Elwha Ecosystem Restoration Project: Plant Colonization and Establishment of the Dewatered Reservoirs after 2-3 Growing Seasons

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Abstract

Revegetating the reservoirs after the removal of two large dams on the Elwha River in western Washington is essential to Elwha ecosystem restoration. Dam removal began in September 2011. The smaller dam was fully removed by March 2012. The removal of the larger dam is expected to be completed by the fall of 2014. Draining the reservoirs exposed over 700 acres of floodplain, new terraces of sand, gravel and cobble, and valley wall landforms. Nearly 30 million cubic yards of sediment had accumulated in the reservoirs. Dam removal redistributed the coarse material, leaving behind terraces 10-20 feet thick on top of deep layers of fine sediment on the valley bottom. The sediments are nutrient-poor and moisture-availability is low, and evaporation is high due to sun and wind exposure. The reservoir sediments have no significant seed bank and much of the site is far from seed rain from intact forests. Thus, natural primary succession of the de-watered reservoirs would be slow. Another major threat to native plant succession is the nearby presence of invasive exotic species. The revegetation plan for the reservoirs emphasizes natural regeneration in areas close to intact forests and in the floodplain. Olympic National Park began planting in November 2011 and has installed more than 170,000 plants and sowed more than 5,000 pounds of seed over the past three years. To monitor the progress, 68 permanent plots have been installed covering natural and planted areas. In some areas, plant succession has been rapid. In sites close to intact forests the cover of bare ground has rapidly decreased and planted areas have had high rates of survival. However, at sites far from seed sources with deep layers of coarse material natural plant regeneration has been very slow and planted areas are struggling to survive.