

Cumulative Impacts

- What are they?
- Why do we need them?
- Examples

Cumulative Impacts

- What?
 - "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions"
 - Integration seen in species/habitat responses
 - Indirect effects

Cumulative Impacts

- Why?
 - 'Disturbance' is diffuse, not discreet
 - Helps assess species and/or habitat 'jeopardy'
 - Helps distinguish causality
 - Stress 'rank'
 - Forecasting individual impact
 - Activity related
 - Non-activity related

Cumulative Impacts

- Examples:
 - Agricultural conversion
 - Invasive species
 - Industrial discharge
 - Mining

Changed and Unforeseen Circumstances

- What are they?

- Why do we need them?

- Examples

Changed and Unforeseen Circumstances

- What?
 - “changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by plan developers and the USFWS at the time of the conservation plan’s negotiation and development, and that result in a substantial and adverse change in the status of the covered species. As described in the No Surprises Regulation, it is USFWS’s responsibility to demonstrate the existence of unforeseen circumstances using the best scientific and commercial data available”

Changed and Unforeseen Circumstances

- Why?
 - Help assess species and/or habitat ‘jeopardy’

 - Assists USFWS

Changed and Unforeseen Circumstances

- Examples:
 - Climate change
 - Invasive crayfish
 - White nose syndrome

Monitoring

- What is it?

- Why?

- Examples

Monitoring

- Compliance monitoring
 - Ensure permittees (and applicants) are complying with HCP
 - Pre-application meeting with permittees
 - Site plan review
 - Site visit/construction inspection
 - As built comparison/post-construction inspection

Monitoring

- Effects monitoring
 - Determine if biological goals are being met

 - Assess whether conservation measures are working

Monitoring

- Effectiveness monitoring
 - Provide feedback to adaptive management
 - What is the extent of the activity impact?

- Leads to Adaptive Management
 - Triggers
 - Responses

Monitoring

- Mitigation
 - ‘replacing’ or ‘exchanging’ land
 - ‘an eye for an eye’

Monitoring

- Why?
 - Assess how well HCP is working
 - Trigger alterations as necessary
 - Ensures long-term effectiveness

Monitoring

- Possible examples:
 - IBI monitoring of ecosystem ‘integrity’
 - Changes in integrity trigger responses
 - Modifications, not additions
 - Conservation of ‘priority’ habitat areas
 - Mitigation
 - Conservation areas/easements

HCP Progress



- Covered Species
- Covered Activities
- BGOs/KLFs
- Conservation Measures
 - Monitoring
 - Compliance Monitoring
 - Effects and Effectiveness Monitoring
 - Adaptive Management
- Implementation
- Changed and Unforeseen Circumstances
- Cumulative Impacts
- Take Estimate
- Funding
- Document Preparation / Writing

