

EVALUATION OF THE RELATIONSHIP AMONG TIME OF OCEAN ENTRY, PHYSICAL AND BIOLOGICAL CHARACTERISTICS OF THE ESTUARY AND PLUME ENVIRONMENT, AND ADULT RETURN RATES

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ABSTRACT

This study examines the relationship among time of juvenile salmon ocean entry, physical and biological characteristics of the estuary and nearshore ocean plume environment, and smolt-to-adult return rates (SARs) for spring Chinook salmon reared by the Clatsop Economic Development Committee Fisheries Project (CEDC) in the lower Columbia River. From 2002 through 2006, six serial releases of about 25,000 coded-wire-tagged (CWT) smolts were made at 10 day intervals through the migration each year, totaling 726,584 fish over 5 years. Adults were recovered primarily from terminal gill net fisheries in Blind Slough, with returns nearly complete from all years (some 3-ocean adults expected in 2009 from 2006 releases). Returns were highly variable among years, with very few adults returning in some years. Annual oceanographic conditions appear to affect all releases within a year similarly. For example, during bad oceanographic conditions SARs were depressed for all releases. However, within years there still appeared specific periods (releases) when SARs were better than other periods. Preliminary investigations indicate that ocean temperatures, forage fish abundance, and possibly predator abundance may strongly influence SARs in influenced by time of ocean entry.