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Seasonal Variation of Occurrence, Distribution, and Density of Bottlenose Dolphins in the Southern Chesapeake Bay and Virginia Coastline

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A combination of visual line-transect survey and photo-identification methods is being used to gather baseline information on the occurrence, distribution, and density of marine mammals near areas of substantial U.S. Navy activity in Virginia. Forty-seven line-transect surveys were completed in two zones (INSHORE and MINEX) between August 2012 and December 2014, with 5,106 km and 276.5 hours completed on-effort. The majority of sightings were of common bottlenose dolphins (Tursiops truncatus), although humpback whales (Megaptera novaeangliae) and short-beaked common dolphins (Delphinus delphis) were also sighted. Conventional line-transect analysis of bottlenose dolphin sightings showed both spatial and seasonal variation in density (D) and abundance (N), with greatest abundance in the MINEX zone during fall months, followed closely by the INSHORE zone during fall months. Densities in the INSHORE zone were calculated as 4.12 individuals per km2 (abundance [N] =1,279) in fall, 0.45 (N=138) in winter, 1.02 (N=316) in spring, and 2.86 (N=887) in summer. Densities in the MINEX zone were calculated as 2.23 individuals per km2 (N=1,333) in fall, 0.06 (N=35) in winter, 0.24 (N=145) in spring, and 1.19 (N=709) in summer. Nineteen photo-ID surveys were completed, and a catalog was created using photos taken during both dedicated photo-ID and line-transect surveys. Approximately 500 unique individuals were added to the catalog from the first year of survey efforts. Re-sighting rates across surveys were low, indicating an open population, with short-term visits to the area. Most re-sightings were less than 3 months and 21 km apart, and between-year re-sightings showed seasonal occurrence in the study area-with animals not sighted for the majority of the year then returning the following year in the same season. Further analyses are needed to better define the distribution patterns of the dolphins utilizing the area, and the extent of overlap with bottlenose dolphin stocks along the coast.