Harnessing CITIZEN SCIENCE to Protect and Restore Puget Sound

Washington Sea Grant
Kate Litle, Citizen Science Specialist
Michelle Wainstein, Senior Program Coordinator
Penny Dalton, Director

Washington State University Extension
Don Meehan, Natural Resources Stewardship Program Director

Citizen Science Advisory Panel
Citizen science — engaging the public in making observations, and collecting and recording data — offers an exceptional opportunity to enhance public stewardship of Puget Sound and provide credible, cost-effective data essential to fulfill research, monitoring and management priorities. The Puget Sound Action Agenda for protecting and restoring Puget Sound by 2020 includes citizen science as a near-term action:

Develop and implement a coordinated citizen science program. This will connect citizens and scientists to not only increase engagement opportunities but provide cost-effective data collection in support of Action Agenda priorities. (E.4 Near-term Action 11).

The Puget Sound Partnership (PSP) contracted Washington Sea Grant (WSG) and Washington State University (WSU) Extension to develop recommendations for advancing citizen science to meet Action Agenda priorities. A Citizen Science Advisory Panel, composed of individuals from federal, tribal, state and county agencies, academia and non-governmental organizations, was formed to contribute critical and creative thinking and guide the development of recommendations. The full report includes a brief description of citizen science models and presents challenges to effective use of citizen science, as well as recommendations to support and enhance citizen science efforts that would contribute to scientific research, monitoring and management needs in Puget Sound.

At present, hundreds of people participate in citizen science programs around the Sound, but in many cases there is little alignment of citizen science programs with regional priorities. While the definition of citizen science is broad, programs and projects that rely on partnerships among citizens, scientists and managers for rigorous data collection will be most useful in addressing Action Agenda science priorities. Many volunteers and citizen science practitioners seek closer relationships with university and agency scientists and report a desire to contribute to real, meaningful and important scientific studies. At the same time, scientists and natural resource managers are interested in engaging citizens in projects to expand the spatial and temporal scope of research and enhance scientific data collection.

While enthusiasm about citizen science in Puget Sound is high, there are a number of challenges that must be addressed to use citizen science effectively as a tool for research, monitoring and management.

- A clear pathway and process for developing and supporting partnerships among citizens, scientists and managers currently is lacking.
- Data quality issues must be addressed in order to provide rigorous data collection.
- Successful citizen science programs require a significant investment in volunteer management, a component for which many scientists and managers, by their own admission, have neither the interest, skills nor time.
- The increased volume of data allowed by citizen science requires additional investment in data management.
- Current agency and academic cultures remain largely focused on traditional approaches to research, and citizen science is not part of the typical research toolbox. Significant expansion of the use of citizen science in research, monitoring and management will necessitate endorsement and funding investment by Puget Sound agencies and institutions.
- Liability, safety and logistical issues must be considered in agency and academic partnerships with citizens.
In light of these challenges and barriers, WSG, WSU Extension and the Citizen Science Advisory Panel reached consensus on the following recommendations:

**Establish a Citizen Science Resource Center to facilitate connections between science needs and citizen capabilities and to provide resources to support and enhance these relationships.**

PSP should support the establishment and maintenance of a Citizen Science Resource Center to facilitate communication and collaboration among volunteers, scientists and managers, and link citizen science efforts with research, monitoring and management priorities. The following Center activities are recommended for the 2009-2011 biennium:

- Identify research priorities well suited to citizen science contributions.
- Proactively develop collaborations that will contribute to science and management needs for protecting and restoring Puget Sound.
- Provide consultation services for citizen science.
- Develop and maintain resources to facilitate citizen science efforts linked to scientific research, monitoring and management needs.

**Promote citizen science as a research, monitoring and resource-management tool.**

The use of citizen science as a tool for research, monitoring and resource management should be promoted through multiple channels, including developing policy, publicizing successes and expanding science education and training. Citizen science can be promoted through meetings and workshops with scientists, managers, policy-makers and volunteer groups, as well as at local, national and international meetings. The following specific actions are recommended:

- The Puget Sound Partnership should adopt formal policy language promoting the use of citizen science to support research, monitoring and management needs.

**Introduce citizen science as a research tool in science education.**

**Promote citizen science success stories and contributions to research and management.**

**Develop approaches for providing sufficient, stable funding for citizen science efforts that contribute to science and management.**

A funding strategy should be developed to support rigorous citizen science programs and build volunteer management and coordination capacity. The strategy should include long-term mechanisms to support capacity and relationship-building as citizen science becomes a more prominent tool in the management of Puget Sound natural resources.

**Evaluate the contribution of citizen science efforts to Puget Sound science.**

It is imperative to evaluate program development and progress through formative and summative evaluations of Center activities and products, and other efforts to promote citizen science and develop funding strategies. In addition, increased capacity for evaluating individual citizen science partnerships is necessary.

**Conclusion**

Through implementation of these recommendations, PSP can build a rigorous citizen science network that enhances public stewardship and environmental literacy, engages the public in efforts to protect and restore Puget Sound and increases the availability of credible, cost-effective data to achieve Puget Sound Action Agenda goals and priorities.
Citizen science efforts are developed along scientist-driven and citizen-driven pathways. In the scientist-driven pathway, scientists or managers identify a research, monitoring or management need and seek citizen involvement. In the citizen-driven pathway, citizens initiate program development based on a question or issue of interest and/or a desire for more public engagement. A Citizen Science Resource Center and funding strategy for citizen science will directly address the challenges faced by citizen science efforts developed through each pathway. The promotion and evaluation of citizen science will work to expand the recognition of citizen science as a standard tool in the research and management toolbox.

1 Citizen is defined broadly to include governments, NGOs, primary and secondary schools, higher education institutions, community groups and individuals.

The full report was submitted to the Puget Sound Partnership in July 2009 and is available for download at wsg.washington.edu/citizenscience/CitSciPS2009.pdf.

For additional information, visit WSG’s citizen science Web page, wsg.washington.edu/citizenscience/index.html, or contact Kate Litle, Citizen Science Specialist, at 206.616.0151 or kalitle@u.washington.edu.

Citizen Science Advisory Panel
Russel Barsh, Kwíált: Center for the Historical Ecology of the Salish Sea
Maggie Bell-McKinnon, Washington State Department of Ecology
Susan Bulleridick, COSEE-Ocean Learning Communities
Doug Myers, People for Puget Sound
Jan Newton, Applied Physics Laboratory, University of Washington
Rohinee Paranjpye, Northwest Fisheries Science Center, NOAA Fisheries
Walter Pacheco, Muckleshoot Indian Tribe
Julia Parrish, School of Aquatic and Fishery Sciences and Program on the Environment, University of Washington
John Pierce, Washington Department of Fish and Wildlife
Mike Racine, Washington Scuba Alliance
Randy Shuman, King County Department of Natural Resources and Parks

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