

A Spatial Economic Decision Support (SEDS) Tool for National Capital Region (NCR) Parks

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Cooperative Agreement with
NPS National Capital Region



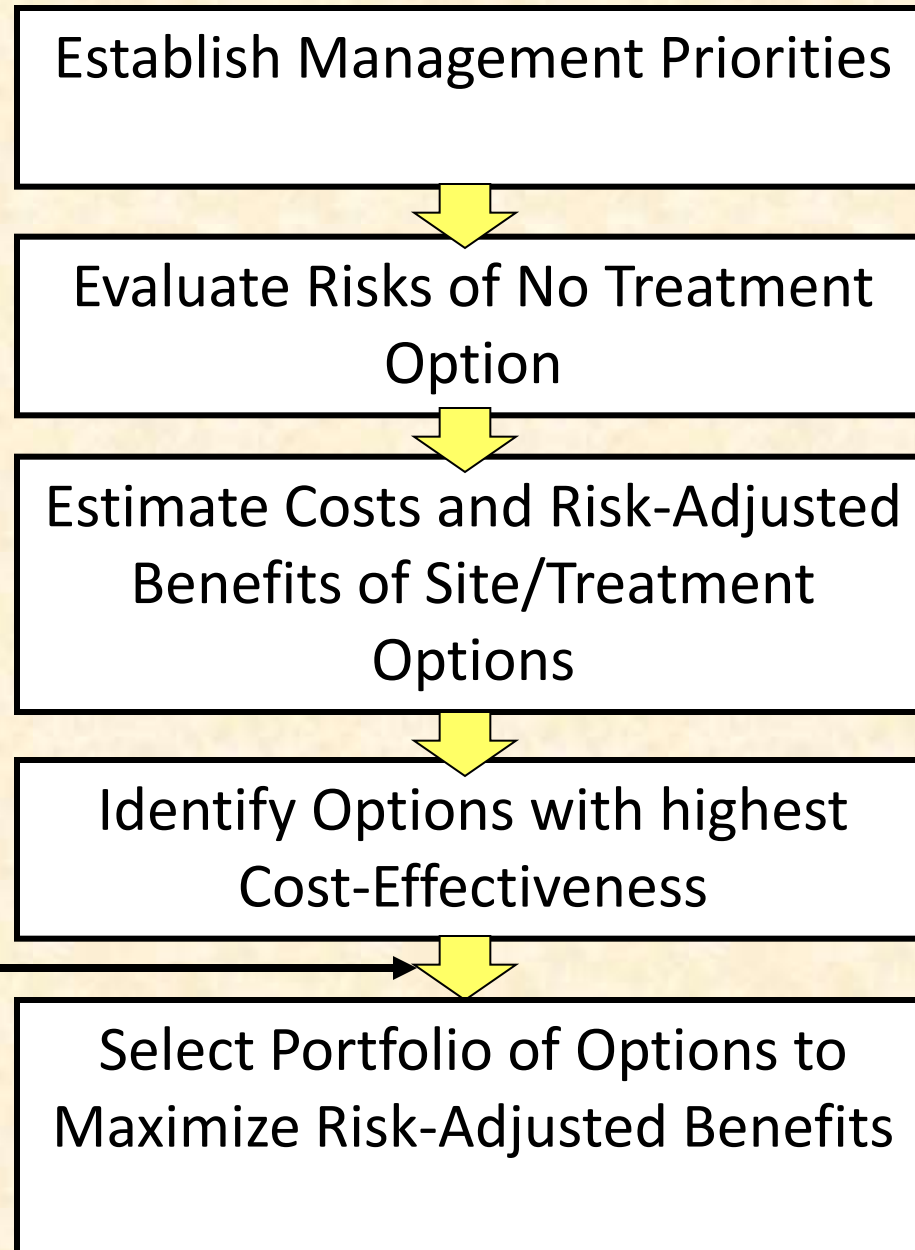
Major Goals of the SEDS

1. Support site and treatment selections to manage invasive species
2. Demonstrate economic benefits of management options in terms of ecosystem service changes



Decision Framework

Test Assumptions



SEDS Overview

User interface
Evaluate Sites

Identify
Management
Alternatives

Report Cost-
Effectiveness

Databases

Internet

Local

Spatial Economic Analysis

Cost analysis

Treatment &
Management

- Current
- Future

Benefit
quantification

Ecosystem
Services &
Values

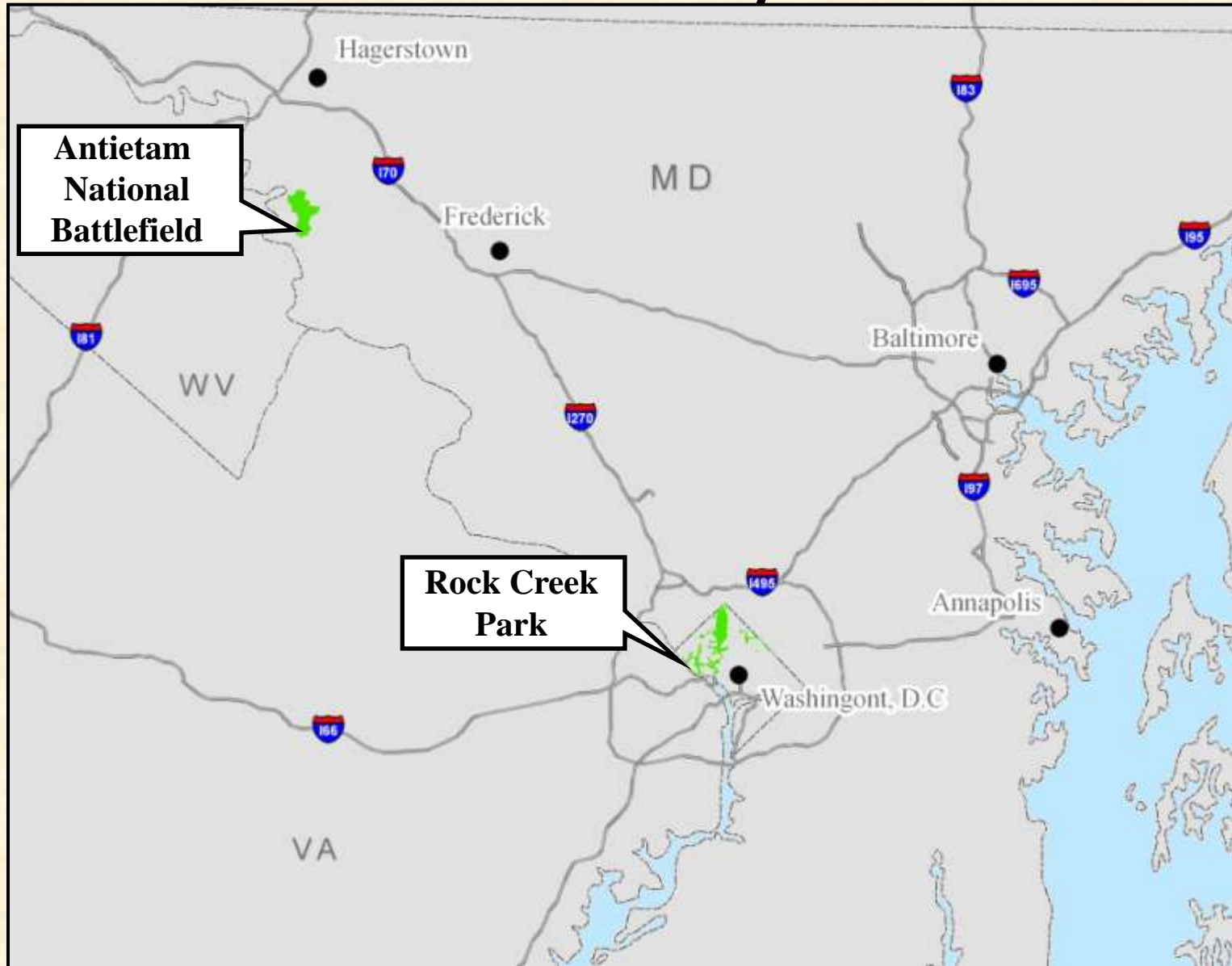
- Recreation
- Culture

Performance
risk

Treatment
Success

- Reinfestation
- Regional risk

Two Case Study Parks:

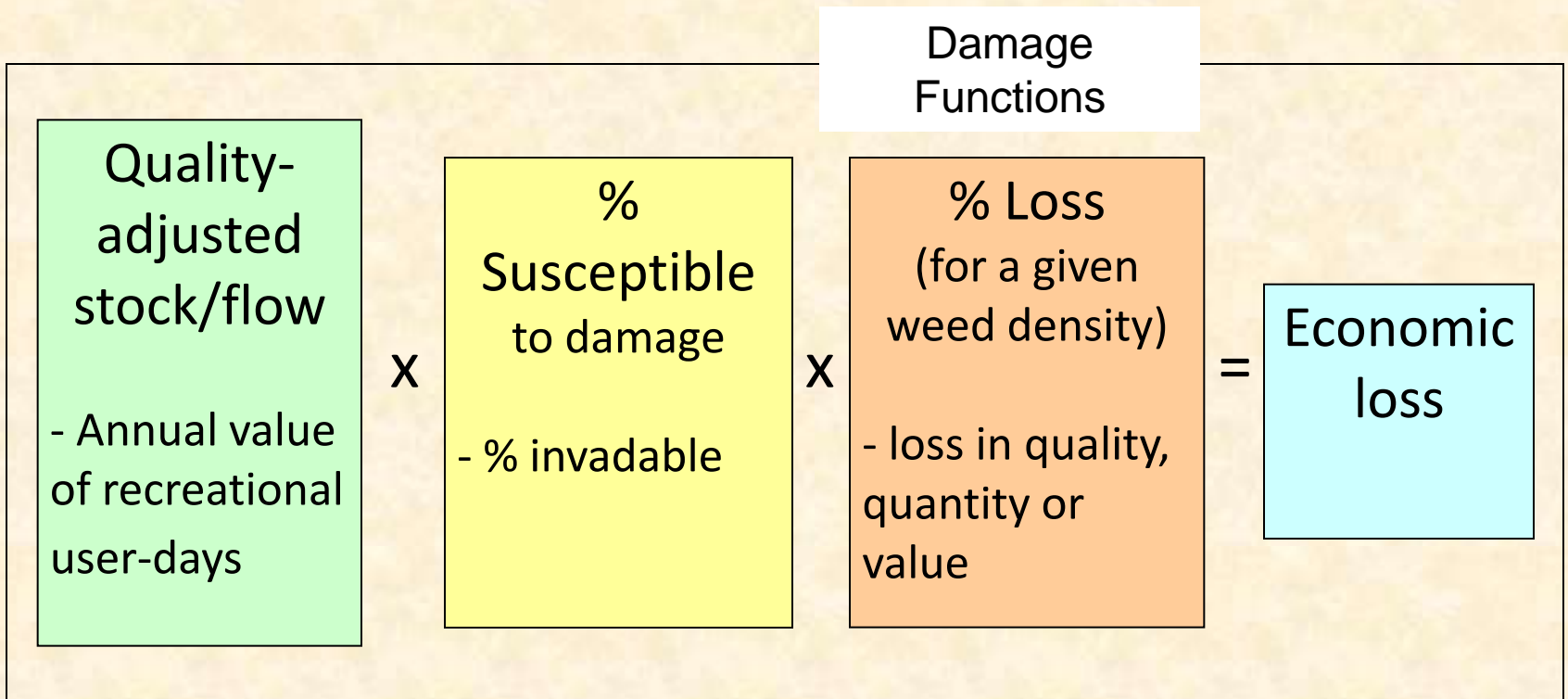


Cost Database

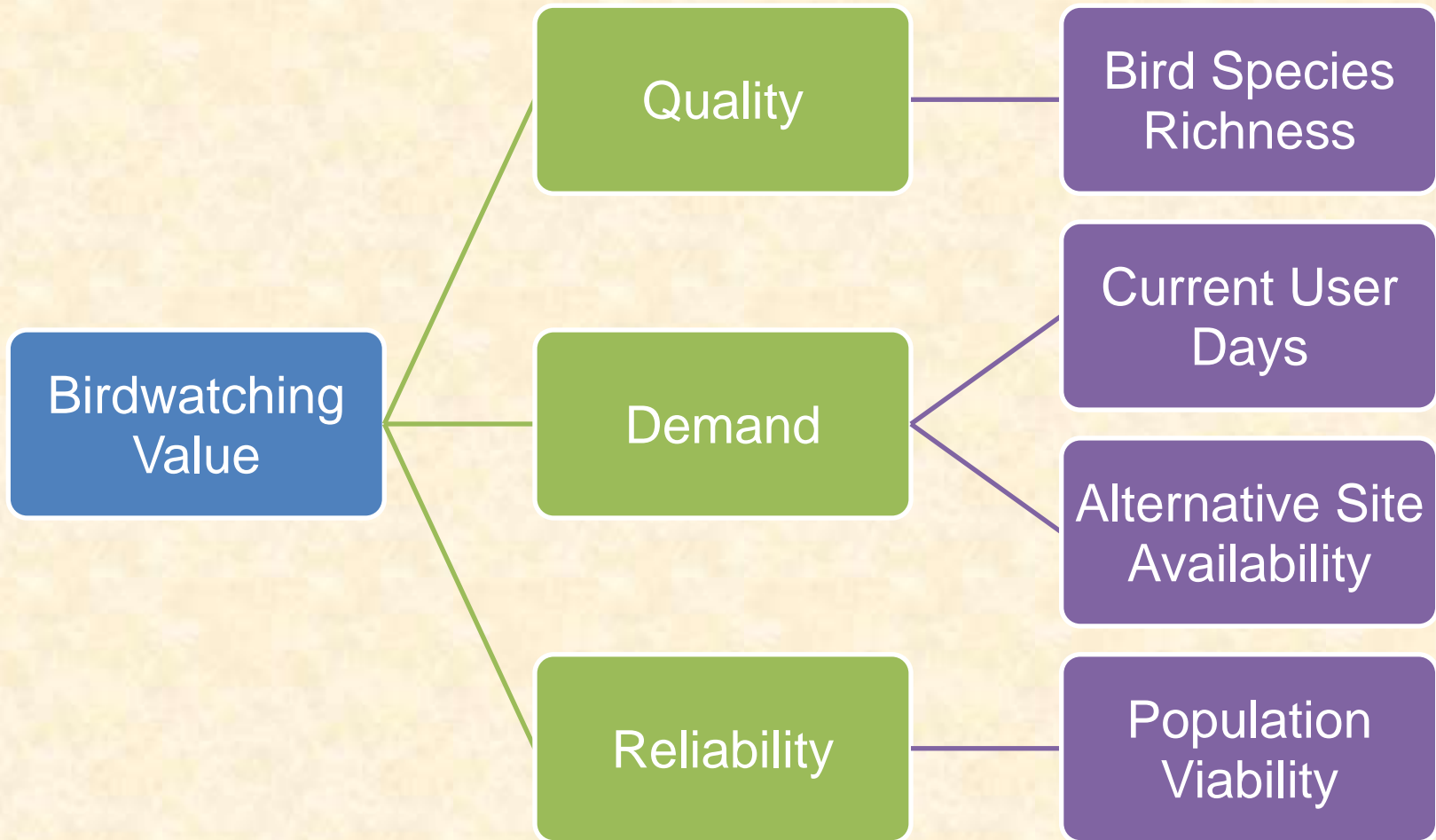
Species	Treatment	Comment	Herbicide Cost (\$/gal w/ carrier)	Average Vehicle Operation Cost (\$/hr)	Average Cost Crew (\$/hr)
Trees (Ailanthus)	Foliar Spray (using backpack)	Usually performed on seedlings below 3m high using Garlon3A	2.20	\$0.789	1 GS9, 2 GS5 (51.60)
	Foliar Spray (using gallon sprayer)	Usually performed on seedlings below 3m high using Garlon3A	1.85	\$0.789	1 GS9, 2 GS5 (51.60)
	Broadcast Foliar Spray (using tank sprayer)	Using a truck sprayer (Garlon3A)	1.85	\$0.789	1 GS9, 2 GS5 (51.60)
	Basal Bark	Performed on dry sites using Garlon4	27.15	\$0.789	1 GS9, 2 GS5 (51.60)
	Cut Stump w/ herbicide	Done if tree is predicted to become a hazard (Garlon3A)	36.90	\$0.789	1 GS7, 3 GS5 (62.22)
	Hack and Squirt	Frill notch and insert herbicide (Garlon3A)	36.90	\$0.789	1 GS7, 3 GS5 (62.22)

2. Benefit Quantification through Risk Assessment

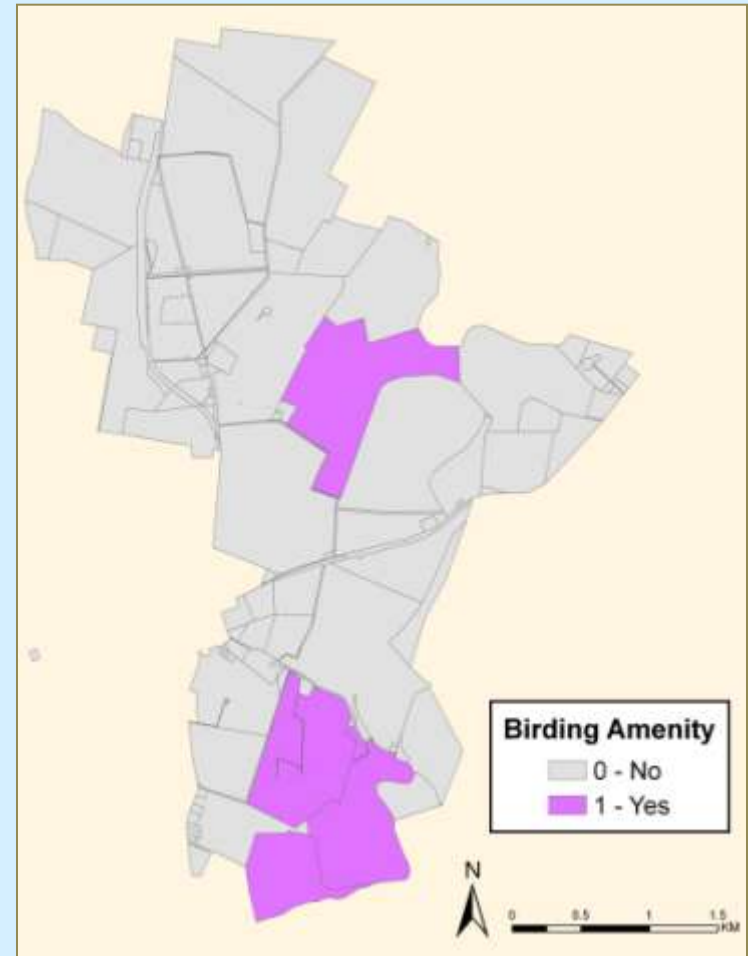
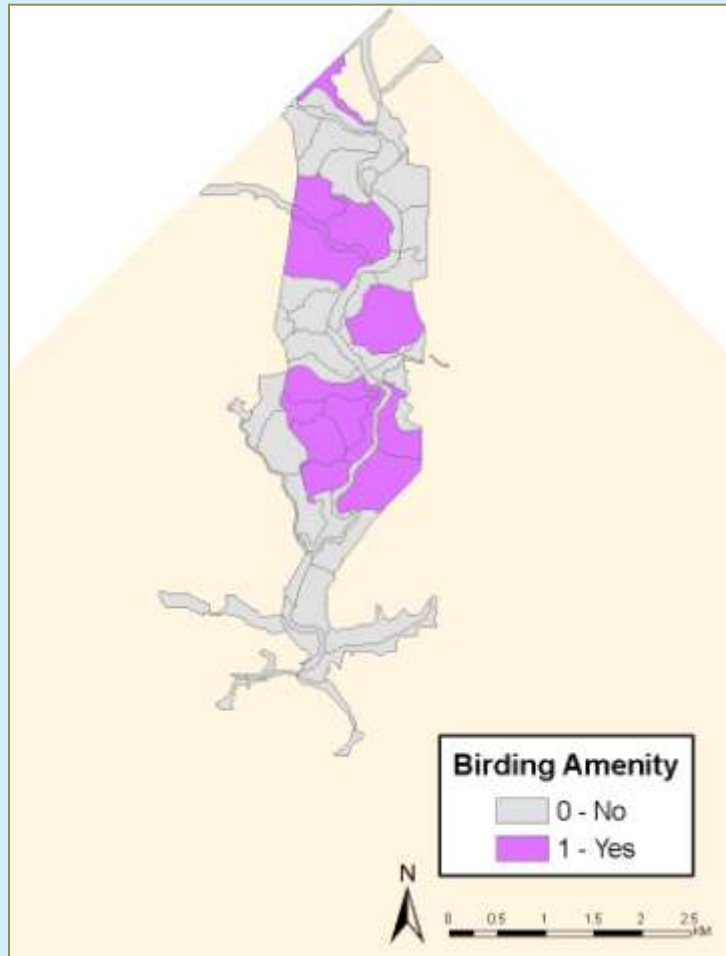
Benefits of treatment = Damage Costs Avoided



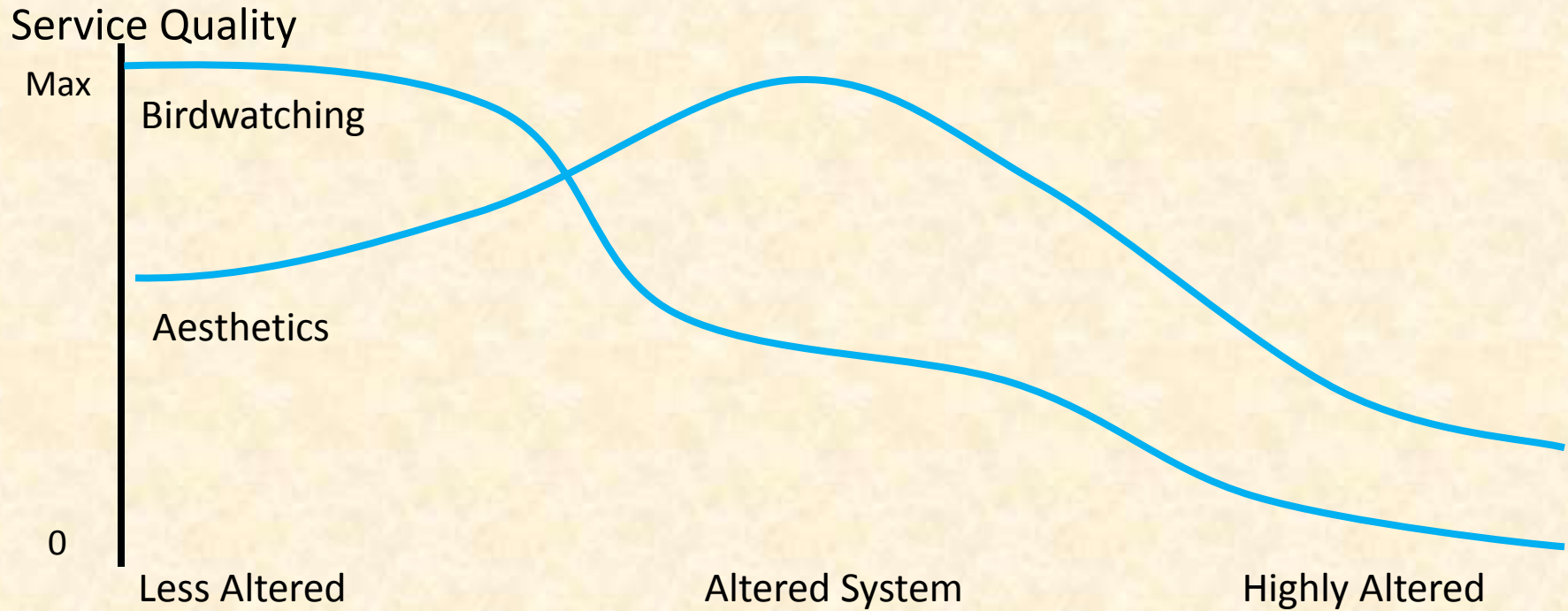
Ecosystem Service Benefit Index (Quality Adjusted Stocks)



Birding Usage



Damage Functions: Service quality and potential value varies along the land alteration spectrum

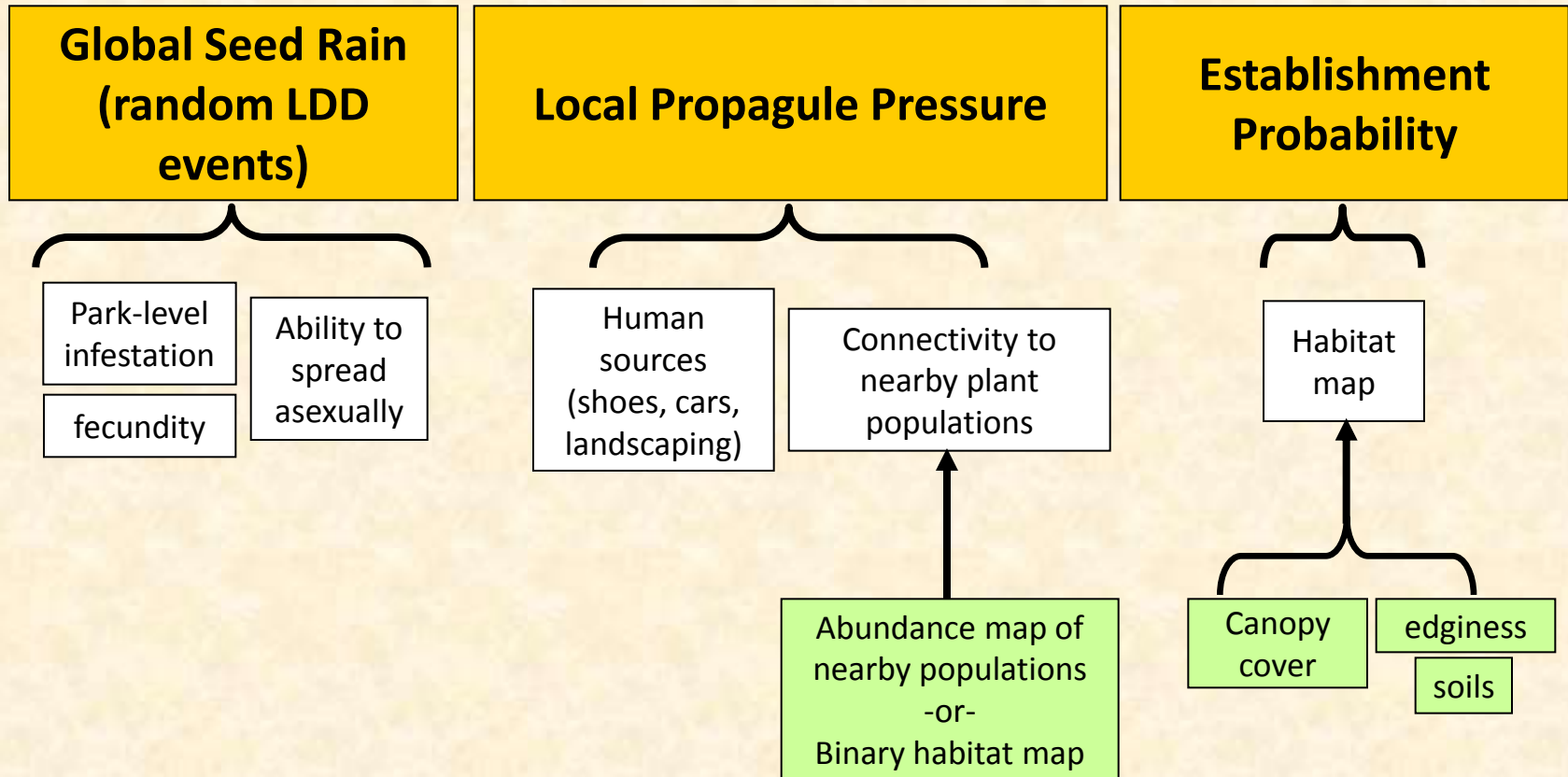


Developing the Damage Functions for Invasive Species Impacts on Ecosystem Services

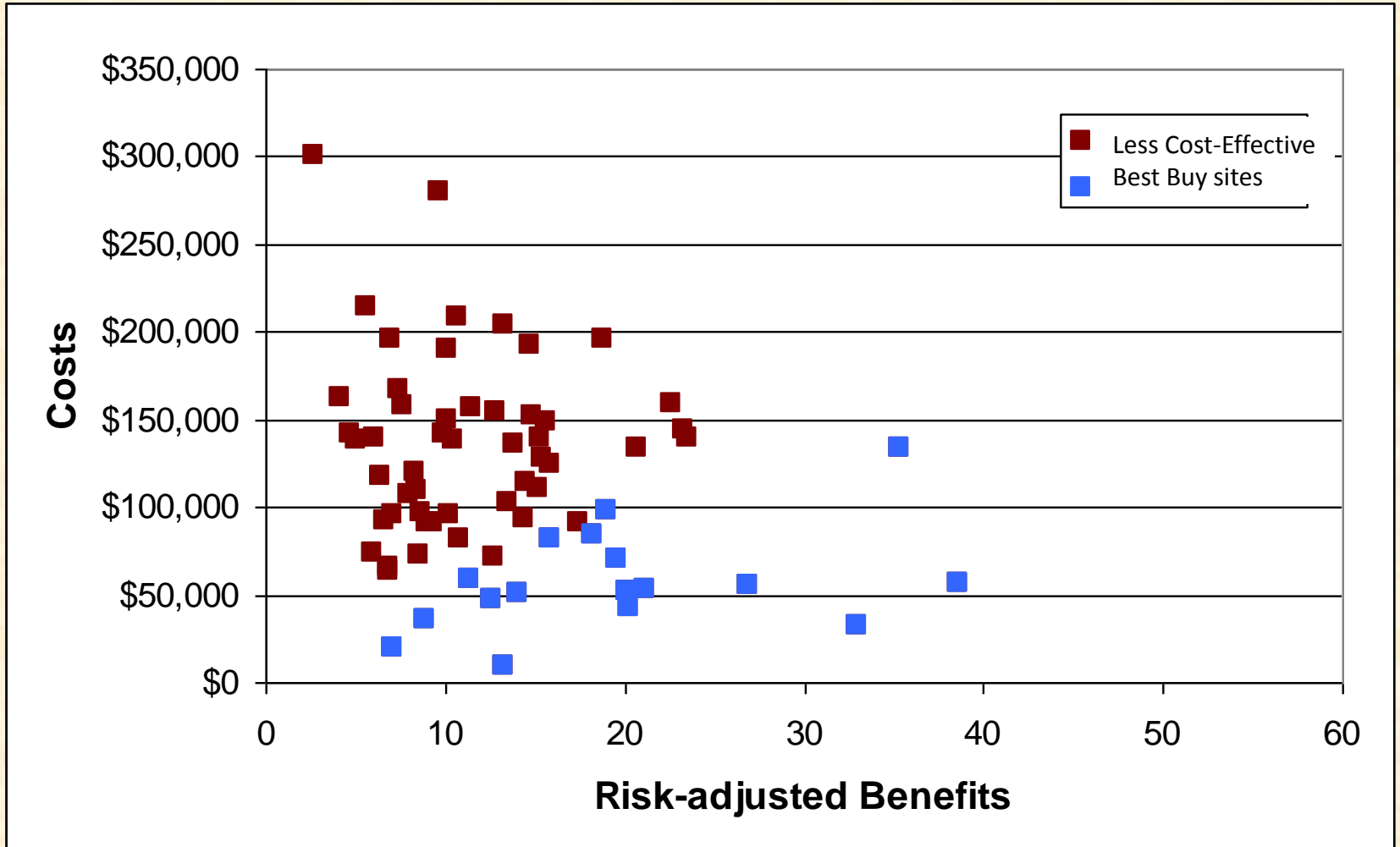
- Literature Review
 - Reasonable evidence on invasive species impacts on vegetation structure and diversity
 - Fewer studies for avian, insect, and cultural endpoints
- Elicited Best Judgment
 - Expert workshops
 - Interviews with park users and staff

3. Performance Risk

Reinvasion Risk



Costs vs. Risk-Adjusted Benefits



Project Status

1. Working with intended users to develop data and models
2. Will demonstrate SEDS for 2 case study parks
3. Developed to be generalizable to any national park
4. Initial demo planned for summer 2010
5. Fall 2010 - Fall 2011 period of user feedback, tool refinement, and user training