NOAA FISHERIES

Papahānaumokuākea Marine National Monument Lesson Organization

Lesson 1: Marine Debris –What are the most common materials that form marine debris and how does marine debris affect PMNM?

Contents

1. Lesson Plan
2. Student Worksheet
3. Student Worksheet ANSWER KEY
4. Marine Debris Photos
5. Overview of Plastic Types

Lesson 2: Biodiversity – What is the importance of biodiversity and how is PMNM unique with respect to its biodiversity?

Contents

1. Lesson Plan
2. Student Worksheet
3. Student Worksheet ANSWER KEY
4. Biodiversity PowerPoint
5. Shannon-Wiener Diversity Index Spreadsheet Blank
6. Shannon-Wiener Diversity Index Spreadsheet ANSWER KEY

Lesson 3: Science and Technology – What processes guide research going on in PMNM and what tools and techniques do scientist use to carry out that research?

Contents

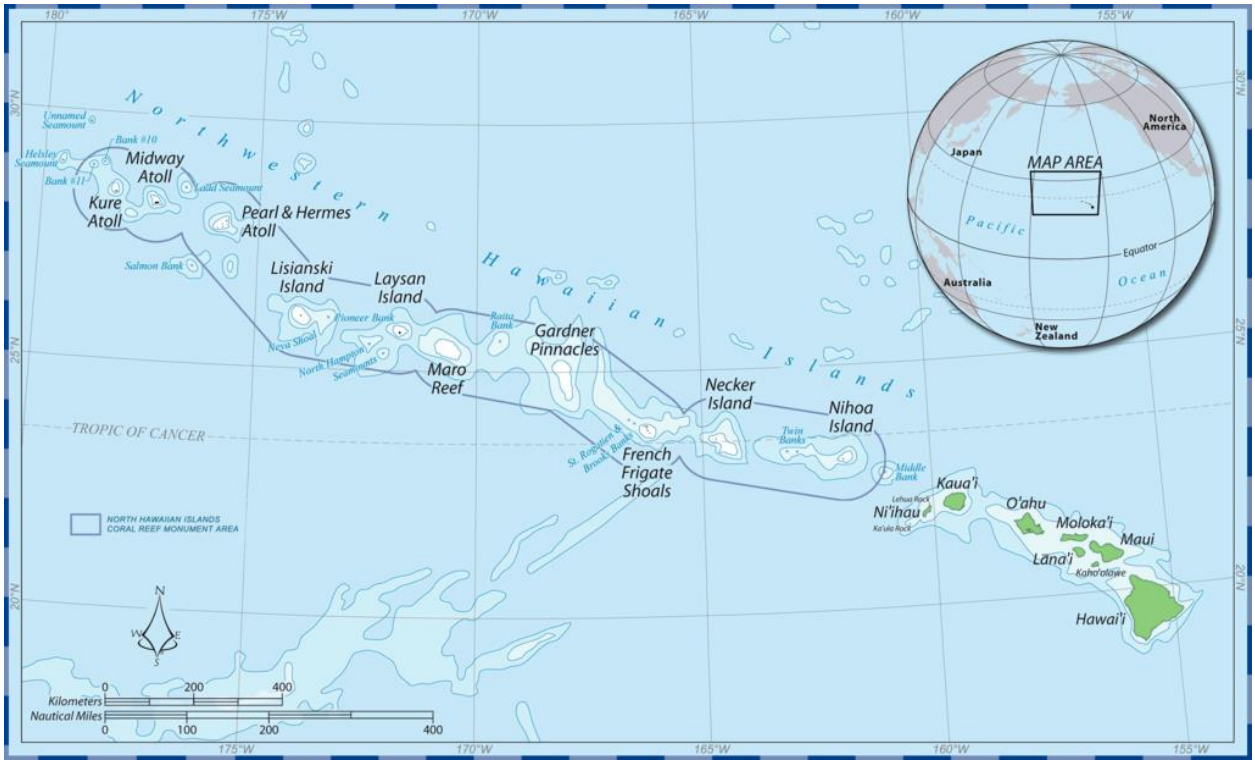
1. Lesson Plan
2. Student Worksheet
3. Student Worksheet ANSWER KEY
4. Four Cruise Summaries
5. Student Research Topics
6. French Frigate Shoals Bathymetry
7. RV Oscar Elton Sette Spec Sheet

Preface: Papahānaumokuākea Marine National Monument

Papahānaumokuākea Marine National Monument is the second largest conservation area within the United States. The name comes from the names of two Hawaiian ancestors, Papahānaumoku and Wākea, whose union created the Hawaiian Islands and the Hawaiian peoples. It was established in 2006 and in addition to its national monument status it has also been declared a natural and cultural World Heritage Site by UNESCO. The establishment of the national monument combined several existing conservation areas into one entity and added additional waters. The monument encompasses 139,797 square miles and extends northwest for 1,200 nautical miles starting north of the island of Kaua'i. In addition to the agencies managing the MNMs, the state of Hawaii and the Office of Hawaiian Affairs are involved in the management of Papahānaumokuākea. The vision and mission for the monument includes protecting the ecosystem and natural systems as well as the cultural resources and Native Hawaiian culture connected to the islands.

Though the majority of the monument is open ocean and submerged reef, there are a handful of atolls and islands with emergent land. Its remote location and historically low level of human impact has left Papahānaumokuākea MNM in a relatively pristine condition providing excellent habitat for resident species and a unique environment for scientists to study and to better understand how humans are affecting coral reef ecosystems elsewhere. This monument is home to over 7,000 marine species and has a very high level of endemism with roughly ¼ of those species found only in the Hawaiian Archipelago (NOAA). Several endangered and threatened species reside in the waters of the monument including the Hawaiian monk seal, green sea turtle, and the Laysan duck. There are also Native Hawaiian cultural sites on the islands of Nihoa and Mokumanamana.

The NWHI have been the focus of lots of scientific research and the high levels of endemism are frequently noted (Friedlander et al., 2009; Fautin et al., 2010). Recent dive surveys report that 46% of reef fish in the NWHI are endemic. Endemism appears to vary with latitude as well, at the southern end of the islands there was 16% endemism ranging up to 92% at the northern extent of the chain (Kane, Kosaki, and Wagner, 2014). Another feature frequently noted is the apex predator dominated food web, a feature not seen in coral reefs in less pristine condition (Sandin et al. 2008; Friedlander et al., 2009).



For more information:

Papahānaumokuākea MNM
http://www.fpir.noaa.gov/MNM/mnm_papahanaumokuakea.html

http://www.papahanaumokuakea.gov/

NOAA Marine National Monument Program
http://www.fpir.noaa.gov/MNM/mnm_index.html

Sources

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Friedlander, A., Keller, K., Wedding, L., Clarke, A., Monaco, M. (eds.). (2009). A Marine Biogeographic Assessment of the Northwestern Hawaiian Islands. NOAA Technical Memorandum NOS NCCOS 84. Prepared by NCCOS's Biogeography Branch in cooperation with the Office of National Marine Sanctuaries Papahānaumokuākea Marine National Monument. Silver Spring, MD. 363 pp.

Kane, C., Kosaki, R. K., & Wagner, D. (2014). High levels of mesophotic reef fish endemism in the Northwestern Hawaiian Islands. *Bulletin of Marine Science*, *90*(2): 693–703. doi:10.5343/bms.2013.1053

NOAA. Papahānaumokuākea Maine National Monument. http://www.papahanaumokuakea.gov/welcome.html

Sandin S. A., Smith J. E., DeMartini E.E, Dinsdale E. A., Donner S.D., et al. (2008). Baselines and Degradation of Coral Reefs in the Northern Line Islands. PLoS ONE 3(2): e1548. doi:10.1371/journal.pone.0001548