A New Tool for Quantifying Riparian Forest and Floodplain Function

Olivia Duren

Partners:
- Eugene Water & Electric Board
- Lane Council of Governments
- The Freshwater Trust
- McKenzie Watershed Council
- Upper Willamette SWCD
- Cascade Pacific Resource Conservation & Development
- USFS
- University of Oregon
- Oregon State University
- McKenzie River Trust
- Landowners
- Local businesses
The McKenzie River, Oregon

• Drinking water, ESA-listed salmon, recreation
  VS
Development, *E. coli*, nitrates, pesticides

• Address degradation
  AND
Source water protection
Rewards private rural landowners for stewardship of high-quality riparian areas and floodplain habitats.

Restoration assistance

Pilot launched 2014/2015
Q: Which areas should be protected?

Limited resources; invest ratepayer $ with credibility, transparency

A: Riparian and floodplain functional assessment

• Data collection protocol and app
• Quantification/pathway recommendation
• Next steps/transferability
VIP Study Area: McKenzie River subbasin (HUC4)

- Surveyed 13 reference sites, 16 private landowner sites
- Ecoregions: Willamette Valley, West Cascades
- Elevations: gen. middle (800-1500 ft)
- Stream orders: 1-7, gen. 6 or 7
- Stream gradient: low (<1.4%)
- Floodplain: flat (slope <5°)
Riparian & Floodplain Functional Assessment

Naturescaping

**Protect** where found (e.g., oak, native wetland)

**Restore** (e.g., non-native grassland)

**Assess & Quantify** forest

Remote data

Field Survey

Reference Area Score

Landowner Area Score

Protect OR Restore
Forest Function: Assess and Quantify

Protocol objectives
- Rapid
- Credible
- Transparent
- Adaptable
Forest Function: Assess and Quantify

Land Use

Floodplain/Instream Condition

Vegetation Condition

Desktop analysis → Field analysis

Remote data

Field Survey

Reference Area Score

Landowner Area Score

Protect OR Restore

Protect

OR

Restore
Forest Function: *Assess and Quantify*

StreamBank® Monitoring iPad app
- Streamlines data entry
- Internal QA/QC
- Guides workflow

www.streambank.com
Forest Function: Assess and Quantify

Scoring
- Metric more important = more weight (veg)
- Better condition = more points
- Score = sum metric points → Protect, Restore

<table>
<thead>
<tr>
<th>Forest buffer width</th>
<th>Metric weight</th>
<th>Metric condition</th>
<th>Metric points</th>
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</thead>
<tbody>
<tr>
<td>Poor</td>
<td>Important</td>
<td>Excellent</td>
<td>A lot</td>
</tr>
<tr>
<td>Few</td>
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<tr>
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Survey area SCORE

External guidance sparse
**Forest Function: Assess and Quantify**

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**Survey area SCORE**
Forest Function: Assess and Quantify

Landowner survey areas graded on a curve defined by reference area score

Protection: ≥ 82% of points

- 58% Protection
- 22% Restoration
- 19% Naturescaping

Private landowner area
Forest Function: Assess and Quantify

Validation:
93% match of scoring pathway with field analysts’ opinion
## Reporting and Actionable Steps

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<thead>
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<th>Metric Score</th>
<th>Action</th>
<th>Points Gained</th>
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<tbody>
<tr>
<td>Riparian buffer width</td>
<td>16</td>
<td>12</td>
<td>Planting project</td>
<td>4</td>
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<tr>
<td>Floodplain connectivity</td>
<td>14</td>
<td>14</td>
<td>Channel modification, regrading</td>
<td>0</td>
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<td>Native woody plant diversity</td>
<td>16</td>
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Highlights degraded characteristics regardless of pathway
Next Steps: Full VIP Roll-Out

- Reviewed metrics/measurements – repeatability, etc.
- App build-out
- Spring 2016 surveys
- Ultimate target: 100s landowners, 1,000s acres in protection/restoration
Transferability

- Tool for prioritizing protection, targeting restoration
- Field-tested, landowner tested
- Complements instream function assessments
- Protocol best for western OR, metric weights adaptable
Questions?
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