

Automatic detection of blue whale calls from ocean bottom seismometer array at the East Pacific Rise, 9°50'N

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In the eastern tropical Pacific, blue whales are known to congregate near Baja California and the Costa Rica Dome (9°N, 89°W) where they are present year-round, with peak numbers in the winter and spring. There is currently debate about whether the whales observed year-round in the eastern tropical Pacific are part of a resident population or if they are members of multiple regional groups exhibiting complex migratory patterns. In addition, few blue whales have been found in other areas of the eastern tropical Pacific. We use data from an ocean-bottom seismometer array at 9°50'N of the East Pacific Rise and an automatic spectrogram cross-correlation detection algorithm to count blue whale B calls over a 20 month period during 2003-2005. We find that blue whales producing B calls are transiently present at East Pacific Rise, 9°50'N in late September to early October for 1 to 3 days and for periods of 2 to 7 days from December to February. We calculate false detection rates and show that the detection algorithm is relatively insensitive to noise. Increased understanding of the detector's response to earthquakes, other animal sounds, and blue whale A calls is needed. We also compare the intervals between calls for days with high and low false detection rates and find that the time between detections can be used as a screen for false detections.