Using NHDPlus as the framework for spatial prediction in the Pacific Northwest

The National Hydrography Database (NHDPlus) is being used as the spatial framework for building predictive models of measures of stream health throughout the Pacific Northwest by scientists at the EPA Western Ecology Division. The goal of the project is to build predictive models of stream health, initially incorporating measures such as total nitrogen and phosphorus as well as probabilities of exceeding certain threshold levels of nitrogen and phosphorus in order to better focus site monitoring efforts. We are gathering a number or landscape metrics and attributing these metrics to hydrologically-defined catchments in NHDPlus in order to create a seamless network of contributing units for both sampled and non-sampled catchment basins. Using a network of 1312 sample locations with stream chemistry data throughout the PNW we've built catchment-based watersheds for all of the sites. Landscape metrics calculated for contributing units of sites include land cover and imperviousness from the 2001 National Land Cover Database (NLCD), elevation and slope from the National Elevation Database (NED), temperature, precipitation, and Strahler order from NHDPlus, EPA ecoregions, a number of soil and geology variables, and census data (population and road density). We hope to build models linking landscape stressors and aquatic response variables based on sampled locations to apply initially throughout the Pacific Northwest.

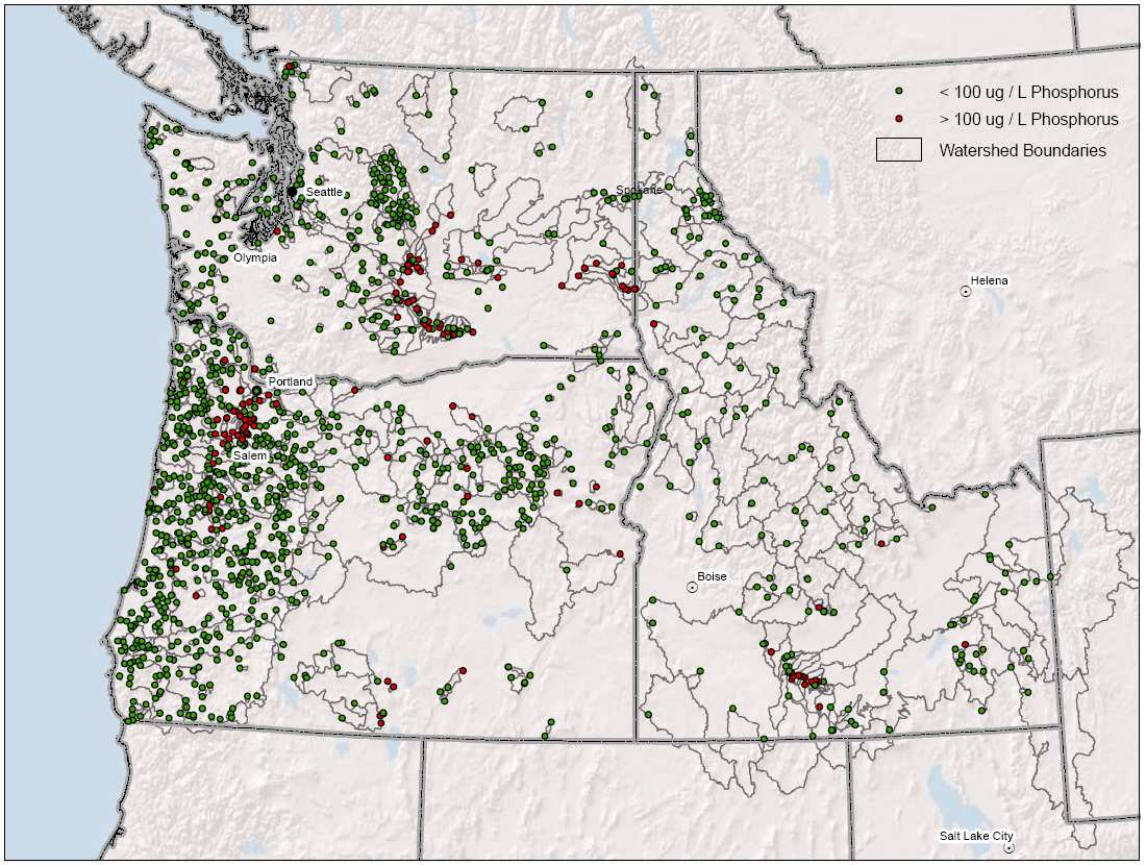

Figure 1. Stream sample locations and NHDPlus-derived upstream basins in the Pacific Northwest.

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