

boat traffic resulted in flushing of the seals from the rocks. The majority of these events were brought about by recreational power boats and fishing vessels. During our study, the haul out area was visited repeatedly by commercial shellfish boats and seal watch tour vessels. Our results suggested the seals did not habituate to reoccurring boat traffic. We concluded that disruption of resting behavior of harbor seals occurred on their overwintering grounds. Repeated disruptions by boats could cause increased energy expenditure of seals and lead to reduced fitness of individuals.

New Gas and Fat Embolic Pathology in Beaked Whales Stranded in the Canary Islands

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Recently, evidence of acute and chronic gas bubble lesions in tissues of different stranded cetacean species. Acute gas and fat embolic lesions have also been described in a mass stranding of beaked whales exposed to anthropogenic sonar signals (Neotapón, 2002). These findings raise some important pathological questions: (1) What the postmortem interval and necropsy technique necessary to diagnose acute gas emboli? (2) Are fat emboli common pathological findings in stranded cetaceans? (3) Do fat emboli develop at sea (*i.e.*, prior to stranding) or during the stranding process? Recent strandings in the Canary Islands provide valuable data to help address these questions. Firstly, two fresh stranded Blainville's beaked whales (*Mesoplodon densirostris*), one young adult female (stranded, 2003) and an old male (stranded, 2004) necropsied between 4 and 8 hours after death had massive, acute gas-bubbles within the porto-mesenteric system. Intravenous gas bubbles were found in other organs (*e.g.*, in the epicardial veins and meninges). Secondly, 18 out of 115 stranded cetaceans of six different species showed diverse grades of lung fat embolism. Most of the cetaceans with fat emboli in lung tissue belonged to deep and long duration diving species. The majority died due to anthropogenic causes like severe trauma caused by ship collision, or were associated with naval exercises and sonar activities. In some cases the cause of death could not be determined. Finally, four beaked whales arrived around the Canary Islands coasts approximately one week after the Majestic Eagle naval exercises conducted more than 100 km north of the Canaries in July 2004. The probability that the animals died at the sea is extremely high. All three beaked whales showed fat embolism (the fourth was not able to be analyzed due to extreme autolysis). Although mid frequency sonar was certainly used during the naval exercises, the use of other possible acoustic sources (*e.g.*, explosions, torpedos) is currently unknown.

Cetacean Socioecology?

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Socioecological models predict certain patterns of social organisation based on two main factors: predation pressures and feeding competition. Although initially developed based on studies on birds and primates, they are currently known as the Behavioural Ecology's theoretical framework to explain broader sociability in vertebrate species. Whether or not this can be done requires further studies on a broader range of species. Of particular interest are Ecothermal species, and species living under particularly different ecological pressures. *Sotalia guianensis* (grey dolphin, previously grouped with *Sotalia fluviatilis* or *tucuxi*) is a small odontocete (up to 2 m) that inhabits shallow and estuarine areas in south-american coasts. Along southern Brazilian coast, such species is described as forming small familiar (male-female-calf) groups when inhabiting estuarine bay waters. At Tibau do Sul (a 50 km coastal area in northeastern Brazil) a population of grey dolphin is observed in more open but shallow areas, rarely making use of an estuarine bay nearby. This population apparently forms groups larger than those described in southern areas (mean 5-6 individuals). This different social organisation seems to be related to

two factors: care of calf in risky waters, and greater success in collective than in solitary foraging (30% and 20%, respectively), although more detailed studies on the social structure of groups in both regions are needed. The socioecology of this group in relation to other *Sotalia* groups and in relation to socioecological models will be discussed.

Interspecific Interactions Between Marine Mammals and Turtles

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The National Marine Fisheries Service conducted an aerial survey, Mid-Atlantic *Tursiops* Survey (MATS) during July-August 2004 from Ft. Myers, Florida to Atlantic City, New Jersey. This survey was designed to estimate occurrence and abundance of bottlenose dolphins (*Tursiops truncatus*) on the western North Atlantic continental shelf. On several occasions, the junior author observed bottlenose dolphins and Atlantic spotted dolphins (*Stenella frontalis*) harassing loggerhead sea turtles (*Carretta carretta*). The dolphins chased the turtles, tossed them out of the water, and pushed the turtles underwater with their rostrums (beaks). We conducted a preliminary review of the interactions of marine mammals with both freshwater and sea turtles in the wild and in captivity. We located reports of interactions between nine cetacean, four pinniped, and two sirenian species with eight turtle species (two freshwater and six sea turtle). Interactions included dolphins apparently feeding on fish hiding under turtles, as well as apparently mischievous and possibly aggressive (*e.g.*, harassment) encounters by cetaceans, pinnipeds, and sirenians, which included physically moving turtles; chasing and poking at turtles; attempting to flip sea turtles onto their backs; pushing turtles underwater with their rostrums; and even tossing turtles high out of the water or onto sandy beaches. Interactions on land also occur, particularly on beaches used by nesting sea turtles. Attempted and successful predation attempts by both cetaceans and pinnipeds were also documented. Reported free-ranging interactions came from a variety of locations including Africa, Australia, the Azores, Brazil, French Polynesia, the Gulf of Mexico, Hawaii, the Mediterranean, Mexico, New Zealand, and Vanuatu.

Spatial and Temporal Variability in the Foraging Behaviour of Gray Whales (*Eschrichtius robustus*) in Clayoquot Sound

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Spatial patterns play a key role in many ecological models, but analysis is often limited to simple description of distribution. Research routinely links cetacean locations to simple variates in order to create a description of "habitat" and habitat use. In many cases such connections are poorly established links, while the significance of the scale selected for study is given little consideration. Understanding how animals use habitat on a fine scale is integral to wildlife ecology and responding to management questions. In this study, GIS analysis at two temporal scales of movement is used to examine the density patterns of whale habitat use and changes in the centres of activity. Eight maps of the 1997 – 2004 seasons of gray whale summer foraging behavior were produced displaying the overall seasonal density of whale activity, sequential weekly change of activity centres and the absolute density of animals using the site. From the results of this analysis a single map of the overall annual centres of activity for all years was created. Habitat use trends have some distinct spatial patterning. The overall within-season movement is interpreted as a product of typical patch foraging behaviour, where animals reduce patches to a "global" density. Rather than provide a full explanation of the vectors of movement of this process, we hypothesize a preferential use pattern; shifting from sheltered waters with more predictable prey to open water with a number of potential combinations of prey items. Change in habitat use between seasons is the result of fine and large scale components including the size of remnant prey