Ecosystem Services Concepts at Work: Overlapping Regimes of Endangered Species Act, Migratory Bird Act, National Environmental Policy Act and Natural Resource Damages Protections

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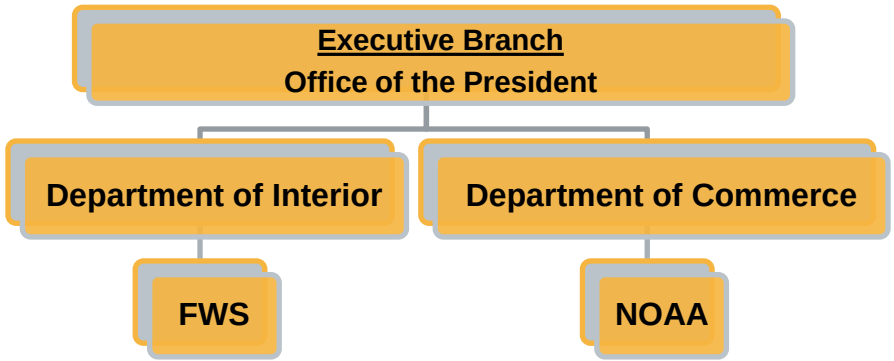
Endangered Species Act

- Endangered Species Act (1973), amended.
- Purpose: Protect and recover imperiled species and the ecosystems upon which they depends
- Approx. 2,200 species listed as threatened or endangered
  - “Endangered” means the species is in danger of extinction throughout all of a significant portion of its range
  - “Threatened” means the species is likely to become endangered within the foreseeable future’
  - Most, but not all, protect species are domestic
    - ESA implements U.S. participation in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

Endangered Species Act – Implementing Agencies

- National Oceanic & Atmospheric Administration (NOAA) and United States Fish & Wildlife Service (FWS) work together to manage ESA-listed species
  - NOAA has jurisdiction over 147 species
  - FWS



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Endangered Species Act – Implementing Tools

- Section 4 – Listing of Species; Critical Habitat Designation; Recovery
- Section 6 – Cooperation with States
  - Federal encouragement of states and funding; some states more protective
- Section 7 – Interagency Consultation
  - E.g., critical habitat designation
- Section 8 – International Cooperation
- Section 9 – Prohibited Acts
  - No “take” without a permit
- Section 10 – Permits for Endangered Species & Habitat Conservation Plans
  - Scientific research or to enhance propagation and survival
  - For otherwise lawful activities causing an incidental “take”
- Section 11 – Penalties and Enforcement
  - Civil and criminal

Natural Resource Damages & Endangered Species

- Adverse impact of the release can be to the species or the habitat
- No special provisions for endangered species under NRD statutes

North Carolina Wildlife Resources Commission

The endangered Roanoke logperch

Brian Watson, Virginia Department of Game and Inland Fisheries

The endangered James spinymussel

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Key Questions in an NRD case involving endangered species

1. Who is the trustee for that resource?
2. How do you assess?
3. How do you restore/replace/acquire equivalent?
4. On the flipside: If endangered species were not impacted by the release, could offsite restoration impact an endangered species?
   - National Environmental Policy Act regulations require Trustees to consider the "degree to which the project may adversely affect endangered or threatened species or their critical habitat."

Fish Creek, Indiana

- How to deal with endangered species injury in an NRDA
  - Know about your ecological neighborhood
- Importance of the use of “biological currency”
- The use of “restoration-based compensation”
- Unique Resources
  - HEA vs Contingent Valuation Methodology
  - Applied vs Theoretical Science
    - Zoos, Labs, etc.
- The natural alliance with The Nature Conservancy

American Burying Beetle (ABB)

- Suitable beetle habitat
  - ABB presence
  - Vegetation and soil conditions
  - Contiguous to other ABB habitat
- Within USFWS ABB Conservation Priority Area
- Adjacency to similar habitat
- Amenable to habitat management
- Willing seller

Selection Process Results

- Four candidate properties were identified:
  - McAlister Site; Pittsburg County
  - Beetle Ridge; Atoka County
  - Muddy Boggy; Hughes, Pontotoc and Coal Counties
  - Owl Creek; Coal County
- Pittsburg Site emerged as the best option
  - Other sites were further from areas with high ABB trap rates or soil conditions were not as good
  - However, no candidate site has been discredited

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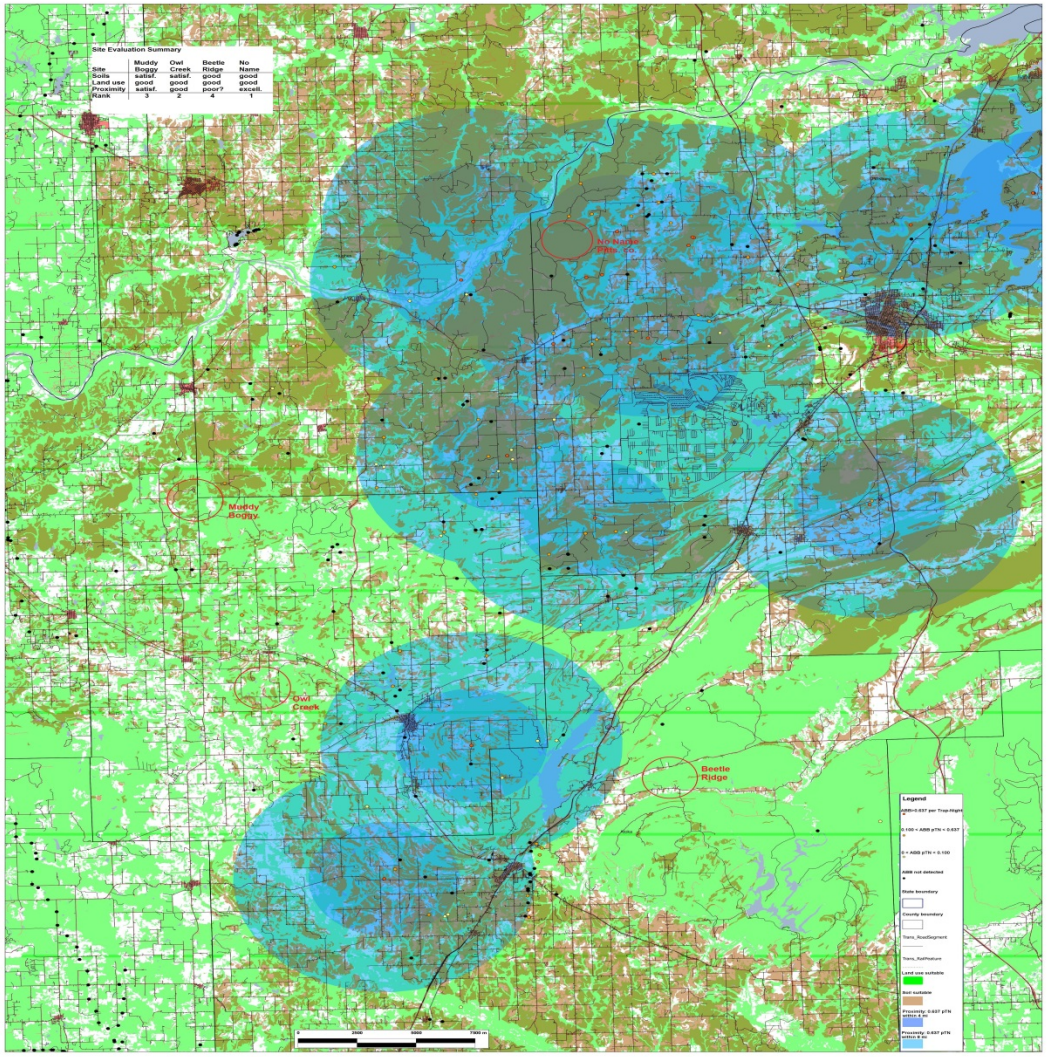
Site Evaluation Summary
Site | Muddy Boggy | Owl Creek | Beetle Ridge | No Name
Soils | satisf. | satisf. | good | good
Land use | good | good | good | good
Proximity | satisf. | good | poor? | excell.
Rank | 3 | 2 | 4 | 1
No Name Site
Muddy Boggy
Owl Creek
Beetle Ridge
Legend
ABB=0.837 per Trap-Night
n =00 = ABB pTN = 0.837
n = ABB pTN = 0.100
ABB not detected
State boundary
County boundary
Trans_RoadSegment
Trans_RailPrimaryLine
Land use suitable
Soil suitable
Proximity 0.837 pTN within 5 mi
Proximity 0.837 pTN within 8 mi
0
2500
5000
7500 m

Rationale for selecting McAlister Site

- Within USFWS ABB Conservation Priority Area
- 1600 acres of suitable, contiguous habitat
- Significant ABB presence
- Corridor between site and McAlister Army Ammunition Plant

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FERC, National Environmental Protection Act (NEPA) and Migratory Bird Act

- Under the framework, mitigation measures (conservation measures) may fall into at least one of 5 categories.
- Each category manages the level of impact to birds from a specific project or activity differently, and attempts should be made to avoid and minimize to the maximum extent practicable before advancing to restoration or compensation options.

Migratory Bird Conservation and Mitigation Plan ("MBCMP")

- *Avoid* the production of a stressor/impact to birds altogether by not taking a certain action;
- *Minimize* the exposure of birds and their resources to project-related stressors by limiting the degree or magnitude of the action and its implementation;
- *Rectify* the effects of an impact by repairing, rehabilitating, or restoring the affected environment;
- *Reduce* or eliminate the stressor/impact over time; or
- *Compensate* for the impact by replacing or providing substitute resources or environments.

Example

Approximate Mitigation Based on Habitat Equivalency Analysis

Permanent Forest Impacts (acres)	Temporary Forest Impacts (acres)
170.06	345.92

Habitat Type	Recovery Years	Permanent Loss Mitigation Ratio	Temporary Loss Mitigation Ratio	Mitigation Acreages		Mitigation Cost ($6,139/acre)
Bat Maternity Roost habitat	120	5.4	4.9	1458.34	2082.10	$18,734,788.46
Bat Roosting Habitat	70	2.2	1.8	594.1390994	764.8541712	$8,342,859.69
Migratory Bird Mature Forest	100	2.3	1.8	621.1454221	764.8541712	$8,508,651.50
Migratory Bird Intermediate Forest	70	2	1.5	540.126454	637.378476	$7,228,702.77
Early Successional Forest (Birds & Bats)	25	1.6	0.6	321.1011632	277.9513904	$3,217,815.63
Grassland	5	N/A	0.13			
Native Prairie	100	3.9	2.9			
Non-native Prairie	40	1.6	0.6			

(Worst-case scenario)

(Best-case scenario)