Expert Elicitation

Beth Stys
Florida Fish and Wildlife Conservation Commission
Fish and Wildlife Research Institute

Situation

- You have incomplete or outdated data
- You’re unsure of which models to use or how to parameterize them
- There are all kinds of other uncertainties
- You need to make a decision anyway

Expert Elicitation to the rescue!

- Good for information decision-making when:
  - Empirical data are missing or incomplete
  - Uncertainties are large
  - More than one conceptual model can explain existing data
  - Technical judgments are needed to evaluate assumptions
Other Benefits

- Can take advantage of integrated and contextual knowledge and understanding
- Generates buy-in, ownership
- Can be rapid, relatively low cost

Approaches in Conservation

- Legally defensible examples:
  - ESA: listing species and critical habitat designation
  - CERCLA: ecological risk assessment
  - NRDA: injuries to resources
- Other examples
  - State-level: identifying habitat acquisitions
  - Developing adaptation options

A few cautions

- If you’re trying to quantify subjective judgment, you need a solid process
- Cutting corners leads to shoddy results
- Beware expert overconfidence and other errors made by experts
- Won’t solve political or value-dependent problems
Who to “Invite”

• It Depends 😊
  • Questions being asked
  • Type of expertise needed
    ▪ Geographic, Technical, Non-traditional

• Qualified Facilitator

Example - Florida

• Pilot of an available tool as part of a vulnerability assessment for a set of Florida species
  • Results used to inform the design of climate change adaptation strategies as part of the update process for the State Wildlife Action Plan (SWAP)

Climate Change Vulnerability Index

• Excel based tool
• Natural history, distribution, ecology of species
• Provides relative assessment of species vulnerability in relation to climate change
• Facilitates assessment of a complex problem by breaking it down into its constituent parts
• Quality of the analysis is dependent on the input provided by participants, and by available data
Expert Elicitation – Data Input

- Species experts
  - Initial phone call / follow-up if needed
  - Enter data into spreadsheet:
    - Select score for each factor
    - Answer a series of questions for underlying information
    - Qualitative Assessment of the associated uncertainty
  - Timeline set – complete assigned worksheets

Climate Change Vulnerability Index

Species Sensitivity

Expert Elicitation – Data Input

- Advantages:
  - Quicker, less investment of time and personnel resources
  - Easier to coordinate/carry-out
Data Results - CCVI

Short-tailed hawk (MV)
winter range

Sea level rise
Hydrologic regime

Climate Change Vulnerability Index

Spatial Resiliency Planning (Scenario Planning)
• Scenarios varied across 4 dimensions:
  o Climate change
  o Human population change
  o Land & water planning policies
  o Availability of public resources
• 50 years into the future
  o 2010, 2040, and 2060

Scenario Planning - Process
• Series of Workshops
  o Managers – Review/Select Scenarios
  o Habitat Experts – Identify loss/gain of potential habitat
  o Species and land Management Experts – Identify Strategies or Actions
• Maps
• Color-coded sticky notes