

12-1-2005

Using Electrofishing Demonstrations to Increase Water Quality Awareness

JP Lieser

Ohio State University Extension, lieder.8@osu.edu

Chris Zoller

Ohio State University Extension, zoller.1@osu.edu

Renee Clark

Ohio State University Extension, clark.471@osu.edu



This work is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

Recommended Citation

Lieser, J., Zoller, C., & Clark, R. (2005). Using Electrofishing Demonstrations to Increase Water Quality Awareness. *The Journal of Extension*, 43(6), Article 22. <https://tigerprints.clemson.edu/joe/vol43/iss6/22>

This Ideas at Work is brought to you for free and open access by the Conferences at TigerPrints. It has been accepted for inclusion in The Journal of Extension by an authorized editor of TigerPrints. For more information, please contact kokeefe@clemson.edu.



Using Electrofishing Demonstrations to Increase Water Quality Awareness

Abstract

OSU Extension has developed a new program that utilizes electrofishing demonstrations to increase water quality awareness. Since 2001, over 2,000 participants have attended 72 demonstrations. Participants learn about water quality indicators and the electrofishing process, view aquatic wildlife and stream habitat, and discuss conservation measures that can protect and restore streams. An Extension professional does not need to be an expert on electrofishing or have any equipment to organize a demonstration. An interest and a dedicated fisheries resource person is all that is needed. Electrofishing demonstrations provide a fun, non-confrontational way to discuss water quality topics that can be controversial.

J. P. Lieser

Extension Educator, Watershed Management
Caldwell, Ohio
lieser.8@osu.edu

Chris Zoller

Extension Educator, ANR/Community Development
New Philadelphia, Ohio
zoller.1@osu.edu

Renee Clark

Extension Program Assistant, Agriculture and Horticulture
New Philadelphia, Ohio
clark.471@osu.edu

Ohio State University Extension

Introduction

The Ohio State University (OSU) Extension Electrofishing program is designed to enhance people's appreciation of nature by providing hands-on field demonstrations and discussions. Reaching out to new, non-traditional, diverse audiences and forging new partnerships is the key to facing the challenge of conserving natural resources. Through the electrofishing program, OSU Extension teaches people about their local streams and watersheds, inspires them to appreciate their environment, and strives to ensure that others will be able to have clean water for years to come.

Electrofishing Program

Since, 2001, the electrofishing program has reached a large, new audience of over 2,000 participants in 72 demonstrations. Participants have ranged from watershed groups to elected officials, high school science classes, and Extension professionals.

Program Objectives

- Teach participants about indicators of water quality,
- Explain the process of electrofishing,
- Show aquatic wildlife and good stream habitat up close,
- Explain how land use practices affect water quality, and
- Discuss how conservation can help protect and restore streams.

Background & Methods

In the fall of 2000, the OSU Extension Watershed Program was founded. Advisory committee meetings and interviews showed a need for basic stream ecology and water quality education in OSU Extension's East District. However, it was apparent that a fun, non-confrontational method of information delivery was needed. Electrofishing demonstrations were identified as a perfect fit, and the program was begun in the spring of 2001.

Fish as Biological Indicators

Monitoring of fish populations is an integral component of many water quality management programs, and its importance is reflected in the aquatic life use-support designations of many states (Barbour, Gerritsen, Snyder, & Stribling, 1999). Fish are good indicators of long-term (several years) effects and broad habitat conditions because they are relatively long-lived and mobile (Karr, Fausch, Angermeier, Yant,, & Schlosser, 1986). They are also at the top of the aquatic food web and are consumed by humans, making them important for assessing contamination and human health. In addition, fish are relatively easy to collect and identify to the species level (Barbour et al., 1999). Research has shown that different species of fish are sensitive, mildly sensitive, tolerant, or very tolerant to pollution. Thus, based on the type and quantity of fish caught, a score can be given for the health of a waterway.

Electrofishing

Electrofishing has proven to be the most comprehensive and effective single method for collecting stream fishes (Barbour et al. 1999). Electrofishing is a fish population survey technique that involves generating an electrical field in the water. Fish that pass through the electrical field are temporarily stunned, then collected by dip net, placed in a live well, counted and identified by species, and then returned to the stream unharmed.

Resources Needed

- Trained fisheries professional with the necessary equipment and experience to conduct a demonstration. The state department of wildlife or environmental protection agency often has many individuals trained to do this type of work.
- An easily accessible demonstration site providing plenty of room for participants to stand. Choose a site that is as natural as possible to demonstrate good stream habitat and to discuss its benefits.
- Two Sturdy tables, two to four 10-gallon aquariums, and plastic bags or plastic specimen containers to pass around the fish for viewing.

Warning: A permit is needed in most states to use electrofishing equipment. Also, due to the risk of electrical shock, participants should not be allowed to touch any of the equipment or walk into the water during the demonstration.

Demonstration Format

- Educators and participants gather at a pre-determined streamside location.
- The Extension educator or resource person provides an introduction to the importance of water quality.
- An explanation of chemical, biological, and physical monitoring methods and rationale for water quality monitoring is provided.
- Fisheries professional provides a demonstration of the electrofishing equipment and gathers fish.
- Stunned fish are placed in a live well and transferred to aquariums placed on a table for display.
- Fish are separated and placed in aquariums.
- Fish are identified to species level and pollution tolerance of each species is discussed. Individual fish are then passed around in specimen containers or plastic bags filled with water.
- Demonstration concludes with a discussion of how to protect and restore water quality in our watersheds.

Note: Extension professionals who are interested in organizing a demonstration are encouraged to contact the authors to answer any additional questions they may have.

Results

In an effort to evaluate one county-based program, a pre/post test was conducted. A Likert-type scale was used, with 1 = Poor to 4 = Excellent. The results are summarized in Table 1.

Table 1.
Electrofishing Demonstration Program Evaluation (N =23)

Topic	Pre Rating	Post Rating
How would you rate your knowledge of electrofishing?	1.4	3.3
How would you rate your knowledge of water quality and indicators of water quality?	2.2	3.4

When asked to share what they learned from the demonstration, participants provided answers that could be divided into three primary categories: the process of electrofishing, factors affecting water quality, and fish identification. Participants were also asked to provide examples of what they would do with their new knowledge. Their comments included going fishing more often, working with government officials to improve water quality, and sharing the information with students.

Conclusions

Electrofishing is a fun, non-confrontational way to teach people about water quality indicators. It provides an opportunity to explain how our actions may contribute positively or negatively to water quality and aquatic life. The demonstrations are designed to appeal to the participants' natural curiosity. Participants are provided the opportunity to explore their local streams and view wildlife and habitat up close. The hope is that by exposing people to the natural world they will gain a greater appreciation and use it as motivation to conserve their local natural resources.

Electrofishing demonstrations are particularly helpful in providing conservation-minded farmers an opportunity to discuss the management practices they and their neighbors follow to maintain and protect water quality. Because agriculture is often blamed for poor water quality, these demonstrations provide an opportunity for non-farmers and farmers to discuss efforts to protect the environment in a relaxed atmosphere.

References

- Barbour, M. T., Gerritsen, J., Snyder, B .D., & Stribling, J. B. (1999). *Rapid bioassessment protocols for use in streams and wadeable rivers: Periphyton, benthic macroinvertebrates and fish*, 2nd ed. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.
- Karr, J. R., Fausch, K. D., Angermeier, P. L., Yant, P. R., & Schlosser, I. J. (1986). *Assessing biological integrity in running waters: A method and its rationale*. Special publication 5. Illinois Natural History Survey.
- Sanders, R., (ed.). (2000). *A guide to Ohio streams*. The Ohio Chapter of American Fisheries Society (AFS). Columbus, OH.

Copyright © by Extension Journal, Inc. ISSN 1077-5315. Articles appearing in the Journal become the property of the Journal. Single copies of articles may be reproduced in electronic or print form for use in educational or training activities. Inclusion of articles in other publications, electronic sources, or systematic large-scale distribution may be done only with prior electronic or written permission of the [Journal Editorial Office, joe-ed@joe.org](mailto:joe-ed@joe.org).

If you have difficulties viewing or printing this page, please contact [JOE Technical Support](#)