on ocean basins, oceanographic currents and prey distribution to assess potential drivers of population structuring in this species. Bayesian and traditional analyses of population genetic structure revealed the presence of at least six management units (MUs) of common dolphins, of which a minimum of two are potentially impacted by the two fisheries. These MUs need to be managed separately for conservation purposes and for monitoring and mitigation of common dolphin fishery interactions off southern and southeastern Australia. We suggest that sub-structuring and migratory movements of common dolphins across these regions are driven by spatial variations in oceanography, upwelling events and fish distribution. This study exemplifies how information on genetic sub-structuring in a neritic top predator can provide valuable information for fisheries by-catch management.

Longitudinal comparisons of digital photography of marine mammals from aircraft and shore

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Rapid progress and affordability of photographic technology with increasing improvements in image resolution have facilitated advancements in efficiency and alternative approaches in data collection for marine mammals. We report these recent improvements by comparing marine mammal photographs taken during 2008-2013 aerial surveys of 16 marine mammal species in the Southern California Bight, shore-based studies of bottlenose dolphins (*Tursiops truncatus)* in Galveston Bay, Texas (2011-2013), and gray whales (*Eschrichtius robustus)* off Sakhalin Island, Russia (2004-2010). Various Canon and Nikon high-definition cameras ranging from 8.2-36.3 MP resolution and 70-1600 mm lenses with image stabilization were used during the studies. Results of these photographic comparisons demonstrate the evolution of digital photography advancements with the successful capture of individuals, as well as detailed information for behavioral ecology studies. For example, (1) individual identification of marine mammal species from aircraft not previously reported (Risso's dolphins (*Grampus griseus*), killer whales (*Orcinus orca*), and blue and fin whales (*Balaenoptera musculus* and *B. physalus*)), (2) shore-based individual identification of bottlenose dolphins up to 500 m and of gray whales up to 2 km from shore, (3) instantaneous differentiation/confirmation of short-beaked vs. long-beaked common dolphins (*Delphinus delphis* and *D. capensis*) from 1,500-ft altitude with a 36 MP camera, (4) reduced proportion of "unidentified" dolphin and whale species, and (5) potential tracking of the behavior, social associations and durations, and relative position within the group of some individually identified delphinids and other species not previously studied in this manner. High- definition digital photography reduces costs and acquisition/processing time from earlier "tried and true" analog photography. This facilitates, advances, and compliments the efficacy of data collection for population and behavioral ecology studies on marine mammals, most recently allowing capture of individual identification images at distances of up to 2 km away

Beach Boys – Good Vibrations: Seismic signatures of communication displays and anthropogenic disturbances of breeding grey seals (*Halichoerus grypus*).

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Communication studies in marine mammals typically focus on visual or auditory components, but the sexual size dimorphism of many terrestrially breeding pinnipeds suggests that seismic signals generated through body-substrate contact might also function in communication. Elephant seals (*Mirounga sp*) have been shown to generate and react to seismic signals, but communication by seismic waves in other species has been largely overlooked. The grey seal (*Halichoerus grypus*) breeding colony at Donna Nook, UK, attracts over 70,000 tourists annually, is located on a Ministry of Defense bombing test range, and is part of the geographic region where a unique Body Slap (BS) behaviour is performed during male-male conflicts. We sought to identify the seismic characteristics of the BS and of various anthropogenic events which occur at this colony. We deployed 2 Guralp-6TD seismometers during the breeding season which record continuous seismic data over a frequency bandwidth 0.03Hz-500Hz. Locations and times of BS events performed by individually identified males were recorded, along with anthropogenic events including jet flyovers and tourist activity. We matched these field observations with the seismic data, and extracted amplitude and frequency (Hz) for each event. Our results indicate the BS generates a stereotyped seismic signature measurable up to 90m away. We found individual consistencies, and found that the rate of display and the seismic components varied by male size and across substrate type. Finally, we identified the seismic signatures of the various forms of anthropogenic disturbances. Results of this study demonstrate that there is information conveyed in the seismic component of the BS display; that habitat structure influences rates and patterns of communication; and that the anthropogenic seismic events overlap with seal communication signals. These methods provide a novel opportunity to investigate this component of animal communication, and to monitor hidden impacts of human activity on breeding grey seals.

Geospace or Hydrospace: Harbor seal (*Phoca vitulina*) movement in a high energy site

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Swimming animals are affected by the medium in which they live and must employ a variety of movement strategies to maintain energetically efficient travel within the oceanic environment. Movement derived from telemetry data can be used to infer biological behaviors such as foraging and identify highly important areas such as foraging grounds. Telemetry data provides 2D positions relative to the fixed earth, or geo-referenced, which does not consider the dynamic movements of the sea (i.e., tidal currents). Removal of tidal current data from geo-referenced tracks results in a track relative to the water, or hydro-referenced. Recent investigations of aquatic species have shown that additional biological and ecological inferences (i.e., energetic expenditure) can be attained by evaluating the hydro-referenced track. Due to the low sampling frequency and large errors associated with satellite position estimates, a technique was developed using fine-scale GPS telemetry data of one harbor seal (*Phoca vitulina*) tagged in 2011 at a high-energy site in the Pentland Firth, Scotland. Isolation of the swim movements by subtracting the current from the geo-referenced track of seal a showed significant reductions in mean distance traveled (two-sample Mann-Whitney U test: W = 7549, p-value