

**A healthy land produces a healthy people: the importance of pilina
(relationship) with place and community through ‘āina education
for a more sustainable future**

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PROFESSIONAL INTERNSHIP TRACK

By

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Abstract

Hui Mālama i Ke Ala ‘Ūlili (huiMAU) is a community-based grassroots non-profit organization started by lineal descendants of Pa‘auilo with a passion to return to their ancestral lands and in doing so bring back a sense of community as well as abundance to their lands and people. The objectives of my work with huiMAU was to principally help our communities with building pilina (relationship) to place and one another. The way I went about this was through place-based and Hawaiian-cultural centered educational initiatives primarily focused in mālama ‘āina (land restoration) work and ancestral Hawaiian practices at our Koholālele work site. My work changed everyday, but the bulk of it centered in helping to host groups at our Koholālele work site and on some days at our KaHua work site. I also helped to piece together the microbe story of Pa‘auilo by collecting fresh and saltwater samples in and around these sites to help huiMAU staff understand baseline data with water quality as an indicator of ahupua‘a health in this region of Hāmākua Hikina (east Hāmākua). This microbe story may help us find connections between the microbes present or absent throughout the year and the arrival of different species such as the koholā (humpback whales) and the kōlea (Pacific golden-plover) as well as various environmental conditions including Poli‘ahu (snow), winter storms, and drought. The water sampling and associated microbe analysis will serve as a way to assess the restoration work that we have been conducting as well as overall ahupua‘a (small traditional land division) and ecosystem health. My project supported huiMAU and made more time available for huiMAU directors to focus on other aspects of the organization. In working with huiMAU I learned that to be able to care for a place, we need to first become intimate with that place, its history, its stories, its place names, its important characteristics, its plant and animal people, its winds and rains and become familiar with its many faces throughout different seasons. As a part of my internship, I also delved into ethnographic research of Makahanaloa, the ahupua‘a I live in, to be able to first and foremost understand my home and additionally helped to generate ideas on how to best form a community-based grassroots organization, similar to that of huiMAU, but instead for the people and land of Makahanaloa located in the former sugar plantation town of

Pepe‘ekeo. Place and cultural-based education can have significant positive impacts on student achievement and well-being, student and teacher involvement in their communities, and can help increase overall community and ecosystem health. With Hawai‘i being home to one of the most resilient indigenous communities with an ever-ongoing culture that can adapt to the many changes to come, centering education in place and its people is the best way to lead our communities to a point of thriving and becoming one with the land and one another. Through my University of Hawai‘i at Hilo Tropical Conservation Biology and Environmental Sciences (TCBES) internship, I was able to fulfill my objective of learning how to engage with community as we do at huiMAU, and also learning about and implementing different techniques to carry out ‘āina education and various ways to assess restoration impact. In addition, I have learned that the interaction between people and culture is of utmost importance in returning a pono balance to ‘āina (land, that which feeds) rather than the typical western view of conservation with minimal human/‘āina interaction.

Table of Contents

Acknowledgements	1
Abstract	2
List of Tables	5
List of Figures	5
Introduction	6
Background	6
<i>Traditional education in the United States</i>	7
<i>Place-Based Education for Students</i>	8
<i>Place-Based Education for Teachers and Overall Communities</i>	8
<i>Indigenous Community-Based Education</i>	9
<i>Place-Based Education, Community Health and Overall Ecosystem Health</i>	10
<i>Aloha ‘Āina and ‘Āina Education</i>	11
<i>Information about host organization</i>	12
Purpose of the Professional Internship Project	14
Graduate Student Learning and Professional Development Objectives	14
Internship	16
<i>Role</i>	16
<i>Responsibilities</i>	17
<i>Expectations of a Professional Master’s Internship</i>	18
<i>Timeline</i>	19
Approach	21
Outcomes	35
Discussion	43
Conclusion	45
Literature Cited	47
Appendices	50

List of Tables

Table 1. Timeline of Tasks Accomplished

List of Figures

Figure 1. Map of Hawai'i island showing general location of Koholālele & Pa'auilo work sites in Hāmākua Hikina.

Introduction

Background

In a healthy relationship with ‘āina, that which feeds us physically, mentally and spiritually, come(s) pono (righteous) stewardship practices and the protection of what we hold dear — those that came before and those who have yet to come. The predecessors and the future generations I am referring to, come in the form of all the various species of plants, animals, insects, “non-inanimate objects” such as pōhaku (rocks), and all of earth's processes and elements. This healthy relationship with ‘āina starts with education. In order to properly educate and create the change that we need for ‘āina to once again prevail, we must build relationships to our plants, animals, and ecosystems, like those that we share with our human family members, understanding that each other’s survival is integral to the relationship that we share. The healthy relationship that is needed is exhibited in indigenous peoples and cultures around the world. In our case, viewing science, management, and education through a native Hawaiian cultural lens while incorporating ancestral knowledge and Hawaiian life ways in the form of concepts, values, practices, knowledge, and language, will supply us with the tools needed to face the many challenges that the future generations will have to adapt to. I believe that pilina with ‘āina can be established through place-based cultural and environmental education leading to improved community health, ecosystem health as well as a better functioning world. These ideas will be expanded upon with a focus on the importance of place-based education.

The remainder of this paper will be written with a Hawaiian world view. ‘Āina in general, plants, animals, pōhaku and other non-inanimate objects will be personified and referred to as plant, animal and rock people. In this worldview, all of these have life within them and are ‘ohana so they will be referred to as such. When referring to ‘āina, it will be inclusive, referred to as “our ‘āina,” instead of “the ‘āina.” This exemplifies that in the Hawaiian worldview, kānaka (people) are an important part of ‘āina and equal, if not inferior to all other forms of life. The ‘ōlelo no‘eau (Hawaiian proverb) “he kauā ke kanaka, he ali‘i ka ‘āina,” the land is chief and people merely its stewards or servants (Pūku‘i & Varez 1983), demonstrates this way of thinking. As such, kānaka

are not placed above or apart from 'āina as is typically done in general conservation management.

Although I was born and raised here in Hawai'i, genealogically I am connected to the lands of Algeria, Morocco, Saudi Arabia, the American continent and Europe and connected to the Amazigh people, the Arabic people, and the Vikings among a few others. I am also connected to the places where I have lived which include France, Costa Rica and Colombia. Although I am not of native Hawaiian descent, my piko or center is here in Hawai'i and I choose to identify myself and the way I live my life with the values and traditions of the Hawaiian culture. Through a Hawaiian stewardship training program called Hālau 'Ōhi'a, Aunty Kekuhi Keali'ikanaka'oleohaililani teaches us that for those of us who are not of Hawaiian origin, although we may not be genealogically connected to this land, we are a part of this place and connected to it because we drink the water from this land, we breathe the air that comes from our forests and eat of this soil. This then makes us accountable to care for this place. So when I refer to a Hawai'i worldview, I'm not implying that you need to be of Hawaiian descent to view 'āina in this way and care for it as such.

Traditional education in the United States

The education system in the United States has remained much the same over multiple decades while our Earth and human society has changed in endless ways. Key issues are not being addressed in an appropriate manner and this may be a result of the stagnant form of education we have been receiving in present day school systems. Education is currently focused on supporting individuals and encouraging competition between individuals rather than encouraging students to work together as a collective. This has been proved to be ineffective (Gruenewald 2003). Forced standards, assessments and regulatory testing that rely on teachers to be the only primary sources of information and exert complete control over students are all factors that have been inhibiting the implementation of more suitable forms of education, with environmental education being one of them (Smith 2007). Cultural and place-based education is

a way to challenge these regulatory systems that have been holding students back from connecting to their environment (Smith 2007).

Place-Based Education for Students

The advantages of place-based environmental education for students and teachers alike are countless. It has been shown that place-based education not only increases student achievement in a range of disciplines, but also increases student interest and participation due to its authenticity and unique approach (Powers 2004, Howley et al 2011). This type of teaching gives students a desire and excitement to learn more in this fashion. It has already been shown that rates of student achievement as well as overall student behavior in schools increase when the environment is at the center of teaching (Lieberman and Hoody 1998). Place-based education often comes in the form of service-learning where students are given the opportunity to participate in hands-on learning outside of the classroom.

No individual is created the same, which results in individuals having different skills and in turn different methods of learning. Another advantage of place-based and environmentally focused education is that it accommodates individual students' unique abilities which can relate to various forms of learning. Furthermore, environmentalists and psychologists believe that place-based education could be linked to how children interact with their environment (Zelesny 1999). Place-based education helps students develop knowledge, as well as understanding and appreciation for their natural surroundings (Lieberman & Hoody 1998). This behavior has long since been believed to be influenced by greater awareness gained through environmental education (Zelesny 1999).

Place-Based Education for Teachers and Overall Communities

Place-based education also benefits teachers in various ways. It has been proven that it encourages them to teach and enables teachers to be more collaborative with one another as

well as cross disciplinary (Lieberman & Hoody 1998, Powers 2004). More time spent outdoors is also said to help control pain and stress (Louv 2008). Place-based education can also lead to teachers and students being more active in their communities (Powers 2004). If teachers and students are more active members of their community, they are likely to also be more active in helping to write testimony for environmental causes. When more testimony is written, this likely leads to greater success of legislation in favor of protecting natural resources or increasing funding which is directly related to greater ecosystem health.

Teacher-student as well as parent-child relationships improve with place-based education which can also lead to closer relationships between schools and governments and increased community demand for student involvement (Powers 2004). We hope that this improved relationship between schools and government could result in the form of funding for internships and mentoring programs for youth. More supported young individuals could lead to more informed and involved adult community members, which we hope will also be reflected in the environment in which these communities live. In actively working with communities, environmental and cultural place-based education may help to extend the younger generation's attention beyond the classroom and put them in a place to help come up with solutions to social and environmental problems their communities currently face (Smith & Sobel 2010).

Indigenous Community-Based Education

Indigenous community-based education can help connect emotions with education and real-world life (Clover 2000). Great concern has been voiced for some time in terms of the disconnect between people and their environment (Kudryavtsev et al. 2012). Working on and with the land in one's own community utilizing ancestral practices helps to build a relationship and connection with one's responsibilities on and to the land. These everyday practices broaden opportunities for local and Native Hawaiian students to rise up and take action with 'āina and community at the center (Peralto 2018).

Indigenous peoples of the world have been facing a number of serious and complex environmental issues within their territories. This may be due to the fact that many post-secondary environmental education programs globally are slow to adopt curriculum and develop programs to meet the needs of these indigenous students and their communities (Simpson 2002). With this in mind and due to colonization which stripped most native peoples of the fiber of their culture — their language and their land— and forced them into a western education system, it is not surprising that there has been a grave disparity in the educational success between indigenous and non-indigenous students (May 1999). In more recent years, however, there has been a shift in the education world that involves reclaiming and revaluing indigenous languages and cultures. Community-based education is a system that puts indigenous languages and cultures at the center of learning with a goal of retaining and strengthening these resilient cultures. Cultural and place-based education links the importance of indigenous and localized knowledge with developing a sense of place (Clover 2000). These types of education approaches have had a dramatic positive effect on the educational success of indigenous students (May 1999). Additionally, the idea of a quadruple bottom line, which defines sustainability with a focus on social, environmental, economic, and cultural concerns, emphasizes the importance of drawing strength from and being respectful of culture, in our case, Hawaiian culture in order to achieve sustainability (Chirico & Farley 2015). Therefore, it can be implied that if culture serves as a core foundation for place-based education, this will lead to our communities becoming more sustainable and interdependent.

Place-Based Education, Community Health and Overall Ecosystem Health

Place-based education has also been linked to increased mental health (Moore 1997). It has been hypothesized that the increase in rates of obesity in the United States could be linked to the decrease in outdoor activity ranging from exercise to walking in the forest (Louv 2011). Nature is said to also enhance self esteem and with its boundless space, encourages healthy development, and stimulates imagination in children (Moore 1997). It has been suggested that first-hand experiences in the environment may contribute to children's emotional connection to

the world (Kudryavtsev et al. 2012). Furthermore, it has been suggested by scholars that sense of place defined through place meaning and place attachment fosters pro-environmental behavior, and related emotions, attitudes, and behavioral intentions, which is an important goal of environmental education (Kudryavtsev et al. 2012). Creating a bond between people and places can help people feel more accountable for the environment and lead to greater overall ecosystem health. Place-based environmental curricula are needed so that education may actually have an effect on community and ecological health in the places that people live (Gruenewald 2003).

Place-based education helps students connect to the natural world, making themselves a part of the environment instead of the more modern and common way of thinking — humans being apart from the environment and even superior. Engagement in place-based environmental education may lead to improved community vitality and ecosystem health as well as overall resilience (Sobel 2004). This in turn has a great affect on community health. It has been proven that students who spend more time outside have improved health conditions compared with those that stay inside. Furthermore, through an indigenous perspective, it is important that intergenerational learning occur (Berkes 2009). Bio-cultural approaches to education can also impact ecosystem health by helping with conservation (Donatuto et al. 2014). Incorporating indigenous cultures and perspectives can in turn help form resilient communities and ecosystems in the face of change (Kawagley & Barnhardt 1998).

Aloha ‘Āina and ‘Āina Education

‘Āina education, a term coined by Dr. Maya Saffery, incorporates indigenous community-based education and place-based learning with Hawaiian epistemology and culture serving as a core foundation upon which to build. Āina education also involves learning the history of place, the ancestral place names and about the significant or storied places nearby (Saffery 2019). It involves learning the names and characteristics of the plant and animal people that live in a place as well as the significant winds and rains of said place, the oli (chants), mo‘olelo

(ancestral stories & historical narratives), and any other practice that enables one to become intimate with every life form that calls that place its home. These practices give us a better understanding of place and the beings that inhabit it so we are better able to care for them. ‘Āina education differs from place-based education as it doesn't just take place outside, but involves the people and culture of the place whereas place-based education can be done at a mālama ‘āina site but would merely mean doing an activity that could be done inside, outside at that particular place (Saffery 2019). ‘Āina education incorporates the people who inhabit that place and call it home as well as their history and culture, in our case Hawaiian epistemology.

In conclusion, studies indicate that place-based education can improve the physical and emotional health of students, furthermore, indigenous community based education can lead to communities becoming more sustainable, resilient, and interdependent. By carrying out ‘āina education in Hawai‘i, this then is the way that we can best reach and communicate with people of Hawai‘i to ensure a thriving people and biota that will support the survival of many generations to come. ‘Āina education is the answer because it helps with all of these things: it helps to retain resilient indigenous cultures like that of Hawai‘i, increases community and ecosystem health, helps our communities become more sustainable and independent and makes people feel more accountable to ‘auamo (carry out or fulfill) their kuleana.

Information about host organization

Hui Mālama i ke Ala ‘Ūlili: Serving as a model for a future non-profit in Makahanaloa

Hui Mālama i Ke Ala ‘Ūlili (huiMAU) is a community-based grassroots non-profit organization started by ‘ohana of Hāmākua Hikina in 2011, that envisions the people of Hāmākua being able to once again become nohopapa (dwell in one place for many generations) by becoming firmly rooted in their kuleana and a greater understanding of ‘āina and their place. Leading by example, huiMAU hopes to encourage others around Hawai‘i to do the same. HuiMAU does mālama ‘āina work throughout the ahupua‘a of Koholālele and Pa‘auilo (Figure 1) and also runs

an after school mentorship and summer program for youth of Hāmākua (Hui Mālama i ke Ala ‘Ūili).



Figure 1. Map of Hawai'i island showing general location of Koholālele & Pa‘auilo work sites in Hāmākua Hikina (Hui Mālama i ke Ala ‘Ūili).

Their mission is:

Ho ‘omau i ke kuamo ‘o pono: *To re-establish the systems that sustain our community through place-based educational initiatives and ‘āina-centered practices that cultivate abundance, regenerate responsibilities, and promote collective health and well-being. In doing so, we are empowered to continue on the pathways and traditions of our kūpuna, and establish new pathways for the present and future pono of our ‘āina and ‘ohana of Hāmākua (Hui Mālama i ke Ala ‘Ūili).*

Their vision outlines how they foresee fulfilling their mission over the years:

***Noho papa Hāmākua:** Starting with the reestablishment of Koholālele and Pa‘auilo as safe places of refuge and learning, Hāmākua Hikina fosters a vision of strength and deep intellect for kānaka, and empowers ‘ohana with the capacity to live and thrive in Hāmākua for generations—with deep aloha and kuleana for the ‘āina and ‘ohana to whom we belong, and with great expertise in regenerating and maintaining the systems that feed us physically, intellectually, and spiritually (Hui Mālama i ke Ala ‘Ūlili).*

My professional wandering has led me into an internship experience with huiMAU. They share the same vision of an abundant and thriving Hawai‘i with people who share an intimate relationship with ‘āina in knowing how to care for ‘āina appropriately and an environment that reflects this relationship.

Purpose of the Professional Internship Project

The objectives of my work with huiMAU was principally to help our communities with building pilina to place and one another through what has been coined as ‘āina education or aloha ‘āina. At huiMAU this principally happens through hana or hands-on work at one of the two work sites: KaHua (located in the ahupua‘a of Pa‘auilo) & Koholālele. The activity may be mālama ‘āina, actively restoring the land, or could involve building pilina with native plants by making traditional tools, foods or other types of provisions with them. As I host groups and help to restore these lands, my goal has been to share the understanding of how our place works and the intimate relationships that come with it, with hopes that visitors will leave with a sense of pilina to this place, but will also want to do the same for their place when they return home, creating multiple aloha ‘āina hubs across Hawai‘i. Another way I built pilina with place was through learning its history through the microbes that inhabit the fresh and saltwater bodies that surround the area.

Graduate Student Learning and Professional Development Objectives

‘A‘ohe pau ka ‘ike ma ka hālau ho‘okahi (Pūku‘i & Varez 1983). Like this ‘ōlelo no‘eau states, not all knowledge can be attained or learned from one school, the same can be said for my

graduate student learning while in the University of Hawai‘i at Hilo Tropical Conservation Biology and Environmental Sciences (TCBES) program over the past two years. I have learned from many people and places in various capacities. My professional development objectives encompassed how to become a better ‘āina educator and become a stronger bridge between multiple communities and perspectives to help to improve our overall collective community health, which in the end helps not only our people, but also our ‘āina.

Something else I have identified during my time as a graduate student is that often enough the people doing mālama ‘āina in a particular place are usually not of that place. They are not lineal descendants of said place, were not raised in that place or are not necessarily living in that place and a part of the community in that way. As people who mālama ‘āina, we often engage with others who also mālama ‘āina and share the same values and ideals but quite often in our own communities, the ones that we live in, were raised in, or are lineally connected to, there exists a disconnect. This disconnect is between people such as neighbors with one another, and also between people and ‘āina. Based on this disconnect, another objective of mine has been to understand the barriers that keep people of place from doing mālama ‘āina and working in the places they are from or have been raised in. I’ve pondered on how best to interest the people in our very own communities to become interested and even passionate about caring for their place. This could be anything from changing small habits such as buying local or organic products or products with less packaging, to completely transforming lifestyles by doing things like planting our own food and making our own medicines and other important provisions. We often have these conversations and take action in the communities in which, and with, the people of whom we are most comfortable and share similar values and perspectives with, which doesn’t seem to have the kind of impact we want to see, as we are just “preaching to the choir.” It is time that we expand out of these communities and extend our message of a momona (fertile and promising) collective future to those with whom we may disagree — those who are our next door neighbors, our co-workers, our classmates, our healthcare professionals. Reaching out to all members of our communities with whom we may disagree, is an important place to start if we really want to change how ‘āina is going to be cared for and what mālama

‘āina will look like in the future. To be able to even engage in conversation, we need to have opportunities to build pilina.

Another objective of mine has been to do work in the wao kanaka (the realm for people), the wao (realm) that was once dedicated to kanaka and transformation by the use of, and for, kanaka and move out of the wao akua (the realm of the gods). Oftentimes conservation and restoration take place in the wao akua, a realm that was once and continues to be dedicated to the akua (the gods). No one would dwell in this realm and few people would frequent it. As such, these places would only be visited for very specific reasons such as gathering wood, feathers, forest plants, or wa‘a (canoes) for special ceremonies and other functions (Peralto 2018). We are now altering these places that we were never supposed to frequent. Why not return to the wao kanaka, the realm where the people lived and the realm that was designated for transformation through the cultivation of land to help sustain our communities.

Hālau ‘Ōhi‘a, which will be described in the approach and outcome sections of this paper, has also been a huge motivator and contributor to my teachings during the time that I have been a graduate student and has helped to shape my perspective and reach my overall professional objectives.

Internship

Role

I am humbled to have served as a research assistant helping huiMAU collect and process water samples for various kinds of microbes, to serve as a volunteer huiMAU crew member, and to now be employed by this organization as their ‘Āina Education Coordinator. The various responsibilities I had and activities that I helped with will be further detailed in the following, responsibilities and “approach sections. My role as a staff member of huiMAU has also been to kāko‘o (support) huiMAU in whatever way and capacity is needed to fulfill our organization's mission, vision and goals. I am very fortunate to have been able to learn more about huiMAU

and how to develop an organization that stems from 'āina and culture with community at its center.

General Background of Work Site & Hana (work tasks)

The site is located on the Hāmākua coast in the small plantation town of Pa'auilo hosting a small population of about 600 residents. HuiMAU activities and work are focused on the specific ahupua'a (land divisions) of Koholālele and Pa'auilo where the founding families of the organization are genealogically rooted. The majority of my work has been done in the ahupua'a of Koholālele which starts in the ocean near shore and reaches an 8,000 foot elevation on the slopes of Mauna Kea. Our organization is restoring close to 300 acres ma kai (on the ocean side) of the Hawai'i Belt Road highway which was once dominated by sugar cane and in more recent history (late 1990s) transformed into eucalyptus plantations. The four water sample sites are located in the ahupua'a of Koholālele and Pahuki'i. Stream samples are collected at Lepelau, Kalapahāpu'u and Waihalulu. Ocean samples are collected at the Koholālele landing.

Responsibilities

- To be a communicator and program coordinator for the organization : be the main contact for potential groups to host, manage waiver form data and reflectionnaire data to support grants
- Learn and begin to teach others the place names, important recent history and more ancestral mo'olelo, rain and wind names, plant and animal information, and about cultural practices and seasons
- Become intimate with place through kilo (observation), but also allow others this same opportunity by recording weekly kilo and tracking data- getting to know traditional names of clouds, different weather patterns and phenomena as well as learning what Koholālele is like during the different malama Hawaiian lunar months) of the year

- Become intimate with place by gathering fresh and saltwater samples monthly and filtering them for their microbes in preparation to be sent to Dr. Kiana Frank's microbiology lab at UH Mānoa & the UH-Hilo Analytical lab
- Help with grant writing to secure future funding for huiMAU
- Help with food preparation to be able to feed the community of Pa'auilo
- Māka'ika'i/i'ike maka (to become intimate with a place by seeing, exploring and experiencing it) in gulches that delineate the boundaries of the ahupua'a of Koholālele
- Ceremony assistance
- HoAMa program and 'ohana night assistance
- Curriculum guide for future huiMAU 'āina educators
- Preparation for hosting groups at our HQ
- Air layering of traditional Hawaiian plants
- Native species seed collection, propagation and outplanting
- Invasive species removal and repurposing

Expectations of a Professional Master's Internship

Meaningful and Challenging Work

I set out to engage in work that would be collaborative, but to also challenge myself with individual projects I was assigned to. I hoped that I would be able to contribute my knowledge of dryland forest ecosystems, native plants and ceremony to the organization.

A Mentored Experience

An objective of mine was to work closely with my mentor and to learn about the ins and outs of the organization from them. I also hoped to be given constant feedback from my mentors so I could assess how I was doing and improve in areas needing strengthening.

Knowledge of the Agency Ecosystem

Water Sampling	x	x	x	x	x	x	x
Microbe Filtering	x	x	x	x	x	x	x
Hosting mālama ‘āina groups					x	x	x
Learning Mo‘olelo					x	x	x
‘Āina Education Coordinator handbook creation					x		
Grant preparation & submission					x	x	
Mālama ‘āina at Koholālele					x	x	x
Mālama ‘āina at KaHua					x	x	x
Food/plant harvesting					x	x	x
Food preparation					x	x	x
Facility maintenance						x	x
Hosting groups at our facilities							x
Data management					x	x	x
Community Workshops					x		x
Ceremony & Ceremony prep	x		x		x	x	x

Helping with HoAMa After School Program					x		x
Community Events				x	x	x	
Makahanaloa ethnohistorical research						x	x
Compilation of historical and cultural data of Makahanaloa to be shared with community							x

Approach

Strategies, Methods and Assessment of Each Major Undertaking of the Internship

Our organization is very versatile and as such the work we do as a small non-profit community organization with a staff of seven, five full-time and two part-time, varies from day-to-day, week-to-week, and month-to-month depending on the amount of groups we are hosting, the time of year, the needs of our community, and the needs of 'āina. Our work revolves around community and whatever it takes to support and appropriately care for our community which we see as our keiki (children), mākua and older kūpuna members that are both people, plants, animals, rocks and non-inanimate objects to which western science might not accord value. Each major task that I was a part of will be further described with methods and assessment strategies below. It is important to understand that we are a new young Hawaiian community grassroots organization and as such the assessment methods described below may not be as conventional as is usually seen in the realm of science. Assessment methods are mostly qualitative and are as quantitative they can be under the circumstances.

Ho‘onui ‘ike: I ulu nō ka lālā i ke kumu: the branches grow because of the trunk, without our ancestors we would not be here (Pūku‘i & Varez 1983)

Learning mele, mo‘olelo, hosting groups and retelling mo‘olelo and sharing about importance of mālama ‘āina and ancestral knowledge of place

Sharing the value of ancestral knowledge through group visits is a key priority for our organization; hence, was one of the most significant undertakings of my internship. This, of course, started with dedicating a lot of time to learning ancestral knowledge in forms of mele, pule and mo‘olelo. The goal of learning from these primary sources would then be to share it with community members, with a particular focus on Pa‘auilo community members as well as those of neighboring ahupua‘a of HāmākuaHikinaa (communities from Laupāhoehoe, Pa‘auilo, Honoka‘a and everywhere in between). It is important to note that the learning of this knowledge takes time. It takes kilo, pepeiao kī‘aha wai (listening with attentiveness), practicing at home, and refining through direct experience when groups come to visit. Just as every story is different, every individual and group is different (age, purpose, origin, etc.), as is their reason for visiting, so another important aspect of sharing these is learning to adapt from group to group focusing on particular interests so the message resonates best and is most effective to a given group or person.

The sharing of this ancestral knowledge would primarily be done by hosting groups at one of our two kīpuka aloha ‘āina (sites of regeneration): Koholālele and KaHua. We generally host groups once or twice a week, but this can vary by month. Some months we host as many as four groups a week and some months we may have week(s) where we do not host groups. I contributed to hosting groups from the time of September 2019-May 2020. During this time, exceptional things happened in our community that had an effect on the number of occasions that we hosted groups.

The primary way that we assess the effectiveness of our group days and analyze the retention of information by visitors is mostly done through qualitative measures. If we have inspired

visitors to want to plant the seeds of aloha ‘āina in their own homes and neighborhoods, and to want to mālama their own ‘āina and learn the stories of their places, we measure that as a success. The most common way we measure this is through direct interaction and the responses of visitors during and at the end of visits. If they are inspired to learn more about our place and their own places, they will often come up to us throughout the day and share this mana‘o (thought) or ask us questions. It can also be seen in the way that individual participants as well as groups mahalo (thank) us. We start each group day with what is called our aloha circle and end it with what we call a mahalo circle. The aloha circle enables individuals to introduce themselves to place and one another, to develop or reestablish a relationship as well as become oriented with place. The mahalo circle is our way of giving gratitude to one another, including place. Participants are asked to share one word or one mana‘o that they are thankful for. When we hear words like kuleana, mo‘olelo, ‘ohana, kaiāulu (community) and related terms this shows us that the knowledge we have shared will be nurtured (ua ‘apo ‘ia- they understood). Based on this interaction and if people express to us that they want to come back, we feel that we have succeeded in our mission with that particular group.

Other days when we are not limited by time, we assess the effectiveness of our curriculum by using one of two quantitative forms; a process named Sensemaker and a reflectionnaire. Sensemaker asks people to create a story of their experience which makes them connect to it personally. This tool helps us collect stories of those that go through our program and turns them into data so we can see patterns across different individuals and groups. It also serves as a type of survey which seems more like a game than an actual evaluation. The data from these are used to improve our program and to collect demographic data. Our reflectionnaires are closer to the conventional survey, but focus more so on kilo, difference in perception, knowledge gained through place and mālama ‘āina, future vision and draws on the depth of people’s connections to their own homes. It also enables participants to respond through art, and not just writing. Additionally, questions are posed in both English and ‘ōlelo Hawai‘i to be more inclusive and enable participants to respond in whatever way is most comfortable to get a real sense of what the experience was like.

I ola 'oe, i ola mākou nei: My life is dependent on yours and your life is dependent on mine (Pūku 'i & Varez 1983)

Mālama 'āina and growing collective abundance. Getting to know Koholālele and Pa 'auilo through mālama 'āina, plant cultivation, and kilo

The land that we mālama in Koholālele was clear cut in the late 1800s to allow for sugar to be planted. This means that most native forests were destroyed as were native varieties of food crops that the communities depended on for survival. These plants were then replaced with sugar which persisted for over a hundred years and was later replaced with eucalyptus. Due to the history of sugar and eucalyptus, the land was heavily poisoned to combat pests, species other than the one being cultivated and to help with the processing of these plants (Peralto 2018). When our hui began, there was just a small clearing which was used by fishermen for parking. The founding 'ohana of our hui worked very hard with hand tools and their own bare hands, not utilizing any type of heavy machinery, to open up this space to help our native species once again have life in these lands - their ancestral home. Displacement of 'ōiwi kanaka (native people) and 'ōiwi plant people occurred simultaneously, so the way that we approach the restoration of 'āina is not just to make space for our plant people to thrive again, but in doing so, to also make space for our people to thrive again as we know that the health and well being of each are one and the same (Peralto 2018). When I began working with the hui, the 'ohana and first crew members had already taken back about an acre and a half of land and had begun the cultivation of native species. During the time of my internship we further advanced this and opened up another half acre of space. This involved a wide variety of tasks. Our first kuleana was to get to know Koholālele to understand its needs and in turn the needs of the local community. Based on the needs of place and community, we did mālama 'āina accordingly. A major need for this community continues to be the availability of resources, in particular food and medicine. This meant that we needed to cultivate these plants, but first create more space for these plants to grow.

This work began with the clearing of iron wood trees that exist on the coast, near, around and in our māla (cultivated space) and the manual removal of guinea grass to which we dedicated and continue to dedicate a lot of our time to. Although the easiest way to be rid of these invasive plant species would be to use herbicides, our community members will be ingesting these plants and we do not want to feed our communities this kind of poison nor continue to poison our land, so instead we have continued to do everything by hand with the use of no chemicals to promote the health of ‘āina. There are also many other ecological, physiological, social and spiritual benefits of restoring ‘āina in this new way. The non-use of these modern tools is a major reason that this kind of mālama ‘āina is done carefully and takes time. Doing things in this new fashion rooted in old ways requires us to not only weed whack the areas crawling with guinea grass once, but many times, sometimes as much as ten or more. This also includes keeping up with maintenance until the seed bank no longer holds guinea grass seeds. After initially weed whacking a space, we will go in, often with groups and do what we call “root ballin’,” digging out the individual root balls and guinea grass clumps with hand picks. As guinea grass is a virulent plant, whenever it rains, guinea grass keiki (seedlings) will start to pop up or older clumps will start to grow back. Groups are also essential in helping us cover larger spaces to handpull every individual seedling. It is important to note that without the use of herbicides, pesticides and heavy machinery, we are unable to restore acres of land a month, however the area that is restored has far more value and benefit to our plant, animal and people communities.

Another important aspect of our work is nurturing the plants that have been previously planted and are already growing at Koholālele. This takes keen observation of the different species and different individuals to attend to their every need. For many plants like lā‘ī (ti-leaf), we care for them by pulling back the dead or dying leaves, as well as those that have been severely impacted by wind. For mai‘a (banana), this requires always being aware of the current phenology of the mai‘a as the tops of the plants will become heavy and may need braces as they start to fruit. Even if the mai‘a may not be fruiting, severe winds might push individual trees down, so we need to be aware of this. While removing a fallen tree, we learned that a pest, the banana root borer, had been attacking the mai‘a, boring into the corm and weakening the plant,

making it vulnerable to being knocked down by even the slightest wind. The hala plant grows best when the older green leaves are trimmed back. Though the learning curve has been substantial, it has been so fascinating learning more about these plants that we are very familiar with in more finished forms, and how best to care for them. Furthermore, it has been very interesting learning phenology and when to collect certain seeds, how to collect them and then how to propagate them.

The best way to keep the invasives away is to plant natives in their place to hopefully shade them out and veer them away from returning. The first step in this is acquiring these plants. During the beginning phases of my internship with huiMAU, we purchased plants from a few native plant nurseries. We had the fortune of taking part in a professional development workshop where Allie Atkins taught us various forms of plant propagation and also helped us to set up our own irrigation system. This gave us the capacity to collect more seeds, propagate more plants and increase our ability to care for the plants, as we would not need to hand-water them multiple times a day. Some of the plant propagation techniques she taught us was how to air layer plants like hau (*Hibiscus tiliaceus*) as well as how to make cuttings of naupaka (*Scaevola taccada*) and how to propagate plants from cuttings using root tone. Not only was this very fulfilling to learn, but it was also really important because it has helped relieve the monetary pressure of having to buy naupaka and other plants that we can be propagated by cuttings. Thanks to this new skill, we will now always be able to have our own supply of naupaka and be able to dedicate our limited funds to other important sources besides naupaka seedlings. We have made cuttings and transplanted multiple times now and although a lengthy process — plants take a few months until ready to go in the ground — we have had great success! Our Executive Director, No‘eau Peralto, also taught us how to make and prepare cuttings of ‘awa (*Piper methysticum*), as well as propagate them. This has made this special medicinal plant even more available to community members as one single plant can create over 20+ individual plants through cuttings which also means that that many more community members can have the chance to cultivate ‘awa in their own māla and have this medicine on hand whenever

needed. Furthermore, ‘awa is a really important resource for our hui to utilize as ho‘okupu (offerings) in ceremony.

Planting native species and varieties to bring back health to these lands is another significant kuleana that I have been able to take part in. As we believe in the ways of old and the teachings of those that have come before us who shared an intimate relationship with these plant people, it is important to us that we follow the Kaulana Mahina (Hawaiian Lunar Calendar), and plant and harvest on the appropriate mahina (moon). Having previously worked in wet and dryland forests, I am not as familiar with the coastal cliff landscape where Koholālele lies, or even working close to the ocean, so choosing what species to plant, where to plant them and knowing what species like to grow together was another great learning experience. The land that we are restoring in the ahupua‘a of Koholālele is in the wao kanaka, so many of the plants that we have planted are plants that are very useful to kanaka, many of them Hawaiian varieties of canoe plants. Working with these new plants enabled me to get to know them and taught me a lot about the relationship that they share with kanaka, but also about how they grow and how to care for them as I have never worked with most of these species. Working with these species also enabled me to learn the value of plants that may not be biologically considered “native,” which has helped me grow in broadening my perspective and also enlarging my group of plant friends.

In addition to our normal work kuleana, our crew had the opportunity to help supervise, share our knowledge with, and motivate a senior Kanu o ka 'Āina New Century Public Charter School student, Dylan Velez who is interested in environmental science and agriculture. His individual senior project was to experiment on various plants with fermented plant juice (FPJ) made from mai‘a. Working with him every Friday this past Spring was not only a learning experience for him, but it was also a learning experience for us. Among other things, Dylan taught us how to make FPJ from mai‘a and that is the fertilizer we now use for our plants down at Koholālele.

While carrying out the different elements that make up the mālama ‘āina part of our work, we are constantly assessing ourselves and our actions to make sure that the ‘āina and individual plants and animals are not just surviving but thriving. It was very apparent at times which plants were doing well and which weren't doing so well. As explained above, for those not doing as well, our methods of caring for them were adjusted. As we are not experts and are still getting to know the ‘āina of Koholālele and a lot of the plants of the wao kanaka, we will continue to assess our work and try and change our approach the more we see impact and the more that we are able to interact with plant experts and do research. We see progress in front of our eyes every day, whether it be a baby hala (*Pandanus tectorius*) plant growing big and healthy, a māmaki (*Pipturus albidus*) coming back from a vulnerable state to a more healthy and strong one, or guinea grass and ironwood trees disappearing and being replaced by natives. Groups who have previously visited also help us assess the work that we are doing. They were able to see what Koholālele looked like just a few months ago, a year or even multiple years before and are always blown away by the aloha that is put into the ‘āina and the mālama ‘āina that is a product of that. This, as well as hō‘ailona (tokens of recognition) from the elements and different plant and animal species reassure our hui that we are all in the right place and taking care of ‘āina in the appropriate manner. There is much work ahead and we are ready and excited to continue fulfilling this kuleana.

***‘O wai ‘oe? Ka ‘Ohiwai maiā Waihalulu, Lepelau, Koholālele kai, Kalapahāpu ‘u
a kekahi mau wai ‘ē a ‘e ma Hāmākua Hikina: Who are you? From which waters do you
drink? Water sampling at Lepelau, Koholālele kai, Kalapahāpu ‘u and others in Hāmākua
Hikina***

Water Sampling, Microbe Filtration & Data Collection

Water in all of its forms is life giving and in its absence can be life taking. By being able to understand the wai (fresh water) and the kai (salt water) that flows through, into and out of the ahupua‘a of Hāmākua Hikina, we can learn to understand it and help to assess the effectiveness of our mālama ‘āina restoration strategies. “‘O wai ‘oe,” is a question posed to a

person one has just met. This is not only asking what is your name, but it is asking, who you are, who your waters are. The waters from which you come (you & your ancestors), the water from which you drink. The answer to this question is not just one's name, but instead would tell us a lot about this person and their characteristics based on the kūpuna they descend from, their 'āina kūpuna from which they come (ancestral lands), and the lands that they have been raised in — the literal water they drink, their mountains, ahupua'a, the types of expertise their area might be known for, plants and animals that live there, etc. This simple initial greeting in the form of a question exemplifies the very importance of our fresh water sources. For this reason, I have been collecting both wai and kai samples during my internship. We hope that the collection of these samples will help 'ohana understand more about the pilina between different seasons, weather phenomena, customary practices, migratory species, and other plants and animals.

Water samples are collected once a malama (Hawaiian lunar month) during the anahulu of poepoe (the hawaiian lunar week of 10 days when the moon is full) at four different sites. These sites experience extreme wind and rain as well as large swells and wave activity during the winter months. The summer months host calmer and more stable conditions. A second sample is collected if extreme weather events occur resulting in ephemeral stream flow. Kilo is also noted at each time of collection recording environmental observations including wind strength and direction, swell strength and direction, precipitation, cloud cover, species phenology, and more to help to identify correlations between microbe presence/absence and what is happening in the environment.

Water samples are collected with a bucket and rope pulley system from streams and the ocean. Ahupua'a in Hāmākua Hikina are delineated by the gulches and perennial streams that once ran through them regularly. These streams would flow continuously year round, but now only flow during or after heavy periods of rainfall. This change in streamflow is likely due to deforestation in the ma uka (upper) lands. This results in stream sampling primarily occurring after or during heavy precipitation events of snow or rain. Routine samples are collected from the east and west extremities of the ahupua'a of Koholālele, the gulches and now ephemeral

streams of Lepelau (located on the westward boundary) and Kalapahāpu‘u (located on the eastward boundary), with sample sites located at about the same elevation. Routine kai samples are collected at the Koholālele landing, located on the coast of the Koholālele ahupua‘a. This means that although there are large swells during the winter months, there is usually a small protected area where samples can be collected. With safety being a primary concern, ocean samples are not collected if wave activity is extreme and conditions are dangerous. Waihalulu, a pūnāwai (fresh water spring) located in the Waipunalau stream between the ahupua‘a of Pahuki‘i and Pa‘auilo, is the last of four routine sites where samples are collected and allows us to peer into what the groundwater microbes look like. Although the streams flow when there has been consistent rain in the uplands, the pūnāwai are fed from the ground, which we can literally see dripping out of the rock. We occasionally have the chance to explore the gulches from which we collect wai by foot to try and find the source of some of these pūnāwai. Whenever we come across a new source of wai, a sample is collected. Although these samples aren't collected on a regular basis, they are important because they help us to piece together the microbe story through different ahupua‘a, at different elevations and at different times in the year.

Once collected, water samples are brought to huiMAU headquarters and processed using vacuum filtration. Microbes are collected in 0.8 μm and 0.2 μm filters per 250-500 ml of water. Dr. Kiana Frank describes the filtration of microbes with a grape analogy. The 0.8 μm filters let individual microbes or grapes pass through and are focused on capturing the bunches of grapes, while the finer 0.2 μm filter separates the bunches into individual grapes so each individual microbe can be analyzed. This can be a lengthy process, especially if there has been heavy rain and therefore a lot of sediment in the water which often clogs the filter. The filtering process of one individual wai sample can take up to 3 hours, so to speed up time efficiency along the way, the type of filter used was adjusted. The paper filters are then frozen until the time that they will be analyzed. When ample microbe samples have been collected and frozen, they are then transported to Dr. Frank's microbiology lab at the University of Hawai'i at Mānoa where analysis occurs. After microbes are collected in the paper filters, 250 ml of the water that

microbes have already been filtered out of, are sent for nutrient and trace metal analysis to the University of Hawai‘i at Hilo’s analytical lab for further analysis. Data is then inputted, stored and managed in google sheets, as well as, on paper so that two readily available copies can be accessed at any time. I have also been in charge of data management for kilo, data collection and will be a part of group data analysis whenever that occurs in the future.

Hānai- mālama i ke kanaka nui, i ke kanaka iki: Take care of all (Pūku ‘i & Varez 1983)

Learning how to better relate to place and community through launa (spending time with & talking to) with ‘ohana of the area during community workshops and events, preparing for and performing ceremonies during especially significant times of the year, lawai ‘a meetings, the HoAMA after school program as well as creating and sharing collective abundance to share

Another shared kuleana of mine was to help with and attend community workshops, community events and to help in harvesting, processing and the production of food, medicine and other provisions for ‘ohana of Pa‘auilo. Just being able to launa with the ‘ohana of the area and members of our hui was another favorite thing that I was privileged with being able to do for work. I especially appreciated talking to and working with the older generations, especially the kūpuna, and being able to hear their stories about what it was like growing up in Kainehe, Koholālele and Pa‘auilo. This helped to give me a better sense of what this place was like in the last century and what community members would like to be brought back. Many of the community workshops I assisted with and had the opportunity to attend revolved around active use of the plants we grow, whether it be learning to cook local favorites and traditional foods and later can them for preservation or to make kaula (cordage), ‘apu ‘awa (coconut shell cup to drink ‘awa with) and lei in preparation for ceremony. The skills gained in these workshops became essential in this time of the Coronavirus pandemic with limited resources available. Thanks to our training and preparation, we were able to have many foods readily available to harvest and then prepare into meals to help alleviate the stress of buying food for those in need in the Pa‘auilo community, especially the kūpuna. Being able to provide whole meals of food

from the plants that we grew and animals we raised was especially meaningful, because it was something I always strived for, and finally got to see come to fruition.

Our hui also runs a daily after school program out of the Hongwanji in Pa‘auilo. This program is called the HoAMa after school mentorship program and its main goal is to instill the values of kuleana, aloha ‘āina and ‘ohana in Hāmākua youth while providing them mentorship and giving them access to mālama ‘āina and the rich cultural history of Hāmākua Hikina. ‘Ohana nights are hosted monthly at the Hongwanji where parents, grandparents and other family members are encouraged to attend. These ‘ohana nights have individual themes and haumāna (students) in our program are able to teach or participate in different activities according to the theme, with their ‘ohana members. I was very fortunate to be able to help with a few of these where we learned about the wa‘a (canoe), voyaging and the provisions necessary as well as how to make kaula out of hau. Another ‘ohana night I assisted with revolved around kalo and the preparation of it from its raw form to pa‘i‘ai (the first form of poi), learning how to cook, skin, and pound it. I had the opportunity to engage with the HoAMa kids and kumu on a few other occasions and found these to be really valuable as it enabled me to learn a different style of teaching from the same foundation of ‘āina education, but in a different environment with haumāna and mākua of different ages. It was also really rewarding to get to know the keiki of the Pa‘auilo community better. We hosted a few grade levels at multiple times throughout the school year at our KaHua work site, and also visited one of the Paauilo Intermediate school classrooms which helped us to deepen our relationships with these haumāna on different levels, especially those that are a part of the HoAMa program.

Ceremony was another huge element of our shared kuleana at Koholālele. Uncle Nālei Kahakalau, a cultural practitioner of Hāmākua that helps to lead our hui in ceremony, says that ceremony increases our mana (spiritual energy). If ceremony increases the mana within ourselves as kanaka, this must mean that it also increases the mana of all of the elements, plants, animals, pōhaku and others that inhabit the space of Koholālele which then gives them a greater ability to be more resilient. Hālau ‘Ōhi‘a has also exemplified the importance of

ceremony and understanding and caring for a place in more than just a physical way, but engaging with place on multiple levels in a spiritual, mental and even emotional way. Ceremony provides us with this space, and also provides us the time and space to connect with those that inhabit Koholālele, to become better oriented with place, to focus our intentions and whole being on the outcome that we want to see manifested in the land, and also to give us the chance to be completely present in that moment of space and time. We perform ceremony during significant times of the year: Piko o Wākea (Fall and Spring equinox), Ke Ao Polohiwa a Kanaloa (Winter Solstice), Ke Ao Polohiwa a Kāne (Summer Solstice) and for the opening and closing of Makahiki. Although I have now only been interning with huiMAU for a little over a year, this is the most connected I have been to any place, because of all of the things described above and the chance to spend time at Koholālele during these significant times of the year and experience first hand where the sun rises at direct east, the boundaries of the path of the sun throughout the year and continuing to learn about the many faces of Koholālele through direct experience throughout our different seasons.

We assess the effectiveness of our community workshops based on attendance and the desire of ‘ohana and huiMAU members to attend other workshops. We assess the effectiveness of helping to feed our community by interacting with community members. If more community members are interested in receiving food each time, we measure this as a success, that our resources are going to those in need and we are able to broaden our reach. We assess the effectiveness of ceremony by hō‘ailona during and after ceremony as well as the response of ‘āina in the months that follow and the productivity of our crops.

***‘A ‘ohe mālama, pau i ka ‘iole: when one takes care of his goods he will not suffer losses
(Pūku ‘i & Varez 1983)***

Data management: Meeting grant deliverables and preparing a federal grant application

Although most of my days of my internship were spent at Koholālele in ‘āina, I did spend some time in the office. My time in the office was often spent recording data in terms of volunteer

information, kilo or water sampling data to help us meet our grant deliverables so our funding continues and we can continue doing this important work. Participant information would be collected on paper data sheets every time we would host any kind of group, whether it be a mālama ‘āina day, a HoAMa ‘ohana night or a community workshop. This data would then be inputted into a google sheet and hard copies would be stored in the office. At the end of each quarter total numbers of participants, total number of Native Hawaiians, total instances of community involvement and interaction would be calculated and then reported to our funders. I assessed my work by the amount of time it would take me to come up with quarterly numbers. If I needed to recount the data for a previous quarter to come up with numbers for that current quarter, this would take me double the amount of time, so I would make sure to organize the data better for the next time around.

With huiMAU being a non-profit organization and solely soft funded, grants are critically important to assuring our future. I was fortunate to have the opportunity to learn about the grant writing process through actually contributing to a grant application. I was able to help draft different sections and combine them into a concise narrative that shared our story accurately while sticking to the limited word count. What was also really beneficial was that during the same time that we were preparing this application, I was also enrolled in ED 494 Communicating Science in Hawai‘i Island Schools, which enabled me to actively use the knowledge from this class to explore science standards and relate them to the curriculum that we teach and provide. This included research as well as kūkākūkā (discussion) with mentors and friends. Preparing a federal grant is a grueling and long practice, but I was fortunate to have been given the more manageable sections to work on and to have had a wonderful teacher and experienced grant writing mentor who coached me through the entire process and gave me kuleana that had to do with things that I was knowledgeable about as well as what I was learning in school. As far as assessment goes, we will be able to know how well we did based on whether or not we get the grant. In the future I will be able to assess myself by seeing how much harder or easier it is to help prepare our next grant application.

‘O wai au? ‘O wai ‘o Makahanaloa? Who am I? Who is Makahanaloa?*Ethnohistorical research of ku‘u ‘āina ‘o Makahanaloa*

As previously mentioned, being a part of huiMAU has made me motivated to do research about the place I live in and call home, the ahupua‘a of Makahanaloa — which also includes the ‘ili of Pepe‘ekeo — in Hilo Palikū. To do this, I completed a directed studies course focused on ethnohistorical research of Makahanaloa. This is really important in helping me to connect my own roots not only to my work home, but the home I reside in. Although I have not finished my research yet, I have already learned a lot more about this place, what it was known for in the past, many of the important place names nearby and within the ahupua‘a, as well as stories relating to Makahanaloa. It was originally part of the course to visit the Bishop Museum and State archives in Honolulu for a few days to be able to delve even deeper into archival research, but due to the Coronavirus pandemic we were unable to do so. As the semester is coming to a close, I am compiling an annotated bibliography that contains all of the sources I have looked at and information I have gathered from community members which I will make accessible to any interested community members. I am also preparing a community presentation so it is ready for the next time our community is able to join together again for a Pepe‘ekeo Community Association Meeting, when I will be able to share my findings. I am really grateful for the opportunity to have been taught about different research methods, as well as to have started to get to know and launa with more members of my community. In doing so, it came to my attention that some community members had been putting together testimonies for the Public Access, Open Space, and Natural Resources Preservation Commission (PONC) to acquire the property where the Lae o Makahanaloa is located with PONC funds. The timing happened to be quite perfect and now, being equipped with a lot more research, I am excited to be able to submit a more substantive testimony supporting the importance of acquiring this piece of land and keeping it preserved and untouched for future generations.

Outcomes

Deliverables

‘Āina Education Coordinator Handbook

The primary goal was to help to provide a space for Pa‘auilo community members to connect to ‘āina in the ahupua‘a of Koholālele and Pa‘auilo, while reconnecting with their cultural heritage through the remembering of wahi pana (sacred places), mo‘olelo, mele, mālama ‘āina, and other cultural practices. The primary deliverable was to create a curriculum guide, a type of educational menu that educators who are interested in coming to Koholālele or doing any work with huiMAU could view. They would be able to browse the different curricula we offer and select those that would be best suited for their group. This would help them to appropriately align DOE standards that teachers and other educators are teaching in their classrooms with the many lessons that huiMAU has to offer. This would also help to tailor mālama ‘āina days to the group visiting at that particular instance.

During the conceptualization phase of developing this tool, it was decided that what would be of more importance for the time being, would be to create a curriculum guide and outreach day protocol for huiMAU employees, especially future ‘Āina Education Coordinators. The elements of both items are similar which will help in the later creation of the educational menu. This was a great tool for me to work on individually as well as in collaboration with huiMAU directors, as it helped to train me as the newest ‘Āina Education Coordinator. It also enabled me to be creative and add some elements that I thought would be important in the mo‘olelo shared during group visits and to add some of my background knowledge on ‘āina restoration and weed management into the routine of leading groups. It was meaningful as it helped me to deepen my understanding of Hāmākua by having to learn the mo‘olelo that I included in the handbook. The way that huiMAU understands their place and intertwines ancestral stories, poetic and figurative language and history also made it challenging to learn this skill and get a full grasp of the knowledge needed to be understood in order to be able to tell the story accurately. This is

something I continue to work on and strive for as one of my lifetime goals, to become versed in Hawaiian storytelling to ensure that these stories are passed down to future generations.

I would say that the handbook is of good quality, but after discussion with our Executive Director, might be more useful to the organization with some minor adjustments. As a part of the handbook, I transcribed two of the main mo‘olelo that we cover during group visits and also wrote out a kind of script for an ‘Āina Education Coordinator to follow from opening protocol and introductions to our closing mahalo circle. What would be of better use, however, is instead a type of layout, in bullet form rather than word for word so whoever may be in the position to host a group can share the mo‘olelo and run the day according to their own style and input their own creativity.

‘Āina Education

In the Fall of 2019, many of the groups who had planned to visit our site during that time likely decided to visit the kūpuna and other aloha ‘āina at Pu‘uhuluhulu to learn more about the Mauna Kea movement. Up until this point, our hui had never had to advertise or even reach out to groups or organizations, it was all by word of mouth. Due to this unprecedented lull in activity, our hui entered a new phase of reaching out to new groups and individuals who we felt would be able to gain from visiting our site and would be interested in the kind of work that we do. It also enabled us to reestablish old relationships with groups that had previously visited and hadn't been back for a short while. Due to this reaching out, we got an influx of groups during the end of winter and beginning of Spring. This really enabled me to see the normal pace of things at huiMAU, learn more about how to host different groups, refine the things I had already learned and gave me multiple opportunities to put my learning into action and actually practice retelling some of the mo‘olelo and lead other aspects of these group days. In addition, with the month of February being ‘ōlelo Hawai‘i month, I was also given the opportunity to practice and use my Hawaiian language skills. This took some extra preparation in translating some of the concepts and terms I hadn't previously been familiar with or refresh my memory on some of those I had once learned but were out of my current repertoire prior to the visits. Because of my

background, these group visits were particularly special to me. I learned more than I thought I could which made me even more appreciative to be a part of a hui that doesn't just talk about the importance of 'ōlelo and mo'olelo of the past, but that actually puts these into practice and makes them relevant to our communities today.

The Spring of 2020 also brought unprecedented change to the operation of our organization with the arrival of the Corona virus and as a result, public and private schools being closed, quarantine and social distancing measures being put in place and in turn the cancelation of a large number of groups that we had planned to host from the months of March-May and potentially into our busiest time of year, summer. Although our original plans changed, having such a clear schedule enabled us to improve and add to our curriculum in making sure that all members of our staff have knowledge of and are able to retell and teach some of our core mo'olelo as well as the associated lessons that come with them. It has also enabled us to be able to analyze and improve the manner in which we run groups and focus more on adapting our curriculum to different age levels and adding to it in general.

Regardless of the limitations we experienced due to the Coronavirus pandemic, we were still able to host and make an impact on a significant number of individuals and Native Hawaiians. In a 9 month period excluding summer, our busiest time of year, we were still able to host a total of 645 total individuals, more than half of them, 326 being of Native Hawaiian descent. Our goal for the year is 1000 total individuals and 500 of those with Native Hawaiian descent, and we are well on our way to meeting that number depending on how things progress with Covid-19.

'Ohiwai, Kilo & Mālama 'Āina

Another huge outcome was that the 'āina continued to look better than we found it after each work day due to our active restoration efforts. We hope that results from the microbe water analysis by Dr. Frank's Microbiology lab will confirm this with quantitative data. I expect that dangerous microbes will be present after storm events when the Kalapahapu'u and Lepelau streams will be flowing. Due to increased precipitation and storm events, I expect that there will

be higher levels of dangerous microbes like staph, during winter months in comparison to summer months. I expect that the data will show less dangerous microbes during summer months, which will help huiMAU in knowing when it is safest, in terms of microbes, for their community members to gather from the ocean at the Koholālele landing. This could also have implications for fishermen, as it would help inform them when healthier fish may be present. The outcomes of the microbe data will be used with observational data to determine if there may be a correlation with the presence of whales, the arrival of Poli‘ahu and the appearance of certain microbes due to seasonality.

Although it was not made official, we had hoped that we would also be able to have some results from the microbe analysis as well as find some correlations between the microbe data and the kilo data. Due to the Coronavirus, members from Dr. Kiana Frank’s lab in the Microbiology lab at UH Mānoa were unable to travel to Hawai‘i island to share the microbe analysis results and therefore the group discussion to draw conclusions and find correlations had not yet happened. They were additionally unable to pick up the 50+ microbe samples that have been stored in our freezer for further analysis.

An additional deliverable was the kilo data from September 2019- March 2020. Kilo data was collected once every anahulu (Hawaiian lunar week of 10 days). This data covered three realms, Papahulilani (all things related to the sky and whatever is above our head including the stars, moon, clouds, winds and rains), Papahulihonua (everything relating to Earth’s cycles including the ocean, streams, lava and pōhaku) and Papahānaumoku (all things that were born including plants, animals, people, and other life forms). The final product ended up being the summary information that google forms popped out. Because the google form that was used to record data got added to and changed many times, it was hard to be able to compare observations from all months side by side. I would say that once again the quality of this product is decent, but can be improved. I will use the next month or so to try and synthesize and summarize the data from different malama to help us visualize patterns and really be able to see the significant weather conditions or species present in a particular malama.

Through mālama ‘āina and spending time at Koholālele almost everyday, we were able to become familiar with the place in its different weather conditions. Many of the things we experienced, we imagine the plants were also experiencing. Heat, stillness, severe wind, occasional breezes, a light drizzle, a lack of water, salt being expelled from our bodies as we contributed our sweat to ‘āina. Living in their environment through different seasons and weather conditions helped us to understand how to better care for them. As there is no running water down at Koholālele we spend a lot of time watering plants by hand after they have been planted. We planted māmaki, ‘ōhi‘a, kōlea and ‘ōlapa among other native species and Hawaiian varieties. We were able to learn if these plants were suited for this moderately new environment and if there were ways that we could help them adapt. All of this happened through direct hands-on experience and without necessarily having worked with these plants in this kind of environment before. We quickly learned that the Japanese rosebeetle is a major pest to māmaki and can severely affect its growth. This taught us that we needed to mālama the māmaki in a different way and pay special attention to it. Since we do not use pesticides, we started using neem oil which proved to be pretty effective. We learned about which parts of the māla are more protected from the wind and the salt which showed us where we could or couldn't plant different species. We also encountered ‘ōhi‘a rust and thanks to visiting group members who have specialized knowledge relating to ‘ōhi‘a we learned to combat it with sulfur. We definitely learned some things the hard way. We learned that we need to be strategic with which ironwood trees growing on the coast that we choose or choose not to drop as many of them are serving as a windbreak protecting the more vulnerable native species as well as preventing erosion of the pali. We continue to learn how to best adapt mālama ‘āina techniques to this new environment and how to best deal with associated issues: our proximity to the ocean and other issues that may arise including excess salt, severe drought/lack of water, and very high winds. We are grateful for this experience and the opportunity to get to know these new plant people and this new environment better.

‘O ka mākua ke ko ‘o o ka hale: the parent is the support that holds the household together (Pūku‘i & Varez 1983)

Professional Development

In acknowledging that our learning is more inclusive when it is a collective process and we are able to learn from multiple sources, professional development was another major undertaking during the time of my internship. I was fortunate to have already been a part of the Hālau ‘Ōhi‘a stewardship program, and during my time as an intern, I was able to continue on this journey. Hālau ‘Ōhi‘a is a stewardship program that teaches participants how to integrate and practice Hawaiian life ways in mālama ‘āina. Our kumu, Aunty Kekuhi Keali‘ikanaka‘oleohaililani has made these resources accessible to all in our group regardless of their background or origin with the goal of taking better care of ‘āina. Aunty Kekuhi believes that in order to restore our nation and our people, we must first begin with the land and those that engage with ‘āina on a daily basis. Thanks to Aunty’s teachings, we have been provided with many different ways to connect with ‘āina in a Hawai‘i way and have gotten the practice in doing so. Among other things, Hālau ‘Ōhi‘a has taught me that caring for a place isn't just in the physical action of working in a place but also comes with understanding those that inhabit that place through a cultural lens, and understanding that plants and animals are ‘ohana. Along with this idea comes the concept that people are a key ingredient to helping the land thrive especially in these modern times when people have altered the natural system in so many ways, now more than ever, it isn't just our right, but it is our responsibility to restore it. Restoration can no longer be done in a hands-off manner, instead must involve kanaka to help to reestablish balance to ecosystems and needs to be integrated with more traditional values, methods and proper protocol.

Other professional development opportunities that have been crucial to my learning during this internship have been attending Papakū Makawalu workshops led by Dr. Pualani Kanaka‘ole and others, as well as Makahiki workshops that have been hosted by huiMAU and led by Aunty Kalei Nu‘uhiwa, and Aunty Kū and Uncle Nālei Kahakalau. These have all been vital to my learning and I have been able to apply this knowledge directly in my work. In viewing this time of

social distancing and the opening of more free time, our Executive Director has been teaching his own university style class called Papa Haku Mo‘olelo. In this class, we (huiMAU staff) are reading, analyzing and having valuable kūkākūkā about the mo‘olelo of ‘Umi, one of the foundational mo‘olelo of our organization. We are learning more about the art of storytelling and also learning how to truly understand a mo‘olelo: to read all different versions, take history into account and put the mo‘olelo into context. We are spending a lot of time focusing on the original version in ‘ōlelo Hawai‘i and seeing how the message and even the events that happened in the same mo‘olelo can be and are portrayed differently from the ‘ōlelo Hawai‘i and in addition can be altered even more significantly depending on who the translator was. I am excited to continue this “class,” and to finish reading and analyzing the mo‘olelo of ‘Umi and eventually be able to share this mo‘olelo with groups and adapt the many lessons contained within it to the particular audience we are working with that day.

I have really enjoyed these professional development experiences, but not only has it been fun to learn, but I have been able to apply these teachings directly to my work with groups and in general at Koholālele. I can assess what I’ve learned by seeing how my capabilities have improved or not in being able to name different elements in kilo, for example different cloud names, in being able to actually perform ceremonies on my own and also integrating Hawaiian life ways into my work and everyday life. Another form of assessment is my ability to feel confident in contributing my mana‘o when it comes to planning a particular ceremony at work and discussing what pule to offer and in what order. Finally, the Makahiki workshops have really helped me to deepen my pule during Makahiki thanks to having a greater understanding of this important time and the associated ceremony, which I believe will help the ‘āina of Koholālele overall.

Additional Achievements

As we are a small hui and generally work together to accomplish most of our tasks, there were many additional achievements outside of the original proposed deliverables. These kuleana were all undertaken collectively and elaborated above as major undertakings of the internship.

Discussion

Benefits to intern organization

Any kind of help is a huge contribution to a small community driven non-profit organization who relies solely on soft funds. Being able to have extra help in the form of volunteer hours helped the mentor organization accomplish tasks quicker than they normally would have and without having to pay the expense. Not to mention that interning with this organization led to a full-time position which might not have occurred had the internship not happened. In addition, being able to have a student take on the kuleana of collecting and processing samples as well as recording and inputting both water sample data and kilo data was something the hui did not have capacity for at the beginning of my internship. The deliverables were another contribution to the organization that with limited time and resources, might not have been accomplished so quickly. After having become employed, assisting with leading work days at Koholālele increased huiMAU's outreach capacity and ability to help with other community efforts and events. It also helped relieve huiMAU's Executive Director and other staff members by opening up their time so they could focus more on other components of their organization like the restoration of important cultural sites that exist on the lands for which we care. The increase in capacity allowed for the opening of more space at Koholālele and the increase in mālama 'āina there. With more capacity and time, we were also able to nurture our relationships with Pa'auilo school more, by engaging with students in the classroom and also hosting classes on more occasions at our work sites. The increase in capacity did the same for helping to rebuild former ties with Laupāhoehoe and Honoka'a schools. Finally, I think that the skill set and knowledge I have of standards, forest and watershed curriculum, as well as hula, oli and practice in ceremony was another good contribution to the hui. All in all though, it's important to note that I was the one who benefited most from my internship with huiMAU. I can't even begin to describe all of the many ways that huiMAU has changed my life and all of the positive things that it has brought,

but I do know that it is my forever mission to help to reciprocate this relationship and bring those same things to this hui and the people and 'āina that I now call 'ohana.

Broader impacts

Place and cultural-based education can have significant positive impacts on student and teacher involvement in their communities, on student achievement and well-being, and can help increase overall community and ecosystem health. With Hawai'i being home to one of the most resilient indigenous communities with an ever ongoing culture that can adapt with the many changes to come, centering education in place is the only way to lead our communities to a point of thriving and becoming one with the land and one another. It has been shown that this kind of education can instill a deep sense of place as well as empower young people to become more active in their communities and make change with the 'aina in mind. Although studies have yet to be published referring to the great successes that 'āina education has had on our students, as an 'āina educator, anecdotal evidence shows an immense positive impact on individuals aloha, happiness, sense of belonging, sense of well being and more.

A main goal of our hui is to create kīpuka aloha 'āina across our pae'āina (island chain) and even the world. We see that Koholālele is that place for us. A place where community can gather, launa, learn ancestral practices, mele and mo'olelo and really form pilina with kūpuna, 'āina and one another. It is these relationships that will sustain and enable our 'ohana (plants, animals, kanaka, etc.) to thrive and with the strengthening of them, we will all become more resilient in combating anything, even global scale issues like climate change, disease and more. At the end of each day, we hope that community members that we have interacted with will take these seeds from our kīpuka aloha 'āina and plant them in their own homes so together we can ensure a pono future for this place and all of the many generations to come. Even if we have just enabled someone to clear their mind of weeds to make space for this seed, this new but old way of thinking, this to us, is success. This has indeed happened with me and because of this I have been put into a position where I can now spread these seeds. After all, it just takes one

individual, one person that we had the chance to interact with to be the one seed that impacts hundreds and grows an entire forest.

Conclusion

With a desire to learn more about ‘āina education, it may seem that a Masters of Science degree in the Tropical Conservation Biology and Environmental Sciences program may not have been optimal to meet all of my professional goals; however with the collaboration of huiMAU through the internship track my goals were able to not only be met, but even exceeded. I was not only able to learn about ‘āina education and working with communities, I was actually able to be part of the community and ‘āina education. I was not only able to learn about the wao kanaka and about the plants that were once planted in this area, but I was able to participate in the active restoration of these plants and form my own relationships with them. Furthermore, I was able to follow these plants through their full life cycle from planting and cultivating to harvesting to processing them into food and then later cooking meals to help feed our community. I was able to actively participate in helping to make a community sustainable. To also actively participate in helping bridge the gap between different communities and generations and help to remedy the barriers between community members caring for and working within their own communities. Thanks to this experience, I was able to meet and even exceed all of the professional goals I set out to achieve in gaining further education.

Thanks to my involvement with Hui Mālama i ke Ala ‘Ūlili, it has encouraged me to dig into my own roots as mentioned above. HuiMAU helps to address many of the issues previously identified. Furthermore, in my time with huiMAU I have identified another objective which is to become a more involved member of my community and to try to form a kīpuka aloha ‘āina in this place. From my time with huiMAU I have learned that this starts with building pilina with place and its community members: the people, the plant people, the animal people, etc. This ignited the passion within me to start doing my own ethnographic and historical research of this

place that I call home, Makahanaloa. My objective is to get a sense of what this place is like, what people and plants have contributed to its history, what its ancestral place names are, who are its winds and rains, etc. and then to share this information with others who also call Makahanaloa their home. I hope that this sharing of knowledge will be a means for these people to understand the cultural importance of this sacred place, to be proud of where they are from or where they live and hopefully plant a seed of aloha 'āina within them so that they want to be a part of mālama of this place, now, and in the future. This will then address the barriers keeping people of place from working in their place. This is something that I have learned from huiMAU as this is what we do in the community of Pa'auilo. After only 7 years of being formally established as a 501c3, there are already young members of the community who have been a part of huiMAU's different mālama 'āina, education, and community programs who want to come back after college and work in their own community here to continue bringing pono to this 'āina. Youth internship and mentoring programs are some of the services that I envision our Makahanaloa non-profit to also provide with a goal of actively supporting our students based on their individual qualities and needs. I hope that by following the model set by huiMAU we can further connect these students with 'āina and be able to even employ them in this very ahupua'a.

I plan to continue helping others of our generation who are committed to restoring these unique places to be as thriving as they can be in our time, by educating community members, adults and children alike, on 'āina awareness and Hawai'i life ways. I am very happy to be part of the restoration generation, and to have found my specific function as an educator in this great movement and community gatherer, essentially a "spreader of aloha." I look forward to being a part of huiMAU for the rest of my life whether it be in a paid capacity or not and to also continue building pilina with members of my own community here in Makahanaloa. I mahalo the TCBES program, the Hau'oli Mau Loa Foundation and Hui Mālama i ke Ala 'Ūlili, for without it, I would not have seeked out this opportunity and a huge part of my life would be missing.

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Appendices

‘Āina Education Coordinator Handbook

Lā Mālama ‘Āina/Hana Ma‘amau me Hui Mālama i ke Ala ‘Ūlili (huiMAU) ma Koholālele

Typical Mālama ‘Āina/Work Day with Hui Mālama i ke Ala ‘Ūlili (huiMAU) at Koholālele

→ **Opening Protocol: Aloha & Oli**

◆ *Figure out parking, collect permission forms*

→ **Aloha Circle (opening)**

◆ *Introduce 3 names (depending on time might limit to 1 or 2): your name, the name of the place you call home, & the name of a kūpuna or other family member that you want to invite with you into the circle*

→ **huiMAU Mo‘olelo**

→ **Hāmākua Mo‘olelo**

→ **Inu wai -- water break**

→ **Work orientation**

→ **Hana!**

→ **Pule**

→ **Pū‘ai/Pā‘ina & Mo‘olelo o Koholā**

→ **Oli Mahalo**

→ **Mahalo Circle (closing)**

◆ *Say one thing that you mahalo/are thankful for-- ideally something related to the huaka‘i, but could also be something we mahalo in general*

→ **A hui hou kākou!**

Opening Protocol

Say aloha to the alaka‘i, check in to see if the group has an oli they would like to share, help with parking vehicles in appropriate places, collect permission forms. If group has an oli, they oli to enter and our hui does our oli (Kū nā pali) to welcome them into the space.

Kū nā pali

Kū nā pali loloa i ke alo

He alo kama'āina nō ia i ke A'eloa
 Loloa ke kuamo'o o ka 'āina
 'Āina wakawaka i ke ala 'ūlili e
 Lele koholā lele i ka makani
 Kani ke koa'e lele i nā pali laumania
 Mai ka piko o Wākea pa'a i luna
 A ka mole uaua o 'Ī pa'a i lalo
 La'a nā kihi loa o ka 'āina
 'Āina Hāmākua aloha nui e

Aloha Circle

Aloha and welcome to Koholālele. I am _____ and we're going to start off our day with protocol. We will oli on behalf of our entire group to say aloha to this place, acknowledge it, state our purpose and intention and then we'll move into our introductions.

We like to start and end everyday in a circle. Let's all join hands. This circle is what we call our aloha circle. We're gonna go around and ask all of you to share three names. Your name, the name of the place that you call home, and the name of a kūpuna, an ancestor or other family member that you would like to bring into the circle with you for the rest of the day.

For us 'āina, is living, breathing and listening to us. Although people, after some time we may forget, we like to think that 'āina never forgets.. So when you introduce yourself to place this morning, make sure to say your first and last name as you may have 'ohana that are from this place or have already established a relationship with this place, and if not, you will establish a relationship with this place for you and all of your pulapula, future descendants.

We start first and lead by example by making sure to keep our introductions especially short so others can follow and we can all stick to time.

huiMAU Mo'olelo

Aloha hou kākou, my name is _____ and I am a member of Hui Mālama i ke ala 'Ūlili, huiMAU for short, an organization that the 'ohana of this place, including Haley Kailiehu and No'eau Peralto that you might

know, started in 2011, really out of a sense of kuleana and aloha for 'āina, this 'āina in particular, the ahupua'a of Koholālele. As an organization we run our own after school program for the youth in our community every day after school, and what they're learning is about these places, about our culture, our language, our history.

Share this next part if group is not from Hawai'i or seems to be uninformed of history in Hawai'i: That is important because that was deprived, that was stripped from us for at least five generations here in Hawai'i. It's a similar history for indigenous peoples throughout the world, and especially in America.

The mission of our hui is to ho'omau i ke kuamo'o pono, to re-establish the systems that sustain our community through place-based educational initiatives and 'āina-centered practices that cultivate abundance, regenerate responsibilities, and promote collective health and well-being. In doing so, we are empowered to continue on the pathways and traditions of our kūpuna, and establish new pathways for the present and future pono of our 'āina and 'ohana of Hāmākua.

So yes, we do this mālama 'āina work, because we understand that it's important for our kids that live here to understand the place that they've come from and that if we all come to understand the places that we come from in a very deep and intimate way, and we care for those places as such, like we do our own family, this world would be a much better place and cared for at a much higher degree.

Like I mentioned earlier, our hui was formed, because of a sense of kuleana. What does kuleana mean? Kuleana is our word for responsibility, and also our word for rights. That tells us one thing about how our kūpuna, our ancestors understood those two things. Rights and responsibilities were and are tied together. They're one in the same and we can't claim any right to something unless we're fulfilling our responsibilities to all of the things that we're accountable to. Our land, our families, our community, our spiritual realm, or however we envision that. So for us, that always comes first, how we fulfill our responsibilities to this place, to this planet and to our people.

Hāmākua Mo'olelo

What is an ahupua'a?

An ahupua'a is a traditional, Hawaiian land division that generally spanned from uka to kai. Here in Hāmākua, our ahupua'a were delineated by gulches.

How many moku are there on our mokupuni or island? 'Ae, they are 6. So let's start here in Pa'auilo, Hāmākua and move towards Ka'ula. Hilo then Puna, Ka'ū, Kona and Kohala. So if we're driving from Kohala, where do we enter Hāmākua? If we're coming from Waimea, we enter Hāmākua at a place called Mahiki, that many of you may know as Mud lane. Now if we follow the coastline, where does Hāmākua begin? You guys know where Pololū is? You ever seen those little islands off of the pali that go towards the ocean? That is just off of the Honoke'ā valley. This is where Hāmākua begins on the north side. An old 'ōlelo no'eau (traditional proverb) informs us of the boundaries of Hāmākua: Hāmākua kihi loa mai Ka'ula a i Honoke'ā. So where does Hāmākua start on the Hilo side? 'Ae, at a gulch called Ka'ula, in fact that farthest point that we can see now.

If we think about the name Hāmākua, how can we break it apart? Hā + mākua. What are some meanings of the word hā? Breath, four, stalk. What about mākua? Parent, adult. So if we put the two together, what could Hāmākua mean? The breath of the parent. Maika'i!

Maika'i. So now we know a little bit more about this moku, and we know the name of this place. Let's now think about the plant people that inhabit this place. What is this plant? *Here we would show Haley's painting of the kalo, a laminated photo of that painting or the actual kalo itself if we have some growing at Koholālele.* 'Ae, this plant is kalo. Who is this plant? This is Hāloa. Who is Hāloa's parents? This takes us to the mo'olelo of Papa and Wākea.

Papa, what other cultures call mother Earth, is the female earth and her kāne, her male counterpart, is Wākea and Wākea is the sky. Just like many other cultures have a sky father. The place where Papa and Wākea come together is the highest peak on the land. That's where the land and the sky meet, that's the top of our mountain, the top of our highest mountain, which is Mauna Kea. That name is a contraction of a longer name, which is Mauna a Wākea, which is the mountain of Wākea. So even in that place name it tells us about why we consider these different places to be so important, why we even consider places to be sacred. This is the meeting point of the sky and the land. Where if we think about it even on a scientific level, where sky and land meets important things occur. Important, natural phenomena occur and those natural phenomena are what bring about life. The fact that these clouds that are in the sky, they happen because the wind interacts with the mountain and forces the moisture in the air up to the convection layer to form clouds, which then bring rain and with rain we get water and water the foundation of all life for all people, for plants for all the microorganisms and fish, everything. So when we talk about our spiritual realm as Hawaiians, it's about understanding all of the life forces, all of the

elements and natural phenomena that allow life to exist. And so this story of Papa and Wākea, one thing that they give birth to is Hāloa, and that name teaches us things. So if we just take one breath, ha, that one breath is not enough to sustain life. When we think of what the metaphor of a long breath is, and many, many breaths over an entire lifetime, that is the idea of life. So when we think about it on a metaphorical level, when the sky and the land come together, they give birth to life. And this plant is one physical form of life for our people because it's a main staple plant for our people. This plant we consider to be our elder brother, when Hāloa was born, the next sibling that was born, was named after him Hāloa and he became the first human ancestor of ours.

When Hāloa was born he was keiki 'alu'alu, or still born, so his parents buried him out back next to their hale. From there grew the first kalo plant. After some time, Wākea and Papa joined once again and this time they gave birth to the first kanaka. They gave him the name Hāloa to commemorate their first born. Hāloa became a chief and also the younger sibling to Hāloanakalaukapalili. So who here is the hiapo, or the oldest sibling of their family? As the hiapo, what is your kuleana to your younger siblings? Your kuleana is to mālama, or care for your younger siblings. As the younger sibling, it is also your kuleana to mālama the hiapo so he or she is able to care for us.

So in this same genealogy of Papa, Earth mother, and Wākea, sky father, what is the next thing that Papa and Wākea give birth to? Our islands! What island is the hiapo or the first born? Well, there are different ways of understanding how our islands were born and therefore different genealogies and mo'olelo. Another mo'olelo, that of Pele, more so based in geology, tells us that Ni'ihau was the first born and Hawai'i was the last born. This genealogy of Papa and Wākea; however, tell us that Hawai'i was born first. Why do you think that is? Cause its the biggest! So if we continue to follow this genealogy of Papa and Wākea, what or who do they give birth to next? Our mountains! 'O Wākea noho iā Papawalinu'u, hānau ka mauna, he makahiapo na Wākea.

So now getting back to our kalo plant and our Hāmākua mo'olelo, what is this part of the kalo called? 'Ae, the lau and the piko. Where else do we have piko? On the top of our heads connecting us to our ancestors, our belly button piko connecting us to the present and this here time and our ma'i piko connecting us to the future. Where is the piko of our island? Where does water collect on top of the mountain? Waiau! Also known as the piko o Wākea. *Point back to ki'i.* What is this big one called? The mākua, the parent stalk. What about the part that we make poi with? The kalo. What about this long part that connects the lau and the kalo? The hā, or the stalk. What are these little ones called? The keiki or

the 'ōhā. So together the keiki and the mākuā form the 'ōhā-na, or the family. So we have our Hāmākua. Our island is like this 'ohana of kalo. So now thinking of our kalo plant and kalo 'ohana on a landscape level, who are the mākuā of our island? Who are the ones that were first "planted"? Who are our largest features? The mountains. Our mākuā mountains are the 'āina that connect the piko all the way down to the roots of our island, ka mole uaua o 'Ī. Who are these mauna? 'Ae, Mauna a Wākea, Mauna Kea, and Mauna loa. So now if we think of our moku, what moku are these mauna in? Hmm.. do you guys know? *Now is a good time to show or re-show map of the island with Hāmākua outlined in red.* 'Ē, the summit of Mauna Kea as well as the upper regions of the Mauna are all in Hāmākua. Hāmākua spans from where we are goes up and over Mauna Kea, encompassing the upper areas of the Mauna and the summit and the kīhi loa, that long corner spreads all the way across to Moku 'āweoweo, a particular place called PōhakuoHanalei located on the summit of Mauna loa. So if Hāmākua encompasses a large area of our mauna mākuā, we could see Hāmākua being the first born and the parent of all the other moku on our island. What is the kuleana of a parent to its keiki? 'Ae, principally to feed them, to raise them. So if we think of our mountain mākuā, what do they feed the rest of our island? Wai!! So as the moku of Hāmākua, it is our kuleana to feed wai to the rest of the island, a pretty big kuleana no?! So today through the mālama 'āina work that we do, we will all help in feeding wai to our mākuā so it, Hāmākua can mālama its keiki, the rest of our island.

Of course, this is a Hāmākua-centric story on how our island was created, because for those of us who are from Hāmākua, Hāmākua is the greatest place on Earth and this is how it should be in all places, yeah? That we love the place we come from so much that it is the best place on Earth and we all have stories pili to our place about how our island or even the Earth came about. Where you are from you have your own story about why its important to mālama your 'āina. So, please we encourage you to learn the stories of your 'āina and why its important!

So now let's all help to mālama the mākuā!

Inoa wahi pana

Nane: Ku'u wahi i'a nona ka lā

Koho: to follow something

Koholā: follow the movement of the sun throughout their migration

What direction does the sun come from?

Koholā connection to the sun, seasons and Koholālele

At Piko o Wākea or our equinoxes the sun rises directly in the East, which for us is a hand and a couple of fingers away from Ka'ula-- the furthest point that we can see (or is it directly at Ka'ula?). During the summer months, the sun is in the Kāne realm so it resides in the North. When the sun is furthest south, this is ke ala polohiwa a Kanaloa, or winter solstice. At this time it rises directly above Ka'ula. This is also the time when the koholā arrive to our kai and can be visible from this very pali we are standing on, Kilohana, an ancient place used for viewing.

As the sun moves South, koholā move South. As the sun moves North, the koholā also move North.

Important roles of the koholā

The koholā help to “fertilize” our ocean. In the summers when they are in the North they spend all their time feeding, devoting these summer months to “bulking up,” building up fat reserves by filter-feeding on tiny crustaceans and schools of small fish such as krill and herring abundant in the North Pacific waters extending from Northern California to the Bering Sea. Hawaii is the only state in the United States where humpback whales mate, calve and nurse their young. Whales play crucial roles in global nutrient cycles – when whales swim from deep waters to the surface, they move nutrients up with them increasing the food source for phytoplankton. Whales poop, releasing large nutrient-rich fecal plumes which are consumed by plankton. And dead whales sink, seeding the ocean floor with nutrients and carbon. In this way the koholā has long been revered in Hawaii as a cultivator of abundance, reminding us of our ancestral connections to all of Oceania. Furthermore, our microbiologist friend over at Mānoa, Dr. Kiana Frank has informed us that there is a special microbe in whale poop that signals coral polyps to reproduce. The coral polyp is the first thing born in our Hawai'i universe, the first thing that comes out of pō in our ancestral Kumulipo text. Therefore this whale poop starts the entire cycle of life here in Hawai'i! Whales also excrete mucus in what is known as a hūpē koholā. These large mucus sacks serve as a kind of nursery for 'ōhua-- baby fish-- especially the manini. A place where these 'ōhua can find sanctuary, protection and food until they are large enough to fend for themselves.

Can also teach an art activity showing these connections or learn the Koholālele dance!

Link to Koholālele dance in English: https://www.youtube.com/watch?v=jRXcD_psS0s

Link to Koholālele dance ma ka 'ōlelo Hawai'i: <https://www.youtube.com/watch?v=t1J1BafDFXg>

Another mo'olelo refers to koholā seeing these beautiful wahine on the mauna and wanted to be their friend, join them on land. One tried to jump on land and missed, becoming a pōhaku, that we can see here in front of us. It is known that men would be enticed by women to meet them on the mauna, but would often never make it back, because the mountain appeared to be close and the journey short, but it was really deceiving and a treacherous journey indeed.