What is ecological resilience worth?

Lisa Wainger
University of Maryland
Center for Environmental Science
Solomons, MD
Resilience Lost

Seagrass dieback
Tipping Point: Hurricane Agnes

Kemp et al. 2005
Resilience Regained
(2 hurricanes & counting)

Cassie Gurbisz (UMCES) in the Susquehanna Flats (Credit: Debbie Hinkle)
Can we use ecosystem services to value SAV resilience?
Which carbon credits would you buy?

<table>
<thead>
<tr>
<th></th>
<th>Option 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planting status</td>
<td>Not planted</td>
<td>Trees 2 years old</td>
</tr>
<tr>
<td>Location within species range</td>
<td>Southern edge</td>
<td>Northern edge</td>
</tr>
<tr>
<td>Fire Probability</td>
<td>1 in 10</td>
<td>1 in 50</td>
</tr>
<tr>
<td>Market Cost</td>
<td>$10 / credit</td>
<td>$20 / credit</td>
</tr>
<tr>
<td>Expected Cost (CO₂ sequestered)</td>
<td>$30/ton</td>
<td>$23/ton</td>
</tr>
</tbody>
</table>
Perhaps the value of SAV is what it represents

Reduced probability of regime shifts

Photo from John E. Gannon, Great Lakes
Valuing Resilience

1. **Reliability** makes any ecosystem service more valuable

2. **Resilience** is an end in itself – if we are investors in the future
   - Reduce controllable stressors to create capacity to absorb uncontrollable or novel stressors