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Impacts of Ferry Terminals on Juvenile Salmon Movement along Puget Sound Shorelines

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Abstract

This study was sponsored by the Washington State Department of Transportation and conducted in cooperation with the U.S. Department of Transportation, Federal Highway Administration.

This study used both standardized surveys and innovative fish tagging and tracking technologies to address whether WSF terminals alter the behavior of migrating juvenile salmon, and if so, which attributes mediate abundance patterns or behavioral changes. Results showed that juvenile salmon were observed most frequently adjacent to ferry terminals, but were also observed far from and underneath the terminals. In some situations, juvenile salmon aggregated near the edge of the ferry terminal OWS. Variations in habitat, as mediated by tidal stage (affecting current magnitude and direction, light under structures, water level) and time of day (light level, sun angle, cloud cover), likely affect salmonid movement. Juvenile chum were observed to remain on the light side of a relatively sharp light-dark "edge" over a short horizontal distance (e.g., five meters). These observations demonstrate that the shading caused by ferry terminals and other OWS characteristics can deter or delay juvenile salmonid movement, and that this effect may be decreased at low tides when ambient light can better filter beneath the terminal structure. Recommendations are made concerning the design and operation of WSF terminals with regard to minimizing the undesirable impacts of OWS on juvenile salmonid movement as well as additional research.

The full report can be viewed at: http://www.wsdot.wa.gov/Research/Reports/600/648.1.htm