



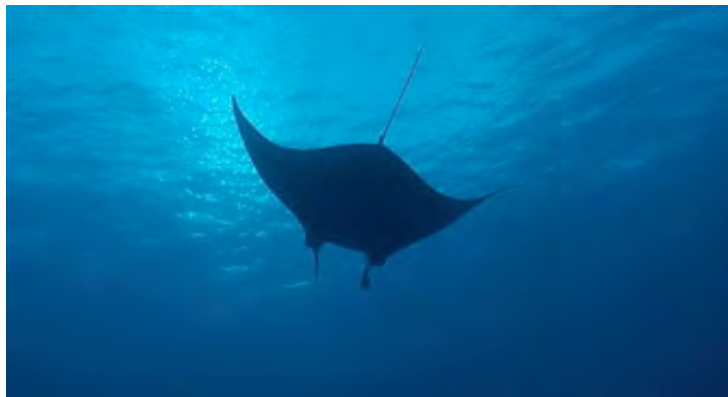
*The Hawaii Association for Marine Education and Research, Inc.*

---

4993 L. Honoapiilani Rd  
Lahaina, HI, 96761, USA  
Phone: 808-280-6448  
Fax: (866) 289-6448

Email: [internship@hamerinhawaii.org](mailto:internship@hamerinhawaii.org)  
[www.hamerinhawaii.org](http://www.hamerinhawaii.org)

## **STUDYING MAUI'S MANTA RAYS**



HAMER is offering a Manta Ray Research Internship to undergraduate or recent graduate students pursuing a career in marine biology. While diving alongside these majestic mantas, interns will work closely with a University of Hawaii Ph.D. student to learn valuable research techniques used in data collection and analysis, while contributing to the protection of Hawaii's largest marine resident.

These graceful giants face serious threats worldwide from direct and indirect fishing, aquarium collection, and irresponsible commercial dive operations. This much needed research will contribute to the ongoing efforts to understand and protect Maui's resident manta ray population.

During your stay in Maui you will participate in ongoing manta ray research, receive training, practical experience, and lectures to help develop your skills as a field biologist. Discover how to use photo-identification as a tool for understanding individual life histories, population densities, site fidelity, and behavior. Learn how paired-laser photogrammetry can be used as a simple, remote sensing technique for measuring the body size of large free-ranging animals. Assist with line-transect surveys performed to monitor the health and status of the reefs. Gain practical skills in database management, scientific discovery and writing, and small boat handling, safety, and maintenance.



### **DIVES**

*(subject to weather and research priorities)*

- One preliminary checkout dive
- Five manta ray research dives
- One line transect survey dive

### **LECTURE SERIES**

*(subject to change)*

#### ***Manta Rays, Then and Now***

Learn about the biology and ecology of these mystical animals. Find out the tools and techniques researchers use to study them, what threats they face, and what is being to protect them.



#### ***Photo-Identification***



Photo-identification involves taking photographs of distinctive characteristics from an animal in order to identify and track individuals of a wild population over time. This technique has been used extensively with large and long-lived vertebrates for: population estimates, life history information, lifespan information, migration patterns, and social relationships of an individual. Find out how this technique is helping to understand the underwater world of the manta ray.

### *Scientific Discovery*

A proper literature review familiarizes the reader about the current knowledge and ideas that have been established on a particular topic, what research has already been carried out, and where the gaps lay in our understanding of the topic. This lecture will go over how to prepare and conduct a proper literature review, and how to organize and catalog sources of information using bibliography software such as Endnote and Google Scholar.



### *Photogrammetry, Measuring Giants with one Hand*

Body size measurements can be useful tools in determining physiological, behavioral, and life-history parameters of individuals and populations, but can be difficult when working with large animals in a marine environment. Simple, non-invasive techniques such as paired-laser photogrammetry and its application with manta rays are discussed.

### *Surveying our Reefs*

Our coral reefs are facing serious threats from both natural and anthropogenic impacts. Line Transect Surveys provide permanent records of the benthic and fish communities within an area and can be compared against other monitoring sites to determine geographic variation in habitats, and more importantly can be monitored for long-term changes in reef health.



## SCHEDULE\*

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		<b>Day 1</b>	2	3	4	5
		Airport Pickup  Orientation House/Maui  Introductions Dinner	Dive#1 – check out  Lecture #1 - Mantas	Dive#2 - mantas	Lecture#2 – photo-id  Data Processing	Dive#3 – manta  Lecture#3 – lit search  Intern project assignments
6	7	8	9	10	11	12
Data Processing  Lecture#4 – photogram.	Dive #4 – mantas	Data processing  Lecture#5 – line transect	Boat Overview/Launch  Dive#5 – line transect  Boat cleanup and Maintenance	Data processing	Dive#6 – mantas	Data processing
13	14	15	16	17	18	19
Dive#7 - mantas	Data processing  Intern informal presentations	House Cleanup  Possible airport drop	free	free	free	free
20	21	<b>Day 22</b>				
free	free	House Cleanup  Airport drop				

*\*Subject to change depending on research priorities or environmental conditions*

## ACCOMODATIONS

Interns will share a two-bedroom one-bathroom house in beautiful West Maui with a full kitchen, living room, and laundry facilities. Each intern receives a \$200 food stipend and is responsible for their meals and meal preparations. The house is conveniently located only a short walk from the market and beach. A shared moped is available for more distant errands.



Some days will be spent at the house analyzing data collected from the previous day. At the end of each day a debriefing will take place to go over the day's events and to discuss the plans for the following day. Evenings are spent listening to a variety of training lectures and films, working on individual research projects, preparing for the following day, or simply relaxing. Everyone rotates through all the tasks and comes away from the project with incredible memories and experiences.

## WHEN CAN YOU PARTICIPATE?

### Team Dates for the 2010 Season

<i>Team Number</i>	<i>Start Date</i>	<i>End Date</i>	<i>Available Slots</i>
1	7/6/2010	7/20/2010	0
2	8/10/2010	8/24/2010	0
3	9/07/2010	9/21/2010	TBD

## PROGRAM COST?

No. of Weeks	No. of Nights	Cost (\$US)
2	14	\$1,999.00

Cost includes:

- Housing during your stay on Maui (cost does not include travel to and from Maui)
- Food stipend
- Check out dive, research dives, habitat survey dive
- All tanks and weights (full dive gear can be rented at \$125 per week)
- Small boat work and training
- All research training and lectures
- *OPTIONAL* complimentary housing for one week immediately following the internship

Interns are required to have their own health insurance.

## HOW DO YOU SIGN UP?



**Email: [internship@hamerinhawaii.org](mailto:internship@hamerinhawaii.org)**