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Evaluation of an Adult Extension Education Initiative: The Michigan Conservation Stewards Program

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Evaluation of an Adult Extension Education Initiative: The Michigan Conservation Stewards Program

Abstract

The Michigan Conservation Stewards Program (CSP), coordinated by Michigan State University Extension, convened a unique group of partners for a new statewide Master Naturalist™ effort. Partners designed a curriculum, implemented a pilot program, and evaluated program processes and impacts. Extension staff used pre- and post-program questionnaires, achieving a 97% program retention rate and an 85% response rate. The CSP attracted a new Extension audience, increased learners' ecosystem knowledge, improved attitudes toward resource management, and fostered skills for accessing ecological information. The CSP achieved its goal of assisting adult learners in gaining skills necessary to complete conservation management volunteer activities.

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Introduction

Conservation education and outreach programs can inform and involve the public to raise awareness, improve knowledge, acquire attitudes and skills, and encourage participation to help achieve resource management goals (Jacobson, McDuff, & Monroe, 2006). Conservation education seeks to foster an understanding of basic ecological principles and should be pleasant enough to motivate individuals to continue lifelong learning about the natural world (Jacobson, 1999; Tilden, 1977).

To coordinate adult conservation education and facilitate conservation service, Texas and Florida were the leading states to draw upon Extension's Master Gardener concept to develop a Master Naturalist™ program (Bonneau, 2003; Main, 2004). After two National Master Naturalist™ Workshops during 2004, several other states initiated their program development, building state Extension and natural resource agency partnerships (e.g., Savanick & Blair, 2005), basing their work on theory and research regarding adult education (Merriam & Caffarella, 2002; Franz, 2007).

Michigan State University Extension (MSUE) and the state Department of Natural Resources (MDNR) developed the Michigan Conservation Stewards Program (CSP) as its state Master Naturalist™ program. The partners' goals were to determine the educational needs of residents, pilot test the program, evaluate the initial effort and impacts, and make recommendations for a sustained effort.

To achieve these goals, partnering stakeholders worked with MSUE to shape the program during

an action research process designed first to assess the needs for such a program, to identify desired outcomes from such a program, and to name the program (Archer et al., 2007). MSUE convened a Cooperators Leadership Team that consisted of MDNR, Michigan Natural Features Inventory (MNFI), other MSUE staff (state and local), and staff members from The Nature Conservancy and The Stewardship Network.

This Leadership Team then drew together a stakeholder meeting involving more than 30 conservation and educational organization representatives and outlined an ecosystem-based curriculum. Collaborators included natural resources agencies, statewide organizations, county Extension educators, other branches of county government, and conservation organizations from the region of the pilot workshops.

Finally, in the action research and design phases of this project, lead instructors from partner groups developed draft curriculum units. These instructors presented their work to the Cooperators Leadership Team, to their peer instructors, and to a small number of potential pilot program participants (learners). Feedback resulted in major modifications to the CSP objectives and content for the next phase--pilot testing of the program.

The CSP consists of 40 hours of instruction regarding ecosystems and resource management. In addition, it requires 40 hours of volunteer service annually. The objectives of the CSP are to provide learning and stewardship opportunities for Michigan residents to:

1. Gain knowledge in natural resources ecology and conservation management;
2. Gain knowledge of and experience with ecosystem-based management;
3. Explore one's own attitudes and diverse attitudes of others towards natural resource management and the affiliated state and local agencies, organizations, and institutions;
4. Gain skills necessary to complete conservation management activities; and
5. Contribute to existing natural resources stewardship activities (Dann & Van Den Berg, 2006).

Diverse instructors share the CSP curriculum through classroom and in-field units during 8 weeknight sessions and 3 Saturday meetings hosted at local parks (Table 1).

Integrated research and Extension objectives with this pilot effort were 1) to determine whether the CSP could attract a new Extension and nontraditional conservation-related audience; 2) to observe program impacts and participants' reactions; and 3) to make recommendations for sustaining this adult Extension conservation education program.

Table 1.

The Michigan Conservation Stewards Program Curriculum, Instructors, and Instructional Formats

Unit/Session	Description	Instructor	Instructional Format
Introduction to the Conservation Stewards Program	Overall goals, rationale and history of CSP, state and local partners	MSUE	Lecture
Michigan's Conservation Heritage	Conservation history; organizations, institutions, agencies, citizens, scientists, and leaders involved in conservation	MSUE, MDNR, county planners	Lecture with interactive activities
Ecological Foundations	Introduction to ecology and ecosystem management; local ecoregions; regional landscape classification and available resources	MNFI	Lecture
Making Choices to Manage Our Natural Resources	Complex decision-making strategies for natural resources; deer management in Metroparks	MSU faculty, local park & planning staff	Case study
Forestland Ecosystems	Natural history, diversity, and unique features of forestlands;	MSUE	Lecture

and Management	current status and threats; organizations, institutions, and agencies for forest management		
Grassland Ecosystems and Management	Natural history, diversity, and unique features of local grasslands; current threats and management strategies; partners for grassland management	MDNR, MNFI	Lecture
Terrestrial Field Experience	Field ID and management techniques; native plants; benefits of prescribed fire; forest management scenarios; preventing wildfire	MDNR, MSUE, MNFI	In-field identification and monitoring activities
Wetland Ecosystems and Management	Natural history, diversity, and unique features of wetland systems; current threats; wetland ecosystem management partners	MDNR	Lecture with interactive activities
Lake and Stream Ecosystems and Management	Natural history, diversity, and unique features of lake and stream systems and their management; riparian zone management techniques; partners for aquatic conservation	MSUE	Lecture
Aquatic Field Experience	Field ID of wetland types and vegetation; aquatic ecosystem monitoring	MDNR, MSUE	In-field identification and monitoring activities
Putting It All Together	Local volunteer conservation opportunities with partner agencies, organizations, parks, land conservancies; roles and responsibilities of a volunteer Conservation Steward	MSUE	Open house ("Expo")
Capstone Projects and Participant Recognition	Presentation of 6-10 hour capstone projects conducted by participants; presentation of certificates; words of "commencement" from MSUE, MDNR	MSUE, MDNR	Participant led session

Methods

We identified two counties in southeast Michigan and implemented the pilot program during February through April 2006. These counties have Priority Conservation Areas, the region has numerous state parks and other public lands, and Extension staff were willing to experiment with adult conservation education and volunteer programming.

We collected data through participants' registration forms, a pre-program questionnaire, session feedback forms, and a post-program questionnaire. In addition, we conducted an 8-week post-program meeting and open-ended questionnaire (Van Den Berg, 2006). All participants who were aged 18 years or older, completed 82% (9 of 11) or more of the training sessions, and voluntarily completed both the pre- and post-program questionnaires were considered study subjects. Layout and design of the questionnaires followed the guidelines established by Dillman (2000). We constructed questionnaires by modifying survey instruments used in previous studies (Schroeder, 2004; Bonneau, 2003; Koval & Mertig, 2002). MSU colleagues not associated with the program reviewed the questionnaires to help improve face validity. We used SPSS to analyze study data (SPSS, 2005). To compare pre- vs. post-CSP knowledge, attitudes, and behavioral intentions, we used the Wilcoxon signed-ranks test ($p < 0.05$).

Results

Response Rate

The pilot CSP had 65 registered participants. Of these, 97% ($n=63$) completed the training workshops, with 85% ($n=55$) qualifying to be study subjects.

Participant Characteristics

The CSP does attract a new Extension and nontraditional conservation-related audience. More than 75% had never taken part in Extension programs such as Master Gardener, Citizen Planner, Master Woodland Manager, or Lake and Stream Leader. About 62% are female (a higher proportion than in some traditional conservation organizations). More than 57% are residents of suburban or urban areas (with population greater than 25,000 people), and nearly half (48%) had grown up in such areas.

About half of the participating audience has had little conservation involvement prior to the CSP. About 19% belong to no organizations, and another 34% belong to only one or two conservation groups. In addition, only a small proportion of this group participates in the traditional outdoor recreation activities of hunting (15%) or fishing (28%) more than twice per year. Instead, this group has high levels of participation in the nontraditional active recreational activities of walking or hiking (90%), and in nature-related activities of wildlife viewing (87%), bird feeding (67%), nature study (65%), or bird watching (57%).

CSP program participants are from middle- and high-income families, are well educated (with nearly all having some post-secondary education), and predominantly Caucasian.

Impacts of the CSP

Participant knowledge of ecology and ecosystem management is significantly greater post-CSP vs. pre-program. Participants received a mean pre-test score of 15.2 correct answers (on a 22-item test), with a standard deviation of 4.8; their mean pre-test scores were equivalent to a "grade" of 69%. After the program, their post-test scores averaged 18.5 correct answers (with a lower standard deviation of 2.8); this equates to a post-program "grade" of 84%.

Attitudes toward specific conservation techniques and toward the state resource management agency likewise become significantly more positive with participation in the CSP. After the program, respondents have significantly more positive attitudes toward hunting as a technique to manage wildlife populations, prescribed fire as a means of maintaining ecosystems, herbicide use for invasive plants, clearcutting as acceptable for grouse habitat management, management of watersheds for biodiversity and ecological integrity, and managing for both wildlife and timber in forest communities (Van Den Berg, 2006). The strongest gain in attitudes toward the MDNR are in participants' agreement with the statements that the agency provides high-quality service to the public and provides adequate opportunities for public participation in natural resource decisions (Van Den Berg, 2006).

After the program, respondents are significantly more likely to agree with the statement "I will help with any conservation activities in my ecoregion," even though their pre-CSP agreement was quite high before the program started. Most CSP graduates are interested in contributing their volunteer time to complex, long-term, hands-on, in-field conservation projects, rather than administrative or outreach-related tasks.

CSP respondents have a high post-program self-rating of many specific conservation skills (Table 2). The conservation skills with the highest means are tasks related to accessing/locating information (e.g., locating information and resources about watersheds or locating information about specific wildlife, plants, or habitats) and carrying out local conservation volunteer work (e.g., assisting with implementation of local conservation projects, contributing to local natural resource decisions). The conservation skills with the lowest means are tasks related to identification/monitoring (e.g., skills to collect data and observe plants or animals or skills to manage nuisance species).

Table 2.
CSP Respondents' Self-Rating of Their Own Post-Program Conservation Skills

Specific Volunteer Conservation Skills ^a	<i>n</i> =55	
	Median ^b	Mean ^b (S.D.)
Access/locate information...I can locate information...		
and resources about my watershed.	5	4.69(0.47)
about specific wildlife or plants, their habitat, status, and ecology.	5	4.65(0.48)
and resources about my ecoregion and dominant ecosystems.	5	4.56(0.54)
Local conservation engagement...I have the skills necessary or I am comfortable...		
to assist with the implementation of local conservation projects.	5	4.55(0.57)
to complete community service projects.	5	4.55(0.69)

contributing to local natural resources decisions.	5	4.40(0.74)
with my ability to work with different resource management agencies and institutions.	4	4.27(0.73)
discussing the ecological planning process.	4	4.18(0.77)
Education/interpretation...I have the skills necessary...		
to assist with information and outreach booths at events in my local area.	5	4.42(0.81)
to develop trail signage or brochures.	5	4.33(0.80)
to conduct youth education programs.	4	4.25(0.82)
to lead field trips or hikes.	4	4.13(0.92)
Identification/monitoring...I have the skills necessary...		
to collect data and observe plants or animals.	4	4.05(0.87)
to manage nuisance invasive species.	4	4.00(0.91)
to help with identification of sensitive species.	4	3.95(0.89)
to monitor land areas for recreational uses.	4	3.85(0.80)
<p>^aRespondents were asked "For each of the following statements, please indicate whether you Strongly Disagree, Moderately Disagree, Neither Agree nor Disagree, Moderately Agree, or Strongly Agree. (<i>Circle only <u>one</u> response per statement.</i>) "</p> <p>^bMedian and mean response on a 5-point scale with "Strongly Disagree" coded as 1 and "Strongly Agree" coded as 5.</p>		

Reactions to CSP

Nearly all CSP respondents (98%) report that they learned something new or something not anticipated and that the in-field and hands-on learning opportunities met their expectations. Somewhat fewer (83%) note that they had adequate opportunities to practice knowledge and skills gained during the CSP.

Respondents indicate that the Wetlands Ecosystems and Management unit are most valuable (74%) followed by the Grassland Ecosystems and Management (70%) and the Making Choices to Manage Our Natural Resources (67%) units. Low proportions of participants report these units as most valuable: Introduction (17%), Conservation Heritage (12%), and Capstone Projects/Participant Recognition (10%).

Discussion

The Michigan Conservation Stewards Program has a remarkably high level of participation and a high retention rate from an audience that can be considered nontraditional from both MDNR and MSUE perspectives. Future programs, however, will need to strive for greater participant diversity in income and ethnicity.

The CSP achieved its intended impacts of positive effects on ecosystem knowledge and attitudes toward resource management. Respondents note that two sessions (Wetlands and Grasslands) taught by MDNR staff are most valuable. Although this occurrence may be coincidental, respondents likely rate these sessions highest because they believe they are learning from resource management experts. In comparison, other instructors were equally qualified individuals who worked for MSUE, planning departments, or conservation organizations. Ironically, some MDNR staff were hesitant to serve as instructors and stated that they lack teaching experience. It will be important in future CSP or Master Naturalist™ programs to sustain an ideal mix of types of instructors (i.e., resource managers and educators) in order to achieve similar impacts among adult learners.

Interest in volunteering for conservation work post-program was high, probably due to the agency staff serving as examples of dedicated individuals working to preserve, protect, and enhance natural resources for the general public (Russell & Kirkbride, 2004). This value-added component is important to take into consideration for Master Naturalist™ programs; future work should focus on capacity building for a larger pool of instructors from diverse resource management agencies and organizations.

One of the main impacts of the CSP is that participants report gaining skills they can use to locate research-based ecological information. Having access to sound knowledge bases should enable informed contributions to local land and watershed planning and natural resources decision-making. Although respondents less frequently report that they have the post-program skills necessary for identifying and monitoring specific plants or wildlife, this is a skill set that CSP designers deliberately de-emphasized within the curriculum. Several educational opportunities

already exist among partner organizations to develop field identification skills for native vs. invasive plants and for amphibian monitoring. Additional opportunities are possible for both MSUE and partners to offer "advanced" training in specialty topics such as easement monitoring, or various field natural history topics.

Implications

CSP respondents reacted favorably to the experience, suggesting that MSUE and its partners have been successful at implementing an adult conservation and Extension education program. The Conservation Stewards Program and Master Naturalist™ programs result in knowledgeable volunteers wishing to contribute to ongoing resource management activities. This will be a tremendous asset for Extension, which is seeking new audiences to diversify its reach and support base, and for wildlife agencies seeking committed, long-term volunteers who can contribute to conservation efforts. Volunteers who are well-prepared and motivated to seek research-based information and engage with local conservation efforts may lead to the creation of local communities of practice--informal learning networks for conservation and volunteerism, where members share knowledge, pool resources, and stimulate innovations (Wenger, 1998; Cleveland & Thompson, 2007). Program coordinators have already used results of the pilot effort to revise the Capstone Project experience to foster greater participant interdependence and improve this final CSP unit, launching Conservation Stewards into their first successful volunteer service through Extension.

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