Which Marine Ecosystem Services Does NOAA (& the Public) Value?

An Inventory of Ecosystem Service Valuation Studies

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Outline of Presentation

- What are ecosystem services?
- How are they valued?
- NOAA drivers for valuations
- Inventory of NOAA valuations
- Results of inventory
- Recommendations for Valuation Strategy
My office

- Office of Program Planning and Integration
- Coordinates Social Science for NOAA
- Ecosystem Services a top priority
Ecosystems—living and non-living components, interacting in a defined space
- Oceans, salt marshes, estuaries, mangroves, coral reefs, deep sea
- We are part of ecosystems
- We rely on functioning ecosystems for survival and quality of life
- 2005 U.N. Millennium Ecosystem Assessment
Four Categories of Ecosystem Services

1. Supporting services – primary productivity
2. Provisioning services – fishing
3. Regulating services – water quality
4. Cultural services – scuba diving
Ecosystem Service Valuation

- Not just a conceptual tool, but a guiding principle in decision making
- Need to be quantified, most commonly by assigning dollar value
- Only some ecosystem services are bought and sold in markets
- Reflects the actual costs and benefits of actions that impact nature
- Two sets of approaches: Revealed and Stated Preference methods
Why might NOAA conduct Ecosystem Service Valuations?

- Legal mandates
- Communicate the value of the ecosystems that it regulates
- Communicate the value of activities that rely on marine ecosystems
- Communicate the impact of its management decisions
- Inform management decisions***
Policy goal: Valuation Strategy

- Internal and external drivers
- What should NOAA value where?
- What valuation methods should be used?
- Is a NOAA valuation strategy even possible?
- What would it look like?
Inventory and analyze NOAA valuation studies
Identify complexities of communicating results of valuation studies
Explore drivers of valuations
Make preliminary recommendations for NOAA valuation strategy
Provide access to inventory for research/program support
Parameters for Valuations

- Papers 2003–2013
- Estimate a monetary value
- Only non–market values
- Carried out or funded by NOAA
Searching for Studies

- Google Scholar journal search
- NOAA-subscribed journals
- Sea Grant Library and project database
- NOAA websites and databases
- Other valuation databases
- Personal communication
- Requests for Papers
Coding Studies

- Read through papers in detail
- Developed coding methodology
- Tweaked/added columns as necessary
Composition of Inventory

- 80 papers, 98 valuations
- Either new valuations or existing valuations utilized differently
- Not exhaustive
Paper Examples

- Willingness-to-pay estimates and geographic embedded samples: Case study of Alaskan Steller Sea Lion
- The effects of water quality on coastal recreational flounder fishing
- The economic value of Guam's coral reefs
- The economic value of scuba-diving use of natural and artificial reef habitats
Ecosystem Services Valued

- Beach recreation: 23
- Existence: 8
- Fishing: 16
- Implicit: 6
- Other: 8
- Recreation: 29
- Water quality: 8
Ecosystems Valued

- Beach: 22
- Coast: 1
- Coral Reef: 17
- Lake: 8
- Marine: 10
- Oyster reef: 4
- River: 30
- Urban: 1
- Wetlands: 4
Map of Valuation Locations

Ecosystem Services Valuations by State in the U.S.

Number of Valuations

Created By:
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Social Science Analyst
NOAA PFI
NOAA–Funded and Carried Out Valuations

- Funded
  - Sea Grant: 30
  - Other: 40
- Carried out
  - Other: 30

# of Valuations
Count of Valuations, by Year

- 2003: 11
- 2004: 8
- 2005: 9
- 2006: 11
- 2007: 8
- 2008: 10
- 2009: 5
- 2010: 5
- 2011: 9
- 2012: 11
- 2013: 7
- Ongoing: 1

# of Valuations
Beach Recreation Valuations

![Bar chart showing the number of valuations per year]

- **# of Valuations**
  - 2003: 2
  - 2004: 1
  - 2005: 4
  - 2006: 3
  - 2007: 2
  - 2008: 2
  - 2009: 2
  - 2010: 1
  - 2011: 2
  - 2012: 4
Types of Valuation, by Year

The chart illustrates the distribution of different types of valuations over various years. The types include:

- **Meta-Analysis**
- **Revealed Preference**
- **Stated Preference**

The x-axis represents the years from 2003 to 2013, with an additional category labeled "Oth...". The y-axis indicates the number of valuations, ranging from 0 to 8.

### Key Observations

- **2004** has the highest number of valuations, with a peak of 7, primarily due to revealed preference and stated preference.
- **2012** shows a significant increase in meta-analysis valuations, with a high of 6.
- **2003** and **2007** have a notable number of stated preference valuations, with 5 each.
- **2011** indicates a balanced distribution among all types of valuations.
- The "Oth..." category shows a moderate number of valuations, ranging from 2 to 4, across different years.

This chart provides a visual representation of how different valuation methods have been utilized over the years, with a particular emphasis on the rise in meta-analysis valuations.
Direction of Valuations

- Assessment: 50
- Declining: 10
- Improving: 20
- Multiple: 5

# of Valuations
Direction of Water Quality Valuations

- Assessment: 3
- Declining: 2
- Improving: 3
Value of Beach Recreation Impacted by:

- Water pollution: 9
- Property development: 2
- Erosion: 8
- N/A: 4
Goal of Beach Recreation Valuations

<table>
<thead>
<tr>
<th>Category</th>
<th># of Valuations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of an ES</td>
<td>14</td>
</tr>
<tr>
<td>Project ES Value-Add</td>
<td>5</td>
</tr>
<tr>
<td>Evaluating Alternatives' Impact on ES Values</td>
<td>4</td>
</tr>
</tbody>
</table>
What does a NOAA valuation strategy look like?

- Establish best practices for valuation
- Ensure NOAA and partners are well-trained
- Explicitly evaluate goals and benefits of valuation
- Consider low-cost alternatives
- Fund valuations that are:
  - tied to management actions
  - widely applicable
  - fill major gaps
  - satisfy multiple programmatic areas
Thanks!

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https://docs.google.com/spreadsheet/ccc?key=0ArxcxNlwmWy5dDBpOUJEUXVRXzaSlJvZU1UaEZIM2c#gid=0