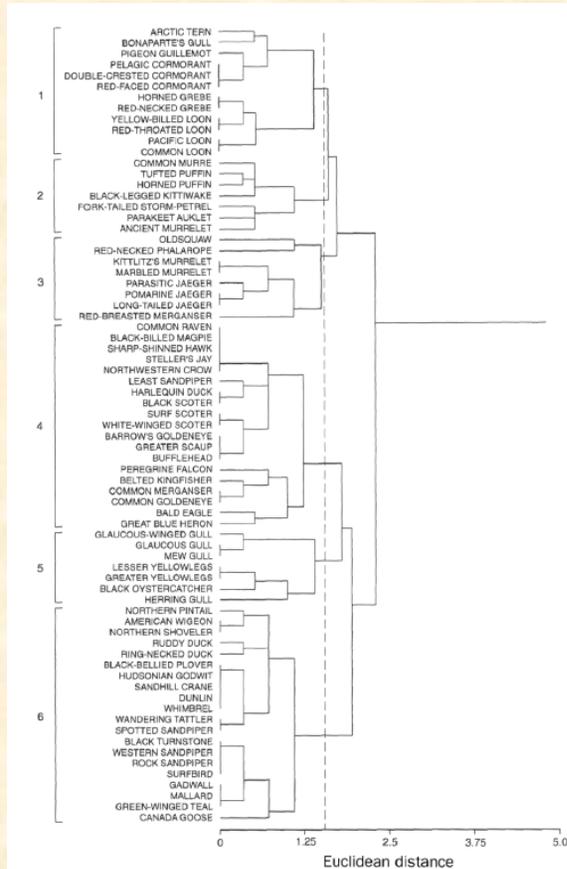


Selecting the Criteria for Establishing Surrogate Species



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



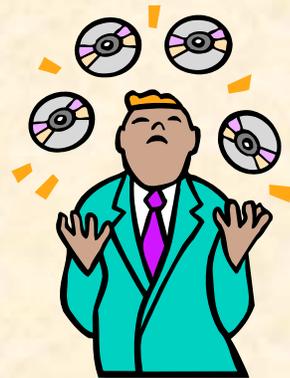
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Priority Species vs. Surrogate Species Approach

Priority Species

- Species in most need of management action
- Ranked
- Management focused on top species



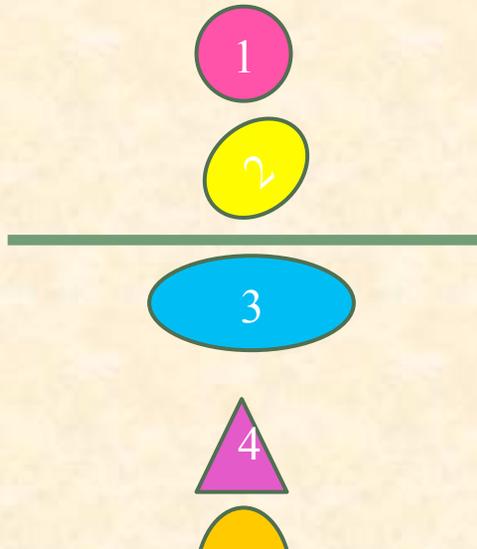
Surrogate Species

- Considers species that are priority
- Assumption is that management for one species benefits other species



Guild A

Guild B



Surrogate Species: Species used to represent other species or aspects of the environment.



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Types of Surrogate Species

- **Focal species** within conservation community
 - Used loosely
 - Species with the most conservation attention
 - Important for conservation planning
 - Species that represent larger guilds of species that use habitats similarly
- **Focal species in NER/A reports**
 - species that represent larger guilds of species that use habitats similarly

It is important to be clear on terminology



Types of Surrogate Species

- **Umbrella** species and suites of umbrella species
- **Landscape** species and suites of landscape species
- **Indicator** species
- **Management indicator** species



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Types of Surrogate Species

Umbrella Species

- A species, generally with a large area requirements



The cheetah can be considered an umbrella species in its sub-Saharan range. Photo C. Michael Hogan

Conservation Objective

- Reserve design
- Conserve all species in a geography



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Types of Surrogate Species

Landscape Species

- A species, generally with a large area requirements
- Use large, ecologically diverse areas and often have significant impacts on the structure and function of natural ecosystems
- Often cultural icons

Conservation Objective

- Use wildlife to define and conserve functional landscapes (Wildlife Conservation Society 2008)



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Types of Surrogate Species

Indicator Species

- Assess concentration of pollutants
- Assess environmental quality
- Assess management effectiveness

Conservation Objective

- Various
- Some definitions

It is important to be clear on terminology

objectives



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Types of Surrogate Species

- Choice of specific surrogate type(s) is flexible
- Does not have to be only one type



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Documentation

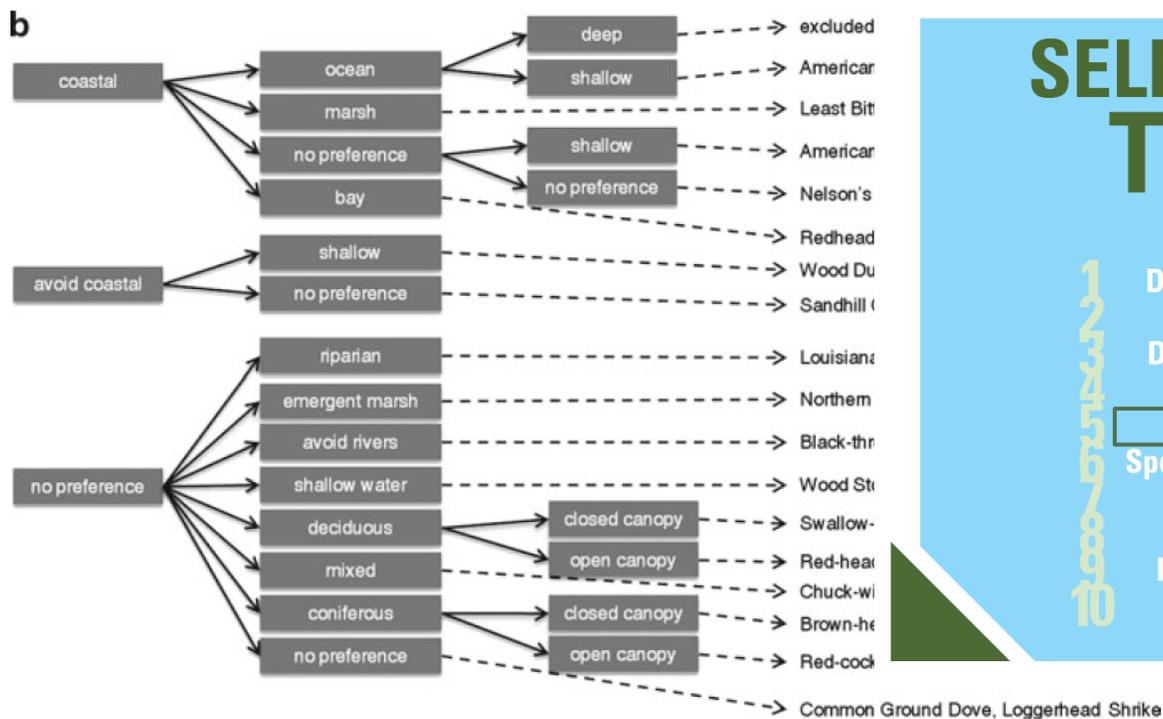
- Description of surrogate species approach used
- Rationale
- Assumptions



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Establish Surrogate Species



SELECTING SPECIES THE STEPS

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



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Establish Surrogate Species

- This step is the heart of the surrogate species process
- Critical to document process and assumptions
- Most opportunity for advancing the science behind the surrogate species approach



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What Makes a Good Surrogate Species?

- Depends on the conservation objective and the surrogate species approach
- Identify surrogate species that best represent the full range of biological outcomes sought by conservation partners while maintaining the Service's commitment to its mission and trust responsibilities



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What Needs to be Considered?

- Cover type associations
- Shared threats
- Similar life-history characteristics
- Categories of home range size
- Others



Based on their relationship to the conservation objective



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What Makes a Good Surrogate Species?

- Species' population dynamics track changes in the larger landscape or ecosystem
- Species and habitat parameters can be accurately and precisely estimated and are linked to changes in the landscape
- Likelihood of detecting a change in the species' status is high, given a change in the status of the ecosystem

From SHC Handbook (FWS 2008)



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What Makes a Good Surrogate Species?

- Species/habitat dynamics have low natural variability, or additive variation, and changes in their values can be distinguished from background variation
- Cost of monitoring the species is not prohibitive
- Species are particularly adaptive to climate change and can be used to monitor species expanding their ranges

From SHC Handbook (FWS 2008)



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Documentation

- The universe of species considered
- Surrogate approach used
- Criteria used to determine groupings and surrogate species
- How the selection criteria were applied
- Surrogate species selected and what they represent
- Assumptions



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Identify Species Requiring Special Attention



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Special Species Requiring Attention

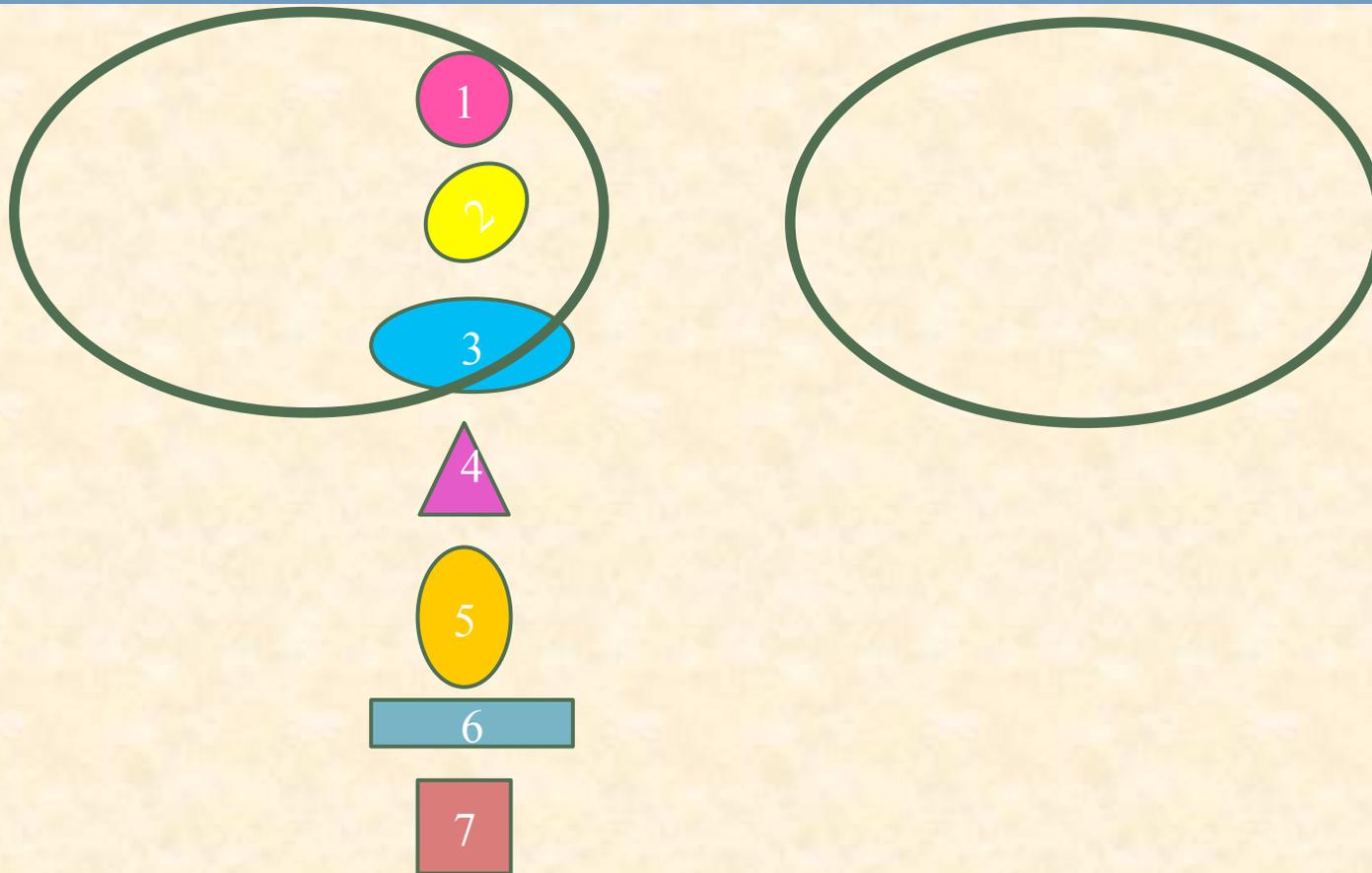
Set Population Objectives
Test for Logic & Consistency
Identify Gaps and Uncertainties
Monitor Effectiveness



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Priority Species “Outliers”



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Identify Species Requiring Special Attention

- Those that have unique habitat needs
- Experience unique threats
 - Collection for pet trade
 - Over harvest
 - Disease
- Legal action



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Documentation

- Why the species can not be represented by a surrogate species
- Assumptions
- Biological Models
- Scientific information used

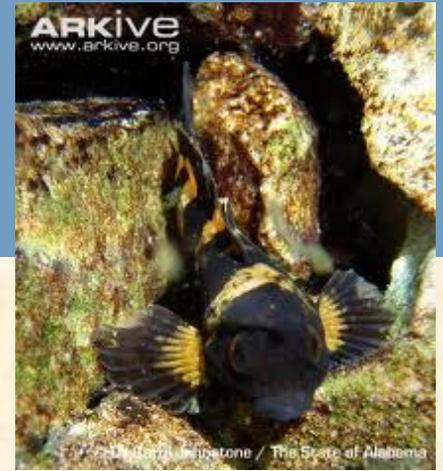


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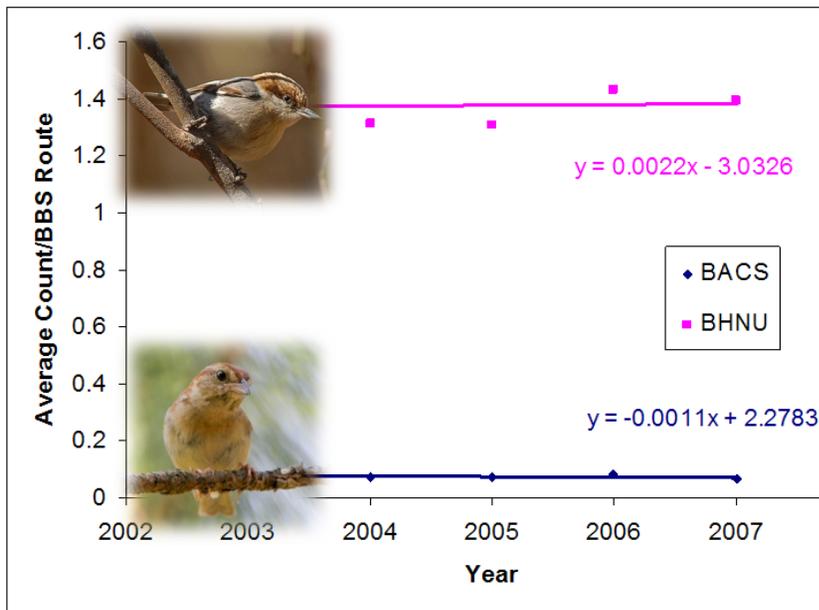


Examples

- Pygmy sculpin – small range
- Slackwater darter, Price's potato bean – very specific habitat requirements
- Orchids – collected for plant trade
- T&E species - with lots of unknowns (cave shrimp, many invertebrates, etc...)



Identify Population Objectives



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Figure 1. Changes in average count/Breeding Bird Survey route for Bachman's brown-headed nuthatch, West Gulf Coastal Plain/Ouachitas Bird Conservation 2007. The short-term population goal is to have a positive trend over a moving window (i.e., have a positive slope in the linear equation).



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Population Objectives

- Population objectives link measurable biological outcomes to landscape level change
- Changes may result from conservation actions, land use conversion, effects of system change (e.g., climate)
- This information will inform resource management decisions across multiple scales (Sub-regions, BCRs, Flyways, Basins)



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Population Objectives

A population objective represents a measurable expression of a desired biological outcome such as:



- Abundance
Ex: 7,400 kites
- Trend
Ex: 10% annual increase
- Vital Rates
Ex: 2 fledglings/pair/year
- Population index
Ex: 62 active territories



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Challenges

Population objectives need to consider:

- The ability of current and alternative landscapes to support species.
- Past, present and future conditions that will be able to support fish and wildlife populations.
- Processes to link population objectives across spatial scales (e.g., across LCCs, FWS Regions, range-wide objectives).



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Potential Sources of Existing Population Objectives

Conservation Target/Species Groups	Existing Guidance with Goals and Objectives
Migratory birds	Continental plans for waterfowl, land birds, water birds and shorebirds; Joint Venture or Bird Conservation Region implementation plans
Species of Greatest Conservation Need	State Wildlife Action Plans
Marine mammals	Individual species conservation plans or recovery plans (e.g. Pacific walrus, sea otters, Florida manatee)
Fish and aquatic resources	Management plans by stocks or sites; National Fish Habitat Action Plan partnerships
Threatened and endangered species	Recovery plans, Spotlight Species Action Plans, 5-Year Reviews
Game species	State management plans
Ecological services & other traditional conservation targets (species, habitat)	Other partner strategic planning documents and implementation plans.



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What if No Population Objectives Exist?

- Regions and programs will work collaboratively with key partners willing to develop population objectives.
- Species-habitat models can be developed to predict potential carrying capacity of the landscape to support populations; thereby informing the development of population objectives.
- These types of assessments should consider past, present, and future conditions as well as population levels desired by the public.



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Food for Thought (Discussion?)

- What information would you need to determine surrogate species and **what** they represent?
- What if population objectives do not exist?



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Questions?



Example



WGCP0 Open Pine Plan

Brown-headed nuthatch & Bachman's sparrow

Short-term: stabilize population trend as indexed by change in BBS abundance over the past 5 years

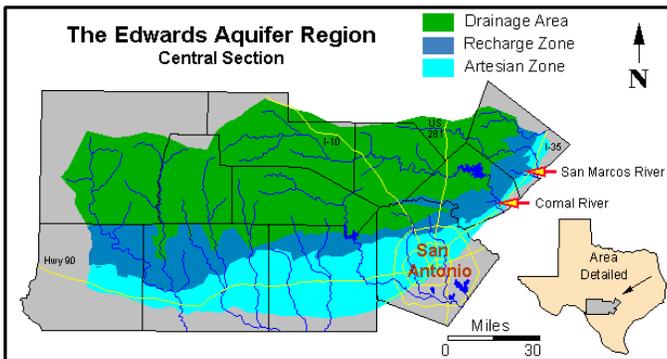
Medium-term: return populations to levels of the 1980's

Long-term: return populations to levels of 1968



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Example

- Edwards Aquifer HCP – objectives set by multi-partner team of species experts that worked to update the recovery plan.
- Pop Objectives included: % abundance for listed fish (proportion of sites presence/absence), % coverage for listed plant compared to a known coverage at a known flow rate
- Spring flow modeling was used to set population objectives for the fish and plant.



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Learning Objectives

- Discuss how the surrogate species approach differs from a priority species approach.
- Discuss how different surrogate species approaches are appropriate for different conservation objectives.
- Discuss methods for grouping species and selecting surrogate species



Learning Objectives

- Discuss handling of USFWS priority species not represented by surrogate species



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Learning objectives

- *Describe what is meant by population objectives.*
- *Describe characteristics of population objectives.*
- *Identify existing resources of population objectives.*



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