To Boing or Not to Boing? The Acoustic Behavior and Ecology of Minke Whales (*Balaenoptera acutorostrata*) Near Subtropical North Pacific Islands

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The minke whale (*Balaenoptera acutorostrata*) is rarely sighted in subtropical waters but produces a unique sound called a 'boing'. Our goal is to characterize the acoustic behavior and ecology of calling minke whales off subtropical islands in the North Pacific using passive acoustic methods. We conducted passive acoustic monitoring of minke whales at four sites between 2006 and 2010: 1) A large area (585,800 km^2) around the Northern Mariana Islands (Western North Pacific); 2) The Pacific Missile Range Facility, off Kauai, Hawaii (Central North Pacific); 3) Ladd Seamount, Northwestern Hawaiian Islands (Central North Pacific), and; 4) Wake Island (located in between the Hawaiian Islands and Mariana Islands). Acoustic data were recorded in deep waters using surface towed hydrophones (sites 1&2), cabled seafloor hydrophones (site 2) and High-frequency Acoustic Recording Packages on the seafloor (sites 3 & 4). We measured 15 acoustic variables from boings at all sites. Random Forest analysis indicated differences for some variables and sites. Results will be discussed relative to known population structure of minke whales. We conducted spatial analysis using acoustic line-transect data collected at sites 1 & 2. Results indicated a dispersed (uniform) distribution with an affinity for deep water and a clustered bi-modal distribution versus depth for site 1. Distribution at both sites will be compared in relation to bathygraphic and oceanographic variables. We provide examples of counter-calling and possible acoustic responses to research vessel noise at site 2. Call rates were quantitatively examined by comparing consecutive 10 min periods with low and high noise conditions using paired t-tests. Results indicate a complex response to vessel noise. These results provide important information about the acoustic ecology and behavior of minke whales that can be used by resource managers and policy makers to improve the conservation and management of this elusive but common whale.

Manatee pedigree reconstructions in Mexico: Are 30 microsatellites enough?

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Little is known about pedigrees, relationships and reproduction in manatees. Pedigree studies provide information that estimates the number of breeders in a population and the reproductive success among individuals. Understanding pedigrees helps maintain genetic diversity in captive programs. Improving fitness in captivity will enable individuals to adapt to new environments, and ensure greater success in management breeding decisions, such as releasing individuals back into wild populations. A pedigree study was conducted in Mexico on 17 captive Antillean manatees using 16 and 30 microsatellites, and on 98 wild manatees using 16 microsatellites. Several manatees indicated a high level of relationship with each other through detection of parent-offspring, full sibling, and half sibling relationships. Two captive manatees, that reproduced together 3 times, showed a 99.2% probability of being fraternal twins. The high number of half siblings from the Jonuta closed lagoon (Tabasco) captive population may indicate that a dominant male fathered several calves producing multiple half sibling relationships and illustrating that inbreeding occurs. Nevertheless, even with 30 microsatellites, some inconsistencies were observed in the captive pedigrees. In the wild pedigree study, several relationships were found, even some that were not possible, such as a female juvenile having a parent-offspring relationship with five other manatees. The high number of linked relationships is probably a bias generated by the microsatellite marker's low number of alleles. Therefore, more markers are required to determine reliable pedigrees. New microsatellites were identified and it is now possible to employ up to 54 known markers for manatees to shed light on patterns in reproduction. Currently, mating has occurred in captive facilities in Mexico between biologically related manatees. Now that relatedness data are available, it is recommended that no breeding between related manatees be allowed. Also this information could be employed for selective breeding to provide a healthier resulting progeny.

Kinship, group structure and philopatry in beluga whales, *Delphinapterus leucas*: the genetic evidence

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Assessing the advantages of group formation is typically framed in terms of inclusive fitness. Determining the extent to which different types of animal groupings are kin-based is also central to understanding dispersal, and population structure and dynamics in social species. In recent decades, much research has been conducted on movements, dispersal and gene flow in beluga whales, Delphinapterus leucas, driven in large part by management needs. By contrast, research on group structure across much of the species range has been limited and no systematic genetic analysis has been conducted to date. Highly gregarious, beluga whales exhibit a wide range of group types, from large herds of 2000 or more to small groups of < 10 individuals. A number of authorities have assumed that beluga whale groupings are similar to killer whales and pilot whales where closely associated individuals are from the same maternal lineage. We genotyped 451 beluga whales sampled from 62 different groups across the species range, and found: 1) apart from cow-calf pairs, most group-members were not close relatives (r = 0.0314); 2) in almost all groups (n=58/62) multiple mtDNA matrilines (n=2-9) were documented within groups, regardless of group size; and 3) despite the low level of observed kinship within individual groupings, close kin (r=0.35-0.48) were found across years in the same population, sometimes up to three years apart. These results suggest a unique social system that is not based on high association indices among kin, but high fidelity to natal herd, subpopulation and key locations.