Elwha River restoration: evolution of habitats and nearshore ecosystems during large-scale dam removal project

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Elwha Nearshore: An Overview
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Coastal Watershed Institute & Peninsula College

I. Sediment Processes – Historic/Pre-Dams

About 160,000 m³ of fine and coarse sediment per year were delivered to the mouth of the Elwha River (Randle et al. 1996). Sediment from the river and feeder bluffs were transported eastward by wind and waves to replenish beach substrate and contribute to the formation and maintenance of Ediz Hook (Schwartz 1972, 1994).

II. Sediment Processes – Post-Dam Construction

• About 21 million m³ of sediment had been locked behind two Elwha dams (Shaffer et al. 2017).
• After dam construction and shoreline armoring, sediment volumes were reduced to approximately 15% of historical volumes (Parks 2015).

III. Sediment Processes – During Dam Removal

Major changes in the area of the shoreline and delta occurred during dam removal. From 2013 to 2014, the total area increased by about 26 ha or 64 acres (Shaffer et al 2017).

IV. Sediment Processes – Post-Dam Removal

By 2015 about 3.5 million m³ of sediment had been deposited at the delta (Warrick et al. 2015). After the Elwha Dam removed, annual sediment delivery is expected to be restored to 160,000 m³/year (BOR 1996).

What’s not restored with dam removal?
• Altered shoreline armoring along Elwha feeder bluffs and Edie Hook
• Lower river diking, including blocking of west estuary by west levee.

Synopsis

As a result of human alterations, the Elwha nearshore was starved of sediment. Removing the dams has provided large amounts of sediment to the nearshore, creating new estuary habitat for various species of fish and softening newly restored beaches. Nearshore ecosystem restoration is limited by the remaining habitat impediments including armoring and lower river dikes. It is important to continue efforts to understand, restore, and protect these important and evolving nearshore landforms and habitats.

Acknowledgements and Citations


