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Cetacean occurrence from passive acoustic monitoring in Guam and the Mariana Islands, 2011-2012

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To understand cetacean occurrence in Guam and the Commonwealth of the Northern Mariana Islands, the United States Navy initiated long-term passive acoustic monitoring in 2011. Data were recorded in September 2011 - January 2012 and April - September 2012 by ecological acoustic recorders (EARs) deployed at two sites off Guam, one at Saipan, and one at Tinian, at depths of 750 - 950 meters. Manual and/or automated analyses were conducted to detect sounds from dolphins, sperm whales, baleen whales, beaked whales, and mid-frequency active sonar (MFAS). Dolphin and sperm whale presence were greatest at the north Guam EAR compared to other sites. Dolphins were more prevalent in spring and summer than in autumn and winter, whereas the reverse was true for sperm whales. Spatial and seasonal patterns varied for dolphin encounters grouped by whistle frequency (above, below, or both above and below 10 kHz), indicating spatiotemporal differences in species assemblages. Humpback whale song was detected at Saipan in December 2011 and April 2012. Three unidentified baleen whale calls were detected in October-November 2011 at the north Guam EAR, and no other baleen whale calls were detected. Beaked whale clicks were automatically detected in <1% of the data (696 of 134856 data files), and 131 of these detections were reviewed manually. Only 12% of the reviewed files (n = 16) were confirmed to contain clicks from Cuvier's (n = 4) or Blainville's (n= 12) beaked whales, occurring at all sites except southwest Guam. MFAS was detected at Guam and Saipan. A multi-day MFAS event in Oct 2012 was associated with a 12-d absence of dolphin detections at the southwest Guam EAR, compared to a mean of 2 d and maximum 5 d absence otherwise. No other anomalous absences of dolphin detections were observed during or following other MFAS events.