

**A CITIZENS' MONITORING PROGRAM
FOR
LONG ISLAND SOUND**

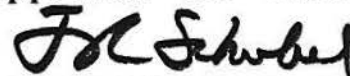
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INTRODUCTION

At this stage, citizen volunteer monitoring groups represent a largely untapped resource. They have at least two major potential societal and environmental benefits: the opportunity to generate valuable data at minimal cost and the opportunity for public education and involvement of citizens in the care and protection of the environments they monitor. However, there is skepticism among many scientists and environmental managers as to the quality of the data collected through volunteer monitoring programs. It is necessary, therefore, to address up-front the quality issue in any volunteer monitoring program to maximize the benefits. Because of their significant potential to generate valuable data and to stimulate environmental stewardship, the Long Island Sound Monitoring Program has assigned a priority to developing an interactive network of citizens monitoring programs around the Sound. While there are a number of citizen groups which already monitor harbors and rivers around the Sound, each of these groups has a very local focus, and they are not integrated into a network which provides regional, or even sub-regional, scale coverage.

This report summarizes the results of a workshop held at the Marine Sciences Research Center on 18 April 1994. The goal of the workshop was to develop a preliminary design of a citizens monitoring program for Long Island Sound (LIS). The workshop participants identified and explored the priority issues in the design and implementation of an effective citizens' monitoring program, and suggested which components are critical for a successful program.

Because citizen monitoring groups are by nature local in scope and because the Long Island Sound Monitoring Program must have a regional scope, the workshop participants concluded that the best model for a LIS Citizens monitoring program would be a Federation; an organization which federates existing local programs, stimulates the development of new programs, creates a network that links all programs together and centralizes only those functions that can be done best, and perhaps only, by a single central, coordinating unit. The centralized functions include those that are required to develop and sustain conditions that ensure quality and comparability of data across programs--conditions necessary for integration of data from different sources. The Federation would also take the lead in aggregating and synthesizing data from across the network, in distributing these data, in transforming them into informational products, and in distributing the information to all members of the Federation. The Federation would be the gateway for all members of the network to the LISS Office and to other formal monitoring programs. The working title for the proposed organization is the LIS Citizens Monitoring Federation. Throughout the remainder of this report, it is referred to simply as the Federation. Some of the Federation's proposed activities are outlined in the following sections.

RECRUITMENT OF MEMBERS

The Federation would recruit members from existing citizens monitoring groups, environmental groups, schools (middle and high schools, colleges and universities), fishing organizations--both recreational and

commercial, boating organizations, and recreational divers clubs. Membership in the Federation would be restricted to groups.

To be successful in recruiting citizen monitoring groups to join the Federation, they must perceive that the benefits of membership outweigh the "costs." Workshop participants suggested that the altruistic rewards of participating in a coordinated monitoring effort, although important, would probably not be sufficient to recruit, and particularly not to retain, members on a sustained basis.. More practical incentives will be needed. Some level of direct funding to members from the Federation would be particularly helpful, but it is unlikely that the Federation would be able to provide it. However, the Federation could provide important support services that would be highly valued by members. The following roles were suggested for the Federation. The Federation should:

- Take an active role in seeking sustained support and appropriate equipment.
- Provide instrumentation cross-calibrations and repairs.
- Provide training to volunteers on methods of data collection, sample analysis and quality control.
- Provide analysis of the data collected by individual groups and by all the groups.
- Provide visibility to members through appropriate public relations programs.
- Provide an equipment pool for emergencies and back-up.

The Federation must also take steps to ensure that member groups do not

- Perceive any loss of freedom.
- Perceive any loss of importance as environmental stewards for their local areas.
- Perceive any loss of control over data and information they generate.
- Perceive any significant added burden of bureaucracy.

To achieve all of these ends, the Federation must be an agile, flexible organization which acts as an advocate for its members, and provides a range of services beyond the capabilities and resources of any member group. These services include setting standards, equipment maintenance and calibration, and training of personnel. The Federation must also provide value added in terms of placing each groups data in the context of the entire set of data collected by all the Federation's members. Above all members must feel that in the aggregate they are the Federation.

The Federation would develop standardized data logging sheets, organize and conduct training programs, and coordinate publicity. It would organize public forums to discuss the changing conditons of the Sound, and to involve increasing numbers of people in stewardship of the Sound. By involving a variety of organizations and individuals from around the Sound, the Federation would nurture development of a greater sense of place and community--the Long Island Sound community. All who live and work in the Sound's watershed have an influence on the Sound. All will have to work together to rehabilitate and conserve the values,

functions and uses important to them. This extended and diverse community has different interests which can be translated into different types of data collection programs, all of which can provide important data and information about the Sound and which are matched to the special interests of the different groups.

COMMUNICATION AND COORDINATION

Starting a citizens' monitoring program, even a federated one, is a relatively easy task. Sustaining one, particularly a coordinated one--a Federation-- is far more difficult. Sustaining the proposed Federation would require a high level of coordination and communication. Some important elements of a comprehensive program of coordination and communication are listed below.

- Considering the size of the Sound, effective coordination would have to be on two levels: regional and Sound-wide. Initially, the region might be defined as Connecticut, Long Island and Westchester County, or perhaps a better segmentation would be into western, central and eastern sections of the Sound.
- Training seminars would be important to ensure that quality data are collected and that relevant information is reported.
- Regular regional meetings and Sound-wide workshops would be required.

- An annual report, as well as a more frequent newsletter, should be established. NY Sea Grant currently produces a newsletter, the *LISS Update*, as part of the LISS public outreach program. Sea Grant might be asked to coordinate the Federation's outreach activities. Or, the New York and Connecticut Sea Grant programs might be asked to do this jointly.
- An electronic bulletin board could also be used as a communication link, but at this point, it should not be the primary communication vehicle. Those groups without access to this technology should not be excluded.
- The Federation needs to have an office--a home base-- for mailings, publicity, manual distribution and data management. This should probably be located at an existing office that has a major commitment to monitoring and research in Long Island Sound. Obvious candidate locations include: either of the two LISS offices, either of the two (Connecticut and New York) Sea Grant Offices, one of the major marine institutions, a state office that has a major commitment to the Sound, or the LIS Monitoring Program Office if it is established.

WHAT SHOULD BE MONITORED?

Identification of the parameters to be monitored by Federation members is a key step since the organization of the program will depend largely on what types of data are collected. It must be done in partnership with the members. Constituent members may have additional data needs and desires that are important to their groups, but which are not important

to the Federation. Being a member of a Federation provides the benefit of flexibility.

The data coordinated by the Federation must be of interest to the members of the participating organizations to sustain their enthusiasm and participation. They must also be important to the Long Island Sound Study, particularly in developing a chronicle of the changing conditions of the Sound, so that they will be used in evaluating management strategies--both formal and informal.

Among the data that are appropriate for a citizens' monitoring program and that would be valuable to the LISS are

- Weather (viz. precipitation, temperature, barometric pressure, wind-- use National Weather Service citizens' monitoring program procedures.)
- Water quality (e.g. D.O., S, T, pH, turbidity)
- Land use (e.g. marina utilization, sewage treatment inventory)
- Habitat inventories
- Species identification and enumeration
- Sample collection (e.g. fish, water) to be analysed by professionals
- Storm events (flooding, tidal stage, painting high water marks observed during severe storms, etc.)
- Intensive Sound-wide synoptic sampling (e.g. boats, bathers, floatables) initiatives a few times a year. Several might be keyed to major summer holidays such as Memorial Day, July 4th, and Labor Day.
- Shorebird inventories.
- Beach floatable inventories.

- Fish kills, massive benthic mortalities, unusual behavioral patterns of marine organisms.

QA/QC

- Different levels of QA/QC will be necessary depending on the type of data collected (i.e. observational, water quality) but should be common to all groups. Methods should be well defined and maintained from year-to year. For definition of the appropriate QA/QC the Federation will seek advice from academic institutions and state and federal agencies which have expertise on the specific subject.
- The Federation should work with scientists and environmental managers to develop training manuals covering sampling and analytical procedures. They should be based on existing manuals, but carefully tailored to suit the special needs of the citizens monitoring program.
- It will be necessary to consider the range of equipment and funding available to each group when determining appropriate QA/QC protocols. It will be difficult for most organizations to commit to a sustained monitoring program, since funding is not consistent. The Federation might create and maintain a pool of equipment that would be available to lend to constituent groups. Ideally, all instruments should be cross-calibrated.

- The Federation should ensure that some of the data collected are relatively simple and inexpensive to collect and require little, if any, processing. This will increase interest and sustain participation.
- Volunteer group leaders should be trained by qualified personnel or by training videos. Certification of volunteers sends a signal that the data are valued and adds credibility to the quality of the data collected. It also will help maintain interest in the Federation. Precision and accuracy of some data should be verified using blind or split samples, or by comparing the results of citizens' analyses with those conducted by professional laboratories.
- Perhaps certain services/funding provided by the Federation to member groups should be contingent upon an organization's ability to meet and maintain a certain level of QA/QC.

DATA MANAGEMENT

- Proper data management requires consistency, continuity and uniformity in data collection and reporting. To facilitate these characteristics, standardized data sheets should be created and used by all member of the Network.
- Pooling and storage of the collected data may be through a computer data base network, such as STORET, or possibly the LISS data management system. All data sets should carry the name of the organization that reported them. The use of STORET is not a substitute for a data base that can be accessed easily by members of

the Federation. If the Long Island Sound Monitoring Program creates a centralized data repository, the Federation's data will be incorporated into it.

- An annual report tabulating the results of the Federation's monitoring activities should be prepared and made available to all groups in the Federation, as well as to other interested groups and individuals. The data analysis should be the responsibility of the Federation, although the participating groups will probably want to retain their own data and perform their own analysis as well. This is a critical link in the program since a primary motivation for collecting data depends on seeing the results of the collection. Scientific peer review and assistance in data interpretation is also important.