

# Ecosystem Services in Risk Assessment and Management

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# Ecological Risk Assessment

- Structured process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors
- 2010 ACES Debate – Will ecosystem services render ecological risk assessment obsolete as a tool for informing decisions?



- Explore opportunities & implications of ecosystem services (ES) in risk assessment & management
- Assert benefits based on EU & US experiences, supported by technical rationale & examples
- Recommend uses of ES in risk assessment & management
- Identify issues, challenges & needs



## *1. Consideration of ES will lead to more comprehensive environmental protection*

Decisions based on risk to final ES will protect underlying environmental components of EPFs

## *2. Use of ES will help to articulate the benefits of environmental decisions, policies & actions*

Tradeoffs inherent to decision alternatives among things that policy makers & the public care about will be more transparent

### *3. Use of ES can better inform the derivation of environmental quality standards*

Evaluation of alternative standard levels will consider incremental benefits to human well-being, rendering them more comprehensive & transparent

### *4. Use of ES will enable integration of human health & ecological risk assessment*

ES will be a “common currency” promoting understanding of systemic risks, promoting more holistic decision making

## *5. Use of ES will facilitate horizontal integration of policies, regulations & programs*

ES are affected through multiple media, multiple stressors, at multiple spatial and temporal scales, providing a common analytical framework to transfer information between policies, regulations & programs, thereby avoiding unanticipated consequences resulting from regulatory & policy myopia





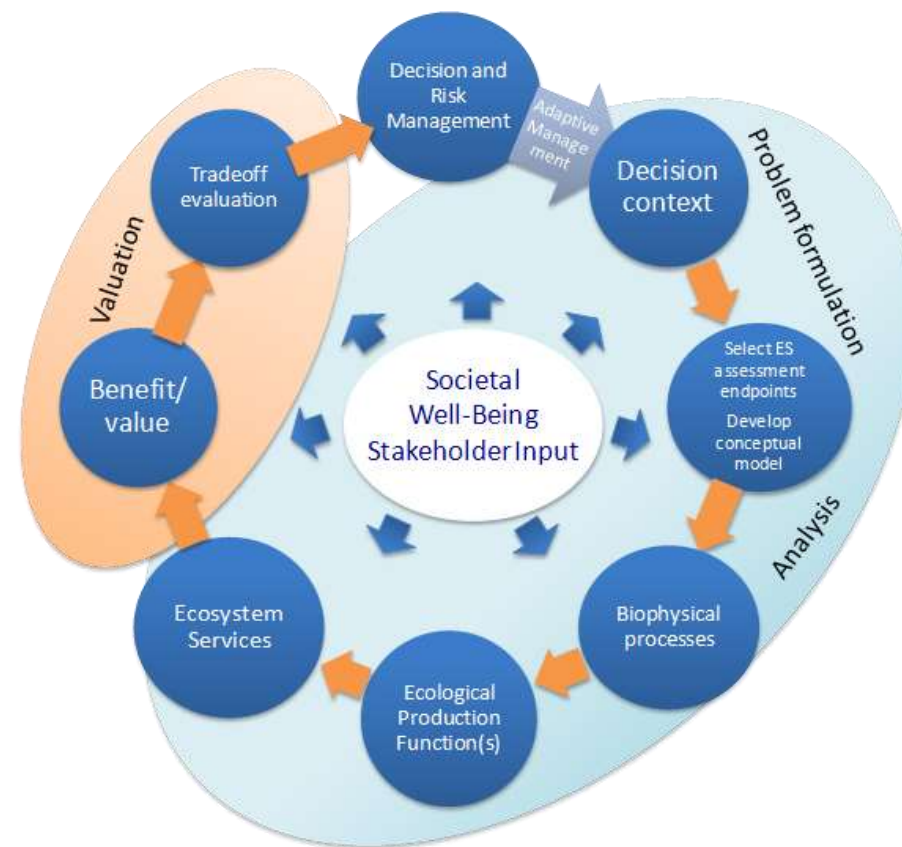
## Problem Formulation

- Select ES assessment endpoints following EFSA or GEAE\* approach
- Ensure suite of assessment endpoints have documentable linkages to human health & well-being
- Base conceptual model development on EPFs
- Actively engage stakeholders in ES assessment endpoint selection

\* See poster: **Ecosystem services as assessment endpoints in ecological risk assessment**

## Risk Management/Communication

- Use EPF conceptualizations as key messaging devices for communicating risk & decisions
- Employ targeted monitoring to evaluate efficacy of results & inform adaptive management actions





# Issues, Challenges & Needs

- Issues & Challenges
  - appropriate scales of assessments & decisions
  - ES & benefit quantification methods
  - current policies & regulatory structures
  - data & analysis requirements
- Needs from science
  - characterizing EPFs
  - monitoring ecological & social systems for adaptive management

