Effects of group size and social unit composition on the daily behaviour of the long-finned pilot whales

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The long-finned pilot whale is one of the rare species that is thought to exhibit natal group philopatry, where offspring of both sexes remain with their natal group. Although these whales can form aggregations of over 1000 of individuals, they are members of stable social units of only 8-12 individuals. The goal of this study was to investigate whether the behaviour of groups of whales was affected by: the number of social units they were composed of and the time of day. We performed 10 min scans of groups of whales in which we noted the group composition, group size, and behavioural states of the whales. We also photo-identified the individuals present in the groups. Each photo-identified individual was subsequently ascribed to a social unit using network analysis. We then compared the predominant behaviour of groups that differed in factors such as the number of social units present, group size, and time of day. For the most part, pilot whales appear to forage, rest, and travel in groups of less than 15 individuals and only with members of their social units. However, they socialize equally often in groups ranging from 5-30 individuals and where members of one, two, or three social units are present. They appear to have a diurnal behavioural cycle, with socializing and resting increasing in the afternoon and early evening. These results underscore that, although pilot whales might be following a diurnal cycle, one cannot fully explain their behaviour without considering the importance of their social units.

Simulating demographic scenarios for a declining bottlenose dolphin community: is there any hope for the Sado dolphins?

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A resident community of bottlenose dolphins (*Tursiops truncatus*) in the Sado estuary, Portugal, has been declining at least in the past three decades, with a present count of 26 animals, 20 adults and six individuals below 5 years of age.This community has exploited since historical times the rich estuarine and coastal waters, but its core habitat is now heavily disturbed by chemical pollution, underwater noise and traffic expansion. Recruitment rates have been low, and high calf mortality is a consequence of possible contaminant loads.The future prospects of this aged and threatened community were simulated using Vortex 9.93 (CZS). The best possible figures in the estimation of the current situation predict an average extinction time of 64.73 years (r= -0.079). At present plus 25 years it is estimated that the community will be down to 14 animals, and 100 years from now only six might be alive. The variation between the best and worse scenarios leads to estimations of 30 and 8 animals at present plus 25 years, and 38 and zero animals at present plus 100 years, respectively.This simulation exercise is, therefore, troubling, but several limitations in the study must be considered: it was assumed that the community is closed, the sex and age of several current individuals was estimated, no genetic data were used (there is no information on inbreeding rates or lethal alleles, for example) and it was further assumed that current environmental conditions are to be maintained. Only if significant changes in reproduction parameters or population exchange patterns occur is it likely that this resident community recovers.

High prevalence of congenital umbilical hernia in bottlenose dolphins (*Tursiops truncatus*) from the Adriatic Sea

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As part of a long-term project to investigate marine mammal strandings, 131 bottlenose dolphin (*Tursiops truncatus*) carcasses found in the Croatian part of the Adriatic Sea were examined from 1990 to April 2009. In 13 cases (five of them were either fetuses found in uteruses of dead mothers or aborted fetuses; while eight were born alive and lived for various periods of time) we observed congenital umbilical hernia, a malformation of the ventral abdominal wall. This malformation is well known in animals and humans and causes death in-utero or soon after birth in terrestrial animals. In humans, the congenital umbilical hernia appears in 3.5 out of 10,000 births. The bottlenose dolphin is the only resident marine mammal species in the Adriatic Sea, with an estimated number of around 200 adult individuals and around 20 cubs living in the Croatian area. It is estimated that between 15 and 20 bottlenose dolphin births occur there annually, so the estimated total number of births since 1990 is between 270 and 360. This means that congenital umbilical hernia appears in between 361 and 482 out of 10,000 births of bottlenose dolphins in the Croatian Adriatic Sea. Our findings indicate that the incidence of congenital umbilical hernia in the Adriatic bottlenose dolphins is more than 100 times higher than that recorded in humans. The cause of such high incidence in the bottlenose dolphin remains unknown. Our future research will focus on determining a degree of relatedness among affected animals using molecular markers, in which we would test the hypothesis of the genetic basis of this malformation in the bottlenose dolphin. Furthermore, we do not know whether such high incidence of congenital umbilical hernia is found only in the Adriatic bottlenose dolphin population, or is it inherent to the bottlenose dolphin species.

Satellite tracking of harbour porpoises: Scales and dynamics of foraging areas

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Harbour Porpoise (*Phocoena phocoena*) is one of the smallest marine mammals in Norwegian waters. It is often associated with coastal waters, but also found offshore. It is widely distributed around the northern hemisphere in temperate waters. Harbour porpoises can grow up to 1.5 to 2.0 meters and a maximum weight of 60 - 75 kg. The normally feed on small fish like capelin, herring and sprat. To gain insight to stock structure, site - fidelity, habitat utilization and home range of harbour porpoise a total of seven animals was tagged with ARGOS satellite transmitters. All animals were tagged within the Varanger fjord in Northern Norway in the summers of 1990 to 2001. The tagged animals was animals that was captured within keyways (Norwegian: kilenot), a trap made of gillnets, by local fishermen's that contacted our crew that attached the satellite transmitters to their dorsal fins and releases them. At the time of the tagging of these animals, very lilted was know about the (spatial) behaviour of harbour porpoises. Unfortunately there is very little data availably about the prey species in the area at the time of the tagging. The numbers of days with signal varied between 39 and 133 days. We estimated a kernel utilization distribution (Ford and Krumme, 1979; Jennrich and Turner, 1969) as a measure of home range (Burt, 1943) for all animals, which varied from 4 500 km^2 to 122 000 km^2. Further we calculated the first passing for all animals. Studying the variance of the first passing time as a function of radii (r) can discover which scale (radius r) the animal optimizes its search pattern (Fauchald and Tveraa, 2003). The analysis of first passing time indicates a large scale search effort within a radius of 20 - 40 km.

It is not what you know, but what you don't know: genetic analyses reveal a small unknown eastern North Atlantic breeding population of humpback whales

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