

SUMMER MARINE MAMMAL INTENSIVE LEARNING EXPERIENCE (SMMILE)



The Summer Marine Mammal Intensive Learning Experience (SMMILE) program is a one-week immersive course hosted by the Marine Mammal Research Program (MMRP) at the Hawai'i Institute of Marine Biology. SMMILE provides an opportunity for high school students from historically marginalized communities (HMC) to learn about marine mammal science, marine protected areas, and conservation. Preference is given to Native Hawaiian and Pacific Islander high school students because their representation in STEM is among the lowest percentages of any HMC and the field of marine mammalogy reflects this deficit. SMMILE was designed to expose students to marine mammal science in a hands-on learning environment. The curriculum topics include acoustics/hearing, unmanned aerial vehicles, tagging, population studies, photo ID, stranding/response, and conservation/management.

Eleven students participated in the inaugural program representing ten different high schools on O'ahu. Over half the students were Native Hawaiian and most students represented HMC. During the course, the students heard from 16 guest speakers and participated in three field trips and numerous hands-on activities. Highlights of the week included a marine mammal survey on the Wai'anae Coast where students sighted multiple marine mammal species, and a hike to Ka'ena Point where students observed endangered Hawaiian monk seals in the wild. Over half of the students had never seen a Hawaiian monk seal before SMMILE!

**PREPARED AND PRESENTED BY**

KIRBY PARNELL / BRIJONNAY MADRIGAL
CO-INSTRUCTORS

PROJECT PRINCIPLE INVESTIGATOR

DR. AUDE PACINI
RESEARCHER, MARINE MAMMAL RESEARCH PROGRAM



OUR GOALS AND OBJECTIVES

GOAL 1

PROVIDE OPPORTUNITIES FOR HIGH SCHOOL STUDENTS FROM HMC TO LEARN ABOUT MARINE MAMMAL SCIENCE, MARINE PROTECTED AREAS, AND CONSERVATION

The students learned about marine mammal science by participating in 16 lectures, four field trips, and numerous hands-on activities throughout SMMILE. Students learned about MPAs through lectures about the Hawaiian Islands Humpback Whale National Marine Sanctuary and the Papahānaumokuākea Marine National Monument. Conservation of marine mammals was discussed during lectures by presenters from the National Oceanic and Atmospheric Administration (NOAA) and the Hawai'i Marine Animal Response (HMAR).



63% NATIVE HAWAIIAN STUDENTS
82% HMC STUDENTS

GOAL 3

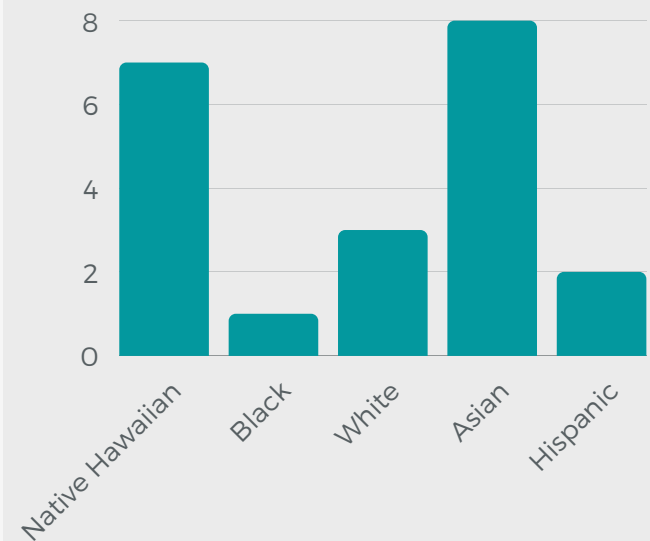
FACILITATE NETWORKING WITH MEMBERS OF THE MARINE MAMMAL COMMUNITY

Students had the opportunity to network with over 16 members of the marine mammal community, at all career stages, through a mix of virtual and in-person lectures and interactive activities. The results from the pre-and post survey showed that the students' knowledge of marine mammal organizations and laboratories doubled after participating in SMMILE. Post-program, the co-coordinators facilitated networking between students and speakers if the students were interested in getting in touch with any of the speakers that visited the students. We allowed enough time at the end of presentations for the students to ask questions and engage with the speakers.

GOAL 2

PROMOTE DIVERSITY AND INCLUSIVITY IN SCIENCE BY TARGETING NATIVE HAWAIIAN, PACIFIC ISLANDER, OR OTHER HMC STUDENTS

Students identified as...





GOAL 4

EXPOSE STUDENTS TO POTENTIAL INTERNSHIP AND EMPLOYMENT OPPORTUNITIES

We encouraged our speakers to highlight internship opportunities at their respective organizations. We facilitated a discussion about the importance of participating in internship opportunities.



GOAL 5

EXPLORE AND REFLECT ON CULTURAL CONNECTION AND SENSE OF PLACE

Malia Evans, the O'ahu Education and Outreach Coordinator for Papahānaumokuākea Marine National Monument, introduced the students to the monument and highlighted Native Hawaiian, Pacific Islander and local researchers and community members that are utilizing traditional Hawaiian knowledge systems and scientific methods to conduct innovative research in the Northwestern Hawaiian Islands. The students were excited to learn about how important traditional Polynesian voyaging is to the monument. Malia was the student's favorite speaker!



GOAL 6

ENCOURAGE STUDENTS TO PURSUE HIGHER EDUCATION

SMMILE students met many marine biology doctoral and master students who provided their perspective on graduate school. We encouraged all speakers to briefly talk about their backgrounds and describe their journey to higher education to their career



COURSE COMPONENTS

FIELD TRIPS

MARINE MAMMAL BOAT SURVEY

Students completed a 6-hour marine mammal boat survey along the Wai'anae coast of O'ahu. Many students had never been on a boat before or never had seen dolphins in the wild. Students conducted visual surveys and once we encountered an animal group, they used cameras to take photos of dorsal fins for photo ID and recorded behavioral data. Students also deployed a hydrophone and listened to dolphin whistles underwater. This field trip was the student's favorite part of the program!



KA'ENA POINT STATE PARK HIKE

Students completed a hike to the Ka'ena Point Natural Area Reserve, a common haul-out location for Hawaiian monk seals (HMS). While at the reserve, students observed HMS behavior, and naturalists led a discussion on the life history of the species, how to ID individuals, ongoing research, threats, and how to conduct ethograms.

UAV DEMONSTRATION/FLYING PRACTICE

Students gained hands-on experience learning about the drones used at MMRP to study marine mammals. Every student had the opportunity to fly the drone and they were really excited to practiced flying the Mavic at a local park. We assigned some students the role of "dolphins" and asked them to run around the field in a group to simulate flying over wild dolphins.



DOLPHIN QUEST

Students observed the bottlenose dolphins at the facility, and we discussed managed care facilities and captive marine mammals. Students met the trainers and we deployed a hydrophone so the students could hear echolocation clicks and whistles produced underwater. The trainer placed eyecups on a dolphin to demonstrate their echolocating capability. Students also observed a 3D scanner demonstration to see how this technology is used to study dolphins' biometrics and energetics.

COURSE COMPONENTS

LECTURES

Topics included: Marine Mammals 101, Hawaiian Marine Mammals, Surveys, Unmanned aerial vehicles (UAVs), Hearing/Acoustics, NOAA Hawaiian Monk Seal Program, Aerial Surveys, Computer Programming, Hawaii Marine Animal Response (HMAR), Hawaiian Islands Humpback Whale National Marine Sanctuary, Papahānaumokuākea Marine National Monument, Tagging, Marine Mammal Stranding Program and Cascadia Research Collective Hawai'i Cetacean Studies



TRAINING

HANDS-ON EXPERIENCE IN THE FOLLOWING:

- Humpback Whale Fluke Matching in Happywhale
- Spinner Dolphin Dorsal Fin Matching
- Using DSLR Cameras for Surveys
- UAV Video Analysis
- Using a 3D scanner/printer
- Underwater Acoustic Analysis
- Hydrophone Deployments
- Thinking like a Scientist Exercise



WORKSHOPS AND PEER GROUP EXERCISES

We led a workshop to discuss internships and volunteer opportunities for marine science on O'ahu. This discussion allowed the students to share their plans for the future, interests in marine science, and desire to potentially seek internship experiences. Students built interpersonal relationships through "Get to Know You" activities, icebreakers, and team-building exercises.

IN THE MEDIA

SMMILE was featured in three local news stories available below in the QR codes:

KHON2



KITV4



UH MANOA



SPONSORS



Cascadia
Research
Collective



FOR MORE INFORMATION, VISIT:
WWW.MMRPHAWAII.ORG/SMMILE

