



Finding the science in citizen science:

“Maximizing the value of local citizen science projects for participants, scientists, designers, sponsors, and community”

Greg Newman¹

¹Natural Resource Ecology Laboratory
Colorado State University



panelists

Michelle Durant

wildlife biologist and volunteer programs coordinator - boulder county parks and open space

Liz Goehring

ecologist, science educator, and citizen science trainer

Megan Mueller

senior conservation biologist - rocky mountain wild

Tim Seastedt

department of ecology and evolutionary biology – cu boulder



serendipity



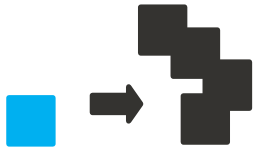
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me



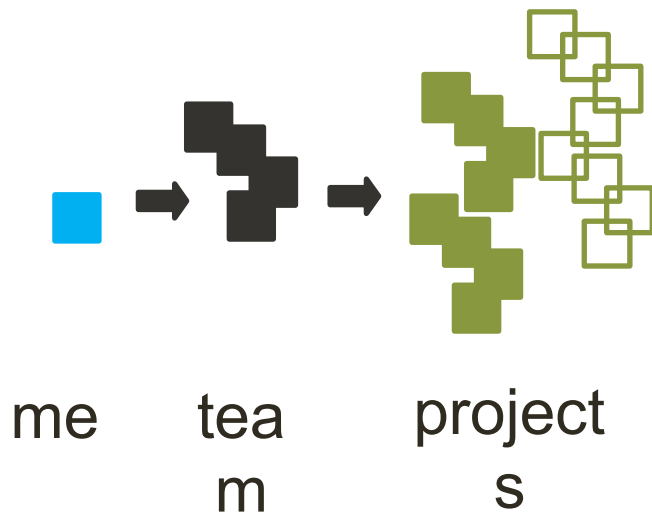
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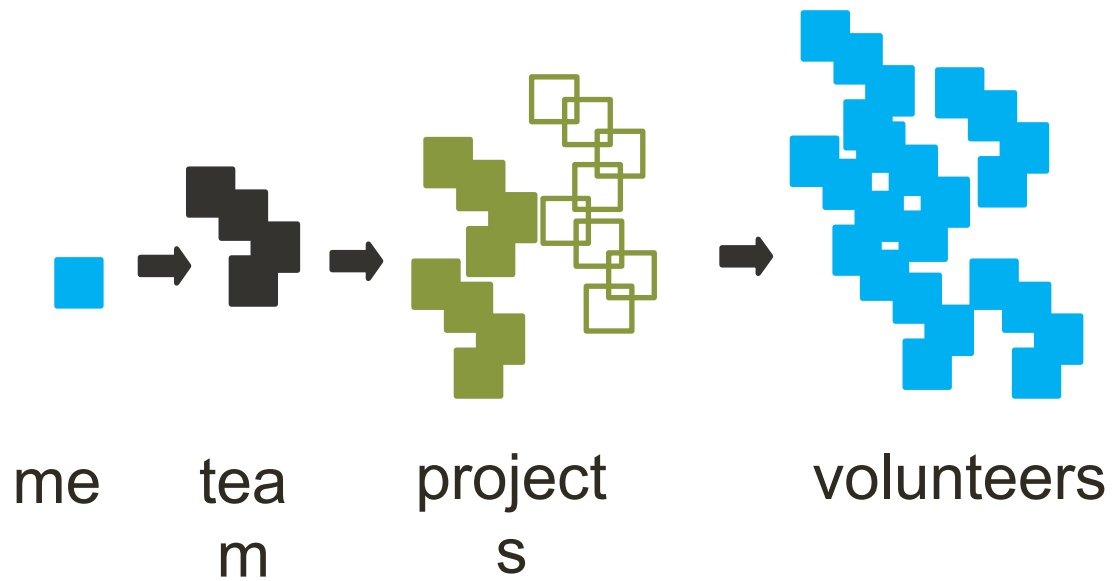
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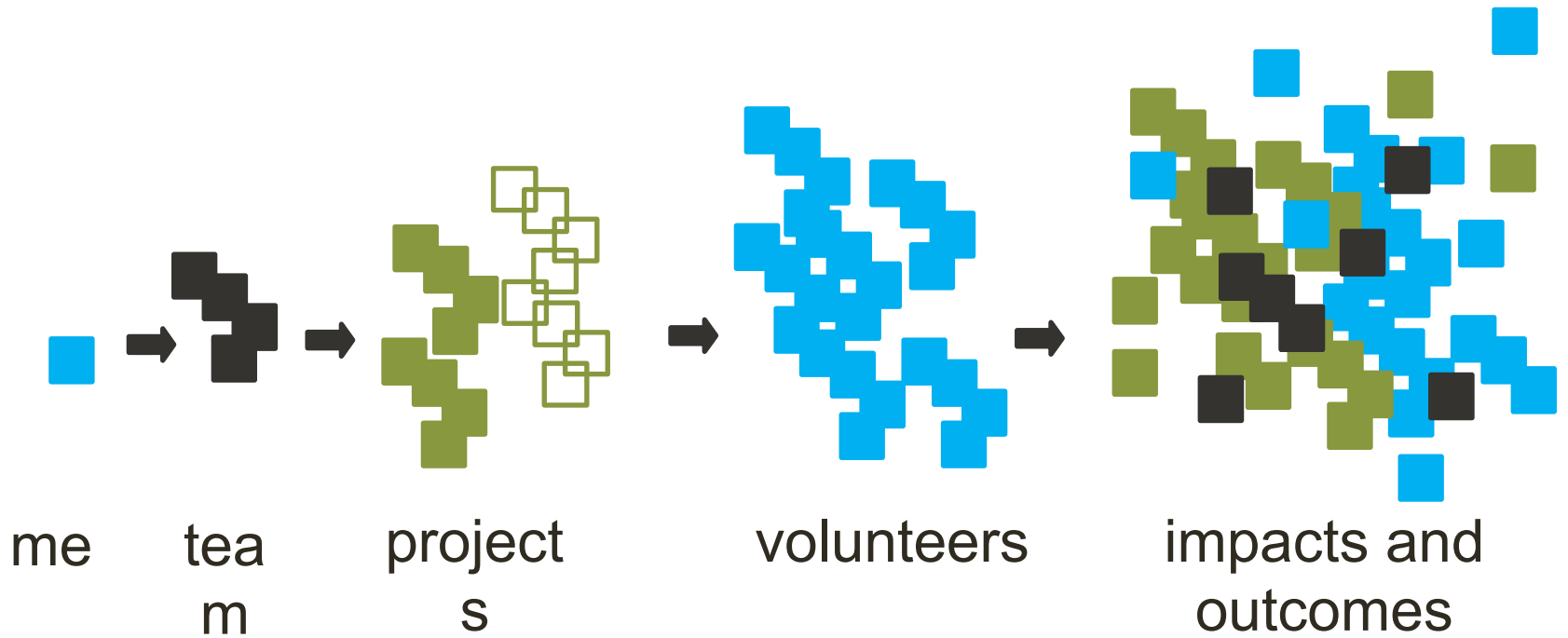
serendipity



serendipity



serendipity



mission

“provide **comprehensive support** for citizen science programs globally”



goals



Support the **full spectrum** of citizen science needs”



Improve the **rigor** of citizen science data”



Improve data **standardization**, interoperability,
integration, accessibility, and dissemination”



goals



Support the **full spectrum** of citizen science needs”



Attain the **rigor** of citizen science data”



Improve data **standardization**, interoperability,
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goals



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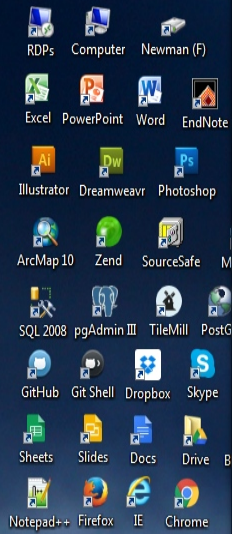
basically...



“provide a comprehensive platform where **anyone, anywhere** can enact projects themselves”

... **and** ...have the confidence that their projects will be rigorous, advance scientific understanding, and yield positive impacts and outcomes...





My Tasks in IBIS - Create ... x CitSci.org - Comprehensiv... x

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385 projects 668,673 measurements 3,128 members 63,997 locations 1,431 protocols


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Benefits

- Configurable**
Build your own datasheets and protocols ~ Make it your own
- Community-Driven**
We're community driven ~ you make us better
- Free**
Free data management, storage, software & support since 2007

Featured Project

Cascades Pika Watch



The Cascades Pika Watch engages citizen scientists to locate and map pika populations in Oregon.

177 Participants 328 Observations 125 Photos

New Observations

- Observation at Warren...
Jennifer Saik
March 17th, 2017
- Observation at Warren...
Jennifer Saik
March 17th, 2017
- Observation at Warren...
Jennifer Saik
March 17th, 2017

"I've looked at a number of different websites, and none of them have had the right ... capacity for what [we want] to do. I'm excited that ... CitSci.org does!"
~ Kate Rinder - Youth Leadership Coordinator - North Cascades Institute

Available on the iPhone App Store Download for Android

Let Us Help

We support **your** citizen science. At CitSci.org, you create your own projects where trained volunteers and scientists together answer local, regional, and global questions, inform natural resource decisions,

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Size

15
9
6
1,10
7,18
2

	Trout Unlimited WV-VA Water Quality Monitoring Project	Monitor the impact of Marcellus Shale gas development on the statewide water resources	September 1, 2013	9,630	+ Join
	Tamarisk Coalition	Tamarisk Mapping on Arkansas and Colorado Rivers	November 16, 2005	7,450	+ Join
	Mequon Nature Preserve	Mequon Nature Preserve citizen science monitoring projects	January 14, 2014	4,710	+ Join
	Front Range Pika Project	A citizen science effort to gather baseline data on the current distribution of pikas and ...	July 26, 2011	4,243	+ Join
	Rios Saludables de Osa - Costa Rica	Rios Saludables de Osa is a water quality monitoring network of volunteer citizens and schools ...	October 1, 2014	3,930	+ Join
	Vernal Pool Cooperative of Virginia 2013-2014	Locate and characterize vernal pools on public lands in Virginia.	November 30, 2013	3,343	+ Join
	Vernal Pool Cooperative of Virginia 2014-2015	Locate and characterize vernal pools on public lands in Virginia.	October 1, 2014	2,446	+ Join
	PikaNet	A citizen science effort to gather baseline data on the current distribution of pikas and ...	March 2, 2010	1,948	+ Join

create projects

Monitoring Project

84 members | 959 observations | 238 locations | 9,630 measurements



Project Manager: Jacob Lemon [Email Jacob](#)

Description: Monitor the impact of Marcellus Shale gas development on the statewide water resources

[+ Project Details](#) [+ Team Members](#)

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Discussion Forum

[Add New Discussion](#)

Manage Tabs

Position	Tabs	Visibility	Active	Positions
1	View Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Move Down
2	Submit Data	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Move Up Move Down
3	Resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Move Up Move Down
4	Media	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Move Up Move Down
5	make it your own			
6				
7				
8	Forum	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Move Up

Project Members [help](#)

To Project Profile

Users Requesting To Join WVCC

User	Email	Requested Role	Options
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WVCC Members

Member	Email	Role(s)	Options
Adam Williams	adam.m.williams.33@gmail.com	Contributor	Edit Roles Remove
Adrie Voors	ahvoors@gmail.com	Contributor	Edit Roles Remove
Adrie Voors	ahvoors@gmail.com	Contributor	Edit Roles Remove
Andrea Williams	awannie79@gmail.com	Contributor	Edit Roles Remove
april keating	apkeating@hotmail.com	Contributor	Edit Roles Remove
Arlene Breder	abreder@frontier.com	Contributor	Edit Roles Remove
Ashley Akers	aakers3@mix.wvu.edu	Contributor	Edit Roles Remove
Aurora Nichols	aurora.nichols@gmail.com	Contributor	Edit Roles Remove
Autumn Bryson	bryson.autumn@gmail.com	Contributor	Edit Roles Remove
Betsy Reeder	ereeder44@msn.com	Contributor	Edit Roles Remove
Bill Quigley	wquig@msn.com	Contributor	Edit Roles Remove
Bill Franz	frnzbill@aol.com	Contributor	Edit Roles Remove
Brian McClung	WV_wrestler@yahoo.com	Contributor	Edit Roles Remove
Brittany & Brandon Huerta-Richardson	b8huerta@gmail.com	Contributor	Edit Roles Remove
Bryce Randall	bjrandall@mix.wvu.edu	Contributor	Edit Roles Remove
Caitlin Marsteller	caitlinmarsteller@gmail.com	Contributor	Edit Roles Remove
Car Komar	cmkomar@yahoo.com	Contributor	Edit Roles Remove
Carol Nix	almostnixie@cs.com	Contributor	Edit Roles Remove
Cassie Moats	cassmoats@gmail.com	Contributor	Edit Roles Remove
Catheri			Remove
Chris			Remove
Cory Ch			Remove
David Stephan	d.f.stephan@gmail.com	Contributor	Edit Roles Remove
Dolly Frazier	dollyfrazier@comcast.net	Contributor	Edit Roles Remove

manage members

CitSci.org Shared Measurements

What We Measure

The projects created on CitSci.org measure many things about organisms and the environment. Below is a growing and changing list of things currently being measured by the many diverse projects being implemented using CitSci.org. Project managers can continually add to this growing list of measurements as needed! The measurements made by projects may be about organisms (species attributes) or any aspect of the environment broadly (site characteristics). Each measurement can be made using units of choice.

[Organism Attributes](#)
[Site Characteristics](#)
[Units](#)

Don't see what you would like to measure?

[Add new measurement](#)

Search: ?

Show entries

Measurement	Type	# of Projects Using Measurement	Options*
Presence	Categorical	50	Details
Count of individuals	Decimal	18	Details
Height	Decimal	16	Details
Percent Cover	Decimal	10	Details
DBH	Decimal	10	Details
Sex	Categorical	8	Details
Life Stage	Categorical	7	Details
Age	Integer	7	Details
Number of individuals	Integer	6	Details
Infested Area			
Length			
Tag ID	Integer	5	Details
Air pollutants removed	Decimal	5	Details

create measurements

Datasheet Creator

To Project Profile

[Preview](#) [Save](#)

Datasheet Information

Datasheet name:

Instructions:
(Limit to 4000 characters)

Locations: Entered By User Predefined (not yet supported by mobile apps)

Projection: Latitude / Longitude UTM

Observation Type:

[Add Organism](#)

[Add Predefined Organism Picklist](#)

[Add Any Organism Picklist](#)

[Add Site Characteristic](#)

Organisms

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create datasheets

Stream Monitoring Field Data Sheet

To Project Profile

If this is the first time you are entering data for any specific site make sure you have already sent the latitude/longitude coordinates to Jake Lemon at jlemon@tu.org. This is the only way that you will be able to enter data for your site! If you have not sent your coordinates to Jake yet, do so now and wait for an email response that your site is officially created before you attempt to enter your data!

Date of Observation

Date of observation:


Recorder:

Comments:

Location Information

Please select a location from the list below (a marker will appear on the map to the right once selected)

Location:



pre-defined locations

To Project Profile

Date of Observation

Date of observation: July 16th 2015

Recorder: -- Select a Recorder --

Comments:

Location Information

Please either (a) enter latitude longitude coordinates below **from the GPS unit** you used, or (b) click on the map to the right and/or enter an address in the search box to determine and provide an approximate location for your observation.

Search: Address, City, Landmark **Locate**

Name: Lake 1

Datum: WGS_84

Latitude¹: 43.802819

Longitude²: -90.043945

Accuracy³ (meters): 627750



¹ Latitude; data must be in decimal degrees and should contain at least 5 decimal places. (Example: 41.99999)

² Longitude; data must be in decimal degrees and should contain at least 5 decimal places. (Example: -72.99999)

³ Approximate uncertainty of your GPS unit in meters. Please enter accuracy information from your GPS unit or use the pre-populated value if using the map to obtain an approximate location.

Organisms

opportunistic locations

Photo file ('jpg' or 'png'): No file selected.

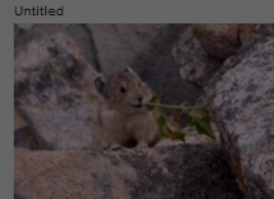
Photo file ('jpg' or 'png'): No file selected.

Front Range Pika Project

91 members | 238 observations | 232 locations | 4,243 measurements

Project Manager: Amy Masching [Email Amy](#)

Description: A citizen science effort to gather baseline data on the current distribution of



By Joe Leahy

Add File

Browse to a file and then click 'Upload'

Tab-delimited text file (.txt): No file selected.

View Data

Submit

Front Range Pika Project(1)

New Datasheet

Data File Uploads

[?](#) Please [contact us](#) or click [here](#) for file upload instructions.

Enter Data

bulk upload legacy data

Observation Details

To Project Profile



Observation Details

Date: September 7th, 2015
Recorder: Thomas Epling
Location Details: LITTRI002
Latitude: 38.5395
Longitude: -79.7282
Accuracy:
Survey Type: Point
Project: Trout Unlimited WV-VA Water Quality Monitoring Project
Data Source: Datasheet inserted from Thomas Epling on September 8th, 2015
Comments: Clean, littler traffic on highway, quiet, mosquitoes bothersome, saw a Great Blue Heron upstream, about 50 yards.



Weather: Sunny

Precipitation Last 48 Hours: None

Stream Flow: Low

Water Condition: C

Conductivity: 61.6

Water pH: 6.5 pH Units

view data



Details of "BOYDRU001"

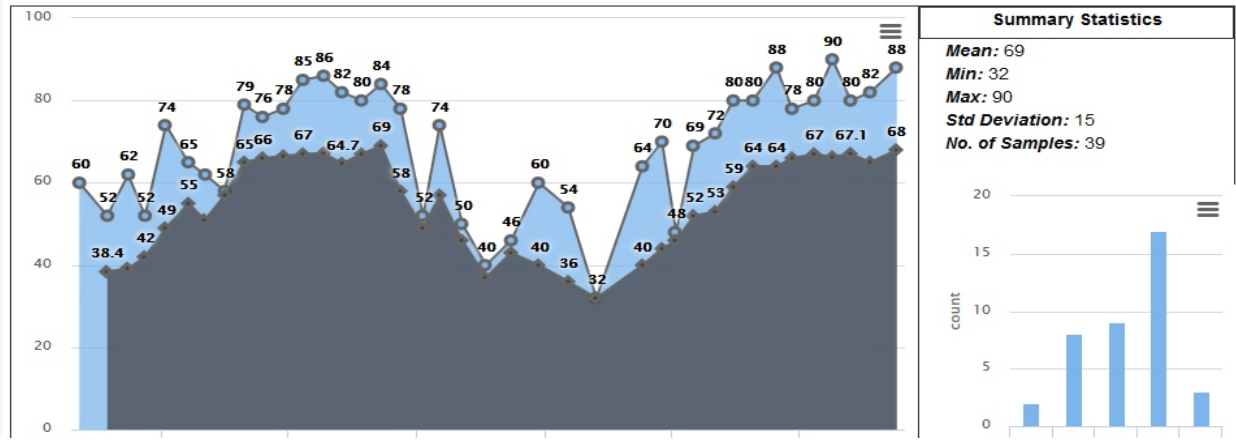
To Project Profile

Name: BOYDRU001	
Project: Trout Unlimited ...	
Latitude: 39.498211	
Longitude: -79.875381	
Accuracy (meters): 0	

Trends at "BOYDRU001"

Site Characteristics

Measurement 2 of 6 Measurements selected



analyze/visualize data



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view data on maps



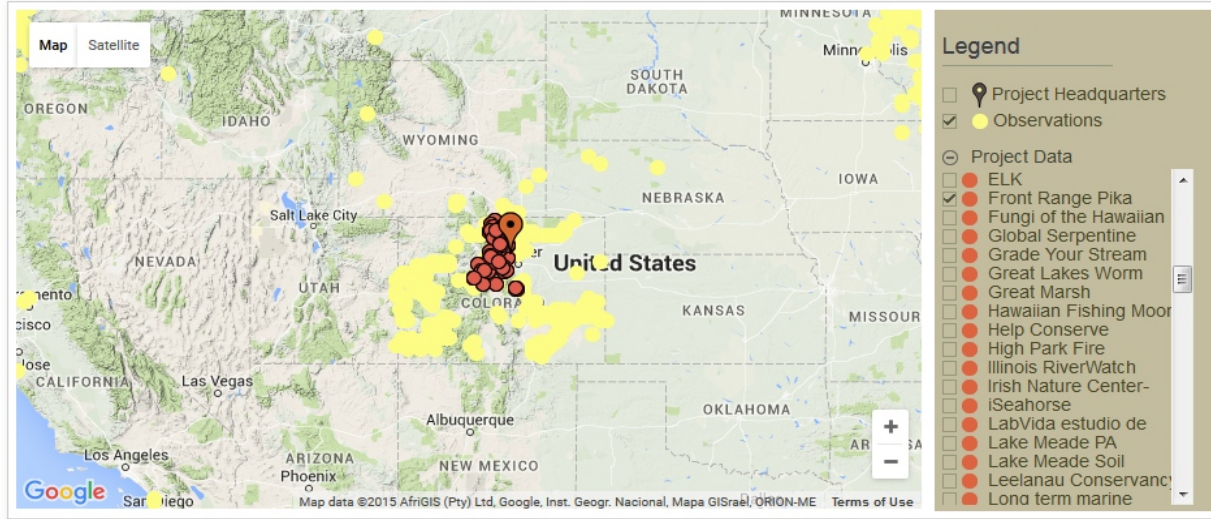
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spatially query data



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Trout Unlimited Coldwater Conservation Corps Water Quality Monitoring

107 members | 4,879 observations | 441 locations | 48,295 measurements

Project Manager: Jacob Lemon
Description: Monitor the impact of Marcellus Shale gas development on the statewide water resources



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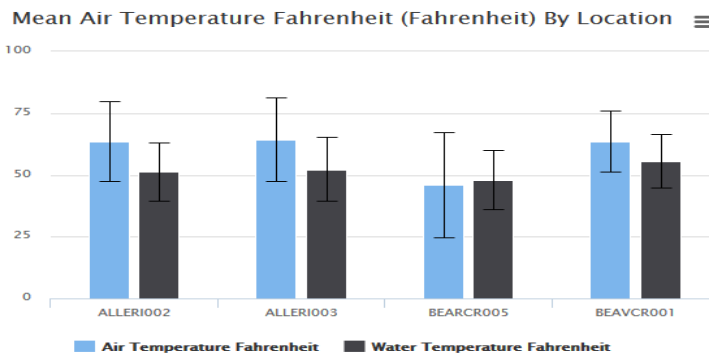
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Comparisons

Select measurements and locations to visually compare their mean (average) values.

Measurement:
Locations:



make comparisons

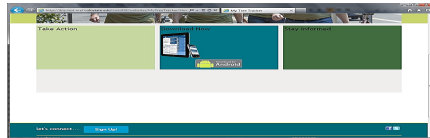


Microsoft Office application interface showing a slide deck with slide 73 selected. The interface includes a ribbon with 'File', 'Home', 'Insert', 'Design', and 'Transitions' tabs. A 'Feedback' button is visible on the right side of the slide deck.

CitSci.org website interface. The header includes the logo and navigation links: Home, About, Projects, Maps, Features, Outcomes, Get Started, What's Being Measured. The user is logged in as 'Greg' with a 'Logout' and 'My Profile' link. The main content area shows 'Project Details' and 'Team Members' sections. A 'Feedback' button is present on the left. The central feature is a scatter plot titled 'Water Temperature Fahrenheit Versus Total Dissolved Solids Parts per Million by location and date'. The Y-axis is 'Total Dissolved Solids Parts per Million' (ranging from -200 to 800) and the X-axis is 'Water Temperature Fahrenheit' (ranging from 30 to 80). The plot shows a positive correlation between temperature and dissolved solids. A legend indicates 'Series 1' with red dots. A 'Manage Tabs' button is located below the chart. The footer includes a search bar and navigation icons.

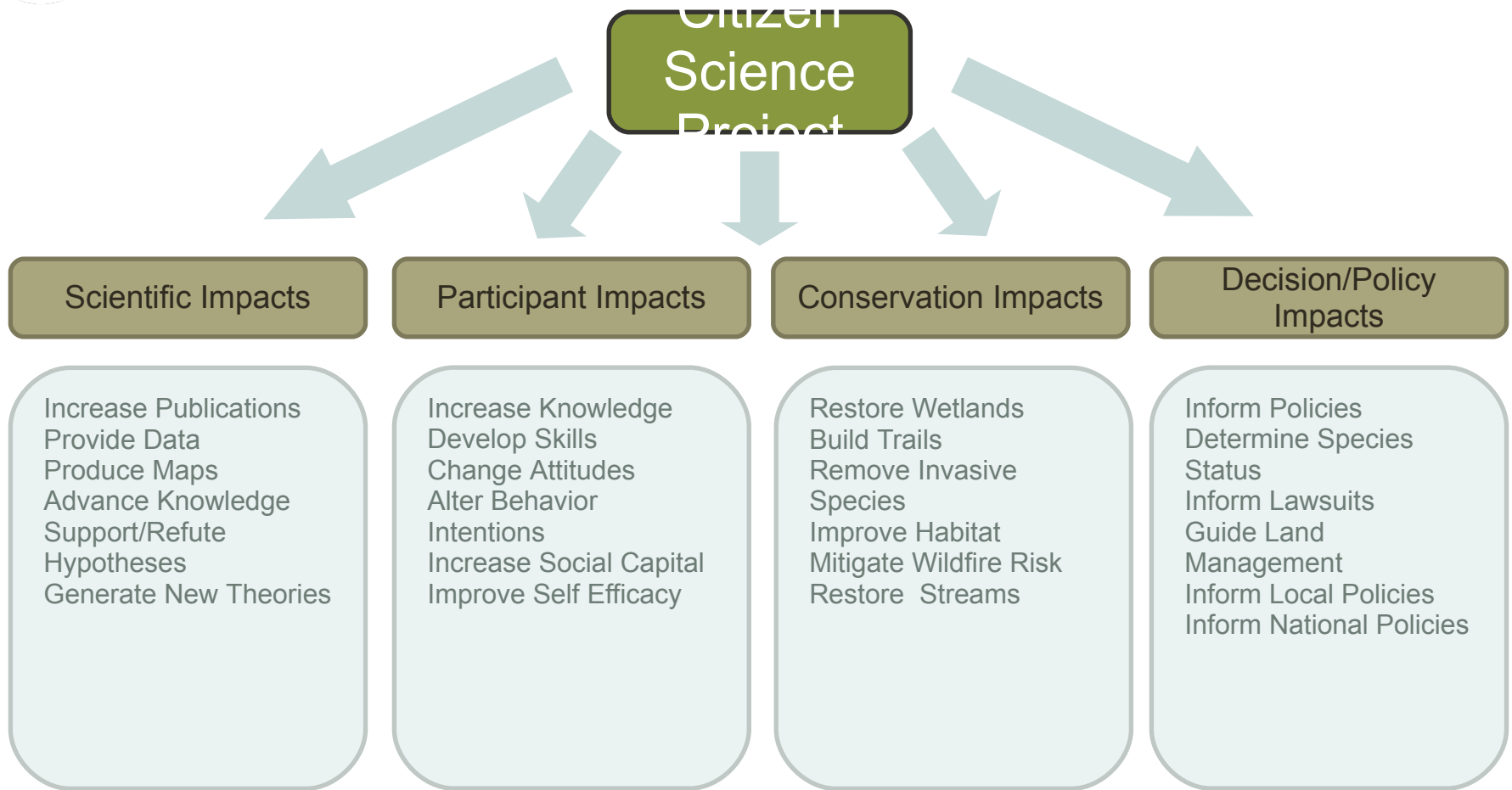
view relationships

make mobile observations





Impacts of Citizen Science

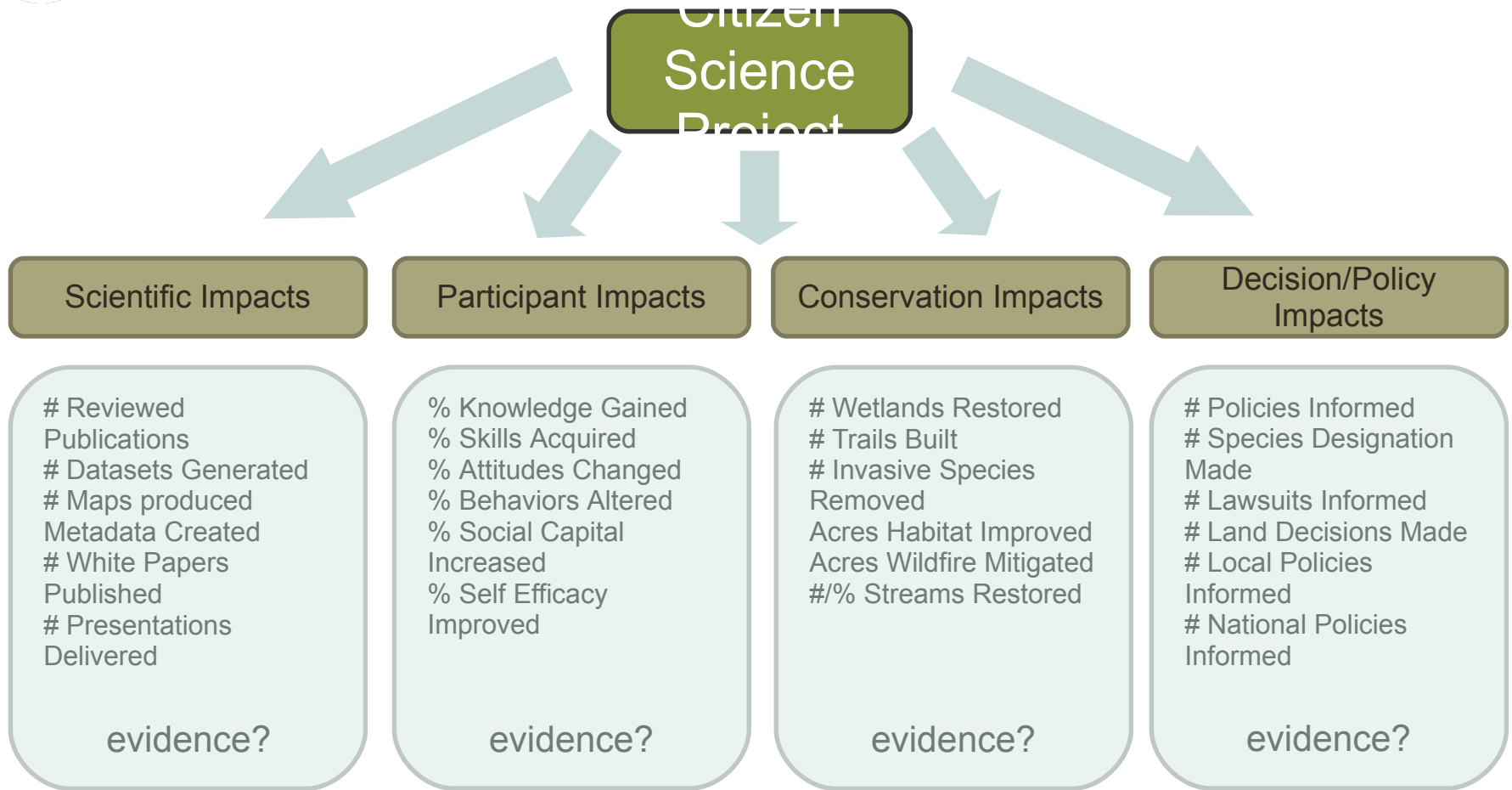


trustworthiness? quantity? quality? accessibility? appraise-ability?





Evaluation of Citizen Science



Pre-Post Surveys / Mixed Methods / Quantitative Statistics / Web Analytics



amplify impacts?

participants
scientists
sponsors
communities
designers
decision-makers

