

Whatcha saying? Evidence of production learning in a solitary common dolphin during interspecific interactions with a harbour porpoise

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Several cetacean species have the ability to change their acoustic repertoire (i.e., production learning) as a result of interactions with other species. This ability has mainly been observed in captive individuals and few cases have been reported for wild cetaceans. A long-term affiliative association between a solitary short-beaked common dolphin (henceforth common dolphin) and a harbour porpoise in West Scotland provided the opportunity to study this ability in wild cetaceans. Harbour porpoises produce entirely stereotyped narrow-band high-frequency echolocation clicks with peak frequencies around 130kHz. Clicks are emitted in trains and used for travelling, foraging, and communication purposes. Common dolphins' echolocation clicks are widely understudied. Available data suggests these are frequency banded (i.e., with distinct peaks and notches in their power spectrum) with peak frequencies below 67kHz. Common dolphins also produce other sounds for communication purposes, including whistles and barks. Data was collected during systematic and opportunistic surveys using a towed hydrophone array. Vocalisations of both species were recorded when interacting as well as when seen alone. Using custom-built algorithms, individual dolphin and porpoise echolocation clicks were extracted, and several parameters estimated, including amplitude, and peak and centroid frequencies. The dolphin regularly produced clicks with peak and centroid frequencies over 100kHz, centred around 120kHz, when accompanied by the harbour porpoise, as well as when alone. Typically, the centroid frequency varied within a click train, between values below 50kHz to over 140kHz. Other sounds were detected, including barks and buzzes, however no whistles were recorded. No changes in the porpoise acoustic repertoire were detected. The preliminary results of this study suggest the common dolphin changes its acoustic repertoire, likely as a result of the interaction with a harbour porpoise. This is the first time the common dolphins' ability for production learning (in the wild or in captivity) has been reported

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