
LIKING LICHENS:
Exploring Lichen Ecology and the Environment

Workshop Evaluation Report
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Submitted to:
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EXECUTIVE SUMMARY

The Liking Lichens Project is funded by a Teacher Quality Higher Education Program Grant through the U.S. Department of Education's No Child Left Behind (NCLB) Act and administered by the Adult Education Program at the University of Georgia's Department of Lifelong Education, Administration, and Policy. The project, an educator enhancement initiative for teachers, has three goals:

1. To enhance educators' understanding of lichen biology, ecology, natural history, identification, and uses in the classroom, laboratory, and field studies
2. To develop geospatial knowledge and mapping skills
3. To assist in building a lichen bio-monitoring network in Georgia

The project began with a 5-day teacher workshop held July 9-13, 2006 at the Charlie Elliot Wildlife Center in Mansfield, Georgia. Conducting the workshop was a team of expert educators and researchers, led by Dr. Robert Hill, Dr. Tommy Jordan, and Mr. Sean Beeching. The 18 attendees were 10 public school teachers, (5 elementary, 4 middle school, and 1 high school), 5 environmental science specialists, a botanist with the Georgia Department of Natural Resources, a college lab instructor, and a science education doctoral student from the University of Georgia. Three follow up meetings were scheduled to support the educators during the 2006-2007 school year, as they incorporate the workshop content into their instruction, and to build the lichen bio-monitoring network.

Project administrators contracted with Cassandra Drennon & Associates, Inc. (CD&A), an educational research and evaluation firm in Athens, Georgia, to conduct an external evaluation of the 2006 Liking Lichens workshop. This report contains the findings of that evaluation. In brief, nine findings emerged from participant evaluations and focus groups held during the final day of the workshop.

Key Findings

1. Hands-on experiences promoted learning and increased interest in lichens.
2. The workshop presented the familiar in new ways.
3. Lecture-style presentations were challenging.
4. The need for classroom application was not met.
5. Participants wanted more opportunity to process their learning.
6. Instructors communicated directions clearly to participants.
7. Group communication opportunities were inadequate.
8. Participants were well-satisfied with the workshop location.
9. Workshop activities needed more structure.

Pre- and posttesting measured knowledge gains in every area participants were tested, most notably in their learning about uses for lichens. Gains were correlated with their beginning levels of knowledge, and all participants moved up at least one proficiency level. Pre- and posttest mean scores for each objective show the knowledge gains:

	Pretest		Posttest
Objective 1:	1.27	→	2.36
Objective 2:	.50	→	1.62
Objective 3:	1.28	→	2.58
Objective 4:	1.56	→	2.19

Key Recommendations

Guided by thoughtful input from the participants and other data collected at the workshop, we formulated the following recommendations to improve future teacher workshops:

- Create an advisory panel to plan future workshops that includes previous attendees.
- Actively recruit more K-12 teachers, particularly from schools targeted for improvement by the NCLB Act.
- Allow opportunities for participants to adapt learning content to their work environments.
- Use a variety of teaching strategies to deliver lichen content.
- Build group learning experiences into the curriculum.
- Hold daily debriefing sessions and adjust workshop activities as needed to respond to participant concerns.
- Communicate workshop details well in advance.
- Develop a protocol for field experiences.

THE EVALUATION

The purpose of this external evaluation was to measure participant learning and satisfaction from the summer 2006 Liking Lichens workshop experience. The four learning objectives of the workshop were:

1. Participants will demonstrate knowledge of lichen natural history.
2. Participants will demonstrate knowledge of lichen ecology.
3. Participants will demonstrate knowledge of lichen uses.
4. Participants will demonstrate knowledge of GPS units.

Data Collection

To accomplish this evaluation, we collected data in three ways:

- Pre-/posttesting, using a 10-item instrument developed by workshop leaders, was administered at the beginning and end of the workshop to measure increases in participants' knowledge of lichens and the tools used to collect and identify them. The questions covered content in four areas, representing each of the learning objectives. Dr. Hill and Mr. Beeching each scored the first three sections, using a scoring rubric and awarding points for the answers according to the following scale: 0 points = No Knowledge, 1 point = Emerging, 2 points = Proficient, and 3 points = Exemplary. They then compared their scores and negotiated or averaged the differences (which were minor) to arrive at the final scores. Dr. Jordan scored the GPS section separately, using the same scoring rubric.
- A written participant evaluation to measure participant satisfaction was administered on the workshop's final day. The survey consisted of 23 positive statements about the workshop experience and asked participants to indicate how strongly they agreed with each, using a 5 point scale: 1 = Strongly Disagree, 2 = Somewhat Disagree, 3 = Neutral, 4 = Somewhat Agree, and 5 = Strongly Agree. The survey was designed to capture participant levels of satisfaction in three areas – the Learning Experience, Communication, and Structure & Organization.

- Focus groups were held, also on the workshop's final day, to gather participant perceptions of the program's strengths and weaknesses. Participants were divided equally into two focus groups, which were held simultaneously and lasted approximately one hour. A CD&A moderator in each group used a semi-structured interview guide to lead discussion.

Instruments used to collect and measure the data are included in the appendices at the end of this report.

THE FINDINGS

The Liking Lichens workshop overall was successful in accomplishing the project's first two goals. In pre-and posttesting, participants demonstrated that (1) they had increased their understanding of lichen biology, ecology, natural history, and identification; and (2) they had developed adequate geospatial knowledge and mapping skills. In the focus groups, however, participants reported that they were less than confident about their ability to apply this knowledge in their educational settings.

The third goal, however, to assist in building a lichen bio-monitoring network in Georgia, did not resonate well with this group of educators, who were concerned primarily with using the lichen-study in their teaching. Aware of the instructors' interest in the statewide plan, a participant in one focus group said, "The GPS is low on my agenda but high on theirs. We need to know how to use this in the classroom with students." In the other focus group, someone made a similar observation, "This workshop was geared toward a long-term lichen research effort more than a classroom application."

Participants found the workshop a very positive experience, nevertheless, and they were energized by their learning of content and technology. "In my wildest dreams, I don't think I could have dreamed what would happen here," declared one teacher. They found experts were always on hand when they needed them to help with identification and answer questions. Participants were also highly satisfied with the facilities at the Charlie Elliott Wildlife Center. Their primary dissatisfaction with the workshop related to the lack of time spent adapting the scientific content to the classroom, and many felt that some of the presentation material was over their heads and/or inappropriate for classroom use.

The following discussion of the findings is organized into two major sections, Workshop Experiences and Knowledge Gains.

Workshop Experiences

Findings about participants' workshop experiences are based on the written Participant Evaluation survey and conversations in the focus groups and they are organized according to the three topics of the survey: The Learning Experience, Communication, and Structure & Organization. Each of these discussions concludes with a chart showing mean scores for that section of the survey and a list of participant recommendations related to the topic area. This section begins with a display of the aggregate responses for each statement in the Participant Evaluation survey by percentage (Table 1). All 18 participants answered the entire survey with the exception of one participant, who skipped three items (noted by asterisk) that did not apply to her practice.

**Aggregate Responses to Participant Evaluation Survey
N=18 except where noted (*)**

The Learning Experience	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
1. Presentations by instructors increased my interest in lichens.		6% (1)		11% (2)	83% (15)
2. Field experiences with instructors increased my interest in lichens.					100%(18)
3. Experiences with GPS units increased my interest in using technology in future instruction related to lichens.			6% (1*)	12% (2*)	82% (14*)
4. Experiences with microscopes increased my interest in using technology in future instruction related to lichens.				12% (2*)	88% (15*)
5. Learning about GIS will be helpful to me.		11% (2)	6% (1)	11% (2)	72% (13)
6. The workshop provided ample resources to support my understanding of the content.				11% (2)	89% (16)
7. The workshop provided ample resources to assist with my instructional needs.		11% (2)		33% (6)	56% (10)
8. Adequate time was provided during the workshop for us to discuss how the material could be applied.		17% (3)	6% (1)	22% (4)	56% (10)
9. Opportunities to conduct lichen identification were adequate.				11% (2)	89% (16)
10. Sufficient time was allocated to learn how to use and apply the GPS unit for exercises during the workshop		6% (1)		17% (3)	78% (14)

Communication	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
11. The goal(s) and objective(s) of the workshop were clear to me				17% (3)	83% (15)
12. Instructions prior to any activity were always clear.				22% (4)	78% (14)
13. Presentations by instructors were pitched at my level (neither too simple nor too advanced).		6% (1)	11% (2)	56% (10)	28% (5)
14. Instructors did a good job explaining difficult material.		6% (1)	11% (2)	44% (8)	39% (7)
15. The instructors helped me connect the scientific information in the workshop with the K-12 classroom or science center work.		18%(4*)	6% (1*)	41% (10*)	12% (2*)
16. The purpose of the next three meetings over the course of the academic year is clear.				22% (4)	78% (14)

Structure & Organization	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
17. The host site (Charles Elliott Wildlife Center) provided an amenable location for a lichen workshop.				6% (1)	94% (17)
18. The environment at the host site was suitable for learning.		6% (1)			94% (17)
19. Housing at the host site was adequate.				6% (1)	94% (17)
20. Information provided to me prior to the workshop was clear		6% (1)	11% (2)	28% (5)	56% (10)
21. Information provided to me prior to the workshop was timely.	6% (1)	17% (3)	6% (1)	28% (5)	44% (8)
22. Adequate time was provided for the meals and breaks.					100% (18)
23. The length of the sessions each day was about right.		6% (1)		44% (8)	50% (9)

*N=17

Table 1

The Learning Experience

Finding 1: Hands-on experiences promoted learning and increased interest in lichens.

The most positive learning experiences occurred during fieldwork with instructors and in the opportunities given participants to conduct lichen identification. They said they learned best during hands-on activities, building confidence by struggling to identify samples and then being able to defend their decisions. Instructors worked alongside the learners, modeling identification procedure as they went, and participants found their enthusiasm contagious. Participants felt good after being left out in the field during the night hike to navigate their way back, using their

GPS units. All 18 participants strongly agreed that field experiences increased their interest in lichens (Figure 1).

Finding 2: The workshop presented the familiar in new ways.

To be cast in the learning role was eye-opening for many of the participants, who are accustomed to teaching others. One teacher said this reminded her of “what it feels like when you don’t know something...As an adult I feel some pride that I know something I didn’t know before. I know that I can go back and take certain things and work them out.” One scientist said, “I work with microscopes all the time but it’s still extremely engaging here,” and another participant commented, “We were seeing things that were always there but seeing them in a new way.” An environment education specialist said she became completely engaged when she discovered a wetlands area similar to her science center and sat down to look around. “For the first time I was able to see what I’ve always seen and know what it was,” she marveled. “I will have a good working knowledge now and will be able to share this with the kids who come to the Nature Center and use it.”

The workshop provided ample resources to support understanding of the content – 88.9% strongly agreed with this survey statement (Figure 1) – despite an initial shortage of microscopes. Participants appreciated the high quality of the resources and tools they were given and the thought that had gone into outfitting them so thoroughly for a return to their work environments.

Finding 3: Lecture was challenging.

In contrast to the fieldwork, participants had a difficult time with the instructional format of the first two days, when a lot of scientific information was delivered through concentrated lecture. “If I could make one suggestion, it would be less talk on the first day and more examination of lichen,” commented one participant and others agreed. Some information was over their heads; a botanist, who probably knew the material better than most, described the first day as “overwhelming.” Without visual aids, participants found themselves unable to take notes during the lectures because they didn’t know how to spell the scientific terms. Only 27.8% strongly agreed that the presentations were pitched at their level.

Finding 4: The need for classroom application was not met.

Teachers were concerned about whether they would be able to adapt workshop content to their classrooms and to the learning levels of their students. In both focus groups the consensus of teachers and nature center directors alike was that some workshop time should have been used to develop curriculum and lab activities for classroom use. According to one teacher:

If I start using these terms with my students they're going to be scared to death. The only drawback that concerns me is I wish we had more time to talk about how we're going to use this with our students. I'm real concerned that I can go back and use this. I need some things that are very concrete. I don't want to overwhelm my middle school students.

Reflecting this concern, survey results were lowest for the following statement: "Instructors helped me connect scientific information in the workshop with the K-12 classroom or science center work." Only 35.3% agreed strongly, while 17.6% somewhat disagreed. Along these same lines, teachers said that the level of GPS instruction was much more detailed than they needed for classroom use.

Finding 5: Participants wanted more opportunity to process their learning.

Asked how they could have improved their own learning experiences, participants suggested that taking more time for reflection, for journaling, and for debriefing in small groups, as well as for diversion and relaxation would have helped. They found little time during the day for this; teachers in particular mentioned that they would have needed guidance or "permission" to opt out of planned activities in order to create this personal time, explaining that their normal workday is very structured and they are unaccustomed to such freedom. In retrospect, some also wished that they had done more advance preparation, such as reading ahead and studying the lab descriptions in workshop material.

Ten of the 23 statements on the Participant Evaluation Form administered on the final day of the workshop related to The Learning Experience. We determined the mean score for each statement, based on the 5 point scale then ranked them according to how strongly participants agreed with each. Figure 1 shows that participants were highly satisfied with the fieldwork and the ample opportunities provided to learn about lichens. It also highlights the area where participants' were least satisfied. The statement, "The workshop provided ample resources to assist with my instructional needs," received the lowest scores (a mean of 4.1), just below the statement, "Adequate time was provided to discuss how the material could be applied" (4.2).

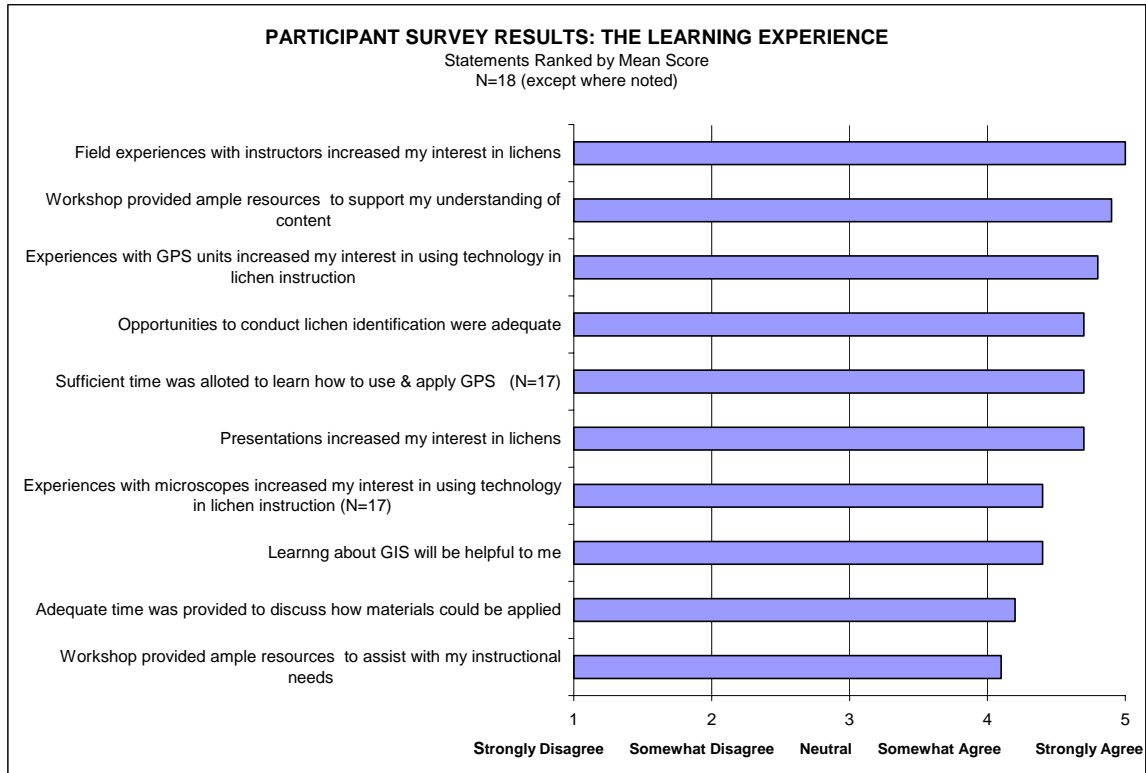


Figure 1

- Participants Recommend:*
- Begin the lecture session with major concepts, supported by Power Point or overheads, use of the whiteboard, and vocabulary handouts.
 - Share samples kit and matrix early in the process.
 - Build in time for reflection, for diversion, for debriefing in small groups.
 - Encourage participants to work together.
 - Provide more opportunities to adapt learning to the classroom and to various grade levels, to create curriculum and lab activities and present them to the group.
 - Provide the Georgia performance standards to guide the inclusion of lichen content into classroom curriculum.
 - Limit GIS instruction to what is appropriate for K-12 students.
 - Provide enough microscopes for everyone

Communication

Finding 6: Instructors communicated clearly with participants.

In general, participants agreed that workshop information had been clearly communicated to them. They well-understood the goals and objectives of the workshop (88.9% strongly agreed) and the purpose of the three follow up meetings was also clear. Instructions given prior to the activities were clear (77.8% strongly agreed). They found facilitators patient and willing to repeat information no matter how often a question was asked, but they only agreed somewhat with the statement that difficult material was well-explained. This may have been due in part to the perceived ineffectiveness of the lectures, as discussed previously.

Finding 7: Group Communication Opportunities Were Inadequate

Participants felt that many of their workshop concerns, for instance their need to talk about classroom application and some confusion about field work, could have been resolved through daily debriefing sessions. As one teacher commented, "If we had just sat down in small groups at least once a day and talked through this – the way we're doing now – it would have made a big difference."

Five statements on the Participant Evaluation Form related to issues of communication. By ranking the mean scores for each statement according to participant agreement with them, (Figure 2) we determined that workshop leaders communicated the goals and objectives of the workshop and instructions for activities clearly, but their lectures were often over the heads of participants and they did not consistently help educators apply the content to their work.

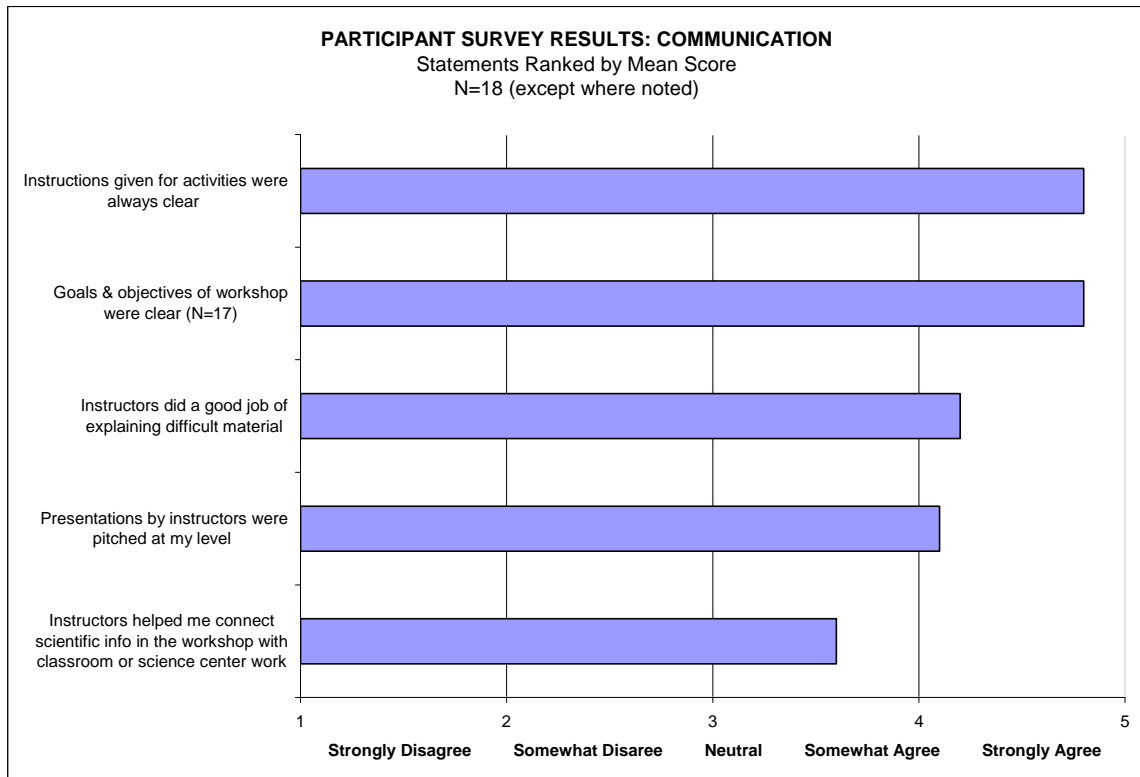


Figure 2

Participants Recommend:

- Provide clear guidance to prepare participants for field work.
- Check in with learners more frequently through daily debriefings.

Structure & Organization

Finding 8: Participants were well-satisfied with the workshop setting.

The workshop facilities, housing, and arrangements for meal breaks were considered very satisfactory (see Figure 4), and everyone praised the food. “They are very sensitive to people’s needs and need for comfort,” and “[Luanne] went way above and beyond the call to see that our needs were met,” were representative comments. They liked the classroom space, where they could leave their materials out overnight. The only concern about the facility was not having a communal gathering place where people could relax and talk about their learning in a casual setting (someone recommended rocking chairs for the veranda). After-hours time spent in the work room, participants found, invariably led them back to their microscopes rather than to

socializing. A related concern was that the chairs and tables were not supportive to leaning over the equipment for long periods of time.

Finding 9: Workshop activities needed more structure

Participants raised the theme of intentionality versus happenstance repeatedly, indicating the need for more structure in some areas. Some of their learning experiences, they said, would have been more effective had they been intentionally planned. Group learning, for instance, was highly valued but difficult to enact. “There were so many types of people here that you get a good balance of information from different people,” commented a participant. Nevertheless, one of the teachers, who had been using a lichen curriculum in her classroom for two years, found little opportunity to share what she had learned with others. There was no mechanism in place to share information such as the matrix that evolved during the week or to encourage participants to work in small groups or pairs.

Fieldwork was somewhat disorganized as well. “All the instructors were showing [us] things at the same time,” said a participant. “I didn’t know where to be.” The botanist in the group would have welcomed more direction on how to collect specimens before they went out into the field. “Bob would tell you if you asked him, or if you were right there,” she explained. “But it would have been better if there was a little more intentionality about it.” Several teachers said they needed more detailed information about the physical reality of fieldwork (such as clothing and hygiene), as they had no previous experience to draw on. The experience caught many off guard: “The first day we collected and came back – that day we felt, ‘I’m done. I’ve just got to stop.’ Everyone was so tired! We were doing something we had never done before for hours and hours.” By the second day they were more acclimated and better able to take care of themselves.

Although the survey indicated that participants were reasonably satisfied with the length of the sessions, we heard numerous complaints about the days being very long, lasting into the night, with few breaks for independent activity. Although the evening sessions were listed as optional, new material emerged there, and teachers did not feel that they could “skip class.”

Scheduling time during the day specifically for teachers to work on curriculum development would have been helpful, they said. “It’s very important that different people work together on the lesson plans.” explained one teacher. She went on:

There’s no way that I could use some of what we did here with my kids because they’re young. I can adapt that, but some people aren’t so good with adapting. More structure and more direction during the retreat would be beneficial. People who are good at this could work with those who aren’t as good with it.

“Trying to do that at 8:00 at night is not the way to do it,” added another teacher. They need to schedule it as an activity for the teachers.”

A final issue about the workshop’s structure and organization was that details were not formalized far enough in advance for participants to plan adequately (less than half strongly agreed that the information was timely). Participants received some basic information, such as exact time and location only a week before the workshop, and, according to one participant, some details in emails were erroneous.

The final six statements on the Participant Evaluation Form related to Structure & Organization. We determined the mean score for each of these statements, based on the 5 point scale, then ranked them according to how strongly participants agreed with each. Figure 3 reflects participants’ strong satisfaction with the facilities (a mean score of 4.8 for both location and housing) but lower levels of agreement with statements about provision of workshop information.

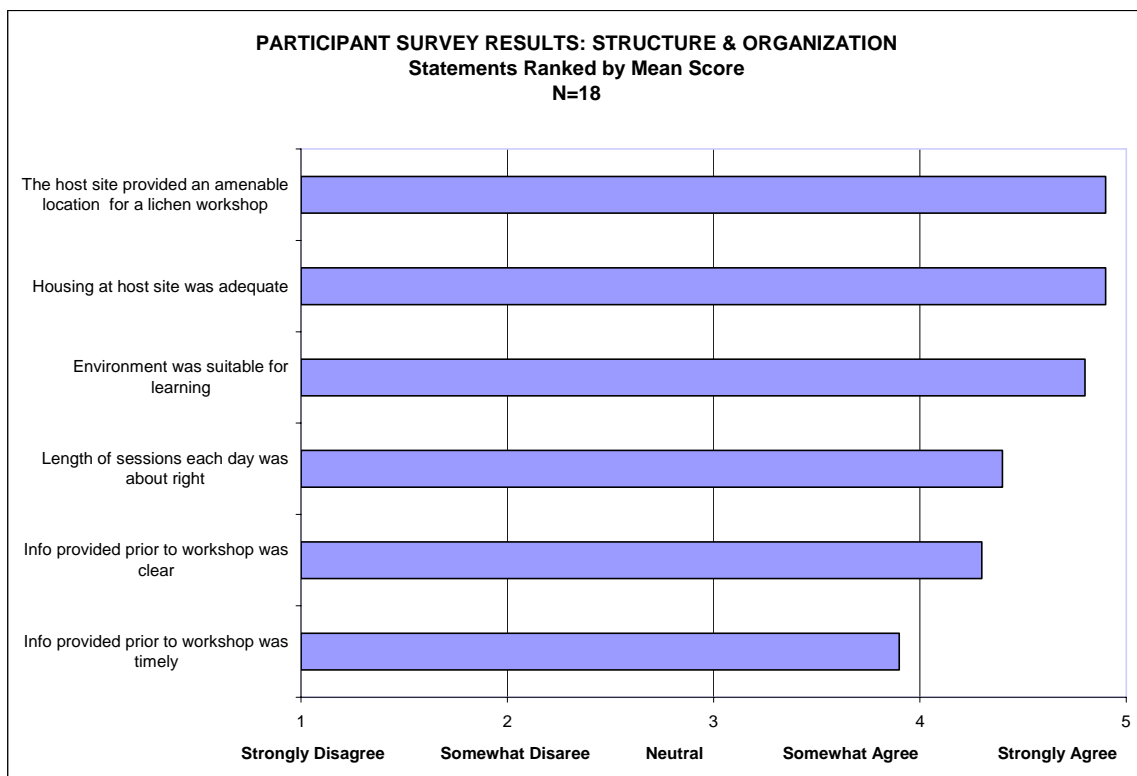


Figure 3

- Participants Recommend:*
- Shorten the workday; build in diversions and optional activities.

- Do field work early in the morning when weather is cool.
- Create a communal gathering space away from the work area.
- Provide appropriate furniture for long hours over the microscope.
- Send workshop information out at least two weeks in advance.
- Allow time at the three scheduled follow-up meetings for teachers to share their post-workshop experiences and to bring samples of new lichen curriculum they have developed.
- During the third follow-up session, have teachers help plan next year's workshop.

Knowledge Gains

Findings about knowledge gained during the workshop were measured by pretesting and posttesting that was conducted at the beginning and end of the workshop. These knowledge gains were measured according to the four learning objectives – that participants would demonstrate their knowledge of (1) lichen natural history, (2) lichen ecology, (3) lichen uses, and (4) GPS units. Tables 1-4 compare pre-and posttest scores for each objective, indicating the percentage of participants scoring at each of the four levels of knowledge (1=No Knowledge, 2=Emerging, 3=Proficient, 4=Exemplary).

All 18 participants moved up at least one knowledge level in virtually every area tested (Tables 2-5). The most impressive gains occurred for Objective 2, knowledge about lichen uses. In this area 56% of the participants began with little or no knowledge, and the entire group moved up to the proficient or exemplary level by the end of the workshop. The smallest gain was for Objective 3, lichen ecology, which seemed to be the most difficult topic for participants to grasp. Only 11% got to proficiency level and none reached exemplary; and this was also the least understood area for participants prior to the workshop, considering that 89% entered with no knowledge at all. For Objectives 1 and 4 the majority of participants began the workshop with an emerging level of knowledge and ended at the proficient level.

Another way of looking at the pre-and posttest results for each learning objective was to compare mean scores for each of the 10 test questions (Figures 4-7). These comparisons emphasize the jump in knowledge that occurred in certain areas, notably lichen identification (Figure 5) and how lichens reproduce (Figure 4).

**KNOWLEDGE GAINS: Percentages of participants
pre- and posttesting in each category**

% Pretested in this category	Objective 1: Participants will demonstrate knowledge of lichen natural history	% Posttested in this category
17%	No Knowledge: The participant does not answer the question or his or her answer is wholly incorrect	0%
78%	Emerging: The participant demonstrates minimal knowledge. His/her response is partially right. It reflects, at best, a superficial understanding of the topic.	11%
5%	Proficient: The participant demonstrates satisfactory knowledge. His/her response is true/correct. Supporting details, if provided, are right for the most part. The response reflects a good basic understanding.	78%
0%	Exemplary: The participant demonstrates extensive knowledge. His/her response is correct and supporting details are extensive and accurate. The response shows an unusual depth of understanding.	11%

Table 2

% Pretested in this category	Objective 2: Participants will demonstrate knowledge of lichen ecology	% Posttested in this category
89%	No Knowledge: The participant does not answer the question or his or her answer is wholly incorrect	0
11%	Emerging: The participant demonstrates minimal knowledge. His/her response is partially right. It reflects, at best, a superficial understanding of the topic.	72%
0%	Proficient: The participant demonstrates satisfactory knowledge. His/her response is true/correct. Supporting details, if provided, are right for the most part. The response reflects a good basic understanding.	28%
0%	Exemplary: The participant demonstrates extensive knowledge. His/her response is correct and supporting details are extensive and accurate. The response shows an unusual depth of understanding.	0

Table 3

% Pretested in this category	Objective 3: Participants will demonstrate knowledge of lichen uses	% Posttested in this category
28%	No Knowledge: The participant does not answer the question or his or her answer is wholly incorrect	0%
28%	Emerging: The participant demonstrates minimal knowledge. His/her response is partially right. It reflects, at best, a superficial understanding of the topic.	0%

44%	Proficient: The participant demonstrates satisfactory knowledge. His/her response is true/correct. Supporting details, if provided, are right for the most part. The response reflects a good basic understanding.	50%
0%	Exemplary: The participant demonstrates extensive knowledge. His/her response is correct and supporting details are extensive and accurate. The response shows an unusual depth of understanding.	50%

Table 4

% Pretested in this category	Objective 4: Participants will demonstrate knowledge of GPS units	% Posttested in this category
5%	No Knowledge: The participant does not answer the question of his or her answer is wholly incorrect	0%
67%	Emerging: The participant demonstrates minimal knowledge. His/her response is partially right. It reflects, at best, a superficial understanding of the topic.	33%
28%	Proficient: The participant demonstrates satisfactory knowledge. His/her response is true/correct. Supporting details, if provided, are right for the most part. The response reflects a good basic understanding.	56%
0%	Exemplary: The participant demonstrates extensive knowledge. His/her response is correct and supporting details are extensive and accurate. The response shows an unusual depth of understanding	11%

Table 5

KNOWLEDGE GAINS: Comparison of Pre- And Posttest Scores

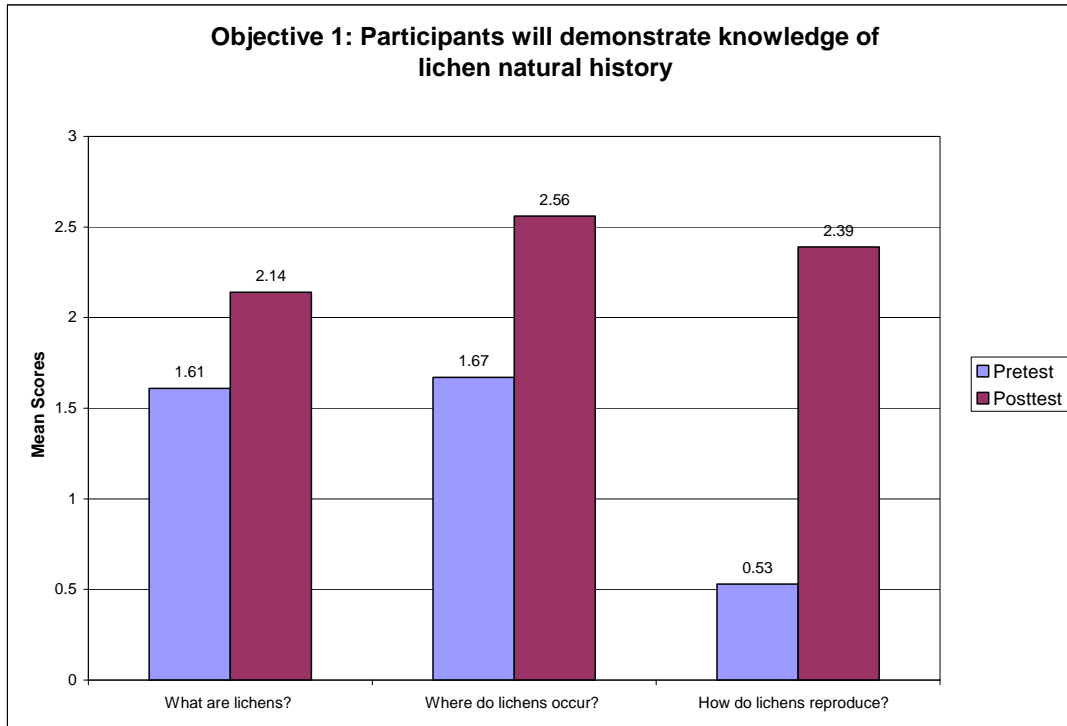


Figure 3

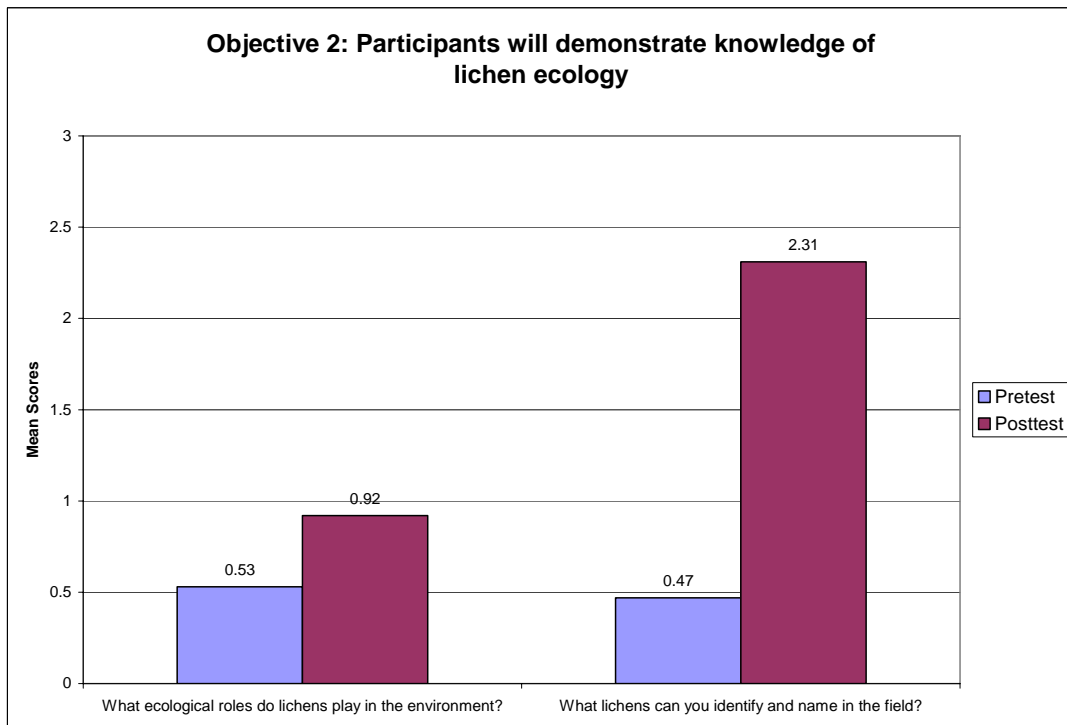


Figure 4

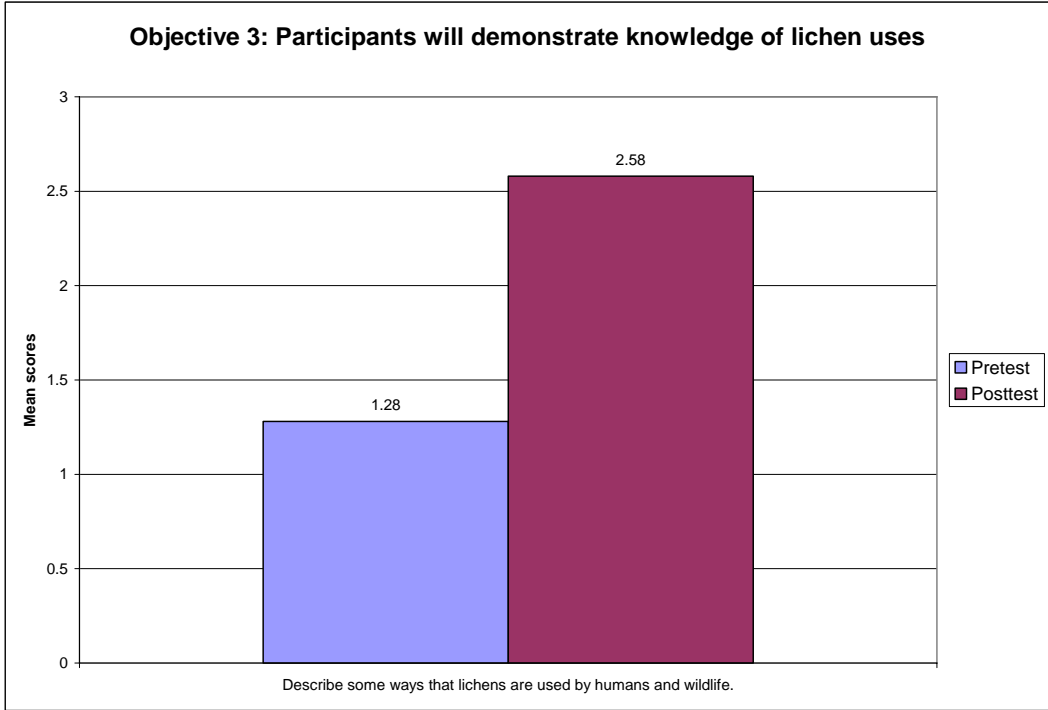


Figure 5

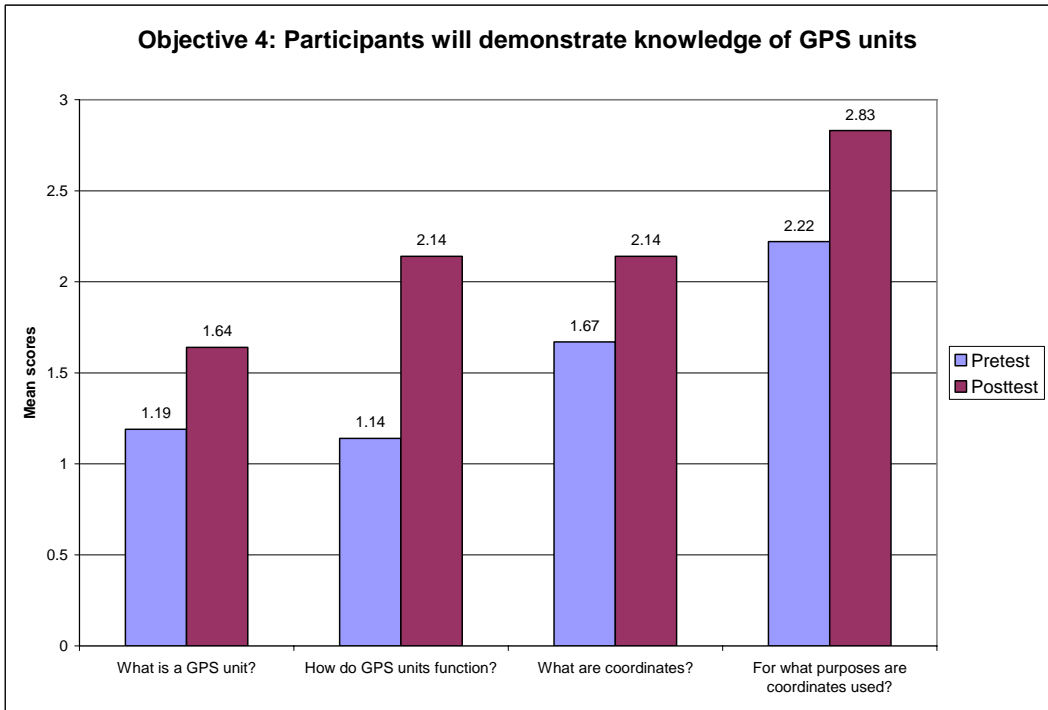


Figure 6

RECOMMENDATIONS

From the perspective of their educational backgrounds, workshop participants offered a cogent list of recommendations for upcoming lichen workshops. These appear in the various sections of the findings. Based on their input and data collected from the workshop, we have assembled a group of key recommendations intended to address participant concerns and to offer improvements for other such educator enhancement workshops in the future.

Key Recommendations

- Create an advisory panel to plan future workshops that includes previous attendees.
- Actively recruit more K-12 teachers, particularly from schools targeted for improvement by the NCLB Act.
- Allow opportunities for participants to adapt learning content to their work environments
- Use a variety of teaching strategies to deliver lichen content.
- Build group learning experiences into the curriculum
- Hold daily debriefing sessions and adjust workshop activities as needed to respond to participant concerns
- Communicate workshop details well in advance
- Develop a protocol for field experiences

Promotion of Future Workshops

Participants suggested a number of ways to promote and expand the reach of future lichen workshops to additional educators. One concern was that minorities, particularly African American educators, were not represented. “It could be cultural,” suggested one science center director who works in an urban area, adding, “Inner city kids and teachers are just not as used to being outside... I wonder if, maybe you could show – or give a teaser – on how you could apply this. You can find lichens anywhere, even in the city.” This led to a recommendation to contact

Piedmont Park in Atlanta and coordinate with its Saturday programming for parents, teachers, and children. The educators also recommended the following promotional strategies.

Participants Recommend:

- Conduct workshops, pre-conference sessions, booth, presentations at Georgia Science Teachers Association (GSTA) and Georgia Science for Youth Teachers Conference (GSYTC), in Athens next year
- Use the Environmental Educators Association network
- Post information at Nature Centers across the state.
- Attend the Outdoor Classroom Symposium in October
- Distribute workshop information through RESAs
- Use Direct Mail – Send information directly to Science Coordinator or Science Department chair at each school, rather than to school district.
- Ask previous workshop participants to spread the word.

APPENDICES

1. Focus Group Questions
2. Assessment of General Knowledge – Pre-session
3. Assessment of General Knowledge – Post-session
4. Participant Evaluation Form
5. Scoring Rubric

