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Species identification and measurement of activity in odontocete species of Palmyra Atoll by acoustic monitoring

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Acoustic monitoring has been used to study odontocete presence at Palmyra Atoll, a remote island in the Northern Line Islands chain. Long-term recordings of high-frequency, broadband acoustic data have become possible with recent technological advances. A High-frequency Autonomous Recording Package (HARP) has been developed which samples at 200 kHz with a duty cycle of 1/4 for up to seven months. This instrument has recorded since October 2006 at Palmyra Atoll. Visual and acoustic surveys were conducted around Palmyra Atoll using a four-element towed hydrophone array sampling real-time at 200 kHz to obtain species-specific acoustic data. These data are used as reference for automatic detection algorithms applied on the long-term recordings. To date, acoustically and visually detected odontocetes include bottlenose dolphins (Tursiops truncatus), spinner dolphins (Stenella longirostris), melon-headed whales (Peponocephala electra) and beaked whales of the genus Mesoplodon. The long-term HARP data reveal acoustic activity primarily at night time and predominantely odontocete clicks. Both the beaked as well as the melon-headed whales are present year round and show a distinct daily acoustic activity cycle.