



The Division of Economics and the Use of Economic Information in the USFWS: Resources, Rationale and Applications

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Road Map

- Division of Economics
- Getting Help
- Economic Information
- Uses of Economic Information
- Analytical Examples
- Information Sources

Division of Economics

- Created in 1994
- Five economists
- Purpose: to assist programs with economic analysis needs
- NEPA (EIS and EA's), Critical Habitat analyses, Hydropower relicensing, NRDA's, Refuges, Hatcheries, WO policy analysis, Rulemaking.
- In-house, contractors, BPA

Getting Help

- Division of Economics
 - In-house studies
 - BPA with Industrial Economics and Research Triangle
 - Co-op Research Units
- USGS Policy Analysis and Science Branch Ft. Collins CO
 - <http://www.fort.usgs.gov/PASA/>
- GSA Contracting Schedule
 - <http://www.gsaelibrary.gsa.gov/ElibMain/sinDetails.do?executeQuery=YES&scheduleNumber=899&flag=&filter=&specialItemNumber=899+1>
- Get Economist involved early
- Frequent communication (meetings, conference calls)
- Attendance at public meetings
- Peer Review

Economic Information

- Economic Values
- Economic Impacts
- Economic Costs



Economic Value

- Consumer Surplus
- Net Economic Value

Max. Willingness to Pay minus Actual Payment

Examples:

Recreation

Ecosystem Services

Public Lands Goods and Services

- Recreational Use
- Commercial Use
- Ecosystem Services
- Restoration
- Information
- Federal Spending
- Subsistence
- Cultural, Religious
- Existence Value

Ecological Goods and Services

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- Natural products
- Fisheries production and support
- Fish and wildlife habitat
- Natural areas/open space
- Flood storage and conveyance
- Shoreline anchoring/dissipation of erosive forces
- Storm-wave and surge protection
- Groundwater recharge
- Pollution assimilation /sediment trapping
- Biodiversity
- Energy fixation/ food chain support
- Nutrient cycling

Economic Valuation of Ecosystems

- Ecological goods and services (Q)
- How are these goods and services affected by the project? (change in Q)
- How are people affected by these changes?
- How does human behavior change in response to these changes?
- What type of value do people place on these changes?

Human Behavior is the Basis for Economic Value

- The stronger (more direct) the link between people and ecosystem services, the **greater** the probability of obtaining accurate, defensible, quantifiable estimates.
- The weaker (more indirect) the link between people and ecosystem services, the **lesser** the probability of obtaining accurate, defensible, quantifiable estimates.

Problem: Limited or Non-Existent Information¹¹

- Doing site-specific studies:
 - Very expensive
 - time consuming
- Rely on existing studies
 - Cheap, quick
 - Questionable relevance

Economic Impacts

- Expenditures
- Output
- Employment
- Income
- Taxes

Angling \$



Sporting Goods Store

*** Direct**

*** Indirect**

** Induced*

Multipliers



Manufacturer



Wholesaler

*** Indirect**

** Induced*

*** Indirect**

** Induced*



Manufacturing Inputs



Why Economics?

- Mandatory

- Discretionary:

Because it helps achieve your programs goals and objectives

Use of Economic Information

- As an **AID** to FWS decision-making
- As a check on other agencies analyses
- Public Relations (we do great things)
- Public Relations (It's not *that* bad)
- Because we have to

Examples of Economic Analyses



- NFH Salmon Production
- Public lands as a vehicle for economic development
- Economic Analysis for Rule-Making
- Cultural Resource Valuation
- Condor Recovery Costs
- Gambian Pouch Rat Damage Assessment



The Economic Effects of Pacific Northwest National Fish Hatchery Salmon Production

Four Mid-Columbia River Hatcheries

Mid-Columbia River National Fish Hatcheries

- Spring Creek - Fall Chinook
- Willard – Coho
- Little White Salmon – Fall, Spring Chinook
- Carson – Spring Chinook

Economic Effects of Hatchery Salmon Production



- **Recreation**
- **Commercial**
- **Tribal**
- **Ecological use**
- **Information**
- **Federal Spending**



Study Results

- Hatch Releases/Production
- Salmon Returns to Columbia River
- Coded Wire Tag Returns: Four Hatcheries
- Economic Effects

Recreational Catch and Economic Value

(based on average CWT return rates)



Type	Fish Caught	Economic Value
Sport River	7,486	\$558,571
Sport Ocean	3,036	\$151,782
Total	10,522	\$710,353

Recreational Catch and Economic Impacts

(based on average CWT return rates)

Type	Expenditures	Personal Income Impacts
Sport River	\$1,471,543	\$956,502
Sport Ocean	\$227,530	\$143,552
Total	\$1,699,073	\$1,100,054

Annual Economic Effects

Average CWT Return Rate

(thousands \$)



Sport value	Sport Income	Ex Vessel	Comm. Income	State and Federal Taxes	Total Economic Effects
\$619	\$1,230	\$638	\$721	\$226	\$3,433

Economic Effects per \$1 Budget

Average CWT Returns	\$1.44
1 % Return Rate	\$4.54

Economic Effects and Budget Costs per Released Fish

Budget Cost	Economic Effects Avg. CWT Returns	Economic Effects 1 % Return Rate
\$0.09	\$0.14	\$0.43

Lower Mississippi River Conservation Committee



- Aquatic Resource Management Plan for the Lower Mississippi
- Mississippi River Conservation Initiative

Emphasizes the enhancement and expansion of sustainable natural resource-based economic development

Natural Resource-based Tourism in Desha County Arkansas and Bolivar County Mississippi: Current Situation and Future Potential



- 1. What is the current situation?**
 - Opportunities: Hunting, Fishing, Wildlife Watching
Biking, Picnicking, Camping, Boating
 - Current and past use: Quantitative estimates
- 2. What is the potential for increasing tourism?**
- 3. How is the potential realized?**

Wildlife-Related Retail Expenditures in Arkansas

- Watching: \$607 million
- Hunting: \$788 million
- Fishing: \$425 million

2006 Total: \$1.8 billion

■ Study estimated:

- Current Visitation
- Potential Visitation
- Retail Expenditures
- Jobs
- Personal Income
- Tax Revenue Generated
- County-level Impacts

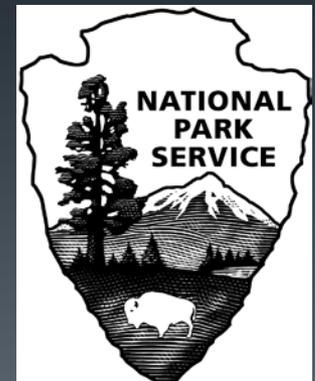


Economic Analysis for Rule-making

- Refuge-specific Hunting and Sport Fishing Regulations
- Importation, Exportation, and Transportation of Wildlife
 - Inspection Fees, Import/Export Licenses, and Import/Export License Exemptions
- Termination of the Southern Sea Otter Translocation Program

Cultural Resource Valuation: State of the Economics

Bruce Peacock
National Park Service
Social Science Division





Overview

- What are cultural resources?
- How can cultural resources be valued?
- What are the valuation challenges?



What are cultural resources?

- Sites, structures, landscapes, and objects that are of some importance to a culture or community for scientific, traditional, religious, or other reasons
 - Tangible and intangible aspects
 - Current and past time frames
- **Example:** *“Congress declares that the national park system ... areas ... are ... cumulative expressions of a single national heritage”*
(Redwood amendment – 16 USC 1a-1)

Historic resources



Archeological resources



Natural resources



What are the valuation challenges?

- The key challenge
 - Economic valuation is all about tradeoffs
 - ***Is the core nature of identity subject to tradeoffs?***
 - If not, how can cultural resources be addressed in a market-oriented society that faces resource scarcity?

Condor Replacement Costs

Estimate the budget cost of replacing a
30-year old condor in the wild

LA Zoo Costs plus Hopper Mountain NWR Condor Program Costs

1. Personnel Costs
2. Operations and Supply Costs

Total costs from the beginning of the incubation
period to 30 years after birth: **\$428,000**



The Potential Economic Costs of a Gambian Pouch Rat Infestation



- Small population in Florida Keys
- USDA considering eradication efforts @ \$400,000
- How do the potential eradication benefits compare to the eradication costs?



Characteristics of \$400K of Pouch Rat Damage

- Agricultural damage estimates per year per rat: \$4 - \$68
- Number of rats necessary to cause \$400K in damages:
 - 5,860 – 109,589
- Number of acres necessary to cause \$400K in damages:
 - 29 – 2,192



Information Sources

- Economics Primer (conceptual)
- Socioeconomic data
- Natural Resources and Economics
- Economics is Fun!

Economics Primer



Environmental Economics 101

http://www.env-econ.net/environmental_economics_1.html

Tim Haab: Ohio State University

John Whitehead: Appalachian State University

Environmental Economics

<http://www.env-econ.net/>

Economists on environmental and natural resource economics

Ecosystem Valuation

Dennis King and Marisa Mazzotta: U of Maryland

www.ecosystemvaluation.org

EPA National Center for Environmental Economics

Yosemite.epa.gov/ee/epa/eed.nsf/webpages/homepage

Socioeconomic Data

U.S. Census Bureau

American Fact Finder: Population, housing economic and geographic information

factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml

American Community Survey: The ACS is an on-going statistical survey that samples a small percentage of the population every year.

www.census.gov/acs/www/

Bureau of Economic Analysis

Personal income and employment by county

www.bea.gov/regional/index.htm

Department of Labor

Bureau of Labor Statistics

www.bls.gov

Economics and Natural Resources



Sustainable Earth Exchange Link for Educators

Cal-Poly, Pomona

Provides links to a wide variety of natural resource-related sites, including fish and wildlife, endangered species, agriculture, climate change, economics, etc.

Information includes bibliographies, data, maps, education and research institutions, government programs, non-profits and NGO's, studies and reports.

www.class.csupomona.edu/ec/aebres/earth

Center for the Advancement of the Steady State Economy

steadystate.org

Economics can be Fun!

Movies and TV for Economists

www.moviesforecon.com

tvforecon.blogspot.com

Jokes about Economists and Economics (PG13)

- <http://economicscience.net/content/JokEc>

Perspectives

*“Not everything that can be counted counts,
and not everything that counts can be
counted.”*

Albert Einstein



“In a world where money
talks, the environment needs
value to give it a voice”

Francis Cairncross