PAPAHĀNAUMOKUĀKEA
Marine National Monument

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New Method used on ‘Opihi Monitoring Trip to Papahānaumokuākea
Hawaiian and Western Science Combine to Further Characterize ‘Opihi Habitat

(Honolulu, HI) – Members of an intertidal monitoring expedition to Papahānaumokuākea Marine National Monument returned on Sunday August 18 after collecting data to help determine whether ‘opihi (Hawaiian limpet) in the Northwestern Hawaiian Islands are bigger when they reach reproductive stage than those in the Main Hawaiian Islands. Results of the research could provide insights into potential human impacts and their implications for management of the highly sought after delicacy.

This expedition represented the fifth consecutive year of conducting research and monitoring activities within the rocky shorelines of Nihoa, Mokumanamana, and French Frigate Shoals in the Northwestern Hawaiian Islands. The team focused on both scientific and cultural activities.

This year marked the first time the team extracted DNA from ‘opihi and other species while on-site (previously, tissue samples were taken back to a land-based lab for processing). Isolating DNA in-situ yields a much longer strand of DNA, providing more genes for analysis. From this, researchers are seeking insight into how well these intertidal species adapt to climate change.

“With this genomic technique, we’re able to see evolution in action and determine if there is low genetic diversity among the small populations of ‘opihi up there like there is in the Main Hawaiian Islands,” says Chris Bird, PhD, a scientist from Texas A&M University Corpus Christi. “By comparing genetic material of NWHI and O‘ahu ‘opihi, we want to see how much human activities have caused a reduction of diversity of ‘opihi in O‘ahu.”

An emphasis was also placed in maintaining cultural connections with Papahānaumokuākea, which holds sacred significance to Native Hawaiians. A number of Native Hawaiian community leaders and cultural practitioners joined the expedition to continue re-establishing the genealogical connection to a place that was inhabited by their ancestors.

“In addition to collecting quantitative scientific data, maintaining connection to place is important,” said Shauna Kehaunani Springer, a cultural researcher and monitoring team member currently living on Hawai‘i Island. “The Northwestern Hawaiian Islands are remote, and not many people get to experience them. Having repeat participants on the trip to observe what’s happening in the skies and in the ocean over the seasons is important. We’ve conducted this trip in four different months over the last five years and the place changes noticeably from month to month.”

For example, the team has noticed differences in rainfall patterns and abundance of different intertidal species like limu (seaweeds) and ha‘uke‘uke (shingle urchins) between September and October.

The ten-member team consisted of participants from the National Oceanic and Atmospheric Administration, Texas A&M University, Scripps Institute of Oceanography, The Nature Conservancy, Nā Maka o Papahānaumokuākea, Conservation International-Hawaii Fish Trust, Nā Mamo o Muoleʻa, Kipahulu ʻOhana and Kalaupapa National Historical Park. These members represent government, academia, nonprofit and community groups, providing a well-rounded perspective for integrated research.

Findings lead to a better understanding of ʻopihi from both a scientific view – which will help in improving management of this prized species – as well as a cultural one, honoring and exploring the spiritual and physical connections to this special place.

“In the past, tidepools and rocky shorelines were places where women gathered food and children learned about the ocean,” Springer said. “They were vitally important as a source for food and education, something we should strive to maintain throughout the Hawaiian archipelago.”

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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 Hawaiʻi - 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.