



Rotary Citizen Science Challenge: Cultivating NexGen Citizen Scientists to Build Stronger WASH Communities

Planning Brief for Symposium Breakout
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In Collaboration with the Colorado State University Cit.Sci.org Group

For Presentation to
The Rotary District 5450 WASH Committee
Monday 9Sept19

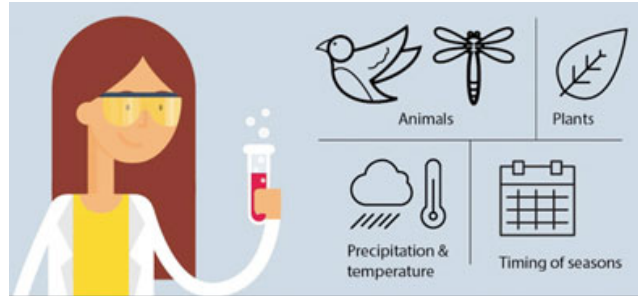
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A) Rotary Citizen Science Challenge Proposed Project Concept

- 1) Rotary prototype project to enable NexGen citizen scientists to participate in on-going WASH projects at home and abroad
- 2) Take an inclusive, broad view to document watershed conditions, history, and opportunities for restoration of water quality and quantity
- 3) Pace activities to culminate in a one-month "Watershed Blitz" between World Water Day (March 22) and Earth Day (April 22) 2020
- 4) Incorporate existing STEM/STEAM via sources like www.projectwet.org and www.earthecho.org

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B) Citizen Science?



Citizen Science is scientific research conducted, in whole or in part, by amateur scientists – Wikipedia

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Citizen Science?

Citizen science occurs when people like you help conduct real scientific research. By participating in citizen science projects, you can contribute to our understanding of the world and make it a much better place – www.citizensciencecenter.com



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Citizen science enables people from all walks of life to advance scientific research – www.scistarter.org:

- 1) Anyone can participate in real science
- 2) Participants use consistent protocol so data can be combined and is of high quality (defensible)
- 3) Data can help real scientists come to real conclusions supporting real decisions in real programs
- 4) A wide community of scientists and volunteers can work together and share data to which everyone has access

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Scistarter is a good place to start, connect with on-going citizen science projects

The screenshot shows the Scistarter website interface. At the top, there is a navigation bar with the Scistarter logo and the tagline "Science we can do together." Below the navigation bar, there is a search bar and a "Find more projects" link. The main content area features a project titled "EarthEcho Water Challenge" with a "Like" button showing 15 likes. The project details include:

- PRESENTED BY:** EarthEcho International
- GOAL:** Collect and share global water quality data while inspiring action to protect
- TASK:** Monitor local water quality, share data, and take action to protect water
- WHERE:** Global, anywhere on the planet
- DESCRIPTION:** The EarthEcho Water Challenge is an international program that empowers citizen volunteers to monitor their local water bodies. An easy-to-use test kit enables anyone to sample local water bodies for basic water quality parameters: temperature, pH, clarity (turbidity), and dissolved oxygen. Participants share their data through the EarthEcho Water Challenge database, contributing to our global understanding of the state of our world's water resources, and use their findings to help guide projects/actions to protect their local waterways.
- HOW TO GET STARTED:** Take part in the EarthEcho Water Challenge through three easy steps:
 1. Visit www.monitorwater.org to learn more about the program and, if needed, order your EarthEcho Water Challenge test kit at: <http://www.monitorwater.org/order-kits>. Use your test kit to collect water quality data from a local water source in your community (ocean, lake, bay, stream, river, wetland etc.)
 2. Share your water quality data through the EarthEcho Water Challenge database at www.monitorwater.org.
 3. Armed with knowledge about your local water resources, use the information and tools available at www.monitorwater.org/protect to help improve the health of your local waterways.

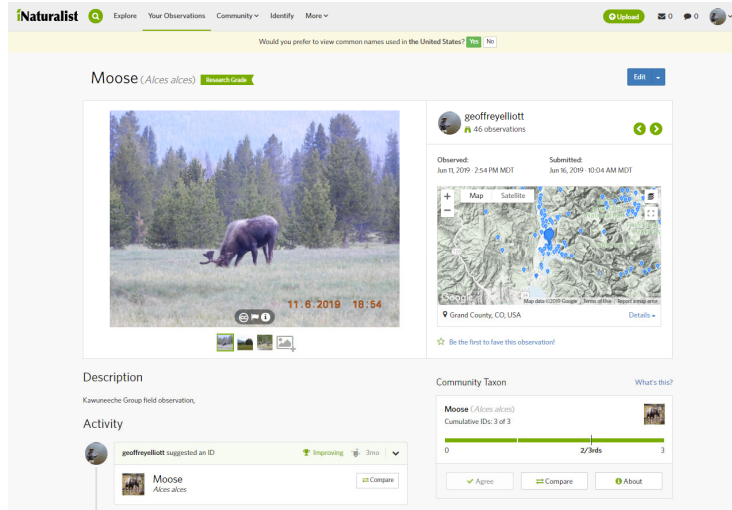
Below the project details, there is a "SOCIAL MEDIA" section with icons for Facebook, Twitter, and YouTube. On the left side, there are buttons for "Off-site Project", "Visit Project's Website", "Save to Review Later", and "Share". At the bottom left, there is a "Projects You May Like" section with three project cards: "GLOBE Observer: Clouds", "Stream Selfie", and "TreeSnap".

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iNaturalist – highly structured to document global biodiversity (now 26,000,000 Observations)

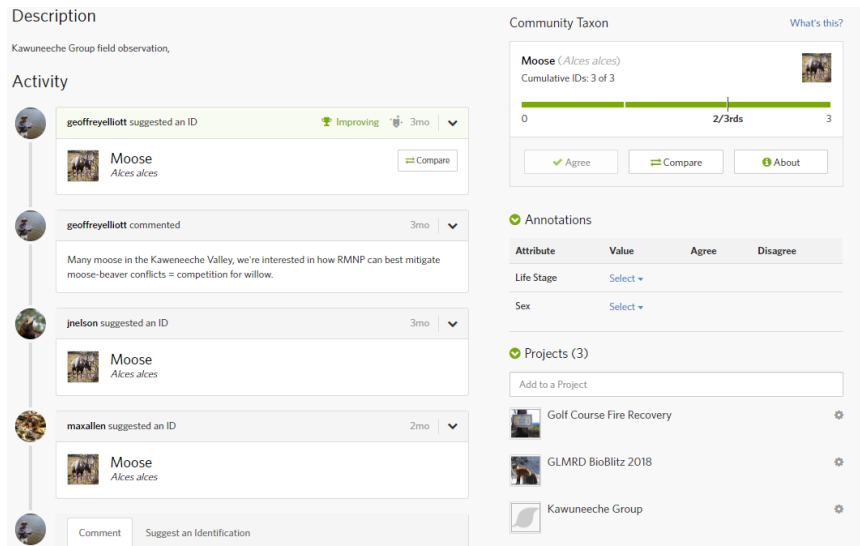


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iNaturalist – more on my moose observation













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iNaturalist – more on my moose observation

✓ Top Identifiers of Moose

 maxallen 4413	 calebcam 798
 jwidness 632	 brucebennett 353
 aguilita 259	 john8 248
 clint_perkins 232	 ck2az 222
 jasonrgrant 200	 napoleon1799 185

✓ Copyright Info

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














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iNaturalist – more on my moose observation

✓ Data Quality Assessment

Quality Grade: Research

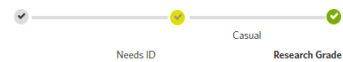
The [data quality assessment](#) is an evaluation of an observation's accuracy. Research Grade observations may be used by scientists for research. Cast your vote below:

Research Grade Qualification	Yes	No
 Date specified	✓	
 Location specified	✓	
 Has Photos or Sounds	✓	
 Has ID supported by two or more	✓	
 Date is accurate	✓ 	
 Location is accurate	✓ 	
 Organism is wild	✓ 	
 Evidence of organism	✓ 	
 Recent evidence of an organism	✓ 	
 Community Taxon at species level or lower	✓	

Based on the evidence, can the Community Taxon still be confirmed or improved?

Yes No, it's as good as it can be

Inappropriate content? [Flag As Inappropriate](#)



This observation is Research Grade! It can now be used for research and featured on other websites.


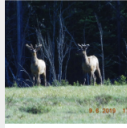


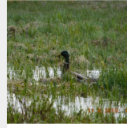

This observation is featured on 1 site



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iNaturalist – more on my moose observation

More from geoffreyelliott View: All - June 11, 2019 - Calendar

 Canada Goose <i>Branta canadensis</i>	 Wapiti <i>Cervus canadensis</i>	 Water Sedge <i>Carex aquatilis</i>	 Tea-leafed Willow <i>Salix planifolia</i>	 Mallard <i>Anas platyrhynchos</i>	 Unknown
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Nearby observations View All Observations of relatives View All

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iNaturalist Upload

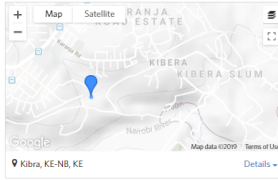
Would you prefer to view common names used in the United States? Yes No

Human (*Homo sapiens*) Follow



mamamaji
19 observations


Observed: Mar 20, 2018 - 10:26 AM +03:00 Submitted: Mar 21, 2018 - 1:17 PM +03:00



Kibera, KE-NB, KE

Be the first to favorite this observation!

Activity

- cmcheatle suggested an ID Improving 1y
-  Human
Homo sapiens Compare Agree
- jakob suggested an ID 1y

Community Taxon What's this?

Human (*Homo sapiens*)
Cumulative IDs: 3 of 3

0 3

Agree Compare About

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This screenshot shows an iNaturalist observation for 'Human (*Homo sapiens*)' with a 'Casual' status. The observation includes a photo of a man standing near a dam. The user 'mamamaji' observed it on Mar 22, 2018, and submitted it on Mar 23, 2018. The location is Kilome, KE-MK, KE. The 'Community Taxon' section shows a progress bar for 'Human (*Homo sapiens*)' with 'Cumulative IDs: 3 of 3'. The 'Activity' section shows a suggestion from 'kookamongus' to improve the ID, with the comment: 'I'm pretty sure "water over kathingung dam" is not an organism'. The footer text is 'Rotary Citizen Science Challenge * September 9, 2019' and the page number is '13'.

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This screenshot shows an iNaturalist observation for 'Green Algae (Phylum Chlorophyta)' with a 'Needs ID' status. The observation includes a photo of a man in a yellow shirt holding a glass of green liquid. The user 'mamamaji' observed it on Mar 20, 2018, and submitted it on Mar 20, 2018. The location is Nairobi, Nairobi, Nairobi, KE. The 'Community Taxon' section shows a message: 'The Community ID requires at least two identifications.' The 'Activity' section shows two suggestions from 'geoffreyelliott' to identify the organism, with the first marked as 'ID Withdrawn' and the second as 'Leading'. The 'Annotations' table is empty. The footer text is 'Rotary Citizen Science Challenge * September 9, 2019' and the page number is '14'.

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www.citsci.org (CSU) tools to build custom citizen-science platforms now 820 projects, 1,062,856 observations

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Date	Location Name	Latitude	Longitude	Photo	Created Date	Options
Aug 15, 2019	KGroup TR Road Curve	40.408847	-105.843559		Aug 17, 2019	View Delete
Aug 10, 2019	KGroup KValley from Fairview Curve	40.39933	-105.835204		Aug 11, 2019	View Delete

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www.CitSci.org – rePhoto Kawuneeche*
Re-photographing historic images to develop watershed baseline



See also rePhotoSA – The repeat photography project of southern African landscapes at rephotosa.adu.org.za

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www.CitSci.org – rePhoto Kawuneeche
Original circa 1952 – note beaver dams across entire valley



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www.CitSci.org – rePhoto Kawuneeche
August 2019 only relic ponds remain



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www.CitSci.org – rePhoto Kawuneeche*



See also rePhotoSA – The repeat photography project of southern African landscapes
at rephotosa.adu.org.za

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Kgroup Willow Blitz August 2019
Transect 4: Colorado River Trail



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Kgroup Willow Blitz August 2019



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Kgroup Willow Blitz August 2019
Transect 3: Beaver Ponds Picnic Area

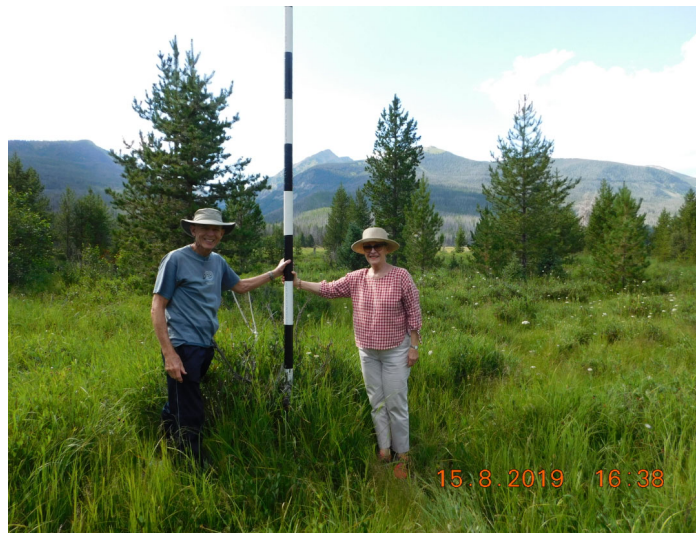


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Kgroup Willow Blitz August 2019
Transect 2: Bowen-Baker Trail



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Project WET
Water Education for Teachers

Project WET and the UN SDGs

Water is the "blue thread" that connects all 17 UN Sustainable Development Goals. Water education strengthens that thread.

[Learn more](#)

1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS	SUSTAINABLE DEVELOPMENT GOALS

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Project WET (Water Education for Teachers) readily available

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Project WET: Macroinvertebrate Mayhem



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Watershed KidZone for Local Events



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Watershed KidZone for Local Events



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C) Symposium Breakout – WASH into Watersheds

- 1) Open forum to explore how Rotary can support and guide NexGen WASH through citizen science, both at home and abroad
- 2) Identify citizen-science teams and what we want to explore (Research Q)
- 3) Collect best practices
- 4) Consider funding needs for robust citizen science programs
- 5) Identify some WASH Citizen Science projects to carry forward for a Watershed Blitz March 22 to April 22, 2020

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WASH into Watersheds – Some questions to explore:

- a) What's in my water?*
- b) What bird is that?*
- c) Could beaver populations rebound in the Kawuneeche Valley?*
- d) How can we restore our watershed to recharge our aquifers?*
- e) Can we clean up dirty streams? And how will we know if it's clean?*

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D) Timeline Concept

5Oct19	7Oct19 to 21Mar20	22Mar20* to 22Apr20*	May- June 2020	Next Rotary Year
Symposium Breakout Kickoff				
	Project development, citizen science teamwork, communications, mentorship, blitz workplan			
		Watershed Blitz		
			Lessons Learned	
				Phase 2?

*World Water Day March 22, 2020; Earth Day is April 22, 2020

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E) Team Structure

1. Project Champion
2. Education
3. Communications
4. Education
5. Mentors
6. Funding
7. Other?

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E) Prototype Structure for Watershed Assessment

1. H2O Yes/No? – most basic = water where, when, variability
2. Water Quality
3. Riparian:
 - a) Vegetation
 - b) Soils
 - c) Hydrology
4. Land use
5. Etc...

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References and Contacts

- www.rotary.org/en/our-causes/providing-clean-water
- Earth Challenge 2020: www.earthday.org/campaigns/earthchallenge2020
- Earth Echo International: www.earthecho.org
- www.projectwet.org
- www.H2Oforliveschools.org
- Colorado State University, Natural Resources Ecological Laboratory, Citizen Science program at www.citsci.org
- www.nps.gov/room/learn/scienceresearch.htm
- www.citizenscience.gov

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