

Workshops for Leaders of Volunteer Estuary Monitoring Programs

Ron Ohrel and Seba Sheavly

Ron Ohrel is a project coordinator with the Atlantic Regional Office of the Center for Marine Conservation (CMC). He manages a series of workshops designed for non-government organizations, educators, and local, state, and federal government officials to explore elements of successful volunteer monitoring programs. He also works with CMC's Model Communities Program, which uses local pilot projects to explore methods for addressing coastal pollution issues.

Seba Sheavly is the Center for Marine Conservation's (CMC's) Director for the Atlantic Region and International Marine Debris Prevention Campaign. Ms. Sheavly manages CMC's conservation programs and interacts with an international network of volunteers, researchers, business and industry representatives, government agencies and policy makers focusing on marine pollution. She develops and directs programs for marine conservation on regional, national and international levels focusing on building public awareness of pollution issues through education and outreach; conducting research and monitoring using "citizen scientists" for data collection; and developing local solutions for pollution problems involving citizen groups and regional partners.

Volunteer monitoring has become an integral part of the effort to assess the health of U.S. waterways. Government agencies have limited funds for monitoring and have found that volunteer groups can provide high quality reliable data to supplement their own water quality monitoring programs.

The U.S. Environmental Protection Agency's Oceans and Coastal Protection Division, in partnership with the Center for Marine Conservation, is conducting a series of workshops in coastal areas near National Estuary Programs. The workshops are free to attendees (including food and lodging) and provide useful tools for all volunteer estuary water quality monitoring groups. Newer organizations learn how to establish or improve water quality monitoring operations, improve the quality of data collected, and enhance training efforts. More established groups share their experiences with sampling, fundraising, establishing partnerships, and other topics. All participants have an opportunity to network with members of monitoring groups and government agencies. In addition, recent participants reviewed and commented on the EPA guidance document, *Volunteer Estuary Monitoring: A Methods Manual*, which is being revised for publication in 2000.

Local and regional experts lead workshop attendees through the sometimes complicated maze of steps necessary to ensure that data can be used effectively by multiple groups (e.g., government agencies, other monitoring organizations, the public). By bringing together myriad and sometimes disconnected monitoring groups and regulators, the workshops help establish or strengthen coordinated estuarine watershed monitoring partnerships.

Introduction

To say that estuaries are valuable resources is a gross understatement. They are among the most productive natural environments in the world and among the most sought after places for people to live. Estuaries support major fisheries, shipping, and tourism. They sustain organisms in many of their life stages and migration routes and are havens for threatened and endangered species. Associated wetlands filter pollutants, dissipate floodwaters, and prevent land erosion.

Yet, despite their value, estuaries are in trouble.

Nearly half of the U.S. population lives in coastal areas, which include estuarine shorelines. Unfortunately, this increasing concentration of people is upsetting the natural balance of estuarine ecosystems and threatening their integrity. Pollution, habitat destruction, overfishing, wetland loss, and the introduction of non-indigenous species are among the consequences of many human activities.

As concern over the well-being of the environment has risen during the past several decades, so has the interest in gathering information about the status of estuaries. Government agencies have limited funds for monitoring. As a result, volunteer monitoring has become an integral part of the effort to assess the health of our nation's waters. Designed properly, volunteer programs can provide high quality reliable data to supplement government agencies' water quality monitoring programs.

Because of the role that volunteer groups can play in monitoring estuarine health, an effort is being made to bring together citizen monitoring groups and government agencies in order to set up a regional dialogue and share information about monitoring programs. An ongoing series of workshops for leaders of volunteer estuary monitoring programs and government agency representatives—funded by the U.S. Environmental Protection Agency's (EPA's) Oceans and Coastal Protection Division, coordinated by the Center for Marine Conservation (CMC), and co-hosted by National Estuary Programs (NEPs)—is being held in coastal areas nationwide. Recognizing that volunteer groups have limited budgets, the workshops have no registration fee. In addition, food, lodging, and limited reimbursement for travel are provided.

This paper describes several details about the workshops, including their objectives, content, participation, results, and future locations.

Workshop Objectives

The workshops provide useful tools for all volunteer estuary water quality monitoring groups, regardless of their level of experience. Instead of using a "cookie-cutter" approach and using the same agenda for all workshops, we tailor the workshops to meet the specific needs of the monitoring community. The workshops are not designed to specify what volunteer groups should be doing, but they help participants discover how they can gain the most from their efforts.

While specifically tailored to meet the needs of volunteer programs in each location, the workshops generally share common objectives, as outlined below:

Networking

A primary objective of the workshops is simply to help the participants get to know each other. Although most attendees (including presenters) live within 50 miles of the workshop site, many often don't realize that they are not alone—many other groups are operating within the watershed. The workshops gather these groups together to share information about their programs and experiences with estuary monitoring. This is a valuable quality of the workshop, as it may lead to future collaboration among several groups.

The workshops also include local, state, and federal government agency representatives who work with water quality issues. Their participation allows them to understand the needs and concerns of the volunteer groups. In addition, the volunteers have the opportunity to learn what data, collection methods, and reporting methods the government agencies prefer.

The involvement of government agency representatives often helps volunteer groups identify government funding sources and other assistance. At one workshop, for example, a government agency representative informed volunteers that her office could loan equipment, provide technical assistance, and analyze samples for them. Until that time, many in the audience did not know those opportunities were available.

Program Management

Most workshop presenters are well-versed in the intricacies of volunteer monitoring and have experience in the region where the workshop is held. These qualities allow them to provide useful information on many topics that form the backbone of volunteer monitoring programs:

- establishing program objectives;
- choosing water quality variables to monitor;
- selecting monitoring equipment and methods;
- recruiting, training and retaining volunteers;
- partnering with other volunteer groups and government agencies; and
- fundraising.

In addition to selected speakers, the interactive nature of the workshops allows participants to share their experiences with these important program details.

Data Credibility

No volunteer group should collect data just for the sake of collecting data. Volunteer programs should know how they want their data used before they place their first sampling bottle in the estuary. Generally speaking, volunteer data may be used to either educate or help make water quality management decisions.

Volunteer programs wishing to use their data for the latter purpose face a very difficult issue: data credibility. Many potential users of volunteer data mistakenly believe that only professionally trained scientists can conduct sampling and produce accurate and useful results. Potential data users are often skeptical about volunteer data—they may have doubts about the goals and objectives of the project, about how volunteers were trained, about how samples were collected, handled and stored, or about how data were analyzed and reports written. Given proper training and supervision, however, **dedicated volunteers CAN collect high quality data** that is:

- consistent over time, throughout the project's duration, and regardless of how many different monitors are involved in collecting the data;
- collected and analyzed using standardized and acceptable techniques; and
- comparable to data collected in other assessments using the same methods.

Experts on the topic guide workshop participants through the process of ensuring high quality data.

Getting the Word Out

Finally, the workshops recognize that the hard work of many volunteers can be for naught if the data remains filed away on data cards or in spreadsheet programs. By highlighting data management, interpretation, and presentation, the workshops show how data can be used to tell a story about the estuary.

Speakers provide helpful how-to guides for workshop participants wanting to learn the best, most convenient ways to analyze data and transform it into a meaningful message for their audience. Participants review:

- uses of graphics to summarize data;
- different reporting methods;
- techniques to draw media attention to the group's efforts; and
- methods for sharing data on the internet.

Revising EPA's Guidance Manual

The most recent workshops gave participants an opportunity to review and comment on the EPA guidance document, *Volunteer Estuary Monitoring: A Methods Manual*. Recognizing that volunteer monitoring programs, techniques, and issues change over time, EPA is currently revising the manual, which was first written in 1993.

In advance of the workshops, each participant was provided with a manual and questionnaire asking for input about the manual's content, format, readability, and general usefulness to volunteer programs. Manual reviewers were encouraged to suggest changes to the document to make it better suit their needs.

Recent Results

Since EPA and CMC began this project in 1997, ten workshops have been held throughout the United States (Table 1). During the five workshops held in 1999 alone, 232 individuals participated, representing 143 non-governmental, educational, and governmental organizations. A breakdown of those organizations is shown in Table 2. It is believed that such diverse representation was beneficial to the workshops, as individuals who may not normally interact were able to share their knowledge, suggestions, and even frustrations. Consequently, participants came away with a better understanding of what monitoring activities are taking place in their region, found solutions to nagging problems, heard different perspectives on a topic, and found supporting resources that they may not have known about earlier.

Workshop participants were encouraged to bring their sampling equipment to the workshops for use during field trips. This was particularly helpful to novice groups that may have been contemplating what water quality parameters they should measure and what equipment to use. Volunteers reported monitoring a broad array of parameters with many different kinds of equipment (Table 3).

While one objective of the workshops is to help ensure data usability, many participants in the 1999 workshops reported that their data is already used by a broad selection of groups, and for many different purposes (Table 4). However, some participants expressed frustration at the reluctance shown by some regulatory agencies to use volunteer data. By continuing to bring these groups together, we hope to facilitate dialogue that might resolve this problem, identify other potential data users, and lead to even more uses of volunteer data.

In all, 25% of the workshop participants submitted comments for improving the EPA manual. They provided many excellent insights and suggestions for making the manual better suit their needs. Comments were so extensive, in fact, that EPA elected to expand work on the project. The final document is being completed and should be available by the summer of 2000.

Evaluations of the workshops were overwhelmingly positive, with individuals appreciating the variety of speakers, the agenda topics, and the fact that the workshops were free. Many requested that additional workshops be held in their regions in the future.

Next Steps

Five additional workshops are being planned for the period between fall 2000 and spring 2001. One workshop, similar in content to previous ones, will be held in Louisiana. Another, designed for monitoring groups with significant experience, is slated to be held in Maine. A third workshop—for students—will be held in Washington, DC. Finally, two workshops will be held near the U.S.-Canada and U.S.-Mexico borders in an effort to expand the effectiveness of monitoring watersheds and provide a forum for cultural exchange between the North American populations.

We also expect to continue soliciting feedback on the revised *Methods Manual* during the upcoming workshops. The manual will be assessed for its applicability to representative estuarine ecosystems throughout the United States, especially with regards to pollutant parameters, biological monitoring, quality assurance/quality control, sample case studies, and document format. Because the *Methods Manual* is designed to be a “living document,” it should be reviewed on a continual basis for opportunities to facilitate its use by volunteer monitoring organizations.

Table 1. Volunteer estuary monitoring workshop locations, 1997-1999.

Year	
<i>1997</i>	<i>1999</i>
Wachapreague, VA	San Pedro, CA
St. Petersburg, FL	Mobile, AL
Galveston, TX	Toms River, NJ
New Bedford, MA	San Juan, PR
Richmond, CA	Astoria, OR

Table 2. Organizations represented at five volunteer estuary monitoring workshops, held in 1999.

Type of Organization	Number of Organizations Represented	Breakdown
Non-governmental	57	38 Monitoring/Advocacy 2 Advisory 2 Research 7 Media 8 Other
Educational	31	1 Elementary 3 Junior High 5 High School 18 University/College 1 Museum/Aquarium 3 Other
Governmental	54	21 Federal 27 State/Regional 6 Local

Table 3. Sampling parameters and equipment used by volunteer estuary monitoring programs, as reported by workshop participants in 1999.

LOCATION	SAMPLING PARAMETERS		EQUIPMENT USED	
San Pedro, CA	algae ammonia bacteria birds conductivity dissolved oxygen dissolved solids fish macroinvertebrates	metals nutrients pH phenols plankton salinity SAV temperature turbidity	Colilert conductivity meter DO/salinity meter GREEN kit	Hach kit LaMotte kit reagent kits trawl Corning checkmate
Mobile, AL	alkalinity bacteria dissolved oxygen hardness nutrients	pH salinity temperature turbidity	LaMotte kit Hydrolab	
Toms River, NJ	algae bacteria BOD carbon dioxide chlorophyll a conductivity dissolved oxygen macroinvertebrates metals	nutrients pH salinity sediments solids temperature toxics turbidity water depth	boat D-frame net flow meter Hach kit Hydrolab hydrometer LaMotte kit	pH paper refractometer Secchi disk sieve thermometer turbidity meter
San Juan, PR	ammonia bacteria BOD chlorophyll a color conductivity dissolved oxygen epibenthos fish hardness marine debris metals	nutrients pesticides pH phenols plankton salinity sediments solids sulfates taste temperature turbidity	biological meters data logger Hach kit Hydrolab incubator LaMotte kit	plankton net refractometer Secchi disk spectrophotometer WQ Analyzer Corning checkmate
Astoria, OR	amphibians bacteria birds BOD chlorophyll a conductivity depth dissolved oxygen fish fluoride macroinvertebrates	nutrients pH precipitation salinity SAV sediments temperature tide stage turbidity water color	boat grab Hach kit Hydrolab hydrometer incubator LaMotte kit	nets (seine, dip, D) remote data logger Secchi disk sieve trawl turbidity meter YSI meter

Table 4. In 1999, workshop participants reported that they share their volunteer data with a wide variety of organizations. In addition, the volunteer data is used in a number of applications.

WORKSHOP LOCATION	VOLUNTEER DATA RECIPIENTS		DATA APPLICATIONS
San Pedro, CA	<u>Local</u> aquarium park district municipality <u>State</u> state parks <u>Region</u> WQ control boards	<u>Federal</u> EPA <u>Other</u> volunteer organizations residents restoration contractors universities/students attorneys scientists	litigation resource management baseline establishment education/public outreach alert env. health officials research watershed management restoration monitoring trend assessment evaluation of NPDES programs
Mobile, AL	<u>Local</u> water quality agencies residents county/municipal officials <u>Region</u> restor./protection projects	<u>State</u> env. mgmt. agencies water quality agency WQ monitoring network <u>Other</u> volunteer monitoring orgs.	trend assessment education/public outreach 305(b) water quality reporting baseline establishment local planning posted on web site (STORET)
Toms River, NJ	<u>Local</u> county planning board environmental council <u>State</u> water quality agency public health dept. of marine fisheries	<u>Federal</u> EPA USGS <u>Other</u> volunteer organization civic associations scientists universities	baseline/trend assessment wetlands monitoring environmental planning watershed management research town planning education/public outreach WQ stds. compliance assessment program assessment
San Juan, PR	<u>State</u> water quality agency Sea Grant env./public health dept. dept. of natural resources <u>Federal</u> NERR	<u>Other</u> medical university universities students volunteer monitoring orgs. newspaper	database development baseline establishment resource management education/public outreach data verification research
Astoria, OR	<u>Local</u> port authority water quality agency land use planning agency watershed advisory council econ. development agency <u>State</u> water quality agency dept. of natural resources fisheries and wildlife dept.	<u>Region</u> water quality agency <u>Federal</u> NMFS U.S. Forest Service <u>Other</u> regional internet network students/teachers universities volunteer organizations	wetlands monitoring resource management education/public outreach invasive species inventories flora/fauna surveys baseline establishment data collection training timber sales advocacy habitat restoration land use planning

