CSREES Volunteer Water Quality Monitoring National Facilitation Project

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How Extension Volunteer Monitoring Programs Get Started

University of Rhode Island **University of Wisconsin**

As part of the Volunteer Water Quality Monitoring National Facilitation Project, we sent an inquiry in February 2002 to 26 program coordinators, operating 27 Cooperative Extension (CE) sponsored/co-sponsored programs in 25 states or territories; these programs were identified through an inquiry in the fall of 2001. Inquiries were completed for 21 programs, a 77% response rate.

The program-level inquiry was designed to help us learn the ins and outs of existing volunteer water quality monitoring programs so that we could compile and share that information through our website (www.usawaterquality.org/volunteer), list server, guidance materials, trainings, and general networking. There were six main sections of the inquiry that correspond with sections of the guidance documents we are preparing. The sections are: types of activities available, effective training techniques, quality assurance issues, volunteer management and support tools, outreach tools, and funding issues. This summary discusses how when and why CE volunteer monitoring programs got started and the types of activities in existing programs.

Program beginnings

The first program began in 1978 (New Hampshire Lakes Lay Monitoring Program), the most recent ones in 2001 (Lake Tahoe Environmental Education Coalition: Tahoe-Truckee Snapshot Day and Colorado's North Fork Volunteer Monitoring Project). Eleven of the programs started after 1995, the year of the last comprehensive inquiry of CE volunteer monitoring programs. Reasons for starting a program include (in decreasing order of popularity):

- Due to a lack of watershed monitoring by state or other agencies/To create a long term, credible, data set (address need for data) (10 programs)
- To educate the public about water quality issues (7 programs)
- As a youth development program (targeted specifically at youth, not general public) (3 programs)
- To create consistency in methods, data management, and coordinated use of data between basins, volunteer groups, and (for one program) agencies (3 programs)
- Due to an interest by the public about why and how monitoring is done and what results mean (3 programs)
- For community involvement with water resources (2 programs)
- Due to a crisis in the shellfish industry caused by poor water quality conditions (1 program)
- Due to concerns about drinking water quality in private wells (1 program)

Environment Monitored

Over time the number of sites and environments monitored by individual programs has often changed significantly. Typically as programs have become more established, the number of volunteers in the programs has increased, and has contributed to the programs' ability to expand the number and types of sites monitored.

In June of 2002 nearly 8500 volunteers were monitoring rivers, streams, lakes, ponds, wells, wetlands, and estuaries in 21 CE sponsored/co-sponsored. All but one program has registered an increase in number of volunteers since the program began and all indicated an increase in number of sites monitored. Most program volunteers are monitoring rivers and streams, with 15 programs reporting a total of 4992 volunteers monitoring 1816 sites. This represents a significant increase in river and stream monitoring as 11 programs reported starting out with a total of 943 volunteers monitoring 178 river and stream sites.

Volunteer lakes and marine monitoring have both seen increases in numbers of sites and monitors as well. Today, about 2660 volunteers monitor 860 lake and pond sites in seven programs. When these programs began only five had the option for volunteers to monitors lakes or ponds, and within those five programs, 87 volunteers monitored 53 lakes/ponds. Only one program has seen a decrease in numbers of volunteers and lake/pond sites monitored. Today, nearly 700 volunteers monitor marine environments in six programs (of the 16 responding programs in locations with marine or large lake estuaries). These monitors sometimes collect data at sites along the tributaries that enter the estuary/marine environment. Five of the six programs offered estuary/marine environment monitoring at their start. Of the five with marine-oriented programs from the start, all but one have seen an increase in numbers of volunteers. One program has remained the same size since its inception in 1991. One program, Great Bay Coast Watch in New Hampshire, has 15 times as many volunteers as when it began, but only about half as many sites.

None of the responding programs monitored wetlands when their programs first began. Since then, three programs have initiated wetlands monitoring, interestingly, all three are in the New England states (URI Watershed Watch, NH Lakes Lay Monitoring Program, and VT's Watershed Alliance). Today, there are still relatively few sites (11) and volunteers (42) who monitor wetlands as compared to other water environments.

The only environment about which we inquired that has seen a widespread decrease in numbers of volunteer monitors and sites since volunteer monitoring programs began is at drinking water wells. There are 75 volunteers currently monitoring wells in three programs. It should be noted that at its inception only one program supported well monitoring with 250 volunteers at as many sites. Since then that program has become smaller, while two other programs have started well monitoring.

No programs specifically reported monitoring beaches. We believe this is due to the fact that beaches were likely considered by respondents to be a subset of both marine and lake environments.

How our 'environments monitored' results compare to 1995 results

A 1995 inquiry by the University of Rhode Island located 28 volunteer water quality-monitoring programs across the nation, 12 of which were still in existence during the 2002 inquiry. Although the 2002 inquiry found that there was an increase in numbers of sites monitored across all environments, it did not track specific programs' loss or gain of sites monitored.

At the time of the initial inquiry, volunteers in CE sponsored or co-sponsored programs monitored approximately 3700 estuary, lake, and stream sites. Since then, that total decreased to about 2800 sites; estuary and lake monitoring sites declined in number, while stream sites tripled (Figure 1). The number of wells monitored decreased dramatically from 22,000 to 80. Interestingly, although some programs ended and others were formed between 1995 and 2002, the overall number of volunteer monitors within CE sponsored/co-sponsored volunteer water quality monitoring programs in 2002 (8550) remains close to those in 1995 (8600 volunteers).

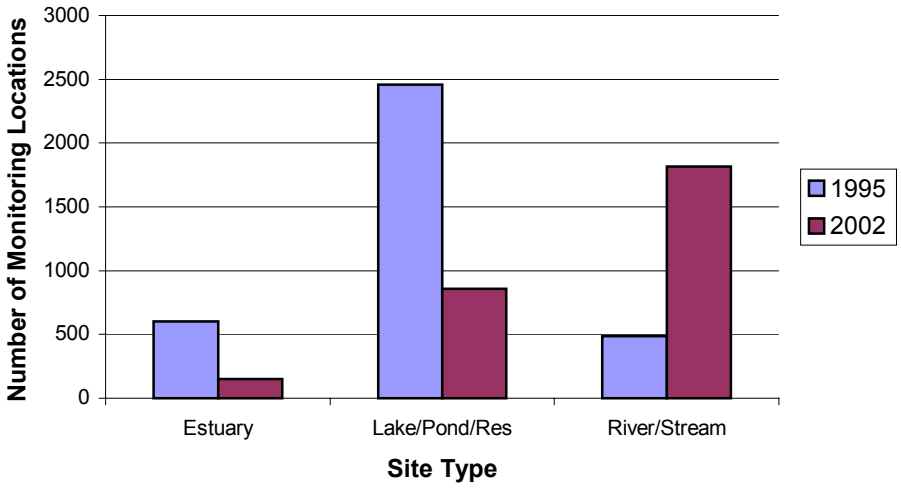

Figure 1. Comparison of number of monitoring sites at estuaries, lakes/ponds/reservoirs, rivers/streams, beaches and wetlands between 1995 study and 2002.

Monitoring Schedule

Of 21 reporting programs, five monitor on a year-round basis. Eleven of the programs monitor on a seasonal basis, generally April-November. Three programs monitor only once or twice a year.

Determining What to Monitor

Volunteer programs employed a variety of mechanisms to choose their parameters. In order of declining popularity they are:

- Eleven programs (of 21 reporting) chose at least some parameters by considering those used by a similar program
- Nine chose parameters based on recommendations from an environmental agency or utilized steering committees to help choose parameters
- Seven reported that project staff was involved in choosing parameters
- Seven programs chose parameters in other ways; these included:

- Choosing parameters highlighted in William B. Stapp's textbook, *Field Manual for Global Low Cost Water Quality Monitoring* (1997)
- Utilizing personal knowledge about the science and methods involved in monitoring
- Surveying citizens/stakeholders to determine monitoring goals
- Identifying what parameters would help answer specific water quality questions
- Choosing parameters discussed at an EPA Conference regarding volunteer monitoring

▪ Five programs used existing guidance documents, including EPA volunteer monitoring methods documents for lakes and streams and Riverwatch guidance materials

▪ Three programs chose parameters based on equipment or funds that were available

Program Development

Thirteen programs reported that they developed or evolved over time (Figure 2). Only three programs indicated that they developed "all at once", with all parameters and methods right from the beginning. Start dates for these three programs range from 1991-2001. Most programs indicated that methods for current parameters have been altered over time, with more advanced methods introduced for existing parameters, and others dropped the measurement of parameters as a part of their program evolution.

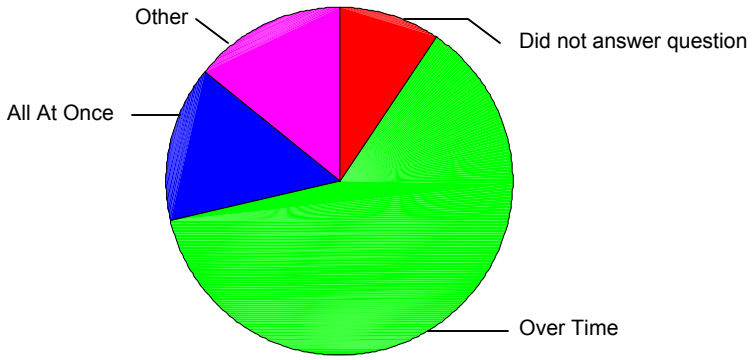

Figure 2. Program development descriptions

Cooperative Extension experts assisted with program development and technical support in half of the programs, while three-quarters reported using assistance of other experts. Agencies that were mentioned by respondents include Departments of Natural Resources, Marine Resources, Environmental Protection, Environmental Services, Wildlife, and the Environment. University scientists/researchers and SeaGrant professionals were also cited, as were personnel from local pollution control agencies, conservation commissions, watershed districts, non-profits, and the Tennessee Valley Authority.

Ten programs indicated that a technical advisory committee was used when establishing their program. Six program respondents indicated they consulted with volunteer monitoring colleagues to help start a program. Three respondents used volunteer monitoring conferences to help build their program, while just two respondents

utilized the World Wide Web to initiate a program (several coordinators noted that the web did not exist when their program was started).

Program Support and Technical Advice

Once programs became established, continued support and technical advice has been sought most often from experts outside of Cooperative Extension, with 15 programs citing this option. Program coordinators generally engaged the experts they initially consulted with for program development. Experts within Cooperative Extension are utilized as resources by eleven of the programs. Seven programs indicated that they now rely on a technical advisory committee for continued support. As testimony to the growth and sophistication of the volunteer monitoring movement, volunteer monitoring colleagues turn to each other more and more, with half the programs indicating they network with other volunteer monitoring professionals. Seven of the program coordinators indicated they currently depend upon conferences as a source of continued program development, specifying EPA-sponsored conferences in every case. Other sources that program coordinators turn to for continued program development include the World Wide Web, the River Network, the *Volunteer Monitor* newsletter, and the United Way Action Center.

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