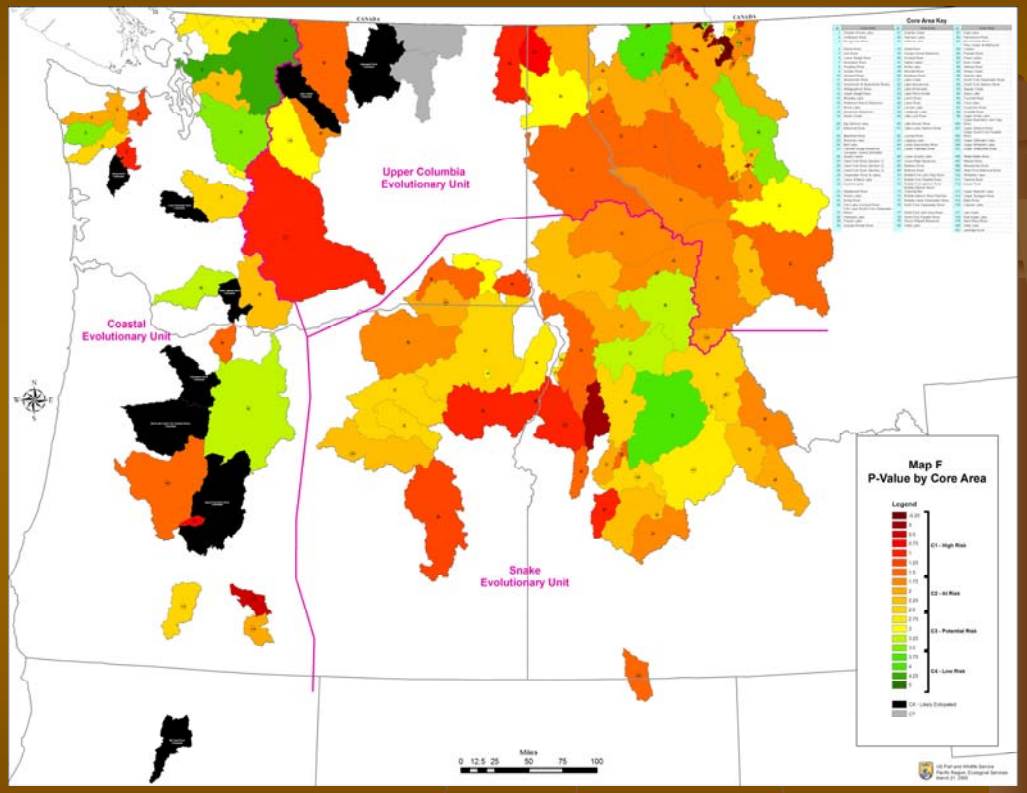
Bull Trout Workload and Conservation



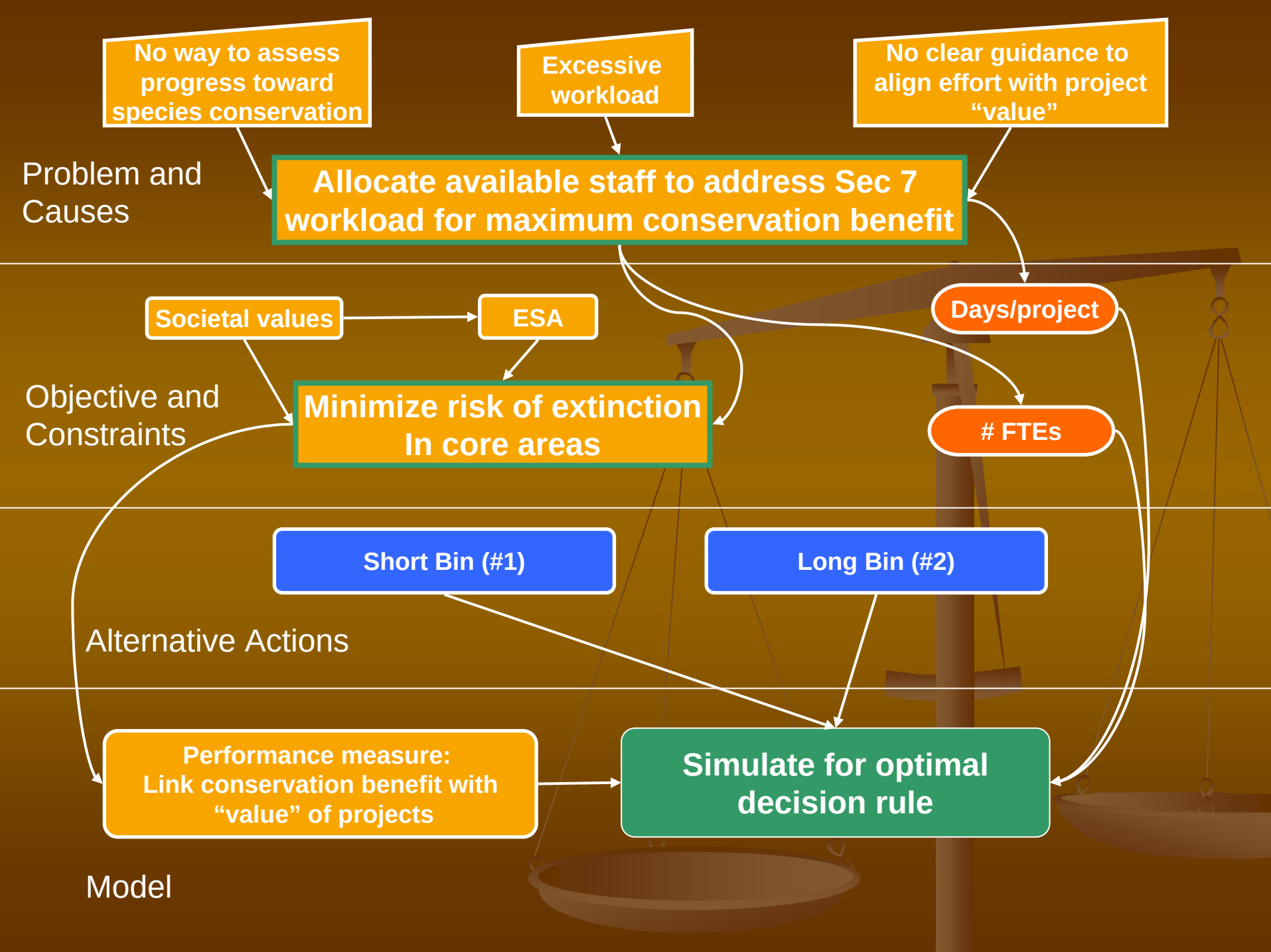
"To work it or not to work it, that is the question."

Decision Environment

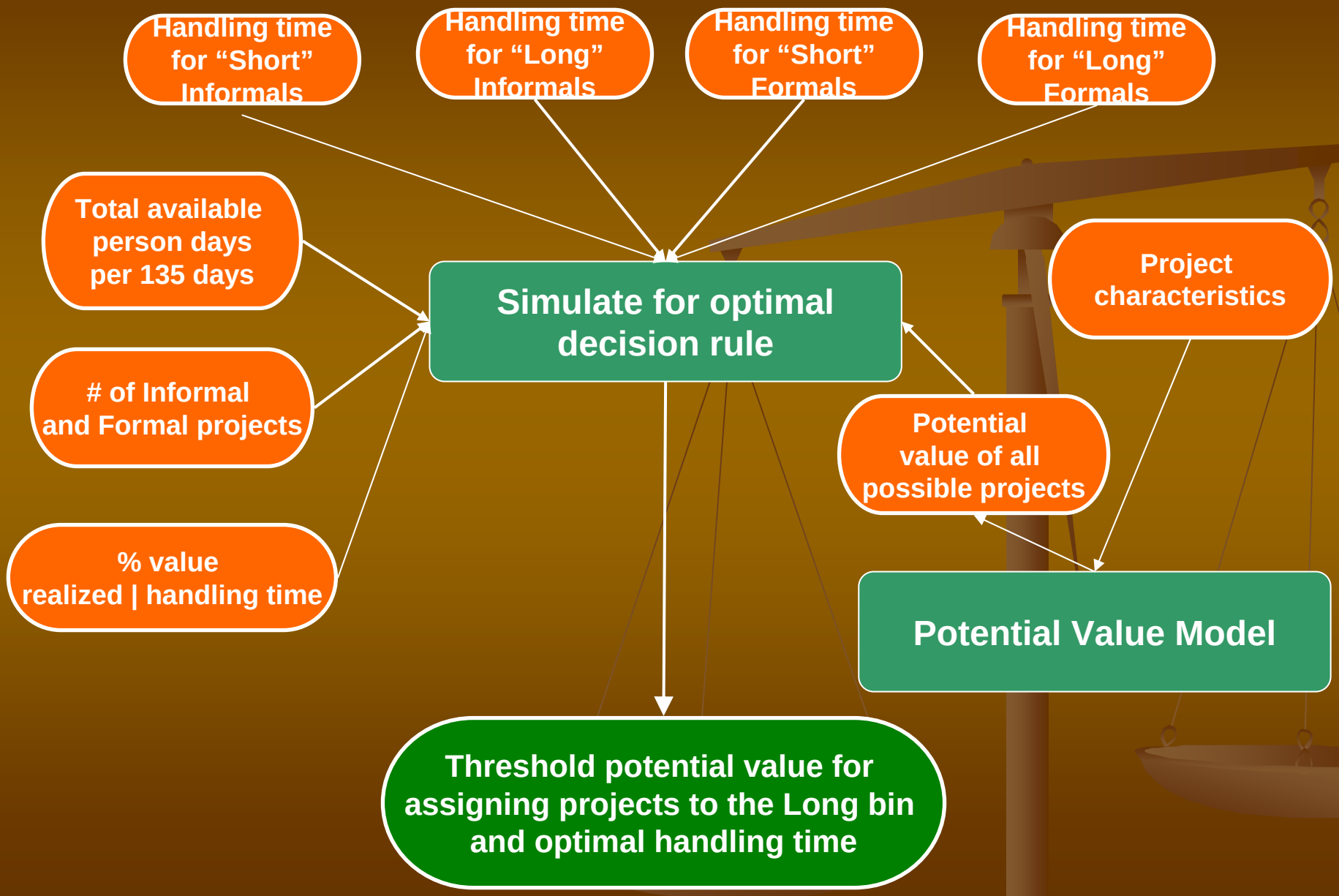
- **Who:** WWFWO Management Team
- **Why:** ESA legal mandate integrated with WWFWO workload management
- **What:** Allocating available staff to Section 7 consultations for bull trout in a way that maximizes conservation benefit to the species
- **When:** Decision rule deployed FY 08 with annual review and revision as needed.

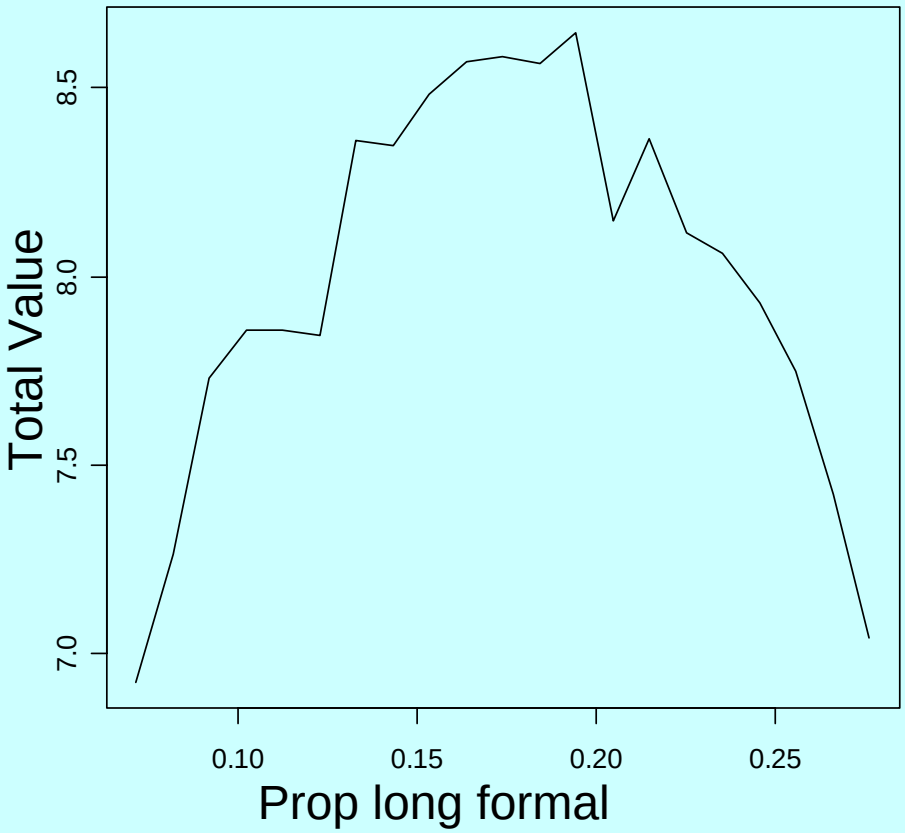
Decision Elements

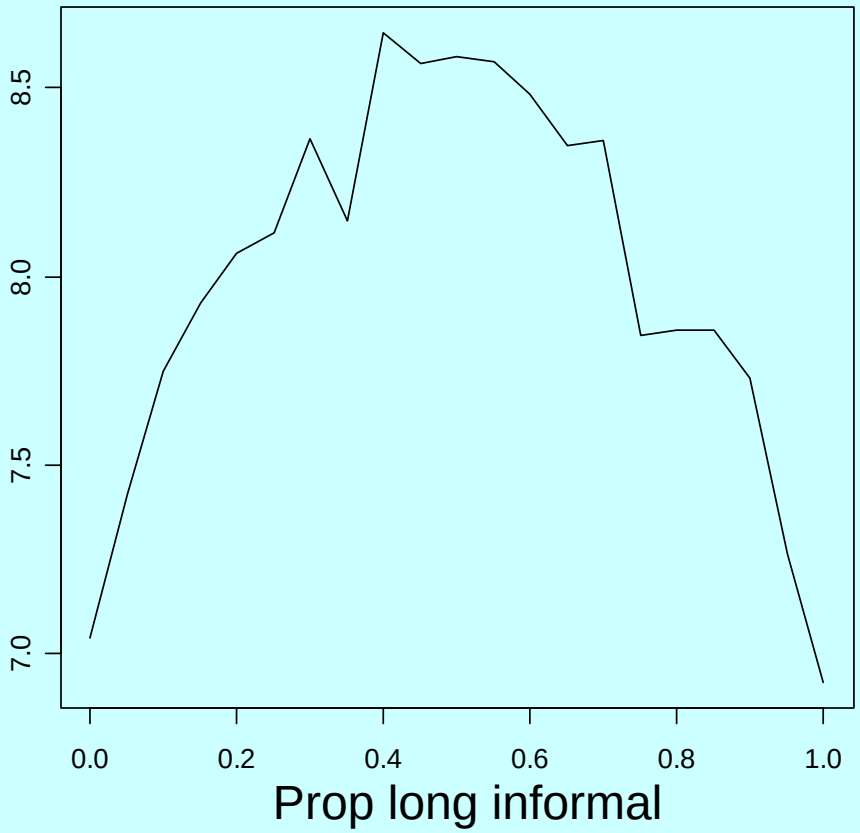
- **Objective:** Minimize the risk of extinction of bull trout within core areas in Puget Sound and Olympic Peninsula Management Areas
- **Performance Measure:** "Value" of completed projects (assumes maximizing value minimizes extinction risk)
- **Actions:**
  - Assign project as short-term consultation
  - Assign project as long-term consultation
- **Consequences:** Model output

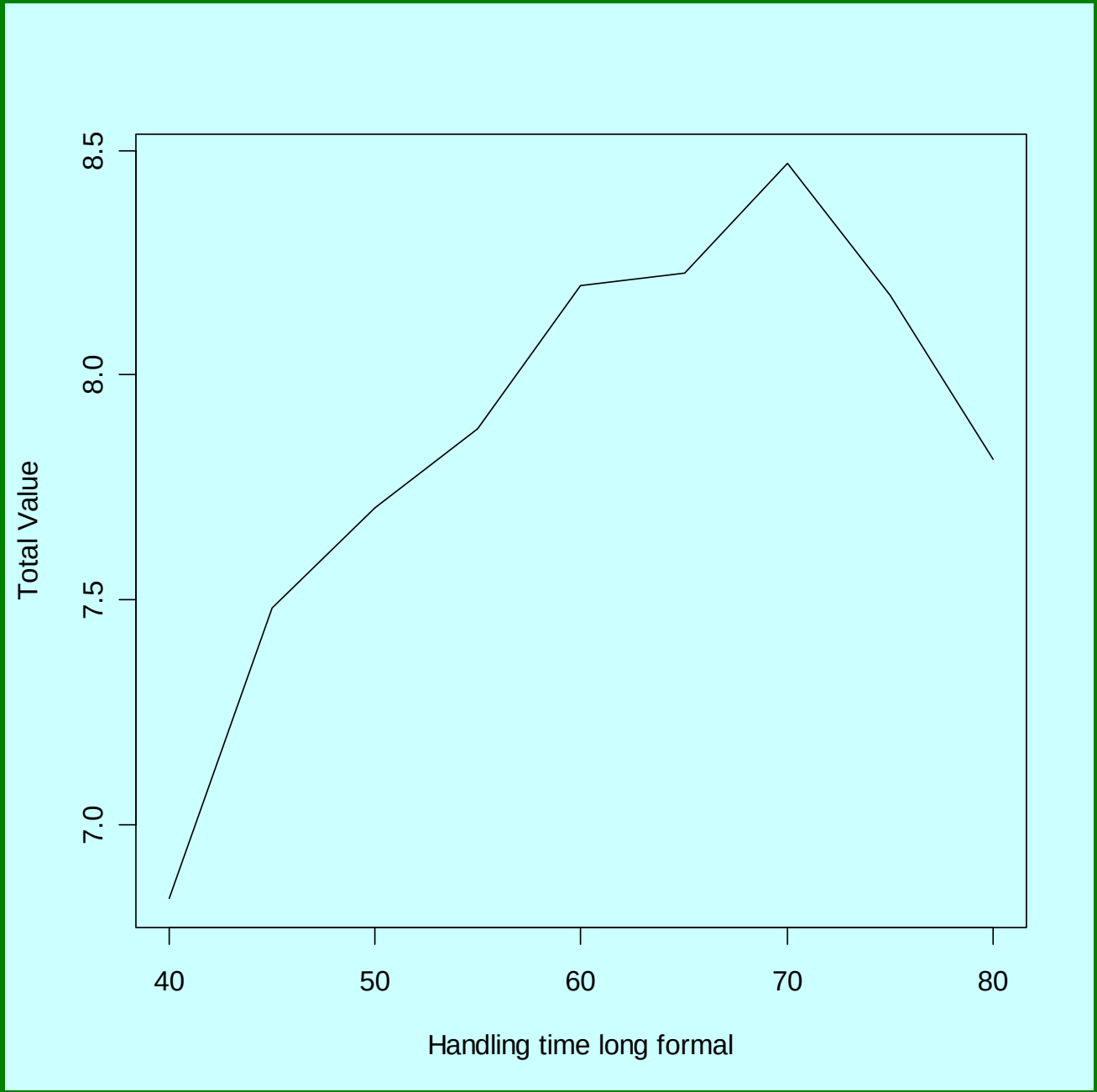

No way to assess progress toward species conservation
Excessive workload
No clear guidance to align effort with project "value"
Problem and Causes
Allocate available staff to address Sec 7 workload for maximum conservation benefit
Societal values
ESA
Days/project
Objective and Constraints
Minimize risk of extinction In core areas
FTEs
Short Bin (#1)
Long Bin (#2)
Alternative Actions
Performance measure: Link conservation benefit with "value" of projects
Simulate for optimal decision rule
Model

Workload Allocation Model




Total Value
7.0
7.5
8.0
8.5
0.10
0.15
0.20
0.25
Prop long formal


7.0
7.5
8.0
8.5
0.0
0.2
0.4
0.6
0.8
1.0
Prop long informal


Total Value
8.5
8.0
7.5
7.0
40
50
60
70
80
Handling time long formal

Analysis and Insights

- Use simulation to find the optimal behavior
- Smart rule performs better than random
- The proportion of long projects depends only on handling time, the number of projects, and total available staff time AND NOT on projects' potential values
- Law of diminishing returns may inform optimal handling time

Uncertainty and Effects

- How to equate project value with real world (structural uncertainty)?
- Will staff follow model recommendations (partial controllability)?
- In what sequence will projects arrive (stochastic uncertainty)?

Next Steps

- Communicate prototype to WWFWO
- Compile relevant data (e.g., # projects/time period)
- We are using a decision analysis within the larger decision framework to develop a potential value model
  - Expert elicitation
- Beta test project valuation model

Learning and Process

- **What makes SDM better than the alternative?**
- Logical problem deconstruction
- Allows consideration of all alternatives
- Allows for informed decision making
- Creates decision transparency

Prototyping Process

- **How did the process unfold with your group?**
- Dive into the deep end of model world
- Shifted focus from biology to operations
- Back around full circle, but with a better overall view

- **Was it effective?**
- YES!

Prototyping Process (cont.)

- **What wrong turns did you take?**
- Focused on prioritization versus allocation

- **How did you get back on track?**
- With time