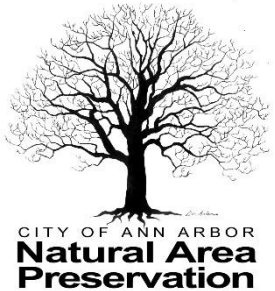




Creating a Biological Inventory App with Survey123



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City of Ann Arbor

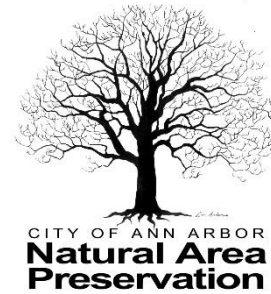


Outline

- ▶ What/who is Natural Area Preservation?
- ▶ NAP's Inventory Programs
 - ▶ Reptile/Amphibian Surveys
- ▶ The Paper Problem
- ▶ Solving the Problem with Survey123
- ▶ Data Submission Demonstration
- ▶ Survey123 Connect Demonstration
- ▶ Data Visualization Demonstration



What is Natural Area Preservation?



- ▶ NAP is part of the City of Ann Arbor's Parks and Recreation Department and is funded by the voter-approved Parks Maintenance and Capital Improvements Millage.
- ▶ Created in 1993, NAP's mission is to protect and restore Ann Arbor's natural areas and to foster an environmental ethic among its citizens.
- ▶ NAP is divided into three main areas that all contribute to ecological restoration efforts in Ann Arbor's parks.
 - ▶ Outreach team
 - ▶ Field crew
 - ▶ Inventory team

Inventory Program

▶ What exactly are we inventorying?

- ▶ Plants
- ▶ Birds
- ▶ Frogs, toads, salamanders, turtles, snakes
- ▶ Butterflies
- ▶ Change over time through photo monitoring



▶ Who completes the inventories?

- ▶ NAP Staff
 - ▶ Field Biologists
 - ▶ Stewardship Specialists
- ▶ Contractors
- ▶ Volunteers



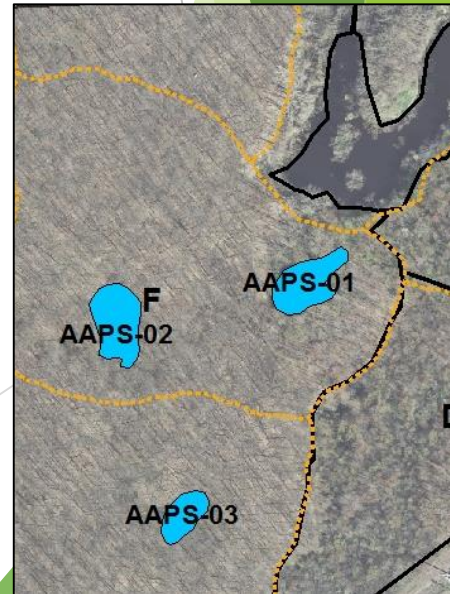
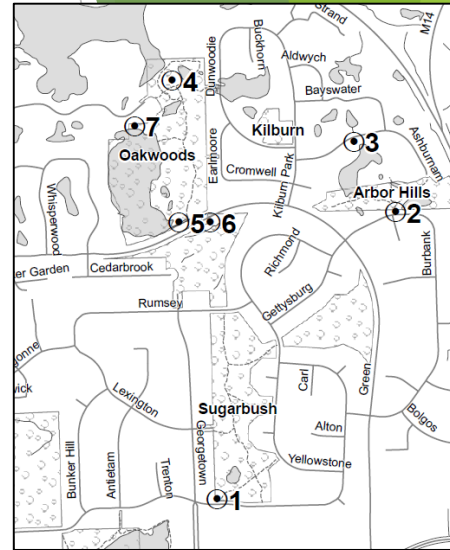
Why Are We Inventorying?

- ▶ To get baseline conditions in new sites.
- ▶ To characterize the quality of the habitats we have.
- ▶ To look for rare species populations to protect and enhance.
- ▶ To document the impacts of our restoration work.
- ▶ To inform future land management actions.



Reptile/Amphibian (Herp) Surveys

- ▶ Frog and Toad Survey
 - ▶ Volunteers visit established monitoring points and listen for calls, recording the species and level of calling.
- ▶ Salamander Survey
 - ▶ Volunteers walk meandering routes around vernal pools, watching for salamander migration. They also look within the pools for evidence of breeding. Outside of the breeding season, they turn cover throughout habitat areas looking for juveniles & adults.
- ▶ Turtle Stewards
 - ▶ Volunteers are assigned to specific parks or stretches of river. They search for basking turtles from the shore or by boat, watching for nesting activity. They also maintain artificial nesting mounds.
- ▶ A Little of Everything
 - ▶ All volunteers are encouraged to report sightings of any reptile/amphibian, no matter what survey they are volunteering for.



The Paper Problem

- ▶ To report sightings, volunteers fill out paper forms and draw the locations of their sightings on maps (since mid-90s).
- ▶ They mail/scan/photograph the forms and maps.
- ▶ Staff translate data on the forms into an Access database.
- ▶ Data from Access is exported to geodatabase feature class and observation points are mapped by hand.
- ▶ Volunteer hours are calculated and recorded in a different Access database.
- ▶ Very time consuming, and the data forms can be confusing.

Salamander Survey Form



Herp Inventory: Data Entry Form
 3875 E. Huron River Dr., Ann Arbor, MI 48104
 (734) 794-6627 / napherps@a2gov.org



Date: _____

Run: _____

Temperature: _____ °F

Start Time: _____

End Time: _____

Observer(s): _____

Site: _____

Weather: clear cloudy light rain raining

Survey Technique meander entire park walk trail corridor visit mapped points only

other: _____

INSTRUCTIONS
 Indicate the location of a sighted salamander by placing a circled number on the map. Map data points separately if >50ft apart or if substantially different. Record number of adults (ad), juveniles (juv), and/or egg masses (egg); mark the "none found" box if nothing found at a point using traps or dip nets.

Map Point	None found	survey method														office use only Site ID for GIS	
		Turning Cover	Dip Net	Funnel Trap	Spotted	Blue Spotted	Red-Backed	Tiger	Red-spotted newt	Four-toed	Small-mouthed*						
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ad		ad		ad		ad		ad		ad		
					juv		juv		juv		juv		juv				
					egg		egg		egg		egg		egg				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ad		ad		ad		ad		ad		ad		
					juv		juv		juv		juv		juv				
					egg		egg		egg		egg		egg				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ad		ad		ad		ad		ad		ad		
					juv		juv		juv		juv		juv				
					egg		egg		egg		egg		egg				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ad		ad		ad		ad		ad		ad		
					juv		juv		juv		juv		juv				
					egg		egg		egg		egg		egg				

notes

Have photos? Please share them with us- via email if you can!

* Very rare. Please contact NAP immediately if you see a Small-mouthed salamander.

Frog/Toad/General Survey Form



Herp Inventory: Data Entry Form

3875 E. Huron River Dr., Ann Arbor, MI 48104
(734) 794-6627/napherps@a2gov.org

Observer(s): _____

Date: _____

Site: _____

Run: _____

Weather: clear cloudy light rain rain

Temp: _____

meander entire park walk trail corridor visit mapped points only canoe

Start/End Time: _____

Map Point	survey method					frogs & toads								snakes			turtles								
	Turned Cover	Dip netted	Funnel trapped	Saw basking	Heard calling	Wood Frog	Chorus Frog	Spring Peeper	Leopard Frog	American Toad	Gray Treefrog	Green Frog	Bullfrog	Brown (DeKay's)	Eastern Garter	Northern Water	Map	Snapping	Musk	Painted	Red-eared Slider	Softshell	Blanding's	Other:	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad	egg juv ad

Notes:

Have extra notes or photos? Please share them on an attached sheet, or send us an email!

C = Calling Level # = Number of Individuals Seen

Last modified April 2012

Salamander Survey Map



Oakwoods Survey Area 1
Green Rd., Kilburn Park
Circle and Whisperwood Dr.
Ann Arbor, MI 48105

Observers: _____

Date: _____ Run #: _____



N
0 80 160 240 320
Feet

- Trails
- Water
- NAP Boundary
- Survey Area

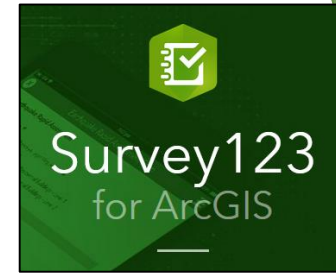
Return to NAP @ 3875 E. Huron River Dr., Ann Arbor, MI 48104 / NAPherps@a2gov.org

Less freedom to report sightings outside of assigned park

Can We Utilize Technology?

- ▶ Free apps are already out there.
 - ▶ Bird survey volunteers enter data into eBird.
 - ▶ Park Stewards and other park visitors report sightings with iNaturalist.
 - ▶ Michigan Herp Atlas, HerpMapper
- ▶ Online databases too!
 - ▶ Butterfly survey volunteers submit data through PollardBase.
 - ▶ Universal FQA Calculator
- ▶ Many benefits: Easier for volunteers to submit data immediately from the field, less time-consuming for staff, automatic report generation, data goes into globally-accessible databases, anyone can contribute
- ▶ Unfortunately, none of the currently available apps capture the level of detail we'd like to record for reptiles and amphibians. Getting data back out can also be a problem.

Exploring Survey123

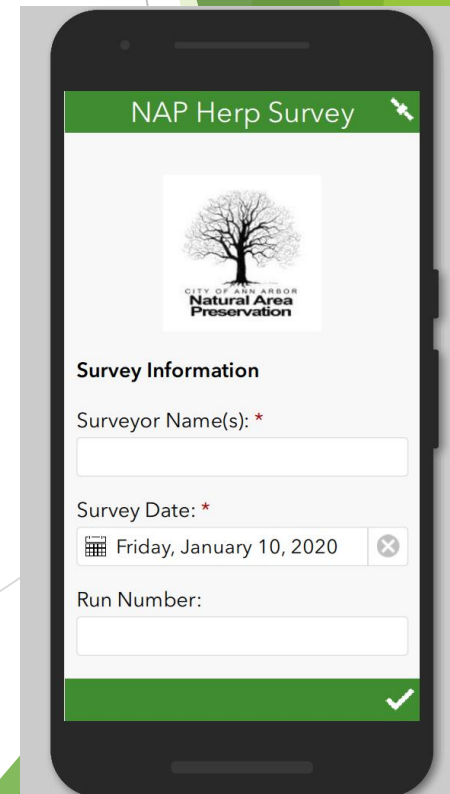


- ▶ The spatial part of our data is the most important - can we just track all of our information using GIS?
- ▶ Can we figure out a way for volunteers to submit their own data from their phones or computers?
- ▶ Could Survey123 be the solution?
 - ▶ A tool for building smart data collection forms, which are stored in ArcGIS Online. Forms have the ability to record geographic points, lines, and polygons.
 - ▶ If your organization has an ArcGIS Online account, you also have Survey123.
 - ▶ The app is free to download and available for both mobile devices and computers.

Building A Survey

- ▶ Two methods: Web builder, or Survey123 Connect
 - ▶ Web builder is the simplest
 - ▶ Survey123 Connect offers much more functionality and customization

	A	B	C	D
1	type	name	label	hint
2	note			
3	note		Survey Information	
4	text	Name	Surveyor Name(s):	
5	date	Date_	Survey Date:	
6	integer	Run_	Run Number:	
7	time	StartTime	Start Time:	
8	integer	Temp	Temperature (°F):	
9	select_one weather	Sky	Weather:	Choose the wettest you encountered. Choose the survey for a majority of the time
10	select_one survey_type	SurvType	Survey Type:	
11	select_one no_obs	NoObs	if you completed your survey without observing any	
12	begin repeat	StartRepeat	Individual Observations	
13	geopoint	Location	Location	
14	select_one certainty	Certainty	Location Certainty:	
15	select_one survey_method	SurvMethod	Survey Method:	
16	select_one calling_code	CallingCode	Calling Level:	
17	select_one organism	OrganismType	Animal Type:	
18	select_one species	Species	Species:	Note: Blanchard's Cricket Frog and Pickerel Frog are extremely rare
19	text	OtherSpecies	Other Species not Listed:	

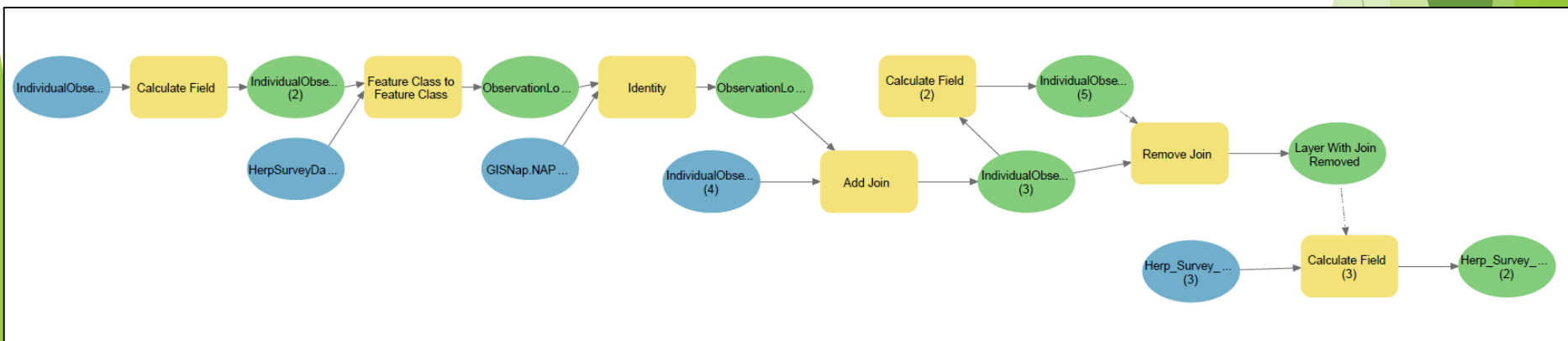




Data Submission, Survey123
Connect, and Data Visualization
Demonstrations

Working with the Data

- ▶ Data submitted through Survey123 can be accessed directly from ArcGIS Desktop or Pro, no need to export.
- ▶ Model in Pro auto-calculates hours volunteered based on start and end times and adds park names to data points.



What's Next?

- ▶ Working on a custom basemap.



- ▶ A frog calling survey app!



Questions?

Thank you!

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