

# Workshop Report:

## Developing a Citizen Science Framework for the U.S. Fish & Wildlife Service

---

Workshop Held: May 27 – 29, 2015  
Ft. Collins, Colorado

Report prepared by: Consensus Building Institute, Inc.  
Under Contract to the US Institute for Environmental Conflict Resolution

### About the Workshop

The Consensus Building Institute Inc. under contract to the US Institute for Environmental Conflict Resolution convened this workshop May 27-29, 2015, in Ft. Collins, Colorado. The US Fish & Wildlife Service (FWS) is developing a framework to support the design of citizen science programs at wildlife refuges. About 20 people from the FWS and other organizations participated in the workshop. The workshop was an opportunity for an in-depth exploration of issues, opportunities, tools and components related to developing a citizen science framework for the FWS.

#### The desired outcomes for the workshop were:

- ✓ Recommendations on citizen science framework best practices, resources, and tools
- ✓ Deepened understanding of unique-to-the-FWS considerations for implementing the framework
- ✓ Clarity on next steps and action plan with assignments for moving forward the framework

The Consensus Building Institute was tasked with facilitating the workshop and producing a workshop summary report. In preparation for the workshop, participants reviewed the summary of the Consensus Building Institute's [Neutral Assessment](#) and the Cornell Lab of Ornithology's [Independent Science Review](#) presentation and report.

The primary audience for the framework is FWS staff who would like to develop a citizen science project independently within the Service or with a partner organization or refine an existing citizen science project. The intent is to provide resources on design, best practices, and choices for FWS field staff, and the people who support them. Staff who will use the framework will come from different disciplines, including inventory and monitoring, refuge managers, volunteer managers, community engagement staff, biologists, etc.

### Companion Framework Document

In addition to this report, a draft Framework is the primary outcome of the May 2015 workshop and is appended to this report. The US Fish & Wildlife Service intends to continue refining the framework to publish it to support the work of staff in realizing citizen science.

The FWS organized a core team including five interdisciplinary staff that have provided leadership on citizen science framework development. At the beginning of the workshop, three of the core team members who were able to attend articulated the following **Intentions, Goals and Outcomes**. The Core Team would like to:

- Use Citizen Science information to influence and support management decisions
- Develop best practices and a framework to test/pilot at a refuges in the future
- Provide useful and sufficient resources for field staff at refuges
- Help establish data and education protocols to support science literacy
- Use Citizen Science to help citizens develop a commitment to conservation
- Support parks and refuges in designing meaningful programs
- Identify tools that are useful and interactive and give people a starting point through the steps/components to successfully complete a project

Participants suggested that Citizen Science could help create advocacy in local communities for conservation and awareness of impacts surrounding FWS parks and refuges. Citizen Science can also help keep citizens connected to the use of the data and realize that their contribution was meaningful.

## Workshop Sessions

On the first day, the group spent the morning reviewing background work and discussing definitions and the purpose of the framework. In the afternoon, the group had a series of small group discussions on Citizen Science components outlined in the Independent Science Review with special attention to considerations / key questions and best practices. The group reviewed the outcomes of those sessions the next morning. The facilitation team created a straw proposal, based on the input from day one, with the core team on the morning of day 2. After some revisions, workshop participants begin refining and improving the straw proposal for the framework, including thinking through a potential project scenario using the framework. The Consensus Building Institute team then incorporated all the insights from the afternoon session and prepared a draft framework for review on the final morning. The group spent the final morning further reflecting on the draft framework, reviewing the criteria identified for the framework, and planning next steps to bring the framework to fruition.

## Defining Terms and Criteria for a Framework

### Definitions

USGS proposed citizen science:

Citizen science is a process that encourages public participation in scientific investigations and applications.

From the Independent Science Review:

The term citizen science describes partnerships between the public and professional scientists to understand and address questions and issues of common concern. Usually when people refer to citizen science they mean projects for which members of the public create, collect, categorize, transcribe, or analyze scientific data.

Federal Community of Practice has another definition:

A form of open collaboration for members of the public participate in the scientific process to address real world problems, develop technologies, solve complex problems...”

**Abe Miller-Rushing** from the National Park Service talked about engagement with citizen science at the Acadia National Park that is driven by the dual needs of science and public engagement. The Park Service needs science to inform decisions, especially in this time of rapid change. There is no part of the park’s operations that is not disrupted by these changes, and the park cannot achieve its mission without adequate science and without effective communication of that science. Abe believes that the Park Service must engage the public in science. People are affected by environmental changes as much as the park is, and their participation is essential to minimizing and responding to the changes.

The group decided to defer the exact wording for the definition charging the FWS core team with the task of developing a specific definition. Workshop participants identified the characteristics that they would like a definition to encompass:

- Citizen science is a research, education, and conservation tool
- Citizen science is a tool to connect people to FWS mission to conservation
- Engagement – definition should be about science and engagement and education
- Gathering data to *understand* something, not just address it.
- Encompasses different scales
- “Public” refers to many publics, propose to make it more specific, yet inclusive of everyday people, experts, students, etc.
- Multi-disciplinary staff must be able to “see” themselves in the definition

## Framework

A framework is a guide and roadmap. It provides the questions and considerations for developing a citizen science project. (A project could use an existing citizen science activity or campaign that would work.)

### Framework Criteria

The group identified the following criteria that a successful framework would encompass:

- Support FWS Mission and Goals (USGS has this as the #1 priority)
- Grassroots – driven by needs of the field and/or programs
- Specific to the FWS
- Provide a vision and connection across refuges and programs
- Make the business case for upper management (cost-benefit)
- Attempt to quantify time and resource requirements
- Measure effectiveness
- Tangible for the user
- Comprehensive and understandable
- Short, not overwhelming
- Address scale (micro to global)
- Consider partners and LCCs and draw on partnerships with equity, collaboration, relationships, expectations
- Communicate to external partners and identify shared goals
- Able to share protocols with other agencies

## Scale

The group discussed the importance of thinking about scale when developing a project or thinking about Citizen Science. The graphic to the right captures the scales discussed in one small group.

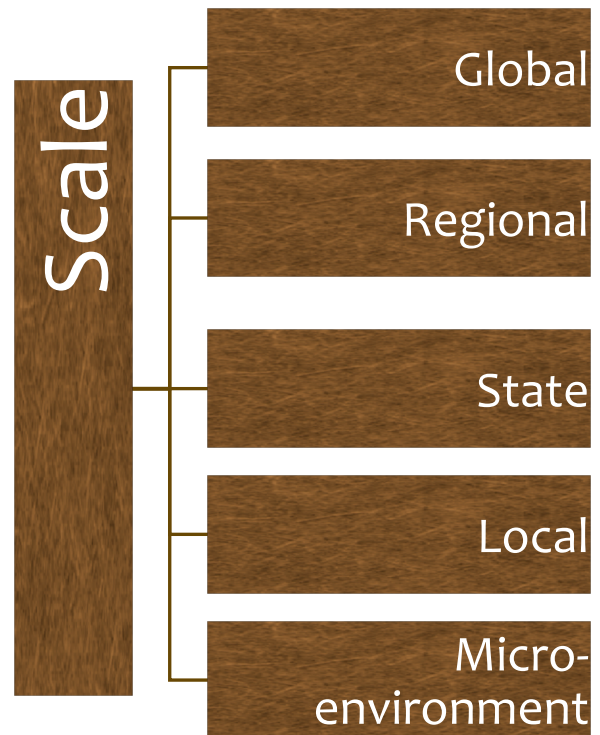
## Data Management

Visiting Contributor

Jake Weltzin, US Geological Survey and  
National Phenology Network (via phone)

A key element of designing a citizen science effort is to evaluate the question: **for my purpose, what's the standard for data?** What kind of citizen science might work for the organizer's needs?

And, what types of data are necessary to meet the requirements of the program and how to manage quality control? Jake Weltzin shared several unpublished frameworks that he is developing to forward group thinking. A key take-away that the group recommended integrating into the framework was the standard for data. Jake and his colleagues' yet-to-be published model thinks about data standards as legal, professional, and local.



Other insights from the conversation included the following.

Effective data management can help people gain an understanding of "who is doing what" across the FWS (i.e., by cataloging projects, etc.).

When looking at data for citizen science, start with what is already available - if there is nothing or not enough data then build from there, but first leverage what exists.

It is valuable to citizen science to think about partners and what they can do (even if there is not a lot of existing data), there can be complimentary interests between these organizations and FWS. Leveraging partners can provide significant mutual benefit.

Helping Visitor Services staff to understand the importance of data quality and metadata (they might not have an understanding of the importance or value) would be very valuable and contribute significantly to efforts.

Bringing data up to the 'professional' level provides a lot of value, for a variety of reasons such as being able to use the data across efforts, for it to be scientifically valid and useful, etc.

The best clearinghouses for databases online are:

- Citsci.org
- Scistarter.org

## Working with Sister Agencies

### Workshop Participants

Duncan McKinley, Forest Service  
Allison Parker, US Environmental Protection Agency  
Dave Govoni, US Geological Survey

### Visiting Contributors

Abe Miller Rushing, National Park Service (via phone)  
Michelle Tamez, Forest Service (via phone)  
Daniel Silvas, Ecosystem Management and Coordination, Forest Service (in the room)  
Bruce Meneghin, Ecosystem Management and Coordination, Forest Service (in the room)

## Opportunities for Working Together

Workshop participants focused on understanding what other federal agencies were working on and thinking about synergies or opportunities for partnering. One person observed that much of the partnering is ad hoc, based on personal relationship. The framework might provide an avenue to improve coordination. Participants identified the following opportunities around participating in communities of practice, sharing protocols and databases, joint research, lessons learned, joint training and capacity building.

### ➤ Communities of Practice

Those interested in citizen science should consider joining or participating in different communities of practice, specifically the **Federal Community of Practice** and the **USGS Community of Data Integration**. The **Citizen Science Association** and Federal Community of Practice may want to forge a joint venture or partnership so federal agencies and the association can reflect on best practices and insights.

### ➤ Shared Protocols & Databases

### ➤ Research

- With an all lands approach, partnering could help agencies address scale
- Creating a pilot on issues that all the agencies are thinking about, such as climate, monarchs, etc., would be a great opportunity.

### ➤ Proximity

Because many lands are in close proximity, federal agencies have overlapping communities and visitors. The agencies might want to think about the opportunities that this provides for citizen science.

### ➤ Communication

It would be helpful to learn from each other on how to talk to others about citizen science, including demonstrating value to leadership.

### ➤ Capacity and Training

- Look for opportunities to share case studies
- FWS and NPS have had success sharing training for professional development because they have so many shared training needs.

## Success Stories / Case Studies

The FWS is looking for success stories as case studies that are illustrative of framework considerations, including drivers (what brought you to citizen science, what did you want to accomplish). To create some success stories and anecdotal information, the FWS Core Team will (a) develop a matrix with audience and categories and (b) create an inventory of FWS case studies.

The group recommended developing a sampling across project types that might include:

- Co-created (joint ownership)
- Collaborative (input on design)
- Contributory (developed and then consulted)

When developing a list of case studies, the core team might want to consider who could serve as ambassadors to champion and mentor citizen science and the FWS framework. Participants also suggested soliciting high-level inquiry (just a few variables to identify projects) of who's doing what across FWS.

### Potential Projects

- The Sea Net Beach Bird Projects, done by the Migratory Bird Program (suggested by Wendy Stanton)
- May Flies

### Additional Resources

- National Phenology Network has a website for FWS partners
- Federal Community of Practice has a template for case studies and a collection of case studies that FWS can leverage
- The Wilson Center has an accessible database for all federal projects that FWS (and others)

## Pilot

The intent of the pilot is to test, vet, inform and refine the FWS citizen science framework. Some potential criteria to consider for piloting the FWS citizen science framework once it is further developed are:

- Consider having multiple pilots that involve vetting the framework's usefulness in developing potential project ideas
- Look at pilot projects by type (co-created, collaborative, and contributory) and topic (wildlife, fire, etc.) to see how the framework works across projects
- Select both enthusiastic, early adapters as well as skeptics and resisters to participate in pilots
- Consider any political criteria or advantages for selecting specific projects for piloting

### “Vet” vs. “Pilot”

- Vet pieces or components of the framework with people who have specific experience and/or expertise (e.g., through peer reviews) to test whether or not elements of the framework work
- Pilot the framework from start to finish, including piloting with people/teams who do not have a lot of prior experience with citizen science, to test if end users can use the framework to generate a project from start to finish


## Next Steps for the Framework

CBI Workshop Report



CBI Follow-Up Webinar



	Core Team Lead	
<u>Track Related Efforts</u> Programs Volunteers Training Monarchs Vision – Conserving the Future Citizen Science within the FWS Urban Institute		<u>Detailed Work</u> Roadmap to Completion Communication Plan Success Stories Inventory existing FWS Citizen Science Projects
<b>Oct 31-Nov 4, 2016, NCTC</b> <i>Opportunity to Share Framework</i>		

## Action Items and Follow Up

WHO	WHAT	DESCRIPTION
Alison	Resource	DONE: Send information to the group on the Wilson Center database for all federal citizen science projects
All	Contacts	Send core team members additional contacts that should stay abreast or made aware of citizen science framework development
CBI	Contacts	DONE: Share excel spreadsheet of contacts with FWS
CBI	Report	DONE: Review workbook from workshop day 1 to incorporate best practices into draft framework
Core Team	Case Studies	Develop criteria and then identify a limited number of illustrative case studies to help staff learn about success stories
Core Team	Communication	Organize periodic contact (e.g., calls, webinars) with group of interested parties (participants of the neutral assessment and workshop and those who were invited but could not attend and want to be involved) – the first point of contact would be the webinar on the framework
Core Team	Communication	Continue to communicate the FWS citizen science framework development effort within and outside of the FWS (e.g., present to the Federal Community of Practice)
Core Team	Definition	Refine/develop definition of “citizen science” for use in the FWS framework
Core Team	Framework	Consider expanding upon the framework to include information that is specific to each of the different types of citizen science projects, respectively: co-created, collaborative, and contributory
Core Team	Framework	Keep track of other related efforts that are going on within and outside of the FWS (e.g., Volunteer Policy, Urban Initiative, Monarch



WHO	WHAT	DESCRIPTION
		Initiative, Federal Community of Practice)
Core Team	Webinar	For the Webinar with FWS participants, consider inviting members from the Federal Community of Practice
Greg	Webinar	Conduct webinar on citizen science project development
Janet	Framework	Flesh out some education and human dimensions tools (based on new insights) to enhance framework, flesh out / adapt / identify what's needed

## Workshop Participants

Janet	Ady	USFWS
LoriAnne	Barnett	National Phenology Network
Wendy	Caldwell	Monarch Joint Venture
Matt	Cloyes	USFWS, National Conservation Training Center
Maria	Fernandez	Colorado State University
Ken	Garrahan	USFWS
Taylor	Goforth	USFWS, Olympia Field Office
David	Govoni	USGS
Jana	Grote	USFWS
Maggie	McCaffrey	US Institute for Environmental Conflict Resolution
Duncan	McKinley	US Forest Service
Kris	Metzger	USFWS
Abe	Miller Rushing	US NPS, Acadia NP
Greg	Newman	Colorado State University / NREL / CitSci.org
Sarah	Newman	NEON, Inc.
Jana	Newman	USFWS
Rajul	Pandya	UCAR - Thriving Earth Exchange
Alison	Parker	USEPA
Cindy	Samples	USFWS, Upper Miss Refuge complex
Natalie	Sexton	USFWS
Jake	Weltzin	USGS - National Phenology Network



## Core Team – FWS

Jana Newman, PhD  
**National I&M Manager**  
**Natural Resource Program Center**  
**Fort Collins, CO 80525**  
**Phone: (970) 266-2922**  
[jana\\_newman@fws.gov](mailto:jana_newman@fws.gov)

**Natalie Sexton**  
Human Dimensions Branch, Chief  
Fort Collins, CO 80525  
970.266.2935  
[natalie\\_sexton@fws.gov](mailto:natalie_sexton@fws.gov)

**Stephanie Koch**  
Wildlife Biologist  
Eastern Massachusetts NWR Complex  
Sudbury, MA 01776  
office phone: 978.443.4661, x24  
[stephanie\\_koch@fws.gov](mailto:stephanie_koch@fws.gov)

**Chris Swanson, PhD**  
Wildlife Biologist  
Kulm Wetland Management District  
Kulm, ND 58456  
(701) 647-2866 (office)  
[chris\\_swanson@fws.gov](mailto:chris_swanson@fws.gov)

**Janet Carrier Ady**  
Senior Program and Policy Advisor  
Division of Education Outreach  
National Conservation Training Center  
Shepherdstown, West Virginia 25443  
304-876-7653  
[janet\\_ady@fws.gov](mailto:janet_ady@fws.gov)