NOAA FISHERIES

Pacific Remote Island Marine National Monument Lesson Organization

Lesson 1: Seabird Biology – What types of seabirds live in the PRIMNM, how do the live and what are the challenges they face?

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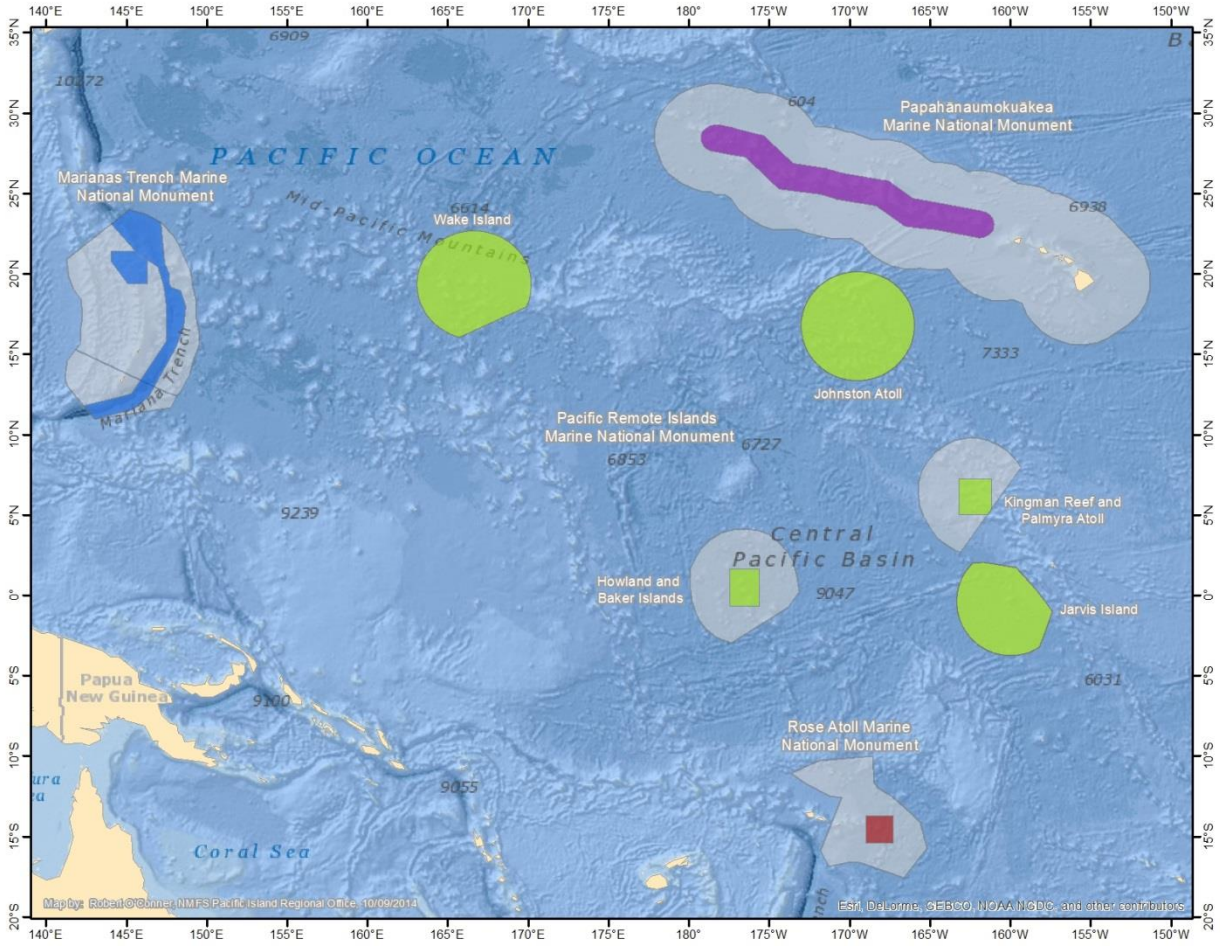
Preface: Pacific Remote Islands Marine National Monument

The Pacific Remote Islands Marine National Monument (PRIMNM) consists of seven atolls and islands: Howland, Baker, and Jarvis Islands, Wake, Palmyra, and Johnston Atolls and Kingman Reef. These islands are farther from a population center than anywhere else in the United States (NOAA, 2014). Created by Presidential Proclamation on January 6, 2009, the monument was established to protect some of the most pristine coral reef ecosystems in the United States and the entire world. A Presidential Proclamation on September 25, 2014, turned the Pacific Remote Islands Marine National Monument into the largest marine reserve in the world. The recent Presidential Proclamation extends the boundary of the monument from 50 nautical miles from the mean low water line of the islands and atolls to the full extent of the U.S. Exclusive Economic Zone (EEZ) for Wake and Jarvis Islands, and Johnston Atoll. The enlarged monument will now be about 490,000 square miles, or larger than all the terrestrial national parks combined. The islands and atolls of the PRIMNM are home to a large number of threatened and endangered seabirds, corals, fish, marine mammals, and plants, many of which are endemic to the region.



Baker, Howland and Jarvis are low coral islands that were claimed by the United States in 1856 under the Guano Act. These islands are characterized by localized upwelling due the Equatorial Undercurrent

which supports high productivity, fish biomass, seabirds, and top predators. The recovery of the seabirds has been the subject of research following the removal of feral cats from each of the islands. Scientists have seen the return of several species of extirpated seabirds on all three islands in the years following cat eradication (Rauzon, Forsell, Flint, and Gove, 2011).

Johnston Atoll is the northernmost of the Line Islands and extremely isolated. The U.S. also claimed it under the Guano Act; however the atoll was also claimed by the Kingdom of Hawaii. It was actively used during WWII as a refueling base and was home to a U.S. Air Force base which was closed in 2004. Johnston is also very old and probably one of the oldest atolls in the Pacific Ocean. Biologically, Johnston has been identified as a connection between the Hawaiian and Line Islands (Friedlander at al., 2009, Fautin et al., 2010). Wake Atoll is the northernmost atoll of the Marshall Islands and one of the oldest living atolls in the word. Wake also has a history of military activity and was actually taken over by the Japanese from 1941-1945.

Palmyra Atoll is the only one of the group that has any human presence besides the occasional research or management visit. Palmyra was also a military base in WWII; roughly 6,000 men were stationed there at one point. It eventually was sold by Hawaii to a private family which sold the atoll to The Nature Conservancy (TNC) in 2000. TNC then sold most of the island to the U.S. Fish and Wildlife Service and the atoll is now jointly managed between the two groups. TNC maintains a small research station on one of the islets that make up Palmyra. Because of that research station, the atoll, lagoon, and surrounding reef at Palmyra have been the subject of much scientific research. The spread of an invasive species of corallimorph in an area of reef has been investigated and traced to a shipwreck on the western shelf of the reef (Work, Aeby, and Maragos, 2008). This was the first time a perceived phase shift on a coral reef could be attributed to a human structure and recently led to the removal of the shipwreck. Palmyra has one of the largest remaining stands of *Pisonia grandis*, a tropical tree, and is an important nesting and feeding ground for birds. It has some of the largest colonies in the world of red-footed boobies and black noddies (TNC, 2013). It is also home to the endangered coconut crab, the world's largest land invertebrate, manta rays, giant clams, and sea turtles. Kingman reef is located roughly 36 nautical miles northwest of Palmyra and is the most undisturbed coral reef in the U.S. Unlike the other islands and atolls in the group, Kingman is a mostly submerged reef with no permanent land and the small bits of emergent coral rubble and sand typically awash. It has a large population of giant clams and an extremely high number of apex predators. 85% of the fish biomass is composed up of apex predators like sharks and jacks (FWS, 2012).

For more information:

NOAA Pacific Remote Islands Marine National Monument
http://www.fpir.noaa.gov/MNM/mnm_prias.html

Presidential Proclamation – Pacific Remote Islands Marine National Monument Expansion
http://www.whitehouse.gov/the-press-office/2014/09/25/presidential-proclamation-pacific-remote-islands-marine-national-monumen

Sources

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U.S. Fish and Wildlife Service (2012). Pacific Remote Islands Marine National Monument Fact Sheet. http://www.fws.gov/pacificremoteislandsmarinemonument/PRIMNM%20brief.pdf

Rauzon, M., D. Forsell, E. Flint, and J. Gove. (2011). Howland, Baker, and Jarvis Islands 25 years after cat eradication: the recovery of birds in a biogeographical context. Island invasives: eradication and management. 345-349.