

Shoreline and Dock Modifications in Lake Washington

Jason Toft

The goal of this study was to estimate to what extent the historical shoreline of Lake Washington has been modified by docks and retaining structures. Such information is a vital step in determining to what degree shoreline modifications affect endangered populations of chinook salmon (*Oncorhynchus tshawytscha*), as juvenile chinook use the littoral zone in Lake Washington for rearing and migration to the ocean. We used aerial photographs from the years 1962, 1974, 1990, and 1999, and conducted field surveys to quantify the historical rate of dock increase, as well as classify current shoreline structures and habitat types.

As of the year 2000, there are 2737 docks along the shoreline of Lake Washington, the majority of which are recreational docks that are low (< 2m) above the water. The annual percent increase has been steadily declining in recent years, suggesting that the shoreline is approaching saturation. Retained shoreline, which represents 70.65% of the total shoreline, comprises rip-rap or bulkhead. Unretained shoreline, which represents 29.35% of the total shoreline, is either beach, naturally vegetated, or landscaped waterfront. Results from our habitat surveys show that the typical shoreline is partially exposed to wave energy, has a terrestrial shoreline with a moderately inclined slope, is characterized by garden/lawn in the upland cover, and has a mixed coarse shoreline substrate. How juvenile chinook salmon react to shoreline modifications is still somewhat unclear, and future research should specifically address such issues.