Assessing Alternative Futures for Puget Sound

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ABSTRACT

The PSNERP ecosystem assessment futures analysis compares cumulative impacts over 50 years for “without restoration” and “with restoration” conditions. Various techniques are applied at different spatial scales including scenario-building, visioning, case studies, and land-use/land-cover models. Each technique provides information for developing basin-wide and local conditions for evaluating restoration plans.

The Why and What of Futures Analysis

We use futures analysis to create an alternative comparison 50 years out between a baseline condition “without” federal restoration actions with a federal restoration alternative “with restoration,” conditions to evaluate the cumulative impacts or benefits of the PSNERP restoration plan.

PSNERP has reviewed and is using a number of available futures techniques at various spatial scales including scenario development, visioning by engaging stakeholders, case studies of local areas, and empirically based models for trend analysis for informing scenarios.

Scenario Development

Scenario development provides a means to describe the futures of Puget Sound through well-developed storylines. Scenarios are typically developed through joint involvement of decision-makers and scientific experts, they are a mechanism for linking scientific information to decision-making processes. They are not an attempt to predict the future, but are designed to indicate what science can and cannot say about consequences of alternative choices that might be taken in the future.

Through multi-staged interviews of stakeholders and scientific experts, the University of Washington Urban Ecology Research Lab (UERL) has developed six scenarios for PSNERP representing the full spectrum of plausible futures created by ten driving forces, with the two primary drivers being climate change and human behaviors and attitudes. A smaller set of scenarios will be used for the alternatives analysis. The scenarios constitute the assumptions for a set of conceptual and predictive models that can be used to assess the future impacts. Further, scenarios can be used to inform stakeholder groups who help formulate the recommended restoration plan assessment.

Visioning

The visioning process is a community outreach tool where stakeholder concepts of the future are rendered by a graphic artist as “visions” of their future. PSNERP convened a pilot workshop with a variety of stakeholders to create a common future vision of Puget Sound. As each stakeholder draws their visions, all drawings are compiled and rendered to a series of common visions by a graphic artist. The visions were then used as the basis to advance community ideas into viable restoration actions.

Case Studies

The PSNERP Nearshore Science Team used local reference materials and interviews with planning experts to develop a pilot case study of how the nearshore of central Puget Sound (Seattle to Tacoma) has developed based on drivers of past actions and how it may develop under future plans. One finding showed that residential areas with high parcel density had the greatest amount of armoring.

Future Risk Assessment

To quantify outcomes from future scenarios, PSNERP is developing a modeling project to identify land use/cover changes and nearshore alterations which are potential risks to nearshore ecosystem processes under three credible regional growth scenarios through the year 2060 either identified under the UERL scenarios or through three standard conditions: 1) continuation of existing regional trends; 2) less growth and increased environmental considerations and conservation; and 3) unregulated growth and increases in natural resource utilization. Risk under these future scenarios will be assessed as potential change in land cover or addition of nearshore structures. The potential ecosystem response to these changes and the resulting future impairment will be evaluated by using these scenario predictions in the same process that is used to assess historic change (see poster 4). One of the major drivers of land use change is population growth, and one of the specific risks to nearshore processes is addition of overwater structures (docks, marinas, ramps) and shoreline armoring.

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