The Dynamic Landscape: Shifting Habitat Mosaics from Headwaters to Estuaries

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From: J. Asel

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Spring

Relative Abundance

All Species
Coho pre-smolt
Coho 0+
Cutthroat >20cm
Steelhead, pre-smolt
Steelhead 1+
Trout 0+

Percentage of Total Habitat

Circle size is scaled to percentage of species total per reach

Source: Reeves et al. 2011
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Intrinsic Potential: Oregon Coastal Province

Steelhead

Coho

IP \leq 0.75

IP > 0.75

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Life-History Variation

Graph showing the movement of juvenile Chinook salmon past Humphrey Trap, Elk River, Oregon. The graph illustrates the number of fish (in thousands) moving past the trap from April to September, with peaks in 1985 and 1986. The graph is sourced from G. Reeves, unpublished data.
## Fall Chinook Salmon Life-History Types

Elk River, OR

<table>
<thead>
<tr>
<th>Life-History Type</th>
<th>Juvenile Rearing Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tributaries</td>
</tr>
<tr>
<td>1</td>
<td>brief</td>
</tr>
<tr>
<td>2</td>
<td>brief</td>
</tr>
<tr>
<td>3</td>
<td>brief</td>
</tr>
<tr>
<td>4</td>
<td>5-6 mo.</td>
</tr>
<tr>
<td>5</td>
<td>1 y</td>
</tr>
</tbody>
</table>

From: Reimers (1973)
Life-history response of Coho Salmon to changes in estuarine habitat, Salmon River, OR

From: Jones et al. 2014

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The River Continuum Concept (Vannote et al. 1980)

FPOM is fine particulate organic matter; CPOM is coarse particulate organic matter; P/R is the production/respiration ratio.
Rosgen Channel Classification (Rosgen 1992)

LONGITUDINAL, CROSS-SECTIONAL and PLAN VIEWS of MAJOR STREAM TYPES

- **Aa+**: < 2%
- **A**: 2 - 4%
- **B**: 4 - 10%
- **C**: < 2%
- **D**: < 4%
- **DA**: < 0.5%
- **E**: < 2%
- **F**: < 2%
- **G**: 2 - 4%

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Channel gravels
Coarse charcoal
Channel gravels
Fine overbank alluvium
Limber Jim Creek, Upper Grande Ronde River basin

From: W. Russell

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Ecological States of Aquatic Ecosystems in the Oregon Coast Range

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From: Naiman et al. (1992)
Time Since the Previous Debris Flow

0 to 30 yrs  30 to 60 yrs  60 to 90 yrs  > 90 yrs

From: May & Gresswell 200

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Thinking Big

- Each spatial/ecological level has unique features
  - Recognize importance of time
  - Lower levels more variable than higher levels
Thinking Big

- Each spatial/ecological level has unique features
  - Recognize importance of time
  - Lower levels more variable than higher levels

- Change is more important than stability
  - Ecosystems are complex & dynamic in space and time
  - Periodic disturbances are important
Sometimes High Intensity Trauma Happens

L.M. Reid
Thinking Big

- Each spatial/ecological level has unique features
  - Recognize importance of time
  - Lower levels more variable than higher levels
- Change more important than stability
  - Ecosystems dynamic in space & TIME
  - Disturbances important
- Focus conservation on biological diversity
  - It takes a landscape
Go big (space & time), or go home!