Restoration of riparian and aquatic habitat complexity by identification and use of natural processes

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Strawberry Valley, Utah

Watershed Area: 212 sq. mi.
136,000 acres

Elevation: 7,550 ft – 10,554 ft

Precipitation: 17-32 inches; 24 avg.
average 24

Dominant vegetation types:
Aspen 35%
Sage brush 31%
Riparian 4.4%

Perennial streams: 136 miles
Intermittent streams: 258 miles

Geology: Paleocene-Eocene sediments
Green River Shale
Uinta-Duchesne River Fm.’s

Annual Runoff: 68,000 acre-ft
Strawberry River

1938

1987

Strawberry River
- Elimination of grazing from 57,000 acres
- Change in grazing practices on rest
- Bank stabilization
  - Juniper/aspen revetments 23 miles
  - Willow+sedge rooted stock 311,000
- Upland seeding 800 acres
- Instream structures
- Road closures 32 miles; reconstruction 18 miles
- Gully plugs
Average channel width by year
Strawberry River below Westside Road

<table>
<thead>
<tr>
<th>Year</th>
<th>Width (feet)</th>
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<tbody>
<tr>
<td>1938</td>
<td>18.7</td>
</tr>
<tr>
<td>1946</td>
<td>18.8</td>
</tr>
<tr>
<td>1956</td>
<td>22.0</td>
</tr>
<tr>
<td>1964</td>
<td>34.1</td>
</tr>
<tr>
<td>1971</td>
<td>37.7</td>
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<tr>
<td>1984</td>
<td>29.4</td>
</tr>
<tr>
<td>1987</td>
<td>33.2</td>
</tr>
<tr>
<td>1998</td>
<td></td>
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</tbody>
</table>
Average channel width by year
Strawberry River above Highway 40

width (feet)

12.4 12.4 15.8 18.5 18.6 24.0 25.2

WHY BEAVER?

• Stream miles surveyed: 72 (of 136/394)
• Beaver dams identified: 1765
• 24 dams/mi avg. (range 0-60)
• Active dams: 400 (+/-)
• Active colonies: 70 (+/-)

• Historically:
  – 5,000 dams (?)
  – 400-800 colonies (?)

• 1938: 2 colonies; 15 dams
• 1956-1998: 66-90 colonies; 259-545 dams
Dominant riparian species: sedge and willow

- 7 sedge species
  - Multiple establishment mechanisms
- 7 willow species
  - Specific establishment requirements
- Permanently- seasonally saturated
- Varying soil texture

- Seasonally flooded
- Coarse-textured soils

Hobble Creek

1938
1946
1956
1971
1987
1998
• Wetlands occupy 78% of available area
• Willow cover 44%; sedge 44%; other hydrophytes 25%
• High community type interspersion
- Wetlands 84% of valley floor
- Dominant CT S. boothii – C. rostrata
- Willow 34%; sedge 34%; 0% hydrophytic gram.
- 1 willow species, but evidence of recruitment
• Wetland 25%
• Sage-bluegrass dominant
• Willow-sedge cover less than 5%
• Noxious weeds 11%
• CT interspersion low
• Fringe riparian
Strawberry River Reach 30

1938

1987
• Wetland 4%; riparian width 82 ft vs >1000 ft
• Dominant CT: A. Cana
• Willow cover 7%; on point bars and FP edge
• 3% hydrophytes in oxbows
• Low interspersion
Strawberry Valley at Reach 30

1938 riparian width

1938 avg high water

Distance and elevation in feet
The graphs illustrate the comparison of valley width and wetland cover for different locations: Hobble, Clyde-U, Straw-01, and Clyde-D. The graphs show the percentage of wetland (% Valley) and the width of the valleys (Valley width). The data indicates that valley width varies significantly across these locations, with Hobble showing the widest valley and Straw-01 showing the least. Similarly, the percentage of wetland varies, with Clyde-D having the highest and Straw-01 having the lowest. The graphs also highlight the distribution of cover types, with Willow and Sedge being the dominant species in different areas.
SUMMARY

• Beaver activity is a major source of habitat diversity
• That diversity is reflected in species composition and community type distribution of floodplains and riparian zones
• Beaver occupancy sets the stage for further recovery…

SUMMARY

• Sedges appear to establish more rapidly because they have a wider range of conditions under which they can establish.

• In disrupted systems beaver activity can speed recovery and regeneration of riparian species.