ECONOMIC VALUATION OF ECOSYSTEM SERVICES FOR HABITATS ALONG THE TEXAS COAST

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In support of the General Land Office’s legislative authority to restore, enhance and protect the State’s coastal natural resources, the Texas Coastal Resiliency Master Plan provides a framework for community, socio-economic, ecological and infrastructure protection from coastal hazards.
PLANNING REGIONS

1) Sabine Pass to Galveston Bay
2) Matagorda Bay
3) Corpus Cristi Bay
4) Padre Island
COASTAL RESILIENCY STRATEGIES

**Ecological Resiliency**
- Beach Nourishment and Dune Management
- Wetland Planning, Restoration and Monitoring
- Upland Planning, Conservation and Monitoring
- Oyster Reef Planning, Restoration and Monitoring
- Rookery Island Protection, Restoration and Creation
- Freshwater Inflow and Tidal Exchange Enhancement

**Societal Resiliency**
- Water-based Transit Enhancement
- Land-based Transit Enhancement
- Storm Surge Suppression
- Community Infrastructure Planning and Development

**Administrative Resiliency**
- Plan
- Policy
- Program
- Study
ECOLOGICAL RESILIENCY

- Monetizing the value of natural and nature-based features that support resiliency
- Habitat types evaluated:
  - oyster reefs
  - coastal wetlands
  - bottomland forests
  - mangroves
  - coastal prairies
  - beaches and dunes
  - seagrass

Ecological Resiliency
- Beach and Dune Enhancement
- Wetland Enhancement
- Upland Enhancement
- Oyster Reef Enhancement
- Rookery Island Enhancement
- Freshwater Inflow and Tidal Exchange Enhancement
ECOSYSTEM SERVICES

- Provisioning
- Regulating
- Supporting
- Cultural services
MONETIZATION APPROACH

- Values developed per hectare of specific habitat types along the Texas Coast
- Context-specific
- High-level, conservative estimates
- Uncertainty analysis
- Benefits transfer method
OYSTER REEFS

Monetized Benefits:
• Provisioning
• Nutrient control
• Erosion control
• Supporting services
• Recreation

Other Potential Benefits:
• Carbon sequestration (source or sink?)
• Non-use value
COASTAL WETLANDS

Monetized Values:

• Provisioning
• Storm Protection
• Water Filtration
• Nutrient Control
• Carbon Sequestration

• Habitat
• Recreation
• Biodiversity
• Aesthetics
Monetized Values:
- Storm protection & water supply
- Nutrient control
- Carbon sequestration
- Habitat

Other Potential Benefits:
- Provisioning (timber)
- Recreation
MANGROVES

Monetized Values:
• Storm protection
• Erosion control
• Nutrient cycling
• Carbon sequestration
• Supporting services
• Habitat
• Biodiversity
• Recreation

Other Potential Benefits:
• Provisioning (timber)
COASTAL PRAIRIES

Monetized Values:

- Provisioning
- Erosion control
- Nutrient control
- Carbon sequestration
- Supporting services

- Recreation
- Aesthetics
BEACHES & DUNES

Monetized Values:
• Storm protection
• Erosion control
• Recreation
• Cultural/spiritual

Other Potential Benefits:
• Raw materials
Monetized Values:
• Erosion control
• Nutrient cycling
• Carbon sequestration
• Habitat
• Biodiversity
• Recreation

Other Potential Benefits:
• Provisioning
<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Average Annual Value per Hectare per Year</th>
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</thead>
<tbody>
<tr>
<td>Oyster Reefs</td>
<td>$114,300 - $224,400</td>
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<tr>
<td>Coastal Wetlands</td>
<td>$37,200 - $53,800</td>
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<tr>
<td>Coastal Bottomland Forests</td>
<td>$28,900 - $39,700</td>
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<tr>
<td>Mangroves</td>
<td>$225,500 - $231,900</td>
</tr>
<tr>
<td>Coastal Prairies</td>
<td>$15,500</td>
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<tr>
<td>Beaches</td>
<td>$47,900 - $131,000</td>
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<tr>
<td>Dunes</td>
<td>$13,000 - $96,100</td>
</tr>
<tr>
<td>Seagrass</td>
<td>$64,900</td>
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</tbody>
</table>
QUESTIONS?

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