<u>Adapt, where necessary, and implement and maintain freshwater and upland restoration projects</u>

Draft 9/7/11

The Challenge

This strategy (and associated sub-strategies and NTAs) is a modification of Strategy B.1 from the 2008 Action Agenda, one that focuses only on freshwater and upland restoration projects, not protection efforts, and incorporates the latest scientific information from the April 2011 Puget Sound Science Update. It also incorporates more specific reference to a watershed-based management approach and the need to assure that restoration projects are designed to improve the resilience of the ecosystem so that ecological functions will both be restored and continue in the face of climate change impacts (e.g., observed or projected changes in temperature, precipitation, stream flow, water quality) and the increasing human footprint in the coming years.

"General principles for implementing site-specific protection and restoration strategies include understanding the physical setting for the proposed action (Buffington et al. 2003, Bolton et al. 2003), prioritizing protection of highly functioning habitats over restoration of damaged ones, focusing on both the protection and restoration of habitat forming processes and connectivity (Clancy et al. 2009) and treating protection and restoration actions as experiments with explicit, testable hypotheses and monitoring to assess their effectiveness." (PSSU, page 542)

Relationship to recovery targets

The 2020 ecosystem recovery targets most closely associated with implementing and maintaining freshwater and upland restoration projects are insects in small streams, freshwater quality, and wild Chinook salmon.

A functioning, resilient Puget Sound requires lowland streams that support the salmonids and invertebrates native to this region, as indicated by benthic index of biotic integrity (B-IBI) scores. The target states that, "by 2020, 100 percent of Puget Sound lowland stream drainage areas monitored with baseline B-IBI scores of 42-46 or better retain these "excellent" scores and mean B-IBI scores of 30 Puget Sound lowland drainage areas improve from "fair" to "good." The target for Chinook salmon states that, "By 2020, we stop the overall decline and start seeing improvements in wild Chinook abundance in two to four populations in each biogeographic region."

Freshwater water quality protects aquatic life and other uses of the state's waters. The target states that, "By 2020, at least 50 percent of all monitoring stations with suitable data have Freshwater Water Quality Index scores of 80 or higher; and by 2020, achieve a decrease in the number of impaired waters (303(d) list) in Puget Sound freshwaters." A freshwater quality index score of 80 or higher indicates that (a) water quality criteria for conventional pollutants are met and (b) sediment and nutrient concentrations reflect better conditions observed during a benchmark period.

<u>A5. Adapt, where necessary, and implement and maintain freshwater and upland restoration projects</u>

A5.1 Adapt, where necessary, and implement and maintain stream (river and creek) restoration projects.

When prioritizing projects for implementation we may consider the hierarchical strategy of Roni et al., (2002), including: (1) habitat reconnection (e.g., culvert improvements, off-channel connections), where prior disconnection is among the problems, (2) road work (e.g., removal, improvement), (3) riparian vegetation restoration, (4) in-stream habitat restoration (e.g., wood and boulder placement), (5) nutrient enhancement, and (6) habitat creation (e.g., in-stream with wood and boulders, off-channel).

Performance Objectives for Ongoing Programs

Existing programs at the state and local levels that have scientific review and community support include programs that implement species recovery plans (including salmon recovery three-year work plans implemented by Lead Entities), flood hazard management plans, road decommissioning plans, Shoreline Master Programs, Growth Management Act programs, and watershed assessments. Major funding sources include Salmon Recovery Funding Board (SRFB), which provides funding for elements necessary to achieve overall salmon recovery, including habitat projects and other activities that result in sustainable and measurable benefits for salmon and other fish species; and the state capital budget funded Puget Sound Acquisition and Restoration (PSAR), which implements many of the Action Agenda and Salmon Recovery Plan's habitat restoration priorities.

Near Term Actions

> A5.1 NTA 1: The 14 Lead Entities for Salmon Recovery implement the highest priority restoration projects identified within the salmon recovery Three-year Work Plans from the 14 watershed groups that are based on salmon recovery plans. Potential funding sources include SRFB; PSAR; and EPA funded Puget Sound Lead Organizations.
>
> *Proposed performance measure:* Successfully obtain funding for the highest priority projects and complete or begin implementation of those projects within the 2011-13 biennium.
>
> A5.1 NTA 2: Local jurisdictions, in consultation with Lead Entities for Salmon Recovery implement the highest priority restoration projects identified by local jurisdictions within the Shoreline Master Programs; coordinate with the implementation of projects on the salmon recovery Three-year Work Plans (see NTA #1). Potential funding sources include SRFB; PSAR; and EPA funded Puget Sound Lead Organizations.
>
> *Proposed performance measure:* Coordinate with the salmon recovery watersheds to successfully obtain funding for the highest priority projects and complete or begin implementation of those projects within the 2011-13 biennium.

A5.2 Adapt, where necessary, and implement and maintain wetland restoration and creation projects.

When prioritizing, designing, implementing, and maintaining wetlands restoration (and creation) projects consider using a wetlands management approach that includes wetlands protection programs. Also consider the known preferences and tolerances of target biological communities, particularly geomorphic, hydrological, and hydroperiod requirements when prioritizing, designing, implementing, and maintaining wetland restoration (and creation) projects.

Performance Objectives for Ongoing Programs

Existing programs at the state and local levels that have scientific review and community support include programs that implement species recovery plans (including salmon recovery three-year work plans implemented by Lead Entities), flood hazard management plans, road decommissioning plans, Shoreline Master Programs, Growth Management Act programs, and watershed assessments. Major funding sources include Salmon Recovery Funding Board (SRFB), which provides funding for elements necessary to achieve overall salmon recovery, including habitat projects and other activities that result in sustainable and measurable benefits for salmon and other fish species; and the state capital budget funded Puget Sound Acquisition and Restoration (PSAR), which implements many of the Action Agenda and Salmon Recovery Plan's habitat restoration priorities.

Near Term Actions

None. Near-term work in this area is addressed in A5.1.

A5.3 Adapt, where necessary, and implement and maintain lake restoration projects.

When prioritizing, designing, implementing, and maintaining lake restoration projects, we should consider applying the established specific techniques of algal biomass and macrophyte control as a focus for such projects.

Performance Objectives for Ongoing Programs

Existing programs at the state and local levels that have scientific review and community support include programs that implement species recovery plans (including salmon recovery three-year work plans implemented by Lead Entities), flood hazard management plans, road decommissioning plans, Shoreline Master Programs, Growth Management Act programs, and watershed assessments. Major funding sources include Salmon Recovery Funding Board (SRFB), which provides funding for elements necessary to achieve overall salmon recovery, including habitat projects and other activities that result in sustainable and measurable benefits for salmon and other fish species; and the state capital budget funded Puget Sound Acquisition and Restoration (PSAR), which implements many of the Action Agenda and Salmon Recovery Plan's habitat restoration priorities.

Near Term Actions

None. Near-term work in this area is addressed in A5.1.

A5.4 Establish a stable funding source and local capacity to implement large-scale and complex freshwater and upland restoration projects.

Numerous studies have stressed the importance of a stable source of funding for large-scale ecosystem restoration. Adler, Michele, and Green (2000) state that "funding stability is as important as absolute funding levels." They go on to suggest that "Congress should consider establishing longer-term funding arrangements for watershed and other environmental programs that must be designed and implemented over long periods of time."

Performance Objectives for Ongoing Programs

The Puget Sound Salmon Recovery Council is working to identify Projects of Puget Sound-wide Regional Significance and to develop a funding strategy for them. Watersheds are asked to identify up to three projects of regional significance.

Near Term Actions

A5.4 NTA 1: The RCO and Puget Sound Partnership (as the salmon recovery Region for Puget Sound) on behalf of the Puget Sound Salmon Recovery Council, establish a stable funding source for Projects of Regional Significance identified by the Puget Sound Salmon Recovery Council.

Proposed performance measure: Establish a stable funding source within the 2011-13 biennium.