

**REPORT TO THE UNIVERSITY OF HAWAI‘I AT HILO MARINE OPTION  
PROGRAM**

Ke Kai Ola Education: An Outreach Internship

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## **ABSTRACT**

The Hawaiian monk seal, *Neomonachus schauinslandi* is found in both the Northwestern Hawaiian Islands and Main Hawaiian Islands. As the seal is a conservation reliant endangered species, it is imperative that response and education and outreach actions be taken for the benefit of the seal's survival. As an intern and ambassador to Ke Kai Ola, I represented them on the East side of the Hawaii Island by working with the education staff to assist in informing university student of the Hawaiian Monk Seal Response Team. I also assisted with the development of a variety of programs related to Ke Kai Ola and ocean conservation which included helping to enrich Nā Kōkua o ke Kai, a 10 lesson curriculum for grades six through eight. By assisting with field trips to Ke Kai Ola and the Mokuapāpapa Discovery Center, I was a part of student discovery through supporting Pono projects to help students think critically, uncover their own passions and connections to the ocean.

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## INTRODUCTION

The Hawaiian monk seal, *Neomonachus schauinslandi* is the last surviving species in its genus, and is endemic to the Hawaiian Islands archipelago (NOAA 2017). Hawaiian monk seals help control levels of numerous prey populations and help maintain a healthy functioning ecosystem (Baker 2004). Unfortunately, they are listed as endangered under the Endangered Species Act and depleted under the Marine Mammal Protection Act. Although they have been found more prominently in the Northwestern Hawaiian Islands (NWHI), there has been a recent population increase on the Main Hawaiian Islands (MHI) (Baker 2004).

The National Oceanic Atmospheric Administration (NOAA) released endangered Species research estimates populations for 2013, 2014, and 2015 which were 1291, 1309, and 1324 individuals, respectively. After a prolonged history of population decline in this species, there has been a lack of evidence for further decline during 2013 to 2015 (NOAA 2017). Today, the best estimate of the current total Hawaiian monk seal population is 1,400 seals (NOAA 2017). This includes 1,100 in the Northwestern Hawaiian Islands (NWHI from Nihoa to Kure Atoll), and about 300 in the Main Hawaiian Islands (MHI from Niihau to Hawaii). The most recent annual population assessment shows that the Hawaiian monk seal has increased in numbers by 3% annually for the past three years (Baker 2016). While numbers have increased since 2013, the long-term decline in abundance at the six main NWHI sites (French Frigate Shoals, Laysan, Lisianski, Pearl and Hermes, Midway and Kure) remains concerning (NOAA 2017).

Factors causing the increase in seal mortality in the Northwestern Hawaiian Islands are food limitation, shark predation, entanglement, male aggression, and habitat loss. On the Main Hawaiian Islands, these factors change to human impacts such as disturbance and injury and death, which are a primary threat to the small, but growing population of Hawaiian monk seals in the MHI. Beaches that are popular for human recreation are also increasingly used by monk seals for "hauling out" (resting) and molting (NOAA 2017). Female monk seals are also increasingly pupping on popular recreational beaches. These "pupping events" entail mother-pup pairs remaining on the beach to nurse for up to seven weeks, during which time they are particularly vulnerable to human disturbance (NOAA 2017). Other factors include fishery interactions, human seal interaction, disease, intentional killing, and extreme negative human impacts, all of which appear to be a growing problem in the MHI. Over the past two years, at least three seals have died from apparent gunshots, and foul play could not be ruled out as the cause of death for at least three other seals (NOAA 2017).

Organizations like The Marine Mammal Center (TMMC) have played a critical part in conservation efforts by rehabilitating Hawaiian monk seals to a healthy enough state for the wild. TMMC was founded by three volunteers in 1975 and is leading in the field of ocean conservation through marine mammal rescue, veterinary medicine, science, and education. In 2014, TMMC opened Ke Kai Ola on Hawai'i island. The center operates the only hospital dedicated to Hawaiian monk seals and is working to increase the Hawaiian monk seal population through direct animal care, community outreach, and response and education. Recent developments in

education at TMMC have been Nā Kōkua o ke Kai or “those who help the sea,” which is the new middle school marine science curriculum that focuses on positive ocean conservation education. For my internship from February 2017 to January 2018 at TMMC: Ke Kai Ola, I worked to gather a pool of university students interested in volunteering with the Hawaiian monk seal response team, developed an organized platform of ocean conservation resources that benefit the Pono Project in the Nā Kōkua o ke Kai curriculum, and connected the Nā Kōkua o ke Kai curriculum to the Common Core Standards.

The first part of my internship involved forming a team of volunteers. As much of the success of Ke Kai Ola is partly due to community volunteers who help to run the center, I worked to organize a pool of university students interested in volunteering with the Hawaiian monk seal response team. Although many volunteers from Ke Kai Ola’s response team are community members gathered from experienced Ke Kai Ola staff, it is also crucial to bring this awareness to the students as they are also the future of monk seal recovery. Therefore, University of Hawaii at Hilo students were beneficial to the team. Primarily attending events on weekends, student volunteers enriched the team with their scientific knowledge and gained a sense of community.

Another major part of maintaining population levels of Hawaiian monk seals comes from carefully planned education. Education on this subject of Hawaiian monk seals needs to stay positive as this is a major component of developing a positive attitude toward this endangered species (Martin 2015). Environmental education plays a critical role in developing positive ideals about the environment, which in turn increases an individual’s perceived value of the places, plants, and animals around them (Martin 2015). Successful environmental education does not stop with just teachers and children; it also requires community leaders and organization such as those like TMMC which work alongside the students and teachers to effectively resolve challenges facing the local and global environment (Martin 2015).

TMMC is working with teachers and educators to integrate Nā Kōkua o ke Kai lessons into middle school education on Hawai‘i island. The goal of the Nā Kōkua o ke Kai curriculum is to treat students as active participants in the learning process and help foster a sense of connection and stewardship to the ocean. Sharing knowledge instead of telling it while being respectful of local and tourist culture is also a key philosophy of the curriculum which allows the students to be supported in their learning instead of being told what is wrong or right. Firsthand knowledge is gained from field trips to emphasize human impacts on ecosystems so the students can gain a better sense of how the community can work together to solve problems. By the end of the semester, the students have a comprehensive and diverse array of science concepts such as the basic knowledge on the formation of the Hawaiian archipelago, natural history regarding foraging habits and evolutionary history of Hawaiian monk seals, as well as science careers in the field of STEM.

I helped to develop a positive way of educating youth about Hawaiian monk seals with marine science educators through The Marine Mammal Center Ke Kai Ola. The Nā Kōkua o ke

Kai curriculum first focuses on establishing the students connection to the ocean. Videos of a variety of community members explain their connection to the ocean to allow students to make their own objective connections. Later, they are introduced to the Hawaiian monk seal and are able to make their own inferences and opinions after the facts have been shown and not told to them. I then helped students with their Pono project which displays the connections they have made through art, photography, writing, or lyrics or other formats. I supported the students by helping them to uncover their own passions and connections to the ocean as well as find science projects related to those passions.

## **MATERIALS AND METHODS**

### **Developed ocean conservation resources and platform for the Pono project**

The Pono project is a call to action project that the students complete in the second semester of the Nā Kōkua o ke Kai curriculum. I developed resources that help the students with their Pono projects and tailored them to the various interests of the students. These included resources related to the humanities, research, and media. I started off by reviewing resources from different marine science related middle school curricula that have been connected to the Next Generation Science Standards as well as to the Common Core standard. Next, I reviewed the resource list from The Marine Mammal Centers Ocean Ambassador lists to find which ones were applicable to Hawai‘i. I then added resources by finding ocean art, poetry and media-related resources that I saw fit. Finally, I organized these resources into the different categories that they fell under such as media, art or science related and put them into an aesthetically pleasing and user-friendly platform. These resources are available to teachers and middle school students.

It is important that the resources be connected to the various interests of middle school students so they have the freedom to be creative. Offering a wide variety of resources will help the curriculum reach its end goal of the students more effectively becoming lifelong ocean stewards uncovering their own passions and connections to the ocean.

### **Enriched the Nā Kōkua o ke Kai curriculum by connecting Common Core Standards to curriculum**

The Common Core is a set of high-quality academic standards in mathematics and English language arts and literacy (ELA). The goals outline what a student should know and be able to do at the end of each grade and are important learning objectives for the students to be successful in high school and college. Connecting the curriculum to Common Core enriched the curriculum by making it more versatile and widely relevant.

I connected the curriculum to these standards by first becoming very familiar with the learning goals within the Common Core standards. The standards are comprised of three main sections: a comprehensive K-5 section and two content area-specific sections for grades 6-12: one for ELA and one for history/social studies, science, and technical subjects. Grades 6-12 ELA have reading, writing, speaking and listening, and language strands; the 6-12 history/social studies, science, and technical subjects section focuses on reading and writing.

I then went through each lesson plan in the Nā Kōkua o ke Kai curriculum and compared their learning goals to the goals of the standards listed on the Common Core website. I mostly focused on the reading for information standards of the common core and other English language requirements to connect to the curriculum. This was all done on a google draft at first and then transferred to a more aesthetically pleasing medium that is now included in the curriculum.

### **Informed university students about volunteering with the Hawaiian Monk Seal Response Team**

A pool of university volunteers interested in assisting with haul-out events of monk seals, such as pupping and molting, attended training events that I organized by ending out emails on the MARE listserv and putting up flyers around the school. I also assisted with the training of volunteers with experienced Ke Kai Ola staff. Student volunteers learned new Ke Kai Ola methods and how to assist in engaging the public during the haul-out, molting and pupping events. This recruitment is beneficial to Ke Kai Ola as the response team for the east side of the Big Island is just being developed.

## **RESULTS and DISCUSSION**

Creating the comprehensive list of resources was a multi-step process as it involved organizing numerous topics as well as listening and responding to feedback from my advisors. It was a challenge at first to figure out the best way to organize the resources. However, through trial and error, the most aesthetically pleasing organization was achieved. The list of resources is now being used in the Na Kōkua o ke Kai curriculum to facilitate learning within the Pono Project.

Connecting the Common Core Standards to lesson plans was also a challenge. Since the Na Kōkua o ke Kai curriculum is still being developed, many of the lesson plans don't include much detail. This made it difficult to connect specific learning outcomes in each lesson to the specific Common Core Standard. My connections of the standards to the curriculum were therefore not as in depth as they could be as they did not contain as much "evidence" supporting the connection. I'd like to see my work with the Common Core Standards completed more in depth.

The formation of the university volunteer response group was not continued in the fall semester of the internship. The factors of time commitment for university volunteers and the

unpredictability of the location of a haul out event on island made it very difficult to organize university volunteer involvement. However, the students that did attend the training session that I organized now have a better understanding of the Hawaiian monk seal response team and ways they can get involved.

Through this internship, I learned that there is an enormous amount of preparation and planning that goes into creating and implementing a new curriculum into a school district. I also learned the method of finding resources that align with the Next Generation Science Standard as well as the Common Core Standards Curriculum and how to connect lesson plans in a curriculum to the Common Core Standards.

My involvement with the educational program at Ke Kai Ola allowed the Nā Kōkua o ke Kai curriculum to meet its overall goals. The goals include encouraging students to come to their own conclusions on Hawaiian monk seals by providing firsthand knowledge gained from field trips. My participation with these hands-on activities such as co-leading a talk about climate change during field trips emphasized human impacts on ecosystems. The knowledge the students gained from the hands-on activities also assisted the students in their completion of their call to action Pono Project. The list of resources I created for the Pono projects allowed the students to utilize their time efficiently as well as become inspired by the different resources provided to them.

Another goal of the Nā Kōkua o ke Kai curriculum is to empower students. The curriculum strives to support knowledge by sharing instead of telling. The completion of the yearlong curriculum allowed students to gain a better sense of how their efforts in ocean conservation can have immense impacts. The students also learn how the community can work together to solve problems like marine debris, and ocean acidification. The Nā Kōkua o ke Kai curriculum will have vast impacts on middle school students in Hawai‘i for years to come.

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