

Workshop 1: Conference on Public Participation in Scientific Research 2012: An International, Interdisciplinary Conference

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The Conference on Public Participation in Scientific Research 2012 was held on 4 and 5 August in association with the Ecological Society of America's 97th Annual Meeting in Portland, Oregon. The conference took important steps toward formalizing the field of public participation in scientific research (PPSR); facilitated communication, collaboration, and innovation, and identified points of strength and concern for the field. Additional information about and results from the conference can be found at citizenscience.org.

Background

Citizen science and other forms of public participation in scientific research (PPSR) are rapidly expanding our knowledge of the world around us, enhancing public understanding of scientific processes, and contributing to management and policy decisions (Shirk et al. 2012). Projects span many fields—including astronomy, molecular biology, human and environmental health, ecology, natural resource management, and conservation biology. Despite the rapid growth and impact of PPSR, there is limited communication of insights across projects and fields of study, and few venues for engaging participatory science practitioners across disciplines. To help meet those needs, we convened an open conference on PPSR that aimed to formalize PPSR as a field of study and practice; stimulate communication, collaboration, and innovation; and develop an organizational structure for the field of PPSR.

The time is ripe to unite and formalize this field. Over the past five years, interest in and funding for citizen science and PPSR has increased dramatically among professional scientists, government agencies, nongovernmental organizations, and public participants, spurring the development of new research projects, technologies, and programmatic approaches (Citizen Science Project Registry, www.citizenscience.org/projects). This interest has resulted in a rapidly growing number of programs and

insights, as evidenced by the upward trend in peer-reviewed publications (Fig. 1), as well as a book reviewing the field (Dickinson and Bonney 2012) and a special issue of *Frontiers in Ecology and the Environment* reviewing the role of PPSR in ecology (Henderson 2012). However, for the most part such insights are disconnected across a number of fields and are not well communicated to researchers and practitioners in different disciplines. For example, new techniques in improving educational outcomes in astronomy-related projects may not be found easily by practitioners in environmental fields.

Along with this increased interest in and implementation of PPSR has come recognition of challenges in demonstrating explicit project outcomes for both science and education. These challenges have resulted in legitimate criticisms of PPSR projects along with some misunderstandings concerning their utility. Because the field is young, dispersed across many disciplines, and not well defined, individuals unfamiliar with PPSR may be hard pressed to evaluate its rigor and potential.

Recent invitational meetings have sought to bring together leaders in PPSR to address these issues and to improve communication, innovation, and best practices across the field. They have led to a toolkit for citizen science project development (Bonney et al. 2009, www.citizenscience.org/toolkit), creation of the web site citizenscience.org, which supports a community of ~2000 subscribers, and the development of best practices for PPSR data management (McEver et al. 2007, 2011). These workshops also have identified the need for open, national conferences and a professional association to advance the field. The conference held in Portland, Oregon in 2012 was a first step in those directions.

Goals of the conference

1. Formalize PPSR as a field of study and practice.
2. Stimulate communication, collaboration, and innovation.
3. Develop an organizational structure for the field of PPSR, including a professional association, regional networks, a journal, and annual or biannual meetings.

Planning of the conference

Recognizing the breadth of the PPSR field and the need to engage leaders from a wide range of disciplines and PPSR programs, we (the organizing committee) iteratively discussed speakers and activities that would meet help achieve the conference's goals and reflect the diversity of the field. We convened a large team of advisors to help refine the conference agenda and to identify a diversity of qualified speakers. We also developed a steering committee that represented leaders from a range of PPSR-related organizations. This committee confirmed that the community was interested in formalizing the field of PPSR and developing a new organization to support it. The steering committee also helped to develop the initial agenda for components of the conference that focused on developing a new organization, taking into consideration anticipated tasks and challenges. Last, we engaged a professional evaluator to assess the success of the conference to meet its goals. In our experience, evaluating conferences of this size (~300 participants) is unusual, but we thought it necessary given our goals for formalizing the field. We needed rigorous analysis of the participants' feedback and experience to inform the continued development of the field and to help ensure that the next steps in its formalization meet the community's needs.

Structure of the conference

The conference structure was designed explicitly to address the three goals of the conference and contained several mechanisms to facilitate dialogue among participants. It featured five themed sessions with invited speakers, three poster sessions, and a culminating “plenary conversation” that addressed the next steps for the field. Throughout the conference, participants were encouraged to fill out surveys associated with the conference, contribute to a Twitter conversation on the conference, participate in interviews, and respond to three prompts on bulletin boards in the meeting hall: (1) “In my role as a PPSR practitioner or researcher, I need ...” (2) “The field of PPSR needs ...” (3) “An organization for PPSR should ...”

The five speaker sessions were designed to inspire the participants, highlight innovations and cross-disciplinary perspectives, and stimulate discussions during breaks, poster sessions, and meals. Speakers represented a variety of disciplines, including astronomy, biochemistry, climatology, conservation, ecology, economics, education, engineering, history, library science, public health, social science, and sustainability science. They also represented a variety of types of institutions, including universities, government agencies, research organizations, nonprofits, and PPSR programs.

The conference agenda intentionally included a wealth of face-to-face time to facilitate participants’ discussions about their work and about developing new collaborations and innovations. The three poster sessions, which cumulatively included 157 posters, were relatively long, as were the breaks and lunches, to enable open-space conversations above and beyond the formal conference topics.

In a structure unusual for a conference of this size, during the closing plenary conversation participants self-assembled into 12 working groups, each of which addressed critical next steps for the field of PPSR (Table 1). The design of the session and the topics for the working groups were informed by participant responses to interviews, bulletin board prompts, and real-time Twitter conversations. We intentionally put off finalizing the session design until just before the session began so that we could incorporate the evolving thoughts of participants at the conference. This design allowed the plenary conversation to flow naturally from the energy, interests, and goals of the conference participants.

Results from the conference

The conference attracted roughly 300 participants from a broad range of disciplines, levels of experience with PPSR, and organization types (see Heimlich 2012 for a detailed breakdown). They came from many different countries and represented research taking place on all seven continents.

The participants’ enthusiasm and their deep engagement was striking. Participant interviews with the conference evaluator showed that participants felt their needs to meet and learn from others were met early on. Participant comments shifted from focusing on their own needs to sharing ideas for advancing the field as a whole as the conference progressed (Heimlich 2012).

A palpable sense of accomplishment ran through the presentations and discussions—participants clearly felt that the field of PPSR is reaching a point of maturity and utility for science, education, and

society. (This was also documented by the external evaluator.) However, there was also an overarching thread of reflective and constructive questioning. One of the most notable concerns was how the field can become accepted by the professional scientific community and by policy makers, which have historically marginalized PPSR. Interviews identified professionalism of the PPSR field as the dominant goal for participants (Heimlich 2012). Additionally, participants recognized that ethnic and racial diversity was poorly represented at the conference and in the PPSR field as a whole, and that this shortcoming requires additional efforts to ensure broader participation and benefits to diverse communities. The conference was successful at stimulating communication and energy toward formalizing the field. Follow-up evaluations (to be conducted several weeks after the conference) should indicate whether it also facilitated new collaborations and innovations.

Working group discussions during the closing plenary conversation identified a number of next steps for the field and for developing a new organization to support PPSR. Recommendations included holding regular conferences and workshops and developing online tools to encourage communication, collaboration, and innovation; providing more opportunities for professional development for PPSR practitioners, educators, and researchers; starting a new open-access journal for the field; developing a code of ethics and recommendations for best practices for PPSR; connecting people with tools for responsible data management and data visualization; working with diverse communities to broaden access to and uses of PPSR; and adopting a new, shorter, more universal name for the field.

Next steps for the field of PPSR

We (the organizing committee, working group members, and other interested practitioners) will be taking steps to continue the formalization of PPSR as a field of study and the development of a new organization for PPSR. These steps will include the participation of the broader community of practitioners, educators, and researchers. For example, we are leveraging and enhancing online tools to enable the working groups (and anyone else interested) to continue to develop the ideas from the conference (these tools will be available via www.citizenscience.org). We will also form a new steering committee to push forward the development of a new organization to support the PPSR field. Because of the interdisciplinary and community-oriented nature of developing a new organization, additional steps will need to emerge from further conversations that engage this broad audience. Based on the rapid growth of the field and the level of engagement of the community in formalizing the field, we are confident that it will be an exciting and productive endeavor.

Acknowledgments

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Table 1. Working group topics.

Working group
Best practices
Code of ethics and diversity
Data management
Data visualization
Education
Governance
Hold regular conferences
Deciding on names and terms
Maintain public communication
Professional development
Publish journal
Web site

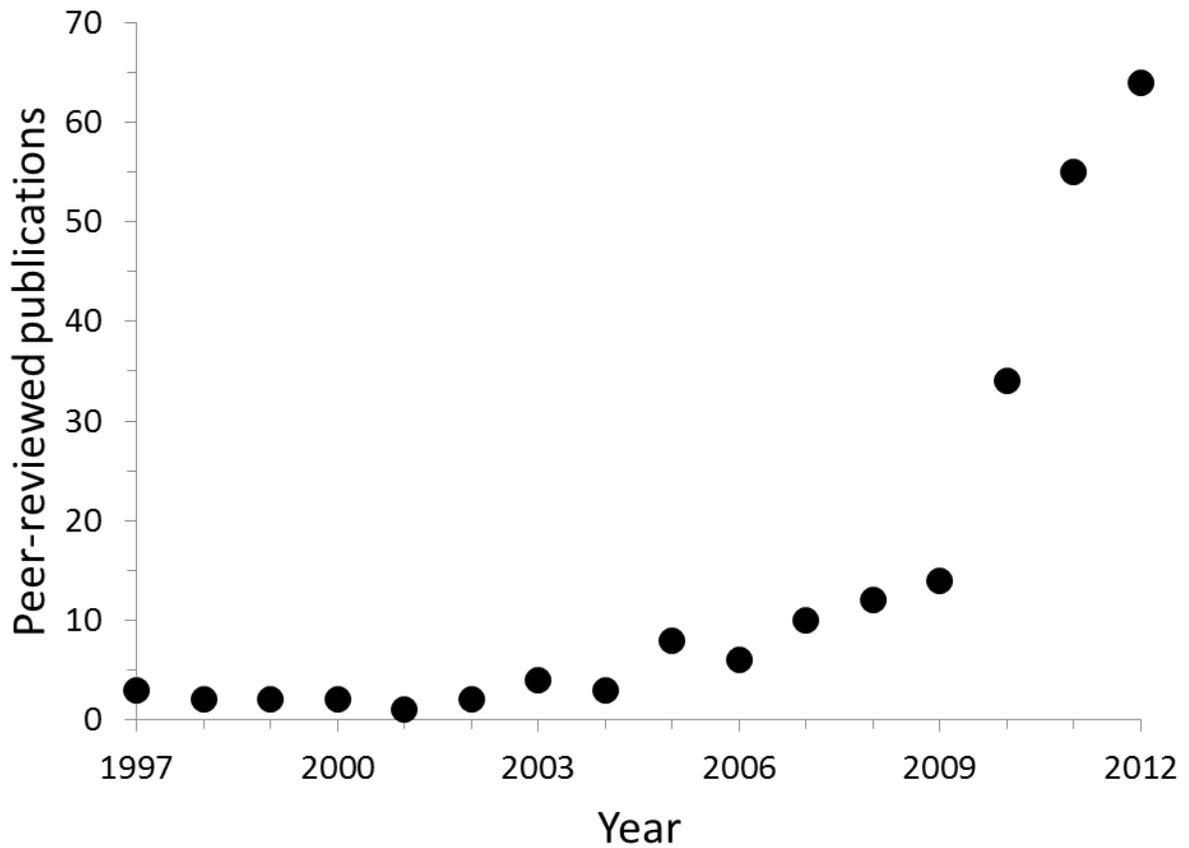


Fig. 1. The number of peer-reviewed publications with the key word “citizen science” (as one indicator of relevant work) as determined in a search of the Web of Science (Thomson Reuters 2012). The search was done on 31 October 2012, and so does not reflect the complete number of publications for 2012.