Chapter 14
Surface Water Information Collection: Volunteers Keep the Great Lakes Great

Mark Gillingham
Hermit’s Peak Watershed Alliance, USA

ABSTRACT

This chapter’s starting premise is that for decades the United States Environmental Protection Agency region subsuming most of the Great Lakes watershed has been partially monitored by private citizens, but collected data have been underutilized by water managers, scientists, and policymakers. Today, citizens with only a smartphone can dramatically increase our understanding of surface water, help managers and policymakers, and educate the general public about the quality of water. The US Clean Water Act and National Strategy for Civil Earth Observations have helped to coordinate citizen scientists and direct funds to surface-water monitoring. And more contributors are being solicited and trained to help with the enormous task of monitoring lakes and streams. At the same time, technology allows citizens with a smartphone to accomplish what previously required experts in a lab: to act for clean water!

INTRODUCTION

The Great Lakes watershed of the United States serves 51 million people with drinking water (United States Environmental Protection Agency, 2016, May 29). For decades the Great Lakes have been partially monitored by private citizens, but these data have been underutilized by scientists and policymakers. However, today, citizens with only a smartphone can dramatically increase our understanding of surface water, help policymakers, and educate the general public about the quality of water in the region. Trained volunteers are able to perform important water quality measurements and use increasingly sophisticated phone applications. With governmental budgets cut, what is needed is a call for citizens to act for clean water!

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PAST CITIZEN EFFORTS TO MONITOR THEIR GREAT LAKES WATERSHED

In the upper Midwest of the United States are five very large fresh-water lakes including Superior, Michigan, Huron, and Erie and tens-of-thousands of smaller lakes and streams in its six states. This area, designated by the Environmental Protection Agency as Region 5, includes the states of Ohio, Michigan, Indiana, Illinois, Wisconsin, and Minnesota (from east to west). Individuals have been monitoring these local lakes for as many as 8 decades. Each of these states began lake and stream monitoring programs at different times through various agencies but mostly as a consequence of the Clean Water Act of 1972. The following describes each state’s lake and stream monitoring programs individually.

Ohio

Ohio law ensures that citizen volunteers are qualified to sample and measure lake and stream water. The state’s Environmental Protection Agency requires volunteers to use approved study plans and become Qualified Data Collectors, who are authorized to submit data to the state’s site where the data can be used by all interested parties and combined with data from other states (Ohio Environmental Protection Agency, 2016).

Ohio has three levels of credible data. Level 1 was designed with educators in mind and targets conservation districts, parks, health departments, and the general public. The purpose of Level 1 is primarily to promote public awareness and education about surface waters of the state.

The Level 2 group was designed with watershed groups in mind and appears to be closer to other Region 5 states’ first tier or basic level. Level 2 information can be used to evaluate the effectiveness of pollution controls, to conduct initial screening of water quality conditions, and to promote public awareness and education about surface waters. Level 2 groups monitor long term surface water quality trends in a watershed.

Level 3 provides the highest level of scientific rigor and incorporates methods which are equivalent to those used by Ohio Environmental Protection Agency personnel. By Ohio law, only Level 3 information can be used for regulatory application (Ohio Environmental Protection Agency, 2016).

Of all the states in Region 5, Ohio rejects most volunteer data collection for research purposes. Whereas most states rely on project coordinators, who are usually government agency employees, for training, Ohio depends on nonprofit and educational organizations to train volunteers and collect data. For instance, the Ohio Watershed Network within Ohio State University Extension (Ohio Watershed Network, 2016).

Michigan

The state of Michigan has been using citizen volunteers to monitor lakes since 1974 and streams since 1992. Since then, the combined program has been called Cooperative Lakes Monitoring Program and more recently has been subsumed under the Michigan Clean Water Corps (MiCorps), which is Michigan’s volunteer surface water monitoring network. Like other states, Michigan’s volunteers monitor lake and stream water over time, reduce costs to the state, and provide important baseline data. Volunteers also educate their communities and build public support of clean and ecological practices near lakes (Michigan Department of Environmental Quality, 2016).