their transits when speed restrictions were not in effect followed by Tankers (58%), Service vessels (50%) and tugs (26%), but all reduced that by >9 percentage points when speed restrictions were in effect.

The influence of dynamic oceanography on cetacean abundance and distribution in Onslow Bay, North Carolina

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Oceanographic features such as fronts and eddies aggregate prey and create important foraging areas for marine predators. In the South Atlantic Bight (SAB), the Gulf Stream front and Gulf Stream Frontal Eddies (GSFEs) are known to provide important habitat for foraging seabirds, but their effect on cetacean abundance and distribution as not been considered. We combined standardized visual line transect surveys in Onslow Bay, North Carolina and analysis of remotely sensed oceanographic data to investigate the effects of dynamic oceanography on cetacean abundance and distribution in the SAB between June 2007 and October 2010 (77 survey days). We used generalized additive models (GAMs) to predict habitat use of the two most frequently observed species, bottlenose dolphins (*Tursiops truncatus*) and Atlantic spotted dolphins (*Stenella frontalis*), using the following predictor variables: sea surface temperature (SST), distance to Gulf Stream front, distance to shelf break, depth, and water mass (Gulf Stream, shelf waters, GSFE cold core and GSFE warm filament). Depth and distance to the Gulf Stream front best predicted bottlenose dolphin habitat ($p< < 0.001$), while distance to shelf break and SST were the best predictors of spotted dolphin habitat ($p< < 0.001$). GSFEs influenced habitat use of both species; the abundance of spotted dolphins differed by water mass when GSFEs were present (Chi square test, p=0.0001), but not when GSFEs were absent (Chi square test, p=0.34). Bottlenose dolphin sightings occurred significantly closer to the Gulf Stream front when GSFEs were not present (t-test, p=0.033). We discuss these findings in relation to the ecology of bottlenose and spotted dolphins and dynamic oceanographic processes occurring within the SAB.

Increasing mortality from white shark attacks drives decline in southern sea otters: estimating demographic impacts using a spatially structured projection model.

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Southern sea otters, a threatened marine mammal population in central California, are amenable for demographic analyses because a high proportion (~50%) of deaths are recovered as beach-cast carcasses from which age, sex, and cause of death can be determined. In recent years, the proportion of carcasses attributable to white shark attacks has increased both in magnitude and spatial distribution (see Hatfield et al., poster, this conference). We developed a spatially-structured projection model to evaluate population impacts of shark attacks. We estimated temporal changes in age- and sex-specific vital rates using maximum likelihood analyses of age-at-death distributions and population counts. We partitioned mortality risk between shark attacks and "all other factors", using a proportional hazards-type function to account for multiple competing risks, and evaluated alternate scenarios of variation in shark-related mortality. The best supported model included temporal, regional and sex-based differences, as well as time-region interactions. Over the last 10 years there has been an exponential increase in per-capita rates of shark attack, but this trend was greatest in the southern half of the population where a higher proportion of reproductive-age females have been affected. Between 1985 and 2000, shark-related mortality had minimal impact on population dynamics, with mean annual population growth just 0.8% lower than expected dynamics with no risk of shark attack. Since 2000, however, shark mortality has accounted for a substantial reduction in growth: when per-capita attack rates are constrained to pre-2000 levels but all other sources of mortality are allowed to vary as observed, the model projects a current population abundance of 3,250 and a growth rate of 2.5% per year, instead of the actual count of 2,711 and decline of -1.5% per year. Our model identifies geographic areas and demographic classes of greatest conservation concern, and highlights the need to reduce more manageable sources of mortality.

Geographic and temporal variations in cetacean strandings on the coasts of Baja California Sur, Mexico from 2006-2010

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A high diversity of cetaceans (32 species) is found in the waters of Baja California Sur, which is bordered on the west by the Pacific Ocean and on the east by the Gulf of California. Although high numbers of strandings occur in the area, little research has been conducted. Our main objective is to understand the spatial and temporal distribution of strandings and see if and how they relate to oceanographic and anthropogenic factors. Twelve beaches distributed along both shorelines were systematically surveyed once monthly for 3 to 5 years (depending on the stranding abundance) to document cetacean standings. Species, sex, length, human interaction evidence, and location data were collected for 437 cetaceans. Odontocetes comprised 85% of all strandings, while 15% were mysticetes. Distribution and abundance of strandings were compared with satellite data of sea surface temperature, chlorophyll–*a*, wind stress, currents and fishing effort data from the National fisheries institute. 95% of the strandings occurred along the Pacific coast with a pronounced peak in summer ($X^2 = 26.583$, $p=7.20E^{-06}$), corresponding to southwesterly winds, ocean currents running perpendicular to the coast, increased food availability and peak months of artisanal fishing effort. Species richness of stranded cetaceans varied between sites ($X^2 = 13.581$, p=0.0185) but not between years and seasons. Contrary to previous studies conducted on a smaller spatial and/or temporal scale, the abundance of strandings did not differ between years ($X^2 = 4.1894$, p=0.38098). Evidence of human interaction (missing appendages, propeller cuts and lesions consistent with fishing gear interactions) were identified in more than 9% of the carcasses. Although this percentage is higher than reports from previous studies, it likely underestimated the actual human interaction numbers due to the conservative evaluation of the carcasses.