



Public Participation in Scientific Research: **2012 Conference Evaluation**

Prepared for:

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10 September 2012

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PPSR Conference Evaluation 2012

Background

The overall goal of the project was to convene a large-scale, open conference on public participation in scientific research, bringing together science researchers, project leaders, educators, technology specialists, evaluators, and others from across many disciplines to discuss advancing the field of PPSR. The conference included three sessions for posters and conversations, and five plenary sessions of presentations. The meeting culminated in an open meeting to explore strategies for large-scale collaborations to support and advance work across this field of practice, through the development of an association. The driving purposes are the furthering of PPSR as a field (professionalization), formalizing PPSR as a field of practice, and increasing collaborations across disciplines.

The overarching evaluation question, therefore, is a progress question: did the conference lead to any large-scale collaborative efforts to support the field; large-scale collaborations to advance work across this field, and the development of an association or other professionalizing activities? To these ends, the following evaluation questions will guide this effort:

1. Why did people choose to attend? What are their motivations?
2. What are differences in perception of PPSR and data use?
3. What are entry expectations for the field? For the conference?
4. Do conference participants support the purposes/intents of the conference? Does this change as the conference progresses?
5. In what ways are participants willing to engage beyond the conference (with others; with the field) and does this change during the conference?
6. In what ways does interest in collaborations increase or decay in the participants post the conference experience?

Methods

Entry measure: to generate a baseline and serve as a means of better understanding the outcomes of the conference, it was important to obtain information to answer evaluation questions 1, 2, and 3 in a direct way. This was done as a web-based pre-conference questionnaire, using the list provided by ESA for registrants. These data were quickly processed to inform the conference organizers as they moved into the conference.

Process measure. As the conference itself is the focus of the evaluation, understanding the changes in participants during the conference toward the goals of the conference around the key products is a way of formatively understanding the potential for success. The evaluator took

advantage of breaks, meals, and movement time to ask a series of questions relating to evaluation questions 4 and 5. The same questions were asked across the conference, but analyzed over the time of the event to attempt to determine if there were changes toward the desired outcomes and if any resistance emerges at what times. Sense-making methodologies informed the question structure to ensure that process and product attitudes are captured.

Post-conference measure. At the conclusion of the conference, participants engaged with a post-program response questionnaire. The instrument included satisfaction measures, intention measures, and willingness to engage further. Both the pre- and the post-conference feedback asked for minimal demographics to describe the participants in the conference.

All scales used were 7-point ranking scales. No summated scales were used. Statistics employed were descriptive, non-parametric.

Findings

For the purposes of this report, the pre-measure and the post-conference feedback are combined.

Who participated?

Of the 284 registered conference attendees, 133 participants completed the pre-conference questionnaire and 124 completed the post-conference feedback form. Of those responding to the question on the feedback measure, 80 (64.8%) were female and 29 (23.2%) were male. Eighty-eight of the respondents who identified race/ethnicity, labeled themselves as Caucasian, White, Euro, Northern European, Swedish, or white/English. Two identified as Asian- or Chinese-American, one identified as Asian, and one as Japanese. Six self-identified as Hispanic, Latino/a, Mexican-American, and Chicana-German. Three called themselves mixed race (white/black, multiracial, and Latina & white). Further, an additional 30 participated in the process evaluations.

The conference organizers wanted broad engagement of those involved in different aspects of PPSR, so participants were asked to identify all the roles in which they engage in PPSR, and then to identify the key role in which they engage in PPSR.

Table 1: Role identification of participants in PPSR

	Pre		Post		Total*	
	N	%	N	%	N	%
Coordinate, direct, or manage a PPSR project	73	54.8	32	56.1	105	55.3
Scientist who uses PPSR to gather data	55	41.4	22	38.6	77	40.5
Individual who participates in gathering or analyzing PPSR data	50	37.6	22	38.6	72	37.9
Represent a group that conducts PPSR	51	38.3	16	28.7	66	34.7
Educator who uses PPSR in teaching	42	31.6	20	35.1	62	32.6

Researcher who studies PPSR	45	33.8	17	29.8	62	32.6
Represent an organization that wants to begin to use PPSR	33	24.8	16	28.1	49	25.8
Building infrastructure to support the field of PPSR	45	33.8	-	-	45	23.7
Pre n= 133; post n=57; N=190						

Columns do not equal 100% as respondents were allowed to select as many as they felt appropriate.

*Post numbers were for those who did not provide information for the pre-measure. Thus the total reflects all respondents who provided this information

A few participants identified only one role, several had dual and some had many roles. The dominant roles held are coordinating or directing a PPSR program, and being a scientist who uses PPSR to gather data. Respondents were then asked to identify the *one* role with which they most identified. Findings are listed in Table 2 (below).

Table 2: Primary Role in PPSR in descending order of frequency of response

	Pre		Post		Total*	
	N	%	N	%	N	%
Coordinate, direct, or manage a PPSR project	45	33.8	24	48.0	69	38.3
Researcher who studies PPSR	19	14.3	6	12.0	25	13.9
Scientist who uses PPSR to gather data	14	10.5	7	14.0	21	11.7
Represent an organization that wants to begin to use PPSR	18	13.5	4	8.0	22	12.2
Represent a group that conducts PPSR	11	8.3	5	10.0	16	8.9
Building infrastructure to support the field of PPSR	12	9.0	-	-	12	6.7
Educator who uses PPSR in teaching	7	5.3	4	8.0	11	6.1
Individual who participates in gathering or analyzing PPSR data	4	3.0	-	-	4	2.2
N=180						

*Post numbers were for those who did not provide information for the pre-measure. Thus the total reflects all respondents who provided this information

In removing the multiple roles, several roles shift in proportion and importance. For example, researcher studying PPSR moves from a rank of 5th to a rank of 2nd; representing an organization that wants to begin to use PPSR shifts from 7th to 3rd. Representing a group that conducts PPSR drops from 4th to 5th in ranking and individual who participates drops from 3rd to 8th. These numbers suggest that those involved in PPSR engage in multiple ways in their work, but that there are particular roles by which participants can be identified.

Table 3: Comparison of ranks of roles

	%	Rank	%	Rank
	Many		Primary	
Coordinate, direct, or manage a PPSR project	55.3%	1	38.3%	1

Scientist who uses PPSR to gather data	40.5%	2	11.7%	4
Researcher who studies PPSR	32.6%	5	13.9%	2
Represent a group that conducts PPSR	34.7%	4	8.9%	5
Represent an organization that wants to begin to use PPSR	25.8%	7	12.2%	3
Building infrastructure to support the field of PPSR	23.7%	8	6.7%	6
Educator who uses PPSR in teaching	32.6%	5	6.1%	7
Individual who participates in gathering or analyzing PPSR data	37.9%	3	2.2%	8
N=190				

The most striking comparison is the shift from being an Individual who participates in gathering or analyzing PPSR data from ranking third to eighth when the primary role is presented. This is not surprising as the majority of people likely to attend this type of conference are in a professional leadership capacity, not necessarily those who consider themselves participants. However, given some of the comments that follow, this may be an area for consideration for future conferences/gatherings.

Over half the participants responding have been involved with PPSR for 1-10 years. Nine percent have not yet been involved with PPSR and 18 percent have been involved for more than 10 years.

Table 4: Tenure with PPSR

	N	%
Have not yet	17	9.3
Less than 1 year	21	11.5
1-3 years	53	29.1
4-10 years	58	31.9
More than 10 years	33	18.1
N=182		

Use of PPSR in Practice

In the pre-measure, respondents were asked to discuss how they use PPSR in practice. Not surprisingly, the responses closely mirrored the demographic of role in PPSR. The responses were narratives around the roles of teaching, research, management and coordination, monitoring, and scientific use of data. The full list of uses is attached in Appendix D.

In the post-conference feedback form, participants were asked to name their primary professional identity. Ten individuals named Citizen Science coordinator or program coordinator; five self-identified as ecologists; five as conservation biologists or scientists; and

another five as professors. Five used the term “research” as the leading descriptor while six used the informal/nonformal or nontraditional educator label. Three called themselves biologists and one a botanist. There were three social scientists, two wildlife biologists, three designers, three non-profits, and three museum professionals. Other miscellaneous labels included agroecologist, academic outreach, communications, community organizer, volunteer coordinator, and web bioinformatics professional. There was a broad distribution of professional identities offered by participants in the conference.

These data can be compared to the pre-measure question related to professional association membership. As with the labels for professional identity, the associations named represent a wide array of interests and affiliations, although there is clustering around ecology, environment, and science teaching, and then additional professional societies very much tied to the academic preparation of the individual.

Table 5: Professional Association Membership

Ecological Society of America	43
North American Association for Environmental Education	12
American Geophysical Union	9
National Science Teachers Association	8
Society for Conservation Biology	6
American Academy for the Advancement of Science	5
George Wright Society	4
National Association for Interpretation	4
National Marine Educators Association	4
American Ornithologist's Union	3
Association of Science and Technology Centers	3
Society for the Social Study of Science	3
Society of Ecological Restoration	3
National Association for Research in Science Teaching	3
North American Lakes Management Society	3
American Meteorological Society	2
Animal Behavior Society	2
The Wildlife Society	2

Note: individuals were asked to name up to three; only those with more than one incident are reported

There were a total of 121 associations named by participants. The long list of associations in which one respondent participated can be found in appendix E.

In the pre-measure, respondents were asked with whom they worked. Most participants (62%) work with adults with children also participating, or just adult groups. Only about one in ten works with children or teens specifically. No participants reported working with seniors, though this may be an issue of definition with many programs including all ages of adults.

Table 6: Ages involved most in PPSR programs

	N	%
Children	3	2
Teens	11	9
Young adults	10	8
Adults	33	26
Seniors	0	0
Primarily adults/also youth	58	46
Primarily youth/also adults	11	9
N=126		

Challenges facing PPSR

Most comments on challenges facing PPSR in the pre-measure and the process measure related to aspects of data. Quality control and assurance were the most commented on aspects, but management of data, large data sets, and collection of data were also mentioned. The second most common challenge was identified as evaluation followed closely by funding. Implementation challenges included staffing, time demands, sustainability of programs, communications, and partnerships with scientists, teachers, and the community. Also within the implementation challenges was the mention of finding collaborators. Volunteer issues including recruitment, training, and retention were named by several respondents. A pattern emerged in terms of where a program is in its life-cycle as those starting programs or planning PPSR efforts mentioned planning as the biggest challenge.

Value of PPSR

Values of PPSR were asked in the pre-measure, the process measure, and the feedback measure. Responses were consistent and so are presented cohesively. One clear set of values is around the benefits to the researcher or the scientist. These include the resource of people (large numbers) for gathering data, the data itself, and “cheap monitoring” referring to volunteers. A second set of values is the benefits to the participants in PPSR. Connecting to a broader idea or issue, gaining a sense of participating and caring about the world, understanding scientific processes, and having a sense of meaningful contribution were

subthemes of participant benefit. A third value set is based on benefits to the community. Engaged citizens, public ownership of science, demystifying or making science accessible and an increased awareness of the importance of science emerged. Additional benefits to the larger community mentioned include increased stewardship and enhanced scientific or STEM literacy. The final cluster of values was that of a learning exchange leading to cultural shift. “Culture of respect and trust in science and scientists,” mutual learning, broader perspectives on a particular issue, the democratization of science, and a transformation of how knowledge is produced clustered around the concept that there is a larger impact of engagement in PPSR beyond the data or the activity itself.

Expectations for and satisfaction with the conference

In the pre-measure, there were five clusters that emerged related to what respondents hoped to get from the conference.

1. Networking, meeting others, learning from others
2. Learning, getting new ideas in general, getting new ideas (specific, multiple mentions of data management, methods, funding sources, integration, curriculum, use of data)
3. State of the field, scope and breadth, and a chance to contribute to the field
4. Volunteer management, recruitment, retention, motivation
5. Share with others; gain exposure/visibility

Participants in the conference were also asked retrospectively about their expectations for the conference¹. The strongest response, as identified as the most dominant cluster from above, was that of having opportunities for networking ($\bar{x}=5.40$, $SD=1.50$ on a 1-7 satisfaction scale), followed by getting to know new people ($\bar{x}=5.10$, $SD=.29$), which shared the same cluster identified in the pre-data. Learning new ideas was also slightly positive with a mean of 4.70 ($SD=1.06$). Sharing with others (the fifth cluster), was also negligibly positive in expectation with mean of 4.10 ($SD=.994$). The third cluster also aligns with a slightly positive mean for the expectations on “furthering the work of PPSR as a field” ($\bar{x}=4.89$, $SD=1.12$) and “revitalized/re-energized about PPSR” ($\bar{x}=4.60$, $SC=1.51$). Even though there was a cluster of expectations around volunteer management, recruitment, retention and motivation, the items on audience building and on making programs more diverse had negative expectations ($\bar{x}=3.11$, $SD=1.36$ and $\bar{x}=3.22$, $SD=1.48$ respectively).

There was a clear interest in and expectation toward networking and learning about the field. The idea of sharing with others was also a very consistent theme.

In terms of satisfaction (Table 7), conference participants were very strongly satisfied with the experience. Overall, they were revitalized/re-energized about PPSR ($\bar{x}=.615$) which was one of the common expectation themes. They were also strongly satisfied with their learning

¹ Due to a transfer error from the electronic to the paper copy, the instrument did not contain a separate scale for expectations; ten individuals did include their rankings of expectations and six participants completed the instrument online. Therefore, the data are presented to support the pre-measure findings, but are not included in a statistical comparison with satisfaction.

of new ideas (\bar{x} =5.41). Participants were also strongly satisfied with their opportunities for networking (\bar{x} =5.56) and getting to know new people (\bar{x} =5.41). Although there was positive agreement on the last few items, the agreement was only moderate on the items of time to share experiences with others (\bar{x} =4.89), insights into making a program more diverse (\bar{x} =4.59) and insights into audience building (\bar{x} =4.59). As these last few were clustered into expectations, it is valuable to note that satisfaction was positive, but not strongly so, suggesting there may be ways of better achieving these outcomes.

Table 7: Means and standard deviations of satisfaction

	Mean	Std Dev
Opportunities for networking	5.56	1.22
Getting to know new people	5.41	1.18
Learning new ideas	5.91	1.16
Time to share my experiences with others	4.89	1.43
Revitalized/re-energized about PPSR	6.15	1.03
Insights into audience building	4.59	1.42
Insights into making my program more diverse	4.63	1.55
Furthering the work of PPSR as a field	5.91	1.15

Process findings

Throughout the conference, participants were approached (convenience sampling— approach those sitting alone, moving toward the evaluator, standing and not engaging with another person) before the start of the day, during breaks between sessions and at mealtimes) and at the end of the day. The same four questions were asked: what do you need from the conference to make it successful for you?, how do you think you would/how are you/how did you get that?, and what are the most important needs/greatest opportunities for PPSR?

As the conference began, and through the middle of the afternoon of the first day, comments tended to use “I” statements in response to all three questions. Needs were very focused on meeting people, learning from others, and finding out what’s new in the field.

Mid-afternoon of the first day through mid-morning of the second day, the language shifted to a “sharing” modality. Individuals stated they had achieved the needs (consistent with the above focusing on meeting people and learning from others/what’s new in the field). The most consistent ways in which people fulfilled these needs was through the poster sessions. Several noted the panels and the speakers, often using words such as “surprising,” and referred to the diversity of speakers and the range of topics. An interesting emergence in language was around the concept and language of sharing. In some cases, “we” was used in conjunction with “I;” in many others, the desire to share with others (give and take implied in most comments) emerged as a dominant theme.

The morning of the second day, and clearly by noon of that day, the language shifted to a more consistent “we.” There was little entry need that had not been satisfied, and the focus of energy in the interviews was on the future for the field. Comments were sometimes extensive, often shared with passion and concern. Ideas came more quickly and were more expansive than in the first two phases. There seemed to be, in this nonrepresentative sample, a consensus on the need to move the field forward and extend the work of PPSR.

Throughout, the needs for PPSR generally were externalized—the need for PPSR to be seen as obtaining good data for legitimate science, usually to be seen by scientists as legitimate means of collecting valid data; the need for PPSR to be seen as an appropriate tool for teaching. The language around perception of others of PPSR was important. There was also a subtheme of the language of PPSR itself—the perceived confusion caused by the proliferation of names used to describe the various activities which constitute PPSR.

Opportunities for the field focused strongly on the need for organization and promoting PPSR across scientific and educational disciplines. This transition in language and focus supports the conference organization designed by the organizing committee. The final session with a focus on discussions for the future retained a majority of participants in the conference, which anecdotally supports the observation that the design facilitated the movement from having entry needs met, to forums for engaging (though, as noted below, never enough), to moving the field. As an observer of the conference, the decision to keep the participants in a large group, even when doing the poster sessions, likely contributed strongly to the support for an association. Because smaller interest bodies did not have time to coalesce, and even though extremely crowded, having the poster sessions in the same larger space as the meeting, appeared to facilitate psychological and sociological bonding of the full body into a relationship.

Intentions

Following the conference, participants were asked about their intentions related to the desired outcomes expressed by the organizers. Overall, intentions were positive. Sharing things learned at the conference with others had a very strong level of agreement with a small deviation ($\bar{x}=6.27$, $SD=.98$). A second very strong level of agreement was the reflective practice of critically examining one’s own work or program ($\bar{x}=6.02$, $SD=1.02$). These two intentions seem to support the entry needs of information about PPSR, what is happening in the field, and what are considered better practices. The application of these efforts, changing one’s own program or practice, had clearly strong agreement with a mean of 5.93 ($SD= 1.13$) (see Table 8).

Strong agreement was obtained on intentions related to the entry need of networking. The strongest response in this group of intentions was for requesting information from specific

individuals (\bar{x} =5.98, SD=1.09). Networking with other participants had a clearly strong mean of 5.82 (SD = 1.17) as did sending information to specific individuals (\bar{x} =5.73, SD=1.37).

Table 8: Intentions of participants following the conference

	Mean	Std Dev
Network with other participants	5.82	1.17
Send information to specific individuals	5.73	1.37
Request information from specific individuals	5.98	1.09
Share things I learned here with other colleagues	6.27	.98
Critically examine my work/program	6.02	1.02
Try something new I learned here	5.93	1.13
Build a collaboration with someone I met here	5.48	1.32
Conduct more evaluations of my project	5.21	1.46

The lowest means, though still clearly positive, were toward building a collaboration with some they met during the conference (\bar{x} =5.48, SD=1.32) and conducting more evaluations of their projects (\bar{x} =5.21, SD=1.46). That conducting evaluations was the lowest mean is not surprising given that there was only one presentation on evaluation from the podium, and evaluative work was not featured on the posters.

Future of the field

Building on the challenges and values, in the pre-measure, respondents were asked to identify their “hopes and dreams” for PPSR. A number of respondents offered “growth” as their dream—growth of the importance and significance of PPSR; the numbers of programs and people engaged in PPSR; and the community of science doing this work. Others dreamed of PPSR as a respected field with an impact on the practice of science, a field that guides science directives, and through widely used processes, gathers data that are valuable and widely used.

Professionalism of the field was perhaps the dominant overarching frame. Some of the comments reflected organization of the field through a professional society or a committee or group of another organization, a clearinghouse for data, a clearing house for programs and methods, coordinated national efforts such as an “event weekend,” and guiding principles for PPSR or the standardization of methods. Others in this cluster mentioned a field that would not have a single definition or approach, but would support alternative models, increased collaborative models, but be driven more by best practices. All of these would support greater inclusion of PPSR in formal education curriculum. Several individuals referred to a Community of Practice and the hope for a stronger CoP.

Another focus of hopes and dreams was on greater support for PPSR. This would include much more support from funding sources that are private, government, and foundations. Others focused on increased support from the science community and that PPSR would be demonstrating its contributions to science, increased scientific literacy, and enhanced attitudes toward science and the environment.

Finally, there were respondents who envisioned changes in society as a result of PPSR work. Some saw a more informed and engaged society, while others saw the changes as increased scientific or environmental literacy. There were some who dreamed of respectful and understanding dialogues among scientists and communities. As one respondent wrote, the hope was to: “do what social systems have failed to do-- create an environmentally literate, engaged public.”

During the process evaluation, individuals were asked about what they saw as needs for the field. These included the predominant need of trust from the scientific community and the also common need of trust from the educational community. Some saw the need as finding the “common ground between the rigor of scientific research and the importance of comprehensive approach to involvement.” There were comments related to “making science we do relevant to scientists” and making science we do relevant “to communities.” A large subset felt data management, data sharing, and data visualization were also tremendous needs. There were a few comments related to the need for focus on diversity of those facilitating PPSR projects and those engaged in PPSR projects, and various comments that focused on costs of programming, benefits of engaging, communication, extending engagement, and similar themes.

In the conference feedback, respondents were asked to rank their interest in participating in several activities that could support a professional organization (see Table 9). Not surprisingly, the overall means decrease as the level of commitment and individual activity increases; there is an almost complete inverse relationship with the standard deviations. With the exception of the two strongest means, the deviations quickly rise to levels that suggest multi-modality (greater than 1.5), which supports the entry assumption of the more time required to add to one’s workload, the fewer willing to take on that work. Even so, all mean agreements were clearly positive with the exception of serving on a national board which had a slightly positive mean, suggesting there is agreement to commit at all levels to engage in creation of an association. It should also be noted that the numbers of people necessary to accomplish any of the tasks reduces along with the means, suggesting there is body enough to engage at all levels.

Table 9: Willingness to engage in association activities

	Mean	Std Dev
Communicate/use a list serve for others doing PPSR	5.82	1.34

Provide reports and studies from your work via a collective website	5.72	1.28
Work with others for the improvement of PPSR nationally	5.50	1.43
Engage in national efforts to create an organization	5.18	1.62
Create a system of mentoring of PPSR	5.14	1.68
Serve on a committee for a national association	5.05	1.75
Serve on a board for a national association	4.50	1.85

The strongest agreement is over communicate with others using a list-serve ($\bar{x}=5.82$, $SD=1.34$) with a fairly close mean ($\bar{x}=5.72$, $SD=1.28$) for providing reports and studies to a collective website. There is a slight skree drop then to those willing to work with others for the creation of an association ($\bar{x}=5.50$, $SD=1.43$). There is a clear drop from these three to the next cluster of three which have engaging in national efforts and creating a mentoring system closely placed with means of 5.18 and 5.14 respectively. A slight drop from these is to serving on a committee for a national association which is conceptually not tremendously different from the other two ($\bar{x}=5.05$, $SD=1.75$). The last item is an outlier and that is for serving on a board for a national association with a still positive mean of 4.50 ($SD=1.85$).

The single most consistent criticism of the conference was around the logistics of the poster session. A tremendous majority of responses criticized the crowdedness, noisiness, and impassibility of the spaces. Recommendations included moving into additional rooms and putting posters in the hall. Caution is urged in interpreting these criticisms for two reasons: 1) suggestions were offered from the most sincere, valued sense, but not from a conference management and cost perspective; and 2) as mentioned above, psychologically for *this* particular conference with its unique goals and purposes, maintaining participants in one space served an important purpose. However, for future conferences, organizers should critically consider the issues mentioned by participants regarding difficulty of moving, difficulty in reading, and difficulty in talking. Additionally, there were many concerns with the inability to determine to which posters to attend in the restricted time of each poster session. Receiving advance abstracts or having some means of previewing the various posters was often cited, but practical means beyond having abstracts online or published were limited by time and physical limitations.

There were many comments surrounding the need for topical, issue, or geographical breakouts. As before, for the purposes of this conference, having the full group together throughout the conference was vital to moving toward the desired outcomes. Yet, for future conferences, the ideas of creating quasi-open-space sessions around topics or issues, having partially facilitated or enabled lunch and dinner groupings of topical or geographical interest groups, including one or more meals in the conference for the purpose of networking, and having topical breakout sessions could be important for the conference.

Conclusions

1. Why did people choose to attend? What are their motivations?

There is tremendous energy around PPSR by those who engage in the professional work of public participation in scientific research. People attended the conference for the dominant reasons of networking with others doing this type of work, to learn about the work being conducted by others in the field, to share their own experiences and work in PPSR, and to support the furtherance of PPSR as a field.

2. What are differences in perception of PPSR and data use?

For those engaged in PPSR, the issue is not perceptions of PPSR and data use nearly as much as perceptions of those external to the field of PPSR, data use, and educational value. The single most consistent comment offered relates to ongoing concern about the more negative perceptions potential partners, the larger scientific community, and educators have about the rigor, validity, and value of PPSR. Those doing this work appear to be champions for the field, and potentially wield an impressive collective knowledge around the value of the work of the field, the value of the data, and the value of the experience for those engaged.

3. What are entry expectations for the field? For the conference?

Entry expectations were fairly low—to learn more, to learn about what is happening in the field, to network, and to share their own work. These entry expectations seemed to be primarily for the conference, but also tied to the field. The biggest issues there were, and remain, how to communicate about the value of the data, the value of the experience, and the importance of this work to communities and the environment and science as a field. Further, the potential of PPSR to facilitate the work of research scientists is extensive if the mechanisms can be managed.

4. Do conference participants support the purposes/intents of the conference? Does this change as the conference progresses?

Conference participants entered with needs that closely paralleled the expectations of the conference organizers. The organization, flow, and management of the conference facilitated the movement of conference attendees along the intentions of the organizers while still allowing conference participants to retain individual voice and individual perspectives.

5. In what ways are participants willing to engage beyond the conference (with others; with the field) and does this change during the conference?

There is a positive intention of participants to engage beyond the conference, not only with each other, but also the field. Clearly, the intentions to engage with others/network is strongly supported in the findings. The willingness to engage in work for promotion of the field, however, is surprisingly strong, although the decay of willingness to engage as the commitment becomes more intense is not surprising. Even so, the willingness to engage, even at the most time and energy commitment level were positive across all participants.

6. In what ways does interest in collaborations increase or decay in the participants post the conference experience?

This final question remains to be determined and will be explored in the delayed-post measure of the conference.

Appendix A

Pre-Conference Measure

Greetings! On behalf of the planning committee, we appreciate your completion of this short questionnaire. We look forward to seeing you in Portland!

What is your role with PPSR? Check the boxes that best describe how you are engaged with PPSR or Citizen Science. Check all that apply.

- Coordinate, direct, or manage a PPSR project
- Represent a group that conducts PPSR
- Scientist who uses PPSR to gather data
- Individual who participates in gathering or analyzing PPSR data
- Educator who uses PPSR in teaching
- Researcher who studies PPSR
- Represent an organization that wants to begin to use PPSR
- Building infrastructure to support the field of PPSR

Of these, which ONE most closely aligns with how you would describe your role in PPSR? Check only one.

- Coordinate, direct, or manage a PPSR project
- Represent a group that conducts PPSR
- Scientist who uses PPSR to gather data
- Individual who participates in gathering or analyzing PPSR data
- Educator who uses PPSR in teaching
- Researcher who studies PPSR
- Represent an organization that wants to begin to use PPSR
- Building infrastructure to support the field of PPSR

How long have you been engaged in PPSR?

- Have not yet
- Less than 1 year
- 1-3 years
- 4-10 years
- More than 10 years

Briefly, explain how you use PPSR in your practice.

Which national or international professional associations are you a member of? List up to three that you think are the most relevant to you or your work.

What age group do you work with/plan to work with MOST in your PPSR program?

- Children
- Teens
- Young adults
- Adults
- Seniors
- Primarily adults but youth are also involved
- Primarily youth but adults are also involved

What are you most hoping to “get” from this conference?

In your work, what are the challenges for PPSR? Planning? Implementation? Evaluation? Choose one particular challenge you face and tell us about it.

What do you believe is the greatest value of PPSR?

What are your hopes and dreams for the future of PPSR as a field of practice?

So we can avoid repeating some of these questions on the post-conference feed-back form, please provide a "code" for yourself to use on that form. (some people use the last 4 digits of their phone, their birthdate, or something like that)

- Code number/letter 1
- Number/letter 2
- Number/letter 3
- Number/letter 4

Thank you for your time and we'll see you in Portland!

Appendix B

Process Interview Schedule

Conference rolling interview schedule

NAME:

DATE:

Time:

Put sticker on nametag so remember not to interview again.

Hi! I wondered if I could take just a minute of your time to get you to answer a few questions about how the conference is going for you? Thanks!

What do you need to get from this conference for you to say it was a success?

Are you getting it? How?

What do you think are the biggest issues facing PPSR?

What do you think are the greatest opportunities for PPSR?

Thanks!

Appendix C

Post-conference measure


If you wish to complete this feedback form online after the conference, do so at the following link:

https://cosicolumbus.qualtrics.com/SE/?SID=SV_0BM8SZf240k2k29

OR, complete it and turn it in before you leave Sunday afternoon.

THANKS

Prior to the conference you were asked to create a code for yourself. If you DID make a code, please enter it here:

CODE: _____ 

If you did not complete the pre-conference questionnaire, you can create a code now such as the last four digits of your phone number or an important date etc).

CODE: 

What was the most valuable aspect of the conference for you? 

For the following, please think about your expectations coming to the conference AND how satisfied you are with the opportunities afforded you by the conference experience. For each item, rate your level of expectation) on the left and satisfaction on the right. A 1 would reflect a very low score and a 7 a very high score.

	Not at all satisfied						Very satisfied
	1	2	3	4	5	6	7
Opportunities for networking	1	2	3	4	5	6	7
Getting to know new people	1	2	3	4	5	6	7
Learning new ideas	1	2	3	4	5	6	7
Time to share my experiences	1	2	3	4	5	6	7

Revitalized/re-energized about PPSR	1	2	3	4	5	6	7
Insights into audience building	1	2	3	4	5	6	7
Insights into making my program more diverse	1	2	3	4	5	6	7
Furthering the work of PPSR as a field	1	2	3	4	5	6	7

To what degree do you believe you will engage in any of the following activities related to the conference when you return home?

	Not at all						Completely
Network with other participants	1	2	3	4	5	6	7
Send information to specific individuals	1	2	3	4	5	6	7
Request information from specific individuals	1	2	3	4	5	6	7
Share things I learned here with other colleagues	1	2	3	4	5	6	7
Critically examine my work/program	1	2	3	4	5	6	7
Try something new I learned here	1	2	3	4	5	6	7
Build a collaboration with someone I met here	1	2	3	4	5	6	7
Conduct more evaluations of my project	1	2	3	4	5	6	7

Is there a new partnership or collaboration you'd like to develop that emerged during the conference? What is the idea for collaboration/why this collaboration?

We are all busy people, but it is often the busy people who do more! Without committing yourself to anything (this is anonymous, so you are fine!), how willing are you to doing any of the following activities for the field of PPSR?

	No way!						I'm ready!
	1	2	3	4	5	6	7
Engage in national efforts to create an association	1	2	3	4	5	6	7
Work with others for the improvement of PPSR nationally	1	2	3	4	5	6	7
Provide reports and studies from your work via a collective website	1	2	3	4	5	6	7
Create a system of mentoring for PPSR	1	2	3	4	5	6	7
Communicate/use a list-serve for others doing PPSR	1	2	3	4	5	6	7
Serve on a board for a national association	1	2	3	4	5	6	7
Serve on a committee for a national association	1	2	3	4	5	6	7

(If you want to volunteer to do something, contact one of the conference coordinators)

Is there anything you hoped to get from the conference that you did not get or did not get enough of?

Would you have any suggestions for the conference committee?

Because the coordinators are interesting in understanding the field, they would like a baseline on a couple of demographics to gauge the field now and in the future. To that end, we ask a couple of demographics if you are willing to share. Are you:

Male Female

What is your ethnic or racial identity----

What would you say is your primary professional identity? (e.g. elementary school teacher; field scientist studying butterfly conservation; etc.)----

If you completed the pre-conference questionnaire, you're done!

If you didn't, would you answer the following couple of questions so we have a bit more information about who responded?

What is your role with PPSR? Check the items that best describe how you are engaged with PPSR or Citizen Science. Check all that apply.

- Coordinate, direct, or manage a PPSR project
- Represent a group that conducts PPSR
- Scientist who uses PPSR to gather data
- Individual who participates in gathering or analyzing PPSR data
- Educator who uses PPSR in teaching
- Researcher who studies PPSR
- Represent an organization that wants to begin to use PPSR

Of these, which **one** most closely aligns with how you would describe your role in PPSR?

- Coordinate, direct, or manage a PPSR project
- Represent a group that conducts PPSR
- Scientist who uses PPSR to gather data
- Individual who participates in gathering or analyzing PPSR data
- Educator who uses PPSR in teaching
- Researcher who studies PPSR
- Represent an organization that wants to begin to use PPSR

How long have you been engaged in PPSR?

- Have not yet
- Less than 1 year
- 1-3 years
- 4-10 years
- More than 10 years

Appendix D

Verbatim comments on “uses of PPSR”

Teacher workshops on the Great Lakes, including zooplankton, larval fish, and algae data collection that will be used by university-based researchers and as a teaching tool for 4th-10th grade science teachers. Volunteer coordinator for a non-profit that uses adult citizen volunteers to conduct land assessments and analyzes information for the land owners and local land conservation organizations.

I manage elements of the UK-based OPAL (Open Air Laboratories) project, including designing and running a public participation survey.

We gather a wide variety of inputs from citizens, scientists, and others about the impacts of climate change on the US. This includes technical information (e.g., reports on observations, syntheses across recent science, etc.) and inputs on topics for future study.

Data collected by students at Lane Community College is in alignment with 4 data networks: National Phenology Network, Project BudBurst, Portland Budwatch & Monarch Larva Monitoring Project. 2. As a member of the Friends of Buford Park & Mt Pisgah I am a member of the Science & Technology Advisory Committee which oversees volunteer monitoring and data collection, specifically an ongoing herpetology monitoring project.

I facilitate expeditions for teachers to participate in polar research. I also use PPSR in my teaching in environmental education and science education

We solicit citizen observations of imperiled species to track current ranges.

manage a national data collection program that relies on PPSR.

My master's project analyzed the quality of volunteer-collected data. After graduation, I continued working on this project for another year. I have since begun a PhD, and my dissertation research depends on gathering data from unique sources, including historical journals and contemporary amateur naturalists. I continue to be interested in how to best utilize volunteer collected data and how to design successful PPSR projects.

I was helping coordinate a pilot PPSR project, but now I am just analyzing the data about the experience of citizen scientists so I am not involved with an active project. I hope to be involved in other PPSR projects in the future, but I do not know yet in what capacity.

I am currently studying the use of PPSR in an educational context at an environmental education center

I publish ecological papers using PPSR data, I study PPSR participants and social outcomes, and develop new PPSR projects

In both research and education; provide workshops and public presentations, personally collect data and encourage others to do so.

My program monitors rare and endangered plant species. We train and engage about 250 Citizen Scientists each year in monitoring protocols. Results are shared with landowners for their management planning.

The organization with which I work offers field science programs to high school students in conjunction with researchers conducting on-going wildlife monitoring projects. We organize our curricula and field experiences around PPSR whereby our participants collect data used by our research partners, in addition to completing a variety of other experiential education activities and initiatives.

First of all, I would like to respectfully mention that I *strongly* dislike the term PPSR--to me, a totally alienating term, as cold and distant as the term "citizen science" is community-oriented and inviting. I represent a group that is implementing a citizen science project on pollination services to crops in

community gardens in Seattle. We are a diverse group of pollination biologists, staff, and students at the University of Washington who are volunteering our joint efforts on the project.

I direct a network of volunteers along the Pacific Coast that report observations of spawning runs of California Grunion, a beach spawning marine fish. Their data are used for scientific studies, management issues, and planning purposes by over 150 local, state, and national organizations.

We are particularly interested in approaches to PPSR that can support monitoring marine protected areas in California.

Currently, I coordinate PPSR project. The project involves volunteers in the data collection, while the training, analyses, and reporting are done by professionals (including me) working for my organization. The volunteers have also been providing invaluable feedback on the protocols, etc. Last summer we got good data related to our project objectives. This summer I would also like to begin surveying their volunteers about their experiences. Overall, I have been involved in PPSR for the last approx. as a volunteer; a representative of a group doing PPSR, an environmental educator, including teaching units with PPSR activities; a researcher of environmental volunteers, including those doing PPSR; a coordinator and designer of a PPSR project; etc. I continue to do so in all roles (varying by degrees over time).

I develop a cyberinfrastructure support system to support PPSR efforts

I used PPSR for a while several years ago while coordinating an alliance of adult natural resource outreach & service programs. In my current job, I am project coordinator for a partnership of scientists, non-profit organizations, and agencies using citizen science to investigate dragonfly migration.

I developing one, possibly two, PPSR projects right now in collaboration with scientists from my institutions. I'm interesting in the use of PPSR as an approach to engage the public in science.

I work with tribal member students to collect ecological data to evaluate changes and design restoration treatments. The students receive basic training on data collection including vegetation sampling and geomorphic surveying. They enter the data and we are working towards basic analysis and interpretation of the findings, along with outreach materials and publications.

Connecting people to nature while collecting information to be used for climate change and other environmental factors analysis

I work for the National Park Service at Olympic National Park and for a network of parks in the Pacific Northwest through the North Coast and Cascades Science Learning Network. We have used PPSR to conduct presence/absence monitoring of the endemic Olympic Marmot for the past two summers. We want to utilize the public to conduct bee monitoring and bio blitz type activities. We hope to use PPSR to increase public awareness of issues facing national parks and how managers use scientific research to inform decision making and policy decisions.

We've used PPSR at Port Townsend Marine Science Center for more than 25 years to engage the public in collecting water quality and species data. In the last several years, we've conducted Puget Sound wide studies of beach plastics using volunteers in 12 counties. We are in the process of having our first peer-reviewed journal article published, on the ingestion of plastics by gulls. Over the course of the year, our volunteers participate in up to a dozen monitoring/research projects, mostly in conjunction with agencies such as NOAA, Dept of Health or other agencies. We just received an EPA grant to engage volunteers in collecting roof runoff samples for toxics analysis.

I studied PPSR for a year, then began to build a pilot program for a local conservation alliance. The pilot is a plant inventory of a mountain park preserve in the Phoenix, AZ metro area. Our larger, longer term goal is to have multiple PPSR programs sustained throughout our preserve system as a way to collect badly needed data, to connect the community to nature and to science as a process, and to build capacity for science-

informed management..

For the past nine years Ocean Discovery Institute has implemented an intensive citizen science program for underrepresented high school students. Students participate in authentic research alongside scientists. This program has resulted in participants building their scientific knowledge and pursuing STEM degrees, leading Ocean Discovery to explore expansion of this model to the broader underrepresented community.

Undergraduate thesis looked at citizen-science data vs professional data, I work at the Denver Zoo doing citizen-science projects, I am starting graduate school with Gregory Newman and citsci.org

I have 20 years experience as a GIScience researcher and practitioner using participatory mapping/public participation GIS (PPGIS), with a focus on its use for natural resource management and land use planning. Currently, however, I study the policy and social science issues surrounding crowdsourcing & crowdmapping for disaster management.

My project(s) collect information on wildlife health events/mortalities from organized volunteer networks or casual observers. While many federal, state and academic programs are tasked with investigating wildlife health events, no centralized system maintains reports of all occurrences or provides a simple of what is going on. All the projects we engage in are creating infrastructure and methods to aggregate and standardize wildlife health event observations/information which can help improve decision-makers situational awareness of wildlife health issues, where they are happening right now, and deliver this information to managers who can use it to make well-informed decisions. Because agencies are hampered by red tape, privacy, records delays and other issues that may delay release of official information - we are looking to harness signals of events from open source news, organized and individual citizen scientists and social media channels to improve the overall understanding of where wildlife health events are occurring.

We are using high-school aged youth to collect data on urban trees planted by a large urban forestry nonprofit.

I am retired individual who participates in several Citizen Science projects. I contribute funding to several Citizen Science projects.

We have a wide array of surveys that inform our land management practices and inform us about natural fluxations in species densities. Birds, butterflies, reptiles, amphibians, ants, prairie and riparian vegetation, stream morphology, heronry monitoring, and more take place at my nature center. We use it to encourage nature awareness and appreciation in our community, to involve community in our research and to expose people of all ages to applied science.

I am the outreach director for a nationwide citizen science project. we gather data on pollinator service from individuals across the country

Co-direct Wyoming Stream Team, a state-wide water quality monitoring project. NestWatch chapter coordinator. Facilitate the following projects for Teton Science Schools participants: pika behavior observations, Nature Mapping Jackson Hole, CoCoRaHS and Wyoming Stream Team. Trying to create a long-term a fire succession monitoring program on our campus.

I test water quality in creeks and used to direct the program of volunteers to collect the data and upload it to a web-interactive database.

Use Flickr for finding "Birds with Field Readable Markers: Bands, Collars, Rings & Tags"
<http://www.flickr.com/groups/505232@N24/> especially Caspian Terns

I manage a PPSR project and support educators in using it effectively in their science curriculum, formal and informal.

I co-direct a service-learning program in which university students collect, analyze, and present

environmental data for community partners. Examples of current and recent projects include habitat assessment, restoration planning, ecological research, and environmental monitoring. Specific topics include oak, riparian and wetland restoration; water quality; conservation of imperiled species; and pollinator conservation. Through our program, we have created protocols which have then used by volunteers to continue the projects after the students complete their work.

We are in the early stages of a project intended to get local (central Illinois) community members involved in the collection of water quality data (i.e. pH, dissolved oxygen, turbidity, flow rate, overall site description, etc.) for the Illinois River and its tributaries. We are also trying to obtain feedback/evaluations from the participants in order to assess citizen learning gains from the program.

Over the past year I have used nation-wide ecology citizen science projects such as ebird to teach ecology research skills to high school students; however, the main focus of my enery has been on researching best practices in engaging students in field ecology research for an environmental education organization that is interested in developing a new program for this.

I provide technical, financial, and organizational support for all of the citizen-based monitoring project coordinators in my state. I try to stay abreast of the latest developments in PPSR so that I can promote those that improve the efficiency and effectiveness of citizen-based monitoring in the state.

I conduct PPSR projects on a 26 acre school campus (K - 6). These projects are conducted in a significant way by the students and will be used for long-term monitoring and land management plan.

Using volunteer groups to help collect data on forest restoration projects.

Utilize volunteers to conduct coral reef monitoring surveys. Assess their ability to collect scientifically valid data.

To present our program

I help design and implement PPSR projects at a research learning center and national park. We use the projects to gather data for science and resource management projects and to achieve educational objectives.

PPSR is used as programming on the museum floor to engage guests in activities based on climate change.

I am directing a project which is building an on-line platform for mapping and analyzing PPSR data. In addition, I am directing the research efforts to help us understand what people learn from the combination of fieldwork and work on this on-line platform.

I have helped train citizens for the Monarch Larva Monitoring Project (www.mlmp.org) in MN, PA and CO. I am now working for NEON and am getting involved with Project Budburst, and will be helping to explore how we can best use citizen science to engage folks in NEON.

I am an intern at Craters of the Moon National Monument. We, so far, don't use visitor data much. We keep logs of what plants and animals they see if it's something that stands out but we don't keep all records. We want to start doing so and to create interactive projects or exercises aimed at adults so those who want a more involved experience at the park don't have only Jr Rangers to fall back on.

I work with several butterfly monitoring groups in North America. I started by asking to use their data for analysis, but more recently I've been working to help develop systems to support data management, visualization, and sharing.

I study projects.

To bridge our education and research depts.

I work with communities and universities to build collaborative research partnerships.

Started by developing and invasive species citizen science program. Conducted research related to data quality and participant impacts (knowledge, skills, attitudes, behavior, science literacy). Also helped develop a cyberinfrastructure to provide data management services to local organizations conducting citizen science projects (citsci.org). Continue to be involved with PPSR related activities through continuation of above programs, networking with colleagues, and writing related grants.

We are starting up a residential environmental education program that has a component called GreenWatch which will encourage people to participate in existing Citizen Science programs. They can also go on to become a Neighborhood Naturalist.

I've introduced the opportunity for using PPSR as a learning tool to a regional network of 45 organizations.

I utilize citizens to collect data about species occurrences via an online project, and their data are quality-checked before being added to a database. Data from our project are provided to climate change scientists, government resource managers, and others who request them.

Coordinate water monitoring program; graduate student studying volunteer monitoring.

I was part of the Communicating Climate Change Project, which used citizen science to teach about climate change. I had a group of teens count frog calls and do butterfly field counts. Currently, I am having a group of teens test water and soil in a variety of local places.

I gather data to look at ecological patterns on a continent-wide scale. That requires use of PPSR data.

I supervise an NPS Research Learning Center, and we utilize PPSR both as a tool to promote science literacy and resource stewardship while gathering useful data to support science-informed decision making.

As a science graduate student I headed up a PPSR project and have been analyzing the data for both education and scientific purposes. I am not an educational researcher who is incorporating PPSR aspects into teacher science professional development projects.

I don't at present, but have directed programs that involved middle and high school students (and teachers) in field science in parks. Data was shared with park managers.

developing methods for ecosystem monitoring by experts and non-experts

I have been one of the directors or director of the Smith Mountain Lake and Claytor lake and Ferrum College Volunteer Water Quality Monitoring Programs for 25 years. I have used these programs and the data collected to study the trophic status of Mid-Atlantic reservoirs and their aging towards eutrophication. I have also studied the bacterial and algal populations in addition to the source of the bacteria in these lakes/reservoirs. These programs have also become an environmental education for the communities and the local and state agencies.

Our climate monitoring role and responsibility is greatly helped by citizens collecting and sharing local climate data from their own backyards

My research involves understanding what motivates people to participate in PPSR, particularly projects that take place completely online. I specifically research user behaviors and reactions to the Zooniverse, a collection of online citizen science projects.

I began using PPSR when I worked in extension with invasive species - citizens and volunteers were often our first detectors of new invasions. Now I lead a citizen science and outreach program aimed at improving the understanding of biodiversity in our daily lives - to that end, we engage the public in participating in science daily.

I organized and manage Portland Budwatch, a Citizen and Student Scientist Partnership using USA National Phenology Network protocol to collect phenology data along an urban to rural gradient trail system

in Portland Oregon.

I develop application to support conservation and biodiversity

I am involved in volunteer projects that rely on ppsr. I am also wanting to implement such projects with a non-profit watershed protection group that I currently volunteer with.

I work with a group of fishermen and scientists to investigate water quality questions. My main interest in the project is to investigate power dynamics and scientific creativity as a result of the process.

As a scientist, I use PPSR to gather data on rarely observed animal behaviors so that I can begin to answer questions about the function and causes of these behaviors. I have also recently been hired to oversee the development and implementation of a citizen science program at a large science museum.

In my current job I represent NPS groups that do, or want to do, PPSR projects. In my previous job I managed an annual bioblitz with a strong citizen science focus

We are the host of a national PPSR program, which we ask chapters to host locally. We use this as an educational/outreach tool, a way to engage the public in learning about and doing science, and as a mechanism for collecting scientific data.

I develop, coordinate, and oversee PPSR projects at Mammoth Cave National Park. I am also actively involved in leading PPSR participants in the field to collect data and helping them analyze the data. I have a pending NSF proposal that if funded will create a new citizen science project that will advance both the PPSR field and the scientific fields related to the project. In addition, on my own time I have been writing a column for the KY Assoc. for Env. Ed.'s quarterly newsletter describing different national citizen science projects and how educators can use them in formal and nonformal settings.

I train others to collect meteorological data for contribution to NOAA and also work with the GLOBE program to train teachers on how to train students to take data that scientists can use.

To engage K-12 students in practicing scientific methods and deepen their understanding of scientific principles and the role of science in environmental stewardship.

Currently, I coordinate a nationwide PPSR program and I also volunteer for a different statewide effort at a coordinator level. Both projects train volunteers on how to collect biological/environmental data to contribute to a larger scale dataset and encourage participants to contribute to newsletters and online communities. Previously, I have engaged in several smaller scale programs at both the coordinator and participant levels. The majority of PPSR projects I have volunteered for or coordinated have been contributory and I am very interested in discovering avenues to make existing PPSR projects more collaborative in nature as a means to enhance data quality and participant experience, as well as promote learning goals and eventual attitude/behavioral changes.

I have, in the past, collaborated to train volunteers for a PPSR project ("Grunion Greeters"--Birch Aquarium at Scripps and Pepperdine University)

we send citizen scientists out to specific location in Glacier National Park to monitor common loons, mountain goats, pikas and invasive plants

Scientists at my university (Willamette University) are developing PPSR projects as part of their scholarly research with student research assistants or to address the broader impacts and outreach of their research. I'm eager to know how to create university infrastructures to help scientists accomplish PPSR projects.

Past: As a scientist, in order to gather data Current: As a tool for engaging volunteers in projects that benefit natural resources and as an educational tool.

Use PPSR to assist with research and as a tool to teach applied science and the scientific method.

Write about new projects and current trends in PPSR.

Community science, usually linked to local environmental issues. PPSR is used to support community understanding of the situation and dealing with it

I manage a long-term (15 year) Citizen Science nearshore monitoring project, and it is a signature program for our organization.

I began the rocky intertidal portion of the LiMPETS program over ten years ago and then helped the National Marine Sanctuary in California combine it with the sandy beach program. More recently, I helped bring in the Pacific Grove Museum of Natural History come in to manage the program in the Monterey Bay area.

We run the Zooniverse suite of online PPSR projects. PPSR is core to our scientific method.

I coordinate a program helping middle school students to create authentic animal research projects comparing zoo animals with animals in their backyard. The program is in its 4th year, however the only dissemination thus far has been a culminating event where the students are able to share their work. This year we created an iPad app that will enable the students to share their data throughout the research process as well as at the culminating event.

I would say I have been more "aware" of PPSR rather than "engaged" in it, although we have promoted it as a way to educate, engage and employ youth in natural resources work.

I work with a network of butterfly monitoring groups. I both analyze the data, develop models for data analysis and am currently developing infrastructure to support the volunteers and foster data sharing and visualization

n/a - interested in local/regional health use potential

As a natural history museum, we use citizens to turn in photographic vouchers of amphibians and reptiles. We intend to amplify the project to include a web-based interface and an educational component.

Education of high school students and undergraduates in marine ecology. Gathering coastal habitat monitoring data

I'm director of an herbarium that involves public volunteers in curation.

I manage the TogetherGreen fellowship program. We do community based conservation and many of our fellows use PPSR actively.

We are using participatory research to gather data on social science issues related to natural resource management.

I manage an urban network of field stations that uses PPSR at its core. All researchers must open up all research processes to citizen volunteers to the extent they are able.

Appendix E

Membership organizations named once

- Agronomy Society of America
- Alliance of Natural Resource Outreach and Service

Programs

- American Anthropological Association
- American Association of Geographers
- American Association of State Climatologists
- American Association Variable Star Observers
- American Fern Association
- American Public Health Association
- American Shore and Beach Preservation Association
- American Society for Information Science & Technology
- American Society of Ichthyologists and Herpetologists
- American Society of Mammalogists
- American Society of Naturalists
- American Sociological Association
- Americorps
- ASCD
- Association for Computing Machinery
- Association for Environmental Studies and Sciences
- Association for Psychological Science
- Association for Science Teacher Education
- Association for the Rhetoric of Science and Technology
- Association for Tropical Biology and Conservation
- Association for Women in Science
- Association of American Biology Teachers
- Association of American Geographers
- Association of Computing Machinery
- Association of Field Ornithologists
- Association of Mid-Atlantic Aquatic Biologists
- Association of Natural Resource Extension Professionals
- Association of Nature Center Administrators
- Association of Polar Early Career Scientists
- Astronomical Society of the Pacific
- Atlantic Society of Fish and Wildlife Biologists
- Biodiversity Information Standards
- California Science Teachers Association
- Canadian Society for the Study of Evolution
- Children and Nature Network
- Council on Undergraduate Research

- CSSE
- Dragonfly Society of the Americas
- EDDMaPs
- Entomological Society of America
- ESIP Federation
- Freshwater Mollusk Conservation Society
- International Association for Great Lakes Research
- International Association for Society and Natural Resources
- International Association for Society and Natural Resources
- International Primatological Society
- International Science Teachers Association
- International Society for Design and Development in Education
- International Society for the Learning Sciences
- Italian Engineers Professional Association
- Midwestern Psychological Association
- Montana Environmental Education Association
- NABS
- National Association of Biology Teachers
- National Association of Science Writers
- National Audubon Society
- National Earth Science Teachers Association
- National Organization of Research Development Professionals
- National Park Service
- National Volunteer Organizations Network
- Natural Areas Association
- NCGE
- New World Agriculture and Ecology Group
- North Carolina Environmental Educators Association
- Northeast Partners in Amphibian and Reptile Conservation
- Pacific Seabird Group
- Polar Educators International
- Project WET Canada
- Royal Geographic Society
- SABER
- SCGIS
- SER
- Sierra Club
- Smithsonian Institution

- Society for Conservation GIS
- Society for Freshwater Science
- Society for Integrative and Comparative Biology
- Society for Range Management
- Society for the Psychological Study of Social Issues
- Society of Freshwater Biology
- Society of Freshwater Sciences
- Society of Integrative and Comparative Biology
- Society of Systematic Biologists
- The Natural History Network
- Trout Unlimited
- Udall Scholars
- University Leipzig
- USA NPN
- Vital Signs of Maine
- Western Society of Naturalists
- Whitebark Pine Ecosystem Foundation
- Wildlife Society