



PAPAHĀNAUMOKUĀKEA Marine National Monument

MEDIA RELEASE
FOR IMMEDIATE RELEASE
Tuesday, September 25, 2012

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‘Opihi Research in Papahānaumokuākea Yields New Information on Reproduction

(Honolulu, HI) Members of an intertidal monitoring expedition to Papahānaumokuākea Marine National Monument returned today from the fourth consecutive year of conducting research in the rocky intertidal zones of the Northwestern Hawaiian Islands. This year, the team focused on learning more about ‘opihi (limpet) spawning activity.

“We have preliminary evidence that female ‘opihi live higher on the rocky shore than male ‘opihi,” says Dr. Chris Bird, a scientist from Texas A&M University, noting an interesting highlight from the research. “This is a groundbreaking discovery that will contribute toward better understanding of ‘opihi reproduction, which will help marine managers when considering restoration of ‘opihi habitat in populated areas like O‘ahu.”

The team spent 12 days on the rocky shorelines of Nihoa Island, Mokumanamana Island, and French Frigate Shoals, part of the Hawaiian Islands National Wildlife Refuge within Papahānaumokuākea Marine National Monument, conducting various activities within the little-explored intertidal zone (the area that is above water at low tide and under water at high tide).

This mission is part of a five-year partnership among scientists, cultural researchers and community members to study the rocky intertidal zones in the main Hawaiian Islands as well as the Northwestern Hawaiian Islands.

“The importance of this work is to gain new information on this iconic food species to better manage fisheries across the archipelago,” says Hoku Johnson, NOAA’s coordinator of the expedition. “The research in the Monument is connected to similar research begin done in partnership in the main Hawaiian islands, which we hope will lead to better management of ‘opihi state-wide.”

The team conducted transects from the highest to lowest tide marks, researched ‘opihi spawning behavior, collected algae and invertebrates for DNA analysis, and documented observations of weather and animal interactions to gain further information on atmospheric and seasonal cycles from a Native Hawaiian perspective.

This final activity was added to the annual expedition last year to continue the Monument’s mission to integrate western research activities with Native Hawaiian cultural knowledge and values. Weather observations and species interactions were recorded on data sheets to be analyzed later; these “sparked interesting conversations aboard the ship at night,” says Shauna Kehaunani Springer, a cultural researcher from Hawai‘i Island.





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“Through recording everything daily about the weather, our surroundings, animal interactions and weather movements across the atolls and islands, we were able to connect further with our kūpuna and gain insight into the importance of being humble and totally aware of our surroundings,” Springer adds.

Compared to the main Hawaiian Islands, the rocky shorelines within the Monument are pristine and host many species of invertebrates, fish, and seaweeds. However, data on species abundance and presence/absence within the intertidal zone in the Northwestern Hawaiian Islands has only recently been systematically collected.

These shorelines were historically important; while the men fished out at sea, Native Hawaiian women negotiated the intertidal zone to gather ‘opihi and ha‘uke‘uke (helmet urchin). The flesh of these species was used for food and their shells used as tools for scraping kalo (taro) and niu (coconut) and imprinting kapa cloth. In reverence to this Native Hawaiian connection, researchers offered chants and small gifts of water and salt prior to conducting their research activities.

The researchers also explored the hypothesis that ‘opihi in the Northwestern Hawaiian Islands are bigger when they reach reproductive readiness than those in the Main Hawaiian Islands, indicating that increased pressure from fisheries forces them to reproduce at an earlier – and thus smaller – life stage.

The monitoring team consisted of participants from NOAA, Texas A&M University, the Scripps Institute of Oceanography, The Nature Conservancy, Nā Maka o Papahānaumokuākea, Conservation International-Hawaii Fish Trust, Kaho‘olawe Island Reserve Commission, Kalapana Fishing Council, Nā Mamo o Muole‘a and Kipahulu ‘Ohana.

For more information on the expedition, [click here](#).

Papahānaumokuākea is cooperatively managed to ensure ecological integrity and achieve strong, long-term protection and perpetuation of Northwestern Hawaiian Island ecosystems, Native Hawaiian culture, and heritage resources for current and future generations. Three co-trustees - the Department of Commerce, Department of the Interior, and State of Hawai‘i - joined by the Office of Hawaiian Affairs, protect this special place. Papahānaumokuākea Marine National Monument was inscribed as the first mixed (natural and cultural) UNESCO World Heritage Site in the United States in July 2010. For more information, please visit www.papahanaumokuakea.gov.

