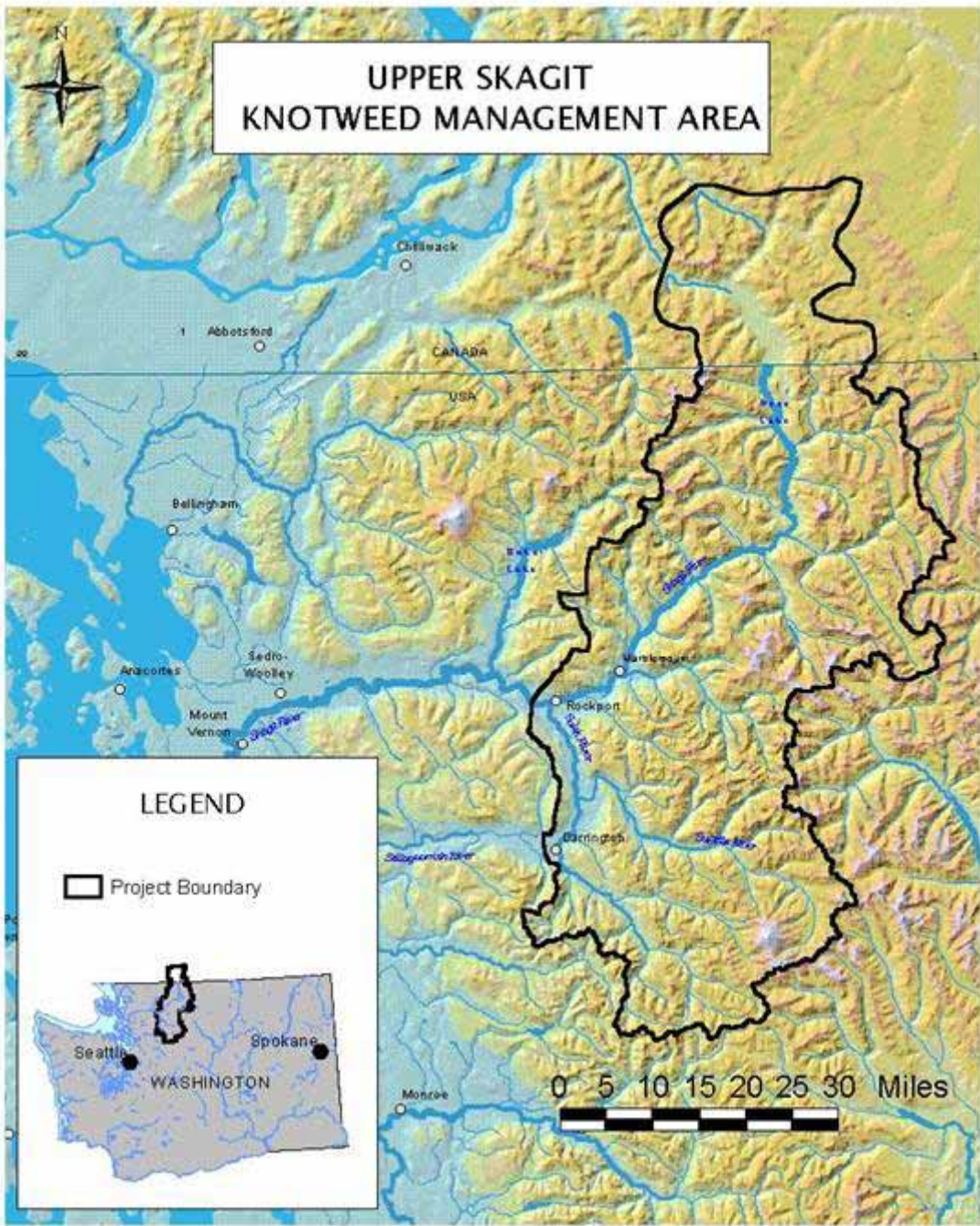


Landscape-Scale Knotweed Control in the Upper Skagit River Basin

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**The Nature Conservancy of Washington
Skagit Knotweed Working Group**



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1. Elements of a Successful Landscape-Scale Invasive Species Control Program
 2. Knotweed Control Results

Elements of success

- Engaged partnerships
- Effective coordination
- Realistic goals
- Participation of private landowners
- Biologically-based, strategic approach
- Rigorous yearly surveying, monitoring, and treatment
- Reportable measures of success



Engaged partnerships

- Major public and private landowners
- Long-term partnerships
- CWMA or “working group”



Effective coordination

- Partner effort must encompass entire project area
- Single coordinator
 - Track partner actions/responsibilities
 - Track project success
 - Ensure continuity (funding, treatments, monitoring, etc)
 - Help engagement
- Semi-annual planning meetings
- Shared group database



Realistic goals

- Clearly define project area, target species, and target endpoint
 - Biological relevance
- Other aspect besides treatment necessary for project success
 - Outreach, education, research



Participation of private landowners

- Outreach and education
 - Threat and control techniques
- Free treatments
- Landowner visits
- Community liaisons



Biologically-based, strategic approach

Plant biology



- Mechanism of dispersal
- rate of dispersal
- effects on ecological system
- ecological setting

Control strategy

- Treatment methods
- Survey methods
- Strategic focus on priority patches
- Ultimate goal of project



Rigorous yearly surveying, monitoring, and treatment

- Time and resource intensive
- Continuous on priority basis
- Monitor beyond apparent death of plant
- **CANNOT** miss a year of treatment



Reportable measures of success

- Deliberate data collection
- Not necessarily experimental
- Benefits:
 - Adaptive management
 - Funding
 - Reporting
 - Dissemination





Control Results 2001-2005

Skagit Knotweed Treatment Methods 2001 - 2006

- Early summer manual control
 - Larger patches
 - Cut or bend
- Late summer foliar spray
 - 5% glyphosate, 1% Agri-dex
- Injection
 - Limited—based on remote location or landowner request



Measures of Success (2002-2005)

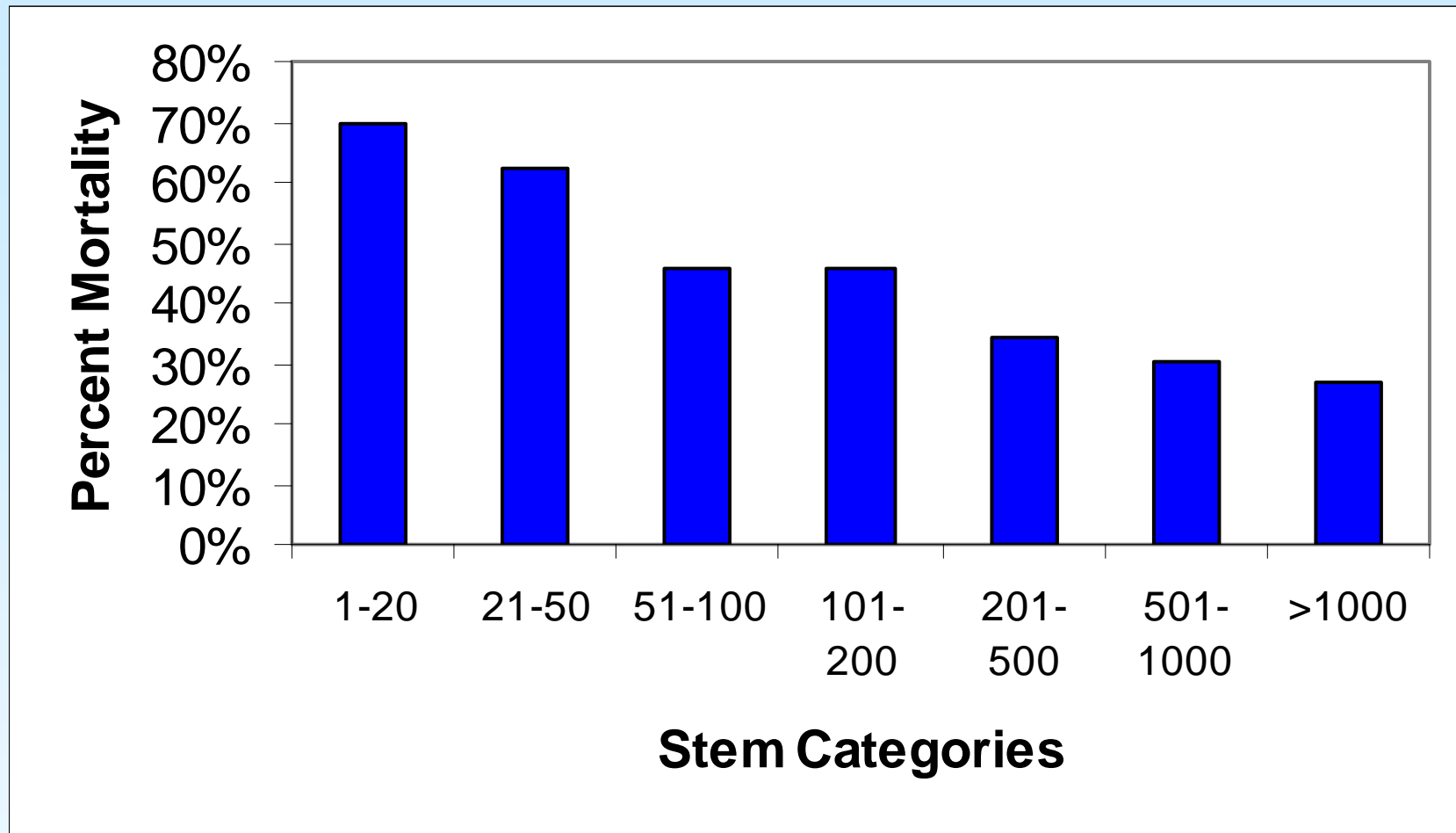
- 55% patches eliminated
 - 752 total
- 54% patch mortality
 - out of 375 treated
- 45% Stem Reduction:
 - from average size of 51-200 stems to 1-50 stems)
 - N = 345
- 78% of river miles are knotweed free
 - Upper Skagit: 49% to 67%



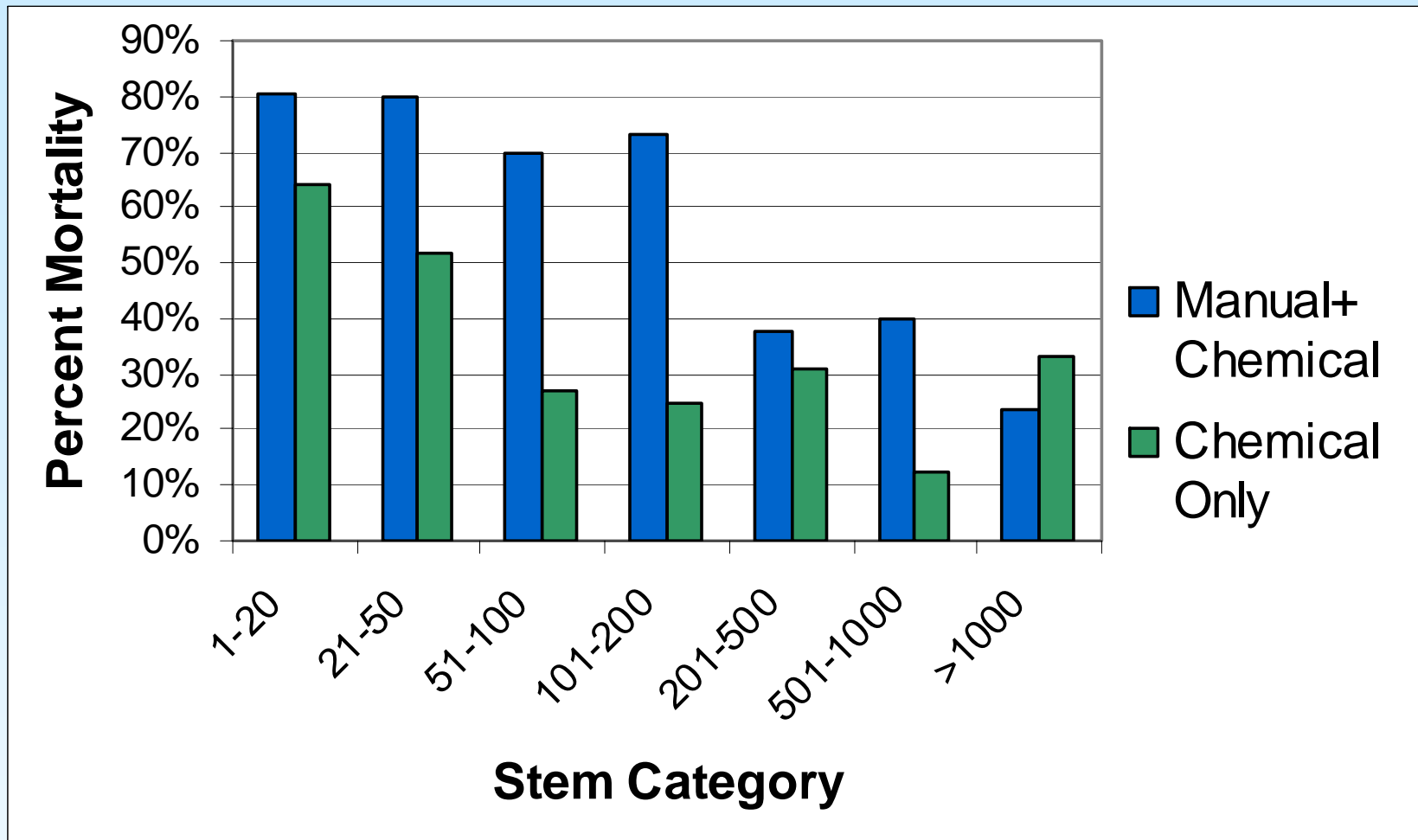
Factors Affecting Patch Mortality

- Initial patch size
- Treatment method
- Number of years treated

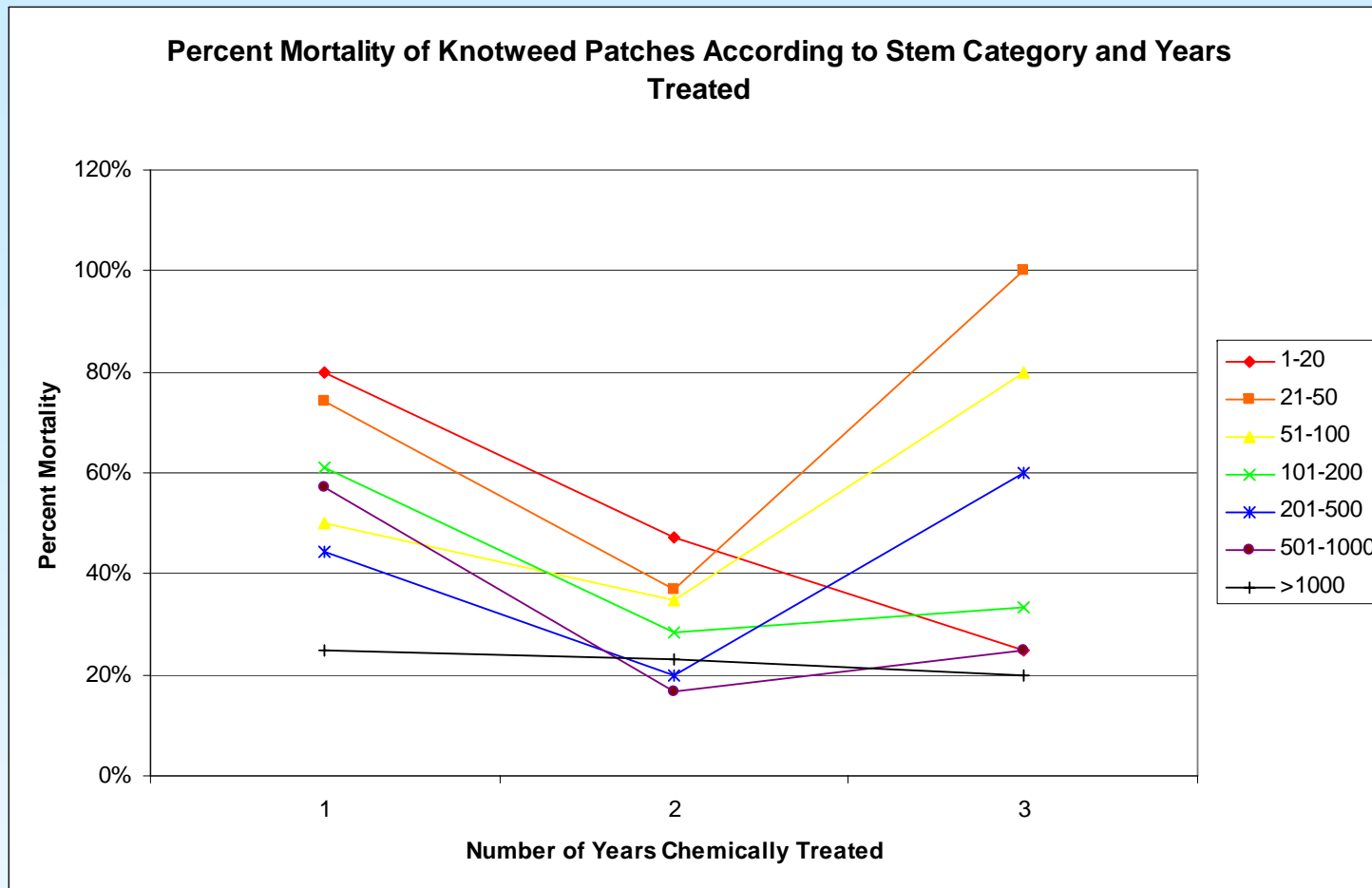




- Mortality rates decrease with increasing patch size



- Integrating manual treatment with chemical control increases mortality rates (63% vs. 47%)
- Chemical Only threshold patch size = 50 stems
- Manual + Chemical threshold = 200 stems



- High survivorship of patches even after 2 and 3 years of treatment—even for smaller patches.

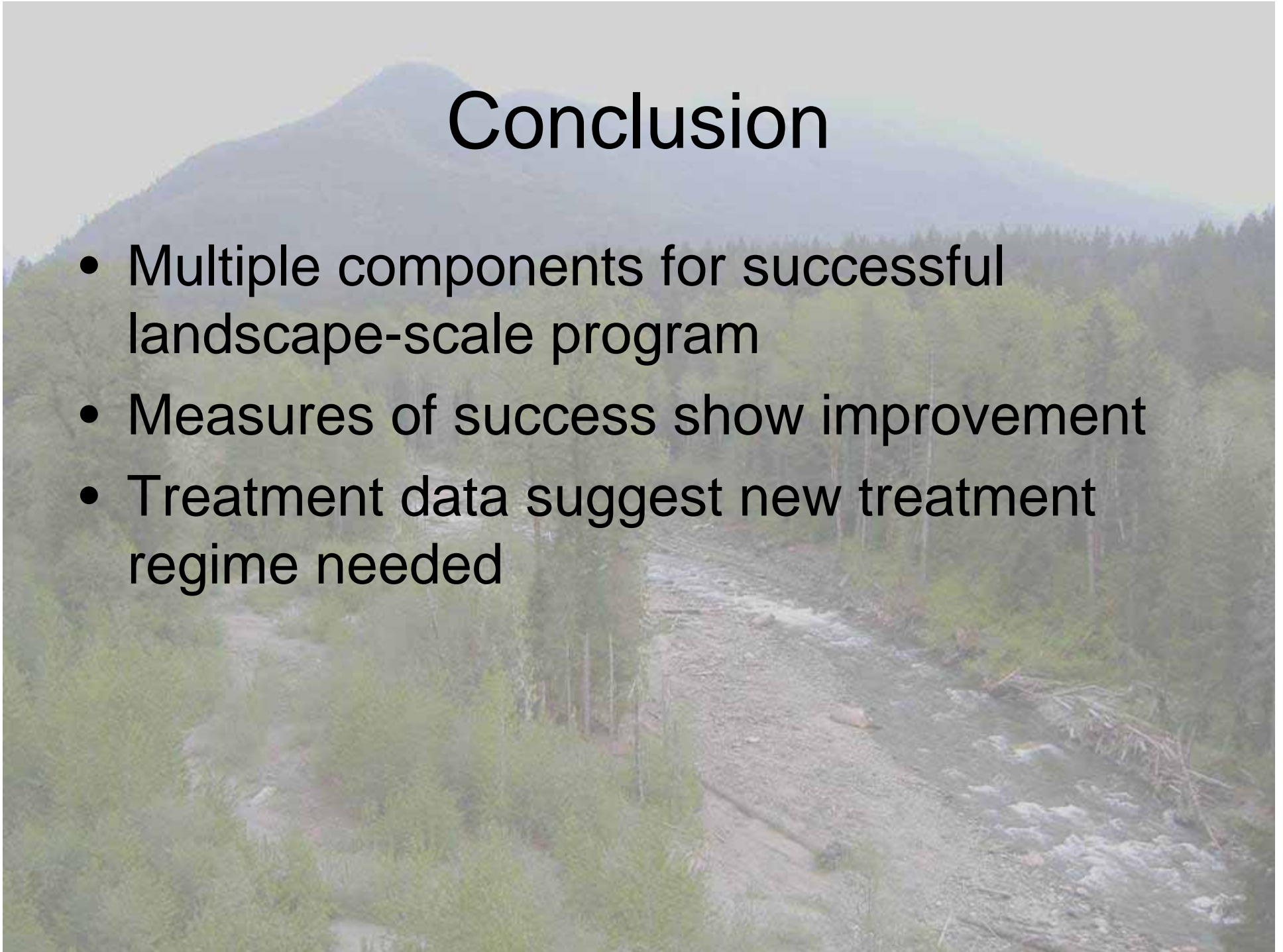
Resurrections

- 11% resurrection in 2005
- Resurrections are more likely for patches greater than 100 stems.



Conclusion

- Multiple components for successful landscape-scale program
- Measures of success show improvement
- Treatment data suggest new treatment regime needed



Thanks!

Upper Skagit CWMA members

- North Cascades National Park
- Seattle City Light
- Skagit Land Trust
- Skagit County NWCB
- Snohomish County NWCB
- Stilliguamish CWMA
- TNC

- USFS / MBS National Forest
- University of Washington
- Washington Conservation Corps
- Washington Department of Fish and Wildlife
- Washington State Department of Agriculture
- Washington State Department of Natural Resources
- Washington State University
- Whatcom County NWCB

Funders

- Martin-Fabert family
- TNC
- USFS
- WSDA
- NFWF
- USFWS

