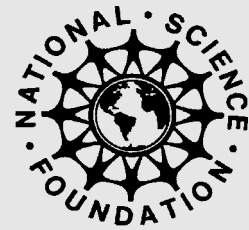


**Citizen Science  
Toolkit Conference**

June 20 - 23, 2007

group discussion on  
community building

Moderator:  
Eleanor Ely  
Editor, The Volunteer Monitor



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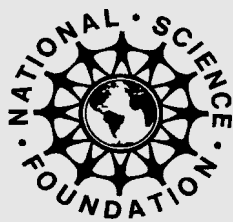
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This presentation took place at the Citizen Science Toolkit Conference at the Cornell Lab of Ornithology in Ithaca, New York on June 20-23, 2007.

This following discussion has been edited for clarity. The participant comments are not exact quotes.

Documentation of the conference is meant to serve as a resource for those who attended and for others in the field. It does not necessarily reflect the views of the Cornell Lab of Ornithology or individual symposium participants.



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The following took place on day three of the Citizen Science Toolkit Conference at the conclusion of the session titled "Community Building for Citizen Science."

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For complete documentation of conference proceedings and to learn more about citizen science and the Citizen Science Toolkit, or to join the ongoing citizen science community, go to:

**<http://www.citizenscience.org>**

# Group Discussion on Community Building

Moderator:  
Eleanor Ely, Editor,  
The Volunteer Monitor

## Involving and Motivating the Larger Community

- I am going to give most of this time to all of you for discussion, but first I will say a few words myself. The topic for this session, "Community Building for Citizen Science," wasn't necessarily that prominent for me in these talks, but here are some of the things people said that touched on the theme of "community." We heard how the Master Gardeners educate the larger community and answer questions for people. We heard about how amateur astronomy clubs are doing more teaching of the public. From the Christmas Bird Count we heard about the need to reward the community of participants who are involved in this bird count.

Right before this session, Candie Wilderman and I talked about what "community" means and how the different citizen science programs interact with the larger community, the community beyond the program participants. As I was listening to the presentations I was thinking, okay, we are talking about teaching the larger community, we are talking about teaching our community of volunteers, but what about something beyond teaching? This goes back to some of the things that Candie Wilderman and Linda Green said about actually getting the volunteers motivated to take action, to become activists.

In discussing this with Candie, we realized that certain types of citizen science lend themselves more readily to that type of community involvement than other activities. We recognized that water is something that many people in the community use for swimming or fishing, and everyone uses it for drinking. There are human health concerns there, and concerns about things like flooding. It may be a more natural medium for getting the larger community really involved and active than something at the opposite extreme like astronomy or birding.

So I guess I will just pose the thoughts that were going on in my mind: What does it mean to involve the community? Who

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What does it mean to involve the community? Who is the community? Is every type of citizen science going to be able to involve the community in the same way?  
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- Eleanor Ely

## Which Came First: Citizen Science or Community Building?

- One of the things I noted was that the topic of this session was "Community Building for Citizen Science," and I always viewed it as "Citizen Science for Community Building." - Linda Green, Program Director, URI Watershed Watch, University of Rhode Island Cooperative Extension

### The Pleasure of Stargazing vs Social / Environmental Problems

- Most of amateur astronomy is for the pleasure of the science and the pleasure of the viewing, it's not for solving any problems. Perhaps it is to answer scientific questions so that people can learn more about supernovae and what is going on with them. There are definitely some scientific questions that are being addressed, but there aren't social issues that are involved, or environmental issues beyond the loss of the night sky. And certainly the more people get out to observe and have to travel farther to find a dark area, that does motivate some of the amateur astronomers to become advocates to preserve that use of the environment. - Suzanne Gurton, Education Manager, Night Sky Network, Astronomical Society of the Pacific
- But nevertheless you have people who are willing to analyze little particles and look at 175,000 slides. - Hague Vaughan, Director, Environment Canada's EMAN Coordinating Office
  - There are a small segment who are activists. There are programs in the national parks now about preserving the night sky as one of the natural resources of that national park and they have set up dark sky monitoring stations. So there are some who have become activists about that, but it is very much a minority. Most of them don't see it as a problem to be solved but as a pleasure to be enjoyed. - Suzanne Gurton

is the community? Is every type of citizen science going to be able to involve the community in the same way? I will turn it over to you at this point. - Eleanor Ely, Editor, The Volunteer Monitor

## Problem Solvers or Pleasure Seekers

### Two Models/Types of Volunteers:

- There are two discrete groups of volunteers. One is very much based on addressing an issue, solving a problem, and that is the group I have been working with. The thought that people would go out and monitor birds for a hundred years and not have any output or any effect is just fantastic to us. How do you get these people? There are bragging rights involved, there is sociology involved. It is sort of bringing purpose to a pleasure, I think. We saw that in an earlier presentation about divers going out and surveying fish, which may give some sort of meaning to what they already love to do.

So I think the birding model, the Cornell model, may be skewed, or maybe it is something we have to integrate with ours, because the power of giving bragging rights and the pleasure of being involved is something we haven't used as effectively as we might. But it seems there are these two models, which Candie Wilderman pulled together in a very productive way. - Hague Vaughan, Director, Environment Canada's EMAN Coordinating Office

### Giving Purpose to the Pleasure

- I want to build off what Hague said. What he said about many of these programs is true in that early on there really wasn't any output. An interesting period in here is the development of the home computer, which has produced a shift. Now we are seeing much more of an emphasis on analysis, and now there is a culture that places an importance on output and we are going to see that more and more.

There is something about the participant's point of view that I know from personal experience. I started doing the Christmas Bird Count in 1974 as a kid. After a while, just going out and looking at birds, you don't have that same motivation when you are just seeing the same things over and over. These kinds of scientific activities give our passions a purpose. We really can't say that the Christmas Bird Count gave us a ton of feedback regarding how our

counts were really being used in those earlier years, though there were summaries, but I felt like I was part of something. I think a lot of people feel that just by counting fish, just by counting stars, their hobby has meaning. And now computer software is changing what can be done with those observations.

- Sam Droege, Biologist, Native Bees Survey, USGS Patuxent Wildlife Research Center

### Shifting the Motivation of CBC Volunteers

- I'd like to address a couple of comments made by Hague and Sam. There is a beauty in the process of people going out over time on Christmas Bird Counts and doing the same count every year. Initially they are only doing it because they hope they're going to see more birds than they did last year, and because they're going to see friends from last year's count. But as they are doing it for five, ten, fifteen, twenty-five years, we are starting to see changes. We're seeing birds dropping out, more robins, more bluebirds, and it starts to raise questions: What is the pattern? What is happening? Where are all the wetlands species? And that starts to raise awareness that there is something going on.

I think the challenge for the birding community (and Audubon and Cornell have been talking about this for years) is getting birders, many of whom are in it for the lists, not the birds, to shift to be into it for the birds and be concerned about how the birds are doing. Then we can use these outputs that we have, and Sam was exactly right. It is the home computer that is allowing people to have access to this incredible amount of information that is out there, and they can start asking their own questions online and either get answers to their questions or get even more concerned. - Geoff LeBaron, Director, Christmas Bird Count, National Audubon Society

### Addressing Multiple Categories of Volunteer Motivation and Needs

- In our experience we have three different main aspects in all of our different types of participant groups. We list our top surveyors in each region on our Web site, and there are people who strive to be at the top of the list for their region, so there are some people to whom that really matters. If they get overtaken, they're planning a trip to find some more fish. Having that simple list on our Web site and in our printed materials is driving that group. But that is not a whole lot of people, that is a sort of subset of a really fanatic group. They care about their individual lists also, so we have a very simple "Show Me My List"

### Competition/Ranking as Motivational/Community-building Tools

- I was thinking how absolutely brilliant it is to have lists of rankings online so that volunteers can see how others are doing. Instead of thinking about how technology has lessened community, we actually have opportunities to create communities among people participating in the project. And that is a need out there that your project is solving. I think competition is a huge motivation to get involved.
  - Sarah Kirn, Vital Signs Program Manager, Vital Signs, Gulf of Maine Research Institute
- We do that also with the Night Sky Network outreach activities, and it is called the Stars of the Night Sky Network. You click on that on our Web site and you see the rankings, but of the clubs, not of individuals. The top few clubs are very competitive, and it is fascinating to see how that little bit of competition made public encourages them to do more.
  - Suzanne Gurton, Education Manager, Night Sky Network, Astronomical Society of the Pacific

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The question is, when we serve certain motivations of people coming in, who are these people? And another question follows, who are we excluding?

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- Martin Storksdieck

on our Web site that summarizes individual data. That appeals to a far larger group of people. They don't really care how they rank against others, but they want to keep track of their own individual lists, and technology has helped fulfill that need.

Then there is a larger group, probably the bulk of them, who are motivated by having a purpose. That is what keeps bringing them back. Some of them have been diving for years and this kind of renews their passion—”Yeah, this is why I became a diver!”

Then there is a third group, though of course there are overlaps between all three groups. This third group ranges from people who have been diving a lot to relatively new divers. They are starting to notice changes. They can see that fish populations are changing, and they want to know what is happening with the data that they are collecting. We try to keep our Web site up to date, reporting back to our membership when data are used.

So we are trying to fulfill the needs of three different broad categories of divers in terms of volunteer participation. - Christy Pattengill-Semmens, Director of Science, Reef Environmental Education Foundation

- I haven't seen competition as the motivating factor. I've had folks who have been monitoring now for twenty years and this is in their free time, and it is because it has become part of who they are. And there is a certain trust level that you will be taking their monitoring data and results and it will be used to good purpose. We find that our volunteers aren't interested in socializing. They will monitor in any kind of weather. I've had to call them in because there was a hurricane coming. But if you try to get them together for a social event, it's a “No.” I always serve food any time people gather because that's what you do, but getting them together for breakfast was not a big deal for them. They do it because it's part of who they are.

In many cases we try to help our volunteers increase their community activity, so we do use volunteers as a stepping stone to community activity, but we also know that we need to honor people who want to monitor but would rather die than go and speak in front of a town council. And we have to engage people who think that monitoring is the most boring thing they've ever done in their life, but they are so alarmed by the results that they will take those results and they will run with them. So there is a whole different sociology

involved in trying to work with all of those different needs. What we haven't tried is going the competition route to see if that works. - Linda Green, Program Director, URI Watershed Watch, University of Rhode Island Cooperative Extension

## A Mismatch in People-Project Characteristics

- To get back to what Martin was saying about excluding people from projects, when we designed a smaller project looking at birds migrating through Milwaukee County, the people who wanted nothing to do with it and showed no interest were the listers. They didn't want to spend time in areas that they knew wouldn't have birds they wanted to see. There are a couple of them who see the value in what we are doing in conservation, but for the most part that was pretty much an audience we realized we wouldn't get with that project. They are the ones who are doing the bird counts on a yearly basis. I think it is the competitive nature that they are into with that. - Timothy Vargo, Research Coordinator, Neighborhood Environmental Project, Urban Ecology Center

## Moving Volunteers to the Data Interpretation Step

- I agree really strongly that it has been my observation in the groups that we work with that there are people of all different types. There are people who are doing it for pleasure, for scientific knowledge, for the fun of it; there are people who are doing it because they are really concerned about a problem and they want to see some action.

What I would like to encourage all models to do is spend some time thinking about how to train the volunteers to actually do some interpretation of the data. That is something that is really challenging and difficult to do. From what I can tell on some of these projects, they don't know what questions they're asking, they don't even care, they just want to go out and do the data collection, which is fine. But if you could sort of push them a little in terms of: "These are the kinds of issues that we're concerned about. We're concerned about the birds disappearing. We're concerned about visual pollution because of the light and so on. There are ways to look at this data and find the story, and you guys might be able to do that."

I think some of them, not all of them, will hate that and not even want to go there, but some of them might go there and if they do, you are really educating them beyond being data collectors into really being scientists, into being able to look at

## Who Are We Excluding?

- We've talked about these various motivations that people have. I think we can see that people come to citizen science with various perspectives. The question is, when we serve certain motivations of people coming in, who are these people? And another question follows, who are we excluding? - Martin Storksdieck, Senior Research Associate, Institute for Learning Innovation
- In the Night Sky Network that is definitely an issue. There have been individuals who have contacted us who have said, "But that's not fair, you have people connected to a planetarium who can do an outreach event after every show and I'm just here in my small town trying to do this. There's no way I can compete." Our response is, it's not about competing, it's about who you can reach in your small town. We encourage them to think about the impact that they're having locally, not necessarily the kudos that are on the Web site. - Suzanne Gurton, Education Manager, Night Sky Network, Astronomical Society of the Pacific

### Gender Factors

- However the program is structured, and whether it includes elements like competition or not, I'm interested in whether there is a connection between how the program is structured and which volunteers stick. I was interested in Keeping Track in Vermont and they found that although they trained both men and women, women stick with it longer. And I wonder why, with the amateur astronomy projects, it is predominantly men. I wonder if others in the room have broken it down in terms of male and female volunteers. - Maureen McConnell, Senior Exhibit Developer, Boston Museum of Science
- It's interesting, in the outreach community there are actually more women, while in the activities we call Star Parties it is all men about their toys. It is maybe ninety percent men and maybe ten percent women. In the outreach component, where you are out talking to people and working with children, you'll see a much higher percentage of women. - Suzanne Gurton, Education Manager, Night Sky Network, Astronomical Society of the Pacific

data and make some interpretations. You may also empower them a little bit to take some action.

I don't hear a lot of people talking about trying to push that data interpretation step, and I think that's a step that would be useful for us to take. - Candie Wilderman, Professor, Environmental Sciences; Chair, Environmental Studies Department; Founder and Science Director, ALLARM

### Capitalizing on Identity (Birder, Diver, etc.)

- To me this comes back to identity—if we can identify the identity of the group. Our group is pretty easy, they're all divers. There is such a strong identity with this, they are willing to spend literally hundreds of dollars to say, "I'm a dive master." We can tap into that and use a training model in which they go through classroom and then in-water training and end up with a certificate. Well guess what? For our reef surveyor certification they go through classroom training and then in-water training and then get a certificate. If you can identify what the identity is and then tailor the program somewhat to that, I think you're going to keep them longer and keep them more interested. To me this is also an American phenomenon. Americans are so into identity they put bumper stickers on their cars saying what they do in their spare time. That is so strong, and we can take advantage of that and carry it even further. - Leda Cunningham, Executive Director, Reef Environment Education Foundation
- That's also very important to amateur astronomers. They get pins now. Our annual award is that if you stay active for the whole year your club gets these pins. These guys are covered with their astronomy pins, with their comets or whatever, and now they get a Night Sky Network pin. - Suzanne Gurton, Education Manager, Night Sky Network, Astronomical Society of the Pacific

### Rewarding Mastery and Achievement

- I want to confirm the potential benefit of giving certificates. In South Africa we have established a training system for tracking in which people can go through levels one, two, three, and then senior tracker and finally master tracker. Getting to level one is attainable in one year. About ninety percent make it to level two. The master tracker level is a lifetime honorary status. The benefit of this system is that it is achievable even for beginners who start at the first level, but it encourages you to take the next step and gives long-term incentives for people to work towards increasingly higher levels. They may be qualified to work in ecotourism, where levels one, two, or three are sufficient, but go on to strive for



more and improve their skills to reach senior and master levels.

The benefit of that is that if you have that part of your metadata in terms of the expertise of the tracker, you can assess and improve the quality of your database. It is valuable from the individual point of view in terms of being able to gain access at level one, so it doesn't exclude, but also being able to continually work to improve your skills. And the scientific value is that you can actually measure the accuracy of the data. - Louis Liebenberg, BioBlitz 2006, CyberTracker Conservation

## Bringing Scientists into the Sense of Community

- In terms of bringing scientists into the community, I had a really embarrassing moment. I have a citizen science advisory board with about thirty professionals in the Milwaukee area who come and evaluate the research project. We just had a meeting and as they were leaving we were getting ready for our volunteer recognition event. There were stragglers who stayed late to finish up conversations and as they were leaving they asked what was going on, and we said we were recognizing our volunteers at the Center and they said, "Hmmm, aren't we volunteers too?" It was embarrassing and brought it to my attention and now all of our researchers get all of our volunteer e-mails and have started coming to our volunteer events and are being recognized as volunteers. - Timothy Vargo, Research Coordinator, Neighborhood Environmental Project, Urban Ecology Center
- I work with a lot of scientists and they're trying to think of how to get the scientists interested in more citizen science. I can think of a lot of educational reasons and outreach and all of those factors that we have talked a lot about. Some of the reasons why they are starting to get more interested in it are things like robust sample sizes and large amounts of data, if they can be sure of the methodology—if there is a way to get volunteers to use what they consider standardized and scientifically valuable methods, or that the methods are very transparent and they can see how it was done and that the data is valid. The idea of sustained data collection for less money is also getting them very interested, and the ability in the bird world to direct birders who are already out and doing it anyway to collect data in areas where there are big knowledge gaps. Those are some of the reasons scientists are interested in joining citizen science efforts. - Melissa Pitkin, Education and Outreach Director, Point Reyes Bird Observatory
- That is exactly why the American Association of Variable Star Observers (AAVSO) was started, because amateur astronomers are

### What Do We Mean by "Community"?

- We are all talking about community in some sense, but there is something I got out of conversations with Eleanor Ely when we were writing this agenda. We had some title on there such as "Audience Identification and Techniques for Reaching Particular Audiences." She said, "I think the way you're using the word 'audience,' you're talking about the volunteers, but the way we use 'audience' in water monitoring often means the scientists—how can we get the word out to scientists?"

We changed the term to "community building" and I see community as much broader than just the volunteers. I wonder what folks' thoughts are along the lines of things like, how do we keep the scientists involved?  
- Jennifer Shirk, Project Leader, Citizen Science Toolkit Project, Cornell Laboratory of Ornithology

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out there looking every night and vast quantities of data can be gathered by people who are out there already. It's not expensive, it's a lot of data, and it is also quality data because they have to go through a training process. - Suzanne Gurton, Education Manager, Night Sky Network, Astronomical Society of the Pacific