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Title : Southern resident killer whales (Orcinus orca [L., 1758]) and Pacific salmon (Oncorhynchus spp.): Correlations through space and time in the semi-enclosed marine waters of Washington State (USA) and British Columbia (Canada).

Category : Conservation

Student : M.A./M.S.

Preferred Format : Either Oral or Poster Presentation

Abstract : The southern resident community of killer whales (SRs), which resides off the coast of Washington (USA) and British Columbia (Canada) in the northeastern Pacific, has been closely monitored for > 25 yrs. Anomalously declining numbers of SRs since the middle 1990s have raised conservation concerns, with primary risk factors thought to be altered patterns of prey abundance and distribution, anthropogenic chemical contamination, and disturbance by increasing vessel activity. Only limited data are available on the foraging ecology of the population, but SRs apparently depend primarily on salmonid fishes for food, specifically selecting for Chinook salmon (Oncorhynchus tshawytscha [Walbaum, 1792]). We report investigations focused specifically on possible associations of fluctuating salmonid prey populations with changing SR numbers. Using information for all salmon species in the region, test fisheries data and run reconstruction models have been linked with data for killer whale movements and behavior in a GIS format. Test fishery data gathered by the Washington Department of Fish and Wildlife have been summarized by week for each fisheries statistical area within Puget Sound, the Strait of Juan de Fuca, and the San Juan Archipelago in selected years from 1975 to 2002. Fraser River salmon run data provided by Fisheries and Oceans Canada are similarly incorporated into the analysis. Information on whale location has also been summarized into weekly frequency distributions for each statistical area and year. GIS-based procedures are used to discern correlations of SR spatial data to specific stocks, species, and areas, and temporal variability therein. Results indicate complex relationships of salmon and SR populations and verify that analyses lacking spatial detail cannot provide useful information in a conservation context.