NARROW BAND HIGH FREQUENCY ECHOLOCATION CLICKS OF FRANCISCANA DOLPHINS ARE DIFFERENT FROM CLICKS PRESUMED TO BE FROM DWARF AND PIGMY SPERM WHALES

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Passive Acoustic Monitoring (PAM) is a tool for solving ecological and biological questions since many organisms produce sounds. A challenge to enhance PAM studies is the ability to detect and recognized sound sources. Toothed whales produce echolocation clicks routinely while foraging, traveling and socializing. Four different families of odontoceti produce a type of click known as Narrow Band High Frequency or NBHF. Here we present a study that assesses the potential for acoustic identification between odontoceti groups that produces NBHF clicks. We compared the NBHF clicks collected in the presence of Fransciscana dolphin (*Pontoporia blainvillei*) in Babitonga Bay, southern Brazil, with acoustic detections of NBHF clicks collected in a series of surveys (PMC-BS surveys) in shallow and deep waters of the South Brazil Bight, using a towed array of hydrophones. Clicks from original records were extract using the PAMGUARD click detector (test band of 120-140 kHz). A total of 2.000 clicks were extracted from Babitonga Bay (3 days of records) and 1.427 clicks from 11 NBHF click acoustic encounters (recorded in oceanic waters > 1.000m depth along 4 years of PMC-BS surveys). Two other brief acoustic detections from PMC-BS surveys, totalizing 25 NBHF clicks, were record in coastal waters of 20m depth. We compared the spectral characteristics (extracted from 10 parameters using PAMGUARD/ROCCA algorithm) of the NBHF clicks from Fransciscana and PMC oceanic and coastal data using Discriminant Function Analyses (DFA). Fransciscana dolphin had a higher peak and center frequency (133,4kHz and 133,2kHz, respectively) than oceanic NBHF clicks (126,8kHz and 127,2kHz). The DFA had a high percentage of correct classification for oceanic NBHF clicks (99.3%) and Fransciscana (97.8%). The NBHF click producer species known to live in oceanic waters are the dwarf sperm whale and pygmy sperm whale (*Kogia* ssp.) and they are the most probably source of the clicks presented here. The coastal NBHF clicks had a very limited data for a conclusion, but peak frequency were similar to the data collected in Babitonga Bay (134,6kHz). It was observed a tendency for higher peak frequency for coastal species (Fransciscana) compared to oceanic species (presumed *Kogia* ssp.). These species detected here are difficult to sight at sea due to their elusive behavior. These results can contribute to the development of tools for acoustic detection and classification in PAM systems.