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Long-term Passive Acoustic Monitoring of Delphinids in the Southern California Bight

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Spectral characteristics of clicks are described for five species of delphinids in the Southern California Bight (long-beaked common dolphins, *Delphinus capensis*, short-beaked common dolphins, *Delphinus delphis*, Risso's dolphins, *Grampus griseus*, Pacific white-sided dolphins, *Lagenorhynchus obliquidens*, and bottlenose dolphins, *Tursiops truncatus*). Recent technological advancements allow long-term, broadband (100 kHz bandwidth), passive acoustic monitoring from autonomous sea-floor mounted instruments. The ability to record higher frequencies allows study of a broader range of odontocete vocalizations including echolocation clicks. To determine whether delphinid species could be identified by their clicks, concurrent ship-based visual and acoustic surveys were conducted. We find that clicks from Pacific white-sided and Risso's dolphins contain spectral peaks and notches that are unique and consistent for each species. These spectral patterns are also apparent in long-term autonomous acoustic recordings throughout the Southern California Bight. Utilizing this spectral classification method, we examine of diel, seasonal, and habitat use patterns of acoustically active Risso's and Pacific white-sided dolphins. The ability to monitor animals through the night provides insight into distinct diel patterns of acoustic activity for both species while the high temporal resolution acoustic data can be used to relate oceanographic time series to dolphin activity.