analyses of the Photo-ID data collected offshore Sakhalin indicate that inter- and intra-year movements of gray whales occur both within the Piltun and Offshore areas and between these areas. Over all the years of this study (2002-2010), 97 whales have been sighted in both the Piltun and Offshore feeding areas. The Sakhalin western gray whale catalogue currently contains 187 identified gray whales. We have also discovered movements of gray whales between the Sakhalin feeding areas and offshore Kamchatka. At present, the catalogue of gray whales photo-identified on the Kamchatka shelf during 2004 and 2006-2010 contains 140 fully identified animals. A total of 78 of these whales were also observed in different areas of the Sakhalin shelf during various years, and it is possible that most of them are western gray whales. It is still unclear to which population the other 62 animals belong. They were photographed near Kamchatka Peninsula, but were not observed in the Sakhalin area. The presence of known Sakhalin gray whales in offshore waters of the Kamchatka Peninsula, and their movement between the two regions, both during the same season and among seasons, is common. It is likely that some gray whales enter Olga Bay to feed early in the feeding season and then later move to Sakhalin, and possibly to other feeding areas as well. The variability in use of available feeding grounds offshore Sakhalin by gray whales is a subject for continued investigations.

The auditory anatomy of the minke whale (*Balaenoptera acutorostrata*): Insights into potential sound reception pathways in a baleen whale

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Ken Norris first described a potential mandibular sound reception pathway in odontocetes in 1964. To date, sound reception paths in mysticetes remain unknown. To understand hearing mechanisms in baleen whales, a thorough examination of their auditory anatomy is required. This study combines classical dissection with biomedical imaging techniques such as X-ray computerized tomography (CT) and magnetic resonance imaging (MRI) to describe the anatomy of the minke whale head with a focus on the ear region. Six individuals have been examined to date. Findings include a large, well-formed fat body adjacent to the posterior mandibular ramus and lateral to the tympano-periotic complex. This structure tapers medially, attaching to the tympano-periotic complex near the base of the tympanic membrane. The fats appear to be continuous with a smaller fat pad within the tympanic cavity, contiguous to the tympanic membrane and ossicles. Odontocetes receive sound via distinctive perimandibular fats that lead to a similar region of the tympano-periotic complex. While a fat body in baleen whales has been described in the context of the temporo-mandibular joint (Beauregard, 1882; Lambertsen et al., 1995), its relationship with the ears and auditory implications were not the focus of prior functional analyses. Notably, the majority of the tympanic bone is surrounded by a thick, fibrous, multi-layered connective tissue adjacent to the peribullar tissue dorsally. This fibrous tissue may serve as an acoustic baffle limiting incoming sound from locations other than the fat body.
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A comparison of the behavioral development of biological and surrogate bottlenose dolphin (*Tursiops truncatus*) mother-calf pairs

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As both wild and captive dolphin calves develop, they spend less time with their mothers and more time engaged in independent activities. In this study, the social development of two captive dolphin calves was examined from the time the calves were born until they were 17 months of age. One of the calves was placed with a surrogate mother shortly after birth due to neglect by the biological mother. The other was reared by its biological mother. Focal animal behavioral ethogram data were collected using 30 second scan sampling. The predominant swim position and individual behaviors were recorded. Chi-square results showed a significant difference in frequency of swim position for each dolphin calf ($P < 0.01$). The calf paired with a surrogate mother swam in infant position more so than the other calf. The calf reared by its biological mother was more likely to engage in solo swimming than was the other calf. However, there were a number of general developmental patterns: (1) an increase in the percentage of time that both calves engaged in solo swimming, (2) an increase in infant position, and (3) a decrease in echelon position. The calves engaged in similar amounts of solitary and social behaviors, with 65% of their individual behaviors recorded as social. The shift in primary swim position and increase in independent (solitary) behaviors exhibited over the 17-month period were consistent with other studies on calf development. The basis for the difference in predominant swim position by each calf could be a result of the type of mother (surrogate or biological), the unique personalities in the calves, or a combination of both.

Distribution prediction of Indo-Pacific humpback dolphins (*Sousa chinensis*) in Taiwan

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In Taiwan, the population size of Indo-Pacific humpback dolphins (*Sousa chinensis*) is less than 100 individuals and the population has been listed as "Critically Endangered" (CR) by IUCN since 2008. Due to limited knowledge of how the environmental factors shape distribution pattern, building predictive models allowed identifying key factors and predicting suitable habitats which together with observed data will provide practical information to conservation management. Data acquired from 2006-2010 boat surveys and from nautical charts were used in ArcGIS 9 to build sighting positions and environmental layers, including salinity, water depth, slope, nearest distance to shore and to river mouth. Three models including Generalized additive models (GAMs), Maximum Entropy models (MaxEnt) and Genetic Algorithm for Rule-Set Prediction (GARP) were employed and evaluated by AUC measures. The selected best models recognized maximum and standard deviation value of water depth, standard deviation value of salinity and nearest distance to shore as key environmental factors. After binary classification for predicted probability, an ensemble approach was applied to produce the prediction that best described the overall pattern. Predicted suitable areas by at least two models covered most part of the observed occurrence. Within the range of suitable area, two areas with higher sighting rates were indicated, suggesting the importance of these areas. However, two predicted suitable areas were lack of occurrence. This inconsistency might be due to insufficient effort and