



THE UNIVERSITY OF  
**WAIKATO**  
*Te Whare Wānanga o Waikato*

Research Commons

<http://researchcommons.waikato.ac.nz/>

## Research Commons at the University of Waikato

### Copyright Statement:

The digital copy of this thesis is protected by the Copyright Act 1994 (New Zealand).

The thesis may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- Any use you make of these documents or images must be for research or private study purposes only, and you may not make them available to any other person.
- Authors control the copyright of their thesis. You will recognise the author's right to be identified as the author of the thesis, and due acknowledgement will be made to the author where appropriate.
- You will obtain the author's permission before publishing any material from the thesis.

**Te Tau Hana ‘Avaika Kākiu: Ancestral Fishing Practice and  
Knowledge of Nukuhiva, Te Henua ‘Enana (The Marquesas  
Islands)**

A thesis  
submitted in fulfilment  
of the requirements for the Degree  
of  
*Masters of Māori and Pacific Development*  
at  
the University of Waikato  
by

**Tema‘uonukuhiva Te‘ikitekahioho-Wolff**



THE UNIVERSITY OF  
**WAIKATO**  
*Te Whare Wānanga o Waikato*

**University of Waikato**

**2020**

*He Tapatapa*

*E Tana'oa ē*

*Te hatu o te Moana Nui a Hiva!*

*Matioka 'ia ē, hahatai te etua o te tai*

*Ha'amenino, ha'amo'ū i te tai*

*Ha'ako'uko'u, ha'aoko te tai*

*Tai ha'apī mai, tai hahati*

*Tai heke atu, tai motu*

*Ka'u kave hia nui to'u*

*Niu i 'oto o te hohonu*

*O te tama Kerara*

*I te ha'atūpuna*

*Tana'oa Etua Kākiu, Hui!*

*Tana'oa Etua Kākiu, Hui!*

*Tana'oa Etua Kākiu! Hui! Hui! Hui a!*

## **Abstract**

This thesis explores the ancestral fishing practices of Nukuhiva Island and how they have changed over time. I aim to preserve the ancestral fishing practices and lore within this thesis to benefit future 'Enana (Indigenous Marquesans) generations due to the unfortunate lack of literature written by 'Enana, for 'Enana, on this and many other topics. This thesis is integral to the perpetuation and preservation of ancestral knowledge and practices among the many changes occurring today throughout Te Henua 'Enana (The Marquesas Islands). There are three key areas that this thesis focuses on, which form the questions in Chapter 1 - The fishing practices of Te Henua 'Enana during the early times of outsider contact, contemporary fishing in Nukuhiva now and in the recent past and how fishing practices and knowledge as a whole have evolved over time.

To accomplish this, a review of relevant literature on the importance of fishing and ancestral fishing practices across Polynesia is presented in order to fill in the gaps within the literature written on fishing practice and knowledge of Te Henua 'Enana. Indigenous Oceanic methodologies are explored to present this thesis through an Indigenous framework. Due to the lack of 'Enana scholarship on methodologies, along with the strong genealogic and cultural links between 'Enana and Tongan culture, the Kakala methodology is adapted for this study.

Next, a thorough review of the relevant ethnohistoric literature written on Nukuhiva and the broader Henua 'Enana is introduced, to provide a basis for the ancestral fishing methods practiced during first contact with Europeans. To provide Indigenous perspectives on the fishing performed in Nukuhiva now and in the recent past, informal interviews with six local fishing elders within Nukuhiva Island were conducted. From these interviews, a comparison is made between the fishing practices that are presently undertaken and the fishing practices that are no longer performed. Modern subsistence fishing with local fishermen was also undertaken within the

context of Nukuhiva, with this experience providing a practical knowledge basis for fishing performed today. Environmental fishing knowledge, such as seasonal indicators of abundance and lunar phases in relation to different fishing practices collected from fishing informants, are also underlined in this thesis.

Although many changes have occurred, the fishing that most subsistence fishermen of today practice - such as handline fishing - still echoes the fishing methods recorded at outsider contact (most traditional nets being an exception) and has evolved with the new technologies and materials of today. The findings presented in this thesis show the efficacy and continued benefits of ancestral fishing knowledge in ancient and contemporary times, highlighting that preserving ancestral traditions is crucial to maintaining 'Enana knowledge systems, identity and culture.

## Acknowledgements

E te tau pā'io'io o te tai 'o mua, te tau tūpuna e noho nei io he Havaiki, me te hua'a paotū o Nukuhiva e noho nei i tēnei ao ma'ama, ko'utau nui i te apu'u me te pātoko mai i tēnei tama 'Enana i 'oto o te 'umihi i te tau taetae o to tātou tau tūpuna.

This work would not have been completed without the support, encouragement and *ka'oha* (love) of the many hands who have come together to assist me in my endeavors. I'd like to acknowledge my Uncle, Teautaipī, for opening his arms and his home in Taipivai to me for the duration of my research in Nukuhiva, sharing his cultural wisdom that deepened my understanding of what it is to be 'Enana. This study would not have been possible without him. I would also like to thank Charles "Petero" Te'ikitohe, Huri Tamari'i, Moni'ehitu "Pūkīkī" Vai'anui, Teri'i Haiti and René 'Otomimi for agreeing to be interviewed for this study and for the many tekatekao we have had. To Iakopo Pellau, I would like to thank for his assistance in translating some of the modern academic terms used within this narrative. To the many *tonton* (uncles), *tati* (aunties) and cousins of Nukuhiva who have provided valuable insight on fishing practices ; Who would always offer food, transportation and accommodation during my stay, I give my thanks. Ko'utau nui.

To my parents, Teta and Toma, I thank for providing financial assistance to conduct research in Nukuhiva, supporting my higher education journey and for their valuable insights on 'Enana language and fishing. To my Uncle David Addison, I thank for donating his ethnohistoric literature collection to me and for always being available for discussions on 'Enana culture. I also acknowledge my advisor Haki Tuapiki for taking me under his advisory and for his assistance in finding an 'Enana voice within my writing. Ngā mihi nui ki a koe e hoa. To my partner Indianna, who has helped in revising this narrative and providing unconditional support throughout this turbulent year, tēnei te mihi ki a koe e te tau.

## Contents

<b>Abstract .....</b>	<b>- 3 -</b>
<b>Acknowledgements .....</b>	<b>- 5 -</b>
<b>Contents .....</b>	<b>- 6 -</b>
<b>List of Figures .....</b>	<b>- 9 -</b>
<b>List of Tables .....</b>	<b>- 10 -</b>
<b>Te Tau Ponatekao ‘Enana - Glossary of Marquesan Terms .....</b>	<b>- 11 -</b>
<b>Chapter 1. Tekao ‘o mua ika - Introduction .....</b>	<b>- 14 -</b>
1.1 ‘O ai au? - Positionality .....	- 14 -
1.2 Introduction .....	- 15 -
1.3 Research Questions .....	- 18 -
1.4 Objectives & Rationale .....	- 18 -
1.5 Methods and Methodology .....	- 19 -
1.6 Indigenous Oceanic Research .....	- 20 -
1.7 Thesis Overview .....	- 21 -
<b>Chapter 2. Vevete ‘ia tumu tekao - Literature Review .....</b>	<b>- 22 -</b>
2.1 Introduction .....	- 22 -
2.2 Significance of marine resources in Oceania .....	- 23 -
2.2.1 As a food source .....	- 23 -
2.2.2 Cultural and Spiritual Significance .....	- 24 -
2.3 Fishing techniques and traditions throughout Eastern Polynesia .....	- 26 -
2.3.1 Hawai‘i .....	- 27 -
2.3.2 Aotearoa .....	- 35 -
2.3.3 The Society Islands .....	- 40 -
2.4 Tapu and aspects of spirituality in fishing .....	- 46 -
2.5 Shifts in traditional fishing .....	- 47 -
2.6 Recontextualizing fishing knowledge .....	- 49 -
2.7 Conclusion .....	- 50 -
<b>Chapter 3. Pehea te ha‘ahe‘e ‘ia hana - Methods and Methodologies .....</b>	<b>- 52 -</b>
3.1 – Introduction .....	- 52 -
3.2 – Positionality of the researcher .....	- 53 -
3.3 Indigenous oceanic methodologies .....	- 55 -
3.3.1 Kaupapa Māori research .....	- 55 -
3.3.2 Kakala as a methodology .....	- 57 -
3.3.3 Talanoa .....	- 59 -
3.4 Talanoa and Kakala in Te Henua ‘Enana .....	- 61 -

3.5 Tekatekao 'ia i Nukuhiva - Interviews in Nukuhiva .....	- 64 -
3.6 Te hana 'avaika i Nukuhiva - Participant observation in Nukuhiva .....	- 66 -
<b>Chapter 4. Te tekao tumu o Te Henua 'Enana - Environmental and cultural context ...</b>	<b>- 68 -</b>
4.1 Geographic and environmental context.....	- 68 -
4.2 Te 'Eo 'Enana.....	- 71 -
4.3 Te 'akakai o Te Henua 'Enana - History of the Marquesas Islands.....	- 72 -
4.4 Ātea me Atanua - Ātea and Atanua, the Primordial Gods .....	- 72 -
4.5 Te Kaikai Tumu - Food and plants of Te Henua 'Enana .....	- 74 -
4.6 Te tau hao'e - Outsiders at contact.....	- 76 -
4.7 Te Ha'atumu 'Enana - The Marquesan culture .....	- 77 -
<b>Chapter 5. 'Avaika i te tai kākiu - Fishing during outsider contact .....</b>	<b>- 80 -</b>
5.1 Introduction .....	- 80 -
5.2 Te hana 'avaika i te tai kakiu- Fishermen and fishing in ancient times .....	- 83 -
Te 'Āhui - Resource prohibitions.....	- 86 -
5.3 Te ika hī - Hook and line fishing.....	- 88 -
Te hī ika ma he vaka - Hook and line fishing by canoe.....	- 90 -
Te ika hī mei o he henua - Fishing from shore .....	- 91 -
5.4 Te 'avaika 'upeka - Nets and netting.....	- 92 -
Te ha'atopa 'upeka ma he vaka - Netting by canoe.....	- 94 -
'Avaika 'upeka mei o he henua - Netting from shore.....	- 97 -
5.5 Te ve'o ika - Spearfishing and harpooning .....	- 98 -
Te ve'o ika ma he vaka - Spearfishing from canoe.....	- 99 -
Te ika ve'o ma he henua - Spearfishing from shore .....	- 99 -
5.6 Special methods of fishing .....	- 100 -
Fish poisoning .....	- 100 -
Gathering.....	- 100 -
Noose and bow.....	- 101 -
Dolphin fishing .....	- 102 -
<b>Chapter 6. Te hana 'avaika i Nukuhiva - Fishing methods and knowledge of Nukuhiva in the recent past and today .....</b>	<b>- 103 -</b>
6.1 Introduction .....	- 103 -
6.2 Cultural aspects of fishing i te tai 'o mua.....	- 105 -
Fish preservation methods .....	- 106 -
6.3 Environmental signs and fishing .....	- 109 -
Te tau pua o te henua me te tau ika - Flowers and fish seasonality .....	- 109 -
Te tau pō me'ama - Lunar phases .....	- 111 -
Te tai, te metaki me te au - Tides, winds and currents.....	- 114 -
6.4 Te ika hī - Fishing by hook and line.....	- 115 -
Te ika hī ma he vaka - Fishing from watercraft.....	- 117 -
Te ika hī io he toka - Toka fishing .....	- 117 -
Te 'avaika hu'u - Feather lure fishing.....	- 121 -
Te hī pa'aihere - Pa'aihere fishing .....	- 122 -

Te ika tāvere - Trolling .....	- 122 -
Te ika hī ma he koutu - Line fishing from shore .....	- 123 -
Te hī mōkoi - Angling from shore .....	- 124 -
Te ‘avaika pūhākau - Underwater line fishing.....	- 125 -
6.5 Te ‘avaika pā‘oa - Seine net fishing.....	- 126 -
6.6 Te ‘avaika ve‘o - Spearfishing and harpooning .....	- 127 -
Te ika puhi - Spearfishing by speargun .....	- 128 -
Te ika kāta‘i - Decoy fishing.....	- 129 -
Te ve‘o aku - Spearing aku .....	- 130 -
Te ve‘o haha‘ua - Harpooning haha‘ua.....	- 132 -
6.7 Other forms of fishing .....	- 133 -
Te hano kohi i te ika - Gathering practices .....	- 133 -
Te hano toetoe me te mama - Collecting toetoe crab and mama .....	- 133 -
Te heke huki - Fishing with stick for octopus.....	- 134 -
Te ‘avaika poa - Fish poisoning .....	- 136 -
‘Avaika io he ka‘avai - Fishing in the rivers.....	- 137 -
Te ‘avaika mokō me te honu - Shark and turtle fishing.....	- 139 -
Te hākai tupa - Gathering and preparation of tupa .....	- 139 -
<b>Chapter 7. Tekao ha‘apao - Discussion and conclusions .....</b>	<b>- 141 -</b>
7.1 Changes in Nukuhiva .....	- 141 -
7.2 Fishing today and the evolution of fishing methods and knowledge .....	- 142 -
7.3 Challenges with contemporary fishing and retaining ancestral knowledge .....	- 146 -
7.4 Informing the past and the future .....	- 147 -
7.5 Limitations.....	- 148 -
7.6 Ha‘apao ‘ia tekao - Conclusions .....	- 149 -
<b>Appendix I: Ethics approval and consent letters.....</b>	<b>- 153 -</b>
<b>Appendix II: Tables of <i>ika</i> commonly caught by each fishing method .....</b>	<b>- 160 -</b>
<b>References .....</b>	<b>- 165 -</b>

## List of Figures

Figure 3. 1 Gifting of hei at a family birthday party. ....	- 62 -
Figure 4. 1 Te Henua ‘Enana (The Marquesas Islands) in relation to Oceania (Addison 2006) -	68
Figure 4. 2 Te Henua ‘Enana (The Marquesas Islands) (Addison 2006) .....	- 69 -
Figure 4. 3 The island of Nukuhiva. (Google n.d.) .....	- 70 -
Figure 4. 4 The mountainous and deep bays of Taipīvai (left) and Hakapa‘a (right) showing the lack of a barrier reef and the general topography of the Nukuhiva coast.....	- 71 -
Figure 4. 5 Left: Tumu mei (breadfruit tree) coming in season. Right: ‘Ua mā (breadfruit storage silo) on a family paepae (stone platform) in Pua‘ua, Taipīvai. ....	- 75 -
Figure 4. 6 Kaikai ‘Enana (Indigenous Marquesan food). From botom: poke mautini (pumpkin pudding), popoi (breadfruit paste), toetoe (shore crab), puaka tao ‘ia (baked pork), meika nunu vai (boiled banana) and ika te‘e (raw fish). ....	- 76 -
Figure 5. 1 My uncle’s pearl-shell fishhook collection found at Anaho bay, Nukuhiva. Pearl-shell hooks are sometimes still found today near the sand burrows of tupa crabs, who sometimes excavate the hooks from beaches and mudflats.....	- 89 -
Figure 5. 2 An assortment of stone sinkers from Taipīvai, perhaps once used to weigh down bag nets or fishing lines.....	- 93 -
Figure 6. 1 Copra drying in an outdoor solar oven to be sold for profit .....	- 105 -
Figure 6. 2. Left: Leaf of the hau tree used for wrapping ika mītō. Right: Modern preparation of ika mītō with salt, lime and garlic. ....	- 107 -
Figure 6. 3 Ika tou‘aki of pa‘aihere at Taipīvai beach in the summer.....	- 108 -
Figure 6. 4 Left: Kenae tree nearing the end of blooming season. Right: Fish (mataiti, haka, kōvīvī) caught bottom fishing near the end of a kenae bloom. ....	- 110 -
Figure 6. 5 Left: Ha‘a tree out of blooming season. Right: Va‘u (dogtooth tuna), one of the “white” colored fish abundant during the blooming of hinako. ....	- 111 -
Figure 6. 6 A contemporary 3 seat vaka made out of marine plywood with outboard motor attached at the back in Taipīvai river. (From left: Toma Wolff, Tepua Gobrait, Taita Gobrait, Tema‘u Te‘ikitekahioho-Wolff) .....	- 116 -
Figure 6. 7 Taipīvai river mouth showing aluminum poti prepared for fishing and the moonset a few nights after the Ohotunui moon. ....	- 117 -
Figure 6. 8 Lining up bow of poti with Tikapo point to locate a toka in Taipīvai bay .....	- 118 -
Figure 6. 9 An abundant catch of pa‘aihere, va‘u and kahi made at a toka in Taipīvai bay. .	- 120 -
Figure 6. 10 Left: Catch of papahu made at night near the koutu with store bought fluorescent flies. Right: Photo of the me‘auku‘a fish.....	- 122 -
Figure 6. 11 The koutu of Taipīvai where hī mokoi is commonly practiced. ....	- 124 -
Figure 6. 12 Left: Hī mokoi in Taipīvai river for pōpō and rorau near the time of tai mate. Right: Rōrau and pōpō, two of the fish commonly caught in this style of fishing. ....	- 125 -
Figure 6. 13 A catch of tatue and other reef fish procured with speargun. The tatue were all caught using modern ika kāta‘i techniques. ....	- 130 -
Figure 6. 14 Iron harpoon head once used for haha‘ua ve‘o. ....	- 132 -

Figure 6. 15 Toetoe and mama prepared for a local feast. .... - 134 -  
Figure 6. 16 U‘a caught during a night diving expedition. .... - 136 -  
Figure 6. 17 Fruit of the hutu tree once mashed and used in tidepool fish poisoning..... - 137 -  
Figure 6. 18 7-prong metal spearhead for kou‘a ve‘o fishing ..... - 138 -  
Figure 6. 19 Left: Tupa crab on Taipīvai beach. Right: Tupa burrows of Taipīvai. .... - 140 -

## List of Tables

Table 6. 1 Names and ages of ‘Enana fishermen interviewed..... - 104 -  
Table 6. 2 List of ‘Enana moon phases compared to modern phase groupings and their related characteristics in relation to fishing. Moon names in column 1 are derived from a manuscript of Dordillon’s as cited in Handy 1923, p. 348 ..... - 112 -

## **Te Tau Ponatekao ‘Enana - Glossary of Marquesan Terms**

Ahu ‘avaika – *sacrificial platform for fishing*

A‘ia – *reef flats*

‘Au ‘oa – *fish startling technique used with strung leaves*

‘Āhui – *enforced prohibition to resources*

‘Avaika – *to fish, a fisherman*

Au hiti – *out-flowing current*

Au heke – *in-flowing current*

Ehi – *coconut*

‘Enana – *person, Indigenous Marquesan, Indigenous*

‘Eva – *Cerbera manghas*

Faira – *3-pronged spear*

Haka‘iki – *chief*

Hakatu – *point of triangulation in locating toka*

Hau – *Hibiscus tree*

Hei – *“kakala”, “lei”, a flower garland*

Hutu – *Berringtonia tree used for fish stunning*

Ika – *fish, marine animal*

Ika hī – *hook and line fishing*

Ika mītō – *preserved cubed fish dish*

Ika te‘e – *raw fish*

Ika tou‘aki – *dried fish*

I‘oi‘o – *plankton*

Ka‘oha – *love, greetings*

Ka‘aea – *red earth used to dye nets*

Kaikai ‘Enana – *Marquesan food*

Kana‘u‘u – *South-Western wind*

Kāta‘i – *decoy fishing for parrotfish*

Kenae – *Erythrina variegata*

Ko‘ika ika – *feast to celebrate and lift tapu of large catches*

Ko'oua – *grandfather, old man*  
Kou'a – *river prawn, Macrobrachium spp.*  
Kōkōpa'a – *hard and dark inner wood of mature hau tree*  
Ma'a – *small wooden pole net*  
Ma'o – *arm span, fathom*  
Mata karahi – *goggles*  
Matava'u – *layered spear with 12-prongs*  
Mave – *expression of welcoming*  
Me'ama – *moon*  
Me'ama hou – *new moon*  
Mei – *breadfruit*  
Meika – *banana*  
Me'ie – *profane, free of tapu*  
Mōkoi – *bamboo fishing rod*  
Ohotunui – *full moon*  
Oho 'au – *temporary tapu houses*  
Papa – *Phaseolus adenanthus*  
Paepae – *stone housing platform*  
Pafio – *long Y-shaped pole net from Hiva'oa*  
Puhākau – *fishing with hook and line while swimming*  
Pu'u – *coconut sinnet*  
Pana – *small bow and arrow used for fishing*  
Pā'oa – *seine net*  
Patia – *harpoon*  
Pe'ue 'ei – *dolphin-teeth headdress*  
Pō – *night*  
Poti – *motorboat, speedboat*  
Puhi – *speargun, to shoot a speargun*  
Puna ika – *magical stone fish figure*  
Ta'a – *fishing spear*  
Taha tapu o te 'avaika – *fisherman's sacred area*

Tai – *ocean, tide, a generation or period of time*  
Tai hahati – *rising tide*  
Tai motu – *ebbing tide*  
Tamanu – *Calophyllum inophyllum*  
Tana‘oa/Taka‘oa – *“Tangaroa”, the principal god of the ocean*  
Tapu – *to be sacred, a sacred prohibition*  
Tau‘a – *spiritual priest*  
Te Henua ‘Enana – *the land of men, the Marquesas Islands*  
Te ‘Eo ‘Enana – *the Marquesan language*  
Te Ha‘atumu ‘Enana – *the Marquesan Culture*  
Ti‘au – *a gaff, to gaff*  
Tiu – *Northern wind*  
Timana – *small circular bag net from Puama‘u*  
Toa – *head warrior, Pacific ironwood tree*  
Toka – *fishing grounds*  
Toko‘au – *Western wind*  
Tona – *small noose for catching shrimp*  
Tuaina – *cotton line*  
Tuatoka – *South-Eastern wind*  
Tuhuka – *expert, professional*  
Tuhuka ‘avaika – *master fisherman*  
Tekatekao – *to converse or discuss*  
‘Ua mā – *breadfruit storage pit*  
‘Upena – *large deep-sea bag net from Atuona*  
‘Upe‘a/‘upeka – *general term for fishing net*  
Vaka – *canoe*  
Ve‘o – *to spear or pierce*

## Chapter 1. Tekao ‘o mua ika - Introduction

### 1.1 ‘O ai au? - Positionality

Thomas is the man from Hawai‘i, Tetauavavaopu is the woman from Nukuhiva. Tema‘uonukuhiva is their son. I am Tema‘uonukuhiva. I was born in Hilo on the island of Hawai‘i. I was raised in Hawaiian immersion schools from when I was in pre-school until graduating in Hawaiian Studies at the University of Hawai‘i at Hilo. My education has embedded the Hawaiian language and culture within my person.

Around the age of 11, my parents made the decision to further connect with my mother’s side of the family living on Nukuhiva in French Polynesia. From then on, my family and I would visit Nukuhiva during the school summer holidays once a year ranging from a few weeks to a few months at a time. For the entire trip, my *ko‘oua* (grandfather), Martin, would always open his home in Tapīvai valley for us to stay. My *ko‘oua* came from a generation of ‘*Enana* (Indigenous Marquesans) who did not receive a formal French education, but instead was educated from his father and other relatives in *Te ‘Eo ‘Enana* (The Marquesan language). He only spoke in ‘Eo ‘Enana or *Reo Ma‘ohi* (the Tahitian language).

Living with my grandfather and spending time with family during the holidays became my ‘Eo ‘Enana classroom. They would speak to me in ‘Eo ‘Enana and I would respond in Hawaiian. I discovered how parallel the languages were, and after a few 3-month long summer vacations, I could speak *Te ‘Eo ‘Enana*. Although adults and children spoke French there also, my French language skills are minimal when compared to my ‘Eo ‘Enana today.

Holidays in Nukuhiva were also times for fishing with family. My father is a skilled fisherman himself and would always be offered a *vaka* (canoe) to go fishing whenever we visited.

Fishing is an activity that all enjoy and experience in one form or another in Nukuhiva. The sea of Taipīvai valley was always abundant with *ika* (fish). It was there that I would fish from shore or by canoe with family. Many of my aunties, uncles and cousins are also skilled fishermen, divers and gatherers. They fish to provide food for the family and at times, for the village. Fishing was one of the ways which strengthened my relationships to family in Nukuhiva and was one way I learned to understand my own culture. I write this thesis not only as an Indigenous academic, but also a modern-day fishing practitioner.

As I write this thesis, I am in Kirikiriroa, Aotearoa (New Zealand). I have been back and forth between Aotearoa, Hawai‘i, and Nukuhiva since 2017. In my education here I have brought with me my heritage from Hawai‘i and Nukuhiva while being educated within *te ao Māori* (the Māori world). Each place has shaped who I am and have thus molded this thesis.

## **1.2 Introduction**

Polynesian people are people who have lived as one with the ocean for many centuries. The ocean provided our ancestors with food, recreation and pathways to discover new lands. They developed efficient and sustainable ways to harvest their food from the sea. Their understanding and respect for the ocean lead them to see the ocean as not something to be exploited, but instead, to live with as one.

One of the most intrinsic ocean practices to Polynesians is fishing. Fishing and gathering provided local food sources from the ocean to coastal and upland communities and was one way the ancestors connected with the rhythms of the environment. It was a practice that developed over thousands of years of observation and technological innovation that was passed down from each generation to the next. It was also a valuable tool to procure new food supplies during prolonged

ocean voyages in search of new land. Fishing and gathering also provided the ancestors with preservable food resources for times of scarcity and gifts to praise and honor their gods.

For one to be a skilled fisherman in the time of our ancestors, one needed to be aware and observant of the changes on land and at sea. One needed to be conscious of the relationships between the moon and the tides; the winds and the stars; the location of the fish and how they interact. One needed to know their plants just as well; knowing which wood or bark to use for their tools and how to maintain them. Fishing knowledge was a tool that our ancestors utilized to live a sustainable and independent lifestyle for thousands of years. It is also a tool that can teach us much about our own lands and cultures.

The advent of colonization in Polynesia, however, has changed many aspects of traditional life. Many of the practices, languages and beliefs throughout the region have been lost through progression into a more Westernized world. New technology and ways of living were introduced to Polynesians through colonization. These influences have shifted localized subsistence economies to more globalized money driven economies. Polynesian societies are becoming increasingly dependent on outside resources to provide for their lifestyle. With increased dependence on and influence from the Western world, the gradual loss of local traditional practices, such as subsistence fishing, occurred. With fishing holding a key role in traditional Polynesian cultures, it is imperative that traditional fishing be explored and given attention to.

Although foreign materials and technologies are used by most Polynesian fishermen nowadays, many aspects of traditional fishing have survived. The circular fishhook used throughout the Pacific, for example, continues to be one of the most effective hook designs for landing fish and is used nowadays in commercial longline fishing (Lavondés 1971, Paulin 2007). This is a testament to the efficacy and usefulness of traditional fishing practices and knowledge.

Furthermore, traditional fishing holds many treasures of Indigenous ecological and environmental knowledge. Currently, efforts are taking place to revitalize Indigenous knowledge throughout the Pacific to be used in education and resource management strategies. These efforts look back on the traditional management systems preserved in literature and the memories of elder fishermen. For many cultures, subsequent information on the topic has been preserved, while others have not been given as much attention. Better understanding of traditional fishing knowledge is a crucial step for Polynesian nations to preserve cultural knowledge and to return to the sustainable lifestyles the ancestors once lived. This is especially poignant, given the current state of the world regarding the threat that climate change poses to humanity.

This thesis explores the fishing knowledge and techniques of Nukuhiva island in *Te Henua 'Enana* (The Marquesas Islands). Fishing was and continues to be an imperative practice to daily life in Te Henua 'Enana. Some fishing practices from ancient times have disappeared, while others have simply evolved to the influences of the modern age. Currently, Te Henua 'Enana sits between a time of preserving the ancient and accepting the modern. Traditional lifestyle has undergone major changes over the past half-century with the introduction of money economies and modern technology. This has reflected on fishing, where materials like aluminum and plastic now replace the wood and cotton used for seacraft and cordage not too long ago. Much of the fishing that remains today is a reflection of the fishing practiced long ago. This thesis addresses the changes in ancestral fishing methods that have occurred over time in Te Henua 'Enana to show the dynamics of ancestral fishing from past to present and how we can hold on to these traditions for the future.

### 1.3 Research Questions

In order to understand the dynamics of ancestral fishing methods and knowledge from past until present, questions (i), (ii) and (iii) are proposed to review the knowledge from the earliest records available until now:

- i. What were the fishing methods of early outsider contact in Te Henua ‘Enana?
- ii. How have fishing methods changed since ancient times?
- iii. What and how are traditional fishing methods and knowledge utilized by fishermen today and in the recent past?

The three questions above will provide insights to answer the main question of this thesis (iv):

- iv. What are the ancestral fishing practices and knowledge in Nukuhiva (The Marquesas Islands) and how have they changed over time?

### 1.4 Objectives & Rationale

The impacts of colonization on Te Henua ‘Enana have caused great cultural disjunctions throughout the archipelago in the recent past. Currently, only a few areas of the culture have undergone a cultural renaissance, such as *patutiki* (‘Enana tattooing). Within the recent renaissance of traditional practice that has emerged in Te Henua ‘Enana, an area that has not been given much attention is fishing and ocean knowledge. Although much traditional knowledge on fishing survives until this day in Te Henua ‘Enana, much has changed since the days of our ancestors. The early literature written on aspects of *Ha‘atumu ‘Enana* (Marquesan culture) in general is spotty and have been only written from the perspectives of outsiders, where certain topics like traditional fishing and ocean knowledge have been given minimal acknowledgement. Today, a large amount of unwritten localized cultural knowledge survives within the memories of ‘Enana elders who have

practiced and learned the lore of their forebears. It is important that this knowledge be preserved for the future and for 'Enana to tell our own narratives. Furthermore, the face of traditional fishing has pivoted in its relevance to fishermen in the past until today with the introduction of new technologies and ideologies. Because of this, attitudes towards the ocean environment have begun to shift and more focus has been placed on developing local commercialized fishing practices. With an increased focus on French education in Te Henua 'Enana, which sometimes requires youth to be displaced elsewhere for their education (i.e. Tahiti and France), 'Enana youth are now educated less on their own culture and language, further distancing them from their Indigenous identity.

This thesis explores the early records on traditional fishing and ocean knowledge to understand who ancestral 'Enana were and are as fisher people. The term "fisherman" is used throughout this thesis to not only represent male fishermen, but also female fishermen, who participate in many fishing and gathering activities. To show the evolution of 'Enana fishing methods, a baseline of ancestral fishing methods during early-outsider contact will first be explored. After establishing a baseline, I will explore how fishing methods and knowledge have changed and adapted to Western influences. Lastly, knowledge shared from elders and fishermen of Nukuhiva Island today will be explored. Examining the progression of fishing methods from these time periods will present a dynamic picture of what ancestral fishing looked like and how it lives today in Te Henua 'Enana.

## **1.5 Methods and Methodology**

The purpose of this study is to show the changes in traditional fishing in Te Henua 'Enana and how traditional knowledge is perpetuated today. In order to understand the fishing practices

during the period of pre and early outsider contact in Te Henua ‘Enana, a review of the ethnohistoric literature written by early visitors in Te Henua ‘Enana is presented. Ethnohistoric resources on this topic provided a basic overview of some of the fishing practiced between the late 18th and early 20th century, although the material written on the topic was not extensive. To account for the lack of literary resources in the early contact period, traditional fishing methods from related Polynesian cultures will be explored to supply a better idea of the types of fishing that would have been practiced during those times. Previous archaeological excavations conducted in Te Henua ‘Enana have also been looked at for further perspectives on fishing materials and techniques used pre-outsider contact in Te Henua ‘Enana.

In order to provide insight on fishing practices from more recent times, informal interviews with elders and community fishermen from Nukuhiva island were conducted. These interviews gave insight on traditional fishing practices that have occurred within the last 50 plus years on Nukuhiva island. All of the interviews were conducted in Te ‘Eo ‘Enana and were recorded using a digital recorder with informed consent. Audio recordings were later transcribed to be used for this thesis.

## **1.6 Indigenous Oceanic Research**

Currently, no Indigenous ‘Enana research methodologies exist. With my educational background from Aotearoa and Hawai‘i, and due to the close genealogic and cultural relationships between Māori, Tongan and ‘Enana, I have adopted Professor Konai Helu-Thaman’s Kakala framework for my research, while acknowledging the inspirations and influences from Kaupapa Māori and Talanoa research methodologies. In this, my position conducting insider research on Nukuhiva island will be discussed.

## **1.7 Thesis Overview**

Chapter 2 first presents a review of relevant literature to traditional Polynesian fishing methods and ocean knowledge. Overviews of traditional fishing in Hawai‘i, Aotearoa and the Society Islands – cultures closely related to *Ha‘atumu ‘Enana* and have had significant literature about the topic - are presented. This chapter also looks at the current revitalization movements across the Pacific to utilize Indigenous ocean and fishing knowledge. Chapter 3 presents the Indigenous Oceanic methods and methodologies used in this research. Chapter 4 provides a brief introduction to Te Henua ‘Enana, its culture, environment and history. Chapter 5 reviews the earliest written records made by visitors to review the fishing techniques and knowledge of that time. Chapter 6 presents the oral knowledge from interviews with elder fishermen of Nukuhiva Island on fishing in the recent past until now. Finally, Chapter 7 presents a discussion and my conclusions on ancestral fishing in Te Henua ‘Enana and research limitations.

## **Chapter 2. Vevete ‘ia tumu tekao - Literature Review**

### **2.1 Introduction**

With a rich history of dependence and connection to the ocean, Polynesian and Pacific peoples have utilized their marine resources in many aspects of traditional living. Marine resources were vital for providing food sources to coastal communities, holding profound cultural and spiritual significance to people throughout Polynesia and the Pacific. Thus, the act of harvesting marine resources held a key role in the daily functions of Pacific Island populations.

Both fisherman and common folk of Pacific societies held knowledge on traditional marine fishing. Developed over centuries of observation and practice, traditional knowledge was passed down orally from parent to child, and expert to expert amid each generation. Today however, the negative effects of colonization on Pacific societies has led to an immense loss of traditional and ancestral knowledge throughout most of the Pacific. Thus, it is imperative for traditional fish and fishing knowledge to be urgently preserved and recontextualized for communities now and in the future (Addison & Ono 2009, Glazier Solomona & Vuki 2012, Levine & Sauafea-Le‘au 2013).

The following chapter will review the literature on the traditional fishing techniques and knowledge throughout Polynesia and the Pacific. It endeavors to look at the significance of marine resources to Indigenous Pacific and Polynesian cultures and overviews the common fishing techniques of a few Eastern Polynesian societies. Key environmental factors, such as moon phases, tides and spawning seasons, pertaining to traditional fishing and gathering will be discussed. Furthermore, this chapter will review the effects of colonization on the transmission and retention of traditional fishing and ocean knowledge, as to how this knowledge has and is currently being incorporated into fishing activities among Indigenous Polynesian communities today. This will

thus highlight the importance and relevance of perpetuating fishing knowledge within Polynesian communities.

## **2.2 Significance of marine resources in Oceania**

### **2.2.1 As a food source**

Marine environments have provided vital food resources to the people of Oceania (The island regions of Melanesia, Micronesia & Polynesia) for centuries. Besides the presence of birds, the greater parts of Oceania lacked land animals to provide adequate protein for Indigenous populations (Paulin & Fenwick 2016, Kirch & Dye 1979). Although in some islands, pigs were introduced, they were predominantly used for ceremonial feasts or were the exclusive food of royalty. For some islands and atolls, local soil was unable to support enough vegetable production for the population (Johannes 1978). Instead, voyagers discovered the rich bounty of sea life in the various lagoons, reefs and open ocean environments that surround the lands of Oceania. Even in larger islands like Aotearoa where many populations were settled far inland, coastal resources were considered very important food supplies. Inland Māori communities often journeyed to nearby coastal areas to collect fish and shellfish and these resources were dried and strung, then returned inland as preserved food supplies (Best 1929, Paulin & Fenwick 2016). For these reasons, many of the island and atoll societies across the Pacific viewed fish, shellfish and other marine organisms as their primary sources of protein and nourishment in the diet of Indigenous people (Addison and Ono 2009; Amesbury 2013 ; Mokoroa 1981, Paulin 2007, Titcomb 1972).

Marine resources would have additionally provided substantial nutrition and value to ancient voyagers who were voyaging by sea in search of new lands. Fishing activity would have been essential for supplying food for long voyages and the cultural protocols that accompanied

them. One example of this can be seen from the Māori voyaging canoe *Takitumu* in its voyage from Hawaiki to Aotearoa. It was considered a *tapu* (sacred) voyaging canoe whose food supplies were provided solely by the fish that was caught from the canoe during the voyage (Best 1929). Traditional fishing practices brought from ancestral homelands could further be translated into the marine environments of newly discovered places to be used for food harvesting; referred to as the “portable economies” of voyaging by some (Glazier 2009 p.10).

Cultural values of resource sharing were perpetuated through fishing expeditions and shoreline gathering practices. Generally, men and women of the Pacific followed specific roles in different fishing practices. Men, who at times fished in parties, would fish by canoe within and beyond the outer reef for large catches of targeted species. Women and children were responsible for the collection of various reef and nearshore species, such as shellfish, crustaceans and smaller reef fish (Glazier 2009, Herdich & Armstrong 2008, Hooper & Tiniealu 2009, Titcomb 1977). In Hawai‘i, each catch was shared among one’s extended family, ensuring that all within the community would have enough to eat (Titcomb 1977). In Tokelau, large animals like marlin, bonito and turtle are seen as sacred fish which required all the catch to be distributed not only to the families of fishermen but to the entire community (Addison & Ono 2009).

### **2.2.2 Cultural and Spiritual Significance**

Indigenous people across Oceania were dependent on the local renewable resources around them to provide materials for their cultural and spiritual needs. Most relied heavily on the ocean for everyday functions and thus many cultures looked toward the marine environment to be able to satisfy these needs. For these reasons, marine resources thus held a significant role in the cultural practices and materials of many Oceanic cultures.

Necessary materials for many everyday functions and cultural practices were provided by marine resources. Skins, bones and teeth of marine life could be used to fashion different traditional tools and cultural instruments. In the Hawaiian Islands, shells of the widely eaten limpet species, named *'opihi (Celana spp.)*, were used as food scrapers in the processing of *kalo* (taro) and *'uala* (sweet potato) for eating (Titcomb 1979). Certain sponge and fish species in Hawai'i were also used medicinally to cure specific illnesses (Titcomb 1977-1979). In Te Henua 'Enana, carved cowrie shells were used as breadfruit peelers. In Tonga, marine resources were very much valued, where more than 230 types of marine invertebrates and species were traditionally used for more than 50 different functions and tools, such as drill bits, files, shaving apparatuses, game markers and even as boat scrubbers (Malm 2009).

Not only was marine life essential to everyday tasks, many spiritual ceremonies of numerous Pacific cultures also depended on marine resources. In the Hawaiian islands, the tough skin of the *lae* and *kala* fish were used as membranes for small drums called *pūniu*. Large shark skins were used as membranes for ceremonial drums called *pahu*, in which both instruments were used to accompany ceremonial *hula* (Titcomb 1977, Malo 1951). For certain spiritual ceremonies, marine species were used as offerings to honor the gods. Common ceremonial species used were turtle, marlin, skipjack tuna, albacore and even certain species of shellfish (Handy 1932, Titcomb 1977, Torrente 2015). Across Eastern Polynesia, it was required that the first fish caught in any fishing expedition was offered at a ceremonial altar, widely known as *ahu*, to one's chief or fishing god as a symbol of gratitude for a successful catch. This protocol also served the purpose of ensuring that fishing expeditions would continue to be fruitful (Best 1929, Glazier 2009, Handy 1932, Kamakau 1972, Titcomb 1977).

Large marine species were also respected and honored by Polynesian cultures as sacred animals connected to traditional belief systems. In the Tuamotu archipelago, large marine species such as turtles were spiritually significant as ancestral guardians or messengers from the gods (Torrente 2015). Similar spiritual aspects are seen in Hawai'i, where certain marine species, such as sharks or turtles, were viewed as *'aumakua* (ancestral guardians), who were a part of one's extended family. Families would each have their own specific *'aumakua*, where members of the family would look after and feed their *'aumakua* understanding that *'aumakua* would protect them if they ever encountered any harm (Titcomb 1979).

### **2.3 Fishing techniques and traditions throughout Eastern Polynesia**

From the time of the Lapita people who first voyaged across the Western Pacific Ocean in search of new land, Polynesian voyagers have brought with them essential plants and animals to be incorporated into newly discovered lands (Spriggs 2013). Along with these resources were the resources of their ancestral traditional fishing knowledge, such as the shaping of shellfish-hooks and the crafting of plant fiber nets. This knowledge was translated upon arrival to newfound environments where fishing strategies further developed and advanced (Glazier 2009, Kirch & Dye 1979). Thus, for Polynesian people, fishing became one of the most essential and advanced cultural practices.

For one to fish, one needed to be aware and observant of their environment. Knowledge of tidal changes, spawning seasons, fish behaviors and local ecology were necessary tools that the Pacific fisherman required to be successful. Fishermen also needed to be expert craftsmen, creating and relying on their own tools for fishing, such as the diverse forms of nets, hooks, and traps that were used for their everyday and specialized needs. Maintenance of these tools was an art and was

essential for every fisherman to be successful in their fishing. Centuries of observational, intuitive and spiritual fishing knowledge was passed down orally between generations to assure the survival of their craft. In some cases, certain knowledge was sacred only to one's family or class, assuring that only those who were responsible enough could continue the success of those that came before them (Johannes 1981, Nordhoff 1930).

To better emphasize the role of fishing and fisherman in traditional life across Polynesia, and due to the lack of substantial early resources written on 'Enana fishing knowledge and methods, we will narrow our focus to look at the fishing methods and traditions of Hawai'i, Aotearoa and Tahiti. These areas have had substantial and more holistic documentation on ancestral fishing and all have been visited or resided in by the author. They are of close relationship to Te Henua 'Enana genealogically, culturally and linguistically, all encompassing the area known to anthropologists as "Eastern Polynesia." Reviewing the traditional fishing knowledge and practices of these areas would in turn provide an overview of similar and contrasting perspectives to the fishing that would have occurred during ancient times in Te Henua 'Enana.

### **2.3.1 Hawai'i**

Fishing held an esteemed role within the structure of ancient Hawaiian society. Fishermen were admired by others for their work, where to be a *lawai'a* (fisherman) meant that one could provide for his community, and was viewed as a person of wealth (Malo 1951). Families within *ahupua'a* (land divisions from the mountain to the sea) relied on fishermen as a vital part of a bartering economy, where fisherman would take their catch to upland households to barter and receive some vegetables, such as taro, sweet potato or breadfruit, in return (Puku'i & Handy 1958). A fisherman also relied on the upland people to supply them with plant materials for making new

fishing gear, such as the fibers of the *olonā* (*Touchardia latifolia*) plant, which were twisted to make fishing cordage (Kamakau 1968, 1976).

Fishing was executed in large or small operations, done alone or with the cooperation of others (Kamakau 1976, Malo 1951). Large fishing expeditions were mainly practiced by professional fishing teams who were led by a *po‘o lawai‘a* (head fisherman). *Po‘o lawai‘a* also had responsibilities to fish for the chief when he desired fish. If the chief wanted to go fishing, it was the *po‘o lawai‘a’s* responsibility to bring him along too (Titcomb 1972, Kamakau 1976). Some landowners and chiefs also acted as *lawai‘a* to their own communities and were known to be well supplied with the best fishing technology (Kamakau 1976).

Hawaiian fishermen developed many different fishing techniques. The technologies ranged from nets, woven fish traps, spears, and hook-and-line that were used with techniques such as communal fish drives, fish poisoning, longline fishing and trolling (Beckley 1883, Kamakau 1976, Kahalelio 1902, Titcomb 1977). The function and construction of these technologies have been well documented through Indigenous and first-hand perspectives by 19th century Hawaiian newspaper authors, such as Samuel Kamakau, David Malo, Kepelino Keauokalani and Daniel Kahā‘ulelio. Their works will be explored in the following section with a focus on the important and extraordinary examples of traditional fishing techniques in Hawaiian culture.

### ***‘Upena - Nets and netting techniques***

Fish nets were a key tool for Hawaiians to target certain fish species and capture many fish at once. Hawaiians have developed a diverse range of nets, ranging in shape, size and setting technique. The literature on various Hawaiian nets and techniques is too vast for the scope of this research, therefore, only the most common and important ones have been considered.

'*Upena* were typically fashioned from the twisted fibers of the durable *olonā*. Before being used, nets were typically dyed red with the bark of the *kukui* (candlenut) (Kamakau 1976). Nets were very precious tools to Hawaiians, where each newly fashioned net required proper ceremony and prayer before it could be used (Kamakau 1968, 1976).

'*Upena ku'u* (gill nets) varied by eye size and use (Puku'i and Elbert 1971). They were laid in sandy bottomed channels of the reef where they were less likely to be damaged a variety of fish frequenting passage through reef channels (Beckley 1883, Kahaulelio 1902).

'*Upena pāloa* (seine nets) were deployed in a semi-circle and dragged through the water column to catch many kinds of nearshore fish (Kahaulelio 1902). They were also used in communal fish drives, such as the *hukilau*. The *hukilau* is a fish startling method which requires a long line of leaves that are strung together along with the action of the community to startle fish into a net. The shadows of the leaves and the commotion caused by the people splashing and slapping the water would scare fish in to an '*upena pāloa* that had already been set further inshore (Kahaulelio 1902).

Hawaiians also utilized a variety of bag nets in both shallow and deep water fishing. One of the most imperative types of bag nets is called *a'ei* and was used to catch schools of '*opelu* (Hawaiian mackerel scad). This type of net was round in shape and finely meshed. The large opening of the net was held open by two bent circular sticks and was dropped several fathoms down. In order to catch '*opelu*, canoes would paddle out to a known *ko'a 'opelu* ('*opelu* fishing ground), readied with vegetable mash consisting of local plants (usually pumpkin, papaya or taro) as chum. Once reaching a *ko'a 'opelu* the *a'ei* net was set in the water. Afterwards a small coconut cloth bag filled with the vegetable mash that was attached to a rope was lowered down within the net. The line is pulled and the chum is then scattered within the net, causing the fish to aggregate

while unknowingly being pulled up in the net (Beckley 1883, Kahalelio 1902). The *'opelu* fishery was important to Hawaiians and was managed under the strictest of *kapu* (prohibition) (Kahalelio 1902, Kamakau 1976, Malo 1951). This fishing method has proven to be efficient until this day, where some Hawaiian fishermen continue to practice it.

Bag nets with large openings were also used for catching fish while diving. These nets were held open by two sticks and were closed at will (Beckley 1883). To fish with this type of net, one would swim to a hole or cave already known to have fish and dive down. Then, placing their net at the opening of the hole, the fish are frightened from their habitat into the net by agitating the water by hand or with the use of a stick (Beckley 1883, Kahalelio 1902).

Square shaped bag nets, known as *'upena kākā uhu*, were used to catch many species of *uhu* (parrotfish). This technique required a *pakali*, a previously caught decoy *uhu*, to lure other nearby *uhu* into the net (Kamakau 1976). This method of fishing would take advantage of the territorial nature of male *uhu* who viciously attacked invaders. Once a nearby *uhu* would see a *pakali*, it would come close to the *pakali* and “kiss” it a few times until, as the Hawaiian fisherman would say, “they are married” (Kamakau 1976). Once this happened, the fisherman would lower their *'upena kākā uhu* down with the *pakali* tied to the middle of the net where the net was pulled up after the *uhu malihini* (visiting parrotfish) entered the net (Beckley 1883, Kamakau 1976, Kahalelio 1902). On a good morning of *'upena kākā uhu* fishing, a fisherman was said to catch between 20-40 *uhu* (Kamakau 1976). A similar luring technique was done by fishing with the *melomelo* stick, a long stick of approximately the length of an arm that had been charred over a flame and rubbed with coconut oil, which colored the stick black and also scented it. It was said to be a reliable technique to catch fish of all kinds where “one would not go hungry using their *melomelo* stick” (Gibson 1873, Kahalelio 1902).

Many small handheld dip nets were also used to capture reef fish. Some were used during torchlight fishing to scoop up and chase small fish trapped in the tidal zones of the reef on dark, moonless nights (Beckley 1883, Keauokalani 1971). Small fish used as bait for a quick meal were also caught with finely meshed hand nets in rivers and at river mouths (Kamakau 1976).

### ***Lawai‘a aho – Hook and line fishing***

Line fishing was done either by handline or rod. Pole fishing was executed in deep-water lure fishing for bonito or with hook and bait in shallow reef areas (Beckley 1883). Fishing lines were made out of either coconut sinnet or *olonā* (Kamakau 1976).

Deep water fishing in Hawai‘i was done by single or double-hull canoe and was practiced in parties or individually. Fishing beyond the reef was a job typically reserved only for men. Large canoe fishing expeditions required the leadership of the *po‘o lawai‘a* to coordinate. Fishing expeditions were done at *ko‘a* (fishing grounds), where fish were plentiful and large (Kamakau 1976). Deep sea *ko‘a* were found using bearings from distant landmarks that were used to calculate one’s location on the ocean precisely.

Deep sea fishing with hook and line were widely practiced throughout the Hawaiian islands with either the use of baited hooks or shell lures (Kamakau 1976, Kahalelio 1902, Malo 1951). Fishhooks themselves were traditionally carved out of tortoise shell, mother-of-pearl shell or the bones of either dog or human (Malo 1951). With the arrival of European trade to the islands, deep sea fishhooks were soon fashioned out of hard and durable metals such as iron, silver and brass. Important and prized fishhooks were passed down from generation to generation or from one fisherman to another and were stored in holding gourds (Kamakau 1976, Kahalelio 1902).

There were two general line fishing methods used to catch *aku* (bonito). One used live bait and the other used the precious *pā hī aku* (pearl-shell lure). Juvenile mullets or the small '*iao* (*Pranesus insularum*) fish supplied both bait and chum for *aku* fishing (Elbert & Pukui 1979, Kahaulelio 1902, Beckley 1883). These bait fish were caught live in the morning of a fishing expedition and were kept alive in the canoe with the use of a seawater filled gourd. When a *lawai'a* would discover a school of *aku*, he would release a few live fish into the water to attract the *aku*. He then baited his own hook with a live fish and cast the line out.

*Pā hī aku* were lures made out of a combination of mother-of-pearl shell, human or dog bone, pig bristles and hook lashed together to resemble the colors and behavior of a moving fish (Malo 1951, Kamakau 1972). *Pā hī aku* were tied to a line and attached to a bamboo rod. Different types of shells were used to give a lure different color properties in the water. White colored *pā* were better used in the morning to fish as the angled sun rays would make the color more attractive to fish, while rainbow colored shells were used near mid-day with the overhead sun's rays (Beckley 1883, Kahaulelio 1902).

Fishing for bonito with the *pā hī aku* was done by both commoner and chief by way of single outrigger or double hull canoes (Kamakau 1972). In order to find schools of *aku*, fishermen would scan the ocean for flocks of swarming birds pecking at the ocean surface; a sign that the *aku* were present. Fishermen would then cast their lures behind them and drag them over or nearby the school of *aku* with their canoes (Beckley 1883, Kahaulelio 1902, Kamakau 1972). Since *aku* would follow the lures and move away from their stationary schools, this method of fishing was not practiced with live bait *aku* fishing which draws fish away from the school (Kamakau 1972). Many canoes were filled with fish by using this technique of fishing.

Hawaiians also practiced a form of longline fishing in the deep ocean. The most widespread method of longline fishing was done with *kaka* lines. *Kaka* lines were longlines with hooks held in place and separated by a coconut stem. Up to 50 hooks could be used on one line. Fishing in this way was always done at *ko'a*. The locations of *ko'a* were secrets held to each fisherman and were not shared with others. The best time of year to fish with longlines was in the winter, wherein currents would be stronger and could carry the scent of bait out further (Kahaulelio 1902, Kamakau 1976, Beckley 1883).

*Paeaea* (rod fishing from shore) was practiced with rod, line, a baited hook and a pebble sinker. Bait for *paeaea* fishing was usually shrimp, small crustaceans, sea urchins and sometimes earthworms. Men and women both partook in this fishing and caught many types of fish on the reef as bait or for food (Beckley 1883). An interesting form of *paeaea* fishing required the use of local sea urchins to fish for *uhu*, who eat coral. Sea urchins were smashed and used to chum the water, while the teeth of the sea urchin were used to bait the hook (Beckley 1883, Kahaulelio 1902).

*Lūhe'e* (cowrie shell lure) fishing is a Hawaiian handline fishing technique that was practiced by way of canoe along a reef. It required the use of a lure made of a cowry shell tied to a stone sinker that was attached to a stick with a hook. It is said that different colored shells were used according to the different times of day (Malo 1951, Kamakau 1976). To fish this way, one would lower their line down and entice the octopus with their lure. Once the fisherman felt pressure on the line, he quickly pulled the lure upwards to the surface to set the hook and once the octopus surfaced, they would kill the octopus immediately with a spear to prevent it from moving about the canoe. Sometimes two lures would be set at the same time, where one line was held by hand and the other by foot (Kamakau 1976).

### ***‘Ō i‘a - Spearfishing***

Spearfishing was a method of reef fishing that was practiced from above and below the water in Hawai‘i. Torchlight spearfishing was done by both men and women, above the water on dark, calm nights where the tide was low (Keauokalani 1971). Sleeping fish on the reef or entrapped fish in tidepools could be speared easily. Underwater spearfishing was done in deeper areas of the reef in the daytime. Spearfishermen would swim or paddle to deeper parts of the reef with a spear at hand. Once a good area was located, the spearfisherman would dive headfirst and anticipate the movement of the fish before lunging at the fish he had selected (Beckley 1883, Kamakau 1976, Kahaulelio 1902). Spears for this type of fishing were typically made with a long straight hard wood like *kauiha* and were carved with a pointed end. Sharper tips were sometimes carved out of bone or metal in later years and were lashed on to the end with sinnet (Kamakau 1976).

### ***Other methods of fishing***

A brilliant fishing method Hawaiians utilized to catch a variety of different fish on the reefs were *hīna‘i* (woven basket traps). Most *hīna‘i* were woven with either the roots of *‘ie‘ie* (*Freycinetia arborea*) or *hala* (*Pandanus odoratissimus*) tree (Puku‘i and Elbert 1979). Fish were attracted into these traps with the use of certain baits. For example, the *hīna‘i ho‘olu‘ulu‘u* was a small basket trap set with shrimp as bait and was used specifically to catch varieties of the *hīnālea* (family *Labridae*) fish. These fish were used both for food and for ceremonial purposes (Titcomb 1972, Kamakau 1976, Beckley 1883).

Large *hīna‘i* were used to catch both *kala* (*Naso spp.*) and *palani* (*Acanthurus dussumieri*) fish, where some were “big enough for two to three men to crouch inside” and could contain forty to sixty *kala* fish per trap (Kamakau 1976, Kahalelio 1902). The bait to catch *kala* were the *limu kala* (*Sargassum echinocarpum*) while *palani* were caught using sweet potato. Other species such as parrotfish, eels, gobies and even octopus were also caught in *hīna‘i* (Kahalelio 1902).

Finally, a uniquely Hawaiian invention were *Loko i‘a* (stone fishponds). *Loko i‘a* were diverse and used to farm many types of fish, and could cover an area of up to 70 acres (Kamakau 1976). They were regularly stocked with young fish that were allowed to migrate in and out of *loko i‘a*, until eventually they were too big to escape from the sluice gate and were an essential food resource for a chief and his people.

### **2.3.2 Aotearoa**

Despite Aotearoa’s size and the fact that many inland areas were settled by Māori, most communities still relied on the bounties of the ocean for food. Both coastal and inland communities fished the ocean for food. Food from the ocean could be dried and preserved, making them essential food provisions during the winter season (Best 1929, Paulin & Fenwick 2016). With the importance of marine foods to the lives of Māori and the traditional knowledge of their ancestors that first voyaged from Hawaiki, Māori adapted and developed a variety of fishing techniques. (Best 1929, Buck 1926, Paulin and Fenwick 2016).

As is the case in many places across the Pacific, the societal and technological changes introduced by Europeans led to a loss of traditional fishing in Aotearoa. By the time many local authors and historians pursued documenting traditional fishing, much of the historical knowledge had been lost (Paulin and Fenwick 2016). However, the current supply of literature regarding

traditional Māori fishing techniques and knowledge is able to offer an invaluable perspective on the life of the fisher people of old Aotearoa. The most notable research on this topic comes from Te Rangi Hīroa (Peter Buck) and Eldson Best, who gathered the remaining knowledge of what remained on Māori fishing in the early 1900s.

### ***Kupenga - Nets and netting techniques***

In Aotearoa, the most important fishing was done with *kupenga* (nets). Māori nets were very efficient in procuring large amounts of fish (Buck 1926, Best 1929). Varieties of Māori *kupenga* were many, ranging from gill, seine, cone shaped, bag, and scoop nets. Some nets were used in part with the seasonal changes marked by the moon calendar which indicated when and where certain fish would be abundant, while others were effective year round. Nets were both used in shallow shoreline fishing that could be done in standing water and in deeper fishing expeditions done by canoe (Buck 1926, Best 1929).

The most impressive and efficient of all nets used by Māori were *kaharoa* (seine nets). *Kaharoa* were set by canoe in deep coastal waters and dragged in a curved fashion (Best 1929). Many of the first outside visitors to Aotearoa noted the immense size of *kaharoa* and the amount of manpower needed to use them. Some of the largest nets seen were estimated by European visitors to be between 5-6 fathoms in width and up to 2000 yards in length, these were observed in Maketu in 1885 (Best 1929). Hundreds of fish were caught at once and early records note expeditions that utilized the power of almost 500 men to haul in a large catch (Best 1929, Mair 1923, Buck 1926, 1949). In order to lessen workload when *kaharoa* held large catches of fish and risked breaking, nets were pulled in close to shore and left there during the high tide. Fishermen

would return during the low tide and collect the bounty more easily once the tide had gone down (Best 1929, Mair 1923).

*Korapa* (scoop nets) were used by Māori in nearshore fishing. They consisted of a big circular netting attached to a hoop of pliable wood that was lashed to a long pole made of *manuka* (*Leprospermum scoparium*). *Korapa* were used to catch a variety of fish from shore (Buck 1929, Paulin 2007). Fish like *kahawai* (*Arripis trutta*) and *kehe* (*Aplodactylus arctidens*) were caught at river mouths and estuaries with *korapa*.

Seasonal fish migrations and knowledge of fish eating habits were important factors in deciding when and where would be best to fish with *korapa* (Best 1929, Buck 1926). For example, Māori understood that the coastal dwelling *kehe*'s favorite food was a particular type of shoreline seaweed. When this particular seaweed was in abundance on the rocks, fishermen understood when the *kehe* would be fat and where they should deploy the nets (Buck 1926). Small *korapa* were also used to catch bait fish. They were sometime used with torches for fishing on dark moonless nights (Best 1929, Buck 1926).

*Ahuriri* (cone shaped nets) were used to catch significant amounts of fish in shallow and deep waters. They were commonly set at river mouths and were sometimes dragged behind a canoe (Buck 1926, Best 1929). *Ahuriri* set near river mouths were held in place with ropes staked to either side of the river bank. When used in rivers, nets would be set before changing tides where fish would migrate to and from the ocean. These nets were also hand-held with some sort of bait placed in the middle, typically crayfish meat (Best 1929, Paulin and Fenwick 2016). A similar cone shaped net was also used to catch fish from canoe by lifting them vertically from the seafloor.

### ***Hī Matau - Hook and line***

Traditional hook fishing methods in Aotearoa were undertaken with either the use of the circular fishhook, called *matau*, or the lure fish hook known as the *pā*. *Matau* were made of several types of bone, wood, or shell (Best 1929, Buck 1926, Paulin 2007). The most common material used to fashion fishing line was *harakeke* (New Zealand flax). Although more difficult to make, the fibers of *tī* (*Cordyline spp.*) leaves were also used to fashion fishing line and was superior in strength (Best 1929).

Line fishing with hook and bait was practiced from the shore and by canoe. A stone sinker was used, where deeper waters required heavier stones. The best and most commonly used bait for hook and line fishing was *koura* (crayfish), while fish and shellfish could also be used (Poata 1919). Fishing in this way was preferably done in areas that were too rocky or were unfavorable for drag netting to be done (Best 1929).

To fish with line from shore, a fisherman would walk out as far as they could in the surf with a hook baited and line coiled around their hand. He then proceeded to cast the fishing line out beyond the surf. If a fish came and bit the hook, the fisherman put tension on the line and simply moved backward towards the shore until the fish was landed. Fish like *kahawai* and *tamure* (snapper) were caught in this way (Best 1929).

Fishing by canoe was done often to catch a wider variety of fish. Fish like *tamure*, *hapuku* (groper), *maomao* (*Scorpiis violacea*), and *moki* (*Latridopsis ciliaris*) were caught from canoe fishing. In deeper areas, Māori would fish at *toka* (fishing grounds). Certain fish like the blue *maomao* were caught by chumming waters to attract fish to the surface (Poata 1919).

Trolling hooks, known generally as *pā*, were used to lure prey eating fish, of which, the most targeted were the *kahawai* and *mangā* (barracouta). *Pā* were both used in fishing from the

shore and by canoe. Two common types of *pā* were the *pā kahawai* and the *pohau mangā* (wooden barracouta lure). *Pā kahawai* were of similar design and use to the Polynesian *pā* (bonito lure), except with *paua* (abalone) shell used in place of pearl-shell (Paulin & Fenwick 2016, Poata 1919). The best place and time to fish with these lures from shore was during the in-coming tides near the river mouths (Poata 1919). *Kahawai* were most abundant during their migrations upstream every spring (Best 1929). *Pohau mangā* were longer in shape and made from a red wood shank and lashed bone or metal barb (Paulin 2007). The long shape of the *pohau mangā* was essential in preventing sharp tooth barracouta from cutting a fisherman's line (Paulin 2007, Paulin & Fenwick 2016). Both *pā kahawai* and *pohau mangā* were caught with a short rod and line dragged behind a canoe, which once a fish bit, steady pressure was applied and the fish was quickly flicked into the canoe (Best 1929, Paulin 2007).

### ***Other methods of fishing***

Māori also practiced spearfishing. Most spearfishing took place above water and was carried out day and night. Typical species that were targeted were flounder and eel (Best 1952).

Māori also implemented the use of fishing traps and baskets, called *hīnaki*. *Hīnaki* were set in rivers to catch eels and in coastal areas to catch fish and crayfish. *Hīnaki* did not rely heavily on bait to catch fish, but instead relied on the knowledge of tides, currents and fish migrations/fish chasing techniques. One such trap was the *hīnaki kehe*, which was set in shoreline channels. These traps, set facing towards the shore, would entrap fish as they returned to the ocean during outgoing tides. Other fish such as *moki* and *tamure* were also caught in this way. Weighted traps, similar to *hīnaki*, were also used in coastal areas to catch *koura* (Buck 1926).

A number of fishing and marine gathering methods were practiced with the use of very simple technology or one's limbs. The best time for *koura* fishing was around October, the time of year when crayfish would begin to shed their skeletons. During this time, *koura* would seek shelter in rock crevices for protection and this behavior made them easier to target. In order to catch *koura*, Māori would walk out in low tides to search rock crevices and feel for *koura* with their feet, then dive down and quickly grab the *koura* before it latched on to a rock (Poata 1919).

An abundant food resource for Māori were shellfish, generally called *anga*. *Kuku* (mussels), *pipi* (cockles), *paua* (abalone) and many other shellfish were gathered and eaten by Māori. Shellfish were eaten fresh or cooked in an *umu* (underground oven) to be dried and stored in huts. These animals lived on either rocky intertidal areas or within sandbanks throughout the country. Of great importance to Māori is the *tahuna pipi* (shellfish sandbanks) where a great amount of shellfish gathered. Shellfish like *kuku* (mussels) were found attached to rocks and they were removed with the use of a thin edged tool called a *ripi* (Best 1929).

### **2.3.3 The Society Islands**

The Society Islands are a chain of tropical islands located in central French Polynesia. The islands are credited with being a central hub where many voyagers first set sail to other lands across Polynesia; Hawai'i and Aotearoa being a few examples. Preserved in these voyages were the technology, environmental knowledge and spirituality of Society Island culture that developed across new lands. Furthermore, the Society Islands are situated geographically close to Te Henua 'Enana, where similar flora and fauna between the archipelagos are shared. Although the marine environments of these two areas vary, the Society Islands' fishing traditions still provide an

excellent reference point to compare to our previously viewed cases in Hawai'i and Aotearoa, and prepare us for further delving into the insights of the fishing culture in Te Henua 'Enana.

As is the case for most of French Polynesia, literature covering the topic of fishing in the Society Islands is not extensive. Where native authors and scientists took interest to record knowledge available early on in Aotearoa and Hawai'i, little focus was put on fishing in French Polynesia. The main records of traditional fishing in Tahiti and the other Society Islands comes from the writings of early visitors and a handful of studies undertaken in the early 1900s, the most extensive accounts being the works of Ethnographer E.S. Handy and Novelist Charles Nordhoff.

### ***Upe'a - Nets and netting techniques***

As was the case in Hawai'i and Aotearoa, netting technology provided Society Island communities with efficient means of procuring large amounts of fish both in and beyond the reef. *Upe'a* (nets) of significant importance to Society Island communities were seine nets. Floats made of *purau* (Hibiscus) wood were lashed at the top of the nets to keep them afloat, while stone sinkers were tied to the bottoms to sink nets down to a desired depth. Large seine nets could provide enough fish for an entire community, and in some cases, entire islands. These large and valuable nets were the property of local chiefs. Creating a large net required the resources and labor of neighboring communities which were delegated by chiefs. When such large seine nets were to be crafted, groups of net makers would be employed to each create sections of a net that were later joined together (Handy 1971).

Bag nets were occasionally used in part with seine nets to maximize the amount of fish caught in deeper parts of the reef. Certain seines were used for catching flying fish (family *Exocoetidae*), known as *marara*. Fish startling techniques were the most common way of

entrapping *marara* in seine nets (Handy 1971). Gill nets were placed in channels of reefs and they entrapped many reef fish that traveled through the channel. Fish startling methods were also sometimes used in part with gill nets and required the use of bamboo poles for splashing and poking fish from their reef habitats. One fish startling technique, called the *rau ere*, was a similar method to the Hawaiian *hukilau*, which required the use of strung leaves and community participation to herd fish into an *'upe'a*.

*Tōtō* (bag nets), were used in shallow and deep areas of the reef. When times of great rainfall were present, large mouthed bag nets were placed in river mouths to entrap fish that would be carried downstream from floods. *Tōtō* were also used while diving to capture startled fish out of coral holes and fish caves, similar to practices seen in Hawai'i (Handy 1971).

Scoop nets were also used widely by Society Islanders. Some scoop nets were used to catch fish in the wild or to harvest fish from fish enclosures and weir-traps (*ha'apua*). Long handled scoop nets were used on the reef to scare fish from holes in the reef. The handles of these nets were typically made from a straight and aged *purau* (*Hibiscus tiliaceus*) tree branch (Handy 1971). A particular type of scoop net (*'upe'a marara*) built in the same way was used to catch the *marara* fish (Handy 1971). However, this type of fishing may have been introduced from other Pacific Islands (Nordhoff 1930).

*Ha'apua i'a* were enclosures of stone with small openings made facing the shore in order to entrap fish returning to the sea on outgoing tides. When a *ha'apua i'a* was full of fish, the openings were blocked with nets or coconut fronds (Emory 1927).

Small gill nets were also used in obtaining large amounts of *'oura* (rock lobster) from *apoo 'oura* (lobster caves). Chasing the lobster out of the cave was done very cleverly by diving down and thrusting a dead octopus, a known predator of lobsters, into an *apoo 'oura* causing all of the

inhabiting lobsters to scurry out into a preset gill net at the caves entrance. One peculiar net believed to be used by Society Islanders from ancient times was the casting net. These nets were circular in shape and had sinkers attached to its bottom to weigh it down once it struck the water. These nets were hand-held and were cast out from shore onto unsuspecting schools of moving fish (Handy 1971). Casting nets are still often used today by fishermen in Hawai'i.

### ***Hī Matau - Hook and line***

Fishing with hook and line were done with either baited hook (*matau*) or with a type of shell lure. The best fishing line was made out of the *ro'a* (*Pipturus argenteus*) bark, and was made by stripping the bark and rolling the bark together on the bare thigh. Coconut sinnet (*nape*) was less prized as a fishing line as it could easily kink and tangle more than the line made of *ro'a* (Nordhoff 1930). In ancient times, fishhooks were fashioned out of pearl shell, bone, boars' tusk or wood, and later on they were fashioned out of introduced metals (Handy 1971, Nordhoff 1930). Common baits used were land crabs (*tupa*), small fish, shrimps, crayfish, coconut and in certain instances, the mature breadfruit. Baited hook and line fishing were also used sometimes to catch other marine animals, such as shark and turtle (Handy 1971, Leach et al. 1984).

There were a few methods in which Society Islanders angled for tuna (*'a'ahi*). One *'a'ahi* angling method, unique to the Society islands, was called *tira* fishing. *Tira* fishing was done with a double-hull canoe at specific *'a'ahi* fishing grounds and required the co-operation of a head fisherman and his crew. It was performed with the use of a large *purau* branch hanging from a bow with multiple hooks and lines running from the branch to the fishermen. A large basket between the canoe hulls held live *'ouma* (*Mulloidés auriflamma*) for chum and as bait for the hooks. The

small 'ouma, when thrown in the water, attracted the 'a'ahi to the surface where they would then take the bait. It was not uncommon to catch 50 large tuna using this method (Norhoff 1930).

Deep sea line fishing, called *puraro*, was done for albacore, wahoo, marlin and other fish species in deep sea fishing grounds. Fishing in this way utilized lines 100+ fathoms in length, multiple stone sinkers, multiple hooks and a wooden bat to stun fish. A single-hull canoe was the typical vessel to undertake this method of fishing and was performed individually. To fish this way, bags were filled with chum, a baited hook and a stone sinker weighed the line down. Common baits were *ature* (bigeye scad), *marara*, 'operu (mackrel scad) and other small fish. The bag was tied to the main line in a precise way so that, when the line reached the right depth, an abrupt jerk would free its contents at once (Ibid.). It was important that deep line fishing was not done on the same grounds where *pā* and *tira* fishing would take place, since 'a'ahi and bonito would not surface if fed at deeper depths (Ibid.).

Fishing for *mahimahi* (*Coryphaena hippurus*) was undertaken in deep waters from sailing canoes by trolling *marara*. *Mahimahi* could be seen when a pair of *itata'e* (white terns) were seen flying near the sea's surface and following the fish. When fishing for *mahimahi*, it was important that the first fish be left in the water once close to the canoe since they characteristically traveled in pairs and could leave if their partner had disappeared (Nordhoff 1930).

Bonito fishing with pearl-shell lures (*pā*) and octopus fishing with cowrie shell lures were practiced widely in the Society Islands. Fishing in this manner was similar to that which has already been described in the Hawaiian context, and does not need further elaboration, although small 'a'ahi and *mahimahi* were noted to be caught with *pā* in the Society Islands (Nordhoff 1930).

### ***Tao vero i'a - Spearfishing***

Spearfishing, called *tao vero i'a*, was practiced in the Society Islands at night and during the day. *Tao vero i'a* by day was done by diving or spearing from the surface. Spearfishing by night was done above the water with a torch. Reef fish and lobsters were the most sought after by torchlight fishing, although lobster was also speared diving underwater (Nordhoff 1930). Underwater spearfishing could catch a variety of fish, such as barracouta, parrotfish and lobster (Handy 1971, Nordhoff 1930, Leach et al. 1984). Spear prong numbers ranged from 1-7 depending on the size of the fish targeted. Spearing from the surface for larger animals such as rays or sharks sometimes required a rope tied to the end of the spear for retrieval. Aged *purau* wood was the material that most spears were made of, while the wood of the *aito* (*Pacific ironwood*) was employed to fashion the prongs (Handy 1971).

### ***Other methods of fishing***

Basket traps were known as *hīna'i*. Basket and pot traps were used to catch marine organisms, such as fish, crabs and lobsters throughout the Society Islands. They were composed of similar structure to those previously mentioned in Hawai'i and Aotearoa, and came in a variety of shapes. *Hīna'i* were made of woven vines of the *'ie'ie* (*Freycinetia arborea*) plant. Bait for *hīna'i*, depending on the desired fish, was either land crabs or ripe breadfruit. Freshwater *hīna'i* were also used for trapping shrimps and *'o'opu* (fresh water gobie) for bait or food.

A form of fish poisoning was practiced in the Society Islands with the seeds of the *hutu* (*Barringtonia asiatica*) tree. Seeds were ground up and placed in small fish holes along the reef to stun fish (Handy 1971).

## 2.4 Tapu and aspects of spirituality in fishing

An overview of Eastern Polynesian fishing traditions would not be complete without exploring the spiritual aspects that took place in fishing. From creating the tools beforehand until the time fish were caught and brought back to shore, every aspect of fishing had a spiritual component to it that required proper protocol and ceremony in order to be successful. It was an act that necessitated great respect for the environment and the gods. One was always careful of what he did or said before and during their time fishing lest their luck be spoiled.

Of great importance to fishing expeditions was *tapu*. Many different *tapu* were set in place before and during fishing. Some *tapu* restricted eating, fire making and contact with women. Before setting out on a group fishing expedition, men were not allowed to sleep with their wives, nor could they eat the night before (Handy 1923, Kamakau 1976). Food and drink were also not allowed to be taken either when one went fishing. All fishing gear was highly *tapu*. (Best 1929, Handy 1971, Puku'i & Handy 1958). Proper protocols were performed while crafting gear to ensure the *tapu* would not be breached. In the making of nets, fishing hooks and traps, for example, one was not allowed to eat or light fires lest the *tapu* of the act be breached (Best 1929, Buck 1926). All of these protocols assured the sacredness of the materials and ensured the fishing would be prosperous.

*Tapu* also restricted who ate certain fish and when certain fish could be eaten. For example, women in Hawai'i had certain fish *tapu* to them and were not allowed to eat fish like *ulua* (giant trevally), *honu* (turtle), and various types of red fish (Kamakau 1968). Some fish were *tapu* to commoners and were only eaten by those of high rank, such as the *moi* fish in Hawai'i.

Important fish also had *tapu* on them in regard to when and where they may be harvested. For example, in Hawai'i, harvesting of *'opelu* and *aku* fish throughout the year were dictated by a

strict interrelated *tapu*, where ‘*opelu* were *tapu* in the winter months and *aku* in the summer months of each year (Kamakau 1972, Malo 1951). Other Polynesian cultures are said to have practiced similar *tapu* (Handy 1971). *Tapu* of this nature was an essential component to the annual sustainable harvest of target species. Another method of sustainable marine management can be seen in the practice of *rāhui*. A *rāhui* is commonly defined as “a form of restricting access to resources and/or territories” that is “dictated by political and sacred strategies” (Bambridge et al. 2016, p. 2). *Rāhui* were practiced broadly across Eastern Polynesia and were commonly used to protect marine areas from human activity by persons of status (Torrente 2016).

## **2.5 Shifts in traditional fishing**

With the advent of European colonization throughout the Polynesian Islands, a rapid change descended on traditional fishing methods and fishing culture. New outside influences brought with them drastic structural changes to many Polynesian peoples’ way of life. Traditional prayers, ceremonial sites and religion soon became condemned by missionaries. The systems of *tapu* that were used to manage fishing seasons and selective catching were no longer followed, replaced by new rules and regulations (Maly & Maly 2003, Buck 1946, Paulin 2007, Poepoe et al. 2007). New crops and animals that were introduced became more important food resources, reducing the dependence and value on fish and other marine foods (Paulin 2007).

Along with these new explorers came foreign diseases. Without proper immunity to the introduced diseases, depopulation became rampant throughout Polynesia. Because of this, knowledge that was transmitted orally suffered under the rapid depopulation that occurred and was lost before it could be documented. As elder members of families passed on, much personal knowledge that was sacred to each family was also lost (Johannes 1981).

With European colonizers came new Western ideologies and governments that were imposed on to Polynesian nations. Indigenous fishing knowledge was devalued by the colonizing governments, and only gave credibility to Western knowledge for managing local fisheries (Poepoe et al. 2007). Governments enforced laws that were set in place to eradicate Indigenous fishing rights, preventing native fishermen from continuing their practices (Buck 1946, Paulin 2007, Rata et al 1988). Reliance on imported outside food sources also lead to greater convenience in food accessibility and changed values towards locally caught fish (Hill 1978). Coastal developments brought on with Western changes also degraded environments where marine life once flourished and were commonly fished (Kahn 2000, Titcomb 1972). Increased urbanization and displacement of Indigenous peoples to urban areas also made fishing activity less accessible and made fishing knowledge outdated (Paulin 2007).

Living in these new systems eventually lead to changes in environmental attitudes towards the ocean. The introduction of cash economies quickly shifted fishermen's mentalities from valuing fish as an integral part in the cycle of Indigenous society, to becoming commodities that could be sold for cash (Johannes 1978, 2002, Maly & Maly 2009, Paulin & 2016 ). Thus marked the native fisherman's disconnection from harmonious relationships with the ocean.

Other day-to-day changes, such as the introduction of the Gregorian calendar and Western employment changed attitudes towards the ocean. These changes in Indigenous time and work would have restricted fishermen to go fishing only on weekends and holidays, preventing them from fishing on days where environmental conditions were more favorable (Hill 1978). Discontinued use of the moon calendar lead to the degradation of profound fishing knowledge where only superficial knowledge is known and used by many fishermen today (Friedlander et al. 2002).

Newly accessible foreign materials also changed the methods and processes that were required to fish. The introduction of durable and hard metals rendered native materials less desirable for hook making. Convenient and durable European fibers soon replaced locally harvested and hand made lines that took much more time and energy to create (Paulin 2007). Modern sea vessels that had motors and could hold greater catches and this made traditional paddling and sailing canoes obsolete (Johannes 1978). This in turn caused much ancestral knowledge to be forgotten.

Newly introduced technologies and concepts also pushed fishermen to partake in different methods of fishing. Systematic lifestyle changes shifted fishing from subsistence fishing for one's community to a more individualistic pursuit. With changed objectives for fishing, fishing overall has become less of a communal activity and more of an individual one for the purpose of leisure rather than survival in many cases.

## **2.6 Recontextualizing fishing knowledge**

Today, modern fishing practices and technologies have had an impact on the ocean environment globally. Historical management of ocean environments across the Pacific have depleted many of the local fish stocks, where coastal fisheries globally are now facing over-exploitation (Friedlander et al. 2002, Johannes 1978). Fish and marine animals that were once cared for sustainably for Indigenous survival are now becoming increasingly endangered. Climate change is now a reality that is impacting the livelihoods of people throughout Oceania. However, many international organizations, governments and Indigenous communities are now looking towards Indigenous knowledge for sustainable solutions (Ryser 2011). Indigenous knowledge, like *rāhui*, are now making experiencing a revitalization in modern contexts, where “individual actors,

societies and states in the Pacific are readapting such concepts to their current needs, such as environment regulation or cultural legitimacy” (Bambridge et al. 2016, p. 3).

Although new materials have replaced ancient ones, the efficiency of Indigenous fishing knowledge and practices has enabled them to be continuously used for local subsistence fishing today (Mokoroa 1981, Paulin & Fenwick 2016, Poepoe et al. 2007, Solomona & Vuki 2012). Although modern technology is used, traditional knowledge like the placement of fishing nets and the temporal movement of fish continue to be effective in today’s environments (Mokoroa 1981). Many islands and areas still persist with fishing lifestyles, holding on to their histories and cultures as fisher people. Revival of traditional fishing knowledge has shown to also be an effective tool for educating youth of today on sustainable marine tenure (Poepoe et al 2007). Further education on Indigenous fishing knowledge would also be efficient tools to teach aspects of culture, spirituality and language to the next generation.

## **2.7 Conclusion**

The various aspects of fishing throughout the Polynesian cultures presented in this review demonstrate that fishing was an integral part of each culture. It was an act that held balance between the mountains and the sea, the sacred and the profane, the physical and the spiritual. Reviewing these fishing traditions gives us a better insight on the intuitive, ecological and environmental knowledge needed to harvest marine resources. These were imperative food resources and were important to each cultures’ way of life.

The many types of fishing that ancient Polynesians developed emphasize how vital ocean resources were to Polynesia. Through exploring the Eastern Polynesian fishing cultures of Hawai‘i, Aotearoa and the Society Islands, we see that fishing traditions were identical in many

instances and will set the scene for what to expect in the context of 'Enana fishing. Although many new influences have changed fishing techniques and attitudes held throughout old Polynesia, the knowledge can still be used to assist to resolve many of the problems we face in today's time. Returning to ancestral fishing methods consequently helped to revitalize our traditional beliefs, crafts and attitudes to the natural world. They are tools for us to continue the legacy once practiced by our ancestors, in order to manage ocean resources sustainably and return to more harmonious relationships with nature.

## **Chapter 3. Pehea te ha‘ahe‘e ‘ia hana - Methods and Methodologies**

### **3.1 – Introduction**

For many centuries, Western academic approaches to research have been applied to studies on Indigenous cultures and communities across the globe (Smith 2012). For Te Henua ‘Enana, nearly all research to date has been conducted by outside researchers who bring their own perspectives and reasonings to the research. This is not to say that the research done by outsiders is not always done with and for the community (i.e. Addison 2006, Aswani & Allen 2012, Dunn 2004), but instead shows a need for more ‘Enana research that is done through an Indigenous perspective and reasoning.

With the rise of the Indigenous peoples movement since the 1970s, Indigenous academics across the globe have proliferated and are actively seeking solutions to research that uplift native epistemologies, world-views, and communities from the historically marginalizing and dominant approaches of the Western world. Upholding cultural values within the research approach has become widespread and paramount throughout Pacific Indigenous Studies. These efforts can be seen within the numerous Indigenous methodologies that have been created and are actively used today (i.e. Nabobo-Baba 2008, Pihama 2010, Smith 2012, Thaman 2003, Vaioleti 2006, 2011). Indigenous research methodologies are especially important for an Indigenous researcher as Indigenous frameworks explain the researcher’s views on how knowledge is created (Kovach 2009 as cited in Naepi 2015). The following chapter reviews the Indigenous perspectives and methodologies that have influenced and inspired the methodological framework of this thesis, specifically the Kakala and Talanoa frameworks from Tonga and Kaupapa Māori research from Aotearoa.

### 3.2 – Positionality of the researcher

An important aspect to utilizing an Indigenous research framework is first positioning one's self. Although this thesis takes place in and is for the people of Nukuhiva, I am currently writing some thousand miles Westward in Aotearoa. I sit here on the land of the Tainui people and would like to acknowledge my gratitude for being here as a guest to these ancestral lands. My graduate studies in Aotearoa have exposed me to further insights on *tikanga Māori* (Māori customs) and *te reo Māori* (the Māori language), as well as the struggles and successes that occur in decolonizing Māori communities. The ideas I have been exposed to and the initiatives I have seen in action have provided inspiration for the island communities of Te Henua 'Enana. I have been treated with kindness and respect during my time here in Kirikiriroa. Nō reira, e te iwi Māori, tēnei te mihi ki a koutou katoa.

My tertiary educational background is a double major in Hawaiian Studies and Marine Science from the University of Hawai'i at Hilo. My interest and passion for Indigenous cultures and the ocean have been like a paddle that propels a canoe (the research) forward. Being raised on Hawai'i island and in a Hawaiian immersion school has driven my passion to gain a deeper understanding of my 'Enana roots. The valley of Taipīvai on Nukuhiva is where my ancestral roots on my Mother's side trace strongest to. It is in Taipīvai where many of my family continue to live until this day. It is in Taipīvai valley that I learned Te 'Eo 'Enana from conversing with my *ko'oua* (grandfather) and other members of my family. The extensive genealogical links from the side of my *ko'oua* Martin Te'ikitekahioho and my *pakahio* (grandmother) Maunaiki Te'ikihunuatua also connects my lineage to many other valleys in Nukuhiva and across the archipelago.

My *ko'oua* was a man who was well versed in the lore of Taipīvai and of Nukuhiva. He was taught many legends, genealogies and other folklore from his parents and preserved the oral

traditions of the ancestors. Most of the legends he spoke have yet to be written down on paper. Hearing the legends, stories and cultural wisdom that he presented through the language of our ancestors at an early age helped me to better understand who I was as 'Enana. With his passing and an understanding of the lack of 'Enana academics, it became more urgent to me that the ancestral wisdom and narratives of 'Enana elders must be preserved and captured now for the benefit of future generations. Understanding the importance of the knowledge he carried and how it must be carried on through the language and narrative of 'Enana has been an impetus and inspiration for writing this thesis.

Te 'Eo 'Enana has been a key way for me to connect to my own culture as a diaspora and to deepen my understanding of the lived experiences of 'Enana. As I was raised in Hawaiian culture, comprehending the environment and culture of Te Henua 'Enana was not difficult as I witnessed many parallelisms between the language and the culture. Thus, it was naturally easier for me to pick up on the native language rather than French. To many 'Enana I am an enigma: a diasporic child of the land who has learned the native language with more enthusiasm and interest than most youth living there now. This came from my upbringing in *Kula Kaiapuni* (Hawaiian Immersion Program), where values of upholding culture and language have been taught to me from a young age. However, speaking the language and coming from a Hawaiian background did not automatically make me an insider. My position as an insider/outsider has been a complex one since I was young. One example can be seen through my fishing in Nukuhiva during the holidays. Many of my cousins and friends would accompany me to the ocean, marveling at my collapsible fishing rod and plastic lures, while most children did their fishing with handline and bait and had not yet seen this foreign type of fishing. Therefore, I must acknowledge that although I am a child of Nukuhiva, that my perspectives and experiences from my upbringing in Hawai'i make me

different. The process of reconnecting to the land and culture is ongoing for me and the perspectives I bring to this research are unique.

### **3.3 Indigenous oceanic methodologies**

Approaching this research as an Indigenous Oceanic researcher with aims to uphold my cultural and academic integrity, a number of different Oceanic research methodologies have been reviewed and considered. These frameworks emerge from my academic connections in Aotearoa for my graduate studies and the web of relationships that link Aotearoa to other islands across the Pacific. Much of what is written below draws from the important works of Leonie Pihama and Linda Tuhiwai Smith on Kapupapa Māori Methodologies, as well as Konai Helu-Thaman and Timote Vaoleti on the Kakala research framework and Talanoa method/methodology of Tonga. Although I am not directly of Māori or Tongan descent, the strong genealogic and cultural connections which Māori, Tongan, and ‘Enana people hold as people of *Te Moana Nui a Hiva* (The great ocean of Hiva) provide an opportunity to utilize these approaches for a similar research approach to be undertaken in Nukuhiva.

#### **3.3.1 Kaupapa Māori research**

In simple terms, Kaupapa Māori research can be described as “research by Māori, for Māori and with Māori” (Smith 2012, p. 48). It is research that looks to transform and heal Māori communities through frameworks centered in *tikanga Māori* (Māori customs/protocol) and *mātauranga* (knowledge) while challenging the a-cultural, objective, and sometimes dehumanizing approaches of colonial Western research (Pihama 2010, Smith 2012). Kaupapa Māori research is also a part of the larger decolonial struggle that Māori face in re-centering and

uplifting tikanga, te reo, *tino rangatiratanga* (self-determination) and *mana motuhake* (sovereignty). These struggles have emerged from the Māori renaissance that has been ongoing from the 1970s until this day (Pihama 2010, Smith 2012).

Kaupapa Māori research assures that cultural integrity is upheld when looking at issues relating to Māori and that academic integrity is kept before and during the research process. Research must have a positive effect on the Māori communities that are researched that can be felt in the short-term or long-term. Smith (2010, p. 48) describes the contrasts of Kaupapa Māori to common Western methodologies: “It is very different, in my mind, from other forms of research in which Māori may participate but over which we have no conceptual, design, methodological or interpretative control.” Thus, Kaupapa Māori research also stems from a need to branch out from common Western research, which has not always aligned with Māori cultural values and development. In the 2012 publication of her book “*Decolonizing methodologies*”, Smith argues how Western research has historically been a tool utilized by colonial forces to marginalize and de-legitimize Indigenous peoples’ knowledge, which has contributed to perpetuating a colonial mindset within Māori and other Indigenous communities (Smith 2012). This comes with a perspective on how earlier research related to Indigenous peoples has typically been done “on” rather than “with”, leading to sometimes harmful repercussions. It is from these exclusive approaches to research that Kaupapa Māori looks to respond to.

Kaupapa Māori acknowledges that Māori researchers, as insiders to the Māori culture and community, have invaluable cultural and linguistic knowledge that is vital for conducting proper and transformative research with and for Māori communities. It also acknowledges that a Māori researcher may be a part of the community they are conducting research for and that the research will inevitably be impactful to themselves also. Although the approach centers the idea of “by

Māori, for Māori”, Kaupapa Māori can also be used by non-Māori as long as there is a Māori presence on the development and implementation of the project (Smith 2012).

Coming from an ‘Enana worldview, much of the values that Kaupapa Māori research upholds have resonated with the perspectives and knowledge of my own culture. This comes from the fact that Māori and ‘Enana are of the same genealogic tree that has spread its branches throughout Polynesia and the wider Oceania. The approach of centering respect, reciprocity and love into research are also important aspects of everyday interaction within ‘Enana communities. Understanding Kaupapa Māori has informed how this research must position itself in upholding and centering intrinsic ‘Enana cultural values.

### **3.3.2 Kakala as a methodology**

The word *kakala* in the Tongan language means “a collection of fragrant flowers, woven together as a garland for a special person or occasion.” (Thaman 2003, p. 9). The Kakala methodology first emerged from the works of Tongan Professor Konai Helu Thaman of the University of the South Pacific, as a part of her ongoing efforts to find more culturally appropriate approaches to higher education and to reclaim and reconceptualize teaching to Pacific communities (Thaman 2003). The Kakala methodology has also paved the way forward for many other Pacific academics to create their own cultural research approaches, such as the Tivaevae of the Cook Islands and the Vanua and Iuvatu of Fiji (Fua 2014, Nabobo-Baba 2008).

The methodology itself uses the metaphor of creating beautiful and significant flower garlands from a Tongan worldview. It also acknowledges the parallelisms of this practice across a plethora of other Pacific cultures. Professor Thaman (2008) affirms this in her response to the idea that her framework does not work for research across other cultures: “So far, my framework,

Kakala, seems to work well for most Pacific students perhaps because they could find equivalent notions in their own cultures (e.g. the Fijian salusalu, or the Hawaiian lei).” (p. 9). This allows many other cultures with similar cultural practices (making lei in Hawai‘i or hei in Te Henua ‘Enana) to respectfully adopt the approach for their own research needs (Thaman 2003). The methodology itself is categorized into the 3 stages of weaving a flower garland in a Tongan context, those stages being - *Toli* (selecting), *Tui* (making or stringing), and *Luva* (gifting away).

The word *toli* refers to the selecting of various flowers, leaves, fruits and other materials necessary to make a kakala. In Tonga, flowers are purposefully chosen depending on the type of garland that will be made. It is also the time where the design of the garland is crafted for a certain person or occasion it is intended for (Fua 2014, Thaman 2003). This is related to the initial stages of research, where a problem is recognized, participants are selected, data is collected and analyzed (Vaioleti 2006). It is an important stage of the research, where a considerate research approach and proper ethics are formulated to obtain proper and accurate data. A typical research tool used in this stage is the Talanoa, a method/methodology which will be reviewed later in this paper.

The second stage of creating a kakala is called Tui, which is the actual weaving or stringing of the flowers to form a garland. In this process, flowers are ranked and selected according to their cultural and mythologic significance (Thaman 2003, Vaioleti 2006). This stage refers to the process of analyzing the data from the research. Fua (2014) describes the comparison between kakala and research processes:

Tui in a garland process always follows a particular pattern in accordance with the event and the person that the garland is intended for. In the research analysis process, we are looking for patterns in the data, as we look for similarities, variations, and new emerging patterns in the data. (p. 54)

It is also the time where the “stories, spirits and emotions from deep Talanoa” are strung together to be presented as research (Vaioleti 2006, p. 27 ). This stage of the research process is a

dynamic one and acknowledges that the researcher may have to adjust or correct the initial agenda based off the data collected (Fua 2014).

The third and final stage of the process is called Luva, meaning “a gift from the heart.” (Fua 2014, p. 55). In Tonga, it stands for the act of giving away the kakala to someone significant, such as a special guest, a dancer, or to a relative or friend who is departing (Thaman 2003). It is an act that expresses *‘ofa* (love) and *faka‘apa‘apa* (respect) to the acknowledged person. The Luva stage represents the dissemination process of research, which is being gifted back to the communities in which the knowledge stems from. It acknowledges with respect who the research has been done for and must give voice to the participants the research stems from (Thaman 2003, Vaioleti 2006). It recognizes the importance of the concept of reciprocity and love present throughout Oceania and that these values must be upheld in the research.

### **3.3.3 Talanoa**

Talanoa is the process of conducting and participating in research through Oceanic culture-based deliberation. It was first presented to the academic world by Sitiveni Halapua as a method of research that allowed participants to talk “openly from the heart” and later introduced as a methodology by Timote Vaioleti (Tecun et al. 2018, p. 157 ). Talanoa is a widespread Pacific concept with links to Fiji, Tonga and many other Polynesian islands; each having their own variations to the concept and the word (Tunufua‘i 2016). Currently, because of its fluid structure, talanoa is viewed by many as both a method and a methodology, where discussion on the topic is ongoing (see Vaioleti 2006, 2011; Tunufua‘i 2016, Tecun et al. 2018).

In the Tongan language, the word *talanoa* can be broken down into two words: the words *tala*, meaning “to inform, tell, relate and command” and *noa*, meaning “ of any kind, ordinary,

nothing in particular”, thus meaning “to talk about nothing in particular, and interacting without a rigid framework.” (Vaioleti 2006, p. 23-24). It is a cultural practice that has existed since ancient times throughout the Pacific and is a way that many participate in deep and meaningful conversations. For researchers, Talanoa can be used as a way to “teach a skill, share ideas or gather information” (Fua 2014, p. 50). When researchers take part in Talanoa they must prepare and expect to experience emotions connected to the knowledge gained and be able to foster close relationships with participants; a contrast to more objective Western research methods (Tecun et al. 2018). A typical talanoa will start with the researcher first setting the intentions of the talanoa, so that its purpose is clear and ensures a proper guidance for the interaction (Vaioleti 2006). As is the case with most cultural interactions within Oceania, it is also important to first have discussions to establish connections and relationships between those involved before a more focused discussion on the research topic is undergone (‘Otunuku 2011). Talanoa should in turn create meaningful and personal interactions with research participants. ‘Otunuku’s (2011) study utilizing Talanoa on Tongan research subjects provides an excellent description of how Talanoa expresses its personal nature:

It [*talanoa*] is a dynamic interaction of story-telling, debating, reflecting, gossiping, joking, sharing families’ genealogies, food and other necessities. It is talking about everything or anything that participants are interested in. *Talanoa* helps build better understanding and co-operation within and across human relationships. (p. 45)

In essence, Talanoa is about maintaining important Oceanic cultural values of respect and love throughout the research process, and acknowledges that Talanoa creates a space where deep, critical and multi-layered conversations can be held. (Vaioleti 2006, 2011).

### **3.4 Talanoa and Kakala in Te Henua ‘Enana**

The Indigenous research frameworks presented above have informed the approach of this research. Although the research frameworks are derived from Tongan and Māori perspectives, they have both expressed values and presented examples on how research done by ‘Enana and for ‘Enana can be undertaken. In regard to both Kakala and Talanoa, many similarities can be seen between the cultural practices and protocols of Tonga and Te Henua ‘Enana due to the close ancestral connections linking all Polynesian cultures, acknowledged by Professor Thaman (Thaman 2003, 2008). Thus, this research approach is an attractive choice for Pacific researchers to ground their research within a familiar cultural framework. As an ‘Enana researcher, the Kakala research framework has resonated to much of my lived experience with family and friends in Nukuhiva. For every arrival and departure, I have received and gifted many *hei* to and from family and friends. *Hei* are also symbols of love that are gifted away during birthdays, weddings and funerals. They are made of flowers, leaves, or beads which require particular skill and preparation to be made. They are always made with similar consideration, love and intentions as kakala are made in Tonga.



*Figure 3.1* Gifting of hei to Uncle Te‘iki at a family birthday party.

In Te Henua ‘Enana, *tekatekao* (casual or informal conversation) also parallel aspects of of talanoa. *Tekatekao* is a part of the daily rhythms of village life throughout Te Henua ‘Enana. Many ‘Enana walk along the village roads heading to work and will gladly take the time out of their day to sit under the shade of a tree or house to talk freely with others to express opinions, news and stories. *Tekatekao* ‘ia are interactions where deeply rooted ideas can be expressed, agreed upon or challenged. It is also a time where genealogies are shared, connections are made and relationships are strengthened between individuals and the village community.

Although I am not ethnically Tongan, from the related cultural values and strong genealogic connections to Tonga, I have decided to utilize the Kakala approach for this research centered in Nukuhiva, with the intent to weave a garland of love and respect to be gifted back to

the communities from which the ancestral knowledge has come from. Looking to approach this research from an 'Enana centered perspective, I have found the ideas of Talanoa to represent many of the embedded aspects of 'Enana culture and values. The inspiration to decolonize the research space among 'Enana communities have also been informed by examples of Kaupapa Māori research and must be acknowledged also.

As it stands today, there is a lack of research that is being done by 'Enana and for 'Enana. Opportunities to pursue higher education throughout the archipelago have been extremely limited from the time of initial colonization by the French until today. Secondary education is the highest form of education taught in Te Henua 'Enana today, where 'Enana must travel to Tahiti to finish their high school qualifications or pursue tertiary education. For the few that pursue such education, they are influenced to choose pathways that follow Western notions of success rather than those that revive Indigenous knowledge and culture in an academic manner. Many 'Enana families today and in the past also have not had the financial resources to fund their children's education in Tahiti. With family being such an important aspect to 'Enana culture, many also choose to live at home to uphold family responsibilities or industry. With the lack of opportunity for 'Enana, most research has been and continues to be conducted by outsiders who do not always hold intentions of giving back to the community in which the knowledge originates. 'Enana's presence within the literature written about our land and culture is nearly absent and calls for positive change. This narrative looks to contribute to the emerging body of de-colonial literature written by 'Enana that will uplift our communities, and perpetuate the practices, histories, legends and knowledge systems of our ancestors.

### 3.5 Tekatekao ‘ia i Nukuhiva - Interviews in Nukuhiva

In order to uncover further insights on the ancestral fishing practices and knowledge of Nukuhiva, a total of six tekatekao style interviews with elder fishermen were conducted between December 2019-January 2020. Each participant was between 58 and 71 years old. They are regarded amongst their community as some of the most knowledgeable in regards to fishing and cultural knowledge. Five of the participants were currently living in Taipīvai valley while one was living in Taioha‘e. Although a lot of the fishing they have done or seen occurred in Taipīvai, many have lived and fished in many other valleys and bays of Nukuhiva, and have shared their stories of their fishing elsewhere with other fishermen.

A portable TASCAM Linear PCM recorder was used to record each interview. The recorder was placed between participant and researcher in a comfortable spot, which in turn helped create an environment where more authentic interactions could take place. Each participant’s consent was given before an interview. All interviews were later played back and transcribed after returning to Aotearoa. Conversations were free flowing and allowed for participants to speak from the heart. Many shared stories of the fishing practices they undertook with their parents, grandparents or friends throughout their lives. As long-time fishermen, they have also shared their observations and insight they have gained over the course of their lifetime as ‘Enana fishermen.

All of the interviews were conducted in Te ‘Eo ‘Enana and were done within the comfort of each individual’s home. Before most of the interviews were conducted, I was first introduced to each participant by my Uncle, Gabriel Teautaiipī Te‘ikitekahioho, who will be referred to as Teautaiipī for the rest of this thesis. He is one of the two representatives for Nukuhiva island in *Te Tuhuka ‘Eo ‘Enana* (the Academy of Marquesan Language) and was also ending his term as Mayor of Taipīvai Valley and Principal of Taipīvai Valley Primary School in 2019. Teautaiipī is also a

skilled spearfisherman and storyteller who was later interviewed for this narrative. It is from his guidance and connections that the participants for this study were chosen. His personal introductions were a critical part of establishing connections and context with each of the participants who did not know me. Introducing me as his nephew from Hawai‘i who has come to *tekatekao* on ancient fishing practice in Te ‘Eo ‘Enana made each participant understand who I was and where I was coming from. It also was an essential process in showing my relationship to the genealogy of the local community for participants who were unfamiliar with me. He also offered transportation to the houses of each participant and always provided advice for each interview. For this and many more reasons I would like to acknowledge and thank my uncle Teautaipī for his immense help in the guidance and approach of this research. E tu‘u Tonton ē, ko‘utau nui iā ‘oe no te pātoko me te āpu‘u meita‘i i tēnei tama e ‘umihi nei i te ha‘amau i te tau taetae o to tātou tau tūpuna.

Upon walking up to each participants house, I would be called out to with a *mave* (traditional welcoming), where participants would call out “Me mai, me mai, me mai” (Welcome, welcome, come inside). At the beginning of each interview, each participant was greeted and told the intentions of the research. Genealogies were then shared between participant and researcher before the interviews proceeded to the research topic. As is the case with most small communities, many of the participants turned out to be either close or distant family to the researcher which helped establish deeper connections between researcher and participant. Participants would share many personal fishing and life stories, observations and jokes throughout the interview until there was nothing else to say. Food was sometimes shared throughout the interviews. At the end of each *tekatekao* ‘ia, a small gift was given to the participant as a sign of respect and appreciation for sharing their time and knowledge. These gifts ranged between macadamia nut chocolates from

Hawai'i and small accessories or articles of clothing such as T-shirts and hats from Aotearoa. These items are sometimes expensive and rare in Nukuhiva, which make them cherished as gifts when brought from abroad.

Near the end of my stay in Nukuhiva, Teautaiipī suggested that it would be appropriate to hold a *ko'ika* (party) to thank the elders and community of Taipīvai valley for their time and contribution to the research project, and thus, a *ko'ika* was organized at Taipīvai beach. Traditional and modern dishes, such as *ka'akū* (breadfruit pudding with coconut milk), *ika te'e* (raw fish) and barbequed meat were shared with the elders as a way of showing gratitude. It was also a valuable time to reflect on the project with the village community, honor the elders who took part in the study and to say farewell for the time being.

### **3.6 Te hana 'avaika i Nukuhiva - Participant observation in Nukuhiva**

I was also able to participate with some of my family members in contemporary nighttime fishing activities to develop better perspectives on the fishing that is practiced nowadays. These fishing expeditions were done at specific nearshore *toka* and near the deep coastal areas within Taipīvai valley. Techniques ranged between methods of shallow and deep-water lure and bottom fishing. The frequency of the fishing occurred on the terms of the head fisherman/boat captain. Unfortunately, the overall opportunities for participant observation was limited during the time of this study. Concurrently, the Matava'a o Te Henua 'Enana (Festival of Marquesan Arts), the largest cultural festival of Te Henua 'Enana that is held every 2 years and attracts many tourists and diaspora to the islands, was being held on 'Uapou. The main transport to 'Uapou is by motorboat from Nukuhiva which, coupled with the increased amounts of taxis required to haul tourists around the island caused a temporary gas shortage for the island of Nukuhiva. Thus, many of the

local fisherman across the island were restricted and, in some cases, not allowed to buy gas for their outboard motors until the next shipment of gas from Tahiti was to arrive. Because of this, there was less boat fishing activity occurring within the last three weeks of my stay in Nukuhiva. Furthermore, Christmas and New Years are heavily celebrated times for 'Enana, where many take this time to rest properly, which combined with the gas shortage, amalgamated in limited opportunities for participant fishing observation.

Follow up interviews with other contemporary fisherman from Nukuhiva, as well as further participation in modern fishing practice were to take place later on in the year. Unfortunately, due to the travel restrictions enforced during the COVID-19 pandemic and the lack of stable internet connection throughout the island, these follow up actions were unable to be conducted for this study.

In order to form a deeper understanding of ancestral fishing techniques and how they have evolved over time, we must turn to the early written accounts in Te Henua 'Enana, which will be addressed in Chapter 5. However, before navigating through these records, it is important that we first further establish a cultural and environmental context of Nukuhiva and the wider Henua 'Enana.

## Chapter 4. Te tekao tumu o Te Henua 'Enana - Environmental and cultural context

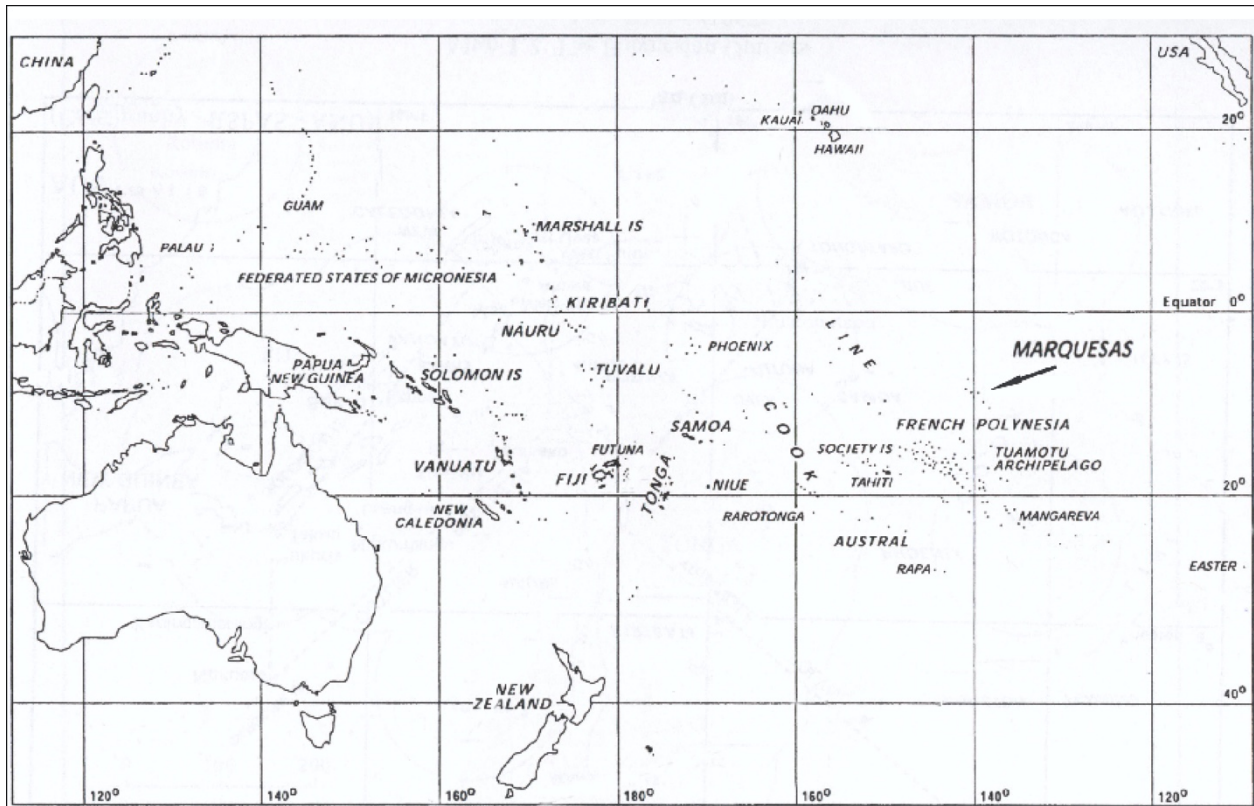
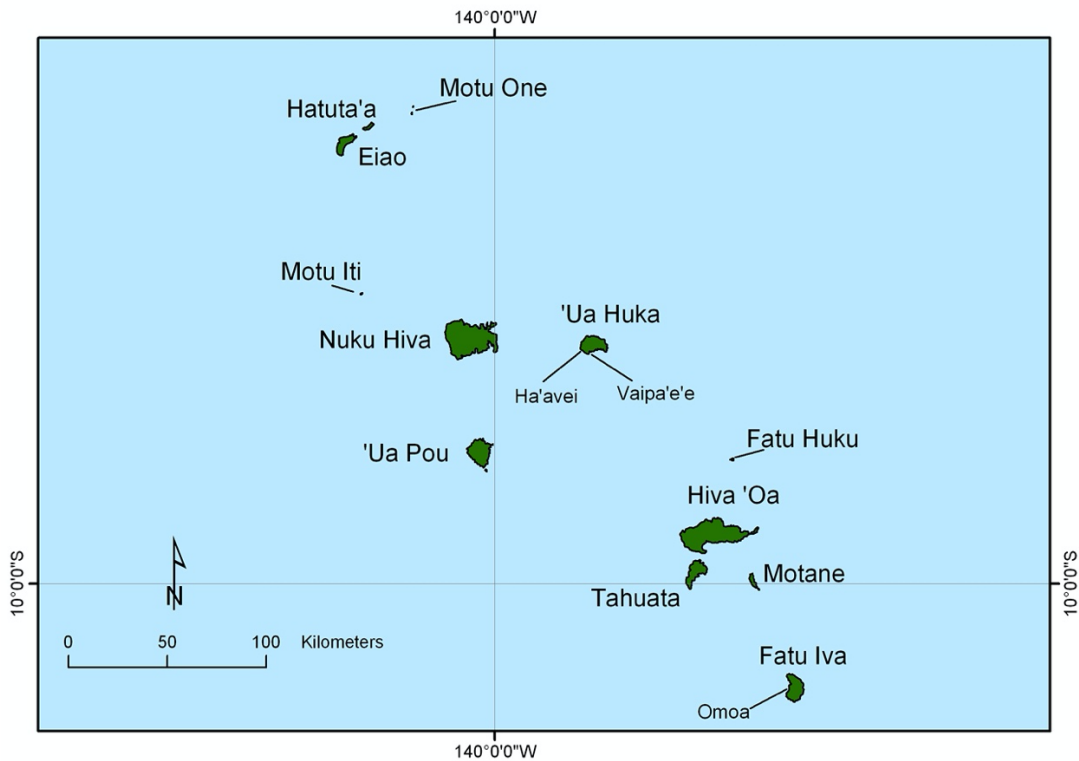


Figure 4.1 Te Henua 'Enana (The Marquesas Islands) in relation to Oceania (Addison 2006)

### 4.1 Geographic and environmental context

To the Western world, the archipelago of 12 islands located approximately 1370km from the Society Island in North-Eastern French Polynesia are known as the Marquesas Islands (Allen 2004). The people of the Marquesas Islands are referred to as Marquesans. To the Indigenous people of these islands, we refer to ourselves as 'Enana or 'Enata (tangata, people) and the islands as *Te Henua 'Enana* or *Te Fenua 'Enata* ("The Land of Men"). There are two general dialects spoken throughout *Te Henua 'Enana*; one belonging to the North-Western islands, the other to the South-Eastern islands, with certain nuances held between each island. In an effort to increase

awareness, along with my genealogic links to the island of Nukuhiva, I refer instead to the Marquesas islands as *Te Henua 'Enana* and the Marquesan people as *'Enana* throughout this thesis. The word *'Enana* is also used as a descriptor for the Indigenous flora and fauna.



*Figure 4. 2* Te Henua 'Enana (The Marquesas Islands) (Addison 2006)

Currently, only the six main islands of the archipelago are inhabited. The North-Western islands are delineated by the three large inhabited islands of Nukuhiva, 'Uapou, and 'Uahuka, as well as the two uninhabited islands of 'Eiao and Hatuta'a. The South-Eastern islands consist of the three inhabited islands of Hiva'oa, Tahuata and Fatuiva, as well as the two uninhabited islands of Fatuhuku and Mohotani (Aswani & Allen 2009, Chauvel et al. 2012).

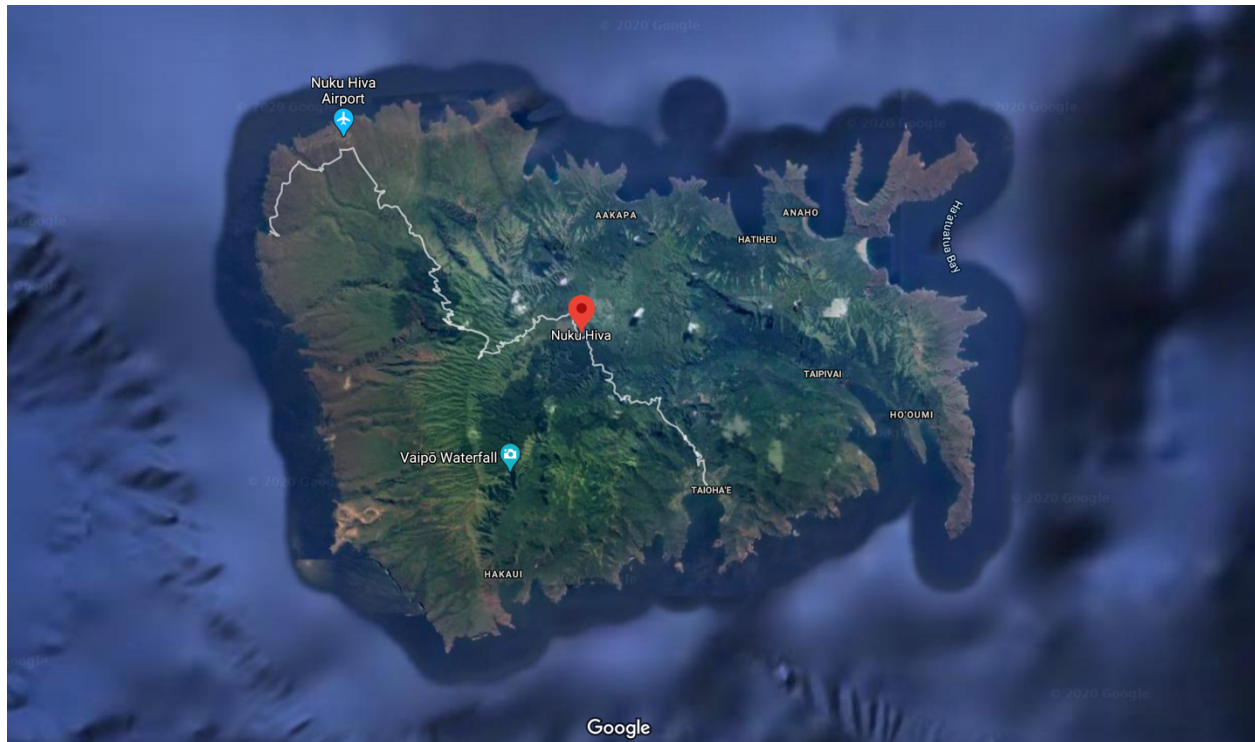


Figure 4.3 The island of Nukuhiva. (Google n.d.)

The largest island within the group is Nukuhiva, which measures at around 330km<sup>2</sup> (Allen 2004). This is the where focus of this study takes place. The island of Nukuhiva is high and mountainous, with little surrounding flatlands. Deep valleys and amphitheater shaped bays make up the inhabited areas and can also sometimes serve as tribal boundaries. There are currently five main inhabited valleys on the island - Taioha'e, Taipivai, Ho'oumi, Hatihe'u and 'A'akapa. Other valleys and bays which were once densely populated are currently occupied by small families of farmers, hunters and fishermen. Most people rely on selling *copra*, limes, *noni* fruit and tourism to make money. Rain bearing trade winds blow from the South-East, across the archipelago causing more lush and vegetated valleys to be located on the South-East side of each island. Although seasonal rainfall occurs in Te Henua 'Enana, droughts occur often in the islands and may last for prolonged periods of time, according to historical records (Addison 2006, Crook 1952, Roberts 1974). Beaches are only found in valleys and certain bays, while the rest of the island's

coasts are high and rugged sea cliffs. Although the islands of Te Henua ‘Enana are well within the proper latitudes for coral growth, overall there is little coral presence throughout the archipelago, where fringing coral reefs are only found in certain enclosed bays, such as Anaho Bay in Nukuhiva (Andréfouët 2014). Instead, nearshore waters throughout the archipelago are deep. Due to the limited coral habitat, there is much less fish diversity than other islands to the West, such as Tahiti (Aswani & Allen 2009), although the endemic fish diversity of the islands rank third within the Indo-Pacific area (Delriu-Trottin et al 2015).



*Figure 4. 4* The mountainous and deep bays of Taipīvai (left) and Hakapa‘a (right) showing the lack of a barrier reef and the general topography of the Nukuhiva coast.

#### **4.2 Te ‘Eo ‘Enana**

*Te ‘Eo ‘Enana* (the Marquesan language) is of close relation to other Eastern Polynesian languages, such as *‘Ōlelo Hawai‘i* (Hawaiian language) and *te reo Māōri* (Māori language). The term *Te ‘Eo* will now be used to refer to the language for the remainder of this thesis. Currently, two general dialects exist in the Northern and Southern islands. However, slight regional dialectal variations exist from island to island and even valley to valley in some cases. *Te ‘Eo* is still spoken today by elders, adults and most youth throughout the islands. Although there are dictionaries and lexicons for *Te ‘Eo* today, diacritic marks are hardly used throughout the literature and continue

to be an area of uncertainty to this day. Application of these aspects of language have been applied throughout this thesis to the author's best knowledge.

#### **4.3 Te 'akakai o Te Henua 'Enana - History of the Marquesas Islands**

'Enana, like many other Polynesian peoples, recorded their histories through oral tradition. Legends, stories and genealogies were maintained and safe-kept by the experts of the lore, commonly known as *tuhuka*. Although these histories lived much more vibrantly in traditional times, colonization has altered what we can understand about the topic today. Currently, all written historical records of Te Henua 'Enana have been written and preserved by foreigners. Paired with severe depopulation, history through an 'Enana perspective has faded through the tides of time. Historical perspectives will be drawn from the literature available. One of the most notable works on 'Enana history and interaction with outsiders has been written masterfully by historian Greg Denning in his doctoral dissertation (1971) and book (1980).

#### **4.4 Ātea me Atanua - Ātea and Atanua, the Primordial Gods**

The isolated nature of Te Henua 'Enana begs the question as to where 'Enana first originated from. From an 'Enana point of view, genealogies link all inhabitants of Te Henua 'Enana back to the gods *Ātea* (daylight) and his wife *Atanua*; the gods who created the land out of darkness (*te pō*) and later became the first to inhabit the islands. From their copulation come the first 'Enana to inhabit the land. In certain genealogies, the first of their children were given the names of distant lands, famous in 'Enana legends, that correspond to known islands in Western Polynesia – Veva'u (Vava'u), Hāmoa (Sāmoa) and Fitinui (Fiji) (Hady 1923). This may hint to

the areas 'Enana were aware of and may have come from in ancient times (Ibid.). Close genealogic connections to Ātea and Atanua also dictated the sacredness of *haka'iki* (chiefs), where *Kiatonui* (the *haka'iki* of Taioha'e) in the late 1700s could recite his genealogy 88 generations back to the primordial couple (Porter 1813, Thomas 1990). Certain tribal genealogies also credit Ātea to be the father of all plants in Te Henua 'Enana, where his copulation with different deities gave life to a number of important plants brought to the islands, such as *mei* (breadfruit) (Handy 1923, Porter 1970). It is clear from the ancestry of 'Enana that the gods Ātea and Atanua were the first to bring human, plant and animal life to the land.

From a scientific perspective, 'Enana are descendants of an ancient line of voyagers from the islands of Western Polynesia, perhaps Sāmoa or Tonga, who sailed Eastward in search of new lands and new opportunity. Earlier excavations in Te Henua 'Enana have revealed areas of initial human settlement in the islands between 150 B.C - 100A.D. Some once theorized that these early settlement periods are evidence the islands were a central dispersal point for other parts of Eastern Polynesia, such as Hawai'i, the Society Islands and even Rapanui (Sinoto 1970, Suggs 1961). Newer carbon dating of excavated material has now set the islands at a later estimate than once believed, at around 1000AD and possibly earlier, making anthropologists reconsider original theories of settlement and dispersal (Allen & McAllister 2010). Nevertheless, oral histories and legends supply evidence that 'Enana continued in the voyaging traditions of their ancestors to places like Rarotonga, in the Cook Islands and Tubua'i in the Austral Islands (Handy 1923). Scientific studies have also discovered rock originating from the adze quarries of 'Eiao in places like the Society Islands, Mangareva and even the Line Islands, suggesting that 'Enana indeed had pan-Polynesian voyaging networks before European contact (Allen et al. 2012).

#### 4.5 Te Kaikai Tumu - Food and plants of Te Henua 'Enana

Regardless of when 'Enana first settled the islands, the first ancestors to land their canoes on the beaches of Te Henua 'Enana brought with them important food crops, such as *mei* (breadfruit), *meika* (banana), *ta'o* (taro) and *kuma'a* (sweet potato), as well as other medicinal and everyday use plants. For everyday food supplies, 'Enana more so depended on *mei*, although *ta'o* and other food crops were cultivated and eaten too. *Mei* grows vigorously throughout the archipelago and are diverse in variety, where 'Enana had at least 36 different varieties of *mei* (Allen 2004). They even celebrated three different fruiting seasons throughout the year; the most abundant crop called *Meinui* occurring in the lunar month of *Ehua*, which is around the time of January (Crook 1952). From *mei* 'Enana made *mā* (fermented breadfruit paste), which was stored in large underground pits made of stone, called 'ua *mā*. *Mā* was an important famine food in times of drought and was stored in communal or individual pits. Many cultural delicacies were also made with *mei* such as *heikai* (breadfruit pudding), *ka'akā* (pounded breadfruit with coconut milk), and *popoi* (pounded breadfruit mixed with *mā*), which was frequently accompanied with fish (Addison 2006, Dening 1971, Robarts 1974).



Figure 4. 5 Left: *Tumu mei* (breadfruit tree) coming in season. Right: ‘*Ua mā* (breadfruit storage silo) on a family *paepae* (stone platform) in Pua‘ua, Taipīvai.

*Ika* was another important food source and was the compliment to *mei* that made up the staple food for ‘Enana (Dening 1971). It was eaten in a variety of ways - raw (*ika te‘e*), steamed in underground ovens (*ika tao ‘ia*), and dried or preserved with salt (*ika pa‘atailika mītō*). *Ika* have been a vital food source in Te Henua ‘Enana for a long time, as seen in the many assemblages of fish bones, pearl shell hooks, bonito lures and harpoon heads that are found at some of the earliest settled areas (Molle & Conte 2011). From their initial discovery of the islands, ‘Enana, with their depository of ancestral Polynesian knowledge, have evolved alongside the land and the sea to develop lifestyles and fishing techniques that could sustain their local needs for centuries before the arrival of Europeans and the advent of colonization.



*Figure 4. 6 Kaikai 'Enana (Indigenous Marquesan food). From botom: poke mautini (pumpkin pudding), popoi (breadfruit paste), toetoe (shore crab), puaka tao 'ia (baked pork), meika nunu vai (boiled banana) and ika te'e (raw fish).*

#### **4.6 Te tau hao'e - Outsiders at contact**

The first documented account of European contact in Te Henua 'Enana occurred in 1595, when Álvaro de Mendaña and his crew stumbled across the island of Fatuiva on their voyage to “rediscover” the Solomon Islands (Dening 1980). In honor of his patron Don Garcia de Mendoza, Mendaña named the islands “Las Marquesas de Mendoza”, which later became “The Marquesas Islands”. Mendaña’s visit to the Southern Islands was brief and distressing, where some estimate that he and his crew killed over 200 people in cold blood while docked in Fatuiva (Dening 1980). From the Southern islands, Mendaña and his men left to the Solomons, ignorant of the other four islands of Te Henua 'Enana in the North. The Northern islands would not be seen by Western eyes for nearly another 200 years later, until American captain Joseph Ingram first sighted the islands in 1791 (Dening 1980).

The first missionary to arrive in the islands was William Pascoe Crook. He was sent in 1797 by the London Missionary Society. He would live in Te Henua 'Enana for over a year and, although his mission to establish a Christian presence throughout the islands failed, he has provided very detailed and crucial early observations of 'Enana society. More missionaries of different faiths and nationalities would further visit Te Henua 'Enana from 1822 onward (Denig 1980). Many European and American whalers, beachcombers and traders also visited Te Henua 'Enana through the late 18th to 19th century on their travels across the Pacific. With them, these foreigners brought with them new diseases, religion and ways of life. Annexation of the islands would not happen until 1842, when Admiral Dupetit-Thouars claimed the islands in the name of the French King. This, however, was a very half-hearted pursuit at the time, where in many valleys and islands life continued on through Indigenous ways of life without very much intervention and support from the French.

#### **4.7 Te Ha'atumu 'Enana - The Marquesan culture**

*Te Ha'atumu 'Enana* is a culture that has developed from ancestral Polynesian systems of organization and belief. *Te Ha'atumu 'Enana* is described as being a very fluid and flexible culture, especially in respect to social positions and hierarchies. For many Westerners who visited the islands, *Te Ha'atumu 'Enana* was difficult to understand and was not a clear-cut system. Unpacking cultural concepts from Western accounts during the periods of initial contact thus becomes a challenging task. Fortunately, authors Greg Denig (1971) and Nick Thomas (1990), have provided excellent critical analyses of the earliest written accounts of Te Henua 'Enana from numerous visitor logs and the ethnohistoric records of beachcomber Edward Robarts and missionary William Crook, who lived in Te Henua 'Enana during the late 18th century to the early

19th century. The following section describes 'Enana culture from their analyses, as well as the author's understanding of the sociocultural roles.

The most intrinsic social grouping for 'Enana was the *mata'eina'a* or decent groups that stem from a common ancestor. In a simplified sense, status within a *mata'eina'a* was divided by the elite who held land and the commoners who did not. Those who held land were called '*akati'a* while those who did not were called *kikino*. '*Akati'a* were diverse; they could be *haka'iki* (tribal chief) or *hakatepei'u* (tribal chiefess), *tau'a* (spiritual priest), *toa* (head warrior), *tuhuka* (varied specialists) or even none of the above. The relationship held between '*akati'a* and *kikino* was that *kikino* were allowed to live on '*akati'a* land and were also placed under their protection, and in return, they would provide '*akati'a* with their services and tend to the land, whether it be harvesting breadfruit and preparing the '*ua mā* (breadfruit pits) to performing simple household duties. Unlike most other Polynesian societies, chiefs in Te Henua 'Enana rarely owned the rights to the land of an entire valley or district. Land is instead described as highly privatized in Te Henua 'Enana, where sections of entire valleys were divided between the '*akati'a*.

*Haka'iki* (chief) or *ha'atepei'u* (chiefess) however, were the leaders of the *mata'eina'a* who held strong genealogic ties to tribal gods. They also sometimes took on the role of *toa*, *tau'a* or *tuhuka* and held large sections of land. It was their close genealogic links to ancestral gods that made them *tapu*, and although they did not have dictatorship like power over entire valleys, they were highly respected by the *mata'eina'a* to do their bidding. When compared to other Polynesian chiefdoms, the position of *haka'iki* also had fewer ritual responsibilities.

Ritual responsibilities instead were fulfilled by *tau'a*. *Tau'a* were viewed as mouthpieces to the gods, who would possess *tau'a* to express their messages to the *mata'eina'a*. They were also the ones to accept godly sacrifices and were even at times considered gods (Dening 1971). With

drought always posing a threat to 'Enana life, *tau'a* also had the power to bring abundance to one's valley in times of famine, which at times required human sacrifice. Seeking sacrifices from enemy tribes would sometimes result in war. War and battle were the domain of the *toa* who was responsible to lead armies into battle and decide when and where it be appropriate to do so. They held a very esteemed role in 'Enana culture and had considerable amounts of wealth, which was displayed in their substantial amounts of property and intricate tattoos. Although they were connected to *haka'iki*, *toa* for the most part managed their work independently and would act more as war advisors.

*Tuhuka* were a diverse range of experts who excelled in a range of cultural roles. There were *tuhuka patutiki* (tattoo experts) who imprinted sacred motifs into the skin of *tapu* persons, *tuhuka hakatū paepae* (expert stone builders), *tuhuka 'avaika* (fishing experts) who would lead canoe fleets in large fishing expeditions and many other diverse forms of *tuhuka* (Handy 1923). Of great importance was the *tuhuka 'o'oko*, (ceremonial priests) who were masters of ceremonial chants and genealogies and were even able to accept sacrifice to certain gods (Thomas 1990). There were no hereditary requirements to become a *tuhuka*. Men or women could achieve the position through apprenticeship and skill (Handy 1923). *Tuhuka* would work independently or be hired by *haka'iki*, *toa*, or *tau'a* and were paid for their services in gifts.

Now that a cultural and environmental context has been established, we will turn the focus towards the early accounts of fishing practice and knowledge in Te Henua 'Enana by reviewing and analyzing the writings of early visitors, missionaries and beachcombers to set a baseline for the ancestral fishing occurring during those times.

## Chapter 5. ‘Avaika i te tai kākiu - Fishing during outsider contact

### 5.1 Introduction

Fishing and all to do with fishing was of great importance in Marquesan society. There is no suggestion in the sources that the lack of coral reefs around the islands limited the dependence of the Marquesans on the sea...A considerable part of Marquesan subsistence came from the sea and fish were abundant in quantity and variety... They were caught and collected in a great variety of ways: by diving and driving with noises under the water, by noose, by line, sunken and buoyed, by cast nets and by long nets, by harpoon and by scoop, by poisoning. (Denning 1971, p. 236)

This excerpt from Greg Denings 1971 Doctoral dissertation highlights the relativity, diversity and importance of fishing to ‘Enana. The aims of this thesis are to show the change and evolution of ancestral fishing practices of ‘Enana from the earliest written accounts until now. From this we will be able to draw upon how important and integral fishing was to ancient ‘Enana society until modern times. By exploring this, we can see how these changes may be able to inform ‘Enana on future issues pertaining to cultural and educational development. A greater understanding of the fishing practices of old and of now can also be a tool to guide marine resource management in Te Henua ‘Enana. This thesis also aims to preserve the voices of ‘Enana fishermen and elders within English written language; an aspect of the literature about our land and our people that has been underrepresented for many centuries. By looking towards the past on the ancient practice of fishing and its evolution throughout time, a greater understanding of the history of ‘Enana fishermen, our identity as a fisher-people and more broadly as ocean people can be achieved.

Colonization has affected ‘Enana society in significant ways from the times of Mendañas’ first arrival until now. Severe depopulation from foreign diseases, new religions and the destruction of the *tapu* system have contributed to the loss of ancestral knowledge and brought

with them significant change. In some ways, the same can be said for many of the traditional fishing practices, where different introduced technologies, religions and worldviews have altered the way fishing was and is practiced today.

In saying this, 'Enana fishermen have also benefitted from some aspects of globalization. New durable materials and maritime technologies would have been immediately sought out for fishing with the arrival of *hao'e* (foreigners). The lack of inter-tribal battles occurring between valleys would have also provided fishermen more opportunities to fish without the anxieties of defending themselves from enemy tribes. European ships also usually brought along Hawaiian and Tahitian ship hands and missionaries to the islands, who have interacted more frequently with 'Enana fishermen while introducing and exchanging new fishing methods and techniques to the Islands (see Handy 1923, Linton 1923).

Today and in the recent past, although much ancestral knowledge has been lost to the tides of time, there is still a significant amount of fishing practice and knowledge that have been preserved along with modern technologies and ways of life, which we will delve further in to in the next chapter. First, it is essential that a basis of ancestral fishing practices before and during the times of outsider contact be established. In order to achieve a fuller understanding of the ancestral methods of fishing and the knowledge surrounding the practice, we will turn to the early ethnohistoric records written on Te Henua 'Enana.

Unfortunately, fishing was not a particularly important or interesting aspect of 'Enana life to most early visitors, who had their own focuses and intentions while in the Islands. Their interests to aspects of 'Enana culture and lifestyle were more centered around the different and intriguing characteristics of 'Enana life, such as warfare, tattooing and ceremonial sacrifice (Govor 2010). For those who described the fishing they saw, insights on the intrinsic environmental knowledge

needed to use fishing technology properly is rarely mentioned; a common occurrence for most places in the Pacific (Kirch and Dye 1979).

It is also worthwhile to acknowledge that 'Enana may not have been interested in sharing all they knew about fishing too. To 'Enana, fishing was an act that was surrounded in *tapu*, from the preparation of fishing gear until the time to distribute the catch. In turn, this may have limited 'Enana's willingness to present some information to outsiders. Nevertheless, although full accounts of fishing and much of the relevant environmental knowledge for fishing, such as moons, currents and tides from the early records are spotty, there are still some significant fragments of information on fishing that are of use to enhance our understanding on the topic.

The following chapter will explore the early records for accounts of fishing written within the days of initial outsider contact which occurred between the 18th and 19th centuries. Some of the records come from the writings of ship captains and their crew, such as G. Forsters (1774), a naturalist on Captain Cook's H.M.S Resolution, Captain É. Marchand (1791) of France, Captain A. Von Krusenstern (1804) and naturalist G.H. Langsdorff (1804) of Russia, and Captain D. Porter (1813) of the USA. We will also turn to the accounts of early missionaries, such as W.P. Crook (1799), Robert Thompson (1838), Mathias Gracia (1843), I.R. Dordillon (1904), and the beachcomber Edward Robarts (1798) who lived in the island for many years and married into a chiefly family. In areas where there is a lack of information or further understanding is required, we will turn to the information written on Polynesian fishing practices presented in Chapter 2.

Also, of significance to this narrative are the writings of anthropologists and ethnologists who have written about fishing during the early 1900s. The most significant of these works come from E.S.C. Handy (1923) and R. Linton (1923) who were a part of the Bayard Dominick

expedition. Information from later studies and archaeological excavations by Y. Sinoto (1970) and A. Lavondes (1971,1978) of the Museum of Tahiti will also be presented.

## **5.2 Te hana ‘avaika i te tai kakiu- Fishermen and fishing in ancient times**

The general term for fish and other marine life in Te ‘Eo is *ika* (Dordillon 1931). Besides vegetable foods, *ika* accounted for the majority of protein within traditional ‘Enana diets. Crook writes: “A considerable part of their subsistence depends upon the produce of the Sea, in which their Country is situated. This is very abundant, and includes the numerous species commonly found in tropical climates.” (p. 127). The abundance of fish as well as the strong connections ‘Enana had to the ocean made *ika* a significant resource in the daily rhythms of ‘Enana life.

In Te ‘Eo, the term for fisherman is *‘avaika* (lawai‘a being the Hawaiian cognate). *‘Avaika* held important roles within ‘Enana society to provide for their people and to their gods. If a chief was to have a feast, it was an *‘avaika*’s responsibility to obtain the fish for him. Expert fishermen who lead large fishing expeditions and the ritual practices were called *tuhuka ‘avaika* (fishing experts). Their knowledge, spiritual connections and status made them *tapu*. It was the *tuhuka ‘avaika*’s responsibility to procure fish for large feasts and to lead the proper rituals and prayers to ensure a successful catch. All fishing rituals before and after fishing expeditions were practiced within the *oho ‘au ‘avaika*; sacred houses that were located on shore where fishermen would congregate and pray (Handy 1923). Ceremonial sacrifices to particular fishing gods before an expedition were conducted on *ahu ‘avaika*; stone fishing shrines that were found on shore. It is said that vegetables, pigs and certain fish were sacrificed at an *ahu* as offerings to the *‘avaika*’s fishing gods (Crook 1951, Handy 1923).

Fishing was an act that was also heavily dictated and managed by *tapu*. All aspects of fishing, from the preparation of fishing gear to the act itself, were encompassed with *tapu* (Gracia 1843). *Tapu* dictated who could catch fish, when and where fish could be caught and who could eat certain fish. Entire valley populations were sometimes placed under *tapu* to dedicate themselves to the fishing gods while large fishing parties were out fishing, ensuring a successful catch. Feasts to celebrate large catches, called *ko'ika ika*, were held at tribal ceremony grounds and were significant events, where Gracia attended a *ko'ika ika* of between 7-800 people (Gracia 1843). Handy notes that these feasts were possibly done to “raise” the *tapu* of the catch before distributing the fish among the tribe (p. 167). Certain species of fish were *tapu* for commoners to eat; only prestigious and *tapu* individuals, such as the *haka'iki*, could partake in consuming these *tapu* fish. Crook lists some of the marine animals that were *tapu* and the individuals who they were restricted to:

The turtle, which they call honu, the cavally, Uua[U'ua], and a fish which they call Kennatoto[Hanatoto] are only eaten by the superior classes. The albacore, called by them tevva tevva [otavatava]; the bonetta, atu; and a species of squid called Touke, can only be participated by persons of the same class at the same time. (p. 127)

The color red was a significant and *tapu* color in 'Enana culture, and explains why all red fish were made *tapu* and why they could only be eaten by *tapu* individuals (Crook 1951, Handy 1923). Elders from 'Uapou island also note that the *humu* (Family *Balistidae*), *utu* (green jobfish), *tatue* (parrotfish), *ku'avena* and *puko'oko'o* (*Cephalopholis sexmaculatus*) were considered *tapu* fish also (Ottino-Garanger et al. 2016). *Tapu* on marine animals could also be lifted and reestablished to control their consumption in certain areas, where in 1888, a Hatihe'u chief placed a *tapu* on *haha'ua* (manta ray) in Anaho bay (Stevenson 1987 as cited in Allen and Aswani 2012).

Other types of *tapu* also controlled the seasonality of fishing activity for certain or all fish.

Langsdorff (1813) writes of a peculiar *tapu* in Nukuhiva relating to breadfruit seasonality:

Almost all fish are at the time when the breadfruit is not ripe tabooed, and must not be eaten. A superstitious idea prevails, that by transgressing this law all the young bread-fruit would fall from the trees, which must inevitably occasion a scarcity. This connexion of fish with the bread-fruit is wholly inexplicable. Perhaps fish may be considered as unwholesome at this time of the year, and therefore the inhabitants are by such a taboo restrained from eating them; or it may be that this is their spawning time, and it is intended by such an ordinance to prevent their natural increase being interrupted by their being taken at this period. It seems strange however, that as soon as the bread-fruit is ripe, and there is great plenty of it, the taboo upon the fish ceases, and the people may catch whatever they please. (p.138)

Dening and Handy both propose that this specific *tapu* on fish stems from a relationship between certain plant and fish species that were categorized under the same names where:

...many fruits notably kinds of breadfruit, banana, and coconut have the same names as different kinds of fish. This *tapu* on fishing during the maturing season of breadfruit was, therefore, doubtless based on conceptions arising out of a belief in magical correspondence and balance of life on the land and in the sea (Handy 1923, p. 167).

These animals and plants may have also held spiritual relationships with certain *tapu* individuals, where Dening suggests that relationships of this nature were quite extensive throughout 'Enana society (Dening 1971).

To ensure that fishing gear would yield successful and abundant catches, strict *tapu* were adhered in the crafting of all fishing gear. The twisting of cordage for fishing line and nets, the carving of a new fishing canoe and the crafting of new fishing nets are a few examples in which one adhered to strict *tapu* (Dening 1971, 1980; Gracia 1843). Dordillon notes that fishermen were required to fast 3 days in advance, thus putting themselves in a state of *tapu*, before the crafting of deep-sea fishing nets within the *oho 'au* (Dordillon as cited in Handy 1923). The strict *tapu* around

canoes and other fishing gear, in turn, limited the practice of canoe fishing to men. This was due to the notions of *me‘ie* (profane, free of *tapu*) that women were believed to possess. However, it is interesting to note that women were often employed to twist cordage for the crafting of nets while under a state of temporary *tapu* (Gracia 1843). Instead of canoe fishing, women, along with their children handled the gathering of various types of invertebrates and seaweeds, as well as certain reef fishing activity conducted from shore.

### **Te ‘Āhui - Resource prohibitions**

Another important aspect in managing ‘Enana fishing activity was the ‘*āhui* (*rāhui*, prohibition). ‘*Āhui* were somewhat secular prohibitions put in place by certain landowners or persons of rank in order to replenish resources. They were marked by placing a marker on the restricted area or plant. For example, fish within a certain area of the bay placed under ‘*āhui* were marked by a pole placed in the bay with a white tapa cloth attached to it (Crook 1952, Handy 1923). ‘*Āhui* set by *haka‘iki* were sometimes put on *mei*, *ehi* and *meika* in certain contexts (Crook 1951, Ottino-Garanger et al. 2016). It was widespread practice for chiefs to set ‘*āhui* on resources in preparation for large feasts (Handy 1923). Specific types of fish within an area were also able to be placed under ‘*āhui*, where Handy notes that a stick with a coconut leaf attached to could be placed on shore to signal an ‘*āhui* on octopus (Ibid., p. 60).

Successful fishing also required proper consolidation with fishing gods. There were many different gods associated with diverse types of fishing. “To every island its gods: to every fisherman his god” was a proverb from father Chaulet (as cited in Dening 1980, p. 168). Some were gods who watched over those who pursued turtle, shark or ray fishing (Handy 1923). Some were the gods of the fishing nets or lines themselves. Overall, ‘Enana acknowledged Tana‘oa

(*Tangaroa* being the Māori cognate) as the main god of the ocean. The uninhabited island of Fatuuku in the South, that is abundant with fish was said to be *tapu* to him and therefore could only be fished in certain contexts. The proper fishing rituals and prayers undertaken before fishing were conducted within *te taha tapu o te 'avaika* (the fishermen's sacred area) and were especially done before and after large fishing expeditions (Handy 1923, Denning 1971). Throughout Te Henua 'Enana, carved stones that embodied certain fishing gods were left hidden and buried within the *oho 'au*. These stones are called *puna ika* and came in the form of fish or other marine animals. Depending on the type of fishing, *puna ika* were dug up and exposed before fishing would occur. They were said to have informed fishermen the direction to fish, what to fish for and when. Certain *puna ika* were also taken along fishing, where they would be placed on the canoe and "jump" into the water when the right fishing destination was reached (Agence des aires marine protégées 2016). Upon returning to shore, the stone figures would return to their place within the *oho 'au*.

Throughout much of the early literature, many believed that fishing was an occupation not held in great esteem within 'Enana society and that fishermen were generally poor (Krusenstern 1813, Langsdorff 1813, Crook 1951). This view can be seen within Robarts' (1974) comment on fishermen: "The fishermen are mostly a set of people that have little or no land. They live in huts on or near the beach. They support their families by fishing which they exchange for food and cloth" (p. 253). Many visitors took notice that there were some fishermen and their families who were the main residents of the more arid and less inhabitable areas of each island. They lived in caves and supplied themselves with fish, fern roots or sometimes bartered fish for food and other goods with people living in more abundant valleys (Crook 1951).

In contrast to this, there were also many fishermen, such as *tuhuka 'avaika*, who were connected to chiefly families and sometimes owned more canoes and land by the sea than the chief

himself (Crook 1951). Dening (1971) sheds some light on the distinction of distinct types of fishermen and the importance of *tapu* fishermen to 'Enana societal hierarchies:

One should distinguish two types of fishing in the Marquesas. One type was in control of the ordinary common fisherman...Other fishing was in the control of the *tapu* group. Some of these would be *tuhuna* [*tuhuka*] 'avaika, or fishing specialists, and own land by the sea and the sea in front of their land. Their capital was in their canoes and in the skill they acquired in catching certain sorts of fish. These activities were not exclusively secular or economic. While they were frequently wealthier in canoes and property than the *haka'iki*, they were not independent agents. They participated in the *haka'iki*'s *tapu* and shared in his responsibility to distribute the economic consumption of *tapu*. They were guardians of the special sacred fishing places (*taha tapu na te avaika*). It was their activities and not the activities of the common fisherman that were surrounded by the strictest *tapu* and their activities essentially involved a distribution of the fruits of their labor. They possessed their skulls in virtue of the *mana* and *tapu* of the *haka'iki* descent line. The skull of the *haka'iki*'s deified ancestor was a key instrument in their ritual preparations for fishing. *Tapu* was essentially associated with sharing and distribution. (p. 240)

These accounts show that the roles of fishermen, especially those of high *tapu*, were linked with much of the spiritual and economic activity of 'Enana life and in maintaining social cohesion (Lavondés 1971).

Now that the roles and functions relating to 'avaika and *ika* within ancient times have been shown, we will now turn to the literature relating to the different fishing methods that were observed during the times of early outsider contact.

### **5.3 Te ika hī - Hook and line fishing**

The action of fishing with hook and line in Te Henua 'Enana is called *ika hī*. Fishing in this way was done by handline or bamboo pole in both coastal and deep waters. The most commonly used fishing line was made from twisting the fibers of the coconut husk (*pu'u*) or the bark of the *hau* (Hibiscus) (Dening 1980, Handy 1923, Porter 1970). There were also many other

types of plants used, such as the fibers from stripped leaves of pineapple which were used in small scale fishing (Handy 1923). Crook notes that the stripped fibers of the *papa* (*Phaseolus adenanthus*) plant, which was a very strong and silky material, was used to make fishhook snoods (Crook 1951). Fishhooks themselves were made out of a piece of pearl-shell, bone or a combination of the two (Fleurieu 1969). They came in various shapes and sizes which depended on the size and type of fish targeted. It appears that these hooks were made in abundance, for Te Henua 'Enana has one of the most extensive and diverse archaeological collections of fishhooks within the Pacific, where even today one may stumble upon an ancient pearl-shell fishhook upon the coasts of Nukuhiva. 'Enana also had 2-piece pearl-shell bonito lures (*pā*) that resemble those found elsewhere in Polynesia (see Chapter 2). Foreign metal and fishhooks were introduced early on to the archipelago within the late 18th century and would have quickly replaced pearl-shell hooks. It is important to note, however, that 'Enana most likely continued to craft metal hooks with similar designs to ancestral pearl hooks, as was the case in Tahiti (Lavondés 1971).



*Figure 5. 1* My uncle's diverse pearl-shell fishhook collection found at Anaho bay, Nukuhiva. Pearl-shell hooks are sometimes still found today near the sand burrows of tupa crabs, who sometimes excavate the hooks from beaches and mudflats (See Figure 6.19 for tupa burrows).

In order to better distinguish the different types of ancient hook and line fishing that occurred in the ancient times through an Indigenous organizational lens, the following line fishing methods have been categorized by their use of a canoe or without a canoe, implying whether or not fishing was performed from shore or on the ocean.

### **Te hī ika ma he vaka - Hook and line fishing by canoe**

*Vaka* (canoes) used for fishing were diverse in size and function. They were typically made out of *mei* (breadfruit) or *tamanu* (*Calophyllum inophyllum*) wood. There were single-hulled vaka with outriggers that could hold 1-3 people and there were double-hulled *vaka* that were used for deep sea fishing expeditions for fish such as *atu* (bonito). Porter (1813) describes the variety of fishing canoes he saw at Nukuhiva:

Their fishing canoes are vessels of a larger and fuller construction, many of them being six feet in width, and of an equal depth. They are managed with paddles more resembling an oar, and are, in some measure, used as such, but in a perpendicular position, the fulcrum resting on the outriggers projecting from each side. With those they proceed to the small bays and coasts where they fish with the scoop net, and with the hook and line. They have also smaller canoes, which are commonly nothing more than the hollow keels of the large ones; after the upper works are taken off; these are furnished with outriggers, and are used for fishing about the harbour. The canoes used for the purpose of navigating from one island to another, a navigation very common, are similar in their construction to the larger kind of fishing canoes, and are secured together by beams lashed across. (p. 73)

It appears from Porter's account that *vaka* used for different purposes were also sometimes re-lashed and adjusted to the type of fishing that was to be partaken in, like fishing for bonito. It is also interesting to note that Crook mentions an instance where natives informed him that war canoe hulls were sometimes re-lashed for the purpose of large-scale deep sea fishing (Crook 1951).

Bottom fishing from canoe was done by handline with hook and bait that was sunk with a stone sinker (Rolett 1998). This type of fishing would have been done typically at *toka*, either close or far from land and explains perhaps why much of the early literature does not mention much information on this type of fishing.

*Atu* (bonito) were trolled for in the deep sea by canoe. *Atu* fishing was done with the use of a bamboo rod attached to a pearl-shell fishing lure with rope of *hau* bark; not unlike the bonito fishing that we have already explored in Hawai‘i and the Society Islands. Dordillon mentions that fishing for *atu* in Te Henua ‘Enana sometimes used 4 hooks on a single line (As cited in Handy 1923).

### **Te ika hī mei o he henua - Fishing from shore**

Hook and line fishing was also practiced from shore with handline or bamboo pole. Reef fish were the primary target for this kind of fishing, where many women and children would partake in this practice. Small shrimps, invertebrates or coconut meat were used as bait. Besides pearl-shell hooks, Crook notes the use of a peculiar type of hook that was used in fishing of *pōpō* (juvenile *Caranx* spp.) from shore:

A small shining fish called the Popo, in shape resembling the Cavally, both on the coasts and in the larger streams, especially when flooded by rains. They are caught with nets, and sometimes by throwing into the stream a small line, with a hooke, made of a thorn from the Prickly Palm, at one end; and at the other, made fast to a bit of wood for a float. The hook, being baited with a morsel of Cocoa nut, is seized by the popo, who runs away with it, till his strength is exhausted, when he is taken out. (p.128)

Dordillon mentions a peculiar type of handline fishing which involved swimming out with baited handline spooled on to a piece of wood to catch fish swimming below (as cited in Handy

1923). This type of fishing, called *pūhakau*, has been noted by Teautaiipī to have been practiced during his childhood and will be addressed further in the following chapter.

Fishing for *heke* (octopus) was sometimes done with hook and line also. Handy's informants recall a way of octopus fishing which required a white stone used as a lure that was attached to a line with 3 hooks lashed together. It was let down near octopus holes and when the octopus latched on, the line was quickly pulled up to secure the animal. Fishing with cowrie shell lures similar to those of elsewhere in Polynesia were mentioned in any of the reviewed literature, but were indeed used at one time, where many "coffee bean" shaped stone sinkers and cowrie shells found in the archaeological findings throughout Te Henua 'Enana (Lavondés 1971).

#### **5.4 Te 'avaika 'upeka - Nets and netting**

'*Upeka* is the general term for a fishing net, according to Dordillon's (1904) dictionary. Many of the early records note a number of net fishing occurring at the time, where Marchand (1969) believed that 'Enana "make much more use of the net than the line" (p. 122). '*Upeka* were vital technologies that were used in the procurement of significant quantities of food for important feasts or daily fishing activity. '*Upeka* were typically constructed of rope made of *hau* bark or *pu'u* (coconut sinnet) and sometimes both (Handy 1923). Denning notes that there was also at least another half-dozen plants that were also used in making cordage for nets (Denning 1980). Unfortunately, due to the rapid deterioration of natural fibers, and the lack of proper collection and preservation, very few actual examples of 'Enana fishing nets have survived until this day. There were once a variety of nets 'Enana used in ancient times that were used from shore or by canoe. Crook names the different nets that he saw:

The men fish with hooks and lines; seines, which are sunk to the bottom for some kinds of fish, and kept buoyant for others; casting nets, bell hooped and strait; and some nets, more than 100 feet long. Their form almost exactly resembles that of our own nets. (p. 127)

From this account, we can see that nets were quite diverse within ancestral 'Enana fishing practices. Crook's note of nets greater than 100ft in length could be in reference to certain seine nets similar to the seine nets used by Māori in Chapter 2. It is interesting to note that Crook listed casting nets as a method that was practiced in Te Henua 'Enana, for virtually no other sources mention of this method being practiced there. Because of this, one can only assume that 'Enana casting nets perhaps resembled in function and design to those described previously of Hawai'i and The Society Islands. To have a better understanding of the net fishing in Te Henua 'Enana, we will explore the intricacies of these nets and netting techniques in the following sections.



*Figure 5. 2* An assortment of ancient stone sinkers from Taipīvai, perhaps once used to weigh down bag nets or fishing lines.

### **Te ha‘atopa ‘upeka ma he vaka - Netting by canoe**

Accounts of fishing with bag nets by canoe in Te Henua ‘Enana was practiced within a general manner of dropping them from canoes into varying depths of the water column. Interestingly, the bag nets that have been described resemble in use to those in Hawai‘i, Aotearoa and elsewhere that were also used for different canoe fishing activities. It appears that one of the most important of these nets was called ‘*upena* by the people of Atuona, Hiva‘oa and has been recorded by Handy and Linton based off of the accounts of their local informants. The frame of the net is said to have been between 30 to 36 feet wide and was of square shape. On each side of the square was a strip of the durable and heavy *toa* (Pacific ironwood) where lines were attached. The middle of the net was a basket like section, called a *to‘opu‘u* that was nearly eight feet in diameter and tapered off from top to bottom. Linton notes that the cord used to make the net was first dyed with *ka‘aea* (red earth) which caused the nets to attract more fish and that in Puama‘u the net’s shape was circular and not square (Linton 1923). Handy (1923) describes in detail the manner in which this type of fishing was done:

The fishermen put to sea about four hours before dawn. Four canoes were required for casting the deep-sea net. For the fish there were two small canoes each containing three men, each of which carried four anchors with their cords, two anchors at bow and stern being used to secure each of the vaka nui from which the net was handled. Part of the duty of the small canoes was to drop these anchors properly. This use of anchors indicates that at Atu Ona such fishing as is here described was not done in very deep water. Each of the small canoes had its separate name signifying its function: the vaka fiti (*fiti*, to go east) went to the east side of the place designated by the tuhuna for the night’s work; the vaka vaho (*vaho*, outside) went to the other side. It is probable that each small canoe put down two anchors for each of the larger canoes, at the respective ends at which they operated. The place for fishing, and all operations were designated and directed by the tuhuna.

Arrived at the designated spot, the upena was let down by its eight cords until it lay on the bottom. The tuhuna then plunged overboard. By using his hands like telescopes, he could see the fish and so it is said could even hear them when they went in to the net. From the water he directed the operation, ordering the men in the large canoes and in the small ones, all of whom aided in handling the net, to pull up this or that line. When the net was full the tuhuna gave the order for all to pull together. Sometimes one big catch would fill all the canoes. (p. 172)

Crafting such large nets like the one described above required strict *tapu* to be adhered by those who worked on the net to ensure bountiful catches (Gracia 1843). Women were often employed in the manufacturing these nets and were thus reserved a portion of the catch (Ibid.).

A similar type of canoe deployed net was used for fishing for *tatue* in Te Henua ‘Enana. It was of similar construction to the ‘*upena kākā uhu* of Hawai‘i. Lavondés (1971) and Linton (1923) describe this type of fishing in-depth. Although this type of fishing was no longer practiced at that time, many ‘Enana who remember seeing it practiced provided them with detailed accounts. They are described as being 3ft square and were held open by arching sticks placed between the corners of each square. Attached to the bottom of the net was a stone sinker to aid the net downward.

With this type of fishing came a deep understanding of the local marine ecology. *Tatue* are very territorial fish and will attack any invading *tatue* vigorously. Knowing this, an ‘*avaika* would first spear a *tatue* before heading out on the canoe. Once he arrived to the *tatue* fishing spot, he would then lower his square net with the decoy *tatue* attached to the middle of the net framing. A line attached to the wooden arches held the net open. A wild *tatue* would then quickly enter the net and the ‘*avaika* would pull on the line holding the wooden arches, thus closing the net and capturing the new fish (Lavondés 1971). There is also mention of *tatue* being left within tidepools and enclosures abundant throughout the coast so that they may be kept alive and accessible for future fishing. Lavondés also notes that the technique has also been adapted to fishing with a speargun in more modern times and continues to be used until this day, as we will see in the following chapter.

Linton also lists the use of a bag net in Puama'u, Hiva'oa called the *timana* which was a circular net 2ft in diameter and 3 ft deep. A stone was placed in the middle of this net as a sinker while squid skin was tied within it. Three strands of rope tied at the upper edge of the net were braided into one above the center of the net. The net would then sink to the bottom of the ocean and stay for some time until the 'avaika would pull the net up, capturing any fish that came close into the net.

Canoe fishing for *ma'o'o* (flying-fish) was done with the use of hand nets. This type of fishing was done at night and was aided by torchlight. Linton (1923) records a net used for *ma'o'o* fishing from Hiva'oa called a *pafio*. The form of this net was made from a y-shaped stick where the netting was attached. This was then lashed to a pole between 10-15ft long. The light produced from the torch attracted the fish to the canoe, where the 'avaika would quickly slap the opening of the net over a fish which caused the *mao'o* to jump and further entangle itself within the net (Linton 1923). Linton's informants mention that this type of fishing was first introduced by the families of the first Hawaiian missionaries to arrive there. However, Robarts makes mention of fishing for *mao'o* in Nukuhiva with a hand net at night some 50 years before the arrival of Hawaiian missionaries, which suggests that the practice may have been practiced before then (Robarts 1973). This method of fishing was also used to catch *ihe* (garfish) and simply required a smaller sized net meshing.

There was also a small wooden dip net with hoop and pole called *ma'a* was also used in the procurement of various other small fish (Linton 1923). Porter noted that the people of Nukuhiva constantly fished with "scoop nets" within the small bays throughout the island (Porter 1813).

### **‘Avaika ‘upeka mei o he henua - Netting from shore**

Netting from shore was either done with seine nets, gill nets or several types of hand nets. The most often used of these methods was the seine net, generally called *pā‘oa* (*pāloa* being the Hawaiian cognate.). *Pā‘oa* were typically made out of *hau* bark cordage and had stone sinkers attached to the bottom with wooden floats of *hau* at the top. They were large in size and best deployed in bays with sandy bottoms. To deploy the *pā‘oa*, one end of the net was taken out in the ocean and then brought back to shore about 75-100 yards away from the other end, creating a semicircle from shore to the sea. Both ends were then drawn up towards the beach and captured any fish within the area or the net (Linton 1923).

Fish driving techniques with the use of stringed leaves similar to the techniques used in Hawai‘i and The Society Islands may have also been practiced in Te Henua ‘Enana. Dordillon (1904) describes the word “*au‘oa*” as a long braid of leaves used to startle fish. Unfortunately, there are no further details of this practice and how it was performed in Te Henua ‘Enana within the reviewed literature.

Similar to fishing for *ma‘o‘o*, hand nets were also used to catch fish at night from shore. Dordillon writes that the small *ku‘avena* fish was caught at nighttime in Taioha‘e. Fishermen would go to the rocky shoreline with torches at hand at around 3AM in the morning. The light attracted the *ku‘avena* fish to the rocks where they were then scooped up with the hand net (As cited in Handy 1923). Robarts makes mention that fishing in the bays with nets at night was a frequent practice by ‘Enana (Robarts 1974).

Fishing for turtle and hammerhead shark was also sometimes done with gill nets. In fishing for *matakē* (hammerhead shark), nets were first dyed with red earth. The nets were set at night in areas close to shore and were anchored to the bottom of the seafloor to be retrieved the next morning (Handy 1923). Catching *honu* (turtle) by net was done by startling nearby turtles into a large gill net. The net was set out near a rocky part of the coast where turtles frequently visited and a *tuhuka* 'avaika would then dive into the water to chase the turtles into the net (Ibid.). This method of fishing turtle could catch between 10-20 turtles. Turtle was said to be caught with hook and line also (Linton 1923).

Fishing for *honu* was a highly *tapu* form of fishing, for its flesh was reserved to *tapu* individuals and as significant sacrificial offerings (Robarts 1974). It required proper prayers to the gods before and after the fishing would occur (Linton 1923).

### **5.5 Te ve'o ika - Spearfishing and harpooning**

Among other ancestral technologies, 'Enana also mastered the use of spears and harpoons for their fishing practices. *Ve'o ika* (spearfishing) was done both underwater and above the surface. It was practiced on canoe or from land. 'Enana had techniques to spear a variety of reef fish and up to the largest of manta rays. *Ve'o* (spears) were carved out of the hard and dark *toa* wood and had single or multiple points to them. There were *ta'a* (harpoons) which were used to spear large fish, such as *haha'ua* (manta ray). Their heads were made of bone and were usually detachable. These bone spearheads are common in the archaeological record and can date back to the 18th century (Lavonés 1971). Upon European contact to the islands, metal harpoons were also often used by 'Enana for their fishing and were often coveted items for bartering with Europeans (Porter 1813).

### **Te ve‘o ika ma he vaka - Spearfishing from canoe**

Spearfishing and harpooning for large fish were both customary practice by canoe. This was done in the daytime or at night with the aid of a torch. Torches were made out of dried coconut fronds, bamboo and even sugar cane (Linton 1923). Although there are few records on this type of fishing, simple spearfishing in the ocean probably used smaller outrigger canoes to reach spearfishing grounds and could be done alone, while harpooning for larger fish was conducted in larger specialized canoes with a team of people. Porter (1970) provides a detailed description of hunting of the sacred *haha‘ua* with harpoons in Nukuhiva:

The harpoon is nearly straight, when made either of bone or wood; the ends slope off to points in different directions; on one side is a notch cut in to secure it to a pole by means of a slight lashing; the opposite side has a jog for the end of the pole to rest against; in the middle of the harpoon is a hole for the harpoon line to be rove through. When the fish is struck, the staff disengages itself, and the harpoon becomes a toggle, which perfectly secures him. They give the preference, however, to our iron harpoons, which are, in fact, with them, the most valuable form which iron can be put into, as they are much used in striking the sun and devil fish [haha‘ua], which frequent the coasts and bays of this island, and although this fish is very sluggish and requires little dexterity to take it, there are some who are trained to the business and pride themselves greatly on their skill. The sons and grandsons of chiefs are those who are most expert in the use of the harpoon, and drives it up to the socket. This appears to be an awkward and very improper method of using the harpoon. But, such was their mode with those made of bone and wood, which required extrodanary force to drive them into the fish, and when they changed their instruments they continued their old practices. They go out frequently with the young harpooners to excercise them in striking, and generally make choice of a time when the sea is rough to accustom themselves in the bow of the canoe, in which consists the chief of their art. (p. 118-119)

### **Te ika ve‘o ma he henua - Spearfishing from shore**

Spearfishing from shore was an efficient and common fishing practice. It was done with wooden spears with multiple prongs attached. It was also commonly done at night by torchlight in the rocky coasts of Te Henua ‘Enana to spear fish trapped within tide pools. Fishing by torchlight

however was done with much caution, for warriors from other valleys were known to go “fishing” for people at night for human sacrifice.

Although spears are claimed to have been used in ancient times, there is little information on their construction. Handy simply notes the use of a 12 prong spear called *matava‘u* that was lashed with 3 layers of sennit and was used for shoreline spearfishing.

## **5.6 Special methods of fishing**

Besides the more common and widespread fishing methods, ‘Enana also practiced many unique and clever ways of fishing. These include the use of natural poisons to stun fish, noosing, fishing by hand and other simple technologies to catch a diverse range of fish.

### **Fish poisoning**

Fish poisoning was a unique way to catch fish and is seen throughout other islands in French Polynesia. Fishing in this way used the mashed fruit of the green *hutu* (*Berringtonia* spp.) that was wrapped up in leaves and was either released in to coastal tidepools or in underwater fish caves. Once in contact with all nearby fish, the poison would stun the fish and cause them to float or be easily speared. The poison, however, did not affect the quality of the fish meat, making them safe to eat (Crook 1951, Handy 1923). Linton notes that *Tephrosia piscatoria* and *Rhyncosia punctate* fruits were also used to stun fish.

### **Gathering**

The gathering of various invertebrates at low tide was also practiced heavily in Te Henua ‘Enana. Shoreline gathering was dominated by women and children. Crabs, shellfish, seaweed and

octopus were some of the most commonly gathered invertebrates. Nighttime gathering by torchlight was the most efficient way to catch crabs who would be less likely to move around from the blinding light. *U'a* (lobster) were dived for and harvested by hand (Crook 1951, Handy 1923). *Heke* (octopus) were fished for with the use of a sharp wooden stick. This was done in intertidal areas or by diving. After finding an octopus within rocks or sections of reef, 'Enana would stab the octopus until its tentacles would reach out and wrap around the stick, where it was then quickly pulled from its hole.

### **Noose and bow**

'Enana utilized nooses to catch both small and large fish. Shrimp were caught by noose in the river streams with a small noose called *tona*. Hammerhead and other prized sharks were caught with much larger nooses by canoe and required the use of bait to attract them. Crook also notes that nooses were used to catch conger eels:

Vast conger eels lodge themselves in holes of the rocks, upon the coast, under water. The islanders dive and remain a long time under water to procure them. They tempt the eels, by a suitable bait, to put their heads out and secure them by slipping a noose round them. (p. 127)

Further details on the nuances between each type of noose are not available. Handy also notes that *pana* (small bow and arrows) were used by children to shoot small fish in tidepools and river prawns. Woven fish traps were also used at one time in Te Henua 'Enana, but a detailed description of them is unknown.

### **Dolphin fishing**

An incredibly unique way of fishing for dolphin was also carried out in Te Henua ‘Enana, the island of ‘Uapou being famous for this type of fishing. This type of fishing takes advantage of the echo-locative nature of dolphins. It required a fleet of canoes to paddle out and find a pod of dolphins. The canoes would form in a semicircular fashion and with the use of two large stone, people from each canoe would clack the stones under water to drive the dolphins to shore. The overwhelming sound disoriented the dolphins and they were thus driven up on shore and slaughtered (Lavondés 1971). Although dolphin meat was consumed, dolphin teeth were especially coveted in the making of *pe‘ue ‘ei* (dolphin-teeth headdresses), especially on ‘Uapou island (Agence des aires marine protégées 2016).

With an overview of the ancestral fishing practices and knowledge in Te Henua ‘Enana recorded at early outsider contact established, we will now turn to look at more contemporary fishing and the knowledge surrounding it through the words, stories and observations of fisherman in Nukuhiva.

## Chapter 6. Te hana ‘avaika i Nukuhiva - Fishing methods and knowledge of Nukuhiva in the recent past and today

### 6.1 Introduction

This chapter will present the knowledge and experience of elder fishermen in regard to *te tau hana ‘avaika kākiu* (ancestral fishing practices). The age of the participants ranged from 58 to 71 years old, the oldest of them being born in 1949. Most of the participants no longer fish due to age related health concerns. In each *tekatekao ‘ia* interview, the elder fishermen would commonly refer to the ancestral fishing they once practiced as coming from *te tai ‘o mua* (the generations of before). In Te ‘Eo, *tai* can mean many things; ocean, tide, a period of time, or a generation. Throughout this chapter, *i te tai ‘o mua* (in the times of before) will refer to the time within the lifetimes of the interviewed fishing elders before significant technological changes to fishing were introduced. Much of the knowledge presented in the following chapter draws from ancestral knowledge that has been handed down from the generations before, along with their own lived experiences fishing with their grandparents, parents and friends. Throughout the interviews, they mentioned which practices they would partake in and noted which forms of fishing they no longer see or believe are practiced today.

Name	Age	Place of Residence
Gabriel Teautaipī Te‘ikitekahioho	58	Taipīvai, Nukuhiva
Charles “Petero” Te‘ikitohe	70	Taipīvai, Nukuhiva
Pierre Teri‘i Haiti	67	Taipīvai, Nukuhiva
Tumuehitu “Huri” Tamari‘i	71	Taioha‘e, Nukuhiva
René ‘Otomimi	58	Taipīvai, Nukuhiva
Moni‘ehitu “Pūkīkī” Vai‘anui	63	Taipīvai, Nukuhiva

*Table 6. 1* Names and ages of ‘Enana fishermen interviewed

Where applicable, fishing techniques that are still used today or have evolved in some form will be mentioned also. This information will be drawn from observations made from participation in modern subsistence fishing activities that occurred throughout the period of this study and also from my lived experiences fishing with family and friends in Nukuhiva. Because Te ‘Eo ‘Enana is strongly influenced by Tahitian language today, many of the common fish names used are Tahitian. Since the average fisherman today will use these fish names (i.e. the word *pa‘aihere* is used to identify most trevally species), I have left these names as they have been presented to me and are commonly used today. For further details on ‘Enana fish names, the reader is referred to the tables presented in Appendix II.

Although no female fishermen were directly interviewed for this thesis, many of the participants have given instances from times in their youth where they would follow alongside their mothers or grandmothers in fishing from shore and sometimes by canoe. Living in Taipīvai valley for one month, many casual *tekatekao* ‘ia with different women throughout the duration of my stay have provided many insights on the roles and activities of female fishermen.

A consistent topic which emerged through each *tekatekao* ‘ia were the traditional ways of preparing various types of fish and shellfish for consumption *i te tai ‘o mua*. Some of these traditional dishes are no longer eaten or have changed since then. This is a significant aspect as to what occurs after the fish are caught and are thus imperative to deepen understandings of fishing culture. Although an extensive explanation of each preparation method is beyond the scope of this narrative, a general description of various ways of preparing and preserving fish and other seafood will be presented.

## 6.2 Cultural aspects of fishing i te tai 'o mua

*I te tai 'o mua*, money was not used to buy fish in Te Henua 'Enana. In those times, one needed very little money to have a fruitful and pleasant life. To make money, one would grow and sell coffee beans or *copra* (dried coconut meat). The only things one would use their money for was buying sacks of sugar and flour for the family. All other necessities could be provided by the land and sea. If one wanted fish, they would have to fish for it themselves or have it given to them. It was the men of the house's responsibility to supply fish caught by canoe for their family and their community. Women had responsibilities to care for the house and the children, but also held integral roles in collecting shellfish from the shore, prawns from the river, or fish from the reef. At times, the father of the household also requested his wife or his daughter's company when he would go fishing by canoe at *toka* or in nearby bays.



*Figure 6. 1* Copra drying in an outdoor solar oven to be sold for profit

Without the laws of *tapu* governing one's fishing practice, it was each fisherman's responsibility to take care of the marine ecosystem. Fishermen *i te tai 'o mua* would only take

enough fish as they needed to feed their family or community and they held a deep respect for all marine life. Those who did not respect the ocean's abundance were often condemned and scolded by the elders.

When returning back from fishing by canoe with a large catch that was caught, the fisherman's extended family throughout the valley would walk down to the ocean to greet the fishermen and assist in cleaning the fish on the rocks nearby. Each family member was then portioned with their share of the catch to take home. Others from the village who wished to have some fish were welcome to come down to receive a share of the catch too. A fisherman would also look after those in the village who he knew did not have food for themselves and would deliver some fish to their houses so that they would not be without. This act of distributing freely is called *tuha* and was how fish and other marine foods were distributed and obtained throughout Nukuhiva *i te tai 'o mua*, before the use of money. Like many other aspects of the work and lifestyle *i te tai 'o mua*, fishing was an act surrounded in community, cooperation and *ka'oha* (love).

### **Fish preservation methods**

Since there were no ice boxes *i te tai 'o mua*, knowing how to preserve fish and shellfish was important to keep the household fed and allow fishermen and the environment to rest. Short term preservation techniques were important to ensure food was always available throughout the week. There were many fish preservation methods practiced *i te tai 'o mua* which made one's palate diverse and nutritious. The tastes of these ancestral dishes are in fact still favored by the older people of Nukuhiva over many modern foods.

If one came back with a large catch of *aku* (keeltail needlefish), *mokō* (reef shark) or perhaps speared *haha'ua* (manta ray), the most likely method of preservation would have been *ika*

*mītō*. *Ika mītō* is a preservation technique that was most often used for day-to-day meals and were accompanied by some sort of starch dish. To make *ika mītō*, one must first cut raw fish into cubes and soak the fish in pure seawater that has been collected and brought back to land from the deep sea. After the fish had soaked in the saltwater for a while, the saltwater was wrung out of the fish and the water was discarded. The fish was then salted once more with sea salt previously gathered from the rocky shore and placed within a leaf of the *hau* tree. The leaf was tied up tightly into a bundle and hung onto rafters outside the house. The bundles could then be eaten whenever one was hungry. This method of preservation would keep fish edible for two to three days and up to one week if maintained properly. Maintenance of *ika mītō* was done by discarding any extra water that had leaked out from the raw fish and repackaging the fish into new leaves every few days. Although *haha'ua*, *mokō* and *aku* were said to be the best eating in this way, any type of raw fish could be preserved as *mītō*. For extra taste, coconut milk was sometimes added when ready to eat.



Figure 6. 2. Left: Leaf of the *hau* tree used for wrapping *ika mītō*. Right: Modern preparation of *ika mītō* with chopped garlic.

*Ika tou'aki* was another method of preserving many types of *ika*. This method simply required a line to be tied across two trees or poles in a sunny area. The best times to do this would be in the summer months between October and May. Fish like *pa'aihere* (trevally), *atu*, *uhi* (black trevally), *kahi* (yellowfin tuna) and many other types were then cut in to thin strips, salted and hung over the line to dry in the sun. *Heke* (reef octopus) was also preserved in this way and was greatly favored for its taste. Moni'ehitu Vai'anui mentions that it was important to clean fish at the ocean if one was to preserve fish in this way, for they will absorb the saltwater into their flesh which helps quicken the dehydration process. He also finds that the large grained, natural sea salt collected from the inter-tidal salt pools of Nukuhiva was much more efficient at drying than store bought salt.



Figure 6.3 *Ika tou'aki* of *pa'aihere* at Taipivai beach in the summer

The most common way that *ika* was eaten *i te tai 'o mua* was as *ika te'e* (raw fish). *Ika te'e* is most commonly garnished with salt, lime juice and coconut milk and is one of the most delicious ways to eat fish, that is still enjoyed by 'Enana today. *Ika* was also boiled in seawater, baked

wrapped in leaves, grilled over hot coals or fried with pork fat. It was typically eaten alongside a serving of *popoi* (pounded breadfruit), *poke* (baked pudding) and other starch dishes.

Today, *ika* continues to be the main protein of most 'Enana households. *Ika* is still prepared in a variety of Indigenous ways and is eaten nearly every day.

### **6.3 Environmental signs and fishing**

The ancestral fishing practices of Nukuhiva cannot be described without first introducing the environmental factors that 'Enana took into consideration before and during the many types of fishing they practiced. Reviewing the ethnohistoric literature presented in Chapter 5, we see that much of this environmental knowledge relating to fishing was not preserved or was superficial. Fish seasonality and environmental knowledge, however, were significant aspects of fishing that were brought up throughout each *tekatekao*'ia. Although most of this knowledge is widespread among the older generations, it is not always used in making decisions for fishing by the younger fishermen.

#### **Te tau pua o te henua me te tau ika - Flowers and fish seasonality**

Like other Indigenous cultures, 'Enana have a deep understanding and relationship with their land. Relationships between land and sea were common and are prominent in 'Enana fishing practices, especially in marking fish abundance. One example that can be seen is the seasonal abundance of certain types of fish which are indicated by the blooming of different flowers. In Nukuhiva, it is believed that when the red *kenae* (*Erythrina variegata*) flower blooms in the uplands, all of the red fish in the sea will be abundant and fat. A few of the most commonly caught red fish during this time are the *haka* (*Lutjanus bohar*), *me'auku'a* (soldierfish), *mataiti* (*Variola*

*louti*), *popi* (*Lutjanus fulvus*) and *rōrau* (black tail snapper). All other red fish will also be abundant during this time.

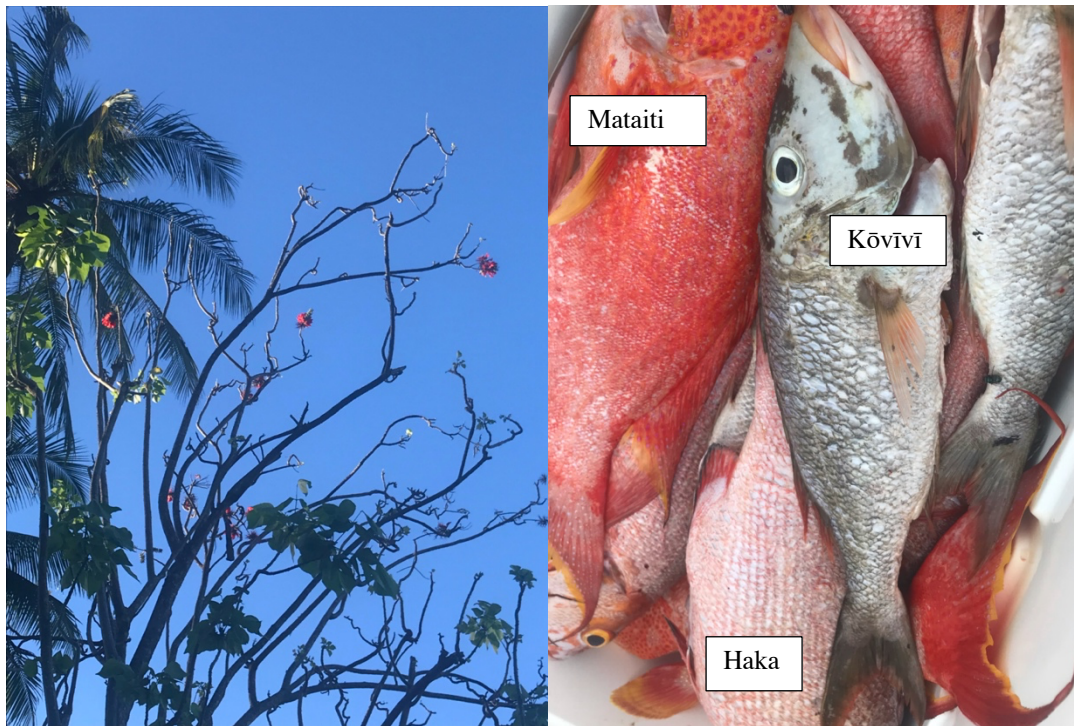


Figure 6.4 Left: *Kenae* tree nearing the end of blooming season. Right: Fish (*mataiti*, *haka*, *kōvīvī*) caught bottom fishing near the end of a *kenae* bloom.

The flower of the *ha'a* (*Pandanus spp.*) tree, known as the *hinako* in Nukuhiva, also has a similar relationship with fish. 'Enana say that when the white *hinako* flowers bloom along the valley walls, all of the white and silver fish will be abundant and fat. Some of the commonly eaten white and silver fish caught during this time in Nukuhiva are the *pa'aihere*, *utu* (green jobfish), *kōvīvī* (*Lethrinus spp.*), *pāpāhu* (bigeye scad), *tava'u* (mullet), *va'u* (dogtoothed tuna) and many others. The white flower of the 'eva tree (*Cerbera manghas*) is said to be an indicator of this marine abundance. Teri'i Haiti mentions a more specific environmental indicator for the *ma'o'o* (flying fish), which were abundant at the time when the 'uru'uru (cotton) tree would bloom. This is an interesting seasonal indicator as the 'uru'uru tree is not native to the Islands and that the abundance

of the “white” *ma‘o‘o* corresponds with the production of white cotton “flowers” from the *‘uru‘uru*.

Marine bird eggs are a delicacy for the people of Nukuhiva, many would travel to Motu Manu (Bird Island) on ‘Uahuka to collect them. It is said that at the time breadfruit fruits the marine birds will also “fruit” and start to lay their eggs.



Figure 6.5 Left: *Ha‘a* tree out of blooming season. Right: *Va‘u*, one of the “white” colored fish abundant during the blooming of *hinako*.

### **Te tau pō me‘ama - Lunar phases**

Like other Polynesian cultures, ‘Enana followed the lunar calendar to track their time. The moon itself is called the *me‘ama* or *mahina* and is the word for a complete lunar month. Each moon phase within a *me‘ama* had its name and would mark good times for fishing or planting (See Table 2). Specific knowledge of names and relative fishing knowledge for each individual moon phase, however, have been lost to the tides of time in Nukuhiva. Knowledge of the moon phases

is now much more general than what it once was before. Nevertheless, of what lunar knowledge remains today, 'Enana fishermen find that it remains to be very useful in decision making of what to fish, how to fish it and when to do so.

	Names:	Modern lunar phase groupings:	Characteristics:
1	O Tunui	Pō Me'ama Mamate	-Pāpāhu fishing is good -Toka, trolling and deep-sea fishing is good
2	O Tuhava		
3	O Tuhaka		
4	O Maheama tutatahi		
5	O Maheama vaveka		
6	O Maheama hakapao		
7	O Ko'eko'e tuatahi		
8	O Ko'eko'e vaveka		
9	O Ko'eko'e hakapao		
10	O Ai		
11	O Huna		
12	O Maha'u	Pō Me'ama Tāhakahaka	-Tupa migrate to shore to spawn eggs. Collection prohibited. -Shoreline fishing is good -Me'auku'a fishing is good -Mama, u'a, 'i'i, and pukava gathering is good -Hatuke are fat
13	O Ua		
14	O Atua		
15	O Tunui (Ohotunui)		
16	O Mahuto		
17	O Tu'u		
18	O 'Ākau		
19	O Motohi		
20	O Tohiau		
21	O Taukume		
22	O Kumea		
23	O Eea		
24	O Taka'oa tutahi		
25	O Taka'oa vaveka		
26	O Taka'oa hakapao		
27	O Vehi	Pō Me'ama Mamate	-All torchlight fishing is good -Tides are low in the early morning making reef gathering good -Toetoe gathering at night is good and efficient -Aku/koma spearing is good
28	O Tane		
29	O Mouikeo		
30	O 'Okō mate		

Table 6. 2 List of 'Enana moon phases compared to modern phase groupings and their related characteristics in relation to fishing. Moon names in column 1 are derived from a manuscript of

*Dordillon's as cited in Handy 1923, p. 348. Diacritic marks have been added to Handy's list according to the author's best knowledge.*

There are two main phases of the moon in which 'Enana use to inform their fishing. These are the full moon, known as *Ohotunui*, and the new moon, known nowadays as *Te Me'ama Hou* (literally "new moon") or *Te Me'ama Ka'o* (the hidden moon). It is said that in general, the best night for fishing activity were the three nights before until the three nights after the *Ohotunui* and the *Me'ama Hou*. The nights of the *Ohotunui* were when invertebrates like *tupa* (land crab) and *u'a* (lobster) move about the rocks and on the beach while carrying eggs. In Taipivai, *tupa* will flood the roads and spawn their eggs at the beach, where many shoreline fish will come in to eat them, making it an excellent time to fish from shore. The nights leading up to *Ohotunui* are called *Pō Me'ama Tāhakahaka* (nights of the bright moon), while the nights leading to the *Me'ama Hou* are called *Pō Me'ama Mate* (nights of the ending moon). Although all fishing is generally productive at this time, there are some nuances to the type of fishing that will be most productive. Torchlight spearfishing, for example, is best practiced near or on *Te Me'ama Hou*, where certain marine animals that dislike light may be more likely to surface. It is also when torchlight is made more effective at blinding fish and the tides are at their lowest during the late hours of the night. A mention of which lunar phase was most efficient and sought out for will be presented for each type of fishing that is reviewed.

At certain times of the year, there were migrations of deeper water fish inshore. Large deep sea fish like *va'u*, *haka* and *utu* would move from their typical deep ocean environments into shallower waters near the coast. Teri'i Haiti mentions that August-December was the season where *uhi* and *va'u* fish would bite nearshore. Teautaipī mentions times when he would go fishing with his uncle Uiku'a who was versed in the lore of fishing and knew much about these migrations. He had certain *toka* that he knew when to visit nearshore at certain times of the year where he knew

schools of *haka* would migrate to. Unfortunately, more specific information on the seasonality of these migrations was unknown to most of the participants.

### **Te tai, te metaki me te au - Tides, winds and currents**

Before and during fishing activities, an *'avaika* would observe the tides, winds and currents. As most fishermen know, tides are an important aspect in informing a fisherman when and where the fish will be. The word for tide in Te 'Eo is *tai* and is also the general word for the ocean. There are four important tides for fishing in Te Henua 'Enana, those being *tai p̄* (high tide), *tai motu* (ebbing full tide, right after high tide), *tai heke* (low tide) and *tai hahati* (rising half-tide, right before high tide). One can also keep track of the moon phases by observing the tides, seeing if they are fuller or lower than normal, implying that it is near the *Ohotunui* or *Me'ama Hou*. In general, *tai hahati* and *tai motu* were the most efficient times to fish with speargun, hook and line.

Currents, known as *au*, were also considered when fishing since they would carry the food of fish, like *i'oi'o* (plankton) and other smaller fish, as well as the scent of one's bait. There are two main currents 'Enana fishermen recognize today, those being the *au hiti* (out-flowing current) and the *au heke* (in-flowing current), both of which are used to a fisherman's advantage. In general, the *au heke* is known to be a good current when line fishing at nearshore *toka* (where most subsistence fishermen fish), for the current will carry the food of fish from deeper waters inshore and attract those fish in. One can measure where the currents flow by observing the movement of debris on the surface of the ocean, or by noticing the changes in the orientation of one's boat or line.

To observe wind direction and strength, an *'avaika* would look up to the clouds to see the direction and speed they were moving, informing if and where one should fish. There are four

cardinal winds that blow throughout Te Henua ‘Enana. The trade wind is the *Tuatoka*, which blows on the South-Eastern coasts of the islands and brings with it big waves and rain to Taipīvai. The *Kana‘u‘u* wind blows from the South-West and is known to bring in the *hahave‘a* (blue bottles) into Taipīvai and Ho‘oumi valleys. In Taipīvai and Ho‘oumi, this is also said to be an excellent wind for fishing in certain Northern-facing parts of the bays by boat or spearfishing from the coast, for the sea is calm in places that are not typically easy to access. The most favored wind for a fisherman in Taipīvai is the *Toko‘au*, which blows from the West and blows offshore. This wind flattens the sea and is an appropriate time for deep sea fishing and gathering *hatuke* (pencil urchin) from the deeper parts of the coast. The *Tiu* wind is a dry wind that comes from the North, and is an indicator for times of drought in Nukuhiva.

#### **6.4 Te ika hī - Fishing by hook and line**

*Ika hī* is the term used in Nukuhiva to refer to fishing with hook and line, primarily bottom fishing. This ancient type of fishing is done by hand from shore or by watercraft. Lines for this type of fishing were once wrapped and stored around carved wooden frames, most likely made of *hau* wood. Nowadays, plastic, wooden or foam frames are used instead. With the introduction of global trade to the islands and a lack of rope makers, traditionally spun plant fibers for fishing were quickly replaced by *tuaina* (cotton line), which became the preferred fishing line for all types of fishing. Nylon was introduced around the 1960s; thus, replacing cotton lines and was what most of the elders interviewed used for *ika hī*.

The most efficient and prosperous way to fish with hook and line was done by *vaka* or whale boat. Whale boats seated four people at a time and were propelled by oar. *Vaka* were carved with the use of metal axes and fire carving techniques. They were made from many different types

of wood, such as the *mei*, *tamanu* (*Calophyllum inophyllum*), *mako* (mango), *uruuru* (cotton) and *kenae* which were used to construct the hulls, while the wood of the *hau* was used to make the outriggers. The *uruuru*, *kenae* and *mei* were especially prized for their buoyant properties. *Vaka* were not particularly large during this period, typically seating 2-3 people and were propelled by paddling. In more contemporary times, *vaka* have been constructed out of marine plywood and propelled by outboard motor.



*Figure 6.6* Putanui, Teautaiπ's contemporary 3 seat *vaka* made out of marine plywood with outboard motor attached at the back in Taipivai river at high tide. (From left: Toma Wolff, Tepua Gobrait, Taita Gobrait, Tema'u Te'ikitekahioho-Wolff)

Fishing in this way was done alone or with others. Fishing with others could be more efficient and meant that the families of those involved would be fed. As we have done earlier, we will present the fishing practices as they were practiced from shore or by watercraft.

### **Te ika hī ma he vaka - Fishing from watercraft**

Fishing by *vaka* and other watercraft is the most important form of fishing nowadays and in the recent past. It is the most frequent method of fishing and yields the most abundant catches out of all techniques once used *i te tai 'o mua*. Although fishing by canoe was traditionally the responsibility of men, women sometimes participated in *vaka* fishing expeditions. There was fishing that would occur at different parts of the coast, either close to the *koutu* (rocky areas bordering the coast), in deeper areas of the bay, or even miles out at sea. Depending on the targeted fish, the depth to which the bait is sunk also varies.



*Figure 6.7* Early morning at the Taipivai river mouth showing aluminum *poti* prepared for fishing and the moonset a few nights after the *Ohotunui* moon.

### **Te ika hī io he toka - Toka fishing**

In Nukuhiva, most hook and line fishing activity by watercraft is practiced at specific *toka*; a tradition also used by many other Polynesian cultures (see Chapter 2). In Te Henua 'Enana, the rugged features of the land make excellent points of triangulation for fishermen. Specific

mountaintops, headlands, rivers and even large trees are used to locate and pinpoint one's location out at sea by lining up certain features together. These points of triangulation are called *hakatu*, where each individual *hakatu* or *toka* will have its name. *Toka* are still very much treasured by local fisherman today, where the locations of many *toka* have been handed down from ancient times. Because *toka* were so precious to each individual and their family, knowledge of *toka* locations were not always shared freely. Certain *toka* were sometimes fished for specific fish while others were abundant with many types of fish.



*Figure 6. 8* First-hand view of a *poti* anchored by parachute at a *toka* near Tikapō point in Taipivai bay

Fishing at *toka* were done by handline with hook, bait and sinker. Two to three hooks were attached and baited to the line above the sinker. Smooth stones from shore were used as sinkers and were tied in a variety of ways (see Carlier 2006). Carved stones weights were tied on at the ends of lines. Other methods simply twirled stones on the end of lines and jerked free once reaching the bottom; a method that was still practiced widely *i te tai 'o mua*. Today, small sections of heavy rebar or heavy swivels are used as sinkers instead.

Depending on the type of fish desired, the line is sunk to different depths. The depths are measured traditionally by *ma'o* (arm spans, fathoms). One will take note of how many *ma'o* he has sunk the line down to see where the fish may be biting and adjust according to what he wishes to catch. In Te Henua 'Enana, the size of fish is not typically measured by pounds, but they would use the different lengths of ones arm span to describe the size of a fish caught.

The best and most common bait for *toka* fishing was the *heke* (octopus), which was captured beforehand from shore, as it attracts less sharks. Bait fish that could be caught with feathered lures, such as *pāpāhu* or *tapatū* (*Sphyræna forsteri*), are cut into chunks for *toka* fishing. They were sometimes diced up and used as chum to attract fish. Fishing at nearshore *toka* would usually yield catches of fish like *pa'aihere*, *kōvīvī*, *haka*, *utu*, *uhi* and many other good eating fish (see Appendix II). When conditions are rough, one would know which *toka* to visit where calmer waters can be found.



Figure 6.9 An abundant catch of *pa'aihere*, *va'u* and *kahi* landed with contemporary handline bottom fishing at deep-water *toka* in Taipivai bay.

*Toka* fishing remains relatively unchanged for local subsistence fishermen today who fish at both ancestral and newly found *toka* to feed their families or to sell and reimburse costs of gas.

Fishing at *toka* today is done mostly by *poti* (motorboat) or by *vaka*. Most local fishermen still fish with monofilament handline and sometimes by motor-powered fishing rod and reel (Agence des aires marine protégées, 2016). With the use of bright electric lights, most fishing is now done all night until the early morning and sometimes during the daytime. Sea parachutes are now implemented to anchor fisherman at deep water *toka*. Teri'i, however, expresses his concerns with modern subsistence fishermen and the overfishing that sometimes occurs today at ancestral *toka* in Taipivai and the wider Nukuhiva.

### **Te ‘avaika hu‘u - Feather lure fishing**

Feather lures were sustainable and practical ways of fishing for smaller fish. The two most common fish caught in this way was the *me‘auku‘a* and the *pāpāhu*. The most common feathers used to catch these fish come from the white feathered *toake* (white-tailed tropic bird). The best feathers for making lures were the smaller feathers collected from under the wing of the bird or near the tail. René ‘Otomimi also mentions that duck feathers were used to make lures. These feathers were sought for because of their hydrophobic properties, which ensured that they maintained color, shape and durability over time while underwater.

Two or three hooks were used in this type of fishing paired with sinker. *I te tai ‘o mua*, the elders recall that winded stone sinkers or sections of rebar were used as sinkers in this type of fishing. Feather lure fishing is highly productive and was done close to the *koutu* by boat. The best night to go fishing for *me‘auku‘a* was during and near the time of the Ohotunui moon, where the fish were attracted to the surface by the moonlight. *Pāpāhu* fishing was more productive on moonless nights like *Te Me‘ama Hou*.

Today, *me‘auku‘a* and *pāpahu* are still fished, *pāpahu* being more often fished for its use as a food and for bait. Fluorescent plastic lures can now be bought from stores and are used by fishermen today in the same way that feather lure fishing was once undertaken. Modern lights powered by 12-volt marine batteries are typically shined on to the surface of the water to attract smaller, and in turn, bigger fish to the surface.



Figure 6.10 Left: Catch of *pāpāhu* made at night near the *koutu* with store bought fluorescent flies. Right: Photo of the *me'auku'a* fish.

### Te hī pa'aihere - Pa'aihere fishing

*Pa'aihere* are an abundant nearshore fish which many 'Enana catch year-round. Although they can be caught trolling lures or with simple hook, line and bait, there was a unique way to catch them noted by René 'Otomimi. This method of fishing required a stick to attract *pa'aihere* to one's hook and was done at *toka*. Up to six baited hooks were lowered down into the water. The fisherman would hold the line with one hand and with the other, tap the stick against the side of the canoe or boat thus attracting *pa'aihere* to the hook. The fisherman would continue to produce this sound until one or all of the hooks were full of *pa'aihere*.

### Te ika tāvere - Trolling

Trolling *i te tai 'o mua* was not practiced extensively on Nukuhiva and was said to be introduced from Tahiti. Before the introduction of plastic trolling lures, most lures were handmade by tying a dried piece of the shiny skin from the 'ai'ai (*Scomberoides lysan*) fish on to a hook that

was dragged behind the boat. Carlier (2006) also notes that trolling lures were also made out of *koio* (*Procelsterna cerulea*) feathers. Pelagic fish like the *roroa*, *kahi*, *atu*, and *mahimahi* were caught in this way. In contemporary times and with the availability of motorized boats, *ika tāvere* has become a more popular method of fishing, especially for profitable fish such as *kahi*.

### **Te ika hī ma he koutu - Line fishing from shore**

Fishing from the shore by line and hook was a simple form of fishing that was done to catch a quick meal for one's self or for the family. Fishing from shore by line and hook was especially practiced by women and children, but men did not exclude themselves from this type of fishing. Reef fish were the primary target for this type of fishing; the *papaea* (*Abudefduf sordidus*) being one of the most targeted fish for its abundance and great taste. Other delicious fish, such as *pōpō* (juvenile trevally), *rōrau* (Blacktail snapper), and other small reef fish were caught. This type of fishing is most commonly practiced on the *koutu*, near river mouths and along the small patches of reef nearshore.



Figure 6. 11 The *koutu* of Taipivai where *hī mōkoi* is commonly practiced.

### **Te hī mōkoi - Angling from shore**

*Te hī mōkoi* (shore angling) was done on the *koutu* or at the river's edge near the ocean required the use of a bamboo pole of approximately two meters in length tied with hook and line, called a *mōkoi*. A small stone sinker was tied to the end of the line or the bait can be left free to float on the surface. The bait for this type of fishing is gathered beforehand by skillful capture of *kou'a* (*Macrobrachium spp.*) from the river, or *toetoe* (rock crab), *'i'i* (cowrie), and other types of shellfish from the *koutu*. A quickly woven coconut frond bag or a bucket was used to carry the fish once caught. This fishing was done in the daytime; the most successful time to fish being in the morning. Sons would typically accompany their mothers in this type of fishing. It is still practiced in the same way today.



Figure 6.12 Left: *Hī mokoi* in Taipivai river for *pōpō* and *rōrau* near the time of *tai motu*. Right: *Rōrau* and *pōpō*, two of the fish commonly caught in this style of fishing.

### Te ‘avaika pūhākau - Underwater line fishing

*Pūhākau* is a fishing method that was done with hook and line while swimming from shore. Although the historical literature mentions that this type of fishing was no longer practiced, Teautaiipī recalls that he and his fellow classmates at boarding school in Taioha‘e would practice this type of fishing to catch an easy meal or for sport. Here is a description of *pūhākau* according to Teautaiipī. To *pūhākau*, one would take a line bundled on to a piece of wood, a hook and a pair of goggles down to the ocean. Once on the shore, a large piece of driftwood is searched for, most likely a washed-up log, it was carried down to the sea with the help of 1-2 other people. This driftwood was set out to sea and used as a flotation device. With the help of the others fishing, the wood was swum out to an appropriate fishing spot on the reef. While hanging over the edge of the wood, the fishermen scanned the ocean floor and moved their hooks and bait to the desired fish

they wished to catch. Teautaiipī notes that *pūhākau* was also done without the aid of a floatation device in some instances.

### **6.5 Te ‘avaika pā‘oa - Seine net fishing**

Although fishing by net in ancient times was common, the elders of Nukuhiva could not recall ‘Enana manufacturing and using nets within their communities *i te tai ‘o mua*. The main methods of fishing in their time were hook and line or spearfishing and would have sufficed to the needs of recovering small ‘Enana populations. With less sheltered lagoon areas and channels like other islands of Polynesia, seine and gill netting opportunities in Nukuhiva were limited. Crafting the nets of ancient times, like the ‘*upena* of Atuona, required a great amount of resources and collaboration amongst many different individuals. Such valuable and resource heavy methods of fishing faded away with the loss of the line rolling and net crafting experts.

Around the 1970s, monofilament *pā‘oa* (seine nets) were introduced and purchased from Tahiti. These nets ranged between 30-40m in length and were used from shore to catch a range of nearshore fish. Rolett (1998) notes that *pā‘oa* of about 70m long were used in Tahuata and were mainly set during the times of the year in which *etu‘e* (juvenile pāpahu) would come inshore. They were best used in sandy bottom bays like Taipīvai and Hatihe‘u. Fishing was and still is performed in a similar manner to the *pā‘oa* fishing mentioned by Linton in Chapter 5. Besides *etu‘e*, other fish such as *pa‘aihere*, *rorau*, *vete* (goatfish), *tava‘u* and sometimes *tāte‘a* (juvenile reef shark) were caught.

Today, *pā‘oa* fishing is still practiced. However, it is not practiced as much as spearfishing, line fishing and gathering are today. It is mostly used to catch a meal for one’s immediate family and is the only netting technique used today.

## **6.6 Te ‘avaika ve‘o - Spearfishing and harpooning**

*I te tai ‘o mua*, spearfishing and harpooning were very popular fishing methods in Nukuhiva. It was practiced in a variety of ways and at various times. It was an imperative fishing method for catching herbivorous and coralivous fish that could not be caught by hook and line. Skilled spearfishermen could spear small and large fish in great quantities, enough to feed ones extended family. *Ta‘a* (wooden spears) were common for fishing underwater or above its surface *i te tai ‘o mua*. These spears were made from the hard, light, and straight wood of the *hauhe‘e* tree and sometimes were attached to the wrist by a cord. The number of prongs themselves were geared towards the targeted animal and ranged from 1-7 in number. Prongs were made of *toa* wood or the metal rims of iron barrels. *Mata karahi* (goggles) used for underwater spearfishing were manufactured by each underwater spearfisherman and were made of copper frames with glass lenses stuck on with beeswax.

### **‘Avaika ve‘o i te pō - Torchlight spearfishing**

Spearfishing above water was most commonly done on dark and moonless nights around *Te Me‘ama Hou*, where tides were low in the early morning, sometimes trapping fish and making more of the coast available to walk on. This fishing was done by torchlight along the *koutu* and *ai‘a* (reef patches) of the bays. *Moni‘ehitu* mentions that spears for this fishing were once *tapapa‘ia* (layered) and probably resembled the *matava‘u* spear mentioned by Handy (1923). Fish such as *menini*, *tava‘u*, *nenuē*, *papaea*, *menini* and other fish along the *a‘ia* were speared in this way. Unfortunately, this once common mode of fishing is rarely practiced in Nukuhiva today.

### **Te ika puhi - Spearfishing by speargun**

*Puhi* (spearguns) were introduced to Te Henua 'Enana from Tahiti around the mid 20th century and quickly became favored by spearfishermen for their extended range and ability to catch bigger fish. Spearfishing by spear was done typically in shallower waters, while spearfishing with a *puhi* enabled fishing to be practiced in deeper waters. Today, due to increased underwater spearfishing activity, many local fish no longer come as close to shore as they once did, making it much more difficult to spear fish with *ta'a*.

*I te tai 'o mua*, *puhi* were manufactured by the fishermen themselves and were not bought from a store. The wood used to make *puhi* was the *kōkōpa'a*, the hard inner wood of a mature *hau* tree were carved to different sizes depending on the targeted fish. Elastic bands taken from bicycle tubes were used as the rubber and a spoon was fashioned as a triggering mechanism. In order to catch larger, deep water fish, the barrel of the *puhi* was carved to be about 1.5 meters long. Many fish, such as *tatue*, *kuripo* (*Naso hexacanthus*), *pe'aki* (*Acanthurus xanthopterus*), *ume* (*Naso unicornis*), and *pa'ahua* (surgeonfish) were captured with the use of *puhi*; the *pe'aki* being the most prized and targeted fish for its delicious taste.

An excellent tide to go spearfishing in is *tai hahati* or *tai motu*. It is during these tides that grazing fish like *pe'aki* or *tatue* come close to shore. This is an advantageous time to spear for fish for they come into more shallow waters and are less likely to be startled by spearfishermen as they are focused on eating. Although not impossible to still catch fish, the *taipī* (full tide) is not the best for this fishing, as fish will most likely return to the depths of the coastal shelf after eating.

Nowadays, *puhi* is the most widespread spearfishing tool, used for its efficiency and range. With most nearshore coastal areas dropping into the deep, *puhi* are easier to retrieve if a shot is missed. *Puhi* today are shipped from Tahitian fishing stores and are bought along with modern

diving gear. The wooden spears of old are no longer used in subsistence fishing activity. Many local fishermen now sell some of their large catches of fish to restaurants, hotels and people of the village, where prices may be just as high or even more than fish caught at *toka*.

### **Te ika kāta‘i - Decoy fishing**

As we have seen throughout this thesis, ‘Enana, among other Polynesians, understood the territorial nature of the male parrotfish (*tatue*) and how this could be taken advantage of for fishing. Decoy fishing for *tatue*, called *kāta‘i*, was historically done by bag net, but with the loss of that type of fishing in Nukuhiva, *kāta‘i* has translated to spearfishing (Lavondés 1971). Before the introduction of spearguns, fishing for *tatue* in this way was commonly done from the *koutu* with multi-pronged spears. Spears made with metal prongs had *kiki* (barbs) attached to the end of each prong to keep the fish secure. Spears were made of hau wood and were about one *ma‘o* in length. To the end of these spears was a rope attached to the wrist of the spearer.

*Tai hahati* and *tai motu* were the preferred tides to spearfish from the *koutu*, for the *tatue* come close to shore to feed on coral. *Tai hahati* were advantageous for it was when the ocean would be clearest and make the colorful body of the *tatue* easily visible. While walking along the *koutu*, the spearfisherman would first spear a *tatue* or retrieve a previously caught one from the tidepools to use as a decoy. Once obtained, the fisherman would tie a long line through its gill plate and mouth. The spearfisherman then cast the decoy into the waters below and waited for a nearby *tatue* to attack. Once close by, the spearer would skillfully spear the fish and retrieve the spear with the line attached to their wrist. A spearfisherman would not spend too much time in one place, perhaps catching 2-3 fish before continuing along the *koutu* to use these tactics in the territory of other *tatue*. This was said to be an extremely fruitful method of fishing, where many

bags were filled with *tatue* on successful fishing days. Moni‘ehitu notes that his mother was a professional in this practice.

*Kāta‘i* was practiced with a speargun underwater with the help of a fishing partner who would hold a line and dangle the decoy fish from the surface. This type of fishing is still practiced in contemporary times because of its efficacy and reliability. With freezers available, decoy *tatue* are frozen whole and taken out whenever one wishes to go *kāta‘i*. Disposable plastic bottles are sometimes attached to the decoy fish with a long line when spearfishing in coastal waters alone.



*Figure 6. 13* A catch of *tatue* and other reef fish procured with speargun. The *tatue* were all caught using modern *ika kāta‘i* techniques.

### **Te ve‘o aku - Spearing aku**

*Aku* and *koma* were prized and delicious fish to the ‘Enana palate. These fish were traditionally caught only by torchlight spearfishing from watercraft. These fish have very streamlined bodies with very sharp noses. They will leap out of the water when startled, making

them very dangerous if one is not careful in their approach. Many living 'Enana tell stories of these fish piercing their boats or bodies, sometimes requiring hospitalization. For this reason, spearing for these fish was only done very late at night, around 2-3 in the morning near *Te Me'ama Hou*, when the *aku* were asleep at the surface of the ocean. *Aku* did not live in deep waters and were fished for in the shallow waters nearshore.

*I te tai 'o mua*, spearing for *aku* at night was aided by torchlight. There were a few varieties of torches used at this time. One was the *'ama 'au po'a* (coconut frond) torch which was made from dry coconut leaves bundled together. These torches burned quick, so many torches needed to be taken along if fishing in this way. Another type of torch was the *'ama kohe* (bamboo torch), which held a piece of gas-soaked burlap sack within it and stayed lit for longer than the *'au po'a*. Lastly was the *'ama kasi* (gas lanterns) which were used in more recent times. The spears for this type of fishing were similar to those used in *kāta'i* fishing but with longer retrieval rope that was attached at one end of the watercraft rather than to the hand. The spear head was made up of six barbed metal prongs; one in its center with five others surrounding it.

Once arriving to the *aku* fishing grounds, the spearer will stand at the prow of the boat. It is important to have the rope coiled neatly at the front of the watercraft and away from one's feet. Moni'ehitu notes that it was dangerous if blue can be seen on the side of the fish for it is a sign that the fish was awake. According to Teautaiipī, one must also observe the *aku* to make sure it is facing away from the spearer, lest the *aku* jump out of the water and pierce the fishermen.

*Aku* fishing is no longer practiced nowadays, for many did not wish to teach their children this fishing style because of the dangers that came with this practice. Moni'ehitu believes that this fishing became especially dangerous when bright electric lights were used, which awakened and

startled the fish, whereas the softer luminescence of natural torchlight did not startle the fish as much.

### **Te ve‘o haha‘ua - Harpooning haha‘ua**

Among the other formidable fishing practices of Nukuhiva was harpooning for *haha‘ua*. *Haha‘ua* was a prized meat for ‘Enana, especially when prepared as *ika mītō*. This was done with two or three people and echoes the harpooning practices that Porter (1813) mentions (see Chapter 5). Iron harpoons attached to thick rope were used *i te tai ‘o mua*. One man was needed to steer the canoe while the other sat on the prow of the canoe or whale boat. When spearing *haha‘ua*, the harpooner would sometimes jump off the canoe in order to thrust their harpoon into the *haha‘ua*’s wing.



*Figure 6. 14 Iron harpoon head once used for haha‘ua ve‘o.*

Today, fishing and consumption of *haha‘ua* is illegal in French Polynesia and is no longer practiced in Nukuhiva because of this.

## **6.7 Other forms of fishing**

### **Te hano kohi i te ika - Gathering practices**

The diverse fishing practices of Te Henua ‘Enana were done, not only with skillfully crafted tools, but could also be done with one’s hands. Gathering practices were a large part of ‘Enana subsistence activity. The gathering of many species of many shellfish, crabs, and other invertebrates was typically the responsibility of women and their children, but this did not limit men from being skillful at gathering. Tidal and lunar knowledge were necessary to ensure productive gathering. Some gathering practices were more productive at night than in the daytime.

### **Te hano toetoe me te mama - Collecting toetoe crab and mama**

*Toetoe* (rock crab) and *mama* (Marquesan chiton) are some of the most sought-after shellfish in Te Henua ‘Enana. The best time to gather these *ika* were during the nighttime and depended on which moon was present. Full moon nights like *Ohotunui* were the best time to harvest *mama* as they come out from under the rocks and crevices of the coast to bathe in the moonlight. They can be simply harvested with a quick thrust of the palm or with a knife. Moni‘ehitu notes that *mama* will also climb up onto the rocks in the daytime after large floods when the sea water is very dirty.

In contrast, *toetoe* are best harvested by torchlight on *Te Me‘ama Hou* and other moonless nights. The light from the torch slightly stuns the crabs and makes harvesting them by hand much easier. Around 3 in the morning is an exceptionally good time for this fishing during *Te Me‘ama Hou*, for tides will be low. One did not need to travel far from shore *i te tai ‘o mua* to have enough *toetoe* to feed their family.

Other invertebrates from the *koutu* were also gathered by hand for consumption, such as *hatuke*, *kōpi'i* (*Eledone spp.*) and 'o'i (sea cucumber).

*Toetoe* and *mama* are still harvested in abundance today. It is still practiced at night but is usually done by boat in the more inaccessible coastal areas of Nukuhiva. Gloves and headlights are used to harvest *toetoe* and *mama* along the rocky outer coasts. Many local restaurants and the hotel in Taioha'e buy them from fisherman or they are frozen and exported to buyers in Tahiti by local small-scale fishermen.



Figure 6. 15 *Toetoe* and *mama* prepared for a local feast.

### **Te heke huki - Fishing with stick for octopus**

Despite the lack of prominent coral reefs, *heke* are caught in great quantity in Nukuhiva. They are eaten in many ways: sun dried, raw, or boiled and mixed with coconut milk. They are a favorite food of 'Enana and are fished for often. They can be caught by spearing them while diving or by jabbing them from crevices in the reef at low tide. The art of catching *heke* at low tide with

a stick/stick like object is called *heke huki*. This type of fishing required skill in the art of searching for elusive *heke* within the small crevices of the reef at low tide. One must be aware of rocks that appear to be flipped over, holes where water appears to be blown from or where there are piles of empty shells present, otherwise they will walk right over the cunning *heke*. Once a *heke* is found within the reef, a hard stick or a short piece of rebar is used to jab and “tickle” the *heke* until its arms wrap around the stick and it can be pulled out from its hole. A bite to the animal’s eye will quickly kill it and end its pain. René ‘Otomimi mentions that with the help of 3 other fishermen, they sometimes catch 50 or more *heke* from the *a’ia* of Taipivai in preparation for feasts by using this ancestral fishing method. Once caught, *heke* are typically slammed (*tā*) and rubbed against the rocks in the ocean to remove slime and tenderize the meat for eating.

*U’a* (spiny lobster) were either speared or gathered by hand. All of the fishermen interviewed noted that *u’a* was primarily gathered during the daytime and was not as prized of a food as it is now. Today, *u’a* has become a very valuable resource and is one of the main seafood exports of local small-scale fishermen across Te Henua ‘Enana. With the introduction of electric powered lights, outboard motors and new fishing techniques from within French Polynesia, *u’a* can be much more easily harvested by diving for them at night and is the most common way of procurement today. By shining a waterproofed and bright light underwater, *u’a* that crawl out from their rocks at night are easily spotted and are blinded making them easy to collect by hand. At the beginning of the 1970s, when refrigeration technology and large steamboats started to reach the islands, a profitable market opened up to sell *u’a*. Huri Tamari’i and Charles Te’ikitohe recall that in the initial days of this type of fishing they would collect up to 10 burlap bags full of *u’a* for sale to steamer ships from Tahiti that frequented Taioha’e. *U’a* were no longer speared for it would ruin the quality of the meat and storage life. Large catches of *u’a* to be sold were stored for around

three days prior within metal cages anchored within Taioha'e bay. Many small-scale subsistence fishermen sell *u'a* catches to local restaurants and buyers in Tahiti. Currently, no commercial licences are required to sell *u'a*, making them attractive choices for small scale fishermen to make money (Agence des aires marine protégées 2016).



Figure 6. 16 *U'a* caught during a night diving expedition.

### **Te 'avaika poa - Fish poisoning**

Fishing with natural poisons was once practiced *i te tai 'o mua* in Nukuhiva, but is now no longer used. To fish in this way, one would mash the poisonous fruits of the *hutu* (*Barringtonia spp.*) or 'eva and tie up the mashed fruit in a bundle of *hau* leaves. One or more bundles would then be placed into tide pools along the *koutu* or inside of fish caves within the reef while underwater spearfishing. The mashed fruit would enter the gills of the fish and stun all the marine

life nearby to be collected. The poison itself, does not affect the quality of the meat, making the fish edible to humans.

Fishing in this way, however, has been banned from French Polynesia since the late 1980s, and is no longer practiced today (Agence des aires marine protégées 2016).



*Figure 6. 17* Fruit of the *hutu* tree once mashed and used in tidepool fish poisoning.

#### **‘Avaika io he ka‘avai - Fishing in the rivers**

Fishing in the main rivers and streams of Te Henua ‘Enana was practiced to catch *kou‘a* and *kue‘e* (freshwater eel). *Kou‘a* were fished in two different ways. One was by torchlight spearing, called *kou‘a ve‘o*, and another required the use of a *pareu* (sarong) tied around the neck, called *kou‘a au*. *Kou‘a ve‘o* was done at night, preferably near *Te Me‘ama Hou*. Prongs were fashioned out of metal and were much smaller than those of *ika ve‘o*. The wood used for the spears was from the *hauhe‘e* tree. *Kou‘a ve‘o* is still practiced often today in upland parts of valley streams

and rivers with the use of bright head lights. This method of fishing became very popular around the 1970s, when restaurants and stores began to purchase *kou'a* from local farmers and fishermen.



Figure 6. 18 7-prong metal spearhead for *kou'a ve'o* fishing

*Kou'a au* fishing was done to catch bait for *hī mōkoi* or to procure a quick meal. It is done during the day by using a *pareu* (*sarong*) as a sort of scoop net. To do this, one tied a *pareu* around their neck lengthwise and grabbed the opposite ends with both hands. Holding the *pareu* as a net, one placed the *pareu* under the grass growing around the banks of the rivers where many *kou'a* would seek shelter. After enough *kou'a* had entered the *pareu*, it was slowly lifted up and out of the water.

*Kue'e* were abundant in many of the larger rivers of Nukuhiva. They were once eaten regularly. They could be speared for at night or gaffed in the daytime. *Kue'e tī'au* (gaffing freshwater eel) was done in the rocky holes within rivers where *kue'e* inhabit. Teautaiipī recalls that if no *tī'au* was available, he and his mother would catch *kue'e* by chasing them from their homes in the rocks into a burlap sack.

### **Te ‘avaika mokō me te honu - Shark and turtle fishing**

Before being outlawed, *mokō* and *honu* were both fished *i te tai ‘o mua*. Like *haha‘ua*, they were especially prized and respected meats. During this time, *honu* were typically caught by hand underwater by diving for sleeping turtles under rocks and grasping on to the top and bottom of their shells, being sure to guide the animal to the surface to avoid struggle. *Mokō* were targeted in *pā‘oa* fishing and were caught as by-catch from *ika hī*.

### **Te hā kai tupa - Gathering and preparation of tupa**

*Tupa* are land crabs that lived within the intertidal mud flats of most valleys. They are large crabs that are in great abundance. They could be collected by hand in the day or night. Since *tupa* ate the mud from intertidal areas, they were not eaten quickly after capture, for their meat would not be tasty. Instead, *tupa* has to be prepared for eating in a particular way. Once gathered, *tupa* were brought home and put in a metal barrel full of freshwater. For one week, they were fed strictly coconut, typically the leftover shavings from making coconut milk and the water was replaced when dirty. After one week, the *tupa*’s shell turned bright red, signifying that the meat is prepared and ready to be eaten. They should not be fed for any longer or else they would die. Moni‘ehitu mentions that *tupa* migrate from the intertidal flats down to the ocean during certain Ohotunui moons to spawn their eggs and cannot be collected during their transit.

*Tupa* are no longer caught and prepared for eating nowadays. Views towards *tupa* have changed, where they are now seen as an unwanted food source.



*Figure 6. 19* Left: *Tupa* crab on Taipīvai beach. Right: *Tupa* burrows of Taipīvai.

## Chapter 7. Tekao ha‘apao - Discussion and conclusions

### 7.1 Changes in Nukuhiva

From the first interactions with Cook, Porter and Dupetit-Thouars, there have been significant changes in the way ‘Enana lived. Severe depopulation from foreign diseases was one of the biggest challenges to land on ‘Enana shores. Walking in the valleys of once flourishing populations like the Hapa‘a of Nukuhiva, where dozens of ancient stone *paepae* remain, one can notice how devastating these effects have been. In the early days of outsider contact, Dening (1980) notes that Robarts and Crook estimated the population of the archipelago to have been around 90,000. Archaeological, ethnohistoric and traditional knowledge give estimates between 35,000 inhabitants to as large as 100,000 during this time (Dunn 2004). Just over 100 years later, in 1921, foreign diseases have caused the population of Te Henua ‘Enana to reach its lowest figure at just 2,094 people living throughout the islands, where some have described it as one of the “worst cases of depopulation in the Pacific” (Rallu 1992, p. 192). Many were unsure if ‘Enana would still be around in the century to follow.

Colonization also had its effects on ‘Enana culture. Ancestral practices such as religious ceremonies, chanting, the construction of *tapu* houses and many other aspects of the culture were condemned by missionaries and French authorities and eventually were banned by law in 1863 (Dening 1980). With Taioha‘e bay being a focal point for voyagers to visit and trade, Nukuhiva as a whole would have felt disproportionate cultural impacts from colonization compared to the other islands. Many of the sacred *ahu ‘avaika* were quickly left behind or destroyed. Shifts in religion would have changed the protocols taken before fishing and the *tapu* that surrounded the activity.

In more contemporary times, laws and regulations now dictate which fish can be harvested. Protected fish, such as *honu*, *haha'ua* and *mokō* are now illegal to fish throughout French Polynesia, which in turn has outlawed the fishing practices.

Around the mid-1960s, the development of larger schools in Taioha'e, Nukuhiva and in Atuona, Hiva'oa, increased Western education opportunities and at the same time diminished Indigenous educational frameworks, such as learning through observation and experience with family. Children from surrounding valleys and islands were required to board or live with relatives in areas distant from their parents and thus limited the fishing that would have been passed on to youth.

## **7.2 Fishing today and the evolution of fishing methods and knowledge**

Despite all of the disseminative pressures on 'Enana ways of life, many of the fishing practices and knowledge of old have survived into modern times. Much of these fishing methods have adapted to the new technologies and ideologies present today but have kept their Indigenous essence. The *toka* that have been passed down from ancestral fishermen continue to feed the mouths of their grandchildren today. Ecological knowledge held in practices like *kāta'i* remain effective in helping fishermen with successful catches and have evolved with the available technology today. The dazzling *pā* were even still being used to fish *atu* in Tahuata throughout the 1980s and 90s (Rolett 1998). The time-tested, low-cost and reliability of ancient fishing practice has kept these traditions relevant throughout the changing currents of time.

In regard to fishing technology, of all the methods reviewed, netting designs and techniques appear to have significantly changed since ancient times and in some cases have been almost all but lost; the *pā'oa* fishing technique perhaps being the only exception. The significant amount of

resources and labor required to create cordage and craft the deep-sea nets of old would have made it a difficult process to retain in a dwindling population. The art of creating natural fishing rope also appears to have faded from Nukuhiva, where the interviewed fishermen have stated that those skills were unknown to their parents' generation. Furthermore, as the elder fisherman of Nukuhiva would say, line and spear fishing provided more than enough fish to meet the needs of small village communities.

Handline fishing techniques continue to live on in Nukuhiva today and are the most widely practiced form of fishing. The main changes have been in materials and transportation, such as the use of modern watercraft, monofilament fishing line and iron sinkers. Most fish in the islands are caught from bottom fishing activity at *toka*.

Spearfishing is now dominated by spear gunning techniques, where spears are rarely used in underwater and above water fishing (*kou'a ve'o* being an exception). Furthermore, ancestral knowledge of tides, feeding times and fish behavior is still known, but is not often used by the younger generations to inform when to spearfish. Torchlight spearfishing with *ta'a* along the *koutu* is now no longer practiced.

Although they still existed elsewhere in the islands at the time, pearl-shell lures were no longer used in Nukuhiva. The only types of lure fishing that were still practiced *i te tai 'o mua* were bottom fishing with feather lures or trolling with lures made of *'ai'ai* skin.

In regard towards communal fishing practices, unlike most other places within Polynesia where communal netting was done, 'Enana had minimal fishing methods of this nature that were mentioned in the interviews or ethnohistoric literature. It appears that dolphin fishing and deep-sea fishing with *'upena* were the only types of major communal fishing that have been documented

from ancient times. Most other fishing was typically done in parties of three and sometimes less. The lack of related historical literature, however, makes it difficult to say for certain.

Although woven traps were common throughout other parts of Polynesia and have been recorded in much detail, there were no accounts of woven traps being used in Nukuhiva and elsewhere, other than Handy and Linton's mention of an unknown type of fish trap that was made of *hau*. Fishing for *ma'o'o* was said to have been practiced traditionally, but no information could be obtained from the informants on the Nukuhiva method for fishing them, although they are sometimes fished with modern methods today. Cowrie shell octopus lures were also not mentioned to be used in Nukuhiva through both the literature and interviews, although the technology was indeed used at one time according to archaeological finds (Lavondés 1971).

Traditional knowledge on the relationships between the environment and fishing have generally been preserved among the older fishermen. More in-depth knowledge on the moon calendars, seasonal indicators and other factors are only known by some. Today, certain knowledge, such as the blooming of flowers and the lunar calendar are known but not followed to the same degree as they once were. Other environmental knowledge such as triangulating one's self to locate *toka* and identifying currents, tides and winds while fishing, are more so considered by most fishermen today, perhaps for their better alignment with the Western calendar and their intuitive relationships to fishing.

Cultural concepts that related to fishing activity, such as *tapu* and *'āhui*, seem to have no longer been practiced in Nukuhiva *i te tai 'o mua*, where there was no mention of adhering to these laws during the interviews. However, the practice of *'āhui* with certain trees is said to have still existed on other islands at this time (Ottino-Garanger et al. 2016).

*I te tai 'o mua*, fish remained 'Enana's primary source of protein, where large land animals such as pig and cow were reserved for special occasions and feasts. Without the establishment of money economies for fish, communal activities of preparing and distributing fishing catches continued on for a long time. Traditional fish preservation techniques were maintained and common throughout 'Enana households. It was not until the early 1970s, where the introduction of refrigeration technology and increased interaction between Te Henua 'Enana and Tahiti created profitable opportunities for selling fish to an inter-archipelago market. In places like Nukuhiva where employment is very minimal, fishing would have supplied excellent job opportunities for locals to pursue. Local, small scale fishermen were very much interested in harvesting and selling *u'a*, which were abundant at the time and did not require any commercial licensing to do so (Agence des aires marine protégées 2016). On the other hand, a broader market paired with the increased availability of modern fishing technology such as speed boats and refrigeration, has also put pressures on fish abundance throughout the islands, especially in places like Taioha'e where Tahitian steam ships would frequent.

Ciguatera poisoning (a product of consuming ciguatoxin contaminated reef fish) is now a threat present throughout many parts of the island, where places such as Anaho bay are now entirely avoided for line and spearfishing (Aswani & Allen 2012). Many fish once caught with spear, like *pa'ahua*, are no longer harvested in Taioha'e and some areas of Taipivai, for fear of ciguatera poisoning, which further encourages the use of spearguns to harvest less potentially contaminated species.

### **7.3 Challenges with contemporary fishing and retaining ancestral knowledge**

Nukuhiva and the broader Henua 'Enana face many challenges in regards to maintaining traditional fishing knowledge and sustainability. Local fishermen have noticed that increased pressures on Nukuhiva fish stock are causing fish to move and stay in deeper waters. Marketable shellfish such as *mama*, *toetoe* and *u'a* are also depleting rapidly from the shores of more populated areas and are becoming harder to access, where the mayor of 'Uahuka has placed a recent 'āhui on these target species (Viatge 2020). This has come from the development of profitable seafood trade markets between Nukuhiva and Tahiti, where modern technologies and greater money incentives have encouraged fishermen to fish harder. Furthermore, since fish stocks are still abundant and with Nukuhiva's status under the territory of French Polynesia, many commercial Tahitian and even other international fishermen now frequent 'Enana waters to fish for tuna.

The current education system also plays a part in disconnecting 'Enana youth from fishing and other cultural practices. Most valleys hold primary education facilities, while secondary study must be pursued in Taioha'e and eventually Tahiti. Students must live away from their parents for most of the year, only being able to visit during the school holidays. As it stands, there are very few programs that teach cultural knowledge from secondary school onwards. Cultural diets of youth are quickly changing also, where traditional dishes of fish and other Indigenous foods become less desirable and imported Western foods such as spaghetti and frozen chicken are more desired. This has caused many youths to become disconnected from their language, culture, and in turn, cultural practices.

Many of the elders interviewed were concerned for the state of cultural fishing among young fishermen of today who show less interest in preserving the ancestral fishing techniques of their forebears and do not always use fishing knowledge in their practice.

#### **7.4 Informing the past and the future**

Looking towards the fishing techniques of the past and how they have changed can inform positive developments for the future and help ‘Enana better understand their past. Understanding the amazing ingenuity and genius of ‘Enana fishermen can instill a strong sense of cultural pride and identity. Understanding how fishing methods have adapted and evolved over time can give communities better understanding of which fishing activities will be sustainable for the future, and which may need to change. It will also give insight on how to manage ‘Enana fisheries by implementing certain gear restrictions, as is practiced in other areas of the Pacific. Ancestral Indigenous knowledge can also help recontextualize traditions like *‘āhui* and *tapu* into current fisheries management in Nukuhiva, where places like Tahiti, the Austral islands and recently ‘Uahuka, have implemented forms of *‘āhui* on their marine resources (Viatge 2020). Finding a balance with local fishermen on the amount of sustainable harvest for easily exploited shellfish such as *u‘a*, *mama* and *toetoe* will also be an essential task for the future.

Today, there are more programs emerging to educate youth in primary schools on traditional practices, such as *ha‘atiki* (carving), *hāika* (Indigenous medicine) and *tā‘ai vaka* (canoe carving). Some ‘Enana are steadily returning to the elders to help preserve our ancestral knowledge that can guide us into the future. Traditional distribution of fish (*tuha*) can still exist alongside money economies, especially in times like the COVID-19 pandemic where financial hardship has fallen upon families that rely on tourism and exporting *copra*. Fishermen have shown that they can still care for their communities through traditional ways, where in Taioha’e over 500 kilograms of fish were donated to the elderly and families whose jobs were impacted by the pressures of COVID-19 (Philiber 2020).

Reviving ancestral fishing technologies can be an important aspect for 'Enana in establishing meaningful and spiritual connections to their ancestors by doing the same work they once did. They are also components of perpetuating our Indigenous culture within the modern world. For subsistence fishermen, returning to paddle propelled *vaka* for fishing can be a way to be less reliant on fishing catches to reimburse gas costs and lessen dependence on foreign fuels.

## **7.5 Limitations**

It is important to acknowledge that this study is not comprehensive to all of the fishing methods that may have been practiced in Nukuhiva and the wider Henua 'Enana in ancient times. The time in which the field research took place was during a busy time of the year where many 'Enana take the time to celebrate, rest from work and spend time with family. It is also a time where more profitable fishing, like night diving for *u'a* and fishing for *kahi*, more frequently occur. Further observation and study of 'Enana fishing practice throughout the less busy times of the year is needed. More interviews with commercial fishermen in places like Taioha'e would also be important for understanding the ways ancestral fishing may or may not be continuing in modern commercial contexts.

Follow up interviews with participants would be recommended for future study on 'Enana fishing. Hiring charter boats to take elders on the ocean or simply conducting interviews near the seaside would be essential for gathering deeper understandings of place and ancestral 'Enana knowledge. Further perspectives from more of the remotely populated areas of Nukuhiva would also prove helpful in deepening understandings. A more in-depth study of further ethnohistoric documents unavailable to me at the time, especially those in French, would also prove beneficial.

Moreover, the lack of a literature base written by ‘Enana has also been a limiting factor for this study.

## **7.6 Ha‘apao ‘ia tekao - Conclusions**

The objective of this study was to provide a review of the ancestral fishing practices and knowledge of Nukuhiva and to present how they may have changed over time. Furthermore, this study has aimed to preserve the knowledge of ‘Enana elders from an ‘Enana perspective and to compare the fishing methods of old with what practices existed in the recent past and today. In order to do this, three sub-questions and one main question have been proposed, those being:

- i. What were the fishing methods of early outsider contact in Te Henua ‘Enana?
- ii. How have fishing methods changed since ancient times?
- iii. What and how are traditional fishing methods utilized by fishermen today and in the recent past?

And the main question of this thesis (iv):

- iv. What are the ancestral fishing practices and knowledge in Nukuhiva (The Marquesas Islands) and how have they changed over time?

In order to explore the fishing methods of early outsider contact in Te Henua ‘Enana, this study has reviewed the ancestral fishing practices of the wider Polynesia and Te Henua ‘Enana from the earliest period of written records in Chapters 2 and 5. Due to a lack of early records on the topic, reviewing the ancestral fishing practices across Polynesia has provided a basis for the type of fishing that was perhaps occurring in Te Henua ‘Enana in ancient times and helped bridge some gaps of knowledge from the early ethnohistoric records. This was done with a critical review

of literature from the University of Waikato library and the literary resources gifted generously to me by my Uncle David Addison.

Per Chapter 5, the fishing methods of early outsider contact in Te Henua 'Enana utilized a plethora of net, line, spear, poison and trap fishing methods and technologies. Many bag netting techniques were performed via canoe, such as the *timana*, *'upena* and square parrotfish nets which were vital technologies in obtaining fish for large feasts. Netting from the shore was done by *pā'oa* seine net or dip net. Handline bottom fishing was practiced with a variety of hook forms but was not written about in great detail from the early records. Other line fishing, such as *pā* trolling for *atu*, *hī mōkoi* and *pūhākau* were also used. Spearfishing was done under and above the water with spears and harpoons, by day or by night with the aid of torchlight. Small scale fishing and gathering from shore was done with the use of natural poisons, nooses, bow and arrow, or skillfully by hand.

To address how fishing methods have changed in Nukuhiva from ancient times and how they are used today, informal elder interviews were conducted to present what type of fishing was once done or is no longer practiced in Nukuhiva. Furthermore, participation and experience as a practitioner of fishing in modern subsistence fishing activities were undertaken for first-hand insight on the fishing of today. From this, we see that in some ways ancestral fishing practices have changed and in many ways they have not. 'Enana have perpetuated much of their ancestral fishing practices which have evolved to use modern day technologies. Fishing knowledge, such as the relationships between lunar phases and productive fishing are still known, however, they are not as extensive as they once were. A majority of net types once used in Nukuhiva and the wider Henua 'Enana have been lost from the memories of people today, where the *pā'oa* net appears to be the only fish netting method used now.

Ancestral fishing knowledge still proves to be effective and have a place within the function of modern society and technology today. Subsistence fishing continues to be important for many of the remote valleys in Nukuhiva and is sometimes done for profit to reimburse running costs of motorboats. Cultural practices such as *tuha* have diminished over time with the ideologies of selling *ika* for profit. However, in a more integrated way, *tuha* is still practiced today where a fishermen will *tuha* fish to their immediate family and to people who are known to be without before selling the remainder. The interviews with elder fishermen of Nukuhiva have presented much insight on practices that have not been extensively written about or are no longer practiced today in Nukuhiva, such as *aku/haha'ua* spearing, torchlight spearfishing from the *koutu*, and above water *kāta'i* fishing. The elders have also expressed their hopes for the current and future generations to perpetuate ancestral 'Enana fishing and to follow in the sustainable ways of their ancestors.

With many 'Enana experiencing disconnection from their culture, returning to ancestral fishing can accompany the cultural, linguistic and spiritual revitalization that is now happening in Te Henua 'Enana. We can also see that much of the Indigenous environmental knowledge has been preserved through fishing and can be an important aspect in educating youth to become better guardians for the sea.

This knowledge continues to be effective for all types of fishing practiced today and will be essential to navigate into the future of sustainable fishing in Nukuhiva and the wider Henua 'Enana. Remembering our ancestors in work like fishing can exist in today's society and is necessary for retaining 'Enana cultural heritage for now and for the future. Holding on to the foods from the sea that our ancestors once ate is important in conserving our unique Indigenous identity and wellbeing. Ancestral fishing is an aspect of maintaining harmonious relationships with the

ocean and a part of our identity as *‘Enana o te tai* (people of the ocean). *Te tau hana ‘avaika kākīu* must be remembered and perpetuated by those of this *tai* so that our ancestral knowledge and genius may live on. *Ua pao tēnei tekao* (these words are done).

## Appendix I: Ethics approval and consent letters

Faculty of Maori & Indigenous Studies  
Te Pua Wānanga ki te Ao  
The University of Waikato  
Private Bag 3105  
Hamilton, New Zealand

Associate Professor Maui Hudson  
Phone +64 7 838 4028  
[maui.hudson@waikato.ac.nz](mailto:maui.hudson@waikato.ac.nz)



Te Manu Taiko: Human Research Ethics Committee  
Faculty of Māori & Indigenous Studies  
Te Pua Wānanga ki te Ao

01/05/20

### Ethics Approval

Tēnā koe e te manu hakahaka e whai atu ana i te whānuitanga me te rētōtanga o ngā kaupapa rangahau o te wā.

This letter is to confirm that Tema'u Teikitekahioho-Wolff has received ethical approval for the study "**Te Tau Hana 'Avaika Kākiu - Traditional 'Enana(Marquesan) Fishing Techniques and Fishing Lore of Nukuhiva Island**" The ethics application was reviewed by members of Te Manu Taiko and was signed off by the chair of the committee on 01/05/20. Good luck as you embark on your research.

Kimihia, rangahaua!

---

Associate Professor Maui Hudson  
Convener, Te Manu Taiko  
Te Pua Wānanga ki te Ao  
Faculty of Māori & Indigenous Studies

Page 154-159

Consent forms for participants

**Appendix II: Tables of *ika* commonly caught by each fishing method<sup>1</sup>**

<b>Te tau ika ve‘o ‘ia - Common hand speared <i>ika</i><sup>2</sup> (by day and night)<sup>3</sup></b>		
<b>Ikoa ‘Enana - ‘Enana name</b>	<b>Common English name</b>	<b>Scientific name</b>
<i>Aku</i>	Keeltail needlefish	<i>Platybelone argalus</i>
<i>Haha‘ua</i>	Manta ray	<i>Manta</i>
<i>Hakuna</i> <sup>4</sup>	Fringelip mullet	<i>Crenimugil crenilabis</i>
<i>Ihe</i>	Half-beak	<i>Hymorhamphus acutus</i> or <i>H. affinis</i>
<i>Kokape</i>	Bluestriped snapper	<i>Lutjanus kasmira</i>
<i>Koma</i>	Hound needlefish	<i>Tylosurus crocodilus</i>
<i>Me‘auku‘a</i>	Soldierfish	<i>Myripristis spp.</i>
<i>Nenuē</i>	Blue sea chub	<i>Kyphosus cinerascens</i>
<i>Papaea</i>	Blackspot sergeant	<i>Abudefduf sordidus</i>
<i>Pe‘aki</i>	Yellowfin surgeonfish	<i>Acanthurus xanthopterus</i>
<i>Pa‘ahua ke‘eke‘e</i>	Striped-fin surgeonfish	<i>Ctenochaetus cyanoguttatus</i>
<i>Pa‘aihere</i> <sup>5</sup>	Trevally	<i>Caranx spp.</i>
<i>Rōrau</i>	Blacktail snapper	<i>Lutjanus fulvus</i>
<i>Ta‘ata‘a</i>	Silverspot squirrelfish	<i>Adioryx caudimaculatus</i>
<i>Tatue</i> <sup>6</sup>	Ember Parrotfish (male)	<i>Scarus psittacus</i>
<i>Tava‘u</i>	Mullet	<i>Chelon spp.</i>
<i>Tuhou</i>	Sabre squirrelfish	<i>Adioryx spinifer</i>
<i>U‘a</i>	Spiny lobster	<i>Panulirus pencillatus</i> or <i>Puerulus angulatus</i>
<i>Uhu haka</i>	Ember Parrotfish (female)	<i>Scarus rubroviolaceus</i>
<i>Ume kuripo</i> ( <i>Kuripo</i> )	Sleek unicornfish	<i>Naso hexacanthus</i>
<i>Ume tarei</i>	Orangespine surgeon fish	<i>Naso lituratus</i>

<sup>1</sup> The majority of ‘Enana fish names presented are compiled from the interviews with local fishermen. Where it is required, some ‘Enana names have been added from tables in Carlier 2006. Scientific names have been adapted from Carlier 2006, Lavondés & Randall 1978 and Randall & Earl 2000. All common fish names were collected via fishbase.se/search.php or Carlier 2006.

<sup>2</sup> The term *ika* throughout the tables is not exclusively used to represent fish but all marine animals, such as octopods, cetaceans, turtles, rays, lobsters, sharks etc; as is the native use of the word which is explained by Lavondés & Randall 1978.

<sup>3</sup> Table refers to fish caught by torchlight fishing, underwater spearfishing and above water spear/harpooning.

<sup>4</sup> Hakuna and tava‘u are interchangeable names for mullet in Nukuhiva. Carlier 2006 identifies hakuna as *Crenimugil crenilabis* while Lavondés and Randall identify hakuna and tava‘u as either *Chelon* or *Chelmon* spp.

<sup>5</sup> The Tahitian term “pa‘aihere” is used by Nukuhiva fishermen to generally describe most trevally nowadays. There are, however, many names for the different trevally in ‘Enana waters and have been recorded by Carlier. Although most fish names presented by Carlier come from ‘Uahuka dialect, which may differ from that of Nukuhiva, I have included them in the tables where appropriate.

<sup>6</sup> Male parrotfish are identified by their green color while female parrotfish are red. Although they are of the same species, they are called by two different names in Te ‘Eo ‘Enana.

<b>Te tau ika puhi 'ia - Common spear gunned ika</b>		
<b>Ikoa 'Enana - 'Enana name</b>	<b>Common English name</b>	<b>Scientific name</b>
<i>Hoke</i>	Small spotted dart	<i>Trachinotus bailloni</i>
<i>Ka'oa</i>	Yellow striped goatfish	<i>Upeneus vittatus</i>
<i>Kokoha'a</i>	Marquesan parrotfish (male)	<i>Scarus koputea</i>
<i>Kōpūtea</i>	Marquesan parrotfish (female)	<i>Scarus koputea</i>
<i>Marava</i>	Streamlined spinefoot	<i>Siganus argenteus</i>
<i>Mahamutukeo</i>	Bluespine unicornfish	<i>Naso unicornis</i>
<i>Me'auku'a</i>	Soldierfish	<i>Myripristis spp.</i>
<i>Menini</i>	Convict tang	<i>Acanthurus triostegus</i>
<i>Nenue</i>	Gray chub	<i>Kyphosus cinerascens</i>
<i>Ta'ata'a</i>	Silverspot squirrelfish	<i>Adioryx caudimaculatus</i>
<i>Tatue</i>	Ember parrotfish (male)	<i>Scarus rubroviolaceus</i>
<i>Tava'u</i>	Mullet	<i>Chelon spp.</i>
<i>Tuhou</i>	Sabre squirrelfish	<i>Adioryx spinifer</i>
<i>Pa'ahua ke'eke'e</i>	Striped-fin surgeonfish	<i>Ctenochaetus cyanoguttatus</i>
<i>Pa'ahua ve'o tava'i'e</i>	Whitecheek surgeonfish	<i>Acanthurus glaucopareius</i>
<i>Pa'aihere</i>	Trevally	<i>Caranx spp.</i>
<i>Pe'aki</i>	Yellowfin surgeonfish	<i>Acanthurus xanthopterus</i>
<i>Tipara</i>	African pompano	<i>Alectis ciliaris</i>
<i>Uhu haka</i>	Ember parrotfish (female)	<i>Scarus rubroviolaceus</i>
<i>Ume herepoti</i>	Whitemargin unicornfish	<i>Naso herrei</i> or <i>N. annulatus</i>
<i>Ume ke'eke'e</i>	Bignose unicornfish	<i>Naso vlamingii</i>
<i>Ume kuripo (Kuripo)</i>	Sleek unicornfish	<i>Naso hexacanthus</i>
<i>Ume puaka</i> or <i>Ume ta'apatou</i>	Orangespine unicornfish	<i>Naso lituratus</i>
<i>Ume tuahipa</i>	Humpback unicornfish	<i>Naso brachycentron</i>
<i>Va'u</i>	Dogtooth tuna	<i>Gymnosarda unicolor</i>

<b>Te tau ika tavere 'ia - Commonly trolled ika</b>		
<b>Ikoa 'Enana - 'Enana name</b>	<b>Common English name</b>	<b>Scientific name</b>
'Ai'ai	Doublespotted queenfish	<i>Scomberoides lysan</i>
Aku	Keeltail needlefish	<i>Platybelone argalus</i>
Atu	Bonito	<i>Katsuwonus pelamis</i>
Haku'a	Marlin	<i>Makaira spp.</i>
Kahi	Albacore	<i>Thunnus albacares</i>
Mapio	Bigeyed trevally	<i>Caranx elacate</i>
Mahimahi	Dolphin fish	<i>Coryphaena hippurus</i>
Matu'ono	Rainbow runner	<i>Elagatis bipinnulatus</i>
Otavatava	Mackrel tuna	<i>Euthynnus affinis</i>
Pa'aihere	Trevally	<i>Caranx spp.</i>
Pomata	Blue trevally	<i>Carangoides ferdau</i>
Roroa	Wahoo	<i>Acanthocybium solandri</i>
U'ua	Giant trevally	<i>Caranx ignobilis</i>

<b>Te tau ika pā'oa 'ia - Common seine netted ika</b>		
<b>Ikoa 'Enana - Marquesan name</b>	<b>Common English name</b>	<b>Scientific name</b>
'Ai'ai	Needlescaled queenfish	<i>Scomberoides tol</i>
Hakuna	Mullet	<i>Crenimugil crenilabis</i>
Hakuna moana	Milkfish	<i>Chanos chanos</i>
Hohoe	N/A	<i>Kuhlia petiti</i>
Hoke	Small spotted dart	<i>Trachinotus bailloni</i>
Ka'oa	Yellowstriped goatfish	<i>Upeneus vittatus</i>
Kumia	Six-finger threadfin	<i>Polydactylus sexfilis</i>
Nenu	Blue sea chub	<i>Kyphosus cinerascens</i>
Etu'e	Bigeye scad	<i>Selar crumenophthalmus</i>
Pa'aihere	Trevally	<i>Caranx spp.</i>
Papaea	Blackspot sergeant	<i>Abudefduf sordidus</i>
Pōpō <sup>7</sup>	Brassy trevally (juvenile)	<i>Caranx papuensis</i>
Tava'u	Mullet	<i>Chelon spp.</i>
Tate'a	Juvenile reef shark	N/A <sup>8</sup>
Vete	Goatfish	<i>Mulloidichthys spp.</i>

<sup>7</sup> 'Enana sometimes use different names to describe the same species of fish at different lifestages. Pōpō are identified by fishermen as juvenile *pa'aihere* that inhabit rivers and near river mouths. I have self-identified them as *Caranx papuensis* due to my familiarities catching this fish and the absence of identification from other literature.

<sup>8</sup> Because 'Enana names are sometimes used to represent more than one species, scientific names for certain organisms have been withheld.

Te tau ika hī 'ia meio he vaka - Commonly caught <i>ika</i> with hook and line <sup>9</sup>		
Ikoa 'Enana - Marquesan name	Common English name	Scientific name
'Ai'ai	Needlescaled queenfish	<i>Scomberoides tol</i>
Etu'e	Bigeye scad (juvenile)	<i>Selar crumenophthalmus</i>
Haka	Two-spot red snapper (juvenile)	<i>Lutjanus bohar</i>
Hakatapua	Two-spot red snapper (adult)	<i>Lutjanus bohar</i>
Kahi	Yellowfin tuna	<i>Thunnus albacares</i>
Ki'ihe'o	Marquesan grouper	<i>Epinephelus spiniger</i>
Kokape	Bluestripe snapper, "ta'ape"	<i>Lutjanus kasmira</i>
Kōvīvī	Emperor fish (juvenile)	<i>Lethrinus spp.</i>
Matuvī	Fusilier	<i>Caesio spp.</i>
Matu'ono	Rainbow runner	<i>Elagatis bipinnulatus</i>
Me'auku'a	Soldierfish	<i>Myripristis spp.</i>
Mokō <sup>10</sup>	Adult shark	N/A
Mū	Humpnose big-eye bream	<i>Monotaxis grandoculis</i>
'Operu	Mackrel scad	<i>Decapterus sp.</i>
Pa'aihere	Trevally	<i>Caranx spp.</i>
Pāpāhu	Bigeye scad (adult)	<i>Selar crumenophthalmus</i>
Papaea	Blackspot sergeant	<i>Abudefduf sordidus</i>
Petī	Giant grouper	<i>Epinephelus lanceolatus</i>
Pōpī	Humpback red snapper	<i>Lutjanus gibbus</i>
Pōpō	Brassy trevally (juvenile)	<i>Caranx papuensis</i>
Rōrau	Blacktail snapper	<i>Lutjanus fulvus</i>
Tapatū	Bigeye barracuda	<i>Sphyraena forsteri</i>
Tāte'a	Juvenile shark	N/A
'Uhi	Black jack	<i>Caranx lugubris</i>
U'ua	Giant trevally	<i>Caranx ignobilis</i>
Utu	Green jobfish	<i>Aprion virescens</i>
Va'u	Dogtooth tuna	<i>Gymnosarda unicolor</i>
Vīpuake	Emperor fish (adult)	<i>Lethrinus spp.</i>

<sup>9</sup> Table includes fish caught with *mōkoi* (rod) and by bottom fishing inshore and offshore.

<sup>10</sup> In general, sharks are categorized by three different names depending on their size and lifestage. Juvenile sharks (primarily reef sharks) are called *tāte'a*. When they are about 1m or larger in length they are called *mokō*, while very large sharks are called *mako*.

<b>Te tau ika kahi 'ia - Commonly gathered shellfish &amp; invertebrates</b>		
<b>Ikoa 'Enana – Marquesan name</b>	<b>Common English name</b>	<b>Scientific name</b>
<i>Hatuke</i>	Pencil urchin	N/A <sup>11</sup>
<i>Heke</i>	Day octopus	N/A
<i>'Ti</i>	Cowrie shell	<i>Family Cypraeidae</i>
<i>Kōpi'i</i>	Small octopus found on the <i>koutu</i>	N/A
<i>'O'i</i>	Sea cucumber	N/A
<i>Mama</i>	Marquesan chiton	<i>Chiton marquesanus</i>
<i>Toetoe</i>	Rock crab	<i>Graspus spp.</i>

<sup>11</sup> There is a lack of proper comparison on 'Enana and scientific names of consumed 'Enana invertebrates. Due to this, I have chosen to omit some of the scientific names and explain their common names as they were presented in the interviews.

## References

- Addison, D. J., & Ono, R. (2009). Ethnoecology and Tokelauan fishing lore from Atafu Atoll, Tokelau. *SPC Traditional Marine Resource Management and Knowledge Information Bulletin*.
- Addison, D. J. (2006). *Feast or Famine? Predictability, Drought, Density, and Irrigation: the Archaeology of Agriculture in Marquesas Islands Valleys* [Unpublished doctoral dissertation].
- Agence des aires marine protégées (November 2016) *Analyse Éco-Régionale Marine des îles Marquises*. Retrieved from: <https://en.calameo.com/ofbiodiversite/read/003502948a604243e3cc8>
- Allen, M.S. (2004). Revisiting and revising Marquesan culture history: new archaeological investigations at Anaho Bay, Nuku Hiva Island. *Journal of the Polynesian Society*, 113: 143–196.
- Allen, M., Dickinson, W., Huebert, J. (2012) The Anomaly of Marquesan Ceramics: a Fifty Year Retrospective. *Journal of Pacific Archaeology*. 3(1)
- Allen, M., McAllister, A. (2010) The Hakaea Beach site, Marquesan colonisation, and models of east polynesian settlement. *Archaeology in Oceania* 45: 54-65
- Andréfouët, S. (2014) A monospecific *Millepora* reef in Marquesas Islands, French Polynesia. *Coral Reefs* <https://doi.org/10.1007/s00338-014-1133-6>
- Aswani, S., & Allen, M. (2009) A marquesan coral reef (French Polynesia) in historical context: an integrated socio-ecological approach. *Aquatic Conservation: Marine and freshwater ecosystems*, 614-625 <https://doi.org/10.1002/aqc.1006>
- Bambridge, T. (2016). *The Rahui legal pluralism in Polynesian traditional management of resources and territories*. Acton, A.C.T. : ANU Press.
- Beckley, E. M. (1883). *Hawaiian fisheries and methods of fishing, with an account of the fishing implements used by the natives of the Hawaiian Islands*. Honolulu: Advertiser Steam Print
- Bennett, G. P. (2014) *Trends and challenges for sustainable marine resource management for rural Solomon Islanders* (Unpublished Doctoral Thesis) University of Waikato, Hamilton, New Zealand
- Best, E. (1929). *Fishing Methods and Devices of the Maori*. Wellington, N.Z.: Government printer
- Best, E. (1952). *The Maori as he was*. Owen.
- Buck, P. H. (1926). *The Maori craft of netting*. Wellington, N.Z.: Govt. Print.

Crook, W.P. (1952) Marquesan Source Materials: Transcript of Mitchell Library Crook Manuscript. In: Sheahan GM, editor. p 207 l.

Delrieu-Trottin, E., Williams, J.T., Bacchet, P., Kulbicki, M., Mourier, J., Galzin, R., Lison de Loma, T., Mou-Tham, G., Siu, G., Planes, S. (2015) Shore fishes of the Marquesas Islands, an updated checklist with new records and new percentage of endemic species. *Check List* <http://dx.doi.org/10.15560/11.5.1758>

Dening, G. (1980). *Islands and Beaches*. Melbourne University Press

Dening, G. (1971) *Tapu and Haka'iki in the Marquesas*. [Doctoral dissertation] Harvard University.

Dordillon, I.R. (1904) *Grammaire et dictionnaire de la langue des iles Marquises* [Grammar and dictionary of the Marquesas Islands] Société des études Océaniques. Tahiti, 1999.

Dunn, L. (2005). *New plants, new diseases, new practices: The changing face of ethnomedicine in Hiva 'oa, Marquesas islands*. [Unpublished dissertation] University of Hawai'i at Mānoa

Elders from Atafu Atoll. (2012) *Echoes at Fishermen's Rock: Traditional Tokelau fishing*. Edited by A. Hooper and I. Tinielu. Knowledges of Nature 4. UNESCO: Paris.

Froese, R. & D. Pauly (2019). *FishBase*. <https://www.fishbase.se/search.php>

Fleurieu, Charles P.C. (1969). *A Voyage Round the World, 1790-1792: Performed by Étienne Marchand*; [translated from the French]. New York: Da Capo Press.

Friedlander, A., Shackeroff, J., & Kittinger, J. (2016). Traditional marine resources and their use in contemporary Hawai'i. *The Rahui: Legal Pluralism in Polynesian Traditional Management of Resources and Territories*. doi: 10.22459/tr.03.2016.10

Friedlander, A., Poepoe, K., Helm, K., Bartram, P., Maragos, J., Abbott, I. (2002). Application of Hawaiian traditions to community-based fishery management. *Proceedings of the Ninth International Coral Reef Symposium*. 2.

Fua, S.J. (2014) Kakala research framework: A Garland in celebration of a Decade of Rethinking Education. *Of Waves, Winds & Wonderful Things: A Decade of Rethinking Pacific Education*. USP Press, Fiji.

Govor, E. (2010) *Twelve days at Nuku Hiva: Russian Encounters and Mutiny in the South Pacific*. University of Hawai'i Press

Gracia, M., (1843) *Lettres sur les Iles Marquises, ou mémoires pour servir à l'étude religieuse, morale, politique et statistique des Iles Marquises et de l'Océanie orientale* [Letters on the Marquesas Islands, or memoirs to be used for the religious, moral, political and statistical study of the Marquesas Islands and Eastern Oceania]. Paris, Gaume Frères.

Gibson, W.M. (1873) *Lāna‘i (Various Fisheries and Resources Described) Nu Hou*.

Glazier, E. W. (2019). *Tradition-based natural resource management: practice and application in the Hawaiian Islands*. Cham, Switzerland. Springer Nature.

Google. (n.d.) [Google Map of the island of Nukuhiva]. Retrieved April 8, 2020 from <https://www.google.co.nz/maps/place/Nuku+Hiva/@-8.8677307,-140.1353366,27864m/data=!3m1!1e3!4m5!3m4!1s0x764a7a43a22ef6e3:0xc1eee905826f07bc!8m2!3d-8.8604808!4d-140.1420882>

Handy, E.S.C. (1923) *The Native Culture in the Marquesas*. Bishop Museum Press.

Handy, E. S. C. (1971). *Houses, boats, and fishing in the Society Islands*. New York: Kraus Reprint Co.

Handy, E.S.C. (1930) *Marquesan Legends*. Bishop Museum Press.

Hill, H. B. (1978). *The Use of Nearshore Marine Life As A Food Resource By American Samoans* [Unpublished Masters Thesis] University of Hawaii, Honolulu.

Johannes, R. E. (1982). *Words of the lagoon: fishing and marine lore in the Palau district of Micronesia*. Berkeley: University of California Press.

Johannes, R. E. (1978). Traditional Marine Conservation Methods in Oceania and Their Demise. *Annual Review of Ecology and Systematics*, 9(1), 349–364. doi: 10.1146/annurev.es.09.110178.002025

Kahā‘ulelio, D. & Nogelmeier, P. (2006). *Ka ‘oihana lawai‘a* [Hawaiian fishing traditions]. Honolulu, Hawaii: Bishop Museum Press.

Kamakau, S. M. (1976). *The Works of the People of Old: Na Hana a ka Po‘e Kahiko*. Honolulu, HI: Bishop Museum Press.

Kamakau, S. M., Pukui, M. K., & Barrère Dorothy B. (1992). *Ka Poe kahiko: the people of old*. Honolulu: Bishop Museum Press.

Kirch, P.V., Dye, T.S. (1979) Ethno-archaeology and the development of polynesian fishing strategies. *Journal of the Polynesian Society*. (88) 53-76

Keauokalani, K., & Beckwith, M. W. (1971). *Kepelinos traditions of Hawaii*. New York: Kraus.

Kjellgren, E., Ivory, C., (2005) *Adorning the world art of the Marquesas Islands*. The Metropolitan Museum of Art, New York.

Krusenstern A.J.,(1813) *Voyage round the world in the years 1803, 1804, 1805, and 1806*. London: John Murray. London

Langsdorff, G.Hv.(1813). *Voyages and travels in various parts of the world during the years 1803, 1804, 1805, 1806, and 1807*. London: Henry Colburn.

Lavondés, A. (1971). *The Polynesians and the Sea*. Papeete. Musée de Tahiti.

Lavondès, H., Randall, J. E., (1978). Les noms des poissons marquisiens. *Journal de la Société des océanistes*. 34(60). 79-112; doi : <https://doi.org/10.3406/jso.1978.2972>

Le Cleac'h, H. (1997). *Pona tekao tapapa 'ia: Lexique Marquisien-Français* [Marquesan-French Lexicon]. Papeete.

Levine, A., & Sauafea-Leau, F. (2013). Traditional Knowledge, use, and Management of Living Marine Resources in American Samoa: Documenting Changes Over Time through Interviews with Elder Fishers. *Pacific Science*, 67(3), 395–407. doi: 10.2984/67.3.7

Linton, R. (1923) *The Material Culture of the Marquesas Islands*. Bishop Museum Press, Bulletin 5. Honolulu, Hawai'i.

Malo, D. (1951). *Hawaiian Antiquities (Mo'olelo Hawai'i)*. Honolulu, HI: B.P Museum.

Mair, G. W. (1923). *Reminiscences and Maori stories*. Auckland: Brett.

Malm, T. (2009). Women of the coral gardens: The significance of marine gathering in Tonga. *SPC Traditional Marine Resource Management and Knowledge Information Bulletin*.

Maly, K., & Maly, O. (2003). *Ka hana lawai'a a me nā ko'a o nā kai 'ewalu: A History of fishing practices and marine fisheries of the Hawaiian islands Compiled from: Native Hawaiian traditions, Historical accounts, Government communications, Kama'āina testimony and ethnography*. Kumu Pono Associates.

Mokoroa, P. (1981). Traditional Cook Islands fishing techniques. *Journal De La Société Des Océanistes*, 37(72), 267–270. doi: 10.3406/jso.1981.3067

Molle, G., Conte, E.(2011) New Perspectives on the Occupation of Hatuana Dune Site, Ua Huka, Marquesas Islands. *Journal of Pacific Archaeology*. 2(2)

Nabobo-Baba, U. (2008) Decolonising framings in Pacific research: Indigenous Fijian vanua research framework as an organic response. *AlterNative*, 4(2).  
<https://doi.org/10.1177/117718010800400210>.

Nordhoff, C. (1930). Notes on the off-shore fishing of the Society Islands. *Journal of the Polynesian Society*. 39(154) 137-173.

Naepi, S.,(2015) Navigating the currents of Kaupapa Māori and Pan-Pacific Research Methodologies in Aotearoa New Zealand. *MAI journal*, 4(1), 71-84.

Ono, R., & Addison, D. J. (2013). Historical Ecology and 600 Years of Fish Use on Atafu Atoll, Tokelau. *Prehistoric Marine Resource Use in the Indo-Pacific Regions (Terra Australis 39)*. doi: 10.22459/ta39.12.2013.03

‘Otunuku, M., (2011) *Talanoa*: How can it be used effectively as an indigenous research methodology with Tongan people?. *Pacific-Asian Education*. Vol. 23, No. 2, 43-52.

Ottino-Garanger, P., Ottino-Garanger, M., Rigo, B., Tetahiotupa, E. (2016). Tapu and kahui in the Marquesas. *The Rahui: Legal Pluralism in Polynesian Traditional Management of Resources and Territories*. doi: 10.22459/tr.03.2016.10

Paulin, C. D., & Fenwick, M. (2016). *Te matau a Māui: fish-hooks, fishing and fisheries in New Zealand*. Parapraumu , New Zealand: FishHook Publications.

Paulin, C. D. (2007). *Perspectives of Māori fishing history and techniques. Ngā āhua me ngā pūrākau me ngā hangarau ika o te Māori. Tuhinga, 18, 11–47.*

Philiber, A., (April 2020) *Pêche solidaire à Nuku Hiva*. Retrieved from: <https://www.tntv.pf/tntvnews/polynesie/societe/peche-solidaire-a-nuku-hiva/?fbclid=IwAR33AZXyeWaxuQD-6OFfhNy6JknUaLpTqtkN1Hipd6InvDJ0hEHbNM38UM0>

Pihama, L. (2015) Kaupapa Māori Theory: Transforming Theory in Aotearoa. *Kaupapa Rangahau: A Reader: A collection of readings from the Kaupapa Rangahau Workshop Series (pg 5-16)*. Te Kotahi Research Institute

Poata, T. R. (1919). *The Maori as a fisherman and his methods*. W.B. Scott & Sons.

Porter, D. (1970). *Journal of a Cruise Made to the Pacific Ocean*. Gregg Press.

Pukui, M. K. & Handy, E. S. C., (1978). *The Polynesian family system in Ka‘ū, Hawai‘i*. Rutland, VT: Tuttle.

Rallu, J., (1992). From decline to recovery: the Marquesan population 1886-1945. *Health transition review: the cultural, social and behavioural determinants of health*. DOI: 10.2307/40651983

Randall, J.E., Earle, J.L (2000) Annotated Checklist of the Shore Fishes of the Marquesas Islands. *Bishop Museum Occasional Papers*. 66(1).

Robarts, E. (1974) *The Marquesan journal of Edward Robarts, 1797-1824* (G. Dening, Ed.). Australian National University Press.

- Rolett, B.V. (1998) *Hanamiai: Prehistoric Colonization and Cultural Change in the Marquesas Islands, East Polynesia*. New Haven: Dept. of Anthropology and The Peabody Museum Yale University.
- Ryser, R. (2011). Indigenous and Traditional Knowledge. *Berkshire Encyclopedia of Sustainability 5/10, Ecosystem Management and Sustainability*.
- Sinoto, Y. 1970. An archaeologically based assessment of the Marquesas Islands as a dispersal center in East Polynesia. *Pacific Anthropological Records* 11: 105- 132.
- Smith, L.T. (2015) Kaupapa Māori Research- Some Kaupapa Māori Principles. *Kaupapa Rangahau: A Reader: A collection of readings from the Kaupapa Rangahau Workshop Series (pg 47-54)*. Te Kotahi Research Institute
- Smith, L. T. (2012) *Decolonizing methodologies: Research and indigenous peoples*.
- Stevenson, R. L. (1987) *In the South Seas*. The Hogarth Press.
- Suggs, R.C. (1961) *The Archeology of Nuku Hiva, Marquesas Islands, French Polynesia*. New York, American Museum of Natural History.
- Tecun, A., Hafoka, I., 'Ulu'ave, L., 'Ulu'ave-Hafoka, M. (2018) Talanoa: Tongan epistemology and Indigenous research method. *AlterNative*, 14(2) 156-163  
<https://doi.org/10.1177/11771180118767436>
- Thaman, H.K. (2003) Culture, teaching and learning in Oceania. *Educational ideas from Oceania*.
- Thaman, K. H., (2003) Decolonizing Pacific Studies: Indigenous Perspectives, Knowledge, and Wisdom in Higher Education. *Contemporary Pacific*, 15.
- Titcomb, M., & Pukui, M. K. (1972). *Native use of fish in Hawaii*. Honolulu: University of Hawaii Press.
- Titcomb, M. (1979). Native Use of Mairne Invertebrates in Old Hawaii. *Pacific Science*. 32(4). Honolulu: University of Hawaii Press.
- Thomas N. 1990. *Marquesan Societies: Inequality and Political Transformations in Eastern Polynesia*. Oxford: Clarendon Press.
- Tunufa'i, L. (2016) Pacific Research: Rethinking the Talanoa 'Methodology'. *New Zealand Sociology*. 31(7).
- Vaioleti, T. (2006) Talanoa Reseach Methodology: A developing position on Pacific Research. *Waikato Journal of Education*, 12.

Vaioleti, T. (2013). Talanoa: Differentiating the talanoa research methodology from phenomenology, narrative, kaupapa māori and feminist methodologies. *Te Reo*. (56/57)191-212

Viatge, J., (February 2020) *Deux zones de pêches interdites créés à Ua Huka*. Retrieved from:

<https://www.tahiti-infos.com/%E2%80%8BDeux-zones-de-peches-interdites-creees-a-Ua->

[Huka\\_a189169.html?fbclid=IwAR0KHaCWfuSsZPDBKTIBLQRbNmGqmb3swqF-](https://www.tahiti-infos.com/%E2%80%8BDeux-zones-de-peches-interdites-creees-a-Ua-Huka_a189169.html?fbclid=IwAR0KHaCWfuSsZPDBKTIBLQRbNmGqmb3swqF-)

[6eINlp0liGFS-9L\\_sXmuDt0](https://www.tahiti-infos.com/%E2%80%8BDeux-zones-de-peches-interdites-creees-a-Ua-Huka_a189169.html?fbclid=IwAR0KHaCWfuSsZPDBKTIBLQRbNmGqmb3swqF-6eINlp0liGFS-9L_sXmuDt0).