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Who follows whom? Interspecific associations of between bottlenose dolphins and pilot whales in deep waters off La Gomera

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Off La Gomera (Canary Islands, Spain) a total of 23 cetacean species have been documented with bottlenose dolphins (*Tursiops truncatus*) and short-finned pilot whales (*Globicephala macrorhynchus*) being sighted most commonly, and often together in mixed groups. From 1995 through 2014 a total of 5,284 bottlenose and pilot whale sightings were recorded with aggregations of the two species observed on 569 occasions. Sighting data including group size, group formation, group composition, depth, slope, distance to coast, were analyzed statistically to answer the following questions: Do the two species randomly aggregate? Which species, if any, initiated the aggregations and which benefits or disadvantages are the driving factors? Results showed that interspecific associations were not of random nature, as group size and group structure differed significantly within the associations as compared to single-species-sightings. Evidence was found for bottlenose dolphins initiating the interspecific associations. E.g. mixed groups were found exclusively in the preferred habitat of pilot whales in deep waters. Furthermore the characteristics of the mixed-group sightings, i.e. seasonal distribution, habitat characteristics and group structure were rather similar to the pilot whale single-species-sightings than to the bottlenose dolphin single-species-sightings. A number of hypotheses for the underlying driving factors and motivations are discussed, such as predator avoidance, feeding success and social advantages.

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MO04

Modelling cetacean seasonal distribution in the Canary Islands. Why do nine cetacean species inhabit the archipelago year round?

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The Canary Islands hold a high biodiversity of cetaceans, but the scarcity of long-term data about their phenology, distribution and connectivity makes it difficult to track impacts from anthropogenic activities and to implement conservation management measures. Here we pool long-term time-series and effort-corrected sighting data collected during dedicated surveys as well as systematic sighting schemes from platforms of opportunity such as whale watching vessels and passenger ferries to analyse seasonal patterns of cetacean distribution using ARIMA modelling. The results show that at least nine species inhabit the archipelago year round, five of which are deep-diving whales. This is surprising given the oligotrophic character of the Canary Islands waters. We incorporate oceanographic data and apply spatial modelling to support the idea that the richness of species in the archipelago can be explained by the Canary Islands being an ecotone between temperate and subtropical waters, with meso-scale enrichment processes due to the vicinity of the upwelling off West Africa, local oceanographic dynamics and the complex geomorphology of these volcanic islands. Progressive warming of these waters, possibly as a result of climate change, might explain observed changes in the patterns of occurrence of rorquals, such as Bryde's whales. Combining data from dedicated research and opportunistic platforms increases sample size and thus strengthens the statistical power required for long-term studies of cetaceans. Our results show that such studies can be essential in order to learn about the effects that climate change and other anthropogenic impacts may have on the spatio-temporal occurrence of high seas predators. Furthermore, a wealth of data generated from different sources will inform decision making about conservation and management.

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