Abstract ID : 546

Title : Spatial and temporal distribution of North Atlantic right whales (Eubalaena glacialis) in Cape Cod Bay, USA, 1998-2002 and implications for management of fishing practices

Category : Conservation

Student : Not Applicable

Preferred Format : Oral Presentation

Abstract : Cape Cod Bay is a federally designated Critical Habitat for right whales, with restrictions on fixed-gear fisheries in effect from 1 January to 15 May to minimize impacts from entanglements. The objectives of this study were to (1) quantitatively describe the spatial and temporal distribution of right whales in the Bay, and (2) use these data to evaluate the effectiveness of the Critical Habitat boundaries and current fishery management measures. Aerial surveys were conducted during December-May over five years, 1998-2002. Right whale distribution and relative abundance patterns were quantified as sightings-per-unit-effort (SPUE) to avoid bias from uneven distribution of survey effort. SPUE (whales sighted per standardized length of survey track) was partitioned into 3-minute spatial quadrats and 2-week time periods. Of 103 quadrats, 101 were sampled in at least one year, and 88 were surveyed in all five years. Right whale SPUE was highest in a relatively narrow band along the entire eastern side of the Bay. There was significant within-season variability in SPUE - low in December-January, increasing in February, maximum from late February to early April, and declining through April to zero in May. There was also significant between-year variability in the magnitude, timing, and duration of right whale occurrence. Mean SPUE was highest in 2000 and lowest in 2002, differing by almost an order of magnitude. The majority of quadrats with right whale sightings were inside the Critical Habitat, but 17 quadrats with SPUE>0 fell partially or entirely outside, both east and west. Pair-wise comparisons showed significant differences between "east" and "west" and between "inside" and "west", but not between "inside" and "east". Our results provide justification for both temporal and spatial modifications to present management measures - including extension of fishery restrictions into December, possibly eliminating them in May, and expanding the boundary of the Critical Habitat eastward.