Exploring the potential for place-based citizen science to advance conservation: lessons learned from Alberta case studies

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The Miistakis Institute is a not-for-profit, charitable, applied research institute affiliated with Mount Royal University.

Our goal – a world where communities have genuine access to the science and research they need to make choices that promote healthy landscapes.

Our work – make innovative research accessible to communities and decision makers.
Lessons

1. Address the inherent tension that exist between citizen engagement and science goals

2. Ensure the diversity of skill sets required for successful program design

3. Get the technology right

4. Establish data quality and validation components

5. Ensure the data need is appropriate for citizen science

6. Invest adequate resources to ensure program implementation
1. Addressing the inherent tensions that exist between citizen engagement and science goals

- Each requires a specific methodology, expertise and evaluation
- Realizing one may compromise the other
- True value of citizen science comes from the marriage of scientific goals and citizen engagement goals
- One doesn’t take priority over another
CALL OF THE WETLAND

Calgarians understanding urban biodiversity in their city by monitoring amphibians.

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Canadian Toad  Wood Frog  Boreal Chorus Frog
2. Ensure the diversity of skill sets required for successful program design
3. Get the technology right

- Technology can enhance citizen science data collection
- An app is not a citizen science program
- Technology needs to be driven by the goals of the program
- You get one shot – need to get it right
Case Study: Building UX Design into Citizen Science Applications

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Abstract. Citizen science is the engagement of the public in science or monitoring to address real world problems. Citizen science programs have the ability to provide excellent data for researchers at large spatial and temporal scales. Advancements in technology has resulted in a proliferation of citizen science programs and many are dependent on website and smartphone applications to facilitate data collection, data usability and communication of results. Citizen science applications need to be developed so that they are easy to use and any interface issues identified and resolved before release. Usability reports during the development cycle provide evidenced-based prioritization recommendations. In this paper, two case studies are presented. The Call of the Wild application involved the testing of a high fidelity prototype to collect data on work flow and ease of use. The Wild Watch application provided data on task success and SUS scores that supported release readiness. Both projects continue to have improvements identified based on usability testing.

Keywords: Citizen Science, usability testing
4. Establish data quality and validation components

- Iterative project development
- Volunteer training and testing
- Expert validation
- Replication across volunteers
- Statistical modeling of systematic error
Training

Amphibian Identification

- Chorus Frog
- Wood Frog
- Tiger Salamander
- Canadian Toad
- Western Toad
- Leopard Frog

Call of the Wetland

Chorus Frog

1. Dark stripe runs from snout through eye, then down along flank to groin
2. Background colour range: Grey, Brown, Green
Quality Control
Playing amphibian call...

Chorus Frog

SOUND RECORDING BY:
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Observation Form 2 of 2

Attach a photo
(optional)

Attach a sound
(optional)

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5. Ensure the data need is appropriate for citizen science?

- Not every science need can be addressed by citizen science
- Is the data need interesting to volunteers?
- Is the methodology appropriate for volunteers (too technical, requires advanced training)
- Is it too onerous?
- Is it engaging?
6. Invest adequate resources to ensure program implementation

- Citizen science costs money
- Citizen science takes investment of time
By building public knowledge about environmental issues and their causes and providing opportunities to engage in these issues, place-based citizen science projects have the potential to support environmental monitoring and decision-making in Alberta and enhance conservation outcomes.