1   # Māori oral histories and the impact of tsunamis in Aotearoa-New Zealand

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24 ABSTRACT

25 Māori oral histories from the northern South Island of Aotearoa-New Zealand provide details of

26 ancestral experience with tsunami(s) on, and surrounding, Rangitoto (D'Urville Island). Applying an

27 inductive-based methodology informed by 'collaborative storytelling', exchanges with key informants

28 from the Māori kin groups of Ngāti Koata and Ngāti Kuia, reveal that a 'folk tale', published in 1907,

29 could be compared to and combined with active oral histories to provide insights into past

30 catastrophic saltwater inundations. Such histories reference multiple layers of experience and

31 meaning, from memorials to ancestral figures and their accomplishments, to claims about place,

32 authority and knowledge. Members of Ngāti Koata and Ngāti Kuia, who permitted us to record some

33 of *their* histories, share the view that there are multiple benefits to be gained by learning from

34 differences in knowledge, practice and belief. This work adds to scientific as well as Māori

35 understandings about tsunami hazards (and histories). It also demonstrates that to engage with Māori

36 oral histories (and the people who genealogically link to such stories) requires close attention to a

37 politics of representation, in both past recordings and current ways of retelling, as well as sensitivities

38 to the production of 'new' and 'plural' knowledges. This paper makes these narratives available to a

39 new audience, including those families who no longer have access to them, and recites these in ways

40 that might encourage plural knowledge development, and co-existence.

41 WHAKARĀPOPOTOTANGA

42 Ko ngā kōrero tuku ā-waha Māori o Te Tauihu o te Waka a Māui e whakaahua nei i ngā wheako o ngā

43 tūpuna ki te/ngā tai āniwhaniwha ki runga i te motu o Rangitoto (D'Urville Island), ki tōna takiwā anō

44 hoki. Mā te whai i tētahi pūnaha, ko tōna tūāpapa ko ngā tirohanga ki te hapori, ā, he mea tohutohu

45 hoki e 'te tuku kōrero ā-kāhui', i mārama ai i ētahi whakawhitinga kōrero ki ētahi māngai matua o ngā

46 iwi Māori o Ngāti Koata me Ngāti Kuia, tērā tētahi 'pūrākau' i tāngia i te tau 1907, ka taea tōna

47 whakataurite me tōna whakakotahi atu ki ētahi kōrero tuku ā-waha e ora tonu nei, kia whai tirohanga

48 ai ki ētahi aituā parawhenua waitai nui o nehe. Ko ēnei momo kōrero tuku he whai wheako maha, he

49 whai tikanga maha anō hoki, mai i te whakamaumahara i ētahi tūpuna o nehe me ngā mahi i oti i a

50 rātou, tae atu ki ngā kōrero mō te rohe, mō te mana, mō te mātauranga anō. Ko tā ngā mema o Ngāti

51 Koata me Ngāti Kuia i tuku kia hopukina ētahi o ā rātou kōrero tuku e whakaae nei, he hua nui ka puta

52 i te whai māramatanga ki ngā rerekētanga ā-mātauranga, ā-tikanga, ā-whakapono anō. Ka

53 whakawhānui tēnei mahi i ngā māramatanga ā-pūtaiao, otirā, i ngā māramatanga o te Māori ki ngā

54 pūmate o te tai āniwhaniwha (me ngā kōrero tuku anō). He mea whakatauira anō e tēnei, e whai kiko

55 ai te whai wāhi atu ki ngā kōrero tuku ā-waha Māori (me te iwi e hono ā-whakapapa ana ki ngā

56 kōrero), me aro pū ki te taha tōrangapū o te tū hei māngai mō tangata kē, ki ngā hopukanga kōrero o

57 mua, ki ngā ara tuku kōrero anō o nāianei, ā, me aro pū hoki ki ngā kaupapa mana nui me mātua

58 whakaaro i te whakaritenga o te mātauranga 'hou', o te mātauranga 'mātāpuna-tini' anō hoki. Ko tā

59 tēnei tuhinga he whakawātea i ngā pakiwaitara tuku nei ki tētahi whakaminenga hou, tae atu ki ngā

60 whānau kāore i whai wāhi ki ngā kōrero nei i mua, ā, ko te āhua e tukuna ai ēnei kōrero hei akiaki pea

61 i te whakawhanaketanga o te mātauranga mātāpuna-tini me te tū motuhake anō o ia o ēnei momo

62 mātauranga.

63

1. INTRODUCTION

64

65   "What is all this? " he asked. "These are the fish I have caught," replied Titipa. "This is the

66 result of my power as a *tōhunga* [priest; expert in traditional lore; person skilled in

67 specific activity; healer]." "But didn't I tell you I should expect the pick of the catch?" cried

68 Te Pou. "If you want fish, catch them yourself," retorted Titipa. "You don't get the pick of

69 my haul." "Indeed," said Te Pou, and he walked along the beach and inspected the fish

70 that were drying in the sun. "We shall see whose catch this is presently." Walking to the

71 water's edge and stretching out his arms towards the sea, he repeated mighty spells

72 before the people. Everyone wondered what would happen, but it was not long before Te

73 Pou came running up the beach. "Get back!" he cried. "Get back to the high ground, or

74 you will be drowned," and running past his people he climbed the high cliff, where he

75 took his stand, and repeated more spells. The people, thoroughly terrified, followed

76 helter-skelter, and left Titipa alone upon the beach. Soon the sea grew dark and troubled

77 and angry, and presently a great wave, which gathered strength as it came, swept

78 towards the shore. It advanced over the sandy beach, sweeping Titipa and all his fish

79 before it, till with the noise of thunder it struck the cliff on which the people stood. "That

80 is one," said Te Pou. "That is for the first fish. There will be two more." The great wave

81 receded, sucking with it innumerable boulders and the helpless, struggling Titipa. Then

82 another wave, greater than the previous one, came with tremendous force and,

83 sweeping the shore, struck the cliff with a thunderous roar. This was followed by a third

84 which, when it receded, left the beach scoured and bare. Titipa and all his fish had

85 disappeared. "I have finished," said Te Pou. "That is all. There will be no more trouble…"

86   [The Rival Wizards: Grace, 1907a]

87   In 1907, Alfred Grace (1867-1942) published a series of Māori "folk stories", imparted by the Ngāti

88   Koata[1] elder Karepa Te Whetu. Within the extensive narrative of one of these stories, 'The Rival

89   Wizards' the "wizard-chief", Te Pou, summoned three great waves to exact retribution upon the rival

90   Titipa for openly defying his instructions. Descriptive details of the impact of great waves striking and

91   scouring the beach were narrated, including many contextual details about the relationships and

92   connections between people, place and the metaphysical world. The reciting of this narrative in print,

93   however, did not occur again until King et al. (2007) and McFadgen (2007) cited the story, among

94   other traditional stories, and made a case for the scientific value of Māori oral histories in

95   understanding catastrophic saltwater inundations or tsunamis in pre-colonial Aotearoa-New Zealand

96   (A-NZ). King and Goff (2010) surmised that the descriptive nature of the language in the story

97   resembled those of modern-day tsunami survivors and argued that it might represent an historical

98   narrative recording direct experience with one (or multiple) tsunami inundations, prior to the arrival

99   of the first Europeans to A-NZ in the late eighteenth century. However, they also acknowledged that

100 the interpretation of Māori stories by 'outsiders' is fraught with the potential for misrepresentation

101 and concluded the need to engage with Māori who share ancestral and kinship linkages with specific

102 oral histories to tell our/their own stories.

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[1] Ngāti Koata is one of several Māori kin-groups [*iwi*] who hold territorial rights, power and authority associated with possession and occupation of *iwi*-land over the northern South Island (Mitchell and Mitchell, 2004). They date their occupation in the area from the late 1800's, and recognise the successive movements of earlier peoples migrating to and through the area. Details surrounding occupational patterns are provided in: Keyes (1960), Mitchell and Mitchell (2004).

103   This study builds upon these collective contributions by working alongside key informants from the

104   Māori kin groups of Ngāti Koata and Ngāti Kuia[2] from the northern coast of the South Island of A-NZ

105   (Figure 1). These informants share linkages not only with Karepa Te Whetu but also the places and

106   ancestral figures named in the 'The Rival Wizards' story. The paper begins by providing an overview of

107   past work in the geosciences to have benefitted from the insights provided by indigenous oral

108   histories. This necessarily includes a brief review of complementary lessons in political,

109   epistemological and methodological theory. The research framing for this work and the methods of

110   analysis are next outlined, before providing detailed accounts of the key elements of the story

111   supported by examples of contemporary dialogue. Finally, consideration is given to the lessons,

112   challenges and opportunities that can come from bringing the knowledge-practice-belief complex of

113   Māori Knowledge [Mātauranga Māori] together with the earth system sciences.

114   2. INDIGENOUS ORAL HISTORIES AND TSUNAMIS

115   Consideration of Indigenous oral histories as tsunami narratives is not new. Vitaliano (1973) discussed

116   the scientific benefits to be gained by considering "myths and legends" as transmission devices for

117   knowledge about (and experience with) tsunamis, among other geologic phenomena. Her work

118   detailed examples of coastal deluge attributed to tsunamis (and their likely sources) from classical

119   Greek history through to more recent times from the Pacific coasts of the Americas to islands across

120   the Pacific Ocean. Accordingly, Vitaliano (1973) argued that such insights provide invaluable

121   information about extreme environmental disturbances in the pre-written past. A series of scientific

122   contributions have since emerged from the Pacific Northwest coast of North America detailing 'Indian

123   myths' and the transmission of knowledge about great sea level disturbances (Heaton and Snavely,

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[2] Ngāti Kuia is one of several Māori kin-groups (*iwi*) who hold territorial rights, power and authority

associated with possession and occupation of *iwi*-land over the northern South Island. They are often

referred to as one of the ancestral iwi of the region (Mitchell and Mitchell, 2004).

124   1985; Clague, 1995; Hutchinson and McMillan, 1997; McMillan and Hutchinson, 2002; Ludwin et al.,

125   2005; Ludwin and Smits, 2007; Thrush and Ludwin, 2007; Vitaliano, 2007).

126   Heaton and Snavely (1985) and Clague (1995) concluded that many details within indigenous oral

127   histories are consistent with tsunami inundation processes (e.g. the sudden receding of coastal

128   waters). Recognising this experience with earthquakes and tsunamis along the northern Washington

129   and southern British Columbia coasts McMillan and Hutchinson (2002) argued that oral histories can

130   provide independent sources of information which can complement geological and archaeological

131   knowledge about the role of infrequent yet catastrophic events in landscape evolution and social-

132   cultural transformation. They also made explicit that such histories may have other independent

133   meanings. Advancing this scholarship, Ludwin et al. (2005) considered 40 stories from 32 independent

134   sources about coastal earthquakes and marine flooding; and with help from Japanese historical

135   records determined that the most recent large-scale event captured in multiple stories along the

136   Cascadia coast occurred on 26 January 1700. Importantly, Thrush and Ludwin (2007) recognised that,

137   Native American and First Nations oral histories not only include rich and explicit accounts of seismic

138   events, but also that scientific inquiry is grounded in the historical relationships between indigenous

139   and settler societies, and that this has resulted in the privileging and production of certain kinds of

140   knowledge about the region's seismic past. Likely informed by transformative and decolonising

141   research theories, this corollary point raised important questions about geology's relationship with

142   colonialism, intellectual and cultural property, as well as the complex and fractious relationships

143   between researchers and the researched. Thrush and Ludwin (2007) highlighted the tremendous

144   potential for benefitting from differences in knowledge, practice and belief about some of the largest

145   seismic events known to human-kind.

146   Considerable scholarship has outlined the scientific value of indigenous expertise and information

147   about tsunamis referenced in oral histories from the Pacific Islands (Nunn, 2001; Lum-Ho and Lum-

148   Ho, 2005; Nunn and Pastorizo, 2007; Goff et al., 2008; Stewart, 2009; Goff et al., 2011; Johnston and

149   Dudley, 2009) and in A-NZ (Goff et al., 2003; King et al., 2007; McFadgen, 2007; McFadgen and Goff,

150   2007; King et al., 2010; Pearce and Pearce, 2010; Goff et al., 2012; Goff and Chagué-Goff, 2015; King,

151   2015; King et al., 2017). Further, there are likely to be contributions from other non-English science

152   communities about the potential value of indigenous histories enriching the geo-archaeological

153   sciences, but such references were not identified in the sweep of English language scholarship

154   conducted here. Notable contributions from the Pacific include Nunn (2001), who identified

155   ethnographic narratives of probable experiences with tsunami inundation, including a story from

156   Pukapuka Atoll in the northern Cook Islands where time is divided into before and after a huge wave

157   swept over the island. Nunn and Pastorizo (2007) also identified that Pacific Islander 'myths' might

158   inform the chronology and social impacts of such hazards. Similarly, Hawaiian scholars are also re-

159   examining their own oral histories that relate an extended history of exposure to tectonic and

160   geologic hazards – including tsunamis (Lum-Ho and Lum-Ho, 2005; Stewart, 2009). This work is as

161   much about adding to the scientific pool of scholarship surrounding Hawaii's tsunami risk-scape as it

162   is about cultural revitalisation and connecting with the ancestors.

163   Meanwhile in A-NZ, Goff et al. (2003) emphasised the limited time frame of the historical record for

164   understanding tsunami risk in A-NZ and thereby pointed to the Māori oral record as a potentially rich

165   source of information about tsunamis occurring prior to European arrival. Succeeding this work, there

166   have been varying attempts to link geo-archaeological evidence and modelling output with historical

167   events inferred from Māori tsunami narratives (Walters et al., 2006; McFadgen and Goff, 2007; King

168   and Goff, 2010). King et al. (2007) argued that Mātauranga Māori is a neglected area of expertise in

169   scientific assessment and declared that greater Māori involvement is required in natural hazards

170   science to make the most of all the knowledge and skills that Māori possess. After this, King and Goff

171   (2010) mapped selected Māori oral histories that potentially related experience with tsunamis around

172   the A-NZ coast. These narratives were compared with contemporary scientific data and the

173   implications of this 'new' information for tsunami science were considered. Importantly, this work

174   signalled the need for new research approaches that openly and respectfully engage with Māori who

175   hold ancestral and kinship linkages to oral histories to tell our/their own stories. Such perspectives

176 have the potential to amend (and perhaps replace) accepted scientific views about pre-written

177 tsunami disturbance and risk in A-NZ.

178 **3. DEVELOPMENTS IN POLITICAL, EPISTEMOLOGICAL AND METHODOLOGICAL THEORY**

179 Developments in political, epistemological and methodological theory from a range of disciplines are

180 relevant to research that explores the potential of indigenous narratives to inform about

181 environmental histories and extreme disturbances such as tsunamis. A key debate relates to how

182 knowledge is constructed and legitimised, including whether a meaningful transfer of knowledge

183 between different knowledge histories can occur (or alternatively do harm) when removed from its

184 cultural context. As Mikaere (1995) argued, the outcomes of early 'research on' Māori (or rather the

185 inaccurate recordings and imaginary portrayals of narratives) rendered oral histories as "fantasy" and

186 resulted in "epistemological disarray". Bishop and Glynn (1999) contend that this reflected the

187 inadequacy of non-Māori to understand and accept the nature of Mātauranga Māori. Whatever the

188 case may be an ongoing challenge is to understand that narratives embedded within indigenous

189 knowledge systems provide more than alternative sources of information or even alternative

190 perspectives (Binney, 1987; Smith, 1999; Mead, 2003). Rather they have their own purposes, which

191 may include devices that help to establish meaning for discrete and repeated events through time

192 (Masse et al., 2007).

193 According to Cruickshank (1994), debates or understandings about knowledge construction are as

194 much about "epistemology" as they are about "authorship". She explains that for many Indigenous

195 peoples there is a reluctance to analyse and publicly explain the meanings of oral histories as this

196 takes away from the value and different messages that come from listening to repeated tellings from

197 family and extended kin, in place. This contrasts with a scholarly approach which encourages the

198 scrutiny of texts, and contends that by openly addressing conflicting interpretations, meanings can be

199 determined to enrich understanding. Many Indigenous commentators are thereby challenging

200 researchers within the academy of science to reframe how they construct and use knowledge. This

201 includes the treatment of Indigenous experience and knowledge as archaic and unchanging which

202   can, without consequence, be used by science to produce "authoritative" and "universal" insights

203   (Howitt and Suchet-Pearson, 2003; Shaw et al. 2006; Coombes et al. 2010). In response, Johnson et al.

204   (2016: 3) argue "scientists have to learn to see our own privilege, our own context, our own deep

205   colonizing. We have to learn to think anew - to think in ways that take seriously and actually respond

206   to information, understanding and knowledges as if difference confronts us with the possibility of

207   thinking differently".

208   The production of knowledge is deeply entwined with power relationships and who holds control and

209   authority over knowledge and its applications (Stephenson and Moller, 2009). This challenge is based

210   on the premise that power underpins the place of science in contemporary society, and that the

211   narrators of science (and history) ultimately hold power, whether knowingly or not (Johnson et al,

212   2016). Indigenous commentators (and others) have discussed legacies of extractive research practice,

213   whereby non-Indigenous researchers have treated the holders of Indigenous knowledge as if they

214   have no moral or legal rights to decide how it will be represented or used within the wider world.

215   Such practices have often resulted in leaving those studied disenfranchised from the knowledge they

216   have shared (Kovach, 2009). Indigenous scholars have thereby mounted a critique of the way history

217   has been told from the perspective of the colonisers – and this has resulted in debates over who gets

218   to frame and legitimise knowledge, whose voices are prominent in these discussions, and for whom

219   the writing is being done (Smith, 1999). A number of scholars have also challenged the notion of

220   including 'voices' in projects that aim to speak (or write) on behalf of 'others' (Howett and Suchet-

221   Pearson, 2003). For example, Coombes et al. (2014, 849) argue that "research that took the once-

222   radical step of 'giving voice' now patronizes and silences those whose voice is quite capable of self-

223   expression". While we recognise as researchers and authors the contradiction in the work completed

224   here, we acknowledge at the same time the collaborative basis of the research and the contribution

225   such grounded histories provide to scholarship.

226   In response to these histories and ethical challenges, all of which are taking place against a broader

227   background of indigenous self-determination and cultural affirmation, there is increasing recognition

228 of 'decolonising' and 'counter-colonial' research methodologies that seek to reframe and transform

229 the way research and knowledge is produced (Smith, 1999; Mead, 2003; Kovach, 2007). Key elements

230 of this discourse (although not limited to) include (i) valuing not only specific forms of Indigenous

231 knowledge but also the values underpinning such systems, (ii) recognising the authority of Indigenous

232 peoples to determine the rules for producing new knowledge, (iii) safeguarding the authenticity of

233 indigenous narratives, (iv) supporting research that enriches everyone who is connected with the

234 research project, and (v) promoting the benefits that come from learning from different ways of being

235 and knowing. Howitt and Suchet-Pearson (2003: 559) remind us also that "choosing whom to include

236 and how to include them, the choices other people have made in representing themselves to the

237 author and other authors, the ways the readers interpret the words and the ulterior motive for the

238 usage of the 'voices', all involve relationships of power".

4. RESEARCH FRAMING

4.1 Methodological approaches

241 This research applies an inductive-based methodological approach informed by 'collaborative

242 storytelling' to consider the meaning and memorials presented in the 'Rival Wizards' narrative. The

243 methodology does not fit neatly into any category, but draws on decolonising research approaches

244 (Smith, 1999; Kovach, 2009) and grounded theoretical principles (Glaser and Strauss, 1967; Pidgeon,

245 1996), while simultaneously seeking plural spaces of learning (Howitt and Suchet-Pearson, 2003;

246 Zanotti and Palomino-Schalsha, 2006; Johnson et al., 2016). This theoretical framing was underpinned

247 by Kaupapa Māori research principles (Smith, 1990; Te Awekotuku, 1991; Smith, 1999; Mead, 2003).

248 All informants were assured of their right to maintain authority over their contributions by reviewing,

249 editing and approving the 'new' narrative produced through this work. The National Institute of

250 Water and Atmospheric Research (HREC2017-005) and the University of New South Wales (HREC-

251 17085) provided human research ethics approvals.

4.2 Methods, analysis and interpretation

253 Semi-directive individual and paired interviews with 20 key informants from Ngāti Koata and Ngāti

254 Kuia were used to discuss the construction, key elements and purposes of 'The Rival Wizards'

255 narrative. In advance of all interviews a copy of the 'Rival Wizards' story (Grace, 1907a) was provided

256 to all informants from Ngāti Koata and Ngāti Kuia. Interview participants self-selected and/or were

257 recommended by participants and extended family members. Each session lasted between 0.5-2

258 hours and was attended by a research facilitator. All interviews were electronically recorded. Analysis

259 of interview material was inductive and consisted of (i) 'content analysis' whereby ideas or words

260 were identified along with the frequency of their use, (ii) 'thematic analysis' whereby the principal

261 elements emerging from the data were examined and sorted, and (iii) cross-checking the integrity of

262 emergent ideas and interpretations through follow-up discussions with key informants with

263 adjustments made where necessary. Central to these analyses was an emphasis on participant views

264 about the narrative (rather than the meaning the researchers brought to the research). Secondary

265 sources of information provided supplemental support. In following such methods, we sought to

266 avoid subjecting the story to external judgements, or in other words, risk turning the story into

267 something it is not.

268 **5. THE RIVAL WIZARDS (ABRDIGED)**

269 An abridged version of the Rival Wizards story is outlined below to provide context for the

270 summarised commentaries that follow. Importantly, in abridging the story, we are mindful that where

271 one chooses to begin and end a story can alter its shape and meaning, and so we encourage a reading

272 of the full story as published by Grace (1907a).

273   **5.1 Synopsis of the story**

274 The story begins with Rongomai, a "wizard-chief" renowned for being able to shape-shift from

275 monstrous to human form. One day, with his revered greenstone fish-hook (named Huakai after one

276 of his most famous ancestors) Rongomai paddled from his island settlement of Motiti to the shore of

277 the mainland opposite the settlement of Motu to fish for *hapuku* [wreckfish] and *kahawai* [A-NZ

278 salmon]. Boastful of his prowess as a fisherman Rongomai soon lost Huakai to a large fish, leaving him

279 miserable and despairing. Te Pou, the rival "wizard-chief" from Motu, watched these proceedings

280 from the shore. Famed also for his shapeshifting capabilities, Te Pou waited until after dark and then

281 stepped into the water turning himself into a shark and searched for the coveted hook. However,

282 Rongomai initiated an immense fishing haul, and relocated 'Huakai'; although there was

283 consternation at a large hole in one of his nets presumably caused by a shark. Te Pou was furious at

284 Rongomai for having found 'Huakai', and for almost having been caught in his fishing nets. Vowing

285 revenge, Te Pou later swam to the village of Motiti and in the middle of night he thrust a burning stick

286 into the thatch of Rongomai's house. Rongomai's human form was burnt and he was thereafter

287 confined to an aquatic existence as a veracious and malevolent salmon. The fish from the coast near

288 Motu were soon thereafter driven away by Rongomai, and then while swimming, Te Pou's son,

289 Kopara, was eaten by Rongomai. The mourning Te Pou subsequently planned a great farewell for his

290 son, but realising the scarcity of fish he transformed himself into a porpoise and travelled to have an

291 audience with Tangaroa, the supreme ruler of the sea. Here Te Pou requested that all the salmon

292 over whom Tangaroa held sway to come to Motu, be summoned to the mouth of the river, to weep

293 for his son. Tangaroa agreed to the request, but also indicated his interest in joining the occasion. In

294 reply Te Pou acknowledged the great pleasure this would bring, but he cautioned that the water at

295 Motu is hardly deep enough, with extensive mudflats and the river so shallow that it would be a most

296 inconvenient place for Tangaroa. Returning home Te Pou advised his people to prepare their nets for

297 the fish that would come, advising that he expected the pick of three fish for his own use. Standing on

298 the shore Te Pou proceeded to say incantations while Titipa, the next chief in command and secret

299 rival, ignored Te Pou's requests. When the great haul of fish was pulled ashore, Te Pou returned to

300 inspect the catch only to find Titipa claiming it. Te Pou therein warned all to stand back from the

301 beach as three great waves were called forth, advancing and receding from the beach, eventually

302 taking Titipa with them. The story ends with Te Pou selecting the three largest fish from the collective

303   haul, gifting the first to his son and the sea, the second to his wife, and the third for himself, ending

304   Rongomai's existence.

305   **6. STORY-TELLING THROUGH WHAKAPAPA[3]**

306   **6.1 Narrative sources**

307   The published version of the 'Rival Wizards' story (Grace, 1907a) was "not known" by the informants

308   from Ngāti Koata and Ngāti Kuia prior to the formal discussions carried out for this study. There were,

309   however, many repeated qualifications about parts of the narrative being very familiar. Independent

310   of one another, informants from both kin groups initially expressed "I am not familiar with the story",

311   "the story does not ring a bell for me", "I've never heard our people talk about it" and, among others

312   "the first time you gave me the story is the first time I had come across this". There was, however,

313   widespread awareness of Karepa Te Whetu (the informant of the story), first by the research

314   participants from Ngāti Koata who hold direct genealogical connections, and second by those from

315   Ngāti Kuia who recognised his name from pan-tribal history. From these collective voices, we know

316   that Karepa Te Whetu lived on D'Urville Island (Rangitoto) and that he was the elder son of Te Whetu,

317   a respected Ngāti Koata leader who migrated with other Ngāti Koata descendants from the North

318   Island in the 1820s to settle on Rangitoto and other areas across the northern South Island (Figure 1).

319   Te Whetu had a settlement at Te Marua (north-eastern side of Rangitoto), which is known for its

320   swampy ground and cliffs. An informant suggested that Karepa Te Whetu most likely grew up at Te

321   Marua alongside kin from Ngāti Koata and the already occupying people of Ngāti Kuia. For example,

322   an informant from Ngāti Koata reflected: "Ngāti Koata moved down here in the 1820s. And there was

323   a whole big history on that island [Rangitoto] before we moved in so I wonder how much of that

324   history, those stories, that he [Karepa Te Whetu] heard". In his later years, it was widely understood

325   that Karepa moved to Croiselles Harbour where he spent his final days (although one informant

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[3] Ancestral and kinship linkages to people and place, genealogy, literally means 'to place in layers'.

326   suggested that he may also have lived at Taranaki for a while). According to Grace (1907b) it was

327   during this period that he got to know Karepa Te Whetu, leading eventually to the sharing of

328   numerous stories, until Karepa's death in 1903.

329   Reflecting further upon the 'Rival Wizards' story shared by Karepa Te Whetu with Alfred Grace, many

330   informants from Ngāti Koata and Ngāti Kuia noted that knowledge holders had probably passed on

331   and/or moved away from the Island, thereby taking many of their stories with them. One informant

332   also remarked that, "Some of our old people were cautious about who they told things to, so they

333   never told them". Other explanations for not knowing the 'Rival Wizards' story included reference to

334   changes in the resident population of Rangitoto following the arrival of the first Ngāti Koata peoples

335   and thereafter the broader social-cultural changes stemming from the arrival of the first missionaries.

336   Statements from both Ngāti Koata and Ngāti Kuia informants included: "What happened prior to the

337   *heke* [migration] … there are a lot that probably won't know what those stories were … so yeah it is

338   probably a Ngāti Kuia story", and "These events [in the story] are before Ngāti Koata. It's probably a

339   Ngāti Kuia story eh?" and "Ngāti Kuia lived on the Island, right up until the 1870s, early 1880s. My

340   great grandfather was born on the island [Rangitoto] but he was straight Kuia… And then all the Kuia

341   left… so lots of those *korero* [stories] about Rangitoto were not spoken about anymore. Ngāti Kuia lost

342   a lot of those *korero* whereas our Ngāti Koata-Kuia relations who stayed on the island retained their

343   knowledge of the place". Whatever the case might be, two informants (one from Ngāti Koata and the

344   other who recognised their links to both Ngāti Koata and Ngāti Kuia) also affirmed that they had no

345   reason to doubt the story from Karepa Te Whetu: "If it [the story] came from Karepa, I have no reason

346   to doubt it". Finally, upon questioning the informants about the role of Alfred Grace in the telling of

347   the story there was no mention of misgiving or distrust, as is common for other Māori when reflecting

348   on the work of other ethnographers of the time (Mikaere, 1995; Smith, 1999; Haami, 2012).

349   ## 6.2 Key elements and story-telling devices

350   Many of the informants expressed familiarity with the places and contextual details described in

351   Grace's account. The most common reflections included reference to the two settlements named in

352   the story, Motiti and Motu. Initial discussions suggested informants were unaware of such settlement

353   names on, or surrounding, Rangitoto. However, several informants from Ngāti Koata and Ngāti Kuia

354   (in conversations independent of one another) were quick to point out that there is a Motuiti Island,

355   also known as Moutiti, Motiti and Victory Island, just off the northern coast of Rangitoto (Figure 1).

356   For example, one Ngāti Kuia informant stated: "In the old books, it is referred to as Motiti and

357   Moutiti. Motiti - that could be just a misspelling if it has been orally translated. That kind of thing was

358   prevalent when they [ethnographers] were transcribing as they heard it and I would expect it would

359   have been the same kind of situation here…Motiti, Moutiti, Motuiti". However, one Ngāti Koata

360   informant questioned these possible linkages, drawing specific attention to there being no beaches

361   on Motuiti and no visible signs of having been occupied (i.e. pits or middens). Notwithstanding these

362   literal inconsistencies, the same informant described the island as an important site for ongoing

363   traditional harvesting of wild-foods.

364   With reference to the settlement of Motu, one Ngāti Kuia informant noted the proximity of Motuiti

365   Island to the historical settlement at Otu Bay at the northern end of Rangitoto, and questioned

366   whether Otu Bay might be a misspelling of Motu (Figure 1). Another Ngāti Kuia informant questioned

367   whether Motu might be a shortening of a longer name such as Motungararara (now formally named

368   Titi Island) which was not only the site of a settlement held by Te Pou Whakarewarewa [an historical

369   figure understood to have lived during the late 18th century] but also a position where he had control

370   of all the area. It was surmised by another informant from Ngāti Koata that by using the name Motu

371   (translates as Island) Karepa Te Whetu may have been 'generically' referring to all the islands in the

372   area, not just a specific place. Alternatively, another informant from Ngāti Koata offered that "just

373   because people don't know this name 'motu' it doesn't mean that there wasn't a place called motu,

374   but the name may have been buried or usurped by new peoples coming in…". Given these initial

375   commentaries, there was general agreement that the story was derived from (and/or around)

376   Rangitoto but it was not possible to confirm any specific location.

377 The description of extensive mudflats and a shallow river at the settlement of Motu, also led some

378 informants to specifically reflect on several locations on Rangitoto and its surrounds with similar

379 physical characteristics. For example, a Ngāti Koata informant stated "When I think about that, I think

380 about Whangarae on the Nelson mainland, just before Okiwi Bay. It was closer than other places on

381 the Island. My recollection is going there as a child for a *tangi* [funeral] and we anchored our boat out

382 there and on the low tide it was stranded. We just waited for the tide to come back in again. And

383 there was a big settlement in that place…at Whangarae… That area is still owned by Ngāti Koata. Not

384 many people live there now but there are a lot of owners…you could class that as part of D'Urville

385 Island [Rangitoto]" (Figure 1). The same informant emphasised that these places were not regarded

386 as separate by the people living in these areas and that any attempts to locate places referred to in

387 the story need to understand that the sea connected all the islands and the mainland as well as the

388 settlements situated along their coasts. The informant added "there is another place on D'Urville

389 Island which is in the Manuhakapakapa Bay. The water there and particularly Opitiki Bay was heavily

390 populated pre-Ngāti Koata and probably even Ngāti Kuia…and the water there is shallow".

391 Specific reference to a "river" at Motu also led some informants to contemplate the absence of rivers

392 on the Island as well as the neighbouring mainland. While this was inexplicable for some, informants

393 from both Ngāti Koata and Kuia recounted that the extensive use of geomorphic names such as

394 'sounds' and 'arms' across the northern South Island today refer to locations that were traditionally

395 referred to as *awa* [river]. For example, "Te Hoiere – is a good example of that. Today we talk about

396 the Pelorus River and Pelorus Sound, as opposed to Te Hoiere being one big entity into the Cook

397 Strait. Even some of the place names through the sounds Awaiti and Awanui, they were calling arms

398 at the time also, so even if we were thinking about D'Urville Island and Port Hardy and Greville

399 Harbour and all of those places, there are lots and lots of little arms all over the place [that would

400 have had names]" (Figure 1). Such contextual nomenclature may thereby explain the use of the term

401 'river' in the story.

402 Ancestral protagonists were another common element discussed by all informants. However, it is

403 important to qualify that most key informants from Ngāti Koata either declared no knowledge of the

404 names or that the names (or at least some) pre-dated the arrival of Ngāti Koata people to the region.

405 In contrast, most of the key informants from Ngāti Kuia recognised the names of the central

406 protagonists, and quickly confirmed linkages, citing genealogical books and historical transcripts (e.g.

407 Meihana Whakapapa Book, no date; Hemi Whakapapa Book, no date), and the ongoing use of such

408 names today. As one respondent declared, "Rongomai, Te Pou and Titipa - I know all those names"

409 and another stated "Te Pou - yep that's my father's middle name. Te Pou is a very common name for

410 Ngāti Kuia. Every Peter is a Pou … so that name's a common one". Another said, "Te Pou and

411 Rongomai have been commemorated down to the present day by the repeated use of their names in

412 the lines of Ngāti Kuia *whānau* [families]". The sacred fishing hook 'Huakai' used by Rongomai was

413 recognised by another Ngāti Kuia informant as a term used by recent generations of Ngāti Kuia. It was

414 also noted that the ancestors named in the story also derived from quite different periods of time.

415 Thereby, any attempts to historicise elements within the story based on genealogy would more likely

416 than not result in looking for detail that is not there. Two commentaries summarise these sentiments:

417 "Such stories were not necessary told in a linear fashion" and "The stories don't follow linear ways of

418 telling a story and that is important because you can have different ancestors from different times to

419 celebrate those people, to remember them, to remember a lesson… so they are not forgotten". In

420 this way, it is the protagonists rather than chronological dimensions of time that are of most

421 relevance.

422 Other contextual aspects in the story considered relevant to connecting the narrative to the Rangitoto

423 (D'Urville Island) area included the multiple references to large (lamniform) sharks and *kahawai*

424 (salmon). Many of the informants from Ngāti Koata who grew up on Rangitoto described deep

425 familiarity with large sharks and *kahawai* (salmon) in the area, particularly at Manuhakapakapa

426 Harbour (Figure 1). For example, "*Kahawai* were plentiful around the Island [Rangitoto]… like at Kape

427 [Manuhakapakapa Bay] … there was a big *kāinga* [settlement] there" and "*Kahawai* is everywhere, we

428 get it quite easy…". Notwithstanding that *kahawai* and lamniform varieties of shark are common

429 around A-NZ coastal waters (Roberts et al., 2015a, 2015b), some informants considered the potential

430 linkages between specific locations well-known for their shark and *kahawai* abundance on the Island

431 and the traditional settlement of Motu named in the story. Manuhakapakapa Harbour, Whangarae,

432 Otu Bay and Skull Bay in Port Hardy were all identified as possible analogue sites given the significant

433 settlements that once existed at all of these neighbouring places. While such information alone was

434 recognised as insufficient to draw any firm conclusions about the specific location for the story, many

435 informants nonetheless regarded the multiple layers of contextual information in the story as highly

436 relevant for connecting the story to the Rangitoto (D'Urville Island) area. One of the informants from

437 Ngāti Kuia summarised: "It is not only the descriptive language of catastrophic waves being called

438 ashore, but the other details, that make us believe we are in the place".

439 Finally, references to the power of prayer and incantation [*karakia*] as well as shapeshifting [*turehu*] in

440 the story were identified as also highly relevant to any claims of the narrative coming from the

441 northern South Island. Ngāti Kuia informants emphasised not only this power, but also the reputation

442 held by the "tōhunga" [priest; expert in traditional lore; person skilled in specific activity; healer] of

443 Ngāti Kuia to modify the elements. For example, "We were known as *te iwi karakia* [the

444 necromancing people] …but not the kind that do *makutu* [dark incantations]. Our *karakia* were very

445 much a demand, that was the *mana* [authority, control, influence, prestige] and power of the *tōhunga*

446 [priest; expert in traditional lore; person skilled in specific activity; healer]. We are connected to all of

447 our *Atua* [Gods, deity] and we are made of our *Atua*". These discussions also led one of the

448 informants from Ngāti Kuia to reflect specifically on the significance of the incantation used in the

449 story and whether the description of destructive waves was due to a tsunami or a phenomenon

450 manifest through metaphysical forces. In response, the informant answered: "what I do know is that

451 our people were recognised as very strong *kaikarakia* [necromancers]". Mitchell and Mitchell (2004)

452 have also pointed out that Ngāti Kuia have long been recognised for their powers in this regard and

453 historical transcripts are known to contain *karakia* about how to control the sea and the waves, with

454 many references to Rangitoto (Smith, 1889). The story also incorporates multiple references to Te

455 Pou and Rongomai 'shapeshifting' or transforming themselves into various life-forms from the sea,

456 from whale and shark, to porpoise and kahawai. Again, several informants from Ngāti Kuia affirmed a

457 deep familiarity with such details, including acceptance of the supernatural and the metaphysical

458 world. For example, "Shapeshifting, that is acceptable to me. I grew up with that *korero* [story]" and

459 "Kaikaiawaro is our *kaitiaki* [person, group, being that acts as a carer, guardian, protector and

460 conserver] and he takes the form of a dolphin". Further still, the familiarity with these elements in the

461 story extended to recognition among many of the Ngāti Kuia informants that they were descendants

462 of Kaikaiawaro, and that he is present in their genealogy as an ancestor rather than an Atua. As an

463 informant declared, "Yes…when I was reading that Te Pou goes to visit Tangaroa and he transforms

464 himself, it was like, we know that because Kaikaiawaro who is in our *whakapapa* as a person, could

465 manifest himself as a dolphin… We are the descendants of Kaikaiawaro".

466   6.3 Memorials and analogue stories

467 Reflecting upon the specific narrative of Te Pou [the principal protagonist in the Rival Wizards story]

468 calling forth catastrophic waves, many informants from Ngāti Koata and Ngāti Kuia regarded this

469 account as most likely referencing direct experience with past tsunami inundation. However, almost

470 all of these informants openly acknowledged that they did not know where this story occurred and/or

471 when it happened, and that the narrative was being told within a framework of deities and super-

472 natural humans with influence over the elements. Consideration of the narrative as a tsunami

473 tradition also led several of the informants to note similarities with the destructive waves described in

474 another story from Moawhitu [Greville Harbour] on the western side of Rangitoto (Figure 1).

475 According to these commentaries a tsunami, possibly occurring in the 1400s or 1500s, drowned

476 nearly all people living around Greville Harbour, and their bodies now lie in the surrounding sand

477 dunes. For example, "Yes, there was a great big tidal wave. I heard it when I was a kid. My

478 grandmother told me when I was a child. This story is *tuturu tika* [genuinely truthful]. I don't question

479 it". The story of Moawhitu was also recounted by Karepa Te Whetu to Elsdon Best and published in

480   the Journal of the Polynesian Society in 1893 (Te Whetu, 1893). It describes the people of Ngai-

481   Tarapounamu who settled Rangitoto Island and a breach of *tapu* [sacrosanct, forbidden, inviolable] by

482   a local woman which led to the gods stirring up the deep ocean and causing great waves to sweep

483   away people where the woman was living. Phillipson (1995) purports that the "tidal wave" occurred

484   some-time in the sixteenth century, while Cope (2011), Chagué-Goff and Goff (2012a, 2012b) and

485   Cope et al., (2012) indicate the previous century as more likely based upon the inferred timing of a

486   Māori occupation layer beneath marine gravels at Moawhitu as well as palaeotsunami evidence from

487   neighbouring sites across region. Meanwhile, Mitchell and Mitchell (2004) referred to the "tidal

488   wave" as *Tapu-arero-utuutu* [vengeance for the breaking of strict food preparation practice] and

489   postulated that the people already living on the Island prior to the arrival of the kin-group Ngai-

490   Tarapounamu may have been from the ancient Waitaha peoples and/or early Ngāti Kuia lines. It is

491   also noteworthy that one informant familiar with the name Tapu-arero-utuutu identified a stand of

492   offshore rocks to the south west of Rangitoto by the same name (Figure 1). The association of this

493   name with tsunamis and its close location to Rangitoto however were not mentioned.

494   More than one informant questioned whether the Rival Wizards narrative might be a retelling of the

495   Moawhitu tradition. One informant questioned where knowledge of the Moawhitu tradition had

496   actually come from. For example, "I have heard the *korero* about Moawhitu and the tsunami there,

497   but I was told by my uncle (and he is passed away now) that the people were labouring men but also

498   avid readers so I cannot say whether that story was one that we had or what he had read and then

499   became ours". Meanwhile another informant reflected that the [Rival Wizards] story might not

500   necessarily be referring to Moawhitu, but rather the Manuhakapakapa area due to the strong

501   references to kahawai and the abundance of people in the area: "This certainly could have been a

502   place where that *korero* might have been had". In contrast, Otu Bay and Skull Bay were also identified

503   by other informants as equally likely sites referenced in the story. As noted earlier, one Ngāti Koata

504   informant reflected that the name motu might have not only been used in a general sense but also to

505   reflect that there are many places here that were likely affected by the extraordinary waves described

506 in the story and so a generic settlement name was used to capture this. Whatever the case may be, in

507 considering the specific sites and sources for the Rival Wizards story there was widespread agreement

508 (although not total) that the story and its elements derived from Rangitoto and the connected places

509 and peoples that surround the northern South Island. As one respondent noted, "It's definitely got

510 the feel that it comes from this place".

511 **7. MAORI ORAL HISTORIES AND NATURAL HAZARDS SCIENCE**

512 **7.1 Lessons and opportunities**

513 By engaging directly with informants from Ngāti Koata and Ngāti Kuia it is evident that there is a deep

514 familiarity with the different elements contained in the Rival Wizards story. This includes knowledge

515 of past tsunami impacts on, and surrounding, the island of Rangitoto. Dialogue may not have included

516 familiarity with the specific story itself, but ancestral relationships were confirmed between

517 informants of Ngāti Koata descent and the original informant of the story Karepa Te Whetu as well as

518 those informants of Ngāti Kuia descent and the leading protagonists in the story. Many other aspects

519 of the story are also deeply rooted in the enduring knowledge of Māori histories across the northern

520 South Island. While such information is insufficient to draw any firm conclusions about a specific

521 location for the occurrence of catastrophic waves, these oral histories from Ngāti Koata and Ngāti

522 Kuia provide strong collective evidence for pre-written tsunami inundation(s) on Rangitoto Island and

523 the neighbouring coast.

524 More broadly, this work confirms that Māori oral histories are dynamic, even when committed to

525 writing in an ethnographical text. The Rival Wizards story holds multiple purposes comprising

526 elements of culture, place, identity, lineage, history and in this case, environmental risk. It is also clear

527 that ancestral and kinship linkages to people and place (i.e. *whakapapa*) are central to the

528 construction and ongoing retelling of Māori histories. Royal (1992: 21) affirmed this notion stating

529 that *whakapapa* is "the fabric upon which tribal histories sit" generating meaning for human

530 behaviours and understanding in the Māori tribal world. Further, Roberts (2012) explained that

531   *whakapapa* is used in story-telling as a construct for mapping the natural world and its phenomena;

532   thereby acting as a "mental map" of place. And most recently, Kelly (2016) has reflected that Māori

533   knowledge was stored layer by layer, referencing places, ancestors and the actions of protagonists

534   as 'memory cues' to retain vitally important information. The specific layering of contextual detail

535   in the Rival Wizards story affirms these connections and relationships between the natural and

536   metaphysical worlds, including the narrative structures critical to cultural endurance and memory.

537   Our working with informants from Ngāti Koata and Ngāti Kuia also highlights that Māori oral histories

538   can complicate scientific definitions of what constitutes events. That is, the earth sciences typically

539   treat events as discrete and bounded but in the case of the Rival Wizards a different paradigm with

540   non-linear contextual details is used to establish layers of meaning with ancestral protagonists from

541   different epochs of genealogical time. Tau (1999) reflects that events in the Māori world are often

542   recalled relative to known ancestors rather than fixed at some objective point in time. Further he

543   points out that trying to apply chronology to genealogical time is akin to historicising a past that was

544   not intended to constitute a linear history. In short, Mātauranga Māori orders itself differently, and

545   thereby the risk of misinterpretation is high when stories and their elements are not understood

546   within the context of ancestry and cultural experience (Roberts et al., 1995; Berkes, 1998; King and

547   Goff, 2010).

548   The methodology underpinning this research provides an example of how the earth system sciences

549   as well as the knowledge-practice-belief complex of Mātauranga Māori can benefit from engaging

550   collaboratively with one another. Confirmation of deep connections to the Rival Wizards story and

551   subsequent affirmation of ancestral experience with past tsunami(s) across the northern South Island,

552   casts off earlier assumptions that the story might derive from the eastern Bay of Plenty (King and

553   Goff, 2010). Further, this study emphasizes the value of such engagements, particularly for scientific

554   researchers who seek to learn from the historical experience captured in Māori oral histories. From

555   this epistemological position, we agree with Styres (2008) who argued that the challenge for

556   researchers from the academy of science is to go beyond traditional methodological approaches and

557 assumptions about research which select and frame stories from the point of view of the dominant

558 culture. Further, we concur with Johnson et al. (2016: 3) that a reframing of science is needed

559 whereby "one is drawn to the wider value of a dialogue across knowledge systems that is humble,

560 respectful and hopeful; which recognizes not only the need to acquire knowledge, but also the need

561 to transform and respond to different knowledges, understandings, meanings, and opportunity".

562 Although, we simultaneously acknowledge that this is deeply challenging because the research

563 structures around us constantly push and pull us to neglect and compromise these values, ethics and

564 practices. Further, we recognise that research framing will not solve all the problems associated with

565 the hierarchies of power and knowledge production (Mustonen, 2014).

566 Notwithstanding these ongoing tensions, engaging in this work can help to promote "plural spaces" of

567 learning that contribute to the reclaiming of stories and culture as well as the development of new

568 knowledge and new questions (Howitt and Suchet-Pearson, 2003; Zanotti and Palomino-Schalsha,

569 2006). For example, this study contributes to a number of projects currently being undertaken by

570 Ngāti Koata and Ngāti Kuia by adding to their existing stores of socio-cultural knowledge and history.

571 This research space also provides an opportunity for the knowledge-practice-belief complex of

572 Mātauranga Māori to engage with the academy of science about tsunami disturbance, recurrence

573 and risk. And, as already articulated, there remain many unrealised opportunities for Mātauranga

574 Māori to inform the earth system sciences about extreme hazard episodes and risk along the A/NZ

575 coastline over the past 1000 years (King and Goff, 2010; King, 2015; King et al., 2017). Such work

576 however will require greater attentiveness to relationships among people involved in the research,

577 including the need to be aware of contemporary developments in political, epistemological and

578 methodological practice.

579 **8. CONCLUSIONS**

580 Working alongside key informants from the Māori kin groups of Ngāti Koata and Ngāti Kuia this work

581 confirms Māori ancestral experience with a past tsunami, possibly multiple events, on, and

582 surrounding, Rangitoto (D'Urville Island). While it is not possible to draw any firm conclusions about a

583   specific location for the occurrence of past 'catastrophic waves', it is evident that Māori oral histories

584   are highly contextual and purposeful, comprising multiple layers of meaning and experience. Further,

585   to engage with such histories (and the people who link genealogically to such stories) requires close

586   attention to a politics of representation of those stories, in both past recordings and current ways of

587   retelling, as well as sensitivities concerning how knowledge is constructed, distributed and applied. If

588   the geosciences are to advance scholarship that promotes plural knowledge development (and plural

589   knowledge co-existence), then a commitment to the acquisition of new skills in trans-cultural research

590   enquiry will be required. The potential of such work to contribute to the production of 'new'

591   narratives about tsunami disturbance, recurrence and risk around the A-NZ coast is regarded as high.

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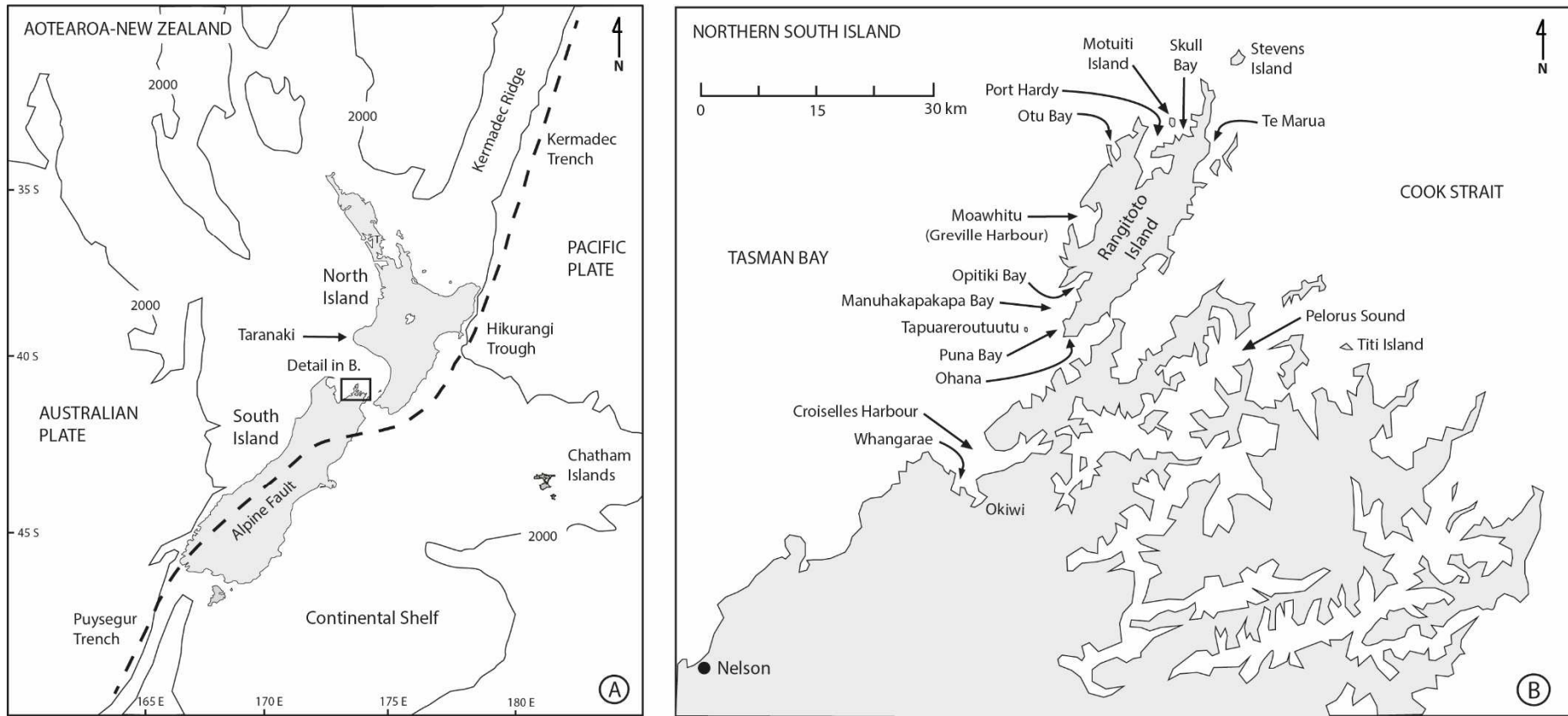
Figure 1: **(A)** Aotearoa-New Zealand's tectonic location in the South Pacific showing the Australian-Pacific plate boundary as a dashed line. The submerged

continental shelf boundary is loosely defined by the 2000 m isobaths (adapted from Carter et al. (1988)). **(B)** Rangitoto Island (D'Urville Island) and

surrounding locations mentioned in the text.