointment of NZCA to these organizations and the public their continued support for the problematization could be assured while the actual power held by the NZCA appears to be very little. Other actants are therefore permitted to express their views and have a spokesperson heard with little risk of manipulating the Conservation Scientists new network. Renganathan examines the NZCA’s 1997 paper *Maori Customary Use of Native Birds, Plants and Other Traditional Materials* and finds:

“the NZCA’s recommendations with regards to possibilities of customary harvest...NZCA acknowledges that any legal system managing customary use of native species would need to be informed by science, it has not
provided any concrete solutions to the practical issue of customary harvest. The NZCA has not provided suggestions as to how research will aid customary harvest. The NZCA (1997b) also recommended that the Wildlife Act (1953), be specifically amended to provide Maori ownership of crafted items created from feathers and other materials of native birds and animals (under present laws the Crown has ownership of such items). Yet it has not suggested ways in which this change in legislation can be achieved nor has it suggested a timeline for these to be achieved. As an independent body representing public conservation interests the NZCA has not fully dealt with the issue of customary harvest

(Renganathan, 2004, p. 62 – 63)

Renganathan’s analysis implies that NZCA wants to deal with the issue of customary harvest, but may specifically be choosing to avoid any real recommendation, or is unable to, given the division of actants and perspective that make up the NZCA board. ANT allows us to view this finding and the actions of NZCA differently, in that the NZCA is a device initiated by Conservation Scientists in order to consolidate power and influence DoC. Renganathan’s shows that the NZCA supports the Conservation Scientists position that science would be essential in informing any arrangement for managing customary use of native species, and the divisive range of actants on the board results in very little risk of a new OPP. The NZCA’s work as described by Renganathan (2004) supports the OPP of an unknown Kererū population (see Fig. 4.12) while allowing for Māori to be intéressed through the recommendation for a return to cultural harvest, although somewhat tenuously, as no guideline is offered for bypassing the OPP. As such the appointment process and the NZCA itself can be seen as another intéressement device deployed by the Conservation Scientists in its problematization of the network. This device called into question the previous translation by the Government and the formerly black-boxed goals of actants can be thought of to have leaked too much to remain part of the existing network. The Government had failed to account for Māori’s desire to return to harvesting of the Kererū and its Preservation network was no longer adequate in stopping the intéressement of actants to this new problematization. The Intéressed Public were intéressed through their relationship with the Kererū as a colourful, iconic species common in the backyards of suburban New Zealand (as described by Scientist in Mander et al., 1998) while the Government (to become represented by its intermediary, the Department of Conservation, after 1987) was

75 Some would argue that the attempt to lump together most or all Conservation Scientists under DOC was a gamble and a failure in itself and that it hasn’t helped conservation in New Zealand at all.

76 Defined as ‘Pakeha’ here to help distinguish between the commonly ascribed ‘Pakeha’ ‘intrinsic value’ or ‘conservation’ frame and the Māori ‘sustainable use’ frame. Both groups are obviously part of the public group, but is best understood in this case through an examination of the dominate ‘Pakeha’ perspective (Tatępa et al., 1997)
intéressed in a new regime which could offer to manage Kererū through data and ‘unchallengeable’ facts. The cost of this however is a current criticism of DoC in that it is now extremely underfunded and is unable to sufficiently fund scientific studies to manage Kererū as well as other species. The Conservation Scientists seem to have successfully navigated the second hurdle of translation and were ready to enrol the actants.

4.6.3 Enrolment

The political process of enrolment necessitates, initially at least, the use of persuasion and then a continuance strategy to sustain immovability and alignment. In this case the problematizer proved very adept at carrying this process out. The Conservation Scientists enticed actants from their previous contexts, not through the authoritarian approach that was characteristic of the Governments previous translations, but by offering an alternative in which most actants desired to participate in, at least initially. The Conservation Scientists re-aligned actants to the rationality of science and their OPP of knowing Kererū population dynamics through scientific inquiry, a process that was tenable through becoming indispensable in any conservation plan. Without their scientific expertise, the other actants were restricted to management actions that did not rely on knowing Kererū abundance and had little leverage or authority over other actants. To increase enrolment effectiveness the Conservation Scientists deployed surveys and scientific reports such as "Birdlife in Seven State Forests Surveyed in Northland" (Moynihan & Unit, 1980) which sought to overthrow the anecdotal evidence of the previous regime and suggests ‘quantitative date’ was the only way Kererū populations could accurately be known. Such works provided ‘facts’ and ‘figures’ to which other actants could relate, presented as indisputable and used by other actants as evidence to further their own management goals such as Māori’s desire to return to harvesting of the Kererū or the Governments goal of an continuation of the status quo.

The Conservation Scientists nevertheless retained definitive control over the network as the reports or surveys they created (see Table 3 for example) were never conclusive and each actant was able to find flaws or ‘cherry pick’ findings to support their own goals. The Conservation Scientists provided intermediaries to each side that allowed it to keep the power while Māori and the Government used finding from different reports in different areas in support of their own agendas. The Government may have had the authority to legislate but they had been enrolled in a network in which they were subject to the rationality of science and Conservation Scientists are indispensable. Kererū were enrolled here as supporters of the Conservation Scientists work and by being available to be surveyed, the Conservation Scientists were able to claim to speak for the silent Kererū. Māori initially enrolled in the problematization as it appeared to suit their overarching objectives to achieve change.

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77 A conservation plan is a physical document or “inscription” created by DOC, often for individual species. Sometimes that are called “recovery plans”
and “fight the New Zealand political establishment” (K. Mills, 2009, p. 1). However, this was not to last. The final stage of translation was yet to be achieved – The Conservation Scientists had had little resistance thus far in translating their network but once again in the translation process mobilisation of actants proved to be most challenging.

Table 3: Headings, Tables and Scientific Evidence for predation and other factors limiting New Zealand forest birds as provided by Innes et al. (2009, p. 32-34)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Original decline</th>
<th>Current Limitation</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand pigeon</td>
<td>Forest clearance, predation, hunting, food competition</td>
<td>Predation by SHIP RATS and POSSUMS, food competition, illegal hunting, motor vehicles</td>
<td>Mander et al. 1998</td>
</tr>
</tbody>
</table>

Evidence consistent with limitation or decline of bird populations due to predation and food shortage, based on the reviews of Martin (1987) and Newton (1980, 1998).

<table>
<thead>
<tr>
<th>Individual level</th>
<th>Evidence for predation</th>
<th>Current Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Removed, killed or eaten remains of eggs, chicks or adults. Relaying, and extended nesting season. Predator removal increases nest success, egg, chick or adult survival</td>
<td>Starvation of chicks or adults (low weight, no body fat, emaciated tissue). Non-laying. Small eggs. Egg desertion. Small clutches. Poor hatching success. Poor chick growth. Reduced number of nesting attempts per season. Weight loss. Reduced feeding rate and food intake. Increased proportion of time spent feeding. Fighting over food. Adding extra chicks increases brood mortality. Removing chicks reduces brood mortality. Supplemental food advances laying date or increases hatching success, chick weight, chick survival, or mean number of young fledged per attempting pair</td>
</tr>
</tbody>
</table>

| Population level | Poor egg, chick or adult survival, spatially or temporally correlated with high predator numbers or predator arrival. Predator removal increases population size. Excess of the non-vulnerable gender or age class in population. | Poor egg, chick or adult survival, spatially or temporally correlated with food reduction or competitor arrival. Food addition increases population size. Excess of the gender with greater access to food. |

| Other evidence   | Predators abundant. Prey confirmed in predator diet.                                  | Food stock severely depleted. Confirmed deficiency (energy, nutrient, micro-nutrient) in food supply |

Source: Table 2 and 7 in Innes et al. (2009, p. 32-34)
4.6.4 Mobilisation

Of significance in this moment was the establishment of the spokesperson’s legitimacy, which the Conservation Scientists achieved through utilizing the rationality of science and the successful emergence of new spokespersons that would strengthen the Conservation Scientists network by linking it to other actants not previously involved. The Conservation Scientists mobilized a number of influential spokespersons, such as DoC, Forest and Bird, Fish and Game New Zealand who employed the Conservation Scientists services to expand their own knowledge, while the Conservation Scientists also presented papers such as “Predation and other factors currently limiting New Zealand forest birds” (Innes et al., 2010a) to appropriate journals including the New Zealand Journal of Ecology which acted as a spokespersons for the Conservation Scientists. This particular article provided a comprehensive summary of native species limitations and rationales for decline including exact rates of decline (see Table 3) and claimed to review “what is known about major causes of current declines or population limitation, including predation, competition for food or another resource, disease, forest loss, and genetic problems such as inbreeding depression and reduced genetic variation” (p. 1).

In addition by presenting information as a table or in shorthand form gives the Conservation Scientists inscriptions a stamp of authority e.g. looks scientific just by layout. This article however failed to account for any other form of knowledge in its ‘comprehensive’ review and showcases science as the OPP for management in the Kererū network and the Conservation Scientists as the gatekeepers. This OPP effectively removed all other knowledge sources from the Kererū management decision making process and resulted in a situation in which only information gathered through scientific inquiry could be considered relevant. Members of Government, NGO’s and other influential actants frequently interacted with the Conservation Scientists work and the Conservation Scientists established a track record of being involved in any and all project and policy implementation in the network. The rationality of science was given a high profile in these projects, while Māori or indigenous knowledge was relegated to secondary, tokenistic knowledge or more commonly not considered at all. The permanency of both the network and the OPP were reliant on the vigour of the relationships between the spokespersons and other actants. This network, by and large, continued into the presence day. Today Kererū policy is largely subjugated to scientific

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78 “Acclimatisation societies retained their name for almost 130 years, although their role had changed greatly and few people knew what acclimatisation was. In 1990, a Government review of sports-fish and game-bird management changed the number of societies, their roles and the regions they covered. Acclimatisation societies became known as regional fish and game councils – collectively, Fish & Game New Zealand.” - Te Ara Encyclopedia of New Zealand (2012)
evidence and decision-making is conditional on ‘evidence’ of sustainability. Māori have largely persisted in their assigned role in the network translation. However, the changing relationship between Māori and Conservationists, and Science has had a significant impact on the network and presents the most strain (see examples in Ducker, 1994; Feldman, 2001; Gibbs, 2003 and Weaver, 1997). The Government, through DoC, still provides legitimacy and power to the Conservation Scientists in dictating if Kererū harvest is un-sustainable; while the Kererū is still fulfilling its role as an available silent actant, being manipulated by others in the network to suit their own goals. Conservation Scientists proclaimed the supposed abundance, or lack therefore, of Kererū and has carried out live experiments to determine Kererū birth rates with or without predation management. On the other hand illegal hunters in Northland claim their own perceived translation of Kererū abundance as justification for hunting. Fig. 4.13 summarizes this complete movement through the events discussed in Section 4.4 showing the translation from the previous problematization of Kererū as a protected species to the new problematization of Kererū as an unknown population.

The Intéressed Public continue to be involved in the network, partially as they enjoy having the Kererū around as the birds seem to be unafraid of people and will let observers still approach closely (Renganathan, 2004). Awasthy (2012) in her research into Kererū in the urban environment however also claims an ulterior motivation: “the general public often believe that wildlife requires their assistance because they believe the animal to be helpless” (p. 25). Therefore they remain mobilised in the problematization simply because Kererū are iconic and ‘helpless’, eliciting a strong public response towards their conservation and rehabilitation. This response has been capitalized on in this translation and the Intéressed Public have been assigned responsibility by DoC again to help protect against illegal hunting, with a DoC spokesperson claiming “People should report any incidents of illegal wildlife hunting to the DoC emergency hotline 0800 DoC HOT (0800 362 468). Any specific information in relation to the location of the alleged offending or identity of the offenders is useful” (Collins, 2015) and that DoC is currently reliant “on reports of illegal hunting from the public” (ibid) to catch illegal hunters in Northland.
4.7 Networks of the Present – The Wings of Change

“Many of our people see it as a customary right [Kererū hunting]; we don’t necessarily share that view. It is an issue - we rely on the goodwill of our people to observe the rahui and not go anywhere near the birds”

Aubrey Temara, of Tūhoe tribe in the eastern Bay of Plenty (Wall, 2010)

The network as it was set out in the previous iteration remains largely unchanged in the present. The Conservation Scientists are still ‘gate keepers’ in the Kererū’s management and have largely maintained the enrolment of the other actants in their translation through the problematization that Kererū cannot be sustainably managed without scientific information as to their population size and dynamics. (Cousins, Battley, Gartrell, & Powlesland, 2012). However, as the history of the network has shown, a certain degree of stabilization (as related to time) cannot be achieved while the proliferation of actants who are able to achieve divergence occurs, which is to say the network cannot remain intact if more and more actants continue to join a rival network in which illegal hunting is undertaken. Hence, while the Kererū and the Intéressed Public have remained mobilized in the current problematization to a sufficient degree, members of Māoridom have not been entirely mobilized since the rise of the Conservation network as many individuals have betrayed their assigned roles and linked with the illegal harvesting network. The 1992 Sealord Settlement Act, an intermediary between the Government and Māori, marked an increased leaking of Māori from the Conservation translation as it recognized Māori rights to manage resources as provided for under the Treaty of Waitangi which bypasses the current OPP of scientific rationale (Lyver et al., 2009).
Māori participants are again disengaging with the problematization and questioning why science has the authority to claim when a return to Kererū cultural harvest is sustainable (ibid) rather than their knowledge. Māori participants are advocating for a new problematization in Kererū management and offering a solution which calls for the co-management and combination of western “scientific” knowledge with mātauranga or “Māori knowledge” (Lyver et al., 2009; Taiepa et al., 1997). This problematization is now in its infancy, having yet to gain significant traction to dominate within the network. However, already there is engagement from other actants such as DoC who claim it is “highly relevant to future policies for science and research” to include Māori knowledge (Henrik Moller, Berkes, Lyver, & Kislalioglu, 2004). This new potential problematization is explored further in Chapter 5, which uses ANT to consider future change scenarios in Kererū Management, as a way the network could develop different along with 2 other scenarios for change. However, before future scenarios can be considered for change the current state of legislation in the Network must be identified, as well as other recent developments in the ‘Conservation’ network as well as concerns and threats to network stability, which could result in a destabilization and allow for new problematization in future scenarios. The recent changes in the network present a continuation of the story of the ‘Conservation’ network and an expression of challenges to the network and the complexity of the reality.

4.7.1 Current State of Legislation in the Network

An abundance of legislation now exists within the network, with different laws applying to the customary use of indigenous species. The Conservation Act 1987 exists as the umbrella act under which DoC administers other legislation such as the Wildlife Act 1953 and Marine Mammals Protection Act 1978 which demands protection for indigenous animals irrespective of location or the National Parks Act and Reserves Act which provides protection for plants and habitat based on the status of the land. In addition numerous management documents, plans and strategies exist at various levels and across regions including the Northland Conservation Management Strategy (CMS) 2014-2024 (Department of Conservation, 2014). There are also international agreements, which the New Zealand Government has signed which also hold influence in the network, notably the Convention on Biological Diversity, signed in 1992, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which entered into force in 1975.

The ever-evolving understanding of the principles of the Treaty of Waitangi continues to influence the network and revise the balance of power between actants, as New Zealand law requires the Treaty be recognized and given effect in conservation management. Recent judgements of the court and the Waitangi Treaty Tribunal clarify principles recommend that the Treaty be considered in all current management plans such as The 1992 Sealord Settlement Act. More recently the Wai 262
Treaty Claim (see Fig. 4.14) lodged in 1991 sought to have Waitangi Treaty principles enforced but with a first report taking 20 years to produce (2011a) and still no resolution or decision in sight suggests its a rather difficult and contentious claim to resolve. The Wai 262 Treaty Claim is a significant intermediary in the network and showcases the claims by Māori that Government actions have prevented Māori from exercising Kaitiakitanga over Kererū through actions such as “the passage of the Wildlife Act 1953, the establishment of scientific reserves and protected areas which prevent Māori access to Kererū” and as such represent a “denial of te tino rangatiratanga” (Sutherland, Parsons, & Jackson, 2011).

The only significance thus far of the Wai 262 claim was the production of a report in 201179; ‘Ko Aotearoa tēnei: A report into claims concerning New Zealand law and policy affecting Māori culture and identity’ (Waitangi Tribunal, 2011a). This document was the Waitangi Tribunal’s first ‘whole-of-Government’ report which addressed “the work of more than 20 Government departments and agencies” (Waitangi Tribunal, 2011b) as well as the first Tribunal reports to deliberate New Zealand’s relationship with the Treaty after historical grievances are resolved. The reports made many recommendations (see Waitangi Tribunal, 2011b) but those relevant to the management of Kererū in New Zealand included “the establishment of new partnership bodies in education, conservation, and culture”, “a new funding agent for mātauranga Māori in science” and “Māori advisory bodies relating to patents and environmental protection”. In addition Ko Aotearoa Tēnei recommended improved support for Māori culture and traditional knowledge and “amendments to laws covering Māori language, resource management, wildlife, conservation, cultural artefacts, environmental protection, patents and plant varieties, and more”. The Tribunal does not settle claims but rather makes recommendation to the Government therefore the outcome of the Wai 262 Treaty claim and settlement now rests with the Office of Treaty Settlements that manages the negotiation of Treaty settlements on behalf of the Government. Treaty principles relevant to the customary use of Kererū include the varying degrees of the “recognition of Māori rangatiratanga (indigenous constitutional authority) over local taonga (valued things)” (Wevers, 2011, p. 6) and the active protection of Māori interests. The outcomes of these Tribunal Claims are already acknowledged by DoC as important to the direction of conservation management in New Zealand (Department of Conservation, 2015a) and is likely to alter the balance of power in the network as the findings and recommendations of

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79 The New Zealand Ministry of Justice explains the reasons for the 20 year delay in the report: “There are many reasons. Initially, priority was given to district hearings in order to support the process of settling historical Treaty grievances, so the Tribunal did not begin hearing the claim until some years after it was lodged. Subsequently, arguments between the Crown and claimants about the scope of the claim, the ill health of the first presiding officer, the extraordinary breadth and complexity of the claim, the need to keep up with an ever-changing law and policy environment, and competing priorities have all contributed to the time the inquiry has taken.” (New Zealand Ministry of Justice, 2011)
documents such as Ko Aotearoa Tēnei (Waitangi Tribunal, 2011a) become more widely accepted and adopted, or challenged.

The origins of the claim date back to 1988, when two women found that the Department of Scientific and Industrial Research had deposited several cultivars of native kumara (sweet potato) at a research institution in Japan. The kumara had been brought to New Zealand by the Māori people, but were no longer available there. The women travelled to Japan to bring the kumara back to New Zealand. The women became concerned at the ease with which native flora and fauna could be lost to overseas interests, and at the lack of Māori involvement in the decision-making process. They felt that the Government and the department had ignored Māori rights of authority and guardianship over New Zealand’s indigenous flora and fauna. Work towards filing a claim with the tribunal began.

Six individuals on behalf of six Māori tribes finally lodged the claim in 1991. The claim generated international interest and WAI 262 became associated with the plight of indigenous peoples around the world. Many governments still struggle to reconcile protection of the collectively owned, traditional knowledge of their indigenous peoples with IP systems based on defined ownership and commercial advantage.

The claim asserted that the crown had breached the Treaty of Waitangi, which guarantees Māori ownership of lands and other properties. It was claimed that the crown had:

- failed actively to protect the claimants’ exercise of their rights of authority and guardianship over indigenous flora and fauna, other cultural patrimony and Māori traditional knowledge;
- failed to protect the patrimony itself;
- usurped Māori rights of authority and guardianship in respect of flora and fauna and other patrimony through the development of policy and the enactment of legislation; and
- agreed to various international agreements and obligations that affect indigenous flora and fauna, IP rights and rights to other patrimony.

The claimants also asked that one of the remedies include a framework recognizing Māori rights of authority and guardianship over indigenous flora and fauna, cultural patrimony and traditional knowledge. The progress of the claim has been slow: hearings began in 1997 and were completed in 2007.

Source: Huria (2010). Also see Ko Aotearoa Tēnei (Waitangi Tribunal, 2011a) introduction (pages 15–24) for a more detailed explanation of what the claim is about and what the Treaty relationship requires.
4.7.2 Recent Developments

While the ‘Conservation’ network as previously described still holds today there have been a number of recent events, which should be considered significant. These include the growth of the public/private partnership between DoC and local conservation boards and the recent public controversy surrounding Ngapuhi chairman Sonny Tau’s who was charged with unlawful killing or taking of protected species after being found with five dead Kererū under his jacket at Invercargill airport.

One of the most significant recent developments in the Northland Kererū network has been the evolving relationship between DoC and the Northland Conservation Board (Te Runanga Papa Atawhai O Te Taitokerau), which serves as a conservation advisory role and is tasked with offering community perspective on conservation management issues for the Northland region to DoC (P. Taylor, 2006). They are independent bodies, established by the Conservation Act 1987 whose major responsibility is to oversee the implementation of the Northland Conservation Management Strategy (CMS). The Northland CMS describes the “conservation values present in Northland, and provides guidance for DoC’s work in the form of a vision, objectives, outcomes for Places, policies, and milestones; translating DoC’s strategic outcomes to Northland” (Department of Conservation, 2014). Mita Harris, chairman of the Northland Conservation Board, has launched and re-iterated its “Save the Kūkupa” campaigns in the past (3 News, 2012; Johnston, 2012; Northern News, 2013), most recently in 2015 in which he claims “Our forests are under threat as kukupa numbers have declined dramatically because of illegal hunting, habitat loss, competition, and predation” (Dargaville News & District, 2015, p. 2). Harris explains “The core purpose of the campaign is simple: Every kukupa protected helps our forests live on for future generations” (ibid). However, what is also notable about this campaign is that the Northland CMS does not make any note of the Kūkupa (or Kererū) as being either critical, endangered, vulnerable or even at risk in its collative table of the regions threatened species leaving room for the questioning of why a campaign is needed for these species over any other. Harris, and the Northland CMS, are not alone in their campaign to “Save the Kūkupa” with other groups such as Dunedin based Project Kereru (Brumby, Hartley, & Salmon, 2015), Banks Peninsula based Kaupapa Kererū (Schotborgh, 2005) and Auckland based Kaipatiki Project (Scott, 2007) having a similar mandate.

Project Kereru was set up to care exclusively for sick and injured Kūkupa so that it “does not fade to become yet another memory and that there will always be Kereru for future generations to enjoy” albeit while recognizing that “since 2008 the DOC threat or conservation status of the kereru has been ‘not threatened’” (Project Kereru, 2015). Kaupapa Kererū, an initiative by Ngāi Tahu, claims it is helping the “threatened” Kūkupa population on Banks Peninsula while again acknowledging that “the
kererū is a fairly common bird” but that the “its numbers are actually declining” (Calman, 2012, p. 1). Similarly the Kereru Awhina Project, whose sole sponsor was the the Kaipatiki Project, was managed by a “small community group” who are “determined to reverse the plight of the Kūkupa” claiming that if “change does not take place we may see the eventual extinction of one of New Zealand’s most beautiful endemic bird species [Kūkupa]” (The Kereru Awhina Project, 2004). Although these groups only operate regionally, here ANT allows us to see Kūkupa as an assemblage which holds a variety of historic meanings, that can be difficult to change and are easily manipulated by other actants in order to further their own goals. To Harris, and these other three organizations, Kūkupa’s contemporary status was irrelevant when invoking its historic translation – as an endangered bird, which needs Government protection and legislation. To many involved actants currently ANT releases the Kūkupa as a historic assemblage, to be manipulated in order to give credibility to a new, current narrative in the current ‘unknown’ network whether it involves the ‘plight’ of the declining Kūkupa or a ‘resilient’ Kūkupa capable of withstanding selective harvesting.

As the Northern News (2013) noted there is an increasing number of conservation groups being set up as DoC makes cut backs, but all of these groups are struggling to be effective and “competing for the same slice of the financial pie”. The Kererū, as previously discussed, has great cultural significance to Māori and the Intéressed Public and is considered a ‘flagship’ species therefore may be exploited for publicity and funding in conservation. In doing so, it suggests that the Kererū does indeed have agency, is not always silent and is very active in this case. Towns & Williams (1993) also argue that there is a move toward single species conservation in New Zealand resulting in Kererū enjoying extra attention similar to the approach taken by the BNZ Kiwi Recovery Trust to Kiwi (Blue & Blunden, 2010). Mita Harris’s actions in the network can then be seen in the context of the funding competition in conservation and whether the issue of Kererū hunting is exacerbated and made more contentious by said actions. The Kererū status as a charismatic ‘flagship’ species does leave its management able to garner public interest more than the 14 snails listed under the Northland CMS as nationally critical, which are less like to attract the Intéessed Publics attention, and funding, to conservation. As Towns & Williams (1993) explains, gathering public support for New Zealand’s over 600 threatened species is a herculean task and could be made simpler by viewing “species as conservation units (target species and flagship species)” (p. 1), an approach which would explain the publicity in the network over the Kererū’s management when it is not listed as critically endangered.

80 Indeed it appears the The Kereru Awhina Project and Kaupapa Kererū are no longer operating as of 2016 – at least maintaining no websites or having any media releases.
The most recent public controversy in the Kererū network arose from the detainment and charging of Sonny Tau, Chairman of Ngapuhi’s treaty settlement team chairman who in July 2015 was questioned by DoC officials after he was found with five dead Kererū hidden in his jacket while checking in for a flight from Invercargill bound for Northland. This is still an on-going development at the time of writing so the network inscriptions are ephemeral in nature, however they can still help as to understand the associations and the effect of this development. Within a week of the announcement Mita Harris, a member of the same treaty settlement team and chairman of the aforementioned Northland Conservation Board, resigning from his position on the treaty team claiming “To have this happen is an absolute slap in the face; Sonny Tau needs to face the people. Sonny Tau needs to face Ngapuhi and man up to what he has done,” (3News, 2015). This statement outlines the ongoing tension between conservation and cultural use aspirations for the Kererū and how within Māori there is no conclusive consensus on management direction. Harris has expressed a clear no-take desire while Tau has undertaken cultural harvest, ignoring the law. The chairperson of Te Runanga O Ngai Tahu, Sir Mark Solomon, exhibits the more commonly expressed middle ground commenting; “Yes, at some time in the future when stocks build, we would like to exercise a customary take, but unless those stocks build to a sustainable level, leave them alone” (Forbes, 2015b). While it is difficult to tell at this early stage if the different actants speaking out in Māoridom suggests a lack of a coherent spokesperson in which to align behind in the network it is probable the next network translation will have to consider these splintering desires for Māori to be successfully mobilized.

Tau has been involved in efforts to resolve Ngapuhi’s treaty claim since 2010 when the tribes successful sovereignty claim was heard by the Waitangi Tribunal however since the allegation of Kererū smuggling he was asked to step down by the treaty board “because the incident could distract from, and impede, negotiations with the Crown” (Radio New Zealand, 2015). DoC has since laid charges in relation to the alleged hunting and possession of the protected Kererū species under the Wildlife Act and Tau was due to appear in the Invercargill District Court. There is very little specific information in regards to the actual poaching event or arrest at the airport (Customs Today, 2015) as its an ongoing investigation in which Tau and DoC are unwilling to comment, however Tau has publicly commented “This was a mistake, which I deeply regret. The laws around native bird protection are important and to be respected by all, myself included” (Weber, 2015). Sonny Tau and other members of Ngapuhi have since travelled back to Southland for a hui to apologise to Ngai Tahu for the taking of Kererū from their region (Forbes, 2015a). Leaked correspondence between Ngai Tahu, who have made no public comment on the Kererū smuggling, and Tau show that the South Island iwi is “deeply disappointed” with Tau and “there was quite a lot of anger in the communities”

81 A major Māori iwi in the Northland region centered around Hokianga, the Bay of Islands and Whāngārei.
(Forbes, 2015a). Te Tai Tonga MP Rino Tirikatene claims Tau’s actions are a “violation of all the good work and efforts that are going into trying to conserve a taonga species” (ibid).

The event has been an major exposition of the controversy surrounding Kererū management which had remained hidden from the media, and has now recently been reported on in all major news sources in New Zealand including radio, print and television, inscriptions which have moved the controversy from the remote forests of Northland to living-rooms across the country. While the outcome of this increased attention cannot be know at the time of writing this thesis it has at the very least converted some of the “Disintéressed Pubic” into “Intéressed Pubic” and increased awareness of Kererū management. This media coverage has already spawned investigations and allegation into other uses of Kererū from increased coverage of poaching to warnings about its decline in Northland and its use at special events in Māoridom. Following the coverage of Tau’s arrest it was revealed the Kererū was served at an iwi leaders’ hui in Ohakune in 2013 after DoC provided five dead birds to local iwi. The Wildlife Act protects Kererū from hunting and consumption but DoC does allow the possession of dead Kererū for cultural purposes, such as “using feathers for cloak weaving or bones to make ta moko (traditional Māori tattooing) instruments” (Wanganui Chronicle, 2015). Separate authorisation is required to consume the Kererū and DoC confirms there was no application for consumption of the Kererū at the hui and it “would not support the consumption of dead birds handed into its offices for food safety reasons” (Jones, 2015). Government Communications Minister Amy Adams, and Primary Industries Minister Nathan Guy along with Dame82 Tariana Turia were in attendance at the 2013 hui and claimed they did not realise Kererū was served at the event83.

Dame Tariana Turia supported the marae’s decision to serve Kererū at the hui, claiming Māori should not be "criminalised" for serving it at special occasions84 and that a cultural harvest should be allowed as Kererū “was depleted not because Māori were eating them, but because deforestation, exotic species and water pollution had destroyed much of their habitat” (Jones, 2015). Current Conservation Minister Maggie Barry however made it clear that the Government remains opposed to the harvest of Kererū for any reason claiming "Māori ate moa as well", “We don't want to eat birds to the brink of extinction, it's not appropriate in this day and age ... these are birds that are under

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82 Dame is one of the highest titles awarded under the New Zealand Order of Merit, an order of chivalry forming New Zealand's honours system that distinguishes exceptional service to either the Crown or the citizens of New Zealand in a civil or military facility. It was enacted in 1996 by Queen Elizabeth II, “for those persons who in any field of endeavor, have rendered meritorious service to the Crown and nation or who have become distinguished by their eminence, talents, contributions or other merits” (Department of Prime Minister and Cabinet., 2013).
83 “Frozen Kererū meat was mixed with chicken and miro berries and fed to guests” (N. Jones, 2015)
84 She also commented that while she supports a return to cultural harvest she personally had never partaken saying “I don’t like game. My stomach has become very Anglicised.” (N. Jones, 2015)
threat. What next, eat the kiwi? I don't think so" (ibid). The disclosure even brought the Prime
Minister, John Key, into the network. He reasoned, "I don't think you could say they actually ate it. If
the marae is saying they served it, they would certainly know. But - as all of you will know - when you
go to a marae, usually it's communal dining with lots of different dishes put in the middle" (Forbes,
2015c). This recent period of contention has brought to light the controversy that has quietly
continued on in Northland over the past decade without much media interest. Renganathan claimed
there was contention when she found the Kererū was largely socially constructed to be "potentially
at risk" (p. 107) but proposed a future construction in that:

“traditional ecological knowledge (TEK) may provide local knowledge about
kereru and be a useful component of its management... Local communities
are already involved in some form of specific management of kereru.
Currently the information communities have seems rarely used as there
seems to be no acceptable method to monitor or evaluate the results of
local communities' data or activity.”

(Renganathan, 2004, p. 107)

However, no such development has come to fruition in recent years and ANT analysis has shown how
the OPP of “unknown” Kererū populations still persists as the gatekeeper to change in the current
network. During this period of ‘quiet’ controversy a researcher could have examined Kererū
management and found it to have stabilized but the most recent events provide that this is not the
case. Our analysis must now extend further, to recognize the ‘Conservation’ network may not be as
durable or stabilised as previously considered and to consider the threats to network stability, which
could result in a significant future change to Kererū management.

4.7.3 Current Concerns and Threats to Network Stability

Actant-networks which are unable to stabilize themselves to the necessary degree inevitably
disappear to be replaced by a network which can achieve convergence through the stronger co-
ordination of actants in its network translation. The current Kererū management network when
considered from this perspective can be said to have achieved significant stability. It has mobilized
the majority of actants in its translation while only a minority ignore its spokesperson and align more
strongly to the illegal hunting rival network – most significantly in Northland these represent Māori
who ignore the rahui and persist in illegal harvest, and more publicly, Sonny Tau.

The present Kererū management network could not persist without actants all remaining loyal to the
existing translation as establish by the Conservation Scientists. It can be seen that the network both
defines and is defined by the actants. An actant-network flourishes due to stabilization when none
of the actants which constitute it “would exist without that network in that form” (Callon, 1992, p. 89). Therefore the promotion of the network becomes a necessity, in the interest of all actants as the stability of the network “guarantees their own survival to a higher or lower extent” (ibid, p.89). The actants align around the problematization that provokes self interest, and the ‘interpretive flexibility’ (Bijker, 1994), or the divergence of the network diminishes. However, as controversy grows around Kererū management evidence suggests that different actants, artefacts and intermediaries re-align consensus among themselves and divergence occurs. The unquestioned ‘black-box’ of science in management that has been closed for so long is being opened, and actants are questioning their alignment to the OPP created by scientists. May (2008, p. 143) when discussing the ideas of Latour (1987) notes how “the stability of a black-box is influenced by the costs of reopening it” and with the Government unwilling to negotiate the Wildlife Management Act of 1953 or with those seeking an alternative management plan the cost of opening the black-box becomes lower and more appealing, and the need for promotion of the current network less appealing.

Within the current network a single conservation ethic dominates and is made unquestionable by those with power. There is no path for a consensus to form among all actants and the option it presents is to either accept the problematization or betray the network translation. Clare Veltman, a Massey University ecology lecturer, explains what she describes as a "deep green" (Saunders, 1996) philosophy that is being pushed by Forest and Bird and reflected within DoC (specifically within their Kaimanawa Wild Horses Plan) as being the only conservation culture that was politically acceptable, indicating an unwillingness to negotiate with other actants. She explains how DoC uses science prioritized according to the Conservation Act in developing its policies, treating conservation as a scientific not a cultural activity. Other conservation ethics such as the traditional harvesting of Kererū and muttonbirds or the hunting of waterfowl, game animals or trout are ignored in such a network and fall outside the criteria for consideration. She also explains in general terms, not specific to ANT, how DoC in conjunction with Conservation Scientists hold the position of power in the network “simply because departmental staff developed the draft management plans, often in conjunction with contracted Scientists, and by the time they were placed on the table for discussion, anyone opposed was already on the back foot” (Saunders, 1996, p. 1). Many actants within the network are unable or unprepared to present against the continued ban and the network stays intact by default.

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85 The term interpretive flexibility is used differently in other fields of academics so its application in ANT is best described by and understood through Patricia Everitt-Deeri (2008, p. 45): “A network can develop in two different directions, towards convergence or towards divergence of its actors. Adding new actors to a network at first increases their divergence. The processes of translation by which the will of one actor is transferred to another actor become initially more difficult because each new actor is already included in other networks that might have aligned him/her/it for different goals. What to do in and how to account for new situations, how to assess the meaning of an intermediary is unclear at the beginning. The divergence of a situation or an element of the network is its “interpretative flexibility” (Bijker, 1994). There is a process of mutual shaping between a new actor and an existing network. In the end neither the network nor the actor now included remains the same. The changes can be so subtle that they are negligible or they might be massive for either one or for both of them.”
For now it appears the costs of reopening the black box and the stability of the network is maintained.

However within the current network there are signs the privileged position and authority granted to science is being questioned. One specific example is the 2014 ‘Great Kererū Count’ (Fig. 4.15), which used public participation in scientific research, including volunteer monitoring, to establish informally the extent of New Zealand Kererū population and distribution (see Fig. 4.16). The citizen science project is organised by Forest & Bird, the Kiwi Conservation Club and Kererū Discovery and the collected data is claimed to “be shared with Scientists, local bodies and any community groups with an interest in Kererū” (Forest & Bird, 2014). The population numbers were publicized as having increased across the country with one of the members of Forest and Bird declaring “We have far more of these birds present now than I had when I was their age - over 50 years ago” (“Kereru numbers rising,” 2014). Wellington Region was also pronounced to be the “Kererū capital of New Zealand” (“Kereru capital,” 2014) as a result of the survey and their efforts to bolster numbers have been heralded as a success (ibid). The ‘Great Kererū Count’ represents an intermediary between the Intéressed Public, Conservation Scientists and Forest & Bird, one in which a solution is offered to circumvent the OPP of an unknown Kererū population which can only be known through science. The ‘Great Kererū Count’ presents an opportunity in the network to rearrange power away from the Government and DoC and locate it with the Intéressed Public. However, in this work no consideration is given to Māori goals and it is unlikely Forest & Bird, the Kiwi Conservation Club and Kererū Discovery would allow their citizen science project to be co-opted to support a return to cultural harvest of Kererū. This scenario is extrapolated and explored further in Chapter 5 when considering future change scenarios in Kererū management.

While the Great Kereru Count reported 19640 Kererū in 2015 and 14086 Kererū in 2014 it is rather meaningless in terms of by-passing the current OPP of an ‘unknown Kererū population’. This is because of a “high occurrence of duplicate reports, incorrect report locations and report times, several incomplete reports and the inability to verify them [reports] due to anonymous reporting option” (Brumby et al., 2015, p. 51). Infact the Great Kereru Count does not actually make claims as
to having knowledge of the exact Kererū numbers on either their website or media releases, simply claiming that number of Kererū which were reported by the public which is an important distinction. 

Brumby et al. found that the Great Kereru Count was ‘primarily a public engagement exercise with no scientific outputs’ (p. 61) and because of a lack of clear scientific research question, or any data analyse funding or mechanisms, was unlikely to be of any use. It is possible however that in future the Great Kereru Count could be aimed to achieve a 'nationwide kererū presence-absence dataset' (ibid, p. 67) that would provide information on Kererū distribution and numbers. This could potentially allow actant in future to use it as an inscription to by-passing the current OPP of an ‘unknown Kererū population’ but is not currently plausible. Wrongly inferring Kererū populations from the current Great Kereru Count would suggest population numbers increased by a quarter in one year between 2014-2015, which is highly unlikely. Notably no actant in the current network has actually used the ‘results’ of the Great Kereru Count in order to support their own claim in Kererū management. The Great Kereru Count, while a seemingly successful citizen science project, appears to have only successful engaged the public on analysis (Brumby et al., 2015). The results of the Great Kereru Count obscured any ‘true Kererū population number’ further by releasing a unscientific survey with no analysis, which is then misreported to the general public as "Keru numbers rising: survey" (Stuff, 2014) when there was only an increase in reported Kererū spotted by the public.

While the stability of the network overall continues to be maintained, there are those which seek a change from within the network by questioning the privileged position of science such as through the ‘Great Kererū Count’ and those who hold the network together, ignore their spokespersons and diverge into a rival illegal hunting network. This rival illegal hunting network has existed ever since the Government started limited hunting of Kererū in the late 1800’s and has persisted to some degree ever since, hidden in remote forests and largely unmonitored and unknown. It’s size never presented a major challenge to the dominant Kererū management network of the day. Recently, however, DoC has initiated a task force to tackle the rival illegal hunting network but has found it difficult in terms of funding, monitoring, public perception and prosecution (Newman, 2015). In one case three hunters in Northland escaped prosecution when a freshly severed Kererū head, and a pair of feet (but no body or bones) were recovered from their persons during hunting as the evidence was deemed ‘circumstantial’ (Waikato Times, 2000). A subset of Māori ignore their spokespersons and continue with their illegal hunting activities such as Sampson and Ogle who were convicted, not for the first time, in the Kaikohe District Court in 2006 for hunting, killing and possessing the indigenous wood pigeons in the Omahuta Conservation Forest. They had plucked the birds and discarded the feathers in the forest, not using them for any traditional

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86 With the exception of Forest & Bird who did not specifically comment on an overall population number or the Great Kereru Count but simply noted that ‘sightings of large flocks of kereru could indicate the population is recovering’ (Stuff, 2014).
garments or nor had they offered the birds to a dying kaumātua, a common request (Dinsdale, 2008).

Figure 4.16: Nationwide distribution of 6,408 Kūkupa presence and absence reports from the ‘Great Kererū Count 2014’ in Regional Council areas (Brumby et al., 2015, p. 19)

Following an increasing recognition of the issue and the prosecution of the poachers the Northland Conservation Board chairman, Mita Harris has called for an end to "free for all" hunting of the Kererū/Kūkupa, directing his call at Northland hapu in particular. Harris, who is of Ngati Toro and Ngati Hao descent, said, “evidence of illegal hunting was in the forest anywhere where there were large concentrations of miro trees” (Dargaville News & District, 2015). He claims the continued hunting had nothing to do with people going hungry or the state of the economy but simply that "It’s

87 While the Department of Conservation does not make any allowances for the talk for a dying elder, they do offer a process for accessing Kererū feathers for cultural use (Dinsdale, 2008).
an old traditional food, that’s why they’re hunted - but that’s no excuse. We haven’t asked ourselves about the situation they’re in. We just continue to take them. A lot has changed in the last 150 years. The forests are full of introduced animals, including us, and people hunt with guns, not snares” (ibid). As a result Harris and the Northland Conservation Board agreed to mount a renewed ‘Save the Kukupa’ campaign to educate and emphasise the issue in Northland, with hopes that the peer pressure within the iwi will lead to a decline in illegal harvesting (de Graaf, 2012).

The program was meant to be in place for the 2014 season but no sign of progress has been seen since. This seems due to funding issues as de Graaf (2012) claims the Northland Conservation Board had no funding for a campaign but would fundraise or use money set aside for its normal expenses. Because of the kaitiaki role, local iwi have said the hapu wanted to deal with the poaching within the community through education, before taking a hard-line approach, but because the birds were protected, going to court was always an option. Currently iwi say that despite their determination to stamp out the hunting themselves and the implementation of a rahui across most forests in Northland, they may have to prosecute some of their own if their message goes unheeded (Johnston, 2012). This potential outcome exposes the controversy even within Māoridom and the willingness of Māori spokesperson to act to stop to leakage of its members to the rival illegal hunting network. Harris also agrees that conviction is a ‘last resort’ and admits that since hunting occurs in remote areas that are difficult to access and costly to monitor for DoC the best option is to persuade iwi to place rahui on all Northland forests to prevent the hunting in the first place:

“I mean it’s my position law and enforcement is the last resort. It’s lore versus law. I put it over to them, it is time to stop. Put rahui in place, let’s get it known the numbers aren’t as great as they once were. I mean people used to go in the forest and bring back four birds - you just don’t do that anymore”

”Hapu need to take it upon themselves, look at what they’ve got in their rohe whether it be kukupa or kiwi, and decide on these things. It’s tino rangatiratanga, self-determination.”

Northland Conservation Board Chair, Mita Harris (as report in the Northland Age, 2015)

Consideration of the future of the network requires an awareness of ‘external’ threats – the entrance of actants or interactions from an outside network influencing the network in a way which cannot be predicted. For example, pathogens such as bird flu, predator incursions, disruption in the food supply
or increased need or poverty would represent unforeseen and unanticipated influences or challenges in the network which is primarily focused on who, if anyone, can harvest the Kererū – a moot point in the case of a extinction event or drastic decline in population. An example of this can be seen in Kakapo, a critical endangered bird species endemic to New Zealand with a total population size of just 126 birds (White et al., 2014). No actant in the Kakapo network is discussing the possibility of cultural harvest as there is consensus over the problem definition and no controversy over the statement that the Kakapo populations are simply too low to sustain hunting pressures. With this in consideration it would be unwise to consider Kererū immune from such considerations and to consider its fate distinct from the discourse of biosecurity and social justice in New Zealand. The introduction of further pests into New Zealand, whose interaction has already harmed Kererū breeding and population numbers (Base, Ranger, & Sutton, 2014; O’Donnell & Hoare, 2012), could significantly alter or destroy the Kererū network in an unexpected way.

The spread of diseases which currently are not widely recognized or discussed in any management plans for Kererū and which are well noted by Howe, a microbiologist at Massey University, could have destabilizing impacts (Gartrell et al., 2013; Ha, Howe, Alley, & Gartrell, 2011; Howe et al., 2012; Howe, Hunter, Burrows, & Roe, 2013). Howe who specialises in avian diseases has published multiple papers on parasites, avipox virus, and even introduced malaria and its effects on indigenous birds. The possibility for wide spread transmission of introduced disease is currently not mentioned in management plans or other texts introduced by key actants and acts as an example for an event which could change the entire network from the outside. This analysis has shown the currently network to still be largely co-ordinated around the original ‘Conservation’ network OPP of an unknown Kererū population which can only be known by science and its internal power structure has largely remained intact.

The prediction made by Renganathan (2004) that the role of traditional ecological knowledge would play a larger role in management has not come true. The events of mid-2015 prove that the controversy identified by Renganathan was simply hidden in the media and still is alive and well in Northland. It is unknown if the current events are a sign of network de-stabilization or simply a flare-up before the network again co-ordinates around it’s initial problematization. This is dependant on the cost of opening up the black-boxes and de-stabilizing the network but the more time passes and the more entrenched the Government and Conservation Scientists remain about their network structure, the less reason other actants have to remain aligned in their assigned positions and they will most likely seek a new network. The following Chapter is a consideration of this and attempts to use ANT to envisage how these future change scenarios, if they were to occur, could play out in the context of Kererū Management and how they might differ from the current management network.
Chapter 5: Future Change Scenarios in Kererū Management

5.1 Introduction

ANT is often utilized as a framework for the analysis of structural changes within a network through time, with consideration as to the distribution of power arising from the attribution of equal agency between human, and non-human actants (Davies, 2002; Latour, 1996b; Law, 1992a). This conventional application of ANT has been carried out in the previous Chapter to show how the Kererū management network has changed temporally, through the translations of various problematizers. However, one criticism of ANT has been its inability to extrapolate findings to predict future change in a given network, or even to theorize potential developments and power shifts (Doolin & Lowe, 2002). After all, conventional ANT analysis simply maps out networks as they appear rather than provide solutions. While this criticism may be well-founded in many historic ANT applications it has been challenged in recent research which suggests that ANT can provide insight into probable events using examples in the fields of diagnostic medicine (Degeling & Rock, 2012), genetic testing (Williams-Jones & Graham, 2003), and business intelligence (Papadopoulos & Kanellis, 2011). ANT is used here to investigate potential scenarios in the future of the Kererū management network. The aim is not to predict future outcomes in the network\textsuperscript{89}, but instead to offer possible outcomes.

Currently, NRM decision making, inclusive of the Kererū management network as previously set out, is dominated by scientific claims of uncertainty and knowledge (Holling & Meffe, 1996; Page, 2010). I focus here on the future scenarios as re-distributions of power between Conservation Scientists and other actants, which is the most likely scenario through which a network change is to be achieved, given the current network position. The following scenarios were selected for their broad coverage, as modes of knowledge governance and to allow for insight from other management paradigms to be applied to Kererū management. Through “knowledge governance”, new knowledge and experiences are accumulated, reinforced, exchanged and stored through a variety of mediums including “communication, negotiation, configuration or recombination of knowledge” (Fang, 2004, p. 5). Only through effective and efficient knowledge governance mechanisms can knowledge flow and be shared freely in a management situation. The scenarios described here represent a continuum in terms of knowledge governance and considers the effect that different network structures may have on directional knowledge transfer and application. Within the current Kererū management network the OPP of an unknown Kererū that can only become known through science, remains the gatekeeper to any significant network change. This strict one-way transfer of knowledge

\textsuperscript{89} Which “cannot be known but it must not be ignored.” (Ruona, Lynham, & Chermack, 2003)
from Conservation Scientists to the rest of the network, presents the major challenge to be overcome before any other future management scenarios can arise. Therefore, considering other forms of knowledge governance that allow for a bridging of scale levels from the national to the local and adapting other knowledge sources to new contexts, is therefore essential to achieving any future network change, in which power is re-distributed away from the Conservation Scientists. In order to understand the structure of the knowledge networks and trace the emerging processes of association this ANT analysis will rely on previous case studies to draw comparisons and understand how relationships may be formed. Understanding how and where knowledge is allowed to circulate, how knowledge is adapted and put into practice, and how knowledge transfer works is key to this examination. It will also be considered if a shift in knowledge generation and circulation could produce significant unintended effects or led to a significant deviation from the current network structure. Actor-networks represent the circulation of knowledge between actants, through direct association or inscriptions, and by considering power within the network and knowledge governance. This Chapter seeks to work towards a better understanding of the circumstances under which knowledge develops and is shaped in the transient, translocal setting and disseminated throughout the network. In the current network the knowledge producers and the Conservation Scientists maintain power through their strict one-way transfer of knowledge and by considering other forms of knowledge generation and distribution. This study aims to identify and better understand any likely shift in power in this process.

Three different change scenarios are selected and termed ‘Civic Science’; ‘Boundary Work’ and ‘Competency Groups’ to be subsumed within an ANT analysis and to investigate the potential for stability in the future. ‘Civic Science’ is scientific enquiry conducted, either wholly or in part, with participatory action from amateurs or the Intéressed Public and can be considered the closest scenario to the current science dominated problematization of the network. ‘Boundary Work’ involves the formation of organizations whose goal it is to generate and sustain significant synergetic links between knowledge producers and users, with a focus on integration of ‘other’ knowledge into science. The ‘Competency groups’ scenario represents the furthest transition away from the current network and involves intéressed actants co-ordinating together to reason the problem and solution as understood by each actant with a goal to facilitate the equal production of new knowledge. These three scenarios currently signify novel or ‘rival’ networks in waiting. In exploring these through current case-studies of Kererū, other indigenous wildlife management or other relatable examples of relevance it is assumed that any relationships identified from these examples could be scaled up and be regarded as representative if such a network were to gain prominence. Given that the Great Kererū Count 2016 is a collaboration between WWF-New Zealand and Kererū Discovery with support from organization’s such as Forest & Bird it is possible to view Great Kererū Count as a successful
inscription employed not to establish Kererū numbers accurately but to garner the Intéressed Public’s support for protection of Kererū.

5.2 Continuing the Current Trajectory – The Civic Science Scenario

From the previous work outlining the iterations of the Kererū Management network, the modern management network can be described as being dominated by Conservation Scientists while Western science persists as the OPP, with little power held by the “Intéressed Public” or the tangata whenua. Such an actant-network cannot be expected to maintain its current “punctualization”, in which the network is simplified to a resulting single actant ‘spokesman’, as enrolment fails and actants ignore their spokespersons and diverge into rival networks. The first prospective scenario investigates what could happen in future if the intéressement of actants is increased and the problematization strengthened by Conservation Scientists through direct involvement and interaction, to be designated the ‘Civic Science Scenario’. Civic Science is a term that was originally coined by Rick Bonney, whose interpretation of the concept provided a basis for its current definition or interpretation. While the ideas of Civic Science are often considered vague and tokenistic (Camino & Zeldin, 2002; Leonard, 2012; Mohammadi, Norazizan, & Shahvandi, 2011), in this research it is defined to be an umbrella term for the participation of non-Scientists in scientific research by integrating public outreach and participatory action research (Bäckstrand, 2003; Jasanoff, 2003). Participatory action research aims to create a framework in which inquiry and analysis is more freely available to different actants and is committed to valuing other knowledge sources, not just those of the scholar. The public outreach of science has some similarities to citizen science, but generally involved outdoors or other public space in which knowledge and information may be communicated. A revision of participatory action research is reflected in the "Great Kererū Count” (see page 66) and the “New Zealand Garden Bird Survey” (see Fig. 5.1 below). These ‘counts’ equate a reconciliation whereby the Intéressed Public is enrolled to record the distribution of the Kererū and is provided to, and translated by, Conservation Scientists who are better positioned to identify future threats to the Kererū such as “land development”, “illegal hunting” and “pests” (Brumby et al., 2015; Ormrod, 2013).

In this network the Conservation Scientists persist with the current problematization and OPP in the claim that a sustainable management plan cannot be enacted for Kererū without having accurate

90 As mentioned previously tangata whenua is a black-boxed concept which when opened devolves into iwi, hapu, runanga and corporations. These actants may chose to sufficiently betray their spokesperson and be defined on their own terms but until then it is easier to consider them as one actant in the wider network.

91 Interestingly the earliest citizen science project which was started in 1900 and still continuing today, also involved the counting of birds - the Christmas Bird Count is an informal census of birds in the Western Hemisphere by volunteer birdwatchers and administered by the National Audubon Society. The intent of this work is to offer population data for use in science, particularly conservation biology, however many people simply contribute for leisure (Awasthy, 2012).
information as to their current population size and dynamic, and therefore scientific monitoring is the only way to save the species (ibid). The Kererū remains enrolled as an object of manipulation in the network by simply making itself available for recording, while there is no further translation made which allows for tangata whenua intéressement as separate from the Intéressed Public. This distinction between tangata whenua and the Intéressed Public is essential for any future management scenario to achieve significant stabilization and alignment from actants as each group has very separate, often conflicting agendas. The Intéressed Public generally desires for the bird to be conserved and protected, to continue enjoying Kererū’s presence in gardens and forest while tangata whenua seek for Kererū to be sustainably managed, to conserve and grow the Kererū population so that it may be able to handle the pressures of cultural harvest in the future. This ANT analysis shows that while these goals are not diametrically opposed to each other, neither should they be radically simplified and considered aligned. This represents what Conservation Scientists have done currently and it risks ignoring tangata whenua as a group while making it difficult for them to remain successfully enrolled in any network. This is discussed further in Chapter 7.

Figure 5.1: Example of Civic Science in the current Kererū management network – Garden Bird Survey Organized Between Landcare Research, Forest & Bird and the Ornithological Society in New Zealand (New Zealand Garden Bird Survey, 2015)

From this reasoning it can be concluded that the current network is very close to a ‘Civic Science Scenario’ and if this were to develop as the next iteration of network, Conservation Scientists would
still maintain power and all other actants would be forced to pass through their OPP, but with a little more involvement and interaction than at present. A complete shift to this Civic Science management network would therefore not be very difficult given the present similarities and growing popularity and support for the “Great Kererū Count”, a current Civic Science project in the network which had 8700 participants in 2015, versus 7000 in 2014, an increase of 25% of Intéressé observers in just one year (“The Great Kererū Count,” 2015). This could be due to the increased media coverage around Kererū since mid-2015 but if the coverage persists and public engagement with Kererū management and controversy continues it is likely this shift to “Civic Science” management will occur as the Intéressé wishes to have more of a role in its management than before. Such a development would be the result of both convergence, where the Intéressé’s activity fits easily with the Conservation Scientists “despite their heterogeneity” (Callon, 1991, p. 199), and divergence in the network, through which the tangata whenua are unable to accept their prescribed role in the network and continue to de-enrol. The subsequent punctualization or de-construction of the network in this scenario would therefore depend on the ability and willingness of the tangata whenua to align with the Intéressé translations, their interpretive flexibility, as none was provided for them.

While the “Great Kererū Count” represents one example of a Civic Science scenario it is unlikely to be able to successfully mobilize a new network without rivalry. A potential rival Civic Science project was undertaken, the Garden Bird Survey (Fig. 5.1) organized by the Landcare Research (a Government entity charged with conducting scientific research – a hybrid actant between the Government and Conservation Scientists) with support from Forest & Bird and the Ornithological Society. The Garden Bird Survey asks the Intéressé to record all garden bird species, rather than just Kererū. The Kererū however still obviously plays a prominent role being featured on the front page of the brochure in full and is the only species to be described by its Māori name. This competing project represents a new intermediary, deployed by the Government and Conservation Scientists in an attempt to keep the Intéressé enrolled in their problematization. The Garden Bird Survey characterises an attempt by the Government and Conservation Scientists to maintain control over the strict one-way knowledge flow in their network translation that the Kererū Discovery Project92, through their “Great Kererū Count”, threatens to undermine. The Garden Bird Survey gives the Intéressé a figurehead role in order to remain intéressé in the Government’s translation. It also allows the Conservation Scientists to appear to loosen their monopoly on knowledge within the network, which informs policy and management decision-making, however they are still the sole OPP through which the raw data collected by the Intéressé can be analysed and ‘known’. The

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92 “The original Kererū Discovery Project was launched in 2005 as a partnership between Te Papa Tongarewa Museum of New Zealand (original coordinating partner), Wellington Zoo, Victoria University of Wellington, Zealandia (Karori Sanctuary Trust), and the Department of Conservation” (“The Great Kererū Count,” 2015)
Conservation Scientists retain their privileged position in the one-way flow of knowledge and the network translation remains largely unchanged. It cannot be predicted which form a Civic Science network in the future would take if it were to occur but it is likely to retain the current OPP as established by Conservation Scientists. However already there is competition, not only from the Garden Bird Survey but other groups such as Dunedin based Project Kererū (Brumby et al., 2015), Banks Peninsula based Kaupapa Kererū (Schotborgh, 2005) and Auckland based Kaipatiki Project (Scott, 2007). The final outcome of these initiative and their impacts will be dependant on who is involved and how popular and durable the new projects are.

Figure 5.2: A social media post to followers of Project Kererū’s Facebook page explaining that Kererū would become threatened if hunting were to be allowed again. The post references the Moa, a well-known example of what is considered to be a extinction caused by Māori over-harvesting leading the groups readership to associate these events (Project Kererū, 2015)

No matter which Civic Science program is to be ultimately successful (indeed they could work together or another unknown contender could be successful) this scenario would present only a superficial shift in power from the Conservation Scientist, who have a significant professional stake in Kererū management. The Intéressént Public’s agenda could theoretically allow them to modify and create impact upon the Conservation Scientists research due to their position as novel data collectors, and thus undermine the authority of claims. However, the Conservation Scientists would still dominate the translations of the enrolled actants, thus preserving control over Kererū network translation. In assessing the probability of such a network eventuating it seems that while the intéréssément of the survey (and greater public involvement in the science) may better align some
actants, the ‘sustainable use’ approach to Kererū resources anticipated by some Māori, remains ignored. An example of this can be seen in Fig. 5.2 whereby Dunedin based Project Kereru is claiming any return to hunting would result in a ‘threatened’ Kererū population.

It is unlikely that any network which is problematized by Project Kereru or similar groups in the future would be able to enrol tangata whenua as such a claim leaves little room for tangata whenua to manoeuvre and interpret the current OPP which suggests that harvesting could be sustainable in the future if population numbers are known. Such a scenario would likely result in the continuing leakage of tangata whenua to the rival illegal harvest network to undertake their cultural harvest, and would threaten the existence of any other management network. Such a ‘Civic Science’ scenario is therefore unlikely to result in network punctualization. This scientific realist view demands that Kererū as knowable by science is real, and will progress to become better understood by science, independent of what any other knowledge might claim about the Kererū. In order for a ‘Civic Science’ scenario to punctualize it would be critical to engage with tangata whenua and not black-box their goals inside that of the Intéressed Public, as doing so limits their engagement and ability to align in the network. Critically, this would involve developing a network that allowed for a return to sustainable, cultural harvest so as to avoid betrayal to rival hunting networks. For this to be tenable it may involve considering the sustainability of harvest at a local level rather than the national level as is conventionally considered by the Government. It is highly likely that some Kererū populations in New Zealand could withstand limited hunting and the ‘Civic Science’ model could be used to identify these at a local level. Tangata whenua would then have the option in their local area of identifying why Kererū populations are not huntable yet and work towards a management plan to deal with local issues to achieve their goal. While this solution may be imperfect as Conservation Scientists would still have control over information flow it allows for an approach in which local areas are considered rather than simply a national level agenda and tangata whenua are more likely to align as they are prescribed a position in which they can align with and allows them a path to sustainable harvest. ANT helps expose how ‘Civic Science’ still allows Conservation Scientists to maintain power through assertions that there is only one reality to be revealed and that science alone provides the means of identifying it. While it could be possible for a ‘Civic Science’ scenario to punctualize, this is unlikely given the current claims made about cultural harvest being unsustainable as a whole (Fig. 5.2) and the lack of attention currently given to tangata whenua agendas. As a result when deliberating the next alternate scenario for consideration in the future of Kererū management such a scenario needs to allow for multiple realities or knowledge sources to be utilized.
5.3 The Ideals of Co-Production – The Boundary Work Scenario

The previous scenario of Civic Science illustrates the integral limitations of a science only approach, chiefly that Conservation Scientists still maintain power and distribution of knowledge. This is articulated well by Gieryn (1983) who describes how science demarcates itself from other forms of intellectual activities to preserve its authority and autonomy, thus perpetuating its control on knowledge production. Therefore the next scenario to be considered is the ‘Boundary Work Scenario’, an attempt to differentiate and bring other knowledge sources into the decision making process. The initiation of Boundary Work in management demands the creation of an intermediary, a boundary straddling organization which is able to mediate the divide between science and policy, offering a solution within environmental management that allows for the legitimization of ‘other’ knowledge sources (Guston, 2001). Boundary Work achieves this by providing a network for actants interaction through contestation and negotiation that results in the provision and translation of ‘other’ knowledge to compliment the input of science (Guston, 2001). This scenario represents the closest scenario to that predicted by Renganathan (2004) to occur through future constructions where partnerships found between “scientists, universities, conservation groups, local government, and communities” are likely to result in new information gathering processes which “may not be purely scientific as it will be based on local and indigenous knowledge systems” (p. 103).

While Renganathan does not focus on this future construction she does give examples of the management used by Rakiura (Stewart Island) Maori on their Titi93 harvests, which will be considered further in this Chapter. Using the case study of a cross-cultural participatory research partnership, or ‘Boundary Work’, occurring with Titi in Southern New Zealand (Henrik Moller et al., 2009) it can be seen how such a network may develop in a Kererū management context. The partnership that took place with Titi management involved Conservation Scientists and the Rakiura Māori, who through the Rakiura Tītī Islands Administering Body (RTIAB)94, a boundary organization, intended to develop traditional ecological knowledge (TEK) and solve the problem as co-operatively problematized by both the Rukiura and Conservation Scientists as a need to achieve improved harvesting (Moller, 2009; Moller et al., 2004; Stephenson & Moller, 2009).

This research undertaken through the RTIAB is different from ‘the Great Kererū Count’ in the Civic Science scenario, which represented a one-way flow of information from the Intéressé Public to

93 Otherwise known as sooty shearwater or Puffinus griseu. Titi will again be used here in order to allow for direct displacement from one frame of reference to the next, allowing for ‘free association’.

94 The Rakiura Tītī Islands Administering Body (RTIAB) is a “committee of 10 members elected by the community to give effect to the Ngāi Tahu Settlement Act (1998) provisions. The RTIAB has special responsibilities for developing bylaws and management plans for what were formerly known as the “Crown Tītī Islands”.” Crown Islands were mistakenly retained by the Crown for the use of other Rakiura Māori who wrongly missed out on allocations on the Beneficial Islands. Ownership of the Crown Tītī Islands was then returned to Ngāi Tahu iwi (tribe) in 1998 as part of redress for broken Treaty of Waitangi promises to provide ongoing access to mahinga kai (food gathering places) for Māori” (Henrik Moller et al., 2009, p. 3)
Conservation Scientists to interpret. The RTIAB by comparison was a boundary spanning collaboration, an inflow and mixing of both TEK and science from which management decisions were then made. Core conditions for the RTIAB to function included “trust between parties, effective communication of the science, equitable decision-making responsibility, and building scientific capability and monetary support to enable meaningful participation” (Moller et al., 2009, p. 2).

Above all, the fundamental requirement identified for success of this boundary organization was mutual respect for each party’s knowledge base e.g. science and TEK. One major distinction between this network and the current Kererū management network is that cultural harvest of the Titi is lawful, with network control achieved by the Rakiura Māori (ibid) however such differences also provide contrast between the differing approaches to provide more depth to the ANT analysis. Titi is also not currently classified as endangered and is located in remote offshore islands in Southern New Zealand unlike the Kererū, which is often located in areas with significant human populations.

Kererū, as a charismatic species has more public recognition which would undoubtedly assemble more opposition to any attempt to harvest them. From a management perspective this dual use of science and TEK in boundary organizations could help intéress both Conservation Scientists and Māori in a solution for Kererū. This dual use, however, is unlikely to sufficiently enrol the Intéressed Public in any proposed solution.

The Titi network briefly referred to reveals how the involved Conservation Scientists created and then took power in the boundary spanning research organization that was intended to facilitate the TEK held by the Rukiura. This resulted in the intermediary of knowledge between Rukiura and the Scientists being controlled and selectively manipulated to allow it to fit within their scientific parameters and methodology, only using TEK when it slotted in with their framework and providing for a more ‘effective’ means of data gathering (Moller, 2009). Examining the interaction between the Conservation Scientists and the Titi in this case results in the interrogation of the scientific realism claim and the efficiency of the knowledge negotiated within the Rakiura Titi Island Administering Body (RTIAB) boundary organization. This resulted in some Titi refused to enrol in the problematization, obscuring their numbers from sampling methods and resulting in inaccuracies in the knowledge produced (Stephenson & Moller, 2009).

From this analysis it can be seen how boundary organizations exhibit the potential to redistribute and translate the network to gain power in favour of those who control such organizations. Boundary work in this case can ultimately be seen

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95 Rukiura tangata whenua are provided power through legislation of the Government and mediation through the Waitangi Tribunal (Moller, Berkes, Lyver, & Kislalioglu, 2004). This power is conditional and can be withdrawn if conditions imposed such as suitable harvest are not met, however is unlikely to be as Kaitiaki or guardians principles are currently being employed (ibid)

96 There are currently estimated to be over 5 million Titi in the 36 offshore Titi Island Though Titi is currently extint in most regions of mainland New Zealand (J. Newman, Scott, Moller, & Fletcher, 2008)– There is an effort underway to re-introduce Titi from these offshore inslands to Cape Kidnappers Sanctuary in Hawke’s Bay (Morgan, 2010)
to be about ‘differentiating’ rather than boundary spanning, or at least only spanning when convenient as seen when the Conservation Scientists took over the RTIAB and only selectively used TEK when it fit within their scientific framework. Moller (2000) implies that this lack of acknowledgment of TEK or other knowledge sources (not just by scientists or resource managers) in this case might be due to a “fear of the unknown” (p. 15), and the need to maintain control over knowledge generation. The ideals of Boundary organisations create an OPP through which even science is forced to pass. In this context it was inconsequential as Conservation Scientists co-opted the RTIAB but if another actant controlled the group a shift in knowledge output could conceivably occur. Actants in this case were required to enrol and interact with the RTIAB in order to have their knowledge translated, while those who do not seek to negotiate either enrolled in the translation or diverged. In the Titi case this is represented by the Intéresséed Public who were not translated into the network and thus push for a divergence to a network which is not managed by Rukiira (Moller, 2009; Moller et al., 2009). A push in this case could take any number of forms including a circulation of a petition to try force the Government into ending or changing the current management practices. The Intéresséed Public could also attempt to notify and mobilize the Disintéresséed Public [which is arguable an even bigger macro-actant in the Titi network than in the Kererū network] as an actant in the network which is less easily ignored, forcing a new translation.

Applying this insight from a ‘Boundary Work Scenario’ to a theoretical future Kererū network reveals how Conservation Scientists and tangata whenua may ‘co-produce’ knowledge which could allow for a return to cultural harvest in some regions while demonstrating how power in the network would likely still remain with the Conservation Scientists, through their control of the boundary organization, and therefore ultimately with the Government. This is an outcome not dissimilar to the Civic Science network. In pursuing such a network it would be important to allow for putting aside of the scientific realist claim within the boundary organization, but this is unlikely to happen as Gieryn (1983) describes, using historic examples, how Scientists use boundary work to gain and control power, credibility, and resources. Even if convergence in knowledge were to occur within the boundary organization, such a situation would perpetuate a dualism of TEK and science. This would allow for Conservation Scientists and tangata whenua to gain power, while failing to enrol other actants seen in the historical network such as Kererū and the Intéresséed Public who would not contribute to the ‘co production’ of knowledge. As a result actants which failed to enrol would be removed and un-intéresséed in any resulting management decisions. The punctualization and stabilization of the network requires the effective enrolment of all actants in the network, which is the starting point for the final scenario; an attempt to imagine a network dominated by a more inclusive approach to knowledge production and decision-making.
5.4 Multiplicities of engagement – The Competency Group Scenario

A final scenario to be considered as a future network development in Kererū management is termed the “Competency Group Scenario”. Competency Groups were developed by Whatmore, Lane, Odoni, Ward, & Bradley (2011) in a conscious attempt to advance a research methodology which translated the generative knowledge of environmental controversies, using the context of flood management in the United Kingdom towns of Ryedal and Uckfield to deliberately and fundamentally contest the “conventional dichotomy between ‘universal’ scientific expertise and ‘local’ lay expertise” (p. 2). While this flood management example has little relevance to indigenous rights and cultural harvest on first inspection, it does allow us to examine a collaborative approach to knowledge generation that could be useful in NRM through examining claims and finding management solutions.

To achieve this goal of better flood management in the United Kingdom, Competency Groups consisting of both local group members and ‘experts’ who were assembled outside the usual institutional constraints with the goal of providing a proposal to flood management policy. The supposed benefit of operating outside of institutional constraints is that problem solutions can be recast or re-framed another way and science can be used and delivered differently outside existing constraints that would usually link problem and solutions rather tightly. (Duncan, pers. Comm., 2004).

By working outside of traditional institutional constraints, scientists are forced to re-position themselves away from their traditional positions of power in knowledge production and as a result the “prevailing alignments of expertise are unravelled” and new associations assembled in terms of knowledge production (Whatmore et al., 2011, p. 1617). This new knowledge was to be generated by following scientific knowledge claims in relation to existing flood management policies; encouraging alternative ways of framing and amending the issue and producing collaborative knowledge. This approach challenged dominant scientific claims and engineering departments with their one-size-fits all approach to dealing with flood management and allowed for ‘other’ knowledge, including local knowledge, to be considered (ibid). The end result of this was a “Bund” model of flood management that was recommended by the Competency Group. Bunds are small dams or low earth embankments, and this “Bund” model considered the effect of these on flooding and only was intended for use in this specific locale. This was opposed to a generalized [working in any/many locations] “physically based, distributed, hydrological model” (ibid, p. 1623), CRUM2D v 3.1, which measured infiltration and run-off rates and the traditional flood management approaches such as

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97 Experts here included hydrological modellers, experts in numerical modelling, and members of an interdisciplinary project team trialling CGs as a new methodology for public engagement (Whatmore, Lane, Odoni, Ward, & Bradley, 2011).
channel maintenance; channel dredging; higher defensive walls and a diversion tunnel that was preferred by the council.

Through this process, the Competency Groups re-distributed the power within the river management network, bypassing engineering methodology as the OPP through recognition that this knowledge is no more or less ‘correct’ than knowledge that was specifically generated by the Competency Groups (ibid). As a result the Competency Groups still used science but in a different way; outside institutional constraints they were therefore able to achieve a novel problematization. The end result however, was the refusal of the Competency Groups Bund Model submission by the Planning Committee who declared “The submissions lack any meaningful justification to demonstrate the rationale for the size and position of the bund, and ultimately its effectiveness in reducing noise levels at the site” (Uckfield News, 2012, para. 2). This outcome demonstrates still, that the greater network in this case was maintained by the Planning Committee, who were unable to reconcile this course of action with their problematization of the network and the Competency Groups plan was unable to successfully pass through the OPP – an important lesson for future management cases, where accountability and over-sight need to be carefully managed in order to utilize this approach. There needs to be a clear will on the part of the problematizer to share power with the Competency Groups and to commit to their findings, no matter if they are reconcilable or not with their OPP, otherwise there is no point in their existence.

When this approach is envisaged for Kererū management, a network can be seen in which actants included in the Competency Groups negotiate a new space with a degree of autonomy that separates them from the influences of other actants outside the group. Within Northland this network could include the local Conservation Board, local iwi, DoC, Conversation Scientists and intéressed members of the Intéressed Public. It is difficult however, to sensibly theorize a group with involved non-human actants such as the Kererū. As such, the Competency Groups could represent a network within a wider network, or a black-box, from which outputs, decisions or new OPP’s are unquestioned. It is important to recognize these lessons from the Uckfield case-study and apply them in any Kererū management Competency Groups. To create a viable network there would need to be input from the Government in terms of a willingness to re-negotiate laws and legislation in order to allow any management practices recommended by the Competency Groups to be successfully translated. Whether the Competency Groups then were the new problematizer in the network or were simply co-opted and negotiated into a network translated by the Government (such as the Preservationists in the earlier Preservation translation) remains to be seen. This is obviously not a compelling reason to use Competency Groups but could be avoided by an upfront and transparent effort to cede or share power in decision making with them. Competency Groups in this way face the same problem
as the United Nations General Assembly in with the Assembly [or Competency Groups] votes and the Security Council [or the problematizer] is able to veto anything that is not in their best interest.

Competency Groups would still need to distribute power unevenly if they were to be effective, after all for a network to punctualize, actants must be strongly coordinated behind only one or a few actants, in this case the Competency Groups. Actants would be likely to enrol in a problematization that the Competency Groups were the best decision makers in Kererū management, as it would allow for equal representation inside the group and traditional indigenous knowledge and values could be negotiated alongside the science and public ‘conservation’ claims and any other knowledge forms and values actants deemed necessary. Any actant could theoretically be part of the Competency Groups, although the silent Kererū would require a creative solution to involve, and groups could operate at required local and regional levels, rather than a broad application of a national ‘no take’ decision in the current iteration, perhaps a key requirement for enrolling Kererū which are distributed unevenly across New Zealand. In Northland these could include experts, both certified (academic natural and social Scientists) and noncertified (local people with knowledge of Kererū), for whom Kererū management is of concern. Such an approach would bring all human actants who wanted to be involved in the process together therefore giving any proposed problematization and solution a higher chance of achieving support in the network simply by more actants being involved in the process. Having DoC, Scientists, tangata whenua, the Intéressed Public, hunters and any other actant wishing to be involved in the room to collaborate towards a solution, rather than having one imposed on them would have a higher chance of successfully resulting in stabilized network. A dominant Competency Group, if permitted power by the Government or DoC, would allow for a more successful translation of actants in the network through understanding their values, relationships and understanding of their issue, with decisions that are more likely to be collaborative and be sensitive of different actants. As Whatmore et al. (2011), shows, actants are more likely to accept unfavourable outcomes if they have input into the decision, which could be understood as the tangata whenua remaining engaged even if cultural harvest is not permitted in an area due to result of knowledge collaboration. Similarly the Intéressed Public is more likely to remain engaged if cultural harvest is legitimized as they could understand the desire for ‘sustainable use’ and their collaborative production of knowledge would assumedly have shown it to be sustainable. This would also allow for a closer translation of the silent Kererū through traditional indigenous knowledge, local knowledge, and scientific knowledge, as well as situated and communicated knowledge that prove a more complete way of knowing. While the “Competency Group Scenario” would represent the furthest divergence seen from the current network form, it is also the most likely to punctualize due to its closer translation of actants, while drawing actants from rival networks in waiting.
5.5 The Complexity of Actuality – Making Inferences and Drawing Conclusions

Through this contemporary application of ANT the scenarios chosen have been examined and applied to an imagined future change in the network, seeking to understand how such networks might look, what implications there are, how would actants be translated and in what shape would divergence occur. In doing this it was shown repeatedly that ANT, much like science, does not deal in certainty and that there is no promise of the future in these words but this does not dictate that all findings are irrelevant. This analysis has successfully contributed to an understanding of the current network by looking back for clues in the historical network. By imagining other potential scenarios it is possible to compare and contrast with other similar networks to better understand the current network and its elements, as well as what and how developments could eventuate.

This analysis also observes how ontological claims can come to dominate a network and attribute power, in these specific cases how importance designated to specific knowledge sources such as science, TEK or generative knowledge results in varying power structures and inclusive translations. Another outcome was an understanding of how the successful translation of actants is critical to the punctualization of networks, and when actants, such as Māori in the citizen science scenario, are not successfully translated they threaten to diverge to rival network and create instability. The goal here is not to provide a solution, but rather a presentation of plausible realities that could be drawn from, examined and built towards. The ‘Civic Science’ scenario reveals to us the domination of scientific realism and how the Intéressed Public engage with it, while ‘Boundary Work’ reveals an approach which engages with TEK in a selective manner, providing an unequal ground for coproduction which risks only partial enrolment of both Intéressed Public and tangata whenua actants. Finally ‘Competency Groups’ provide a new ontological approach in the network, seeking to disseminate and understand knowledge and values collaboratively, but a style that could still fail to account for the agenda of the Kererū, and risks being implemented in a way that manipulates the process. In striving for an ideal network such considerations can be used, to rejuvenate and produce new configurations and possibilities, and while it may not be possible to achieve a ‘win/win’ management scenario in which all actants are successfully translated, a more equal trade-off could likely be achieved.
Chapter 6: Discussion of Results

6.1 Introduction

The aim of this research was to establish a historical overview of Kererū management since the arrival of Māori in New Zealand and to provide insight into the current management of Kererū, which was last studied in detail by Renganathan (2004). This Chapter will return to my original research questions and link theory with the research findings by discussing various intersecting themes and issues that have arisen over the course of this research. The research questions as originally stated are:

- How has the management of Kererū progressed, if at all, since it was last extensively studied by Renganathan in 2004?
- What analytical insight can undertaking a historical analysis provide to current Kererū management?
- What understanding can the tools of Actor-Network Theory add to cross-cultural issues such as Kererū management?

The role ANT can have in examining current NRM issues will be discussed considering the various tools that have been applied in the course of my research. Next the research findings will be used to identify themes in Kererū management as a cross-cultural issue, and consider what value ANT can have in examining future management networks with various forms of interactivity between members of disparate cultural groups. Finally, drawing from this research experience, the role of ANT will be evaluated to establish its value as a theoretical or practical guide for Kererū Management and NRM more broadly.

6.2 ANT in Natural Resource Management

ANT has assisted in this study of Kererū management by trying to put aside preconceived notions of actant influences. ANT encourages a more careful treatment of pre-existing networks, groups or connections, claims or attributions about what is true or not, and allows for the exposing of networks and connections as they simply appear, or in places where it may not have originally been anticipated, for example, by including non-human actants. This thesis work still manages to stay true to these ideals, even through the usage of Renganathan (2004) as a social constructivist comparison, because the network structure found were established independently and corroborated through a range of different sources. Admittedly however the aspect of mandatory agnosticism, or analytical
impartiality, required within ANT does represent one of the most significant challenges for a researcher in applying ANT within NRM, or in other subjects. It is extremely difficult for a researcher to undertake an approach absolutely free of any preconceived influence, and it is likely that, to some degree, the usage of Renganathan (2004) influenced the structure of the networks found. During this analysis I had to be aware of this risk, seeking to ensure the network described was exposed simply as it appeared and without bias. This was attempted through trying to substantiate any connections found through multiple sources wherever possible and building the network ‘independently’, which was made easier with no previous ANT analysis of Kererū Management having been undertaken.

While Renganathan presents a comprehensive social constructivist overview of Kererū management she does not attempt to map out any networks. The similar findings in terms of event significance or inscriptions can be seen as a validation of both approach’s, and ANT can complement a social constructivist approach by revealing new connections. In this research connections were made which were not considered by Renganathan’s social constructivist approach such as the contemporary links between contests for funding and campaigns by conservation boards for flagship species, or the connections between Kererū and Māori in pre-European times and the rituals that bound their relationship. The discipline of NRM is by its very nature a socio-natural one and consequently there is a need in this field, as well as in the smaller sub-field of Kererū management, to consider the coproduction of culture and nature together. However currently the privileged methods of sociological analysis do not allow for by systematically ignoring the role of nature and non-human actants.

NRM issues are not binary, able to be easily examined through separation and purification into nature and culture. Rather NRM issues are complex, involving a hybrid web of both human and non-human actants that create a network, which is actually seamless “simultaneously real, like nature, narrated, like discourse, and collective, like society” (Latour, 1993b, p. 6). In studying the whole network however, confusion is added from a network perspective by being forced to consider which pieces of information need to be emphasized and which are minimized in management decision-making. Science and TEK, Expert and Lay knowledge, all are equal in an ANT analysis and all should be considered. This challenge can be overcome by the utilization and acknowledgment of heterogeneous actants, thereby avoiding the red herring questions of ‘is it social?’ or ‘is it natural?’. Instead we should be focused on the key question of any network “Is this association stronger or weaker than that one?” (Latour, 1988, p. 27). In the Kererū Management network science simply becomes the intermediary through which Scientists linked to other actants undermine all other associations with competing problematizers in the Conservation iteration of the network (Chapter 4.6). The ANT analysis did not privilege science or TEK, allowing each inscription to present and
expose the network as it was and to showcase the varying levels of association each intermediary was able to facilitate in the network. By shifting the focus of the investigation complex issues can be viewed from a new perspective, and ANT provides a varied methodology for analysis with which to interrogate the Kererū Management issue that is a significant shift from the conventional NRM approach. It has shown a finer level of understanding for the issue including revealing connections not previously found in other approaches and could be useful as a complementary approach for other NRM issues in future.

ANT not only provides an complementary approach to NRM process but was specifically cultivated to analyse the conditions that exist in NRM in which “it is difficult to separate humans and non-humans and in which the actors have variable forms and competencies” (Callon & Blackwell, 2007, p. 183). In analysis of the development in Kererū Management over time, it was necessary to determine which individual inscriptions were relevant and told a part of the story, how they were related and what they informed us of at the time. The appreciation of the role of legends and whakapapa in the pre-European network allow us to understand how the Kererū was managed sustainably in this period, or how travel writings in the 1800’s encouraged the hunting of Kererū for support, a juxtaposition to the strict hierarchal society many colonists came from. Many other issues within NRM research may be gainfully assisted from an informed ANT evaluation, which is in a position to clearly picture and investigate such issues in a novel and complementary way. ANT offers an improved understanding of the historical claims at play in a given issue while potentially revealing previously overlooked connections which could lead to better or more informed management.

Through examining the problematization of a network, and the recognition of how actants relationships defined themselves and others we can begin to recognize the network’s ‘texture’ – how it is shifted and weaved together. In the circumstance of the Kererū network, its management has not been static, but dynamic and fluid – Its OPP changing five times since the arrival of tangata whenua in New Zealand. These changes resulted from strengthening of new associations concurrent to the undermining of old associations and the rebalancing of power between actants. This most noticeably includes the New Zealand Government that had to redefine itself and its problematization to remain in control, first in the pressure of Preservationists and then with the growth of conservation and science. A network can be no more than the sum of the relationships between actants and therefore key to understanding this is identifying their obstacles and related goals, a task which was completed in this case by historic proxies – inscriptions which were because of active agents capable of assembling, shaping and connecting the network and allow us to envisage how objects are enacted, subjects constituted and most importantly; relationships inscribed. Management plans, Government Acts and Reports, Books, Speech’s, Formal Accounts, Letters, News Reports and Scientific Papers were just some of the inscriptions sampled in this study to help piece
together the historic Kererū network without which it would have been difficult to accurately consider and articulate the historic OPP’s. In the absence of these inscriptions, the current OPP of science in management and the problematization of an unknown Kererū population could conceivably have been established, but analysis was unlikely to have revealed changes in the historic network such as how the Government only initiated a change of policy from hunting in the face of pressure from Preservationists. Likewise it would have been difficult to establish that the historic pressure on Kererū populations was not simply a result on Māori hunting, but also from habitat loss, competition and predation by introduced mammals such as stoats, cats, possums and rats and European hunting for sports. The debate surrounding a return to cultural harvest and current management changes when it is considered how Māori presided over a sustained hunting network, for Kererū at least, from their arrival in 1300 AD through to the arrival of Europeans in the 1800’s. After this point the New Zealand Government took control in the network and presided over a large and sudden decline in Kererū numbers that has not recovered to similar levels since.

In carrying out this ANT research *a priori* assumptions were avoided as far as possible about the strength of the actants relationships. This provided a novel basis for evaluation of the network. Detecting all heterogeneous elements presents ‘a castle in the air’, an ideal prospect which is both unrealistic and impractical in most networks given their scale and complexity (Hu, 2011) and results in what is known as the “problem of selection” and it becomes the researchers duty to identify the most concerned actants (Krauss, 2005) . The actants who were presented in the Kererū case study are the ones who are found through historical inscriptions when it comes to different views on the role of management with regards to their generalized time periods. Through different problematizations Kererū Management is led in very different directions in each network transition, and the actants who then wish to speak are give a chance to be heard. The problem of selection bias on the part of the researcher when describing the network is not easily resolved i.e. who should speak? Which point is the line drawn? Yet the selection undertaken in this research is meant to reflect a continuum of distinctive views on Kererū Management, the role of conservation and hunting and how this adds up to a coherent explanation of the Kererū Management issue.

### 6.3 ANT in Cross-Cultural Issues

NRM strategies and plans, and more specifically their effective adoption and implementation, have become a topic of ANT research as evidenced by literature (see Edwards & Steins, 1999; Holifield, 2009; Newton, 2002; Rodger, Moore, & Newsome, 2009; Steins, 2001). Conversely, the ability of ANT to be applied to cross-cultural issues has been significantly less considered, perhaps because of the inherent complexity and uniqueness of cross-cultural issues themselves. In today’s increasingly connected global environment, controversy frequently entangles cultural interactions resulting in
another layer of complexity to be considered when approaching already multifaceted NRM issues. In New Zealand specifically, the requirements of legislation and the Treaty of Waitangi demand issues be solved with due consideration of the cross-cultural aspects of any issue. Hence there is a need to consider how effective ANT is at approaching cross-cultural aspects of any issue and its success in identifying and connecting organizations, actants and inscriptions across cultural borers. By recognizing that human actants are not the only actants that constitute the ‘social’ sphere ANT contributes to issues of cultural interaction in the recognition that cultural actants and relations do not exist without non-human actants (Whittle & Spicer, 2008).

ANT shows that any attempt to study cultural interaction in isolation, for example the dualism of Māori and European cultural as in this case study, could potentially miss important dynamics such as how Kererū played a key role in that network through its presence, absence or unknown aspects which show the influence non-human actants can have even when not perceived to be ‘acting’. The Kererū has played a role through the networks history by threatening to withdraw from the network when it could no longer sustain, after all there can be no Kererū management network without a known Kererū population [this can occur without extinction as shown by the Takahe which withdrew from their management network. They were assumed extinct but lived unknown in the rugged Murchison Mountains of Fiordland until they were rediscovered in 1948.] At each stage the problematizer has sought to speak for the ‘silent’ Kererū, as tangata whenua did through their displacement and reassembly the Kererū into an oral tradition or Conservation Scientists who claim to know Kererū population through science, but the Kererū has its own agency. While the Kererū ‘story’ may be easily co-opted by the problematizer in their translation it can be seen from this analysis that the Kererū does indeed possess the ability to influence the network significantly, to ignore its prescribed role in the network and dis-enrol. The influence of non-human actants in a network should not be ignored, and in fact may provide a key for understanding network changes better. Indeed ANT has shown in this case study to be able to manage cultural interactivity by not taking it for granted and exploring it as a relation of connections both culture to culture, such as European Preservationists to Māori hunters, or Conservationist to Māori, but also non-cultural as in Kererū’s relation with Government or Māori.

This research has shown ANT can be an effective tool in exploring cultural interactions in a controversy while also being able to look past it and recognize that in this case there are different constructions of the controversy historically based on cultural perspectives, Māori with the view of Kererū as taonga to be managed for food and resources, with significant spiritual connections, such as being served at significant events or as the last meal of a dying Kaumātua [Cultural perspectives at the time lead to the view of European hunters of the egalitarian right to hunt Kererū for sport, away for the rigid hierarchy of 19th century England while many members of the Intéressé Public today
consider it a charismatic bird, valued for its colours and nature, a frequent visitor to private and public gardens in urban areas to be protected and cherished]. ANT analysis results in questions about the true nature of the controversy and whether the Kererū’s protected nature actually allows for more funding for conservation boards who need a flagship species in order to generate support for the conservation movement as whole. In such a case the narrative of a colourful backyard bird which the Intéressed Public can identify with being faced by hunting to extinction by Māori as happened with Moa would certainly result in increased interest in conservation as a whole over less emblematic species such as a native snail or lizard. The previously noted comments by current Conservation Minister lend credence to a flagship species based approach to conservation that she provides quick soundbites for the media and Intéressed Public claiming, “Māori ate moa as well”. Needless to say this argument ignores the significant impact of Europeans since colonization and other factors of reduced habitat, introduced species and competition. The lack of negotiation regarding Kererū harvest undertaken by the Government signifies there is currently enough support for change in the network as the Government has yet to prove its willingness to re-define itself and its problematization in previous network iterations in order to seek to retain control of a network.

ANT analysis has shown how Māori knowledge has largely or completely been ignored in any management context since the arrival of Europeans and how recently science has been privileged as the only way to solve the problematization of ‘unknown’ Kererū populations. The current problematization ignores challenges made to the Government to fulfil obligations under Article two of the Treaty of Waitangi which “guarantees Māori the full, exclusive and undisturbed possession of our fauna and flora” (3News, 2015) or the recommendation of the Waitangi Tribunal (2011b) to increase funding for Māori science and to establish Māori advisory boards for environmental protection. The analysis of the Kererū networks previous iterations shows a willingness of the Government to re-define itself in response to rival management networks and pressure from other actants and with the current renewed public debate surrounding Tau’s charges for poaching Kererū. It remains to be seen if Government will be compelled to act as it was in response to Preservationists and Conservationists. ANT also allows for the examination of future scenarios in which Māori TEK and Science are placed on an equal footing through a boundary organization, based on the Rakiura Tītī Islands Administering Body, or how Competency Groups can avoid the dichotomy of science versus traditional knowledge by opening up the management process to generative knowledge and consider the knowledge of any actant that wishes to be involved. Competency Groups use a process, which avoids labels and privileging information to collaboratively build a management plan, and a reframing of the problem and solution, which could achieve a degree of consensus needed to avoid the divergence of actants to rival networks. The use of ANT in this case study enriches the analysis of contentious cross cultural activities and provides an alternative approach for moving forward and
understanding the issue in a format in which it has not previously been presented by examining, but not being restricted to, the relationships between culture, science and conservation.

6.4 ANT as a Guide for Research

In approaching ANT entirely through a literature review of documents and websites it established early the fundamental issues the approach had in addressing theoretical and methodological multiplicities. ANT research has been categorically unable to define itself as either a practical or theoretical tool largely due to its ability and propensity to be defined by its researchers, not an unexpected outcome when the researcher itself plays an unintended role in simply exploring and describing the network. This studies approach to ANT defined a methodology based on previous ANT case study research and one of the founding documents of ANT: “Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay” (Callon, 1986a). This provided the guide for examining and describing the four stages of a successful translation in my analysis: Problematization, Intéressement, Enrolment and Mobilisation. I used Callon (1986a) to recognize each translation and then establish five key historical shifts in the Kererū network, which occurred at similar timing to the shifts of changing social constructions of Kererū which Renganathan (2004) described. This methodology also sought to understand how the network developed with the arrival of tangata whenua and how they adapted to the loss of large keystone species. It then went on to consider how the arrival of Europeans shifted power to the New Zealand Government who has since re-defined themselves and the problematization in order to keep actants enrolled in their network over any rival. ANT when used as a methodology in the examined literature was rarely considered in a critical or reflexive manner preferring instead to focus the inquiry in the network analysis rather than critique of its approach. In contrast, consideration of ANT in theoretical literature is often vague and cyclical, focussing on the shortcomings or limitations of the approach such as its vague methodology and entirely descriptive findings. ANT as a research methodology presents challenges and flaws and it would perhaps be best to consider ANT as only one tool in approaching issues, to be combined in a hybrid methodological approach which allows for new connections, pathways and ideas not considered in other approaches. This thesis approach considers the process required to ‘follow the actants’ through a ANT case study approach and therefore is valuable to other researchers looking to examine networks in current and historical NRM issues. However a potential user must be aware of its limitations as well which are well-known in terms of its potentially boundless scope, vague instructional process, qualitative findings and inability to ‘know the present’.

ANT indeed has no boundaries or scopes to reign it in, the notion of the network rids ANT of the third spatial dimension and leaves it unable to differentiate between “inside/outside”, “far/close and
big/small” (Latour, 2010, p. 6). A network is all boundaries without inside and outside, which is advantageous in considering each aspect of an issue and not considering any issues too big or too small to deliberate. This also makes it more difficult to use as a practical research methodology as researchers are on budgets, time constraints and cannot continue examining issues indefinitely in an ever-expanding network. ANT does not provide us with a logical end point at which to stop considering the network but an ever-increasing expansion from which the researcher is forced to arbitrarily decide enough is enough and cut out a specific network from a larger one. This presented a significant challenge in this research in determining when to stop describing and exploring each network as no logical end point presents itself, however I did have the early works of Renganathan to bounce ideas off. This presents a limitation of ANT as the researcher is left to determine when the network had been adequately describes and to move on to the next network transition that leaves ANT, as a research methodology, somewhat weakened and open to interpretation, as everything is subjective. This also means it is unlikely to be adopted as a preferred research method within NRM analysis and will continue to be used as a niche tool by those with an interest in its theoretical implications; a largely academic exercise which may yield some curious or significant connections but is too unapproachable to garner wider support. This however, would be a mistake since as this research has shown, it does still prove useful in shedding a different light on issues which can lead to new ways of considering difficult NRM issues.

One way however that this thesis has found of mitigating some of the weaknesses inherent in ANT is to explicitly define the goals and desired outcomes at the beginning of the research. This helps to impose boundaries to restrict researchers to the area of interest and contributes to making ANT’s vague terminology more accessible to the uninitiated by reminding the reader why certain actants have been included and others excluded. This research has also exhibited a different model of ANT research than is typically invoked. ANT is traditionally allied with an ethnographic approach in which the researcher enters a ‘foreign tribe’ to study them within through full immersion. However this research was a purely desktop exercise, mainly because of the challenges involved in doing ethnography with appropriate cultural permission as a Pakeha student researcher, time constraints and limitation of thesis scope. However by altering the research parameters and using a different methodology the actants were able to be followed through their inscriptions, a combined methodology of historiography and source criticism. With the continuing expansion of the internet and digital texts which don’t age or disappear like their physical counter-parts this inscription based approach will continue to be utilized progressively in future and it will be possible to collect more information for a larger variety of sources. However on reflection, without the limitations of this thesis, ANT should not seek to entirely avoid interaction with the actants themselves and instead seek to compliment an ethnographic approach in such a way as to not violate ANT principles while
Connections can be made through inscriptions while others may appear only through talking to the actants therefore a combined approach offers the most possibility of a greater understanding of a given management issues. The most obvious way to achieve this would have been to go to Northland and conduct interviews with actants, including birds and people, which could have added significantly to exploring the present network where available inscriptions may not be recent or detailed enough to relay the complexity of associations and relations present in the network. In this analysis it is recognized that interviews could have provided information for example into the extent in which rahui have been enacted in the Northland region and the role of the iwi in managing these e.g. how infractions of this system are dealt with internally. While this hybrid inscription and interview approach may not have produced significant insight in the historical analysis, which is preserved intact in inscriptions, it would be worth exploring for future ANT in analysis looking to explore a contemporary network in which information is limited and further sources are needed. ANT could be more widely utilized and accessed as a tool in examining contemporary and historical controversy. However such an approach is likely to be better when supplemented with interviews and field research when examining present-day network with limited available inscriptions.

### 6.5 ANT in Hybrid Species Management

Kererū are not unique. There are many other ‘hybrid’ species that exist worldwide whose management is controversial as a result of their differing constructions by actants built on cultural perspectives, intermediaries and associations. Hybrid here does not refer to the scientific genetic definition but rather acknowledges that many species do not have a pure translation, but are complex collective fulfilling different roles and definitions simultaneously, having competing constructions which must be considered in their management. The harvesting of Tītī (see Fig 6.1) on Titi Islands creates comparatively less outrage than Kererū harvesting because it does not have the same strong hybrid translation, in fact the Tītī is even alternatively known as Muttonbirds, contributing to its “translation” as a food source. In this case the general New Zealand populace, whose support for the Government relies on decision-making have a very weak, if any association with the millions of birds on offshore islands in remote Southland, while the Kererū is represented in urban areas around the country. The Kererū is thus hybridized, on the one hand it is an important food and cultural resource for Māori, inseparable from its historical cultural and spiritual associations and traditions that pre-date the arrival of Europeans in New Zealand. But Kererū is also a frequent garden visitor to many in New Zealand, an enigmatic species which provides enjoyment to many and as such for many members of the Intéressed Public it would be unimaginable to trap them in their
hundreds in nets for consumption. This hybridization of species creates tension in their management, not just in relation to Kererū but also in the management of any indigenous species. The hunting of whales by indigenous communities in the Arctic is contentious but the hunting of wild deer, pigs and possums in New Zealand often seems less contentious. When a species in a network has different associations to different actants, its management is contentious. The hunting of lions in Africa is condemned by “wildlife and conservation researchers along with leading animal advocates” (Levin, 2016) even when the permit fees from hunters helps grow the populations and creates resources and incentives for protection. The management of Kangaroo in Australia in many ways represents a closer allegory to Kererū than the Titi, with Kangaroo, an emblematic species with a strong association to the national identity of Australia being culled, run over, farmed and served in restaurants with pride as “authentically Aussie cuisine” (Craw, 2008). Management for each species is distinct, however if Australia can serve up Kangaroo, the United States Bison and Icelandic Puffins then perhaps a solution to be considered is for Kererū to be farmed and sold, creating supply to meet the demand and supposedly negating the need for illegal hunting.

This ANT research can help serve as a reminder for stakeholders and decision makers that they are working or operating in a global network in which changing construction and definitions flow backwards and forwards resulting in shifting views of species and how we construct them. An example of this is elephants, which are now viewed as special and intrinsically valued, a vast change from 100 years ago when elephants were seen as big game. The Kererū which was originally viewed by Pakeha hunters as no different from the common pigeon, shot in the hundreds for sport which often rotted before it could be sold, a very different view from today as evidenced from the debate.
around Tau’s Kererū poaching charges. This can morph with species to such an extreme where people are prepared to agree and follow through with the view that a species life is worth more than a human – A shoot-to-kill policy has been announced in countries such as Tanzania, Uganda and Botswana towards Elephant poachers (Duffy, St John, Buscher, & Brockington, 2015; Picard, 2015; Smith, 2013) and Sea Shepard activist use tactics which risk their lives in order to protect whales in the oceans surrounding Antarctica. In these cases the animal’s life has been deemed worth more than that of a human. There is yet to be an example where Kererū hunters have been shot to save the bird however we have progressed over 150 years from open season, to a crime now carrying a maximum sentence of 6 months in jail. It is unlikely Kererū rights will progress to trump those of humans but the global trend seems to be towards treating species as worthy of protecting fully - some more than others.

ANT helps the user to see how things that are nonhuman help to shape and change values, in the case of the Kererū it has been valued, or at least punishment for hunting has increased as the birds become more rare – This leads to questioning if it would have made more sense to have put these protections mechanisms in place earlier rather than the ambulance at the bottom of the cliff approach? Do we need to wait until the Kererū behaves and acts like humans until we extend the ethical sphere to it that we do to whales, dolphins and apes. Kererū are not high up the list for special treatment and ethics extension under science but if we must wait for a species to be humanised before we offer it more protecting then perhaps the Kererū’s curious habit of getting drunk off fermented fruit and falling out of trees and hurting itself can be considered criteria since this is an all too human attribute.

The purpose of this ANT research, is not however to re-write the management manual for protected species but to understand the connections and associations within Kererū management. As a result of this analysis the question to be considered is what understanding can ANT add to cross-cultural issues such as Kererū management and what analytical insight can undertaking a historical analysis provide to current Kererū management? The successful management of contested or hybridised species relies on a stable network strongly mobilized around a single problematization. This is not to say however, that an inflexible network is required for success, as actants and interactions are often changing, but rather that future network translations must make allowances for all actants in a single problematization rather than allow some to leak into rival or competing networks which threaten the management of contested or hybridised species.

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98 Not unlike a game played by University students “whereby a group of people drink alcohol, while up a tree. The first one to fall out from drunkenness loses the game” (Turner, 2012)
A single network strongly co-ordinated around a single OPP is therefore most desirable in terms of management with the implication being that maximum effort must be taken to enrol and translate all actants involved. Throughout this case study, it was demonstrated how a management network was only satisfactorily implemented when the problematizer was able to keep actants mobilized and that management begins to fail when actants are no longer interested in the problem definition. An example of this is various Māori, who betray their spokesperson and continue to participate in illegal harvest in a rival network which began in the late 1800’s and continues still today because the network problematizer was unable to successfully convince them of the problem definition. The shift and breakdowns involved between the different networks iterations should in this light then be seen as helping, in recognizing that the previous iteration was no longer efficiently functioning and a new OPP was needed to more accurately translate actants and maximize mobilization. It seems therefore if a single problem definition is required for successful management and a stable network, and that diverse and often conflicting rationales exist for management of hybridised species, the only way to successfully realise management plans for hybridised species which will result in long-term stabilized networks maintained by all actants, rather than the power of one, is to collaboratively approach management from the onset involving all actants and develop goals and the problematization through discussion. This is similar to the Competency Group Scenario discussed in Chapter 5.4, which showed removing the privilege of science and having actants co-ordinating together to reason the problem and solution with a goal to facilitate the equal production of new knowledge could be a more productive step forward in terms of management. This is unlikely to be the simplest or easiest approach, but by getting all actants together to decide their own problem definition they are likely to be willing to make more compromises, to view the issue from the perspective of other actants and holistically consider the issue and define a problem definition from which the management network can be built around, rather than having one imposed upon them through power and rule of law.

It cannot be known what problem definition would be agreed upon by such a diverse group but key to such an initiatives success would be letting all actants speak and be heard, to have their thoughts and opinions considered. It could be imagined to work like a Jury in a trial case, all the actants are placed together and none have any more power or privilege then the other, they must decide between themselves and only the verdict would be known. Their decision would not be subject to the judge (the Government) who would simply carry out the ‘sentence’. In this way all actants would be interested in the solution of their own problematization, enrolled together with the other actants in the problem definition and mobilized in order to protect this definition from rival network – This is where it is key to involve all actants. If one or more is ignored they have the ability to join a rival network and undermine the management plan. Given however the research conducted it would seem that the reframing of the current problem definition away from ‘a dynamic Kererū population
which can only be known through scientific inquiry’ which currently restricts actants to solutions that do not rely on knowing Kererū abundance would allow for better collaboration and mobilization within the network. This research suggests it may be efficient reframing the problem definition to incorporate different ontologies and ways of knowing. This would remove science as the insurmountable OPP and allow other actants such as tangata whenua and the Intéressed Public to be successfully translated into one single network and to minimize leakage to rival networks while continuing to embrace their distinct ontologies.

Thanks to ANT we are now able to see Kererū as a multidimensional assemblage of interests and states of being. By understanding the factors that make up the Kererū assemblage’s “identity” it is then possible to comprehend the limitations of its current understandings while also recognising its potentialities for moving beyond these limitations in the future. Recognising the Kererū as an assemblage allows us to focus on what it does and how it functions which allows for a more constructive discourse from a management point of view. Unravelling the Kererū assemblage’s shows us that it is not just a bird to be managed by DoC, and begs the question what should a new management structures look like and who should manage it? While the considered future change scenarios give some insight into how this looks it will need to be considered further with a focus on management structures in order for a clearer understanding to emerge. Perhaps management should be more localised given the change in the Kererū assemblage at different local levels?
Chapter 7: Conclusions

7.1 Introduction

ANT assists in undertaking as to how problems are framed, solved, “re-solved” and black-boxed, and understanding this offers a new tool in exploring controversies. For now, a return to Kererū harvest is outlawed but things may be set to change. The law, when considered by ANT, is simply a collection of black-boxes. The Wildlife Act (1953) currently precludes the legal return to any Kererū harvest but the Act is an ‘artefact’ rather than a dynamic tool in and of itself. Species can move in and out of particular clauses and provisions and amendments can be passed. Indeed, ongoing Treaty of Waitangi settlements may set new legal precedents around cultural harvest. However, in order for any change to occur to the way Kererū is managed, the support of the Government will be needed and a shift from the current problematization that Kererū cannot be sustainably managed without accurate (scientific) information as to their population dynamics.

As long as Government is in control of this network it remains dedicated to the current problematization and refuses to open the Wildlife Act up again to legislative processes, to review it, the Act will remain closed. All elements, not matter how arbitrary, cannot easily be changed without Government support. During the initial legislative process when the Wildlife Act was implemented, the Government was fluid and open, allowing for select committees and public debates to influence the legislation, but for 60 years it has been black-boxed into a fixed relationship, which cannot easily be interrogated or challenged by other actants. This is not to say however that the Government is never contested, as it is currently only by those not enrolled and those undertaking illegal harvest or maintaining harvest can take place. Hegemony is never complete, but is difficult for contestations in the network to be successful without the Governments support. Yet there has been regular “leakage” of black boxes around Kererū and endangered species in general with 61 amendments incorporated into the Wildlife Act since 1953; each represented a successful contestation with the support of the Government. This was seen through the Kea, which was given full protection in one amendment, or the removal of the protected status of an Australian species, Spur-winged Plover. However, there have been no changes related to Kererū. With Government support the act could be amended so the Kererū is no longer considered a fully protected species but is a) one which may be hunted or killed subject to Minister’s notification⁹⁹ or b) is wholly not protected, except in areas and

⁹⁹ Applied under Schedule 3 of the Wildlife Management Act 1953. Currently administered by the Department of Conservation. This is the provision which allows for the harvest of Tītī but also applies species such as
during periods specified in Minister’s notification\textsuperscript{100}. The Government has shown in previous network iterations a willingness to negotiate its problematization (but not its position as the network problematizer). In order to remain in control of the network it is likely that any change would first be generated by pressure from actants who were no longer willing to enrol in the current network problematization and threaten to join a rival management network. The Kererū Management network has a long and complicated history. In describing the past and present states within networks it is possible to better appreciate how power is distributed, both historically and currently, to establish which problematizations have been engaged. This was in order to maintain the management network and recognize how science has been used and manipulated by actants within the network to achieve power. One critical limitation of ANT historically has been its inability to predict future change in the network. However, this thesis explored future change scenarios within Kererū Management. The aim was not to predict, but to offer the possibilities of outcomes. ANT, as used here, was used to explore three different hypothetical scenarios based on literature and examined then to consider the potential stability of these networks. This analysis revealed how ontological claims could dominate in future networks and explored a different position of power from the current situation in which it is maintained by the Government. This analysis provides scope for exploring how science and TEK can be engaged in future Kererū Management. It considered the grounds for coproduction of knowledge and enrolment of the Intéressed Public into management. The analysis finds that in order for management networks to proceed in which all actants are successfully mobilized, trade-offs by all actants would need to be considered. It is beyond the scope of this analysis to offer specific solutions. However, ANT as used here helps to link the Kererū Management networks to larger global issues of how to successfully manage hybrid species, i.e. those in which different actants want to manage for different reasons. In particular, looking at the global management of other species with significance to indigenous people may provide direction and new solutions. In applying ANT to environmental rather than technical controversies as has been done here it can be argued that a single problem definition is required for successful management and a stable network, and that diverse and often conflicting viewpoints on the problem from different actants, create the controversy. Therefore, applying ANT to environmental controversies leads to the conclusion that the only way to successfully implement management plans for environmental controversy which will result in long-term stabilized networks maintained by all actants, rather than through the power and enforcement of one or a few key actants, is to approach management collaboratively from the outset, to redefine institution based problem and solutions.

\textit{Australasian harrier, Black swan, Pukeko, Weka and Mallard duck. The provision can be applied either nationally or only in specific regions.}\textsuperscript{100} Applied under Schedule 4 of the Wildlife Management Act 1953. A now obsolete category with no listed species but previously applied to wild horses in the Kaimanawa range, and Canada Goose, both of which are now wholly unprotected under the Act.
This must involve all actants from the onset co-ordinating together to reason goals and the problematization through discussion and calls for the collaboration of multiple ways of knowing to facilitate the equal production of new knowledge, in line with the Competency Group Scenario (Chapter 5.4).

### 7.2 Final Remarks

This thesis tries to unpack a seemingly stable network for its instabilities. The network studied involved a cross-cultural NRM issue, that of Kererū Management in New Zealand, that was last explicitly analysed as controversial by Renganathan (2004). This is an issue that can be considered to have “gone quiet” until the events of 2015. It ties together texts and inscriptions associated with, and connected to, Kererū Management, both historic and contemporaneously, to delineate a network through which the development and context of the controversy can be examined while also considering its state today and how this might adapt in the future. The goals of this research are to establish a historical overview of Kererū management since the arrival of Māori in New Zealand and to provide insight into the current management of Kererū, which was last studied by one person in detail (Renganathan, 2004).

This thesis explores the development of ANT from its roots in the early 1980s and relied on Callon’s seminal work “Some elements of a sociology of translation: domestication of the scallops and the fishermen of St. Brieuc Bay” (1986) to develop a methodology suited for analysis to NRM and Kererū management focussing on the core concepts of translation and obligatory passage points. Consideration was given to ANT use in a NRM context, where previous work has shown ANT’s success in the field by removing preconceptions, labels of ‘success’ and ‘failure’ and in focussing on the collective actions of multiple stakeholders.

The development of the Kererū management network was examined through five distinct historical network phases – termed in order of appearance, the “Archaic” Network, the “Classic” Network, the “Colonial” Network, the “Preservation” Network and the “Conservation” Network. Through each of these phases the significant actants involved were followed in the management of Kererū through historical inscriptions and identified the major events in the network transitions. Each phase also saw the recognition of the network problematizer and the OPP and followed the problematizer through their translation process: problematization, intéressement, enrolment and mobilisation. The contemporary network was also subject to ANT and the historical relations could still be seen in the present – The Government, represented by DoC, remain the problematizer while Conservation Scientists enjoy a privileged position as ‘gate keepers’ of Kererū knowledge, the only actants able to speak to the sustainability of an unknown Kererū population. Numerous inscriptions continue to play roles in the network, most significantly the Northland Conservation Management Strategy (CMS)
2014-2024 (Department of Conservation, 2014) and the Wildlife Act 1953 which continue to allow action at a distance, the translation of the Governments interests into material form and inhibits any legal return to Kererū cultural harvest. Significant events were identified and are likely to play a role in the next network transition, if one occurs, with debated levels of accountability including the ever-evolving understanding and adherence to the principles of the Treaty of Waitangi, the Wai 262 claim specifically and the increased use of citizen science, such as ‘the Great Kererū Count’. The growth of TEK was also identified as being a possible contributor to the next network transition and examined through the harvesting of Tītī in Southland, as were the continuing threats to Kererū such as illegal harvesting, introduced pests and habitat clearance.

This thesis presented future change scenarios in Kererū management using a more contemporary application of ANT. Civic Science, Boundary Organizations and Competency Groups scenarios where investigated in considering what a future shift in the Kererū management network could look like. The analysis contributed to a new understanding of how ontological claims, specifically the importance designated to particular knowledge sources such as science, TEK or generative knowledge, could dominate in the network and attribute power and exemplified how the successful translation of actants would be critical to the punctualization of networks. The ‘Civic Science’ scenario explored how scientific realism could dominate in a future scenario while still engaging the Intéressed Public. ‘Boundary Work’ considered a future network that engaged TEK in a selective manner and resulted in an unequal ground for coproduction, which risked the enrolment of both Intéressed Public and tangata whenua actants. ‘Competency Groups’ showed a future network that sought to disseminate and understand knowledge and values collaboratively however still failed to account for the agenda of the Kererū, and risks being implemented in a way that manipulates the process.

While Kererū Management in New Zealand has proven to be controversial, the focus of this work was not solely to observe this controversy but also to consider the ability of ANT to be applied as a practical methodology in controversy involving NRM and cultural interactivity. Using “Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay” (Callon, 1986a) to develop a practical methodology allowed for the ‘following the actants’, tracing their relationships with the network over time and successfully utilized an inscription backed research methodology. Through this Kererū Management was specifically examined by surveying texts and connections in a novel way and it is appropriate now to assess the suitability of applying an ANT approach in other NRM and cross-cultural controversies. This research was to show an approach using a variety of tools, developed by ANT scholars, to question the assumptions in the current network and to provide intéressed parties with new ideas and connections to consider. As a result of this ANT analysis associations within Kererū management were described, the distribution of power
was shown, and the translation process exposed. It is hoped this work will be useful for those involved with or have an interest in the management of the Kererū and those who are exploring controversial cross-cultural NRM issues, especially related to the management of indigenous species. For those managing Kererū, this analysis could be beneficial in exposing how historically Kererū management has resulted in the divergence of some actants to rival network, and thus provides a way in which to ensure each actant is successfully translated into future network structures.

As this is not a crisis situation it would be advisable to establish a liaison group for involved members to come together, collaborate and make recommendations for Kererū management. At present there is no clear instrument for all parties to come together and have an open and free discussion. A suggested point to focus efforts originally would be to discuss a co-ordinated plan to deal with threats such as introduced predators and deforestation in which the parties are likely to be more agreeable. However one of the chief tensions is clearly between conservation values and Maori practices, which in current management terms conservation values predominate. A verdict on the Wai 262 Treaty Claim could offer a profound shift in the current dynamic, however this is an unknown variable and it is unreasonable to wait and do nothing in the meantime. DoC is already obliged to consult with Māori and through a liaison group and both the DoC Management Plan and the Māori rahui system could be co-ordinated and co-evolve based on shared knowledge. Rahui in some areas may allow for limited harvesting rights in others. This would represent a more balanced trade off between conservation values and Maori practices than the current situation. Alternatively the New Zealand Conservation Authority (NZCA) tackling the issue of cultural harvest would seem to be the most plausible way currently of achieving a management approach that accounted for the majority of group’s views. Building on recent public interest in 2015 it seems to be an ideal time to bring the issue out for open discussion for those who are interested. The public is likely not aware of the foundation for a return to legal Kererū harvest, nor the extent to which it could be enacted. Does iwi intend to selectively harvest only as dying kuia or kaumatua call for a final meal of Kererū [in the belief that it will help them on their journey to the afterlife] or allow for more wholesale approach in which anyone is able to harvest? There is also likely to be a different approaches and viewpoints taken by different iwi and there is evidence some in the younger generation of Maori have little interest in Kererū harvest which could make this less of a issue in future as these individuals grow older.

Currently field workers would do well to consider the inviolability of “scientific facts” in creating management plans and recognize that forcing a total ban on Kererū has thus far been ineffective. It appears that Government and DoC, along with most of the general public, presently refuse to entertain any scenario in which limiting hunting of Kererū is allowed. History indicates members of Māoridom will continue to partake in “illegal” hunting when their views are not accounted for and
discussion is closed down. Increased pest control measures could be used to compensate for this in affected areas and more forests protection measures encouraged on private and public land in order to promote Kererū population growth. Farming of Kererū could also be highly effective in reducing demand for wild Kererū if this is the primary concern, creating a stable supply to feed demand. Ultimately the course of action decided upon by managers and involved parties depends on the goals for the future of Kererū management, but this thesis may provide historic lessons, allowing groups to better appreciate the perspectives of others involved.
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