Protection and restoration of salmon bearing streams in agricultural landscapes of the Puget Sound basin: a synthesis of approaches to reach-scale planning for eight focus areas

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Protecting riparian areas in agricultural landscapes: reach-scale planning & acquisition projects from the NEP Watershed Lead Organization

Session Chair: Carrie Byron
Project Lead – Puget Sound Watershed Protection and Restoration grant program

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Protection and restoration of salmon bearing streams in agricultural landscapes of the Puget Sound basin

A synthesis of approaches to reach-scale planning for eight focus areas

Colin Hume
Watershed Ecologist
Technical Lead for the Watershed LO Riparian Protection and Restoration grant program
Developing the Grant Program

• Tribal Treaty Rights at Risk initiative - Need to accelerate progress!

• NEP Watershed Lead Organization charged with developing new Riparian Protection and Restoration grant program for EPA
  • $5.8 Million investment
  • Focus on salmonid habitat in agricultural landscapes
  • Focus on permanent protection

• 25 person advisory group process informed program approach and design
  • Planning and strategy development important to fund in some areas
  • Concentrate investments to demonstrate progress
  • Use flexibility of NEP $ to leverage and coordinate with other programs (e.g. CREP) for greater effect
Grant Program Design

Phased approach

• Phase I Planning - Competitive solicitation to conduct reach-scale planning (up to $120K) for a focus area
  • Priority salmonid habitat in agricultural landscapes of PS basin
  • Partnerships which demonstrate habitat restoration, landowner recruitment and acquisition expertise

• Phase II Implementation – On-the-ground protection and restoration actions
  • Eligible for additional implementation $ upon completion and approval of reach-scale plan
  • Total award including phase I not to exceed $550K unless additional $ becomes available
  • Propose projects identified in or justified as strategic by reach-scale plan
  • Provided flexibility to propose projects as landowner willingness comes and goes
8 Focus Areas

- **South Fork Nooksack River** – Nooksack Tribe
- **Middle/Upper Samish River** – Skagit Land Trust
- **Lower Stillaguamish, Pilchuck, Snohomish Rivers** – Snohomish Conservation District
- **Chimacum Creek** – North Olympic Salmon Coalition
- **Snoqualmie Valley Southern APD** – King County
- **Newaukum Creek** – King County
- **Skokomish Floodplain** – Mason Conservation District
- **Middle Reach Nisqually River** – Nisqually Land Trust
Reach-scale plan development

Phase I funded activities differed by focus area

- Planning related actions depended on the needs of sponsoring organization and context
- Wide variety of activities conducted
- Each plan different
- Plans required to cover and document some common elements

Reach Context

- Watershed to parcel scale conditions
- Legacy land use effects
- Current pressures threatening habitat

Action Identification

- Protection needs and opportunities
- Restoration needs and opportunities

Priorities and Sequence

- Greatest potential for ecological lift
- Intact habitat at threat from development
- Landowner dynamics and opportunities

Landowner recruitment

- Broad outreach to gain buy-in from community
- Build on existing relationships
- Develop new relationships

Implement Plan (Phase II)
SOWs proposed
Approaches to Documenting Reach Context

• Assembling historic information on habitat and land use
• Assessing and describe development pressure
  • Zoning
  • Local knowledge about proposed development
• Assessing current conditions and riparian management issues
  • Assemble recent studies (e.g. TMDL, Salmon recovery plans etc.)
  • Geomorphic, water quality, and concentrated flow analyses
  • Beaver management issues and plan
  • Invasive species
  • Mapping current and proposed protection and restoration actions
Project Highlight- Newaukum Creek
Action Identification

Identifying protection and restoration actions at reach -> parcel scale

Approaches included:

• Conducting partner workshops to review data/maps, categorize types of activities which are needed at reach/parcel scale

• EMDS logic modeling of riparian function and “farmability” -> landowner workshop

• Geomorphic and land cover analysis to determine where restoration is primary need or protection.

• Use of predefined suite of actions, e.g. –
  • Skokomish Floodplain – USACE projects
  • Watershed Plan and TMDL in the South Fork Nooksack
Project Highlight – Chimacum creek
## Project Highlight – Chimacum Creek

<table>
<thead>
<tr>
<th>REC #</th>
<th>TYPE</th>
<th>RM</th>
<th>LOCATION</th>
<th>RECOMMENDATION CATEGORY</th>
<th>RECOMMENDATION</th>
<th>PRIORITY</th>
<th>CONSIDERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Restoration</td>
<td>7.4-7.8</td>
<td>Main stem</td>
<td>Riparian Vegetation</td>
<td>Establish riparian vegetation along ditched reach.</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Protection</td>
<td>7.9-8.3</td>
<td>Main Stem</td>
<td>Riparian Vegetation</td>
<td>Protect and enhance riparian vegetation planted during previous restoration efforts; 2015 imagery suggests very small plants.</td>
<td>High</td>
<td>Note that there are existing beaver dams, and the low lying portion of the valley adjacent to the right bank could possibly become inundated.</td>
</tr>
<tr>
<td>16</td>
<td>Restoration</td>
<td>8.4-8.8</td>
<td>Main Stem</td>
<td>Riparian Vegetation</td>
<td>Establish riparian vegetation along ditched reach.</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Restoration</td>
<td>8.6-8.9</td>
<td>Main Stem</td>
<td>Re-meander</td>
<td>Re-meander and/or roughen channel in this reach through wood placement; some suggestion of relict channel features from the REM map.</td>
<td>Low</td>
<td>Additionally recommend 2-D hydraulic modeling to assess activation flows and changes in inundation from roughening.</td>
</tr>
<tr>
<td>18</td>
<td>Data Gap</td>
<td>8.8</td>
<td>West Valley tributary-ditch and unnamed tributary-ditch at left bank</td>
<td>Analysis</td>
<td>Investigate inflow from unvegetated west valley tributary ditch and from partially vegetated unnamed tributary ditch.</td>
<td>High</td>
<td>Water quality exceedances in both tributary ditches; establish or enhance riparian vegetation along ditches if inflow is substantial.</td>
</tr>
<tr>
<td>19</td>
<td>Restoration</td>
<td>9.0-9.4</td>
<td>Main stem, confined reach</td>
<td>Roughen</td>
<td>Improve habitat complexity by adding roughness; opportunity to re-engage flood plain.</td>
<td>Low-Medium</td>
<td>Additionally recommend 2-D hydraulic modeling to assess activation flows and changes in inundation from roughening.</td>
</tr>
<tr>
<td>20</td>
<td>Restoration</td>
<td>Trib.</td>
<td>Barnhouse Creek</td>
<td>Riparian Vegetation</td>
<td>Establish riparian vegetation along ditched reach.</td>
<td>High</td>
<td>Water quality exceedances at confluence of Barnhouse Creek and Chimacum Creek.</td>
</tr>
</tbody>
</table>
Prioritization schemes

- Desktop GIS analyses to score and rank reaches, buffer segments, and/or parcels for their-
  - Potential ecological lift if restored
  - Existing habitat value to be protected
  - Threat to development
  - Feasibility/landowner willingness (often based local knowledge of partners)
- Partner workshops to score based on BPJ
- Cost estimates and real estate analyses
Prioritization schemes highlight

Nisqually Land Trust ranking – update of a 2005 Shoreline assessment

Table 1: Ranking Criteria – Three Key Habitat Characteristics

<table>
<thead>
<tr>
<th>Description</th>
<th>Attribute Codes/Score</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmonid Accessible Tributary on Parcel</td>
<td>Yes</td>
<td>WA Department of Fish and Wildlife and Nisqually Indian Tribe</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Department of Natural Resources</td>
</tr>
<tr>
<td>2015 Flood Zone Forest Cover</td>
<td>100%</td>
<td>2015 National Agricultural Imagery Program aerial photography and</td>
</tr>
<tr>
<td>(for Parcel &gt; 1 acre)</td>
<td>100%</td>
<td>Nisqually Land Trust staff</td>
</tr>
<tr>
<td></td>
<td>75%-100%</td>
<td>knowledge of riparian forests in project area</td>
</tr>
<tr>
<td></td>
<td>50%-75%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25%-50%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;0%-25%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>2015 Off-Channel Habitat Site Score</td>
<td>Functional</td>
<td>South Puget Sound Salmon Enhancement Group Assessment</td>
</tr>
<tr>
<td></td>
<td>Restored</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impaired Site &gt; 10 acres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impaired Site &gt; 5 acres and &lt; 10 acres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impaired Site &lt; 5 acres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No off-channel habitat</td>
<td></td>
</tr>
<tr>
<td>Assessment Score</td>
<td>11-15 = High</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6-10 = Moderate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-5 = Low</td>
<td></td>
</tr>
</tbody>
</table>

Maximum Score = 15 = Functional Off-Channel Habitat + 100% Forest Cover + Salmonid Tributary

Map for planning purposes only. Flood zone based on FEMA data.
Landowner Recruitment Strategies

• Gain understanding of motivators and barriers to buffer work
  • Surveys
  • Focus groups
  • Landowner interviews

• Broad community outreach and public meetings to gain acceptance from stakeholders – Farm/Fish/Flood dynamics
  • SF Nooksack watershed planning process and flood zone meetings
  • Snoqualmie landowner workshop to identify properties where buffers could be restored without impacting agriculture

• Targeted landowner recruitment
  • Cultivate existing relationships (e.g. landowners who have done CREP or other restoration already) from project partners
  • Presentations at public meetings/landowner trainings on other topics
  • Mailers, brochures, knocking on doors, etc...
Project highlight

- South Fork Nooksack conducted reach-scale planning within a broader watershed planning effort
- NEP $ helped provide a focus on the agricultural areas
- Challenging community dynamics makes broad outreach efforts and community engagement important
Current phase of the program

• Moved into the implementation Phase (II)

• Early successes:
  • Have made 4 acquisitions on Newaukum Creek
  • Close to closing on 60 acres in Nisqually River focus reach
  • Appraisals on several more parcels being conducted

• Evaluating “Conceptual SOWs” which are proposed by grant sponsors to identify next round of funded activities:
  • Site visits
  • Appraisals and due diligence activities
  • Restoration designs
  • Negotiating easement terms

• About $1.5 Million to allocate still (doesn’t include awarded but unspent $)
Lessons Learned

• If priority for investments is to focus them geographically instead of spread around, then we need to understand and plan to address barriers to implementation locally:
  • Dynamics and barriers to implementation can be very different across locales so planning related investments and priorities need to adapt to this
  • Landowner perceptions vary, past experience matters, neighbors talk!
  • Competing interests – same patch of ground

• A flexible grant program can help solve local problems and overcome barriers but short timelines for spending $ makes this challenging.

• Local momentum is real and can drive success!
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• Elizabeth Butler (formerly RCO)

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