

# Present & Future Collaborations in Ecosystem Services

Janet Cushing, USACE Institute for Water Resources  
Frank Casey, USGS Science and Decisions Center



US Army Corps of Engineers  
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# Topics of Discussion

- Complementary mission areas
- Ecosystem Goods & Services Work Unit
- ACES
- Other multi-agency endeavors: National Ecosystem Services Partnership and CENRS Subcommittee on Ecological Systems
- Future collaborative opportunities



# Complementary Areas

There are several areas of common interest between the USGS Science and Decisions Center and USACE IWR/ERDC:

- Decision science and the use of science to support decision-making
  - USACE – Planning process; USGS – Adaptive management and structured decision making
- Ecosystem services
- Resilience and sustainability



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# USACE Ecosystem Goods & Services Work Unit

**PDT Leads:** Janet Cushing, IWR; Elizabeth Murray, ERDC

**Product Development Team:** Guillermo Mendoza, Paul Wagner, Lynn Martin, Shawn Komlos (IWR); Tim Lewis, Sherry Whitaker (ERDC); Lisa Wainger, Hannah Griscom, Anna McMurray (U of Maryland); Denise Reed (The Water Institute of the Gulf); Tomma Barnes (SAW); Chuck Theiling (MVR), Denise Kammerer-Cody (NAE); Kat McCain (MVS); Frank Casey (USGS)



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# Approach

- **Six-prong approach to the investigation of EGS**
  - Principles, best practices, with implications for the Corps: TN and supporting TR
  - Policy review and analysis: Report
  - Review of data analysis and analytical tools: Catalog and synthesis report
  - Interagency Coordination
  - Case Studies: Synthesis report on previous attempts within the Corps
  - Guidelines/Framework Development: Supporting workshops and reports



# Ecosystem Services Definition

Working definition:

**Ecosystem goods and services** are socially valued aspects or outputs of ecosystems that depend on self-regulating or managed ecosystem structures and processes.



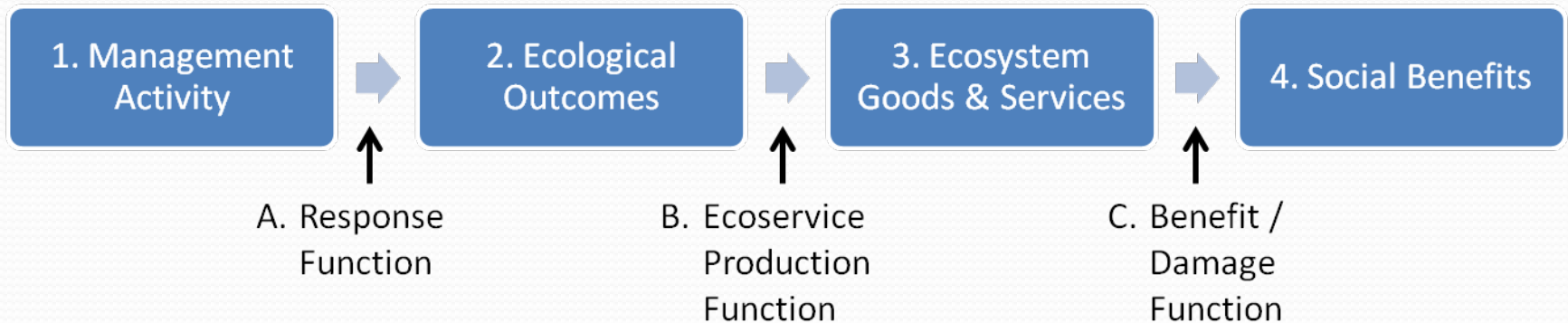
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## Examples of Ecosystem Services and USACE Activities

| Ecosystem Service Categories  | Corps' Influence on Service  |
|---|--|
| Ecosystem Sustainability/Habitat  | Ecosystem impacts and restoration  |
| Water Supply and Regulation   | Stream restoration; environmental stewardship  |
| Natural Hazard Mitigation, Property & Infrastructure Protection, Human Safety | Tidal wetland restoration; invasive species control; alteration of hydrology, landforms, and plant communities |
| Navigation conveyance   | Riparian restoration, erosion control, distribution of dredge material   |
| Recreation  | Wetland, riparian & stream restoration; alteration of water and land resources                                 |
| Cultural, Spiritual , & Educational Support                                   | Revegetation; invasive species control   |
| Water Purification  | Ecosystem restoration; water management; channel configuration   |
| Climate Regulation, Carbon Sequestration                                      | Ecosystem restoration  |

# Conceptual Model for Quantifying EGS





# Assessing Ecosystem Goods & Services

## Screening Criteria

- Relevance
- Transparency
- Transferability
- Sensitivity
- Scientific and technical quality

## Metadata

- Identifiers
- Applicable EGS
- Basic technical characteristics
- Output / input characteristics
- Ecosystem, geography, and resolution

The screenshot shows the 'Ecosystem Goods and Services Tool Library' interface. It features a dark green header with the title. Below the header, there are two search dropdown menus: 'Search by Acronym' and 'Search by Applicable Ecosystem'. The 'Search by Applicable Ecosystem' dropdown is open, displaying a list of ecosystem types: Agriculture, Developed landscapes, Estuary or bay, Few terrestrial cases, Forest, Freshwater wetlands (ephemeral or perennial), Grassland, Lakes, ponds, or reservoirs, Large river, Most freshwater ecosystems, Most saltwater ecosystems, Most terrestrial ecosystems, Not Available, Off-shore: reefs, islands, or sandbars, Shrubland, Stream or small river, and Tidal or coastal wetlands. The main content area contains text that is partially obscured by the dropdown menu, including the sentence 'The Ecosystem Goods and Services Tool Library is a web-based tool for consolidating and providing access to information on ecosystem goods and services. At this time, users can query the Acronym and Ecosystem Goods and Services Tool Library. Click on the title to return to this main page.' To the right of the dropdown, there is a snippet of text: 'tioners of ecosystem restoration by tools and software.'



# Potential Benefits of an Ecosystem Services Approach

1. Manage natural resources for the highest possible “return” on investment
  - Appropriately comparing locations and designs
  - Appropriately measuring benefits & risks at multiple scales (e.g., site, watershed, ecoregion)
2. Improved communication of social benefits for ecosystem restoration and natural resources management
  - Fulfilling the Corps’ mission
  - Engaging local communities
  - Securing federal support



# USGS Ecosystem Services Efforts

- Identify and value ecosystem services benefits associated with Sage Grouse habitat conservation
- Provide preliminary estimates of the impacts of climate change on California ranchland ecosystem services (carbon, water, wildlife habitat)
- Develop a consistent framework for measuring the state of biodiversity or wildlife habitat
- Develop a framework and research program to apply ecosystem services to climate change adaptation



# ACES (A Community on Ecosystem Services)

- A broad community of scientists, practitioners, and decision makers in government, academia, NGO's, and the private sector with an interest in applying ecosystem services for decision making.
- Bi-annual conferences hosted by the University of Florida since 2008; in partnership with Ecosystem Service Markets and Ecosystem Services Partnership since 2010.
- ACES 2014 Conference, Crystal City, December, 2014.



# Other Interagency Efforts

- National Ecosystem Services Partnership
  - Federal Resource Management and Ecosystem Services (FRMES)
- National Science and Technology Council Subcommittee on Ecological Systems
  - Response to the President's Council of Advisors on Science and Technology report on Sustaining Environmental Capital



# Future Collaborative Opportunities

- Urban ecosystem services
- Green infrastructure and coastal resilience
- Value of stream gage information
- Applying an ecosystem services framework for climate change adaptation decisions
- Assessing and valuing ecosystem services provided by ESA mitigation



# Meeting the Challenges

- How do we develop products that are resource efficient and timely?
- How do we identify methods that while useful, do not burden practitioners in terms of resources?
- Conduct a joint project on urban ecosystem services and / or coastal resilience?



# Questions?



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