Riparian Habitat Assessment Database (RHAD)

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Sid’s Vision
The RHAD_{est} Database

- Predictive modeling of potential restoration sites
- Transferable to different places and different scales
- Include a socio-political component

Sid’s Goodbye
Fanno Creek Study Area

Fanno Creek Facts

- Watershed area is 20,259 acres
- About 309 acres, or 7% of the watershed, is parks or open space
- About 15% designated within environmental protection and conservation zones
- There are 23 miles of open stream channel, about 5 miles in culverts or piped
- Impervious surfaces comprise nearly 1,500 acres, or 33%, of the watershed
Data Sources

- City of Portland Bureau of Environmental Services
- METRO RLIS
- Oregon Water Resources Department
- Puget Sound LiDAR Consortium
- USDA NRCS Soils
- USGS/EPA National Hydrography Dataset
- Clean Water Services

Literature Review
How are Riparian Restoration Sites Selected?

- Existing Models Use:
  - Biophysical Factors
    - Land Cover
    - Soils
    - Hydrology
  - Spatial Factors
    - Size
    - Proximity
    - Connectivity

Restoration Prioritization

Restoration vs. Preservation

(Russell et al. 1997)
How are Riparian Restoration Sites Selected?

- Our Model Also Includes:
  - Socio-political Factors
    - Land Ownership
    - Zoning
    - Impervious Surfaces
      - Roads
      - Urban Development
      - Residential Development
  - Vegetation Land Cover
  - Water Rights
    - Points of Diversion
    - Places of Use

New Model

<table>
<thead>
<tr>
<th>HABITAT</th>
<th>IDENTIFICATION</th>
<th>PRIORITIZE (biophysical)</th>
<th>PRIORITIZE (spatial)</th>
<th>MONITOR (biophysical)</th>
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<tbody>
<tr>
<td>RIPARIAN</td>
<td>Aerial Photography</td>
<td>Land Ownership</td>
<td>Land Ownership</td>
<td>Aquatic/Avian Species</td>
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<td>Land Cover</td>
<td>Land use</td>
<td>Land use</td>
<td>Ground truth</td>
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<td>Stream Buffer</td>
<td>Impervious surfaces</td>
<td>Impervious surfaces</td>
<td>Water quality</td>
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<tr>
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<td>Land Ownership</td>
<td>Roads</td>
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<tr>
<td>WETLAND</td>
<td>Aerial Photography</td>
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<td>Avian Species</td>
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<td>Land Cover</td>
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<td>Ground truth</td>
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<tr>
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<td>Soils</td>
<td>Impervious surfaces</td>
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<td>Water Quality</td>
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<td>Topography</td>
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<td>Abundance</td>
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<td>Size</td>
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<td>Proximity</td>
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<tr>
<td>OUTPUT</td>
<td>Habitat</td>
<td>Ordered list of suitability</td>
<td>Ordered list of feasibility</td>
<td></td>
</tr>
</tbody>
</table>
Data Processing/Database Design

- Processing: Project, Query, Buffer, Clip, Intersection
- Development: Digitize aerial photography, Field survey with GPS
- Integrity: Attribute Domains, Topology
- Behavior: Relationships, Subtypes, Terrain Dataset, Linear Referencing

Processing: Area of Interest
Development: LULC Digitizing

Ground Truthing
Integrity: Attribute Domains

Integrity: Topology
Behavior: Relationships

Primary / foreign key = "meta_ID"
ArcMap Example: Query

ArcMap Example: ‘Predictive’ Map
Limitations and Quality Statements

- Resolution of data not high enough to work with such small areas
- Different data from different counties
- Shape Considerations
- Small Study Area

What’s Next?

Future Uses
- Private Land Owner Census
- Integration of Data between Agencies and Public Advocacy Groups
- Future Monitoring
What's Next

Developing the Model

- Use short integers for domains to be sub-typed
- Flow accumulation modeling
- Ground Truth Data

Works Cited

- Drescher, D and E. Lindstrom. 2007. Personal communication with members of Fans of Fanno Creek, volunteer watershed health advocacy group.