CETACEAN DIVERSITY IN NORTH WEST SCOTLAND: AN OCEANOGRAPHIC PERSPECTIVE

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The waters of the west coast of Scotland are oceanographically diverse. The two main influences are the Coastal Current arising from the Clyde and Irish Sea, and Atlantic water moving over the continental shelf north of Ireland. This leads to several distinct regions of oceanographic characteristics. It might be expected that this variation in oceanographic conditions in the area would be reflected in a non-uniformity of cetacean sightings, both in relation to abundance and diversity. Line transect surveys were conducted for five years from research vessel *Silurian* from April to September 2003 to 2007. A mean of 5,200 km survey effort was conducted per season (low 3,100 in 2004, high 8,200 in 2007). Sightings were dominated by eight species of coastal and pelagic cetacean, most of which were seen every year. Both cetacean abundance and species diversity were highest in areas where the coastal and Atlantic waters are actively mixing, for example near the Small Isles (~25% Atlantic water). The Simpson's Diversity Index (SDI) for this area was 0.898. Diversity was lowest in areas exclusively dominated by the Coastal Current, chiefly in the region of Islay and Jura (SDI = 0.419). In fully mixed waters (>50% Atlantic water), for example around the Outer Hebrides, high species diversity remained (SDI = 0.856). The presence of Atlantic waters (at >25%) was a prerequisite for the occurrence of species such as white-beaked dolphins and common dolphins. Preliminary observations suggest that the degree of water mixing was a stronger indicator of cetacean abundance and diversity than sea surface temperature.