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## Acoustic monitoring reveals the seasonal occurrence of humpback whales and four other baleen whale species in the Mariana Archipelago

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The Pacific Islands Fisheries Science Center maintains year-round acoustic monitoring at two sites in the southern portion of the Mariana Archipelago. From March 2010 to June 2014, High-frequency Acoustic Recording Packages recorded duty-cycled data at 200kHz sample rate over 705 days at the 'Tinian' site and over 586 days at the 'Saipan' site. A decimated dataset was automatically and manually scanned, with calls from humpback, fin, blue, minke, and sei whales detected, as well as two other common call types for which species identity has not been confirmed. The relative occurrence of calls from each species varies by year and site, with humpback whale song the most commonly detected call type across the entire dataset, followed by fin whale 20Hz downsweeps. Humpback song was detected from October to April at both sites, with periods of song commonly lasting 2-15 days, followed by 1-20 days with no detections. Fin whales were heard from January to May, with detections on 20 days in 2014 versus only 6 total days in all prior years. Blue whale 20Hz tonal calls, typical for central Pacific blue whales, sei whale downsweeps, and minke whale boings were detected on only a few days each within the entire dataset. Propagation modeling at both sites suggests baleen whale calls may be detected up to 100km from the monitoring locations. The acoustic results indicate sporadic occurrence of humpback whales in this area. A visual survey in February and March of 2015 resulted in sightings of at least 12 individual humpback whales off of Saipan, including at least 4 mother-calf pairs, suggesting humpbacks may use the Mariana Archipelago as a breeding ground and are not just passing through to other regions. Continued acoustic monitoring may provide a basis for assessment of population trend of this proposed 'threatened' population in this area.

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