

An aerial photograph of a lush green forest. A stream flows through the center, with a small waterfall on the right side. The water is a vibrant blue-green color. The surrounding forest is dense and green, with some white patches of snow or light-colored rocks visible in the upper right corner.

Developing an Enterprise GIS to support collections management, teaching, and research

University of Michigan

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Matthaei Botanical Gardens & Nichols Arboretum

Jason Tallant, Biological Station

Peter Knoop, College of Literature, Sciences, and the Arts

Shannon Brines, School of Natural Resources and Environment

Goal is to archive and curate data collected from our properties and make this data discoverable and accessible for teaching and research



UM Field Research Properties in Michigan

Biological Station – 4,047 ha

- Sugar Island Preserve – 1,295 ha

School of Natural Resources and Environment

- Saginaw Forest – 32 ha
- Stinchfield Woods – 314 ha
- Newcomb Tract – 100 ha
- St. Pierre Wetland - 53 ha
- Harper Reserve - 152 ha
- Ringwood Preserve - 65 ha

Matthaei Botanical Gardens & Nichols Arboretum

- Matthaei Botanical Gardens - 142 ha
- Nichols Arboretum - 50 ha
- Horner McLaughlin Woods - 36 ha
- Mud Lake Bog – 117 ha

E.S. George Reserve - 526 ha

Total

13 Properties

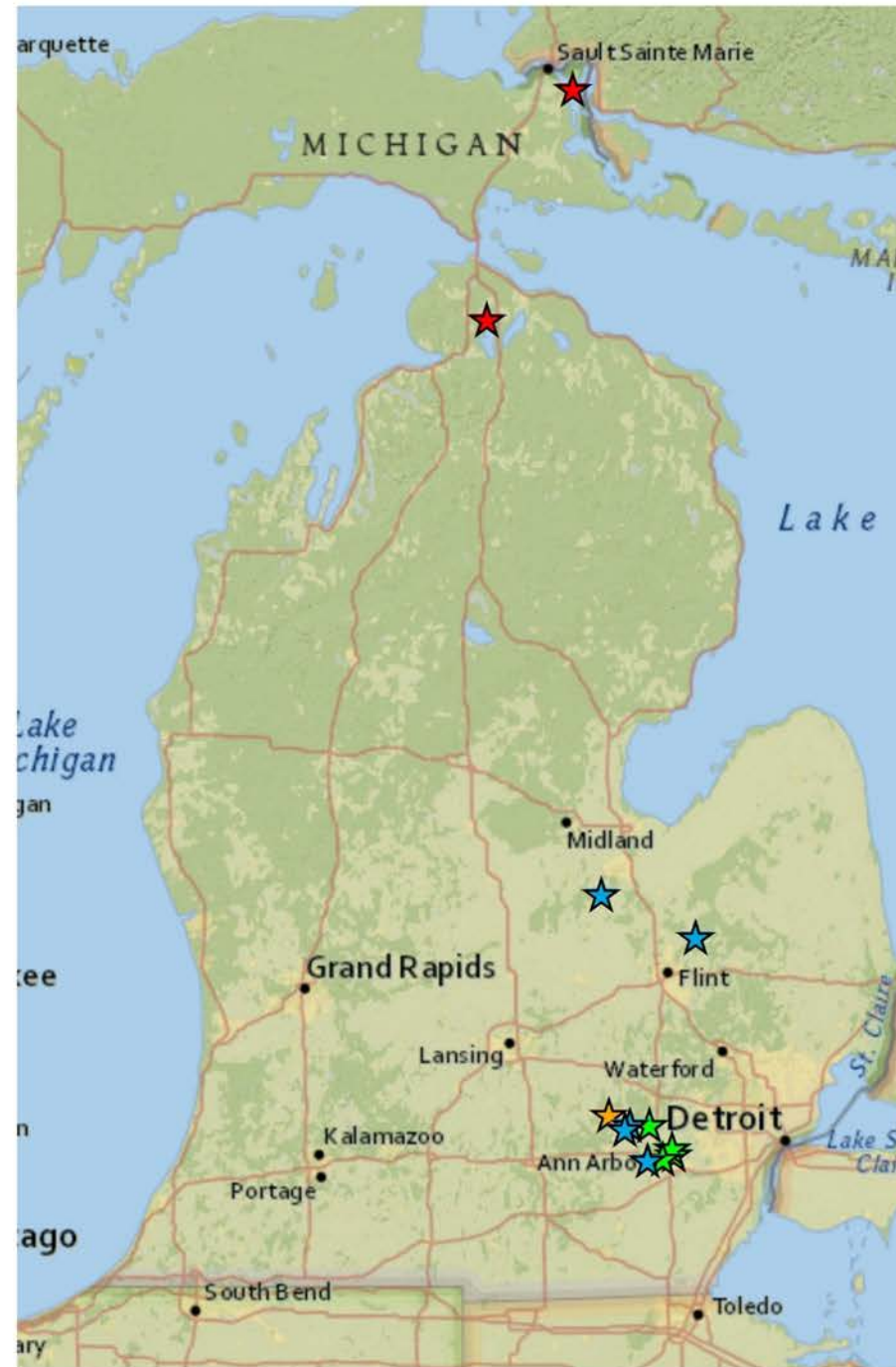
6,929 ha

17,122 acres

Properties

- ★ College of Literature, Science and the Arts
- ★ Department of Ecology and Evolutionary Biology
- ★ Matthaei Botanical Gardens and Nichols Arboretum
- ★ School of Natural Resources and the Environment

0 60 120 Miles



Enterprise GIS Implementation at Matthaei Botanical Gardens and Nichols Arboretum

Maricela Avalos, Data & GIS Specialist

Desktop



Web



Device



Web GIS

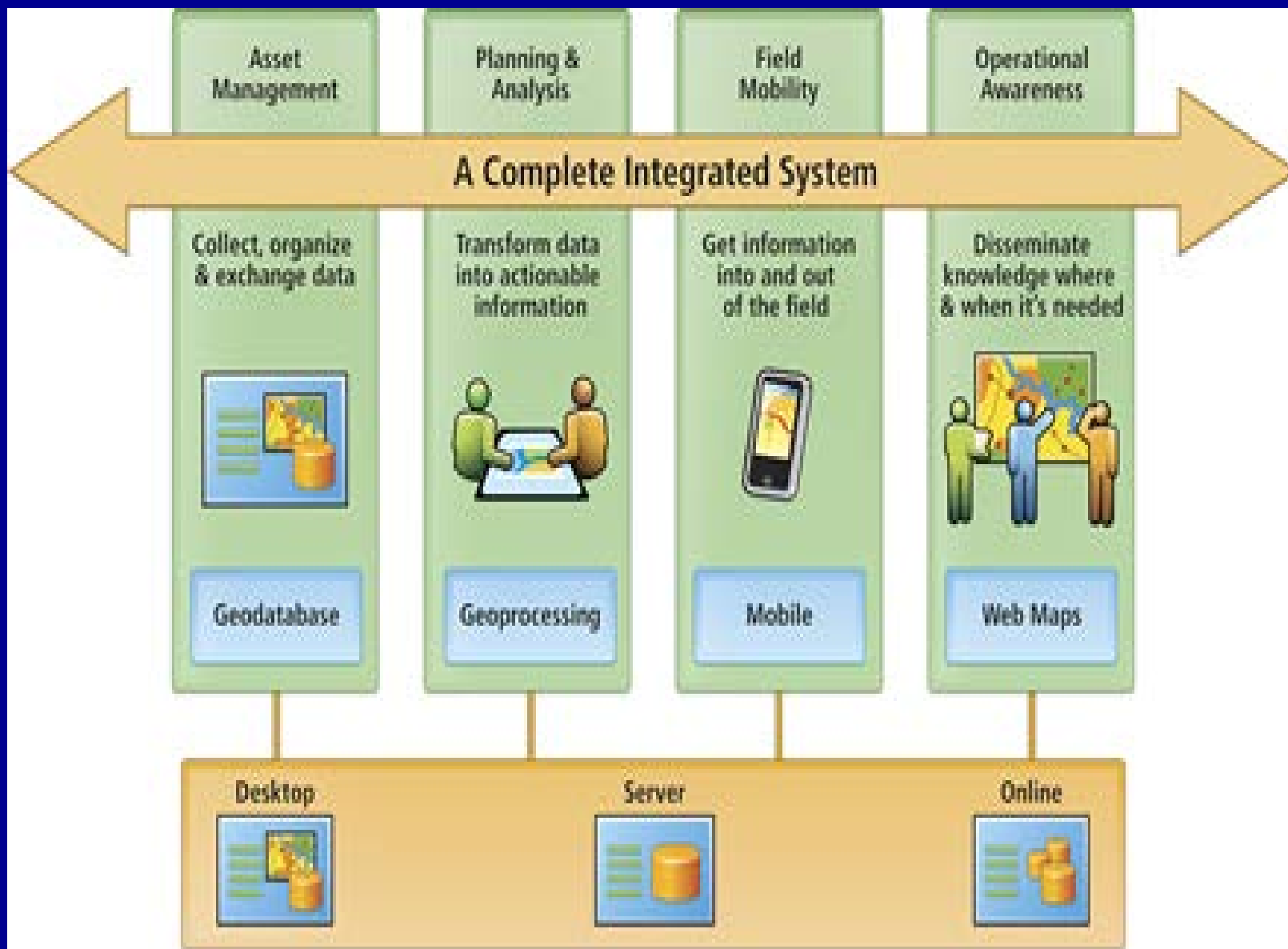
Portal



Server

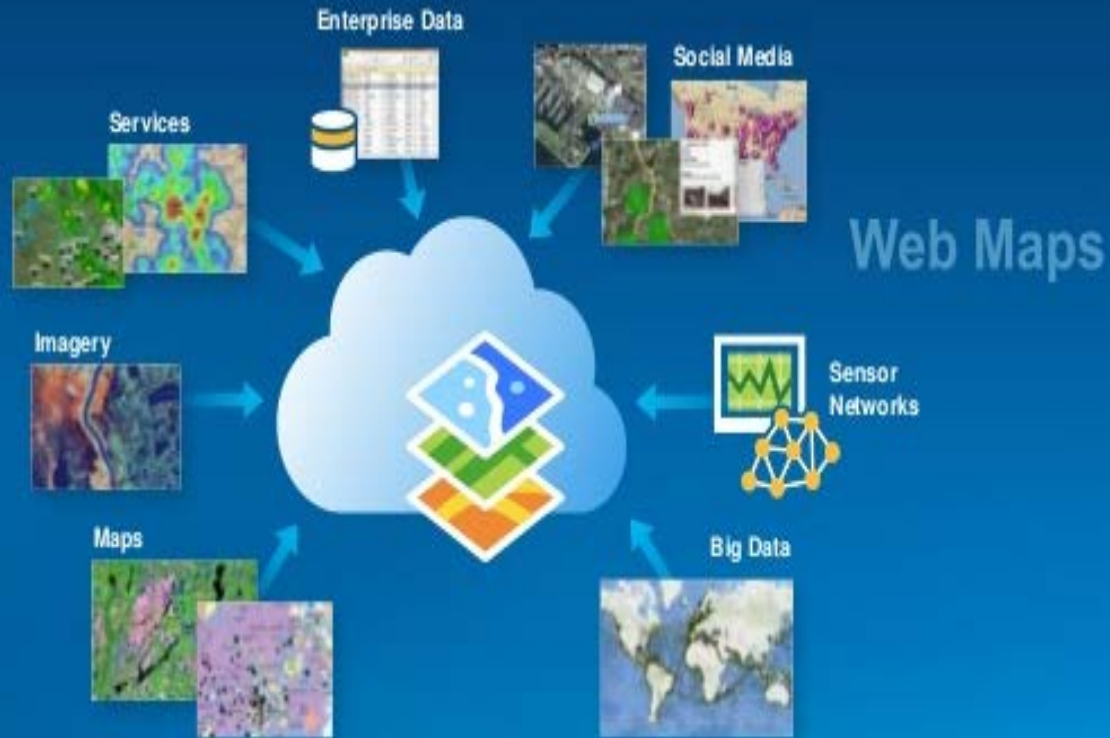


Online Content
and Services



Web GIS Can Represent All Data Types

As Web Maps and Web Services



Providing a New Medium for GIS

**Knowledge
Workers**



**Executive
Access**



**Public
Engagement**



**Work
Anywhere**



**Enterprise
Integration**



**Professional
GIS**



Contractors

Digitizing collections at UMBS

J. Tallant
@UMBSData

Opportunity Abounds at UMBS

- 100+ years of teaching and research translates into 3170 peer review publications and theses, plus 4024 student research papers at ~650 unique locations

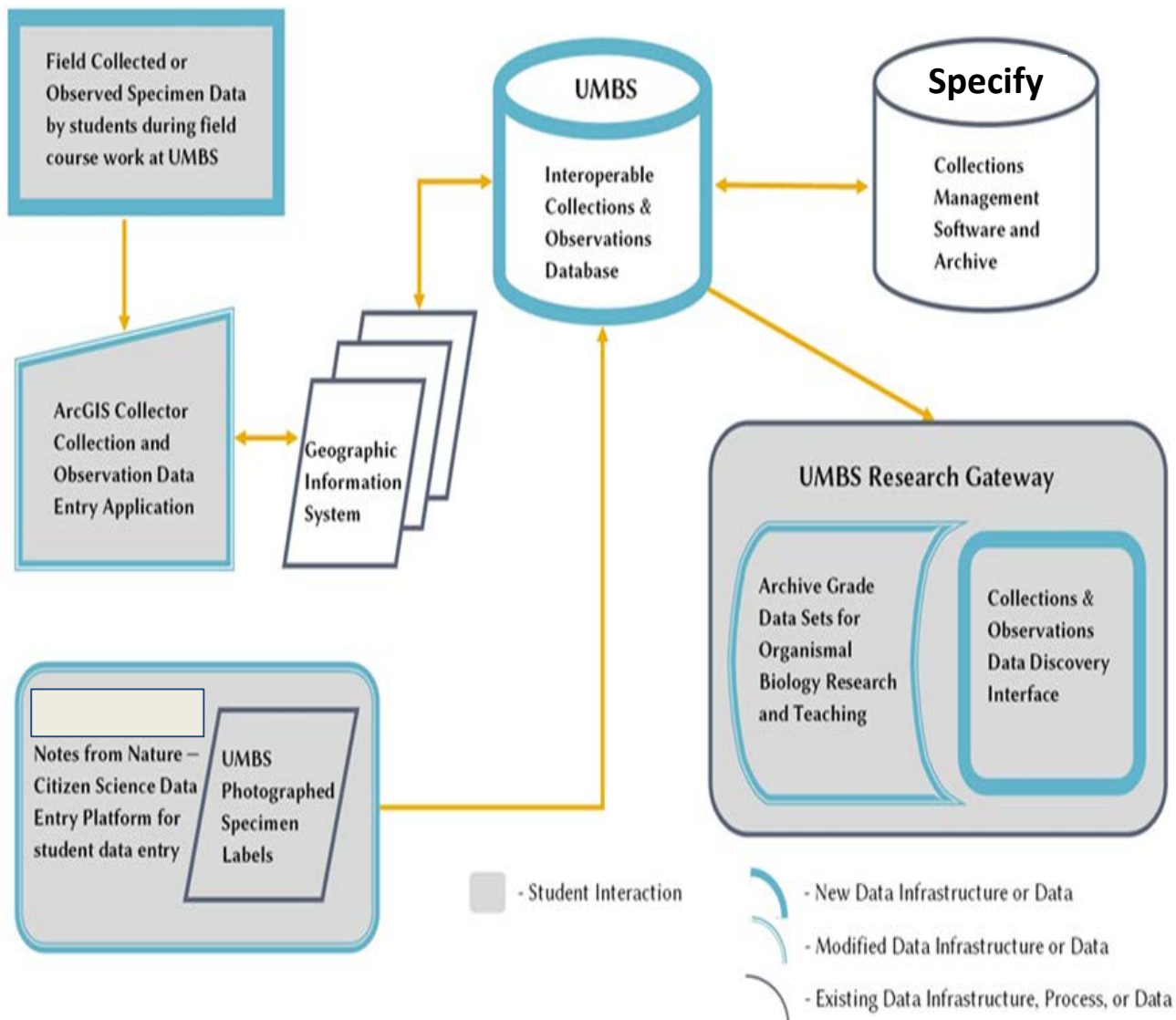


- 161 digitized and published datasets, many others in various states





Organismal Collections and Observations Digitization, Management, and Discovery at the University of Michigan Biological Station



Details Add ▾ Edit Basemap Analysis Save ▾ Share Print Directions

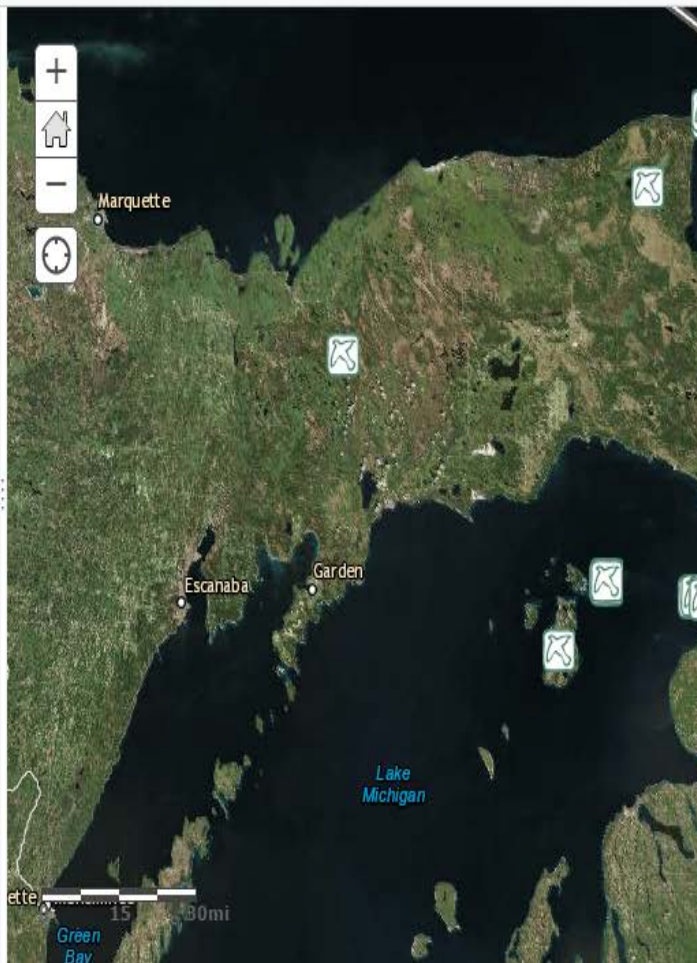
About Content Legend

Legend

Birds_Site_Lists



Birds_Observations



Entered by Sun 10/5/15
 Michigan Audubon Society
 Michigan Daily Field Checklist of Birds (revised 1/2007)
 Date 9 June 2015

Localities Dingman Marsh

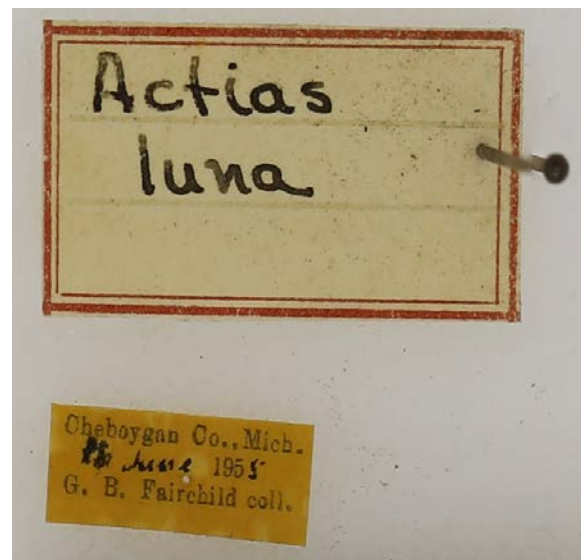
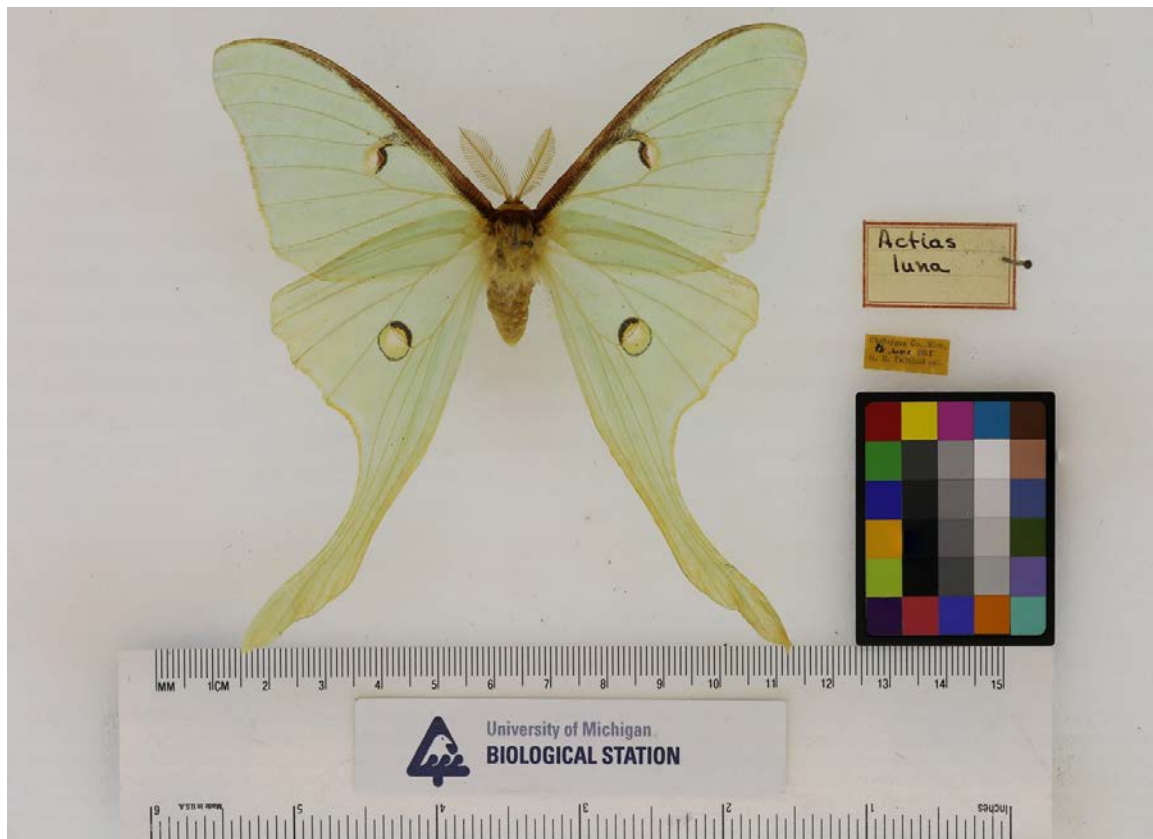
Weather ptly cldy Temperature 60°F Time 0800-1100

Observers UMBS class Species Individuals

Regular and Casual Species: The species below range from abundant to uncommon in Michigan. Casual species (in italics) were recorded more than three times, but not more than thirty times, in the last ten years, and were recorded in fewer than nine of the last ten years. Any sighting of a regular species marked with an * or of a casual species should be documented with a detailed written description or, when possible, with photographs.

Location	A	B	C	D	Location	A	B	C	D
Greater White-front. Goose					White-winged Scoter				
Snow Goose					Black Scoter				
Ross's Goose					Long-tailed Duck				
<i>Brant</i>					Bufflehead				
Cackling Goose					Common Goldeneye				
Canada Goose		✓			<i>Barrow's Goldeneye</i>				
Mute Swan					Hooded Merganser				
Trumpeter Swan					Common Merganser				
Tundra Swan					Red-breasted Merganser				
Wood Duck		✓			Ruddy Duck				
Gadwall					Ring-necked Pheasant				
<i>Eurasian Wigeon</i>					Ruffed Grouse				
American Wigeon					Spruce Grouse				
American Black Duck					Sharp-tailed Grouse				
Mallard		✓			Wild Turkey				
Blue-winged Teal					Northern Bobwhite				
Northern Shoveler					Red-throated Loon				
Northern Pintail					Pacific Loon*				
Green-winged Teal					Common Loon		✓		
Canvasback					Pied-billed Grebe				
Redhead					Horned Grebe				
Ring-necked Duck		✓			Red-necked Grebe				
Greater Scaup					Eared Grebe				
Lesser Scaup					<i>Western Grebe</i>				
<i>King Eider</i>					American White Pelican				
Harlequin Duck					<i>Brown Pelican</i>				
Surf Scoter					Double-crested Cormorant				

Collections digitization



Collector	collection_method	Order	Family	Genus	species	Abundance estimate	Notes - Host, Associated Species, etc	habitat or plant community	Identifier	voucher_type	Rearing_Info	Weather Notes	Locality notes	Collection deposited:	observation_date	Photos and Files
G. B. Fairchild		Lepidoptera	Saturniidae	Actias	luna				G. B. Fairchild	Adult			Cheboygan Co., MI, Box #25	UMBS	June 11, 1955	(2) Show

Bryophytes > liverworts

Genus:	Species:	Species Authority:	Sub-Type:	Sub-Type Name:	Sub-Type Authority:
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County:

Locality:

Habitat:

Collector:

Collector Number:

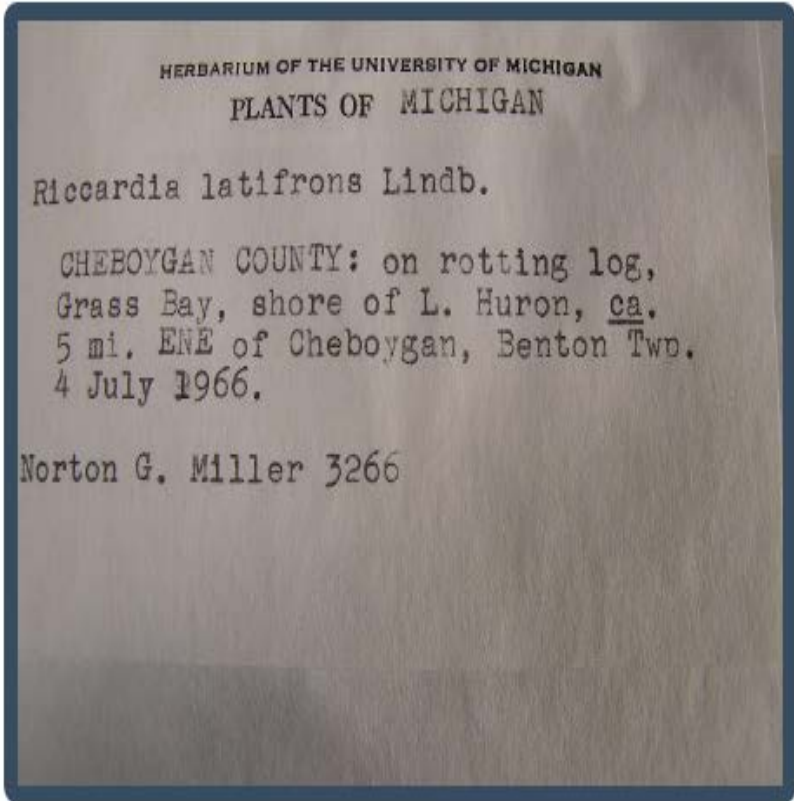
Determiner:

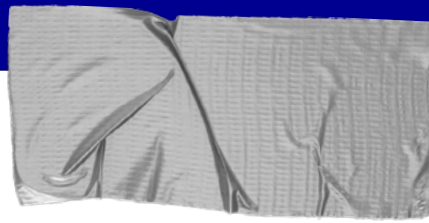
Date: ▾ ▾

Status:

Transcription Complete

Not Transcribable





- **Ongoing efforts to digitize historic data**
 - Paper to spreadsheet digitization
 - Metadata and curation of digitized data sets
 - Collections digitization
- **Ongoing efforts to train researchers and students**
 - BYOData workshops
 - Data Management 101 workshops
 - One on one consulting

Acknowledgements

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- Private Donation

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- Anna Wan

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