

# Test for Logic and Consistency

## SELECTING SPECIES THE STEPS

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

- Develop Conservation Objectives  
Choose Scale
- Determine Species In Landscape  
Select Criteria
- Establish Surrogates  
Special Species Requiring Attention
- Set Population Objectives  
**Test for Logic & Consistency**
- Identify Gaps and Uncertainties  
Monitor Effectiveness



U.S. Fish & Wildlife Service  
Conserving the Nature of America



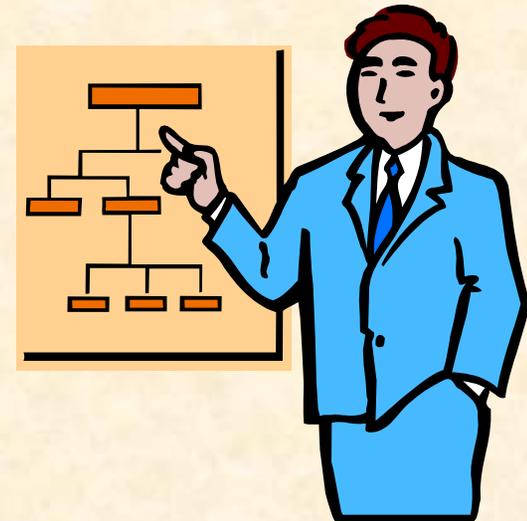
# Why Evaluate Effectiveness?

- *Key reminder: selection of surrogate species is part of the biological planning process that will aid in decisions for conservation actions*
- *Key assumption: surrogate species or groups are proxies for management of a larger suite of species*
- *Surrogate approaches in the past have had mixed results; following selection of surrogate species it is important to rethink/test if they are appropriate to achieve your objectives*



# Options to Test Logic of Selection

- Document the linkages
  - Descriptive text
  - Conceptual diagrams
    - Stressors, how surrogate species and the others relate to habitat, expected biological outcomes, etc.
- Expert review
- Examine the geographic overlap
- Simulation modeling



# Consistency

- To achieve range-wide biological outcomes we must be consistent in selection of species and their objectives across the landscape.
- Without coordination we may achieve local objectives but not range-wide population objectives



U.S. Fish & Wildlife Service  
Conserving the Nature of America



# Food for Thought (Discussion)?

- How would you ensure consistency within and across landscapes?
  - Population objectives
  - Surrogate selection
  - Other issues



U.S. Fish & Wildlife Service  
Conserving the Nature of America



# Identify Knowledge Gaps & Uncertainties



## SELECTING SPECIES THE STEPS

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

- Develop Conservation Objectives  
Choose Scale
- Determine Species In Landscape  
Select Criteria
- Establish Surrogates
- Special Species Requiring Attention  
Set Population Objectives
- Test for Logic & Consistency
- Identify Gaps and Uncertainties**
- Monitor Effectiveness

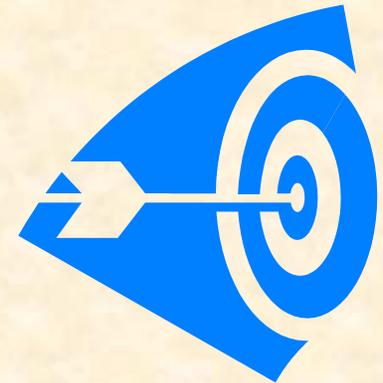


U.S. Fish & Wildlife Service  
Conserving the Nature of America



# Why Identify Knowledge Gaps & Uncertainties?

- *Management decisions and actions will be made despite uncertainty.*
- Clearly documenting knowledge gaps and uncertainties allows us to target resources to the most pressing information needs.



U.S. Fish & Wildlife Service  
Conserving the Nature of America



# Gaps & Uncertainties Should Drive Research & Monitoring

- Throughout the process of surrogate species selection and establishing biological outcomes needing documentation
  - Assumptions
  - Knowledge gaps
  - Uncertainties
- Not all knowledge gaps and uncertainties are equal
  - What is the strength (i.e., how uncertain)?
  - What is the gap/uncertainties importance on achieving the objective?



# Final Notes

- Areas of high uncertainty may require immediate research, monitoring or a cautionary approach to selection of species and management actions.
- As the complexity of problems grow it is important to make decisions based on science in a structured and transparent way



U.S. Fish & Wildlife Service  
Conserving the Nature of America



# Food for Thought (Discussion)?

- What are the consequences of a lack of data and increased uncertainty on the selection of a surrogate species?
- Some uncertainty is more important than others – how do we target and model the uncertainties that we need to pay attention to – those that will change management decision; affect ES recovery efforts?
- How does identifying knowledge gaps and uncertainties impact future strategies and actions?



# Monitor Effectiveness of the Surrogate Species Approach



## SELECTING SPECIES THE STEPS

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

- 1 Develop Conservation Objectives  
Choose Scale
- 2 Determine Species In Landscape  
Select Criteria
- 3 Establish Surrogates
- 4 Special Species Requiring Attention
- 5 Set Population Objectives
- 6 Test for Logic & Consistency
- 7 Identify Gaps and Uncertainties
- 8 Monitor Effectiveness



U.S. Fish & Wildlife Service  
Conserving the Nature of America



# Testing Surrogate Species Approach Effectiveness

- *Key reminder: selecting surrogate species is one process to enter the biological planning process of SHC*
- Related to step 8, but involves empirical testing of how well selected surrogate species represents other species
- **THIS STEP IS NOT TO TEST MANAGEMENT EFFECTIVENESS!**
- Tests the conceptual “linkage” developed between the surrogate species and the species it represents



# Strategies for Evaluating Effectiveness

- Directly identify if needs of surrogate species = needs of species it is meant to represent
  - Requires development of the expected biological outcomes for both the surrogate and the other priority species
  - Should be attempted in areas with great uncertainty and risk



U.S. Fish & Wildlife Service  
Conserving the Nature of America



# Considerations

- What biological outcome to measure? (occurrence, abundance)
- What are the potential sources of information? Can models be used?
- Is research needed to test the surrogate approach?
- Should all species (surrogates and priority species) be monitored with equal rigor to assess effectiveness?
- After acquiring information needed to test the relationships you may need to go back to select new or different surrogates until you have representation for all priority species.



# Food for Thought (Discussion?)

- How are monitoring for planning assumptions related to surrogate species selection different than monitoring for biological outcomes?
- What biological measures need to be measured to determine effectiveness of the approach?
- How would you determine which species need to be monitored to assess the approach?



U.S. Fish & Wildlife Service  
Conserving the Nature of America





# Learning objectives

- *Discuss reasons why it is important to identify knowledge gaps and uncertainties throughout the process.*
- *Explain how you can use this information to identify future needs for research and monitoring that will improve our ability to meet our objectives.*
- *Describe how uncertainty and knowledge gaps might influence selection of species.*



U.S. Fish & Wildlife Service  
Conserving the Nature of America



# Learning objectives

- *Explain the importance of evaluating the effectiveness of selected species for representing a broader suite of species*
- *Describe strategies for evaluating effectiveness of a surrogate species approach*
- *Discuss why it is important to ensure consistency across landscapes*



U.S. Fish & Wildlife Service  
Conserving the Nature of America



# Learning objectives

- *Describe how you would determine the effectiveness of a surrogate species approach.*
- *Identify what information you would need to determine effectiveness.*
- *Discuss how effectiveness of this approach could be improved by iteratively repeating the steps in the process with lessons learned from this evaluation.*
- *Consider what biological outcome measures would be required to demonstrate effectiveness of a surrogate species approach to management.*

