Integration of citizen science programs into management of Delaware’s Inland Bays

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Delaware Center for the Inland Bays
- 300 mi$^2$ watershed
- 32 mi$^2$ shallow estuary
- 89,000 full time residents
- Diverse, productive ecosystem with a history of nutrient pollution and habitat loss
The Inland Bays Volunteer Horseshoe Crab Survey
Citizen Science at the Center for the Inland Bays

The Inland Bays Volunteer Fish Monitoring Program
Citizen Science at its Best

Juvenile Oyster Toad Fish

The Inland Bays Fish Monitoring Program is an all-volunteer effort to study the inshore fish populations of the Inland Bays at 17 locations around the Bays and their tributaries.

Join the effort to preserve water quality in Delaware’s Inland Bays!
University of Delaware Citizen Monitoring Program

- Formed in 1991 to support Inland Bays NEP
- Ambient WQ parameters (N&P, chlorophyll, DO, bacteria)
- Special interest monitoring
- Long-term data, > 300 volunteers
2016
STATE OF THE
DELAWARE
INLAND BAYS

DELAWARE CENTER FOR THE
INLAND BAYS
Research. Educate. Restore.
• Volunteers see their data used.
• Connect to a place.
• Serve as watchers/advocates.
• Learn about science.
Inland Bays Horseshoe Crab Survey and Tagging Project
Inland Bays Shorezone Fish & Blue Crab Survey
16 sites, 2x per month, Apr.-Oct.
~1,000 vol. hours/yr
## Levels of Citizen Science

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>Level 1 ‘Crowdsourcing’</td>
<td>Citizens as sensors</td>
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<tr>
<td>Level 2 ‘Distributed Intelligence’</td>
<td>Citizens as basic interpreters</td>
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<td>Level 3 ‘Participatory science’</td>
<td>Participation in problem definition and data collection</td>
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<td>Level 4 ‘Extreme’</td>
<td>Collaborative Science – problem definition, data collection and analysis</td>
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Strategic expansion of Citizen Science Opportunities

- Provide useful data
- Address priority issues
- Leverage partnerships
- Engage communities
- Increase diversity
- Effectively use technology
- Increase stewardship
“We cannot win this battle to save species and environments without forging an emotional bond between ourselves and nature as well – for we will not fight to save what we do not love.”

~ Stephen Jay Gould