

The Macroalgal Herbarium Consortium

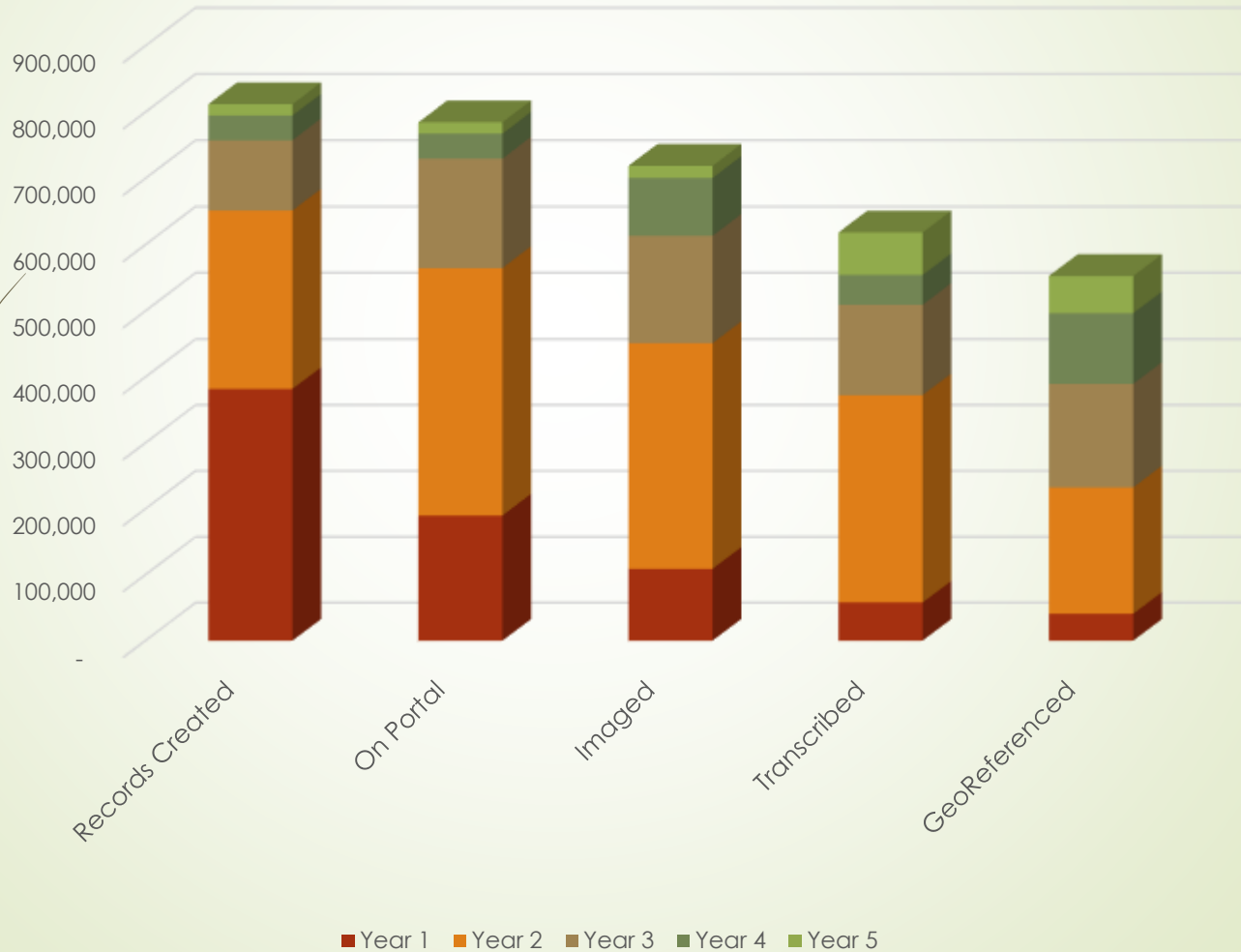
Accessing 150 Years of Specimen Data to Understand
Changes in the Marine/Aquatic Environment



Chris Neefus, Lead P.I.



Progress in Digitization Efforts

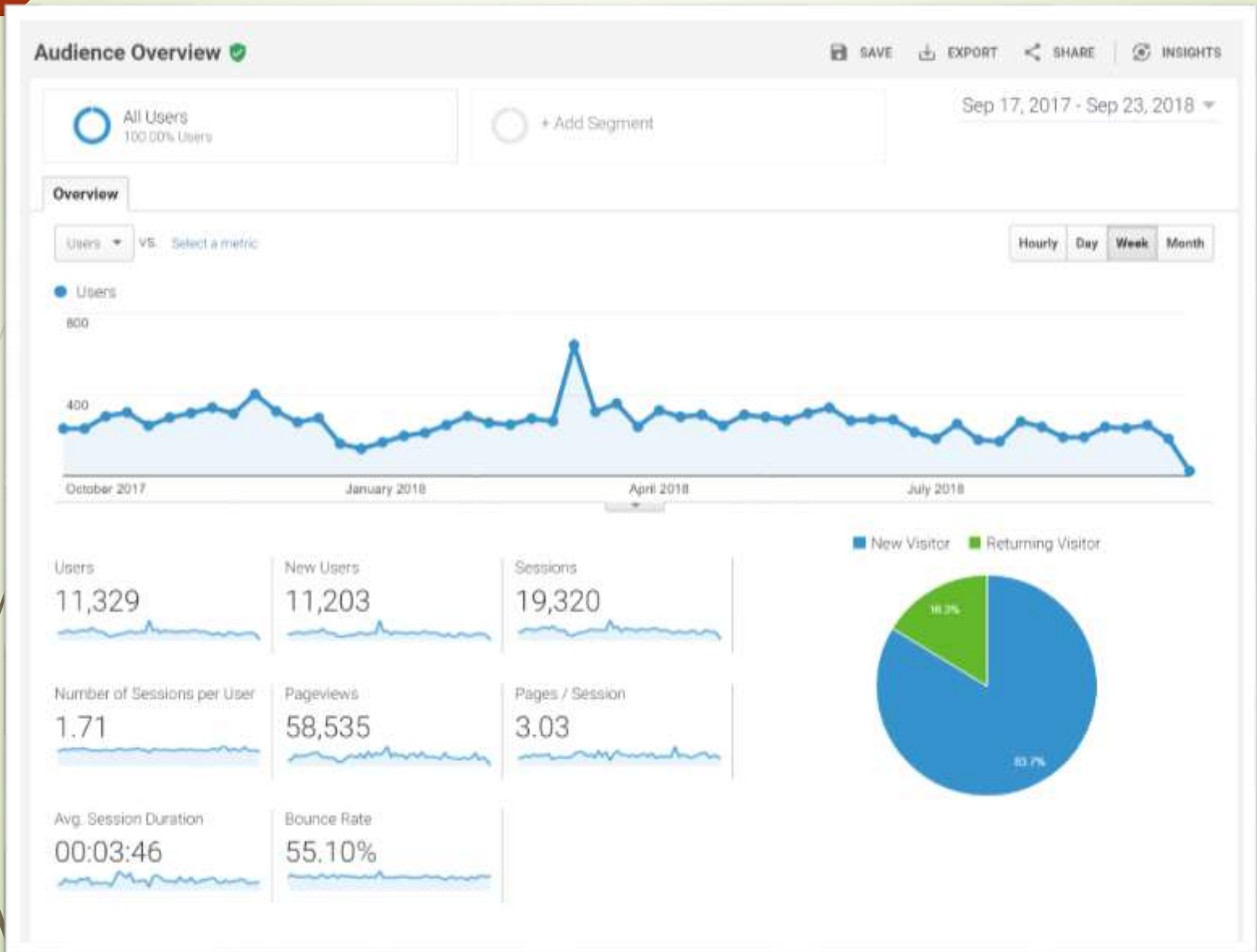


Progress in Digitization Efforts

Digitizing Institution	Start	Collections	Specimens	Percent Complete				
				Records Created	On Portal	Imaged	Transcribed	Geo-referenced
University of New Hampshire	Year 1	10	140,493	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
New York Botanical Garden	Year 1	5	172,613	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>
University of North Carolina	Year 1	7	62,830	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
University of Michigan	Year 1	5	95,589	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
University of Washington	Year 1	3	25,775	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
Duke University	Year 1	1	17,828	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
University of Alaska SE	Year 1	1	9,889	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
Bishop Museum	Year 1	1	65,000	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>
Field Museum	Year 1	1	48,058	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
Oregon State University	Year 1	1	12,120	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
University of Guam	Year 1	1	7,913	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
University of California - Berkeley	Year 2	9	230,869	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>
University of Hawaii	Year 2	1	4,730	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
Harvard University	Year 2	1	125,000	<div style="width: 0%;"></div>	<div style="width: 0%;"></div>	<div style="width: 0%;"></div>	<div style="width: 0%;"></div>	<div style="width: 0%;"></div>
Academy of Natural Sciences	Year 3	1	37,816	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
University of Vermont	Year 3	1	3,062	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>
Totals		49	1,059,585	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>	<div style="width: 80%;"></div>
				<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>	<div style="width: 100%;"></div>

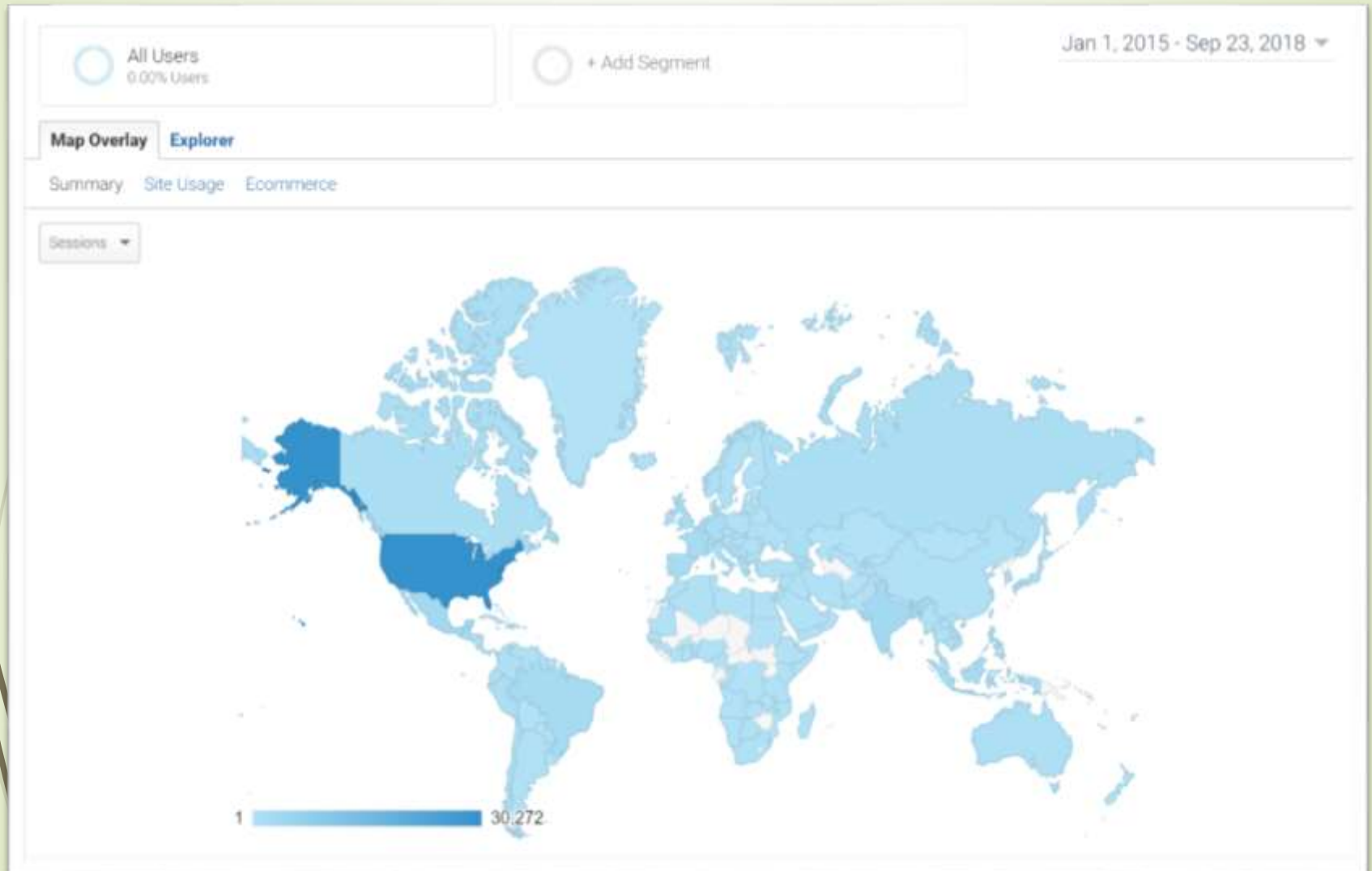
Who is Using the Data?

➔ Google Analytics for Macroalgae.org



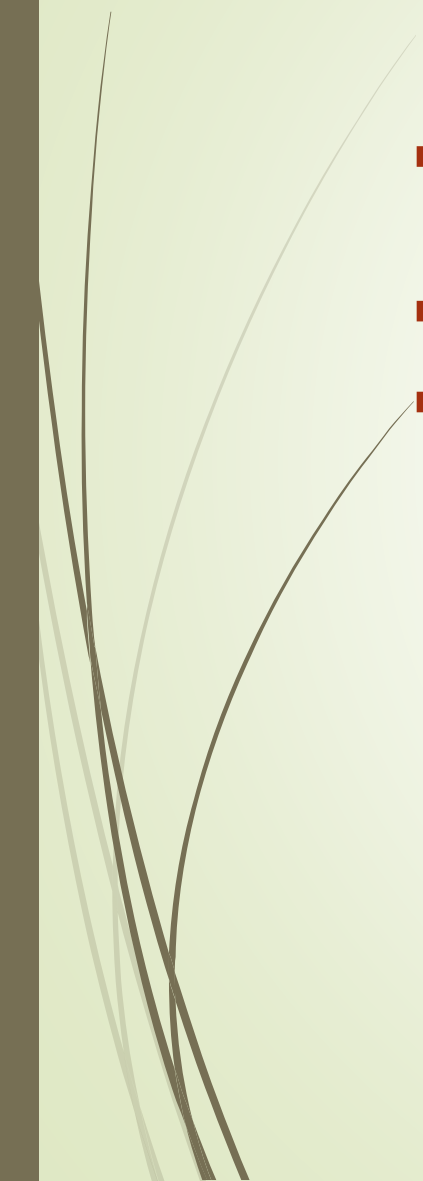
Who is Using the Data?

➤ Google Analytics for Macroalgae.org



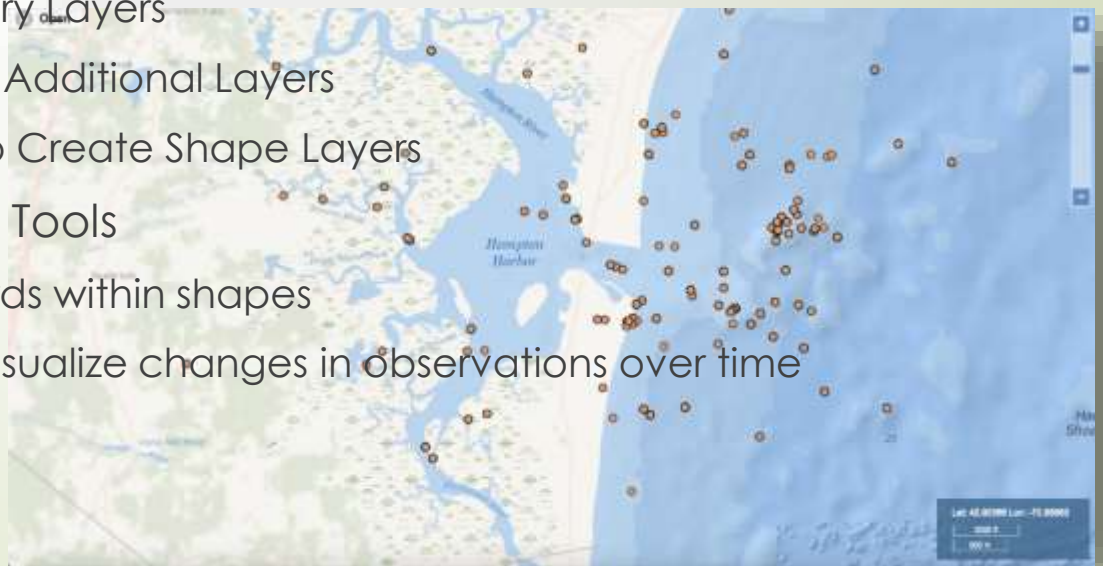


How is the Data Being Used?

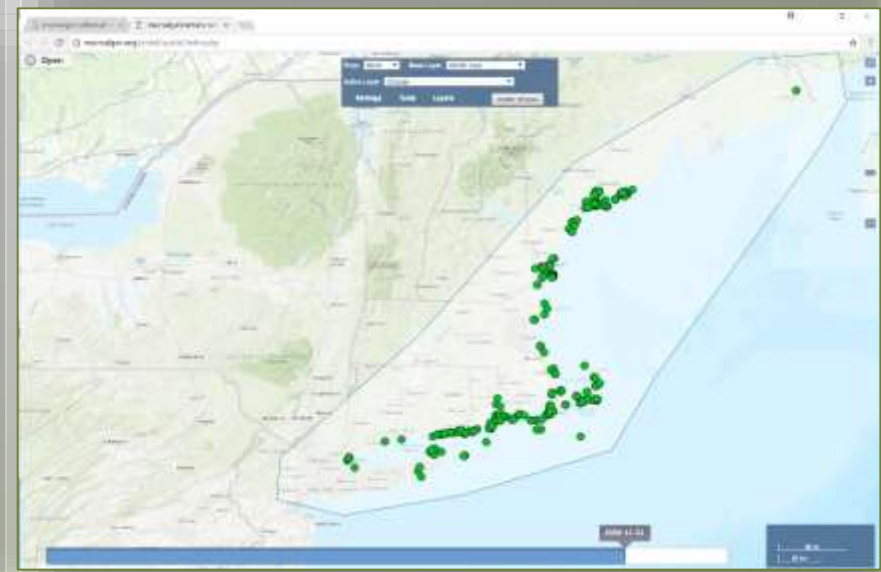
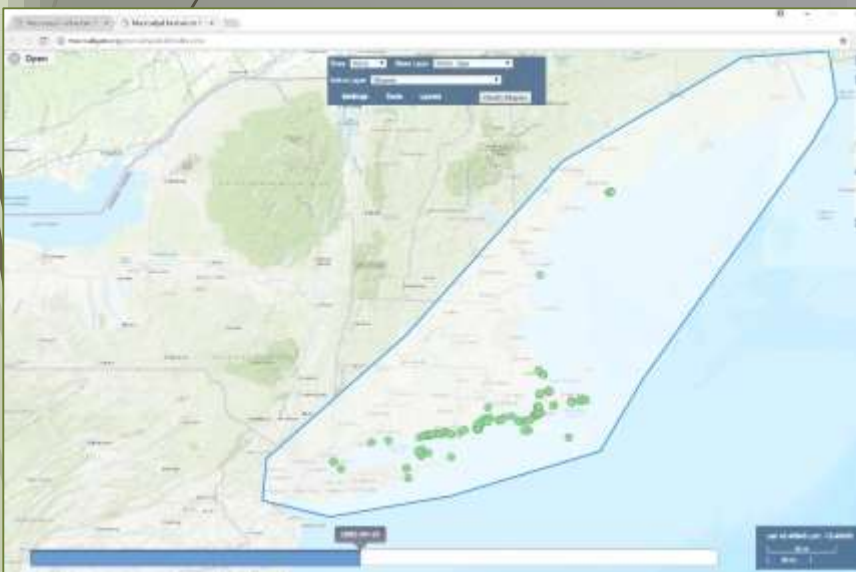
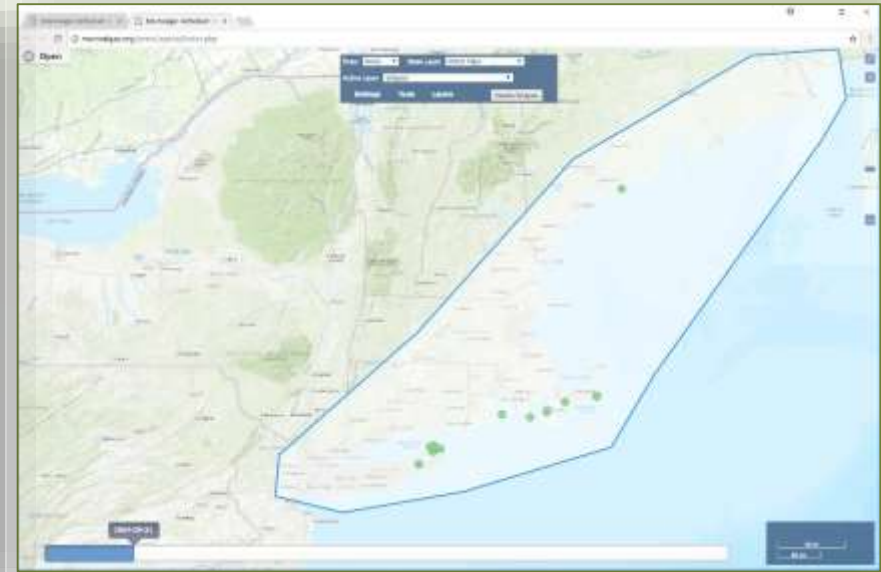
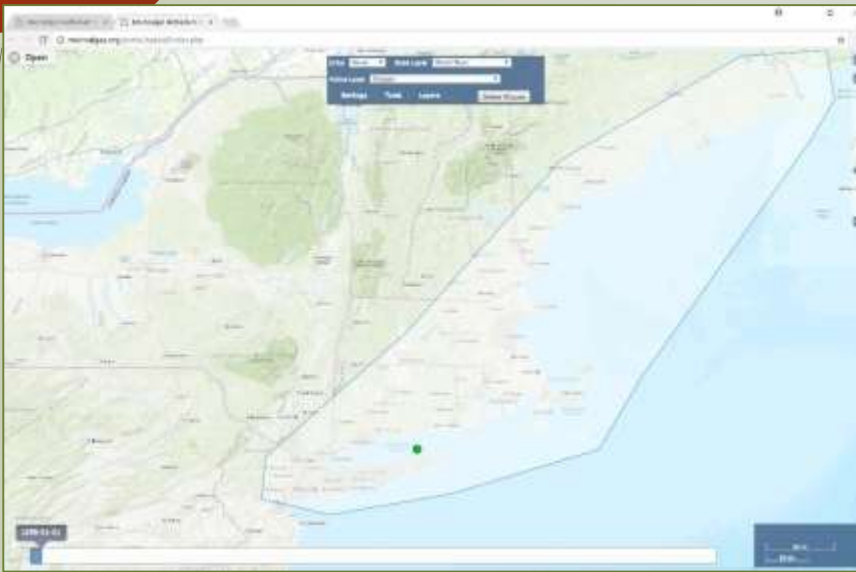
- ▶ Determine when and where a species can be collected
 - ▶ Taxonomic studies
 - ▶ **Biogeographic studies**
 - ▶ Effects of environmental changes or disturbances on species distribution and community structure
 - ▶ Track progression of invasive species and loss/displacement of native species
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Spatial Module

- ▶ Modeled after the Atlas of Living Australia Spatial Module
- ▶ Integrated with Symbiota
- ▶ Far more capabilities than the Symbiota Map Search
- ▶ GIS Layers
 - ▶ Choice of Base Map Layers
 - ▶ World Climatological Layers
 - ▶ Average and Monthly Temperature, Precipitation, Solar Radiation, Wind
 - ▶ Political Boundary Layers
 - ▶ Ability to Import Additional Layers
 - ▶ Drawing Tools to Create Shape Layers
- ▶ Enhanced Search Tools
 - ▶ Search for records within shapes
 - ▶ Date sliders to visualize changes in observations over time

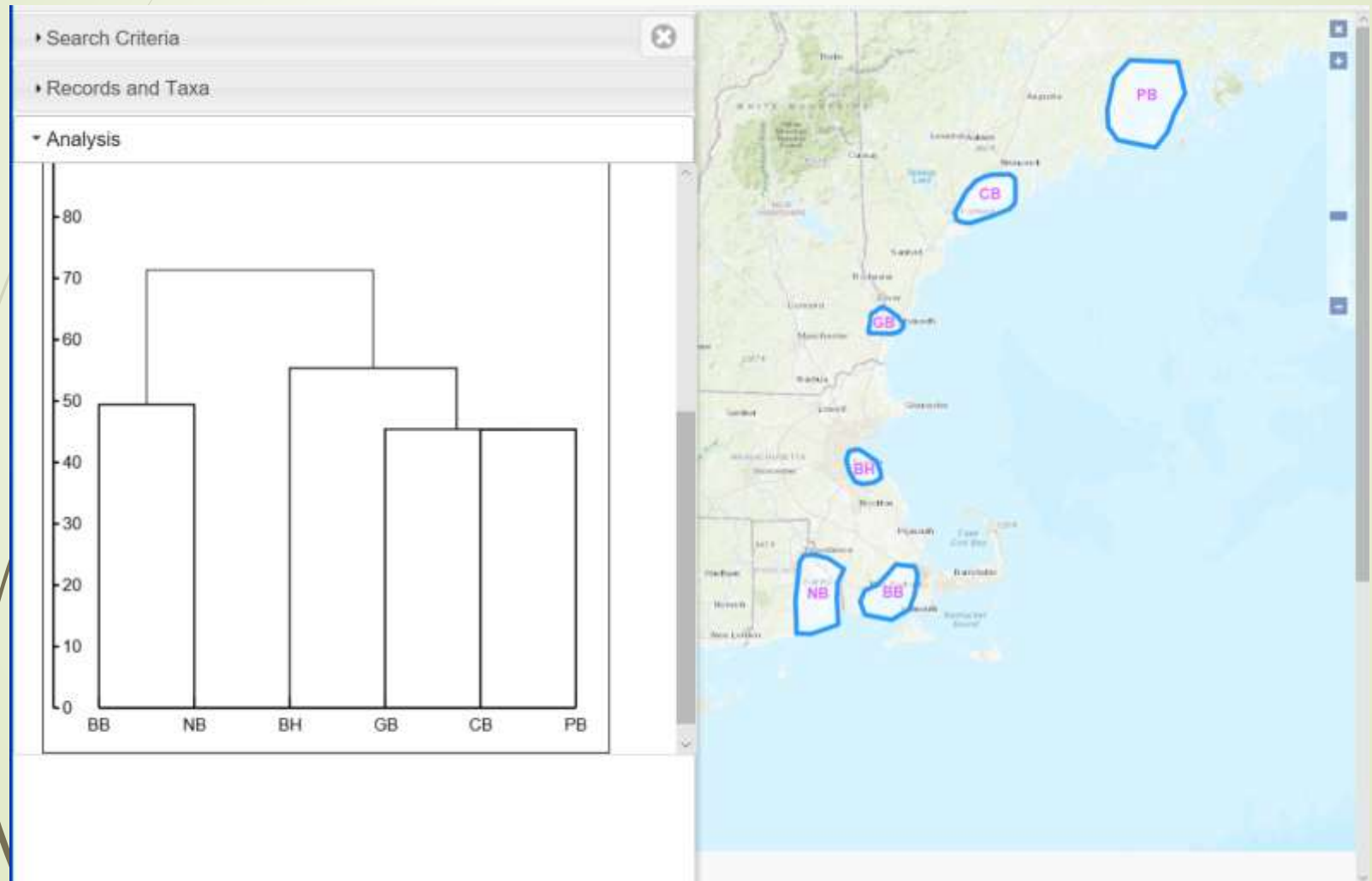


Spatial Module



Spatial Analysis Module

Continuing Development at UNH

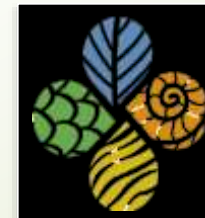




One Lesson Learned?

Small Herbaria Are Easier to Digitize than Large Ones

Acknowledgments



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