

Wildlife and Wildlife Habitat Restoration

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Foundations

- Conceptual basis for restoration planning requires foundation of appropriate terminology and definitions
 - Failure to establish this foundation means that restoration targets will be vague, and that the means to achieve any targets will be cursory
 - Also makes it difficult to explain strengths and weaknesses to stakeholders

Wildlife Habitat

Definition

- *Habitat is a species specific concept*
- *Habitat is **not** synonymous with habitat type*
- *Habitat is simply a user-defined area occurring around an animal at a particular period of time*
- *Habitat is a surrogate for mechanisms*

Habitat Components

- Vegetation structure and species composition
- Other environmental features
- Predators
- Competitors
- Disease and parasites
- Disturbance

Niche Components

- Size distribution of food
- Resource phenology
- Nutrients
- Intra- and interspecific competition
- Social facilitation
- Abiotic considerations
- And so on...

Restoration in Concept

- *Top-down or ecosystem approach:*
 - Rehabilitation to a previous functional condition
- *Bottom-up or layering approach:*
 - *Build or layer targeted environmental features and conditions*

Concept (con't)

- Top-down:
 - Make predictions of animal species that can be supported and base success/failure on these species; usually “assemblage” approach
- Bottom-up:
 - Target specific species and base success/failure on these species; usually single-species (TES) approach

Importance of Proper Habitat Concept

- Some or much of the loss of animal species diversity is **not** a result of alteration of the vegetative component of habitat (e.g., Bill Williams River, AZ)
- Thus, evaluation of underlying mechanisms driving diversity are an important component of restoration planning
- Links with goal of only promising things that you can deliver

Goals and Success

- If goal is to achieve a certain general vegetative structure and plant composition as a surrogate for habitat, then success in establishing specific animal species is unlikely to be met. Yet ...
- Plans often call for a focus on a short list of animal species to be the restoration (and thus success) target
- **Recommend:** Tighter link between species-specific habitat and restoration goals

Spatial Context

- Population concept must be considered in selecting target species
- Where will the colonizers come from?
- Area requirements?
- Intrusion of competitors, predators, etc. from surrounding region?
- **Recommend:** Stronger development of this topic in all plans

Recommendations

- Define terminology
- Establish habitat concept and conceptual framework
- Develop complete discussion of habitat and niche components (including limiting factors) for selected species
- Determine which components restoration can and cannot achieve (set in spatial context)

Recommendations (continued)

- Design restoration to include management actions needed to complete habitat, including potentials for:
 - Cowbird control (adults and/or eggs)
 - Predator/competitor control (e.g., starlings)
 - Provision of special features (e.g., permanent ponds)
 - Relocations necessary?

Final Message for Wildlife

- It is best to limit what you try to do, and do that well
- It is best to be rigorous about what you do, no matter how limited the number of actions taken
- The science of restoration will only advance when projects are well designed, targeted, quantitative, and rigorously documented