Ground-Based Monitoring of the Biological and Physical Effects of Restoration Activities

Jerry Tagestad
Sr. Research Scientist
Ecology Group
Pacific Northwest National Laboratory
902 Battelle Boulevard
P.O. Box 999, MSIN K6-85
Richland, WA 99352 USA
Tel: 509-371-7181
jerry.tagestad@pnl.gov

Ground-based monitoring of the biological and physical effects of restoration activities provides important quantitative data that can be used to update adaptive management strategies. Although monitoring data are located spatially using precise GPS coordinates, they typically do not provide a comprehensive spatial picture of the effects of restoration. In particular, it is not economically feasible to conduct ground-based before and after monitoring of vegetation throughout entire large restoration areas. In contrast, while remotely-sensed imagery can provide a view of the change in spatial patterns over large areas, images provide a qualitative view of the phenomena of interest. By combining quantitative monitoring data with multispectral remote sensing data, we were able to develop vegetation maps for two restoration sites on the Columbia River estuary, located in the vicinity of Youngs Bay and Grays Bay. These maps document the spatial patterns of changes in plant communities due to hydrologic reconnection restoration activities (dike breaching, culvert installation, and tide gate installation). These map products can inform adaptive management strategies by providing evidence of large-scale environmental change that may not be evident in the quantitative ground data collected via currently accepted monitoring protocols.