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This issue of JIR includes two interesting research articles in addition to several pieces in the two new sections, “In Short: Reviews and Reports” and “In My Opinion”. Both of these new sections serve to bridge gaps between researchers, practitioners, managers, and administrators. This issue’s “In Short: Reviews and Reports” section contains a review of the recent book Interpreting the Land Down Under: Australian Heritage and Tour Guiding edited by Rosemary Black and Betty Weiler. The “In My Opinion” section asks the question, “What are the primary issues facing interpretation and interpreters in the next five years?”

I would like to announce an upcoming special issue of JIR that will involve an exchange of articles and ideas between the Journal of Interpretation Research and the Journal of Applied Environmental Education and Communication. As closely related, if not often overlapping disciplines, we often share the same target audiences, theoretical groundings, and literature for much of our research. In addition, the application and importance of findings are of value to both fields of study. As such, providing an opportunity for authors to publish research and share ideas between the two disciplines should encourage and increase the likelihood of true collaboration. A detailed call for papers for this upcoming special issue will be out soon.

I look forward to the future developments of our field through your quality submissions to JIR.

—C
Abstract
The multiple case study described further investigates and identifies elements associated with successful interpretive programs through assessing what is perceived as important elements by interpreters in five U.S. National Park units. Data sources included semi-structured interviews with interpretive personnel, analysis of documentation related to interpretive programs in the units, and participant observation of interpretive programs conducted at each site. Four themes surfaced from this data: (a) an interpretive program must relate to the visitor, (b) it must attempt to achieve its goals through innovative techniques, (c) attain basic program needs and, (d) promote community outreach. One discrepancy found, based on the researchers’ analysis of program observations, was no attempt at receiving responses from the program participants. This “one-way” form of communication differs from the profession’s interest in connecting with the visitor. One recommendation from this study is to explore constructivist learning strategies that could help bring about “two-way” communication between the interpreter and visitor.
Keywords
interpretation, National Park Service, qualitative research, constructive learning theory, program evaluation

Introduction
Every year, millions of people visit national, regional, and local parks. Many of these people will seek some type of information about, or understanding of, the sites they visit. This information may come in the form of a brief stop along a highway to view a panorama, a walk along the shoreline of a lake, a tour of a nature center, or an evening program at a campground. Thousands of park and recreation personnel are engaged in processes which provide visitors with high impact, short-term experiences. The process of “revealing” natural, cultural, and historical wonders is what Freeman Tilden called interpretation (1957).

The diversity of interpretive goals and mediums has created a variety of public perceptions regarding the interpretation profession (Knapp, 1994). Leaders of the field, such as Beck and Cable, confess that to some degree they still don’t know what interpretation is (2002a). The National Association of Interpretation (NAI) defines it as, “a communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings of the resource” (Brochu & Merriman, 2002a, p. 14). Beck and Cable offer a more poignant definition that it is simply a “process of profound gift giving” (2002a, p. 10). They further define these gifts in their text Interpretation for the 21st Century: “The most effective interpreters orchestrate their interpretation to elicit a response from the audience: astonishment, wonder, inspiration, action, sometimes tears” (Beck & Cable, 2002b, p. 2). The array of perceptions of what interpretation is suggests that it is still in its developmental stages. As Larsen notes, “Interpretation is a budding profession. It is in the process of defining its purpose, standards, and language” (2002, p. 17). Different perceptions of what can be achieved through interpretation contribute to discussions / debates concerning successful elements of an interpretive experience.

Elements Associated with Successful Interpretation
Interpreters want to know if their programs are successful (Beckmann, 1999). Since many, including Tilden (1957), perceive the interpreter to be an “artist” who has individual poetic license in conveying an interpretive message, techniques may vary from one program to another.

There are, however, resources available to the interpreter which define variables, or elements, that aid in an interpretation program’s success. As previously noted, several common directives are couched in Tilden’s book, Interpreting Our Heritage. More recently, Beck and Cable (2002b) provide an additional nine principles that enhance the original six principles Tilden (1957) conveyed in his seminal work. These fifteen tenants provide further guidance in developing successful interpretive experiences (2002b).

A set of general characteristics outlined by Ham (1992) have influenced interpreters’ notion of what successful interpretation should entail. These four “qualities” have been noted as essential for success in almost every personal interpretation program (Brochu & Merriman, 2002a):

• Interpretation is enjoyable
• Interpretation is relevant
• Interpretation is organized
• Interpretation has a theme

Others have also supported these criteria with recent emphasis on presenting programs with clear themes (Chadhokar & McLoughlin, 1999; Ham & Krumpe, 1996; Larsen, 2003). As Larsen notes, “perhaps the most powerful interpretive tool is the interpretive theme” (2003, p. 1).

Both the National Association of Interpretation (NAI) and the National Park Service (NPS) have similar views on ways to achieve successful interpretation (Brochu & Merriman, 2002a). Ultimately for NAI, it is organized into four general goals: (a) know your audience, (b) know your resource, (c) program development, and (d) program delivery (Brochu & Merriman, 2001). These variables are the basis for one of the most aggressive training endeavors in interpretation – the Certified Interpretive Guide program sponsored by NAI. The NPS, through its Interpretive Development Program (IDP), has established a “product” that the agency suggests would reflect successful interpretive experiences. The following is a general description of a “successful” IDP program:

[The program] creates an opportunity for the audience to form its own intellectual and emotional connections with meanings / significance inherent in the resource, and should be appropriate for the audience and provide a clear focus for its connection with the resource(s) by demonstrating the cohesive development of a relevant idea or ideas, rather than relying primarily on a recital of a chronological narrative or a series of related facts. (Chen, 2003 p. 2)

As noted in the above IDP description, the desire to relate to the visitor by making connections is a foundational tenet of interpretation. Certainly, it is a variable that aids in learning (Webb, 2000, p. 22) and in memory recall (Knapp & Yang, 2002). As Webb (2000) states, “the more of these connections that are made, the better the retention will be” (p. 22). The emphasis placed on “connection” between the interpreter and the participant led to a thorough examination of the idea and the process to make such connections. The NPS views connections as personal bonds with the resource that are accessible both intellectually and emotionally (Goldman, Chen, & Larsen, 2001). The NAI views the concept with such importance that it is included in its definition developed by the Board of Directors in 2000 (Brochu & Merriman, 2002b). Finally, Chen’s (2003) research on the opportunities for emotional and intellectual connections led to the delineation of several opportunities for visitor connection which include: individualized meanings, shared meanings, and resource meanings. Enhancing these connections, according to Chen, will help communicate meanings of their heritage, enhance experiences, and satisfy basic needs to create and sustain meanings. Beck and Cable echo this strategy to find the connections: “Experienced speakers know that the telltale way to determine whether a talk is making an impact is to watch the audience throughout the program” (2002b, p. 111).

Ultimately, successful interpretation is closely associated with what it is attempting to achieve. However, the variance of desired outcomes relative to an interpretive program precludes sweeping notions of successful interpretation. Rather, success can only be measured by what is accomplished – actual or perceived - by the interpreter. As Ham states, “success, of course, depends on what interpretation is intended to achieve; provocation to thought, an
enjoyable experience, acquisition of a belief or attitude, or perhaps a behavior like staying on a trail, buying a souvenir, or a repeat visit” (2004, p. 65-66). But more importantly, Ham notes, “make no mistake about it, being able to explain success in interpretation requires research” (2004, p. 66).

The continued maturation of interpretation’s identity comes at a time when two of the most influential organizations associated with the field - the NAI and NPS - are in the early efforts of formalizing interpretation certification and standardization procedures. The juxtaposition of the initiatives put forth by NAI and NPS to increase professionalism, with the ongoing refinement of the interpretive process, suggests the need to further analyze what professionals in the field believe are elements that will accomplish interpretive program objectives. Support for this type of analysis comes directly from the authors of NAI’s certification program: “Fine tuning the definition [of interpretation] in the future will create a true standard for the profession that is supported by NAI’s certification program in all categories. As all of the pieces begin to be seen as part of a whole, the profession will begin to mature” (Brochu & Merriman, 2002b, p. 15). Empirical research is needed to better identify and assess these “pieces.”

This multiple case study is an attempt to further investigate and identify successful interpretive strategies through assessing what currently is perceived as important elements by interpreters at five National Park units. For the purpose of this study, an interpretive experience is considered successful when it is believed by the interpreter that the program has met its goals / objectives. At all five sites, the authors focused on what park interpreters perceived as important elements of successful interpretation experiences for an individual program, as well as on a park-wide basis.

**Methodology**

This qualitative research study employed a multiple case study design (Yin, 1994) to further investigate variables associated with successful interpretation. According to Yin, multiple case study design is considered more “compelling” and “robust” than a single case (p. 45). This power, however, can occur only if replication of each individual case study has been accomplished. A triangulation method was employed to collect multiple sources of data to control for possible biases caused by the researcher being the sole observer. Data sources included: (a) semi-structured interviews with interpretive personnel, (b) analysis of documentation related to interpretive programs in the units, and (c) participant observation of interpretive programs conducted at each site.

The case study sites were decided on the basis of representation of a variety of park unit characteristics. Parks were chosen by the breadth and depth of personal service interpretation provided by the particular unit. Criteria were based on the variety and types of programs offered to ensure the researchers a full range of program staff and offerings. This information was gained through the aid of the Chief of Interpretation Office of the National Park Service. The units included a major western site (Yellowstone), a major eastern site (Great Smoky Mountains), a mid-range park (Shenandoah), an urban unit (Cuyahoga), and a historical park (George Washington Carver). The general criterion used to select the interview participants of the case studies was that they be full time employees of the National Park Service that had interpretation as their primary duty. These positions ranged from field interpreters to chiefs of interpretation. This criterion was used with the assumption that they had, to some degree, expertise in interpretation. For each park, the researcher attempt-
ed to interview all staff available during the site visit. All individuals that were contacted during the site visit chose to participate in interviews. 

Data attained from interviews reflect responses from a series of open-ended questions (Table 1) examining elements believed to contribute to a successful interpretive program. A total of 35 interviews were conducted from the five park units. Each interview lasted approximately 45 minutes. All interviews were tape-recorded and later transcribed, word for word, for subsequent analysis. Descriptors, topics, values, and other issues were identified. This data was then categorized and assessed for relationships until distinct themes and sub-themes emerged (Strauss & Corbin, 1990).

Agency documentation and program observations were used to supplement the information gathered from the interviews. Each park unit shared key documents regarding the planning, development, and implementation of the unit’s interpretive programs. Through an initial analysis of all materials, ten specific forms of documents were selected for each park unit. These were the long range interpretive plans, organizational charts, interpretive service inventory, representative newsletter, school program lesson plans, teacher surveys / curriculum evaluations, annual interpretation reports, visitor survey cards, school program evaluation forms, and visitor surveys / studies. A range of interpretive goals, techniques, and strategies are represented in this documentation. The author analyzed these supporting materials to correlate this information with the data generated from the interviews.

Twenty-one public interpretive experiences at the five National Parks were observed by the researcher as a third source of data. Interpretive venues observed included the following:

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<tr>
<th>Table I</th>
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<td>What are elements to successful specific interpretive programs?</td>
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<td>2.</td>
<td>What are variables that could be perceived as unsuccessful to a specific interpretive program?</td>
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<td>3.</td>
<td>What are variables to successful park-wide interpretive programs?</td>
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<tr>
<td>4.</td>
<td>What are variables that could be perceived as unsuccessful to park-wide interpretive programs?</td>
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<tr>
<td>5.</td>
<td>If you were Chief of Interpretation what would you do?</td>
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<td>6.</td>
<td>Other thoughts / comments?</td>
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Twenty-one public interpretive experiences at the five National Parks were observed by the researcher as a third source of data. Interpretive venues observed included campground / campfire programs, interpretive walks, visitor center programs, site-oriented programs, and visitor center front desk interface. Focused note taking (Hammersley & Atkinson, 1989) was employed to attempt to gain as much information from these events as possible. The areas of focus included the following:
Results
From the analysis of the data four themes emerged. Consistent with a linear-analytical structure (Yin, 1994), these themes reflect the researchers’ interpretation of the data. Two of these general areas were consistently cited: (a) an interpretive program must relate to the visitor, and (b) it must attempt to achieve its goals through innovative techniques. Two other themes less emphasized in the data, but still prevalent, were: (c) the attainment of basic program needs, and (d) community outreach. These four themes, along with sub-variables associated with each theme, are outlined in Figure 1.

Relating to the Visitor
Participants in the study frequently attributed the success of an interpretive program as to whether or not the program(s) connected with the visitors. In all park units, interpreters believed the connecting of the visitors to their message, and their resource, as being crucial. For example, one concern of the respondents was that the interpretive experience not be esoteric. As one ranger noted, “being way too esoteric turns people off…things are so lofty, you’re shooting way over their heads and you’ll see it because people will get up almost en masse at times to leave programs.” Interpreters were also adamant that they connect with the visitor. Whether this comes from “incorporating modern lingo, modern fads, modern catch phrases” or the use of art to make that connection, interpreters saw this as a primary element for success in interpretation. In support of this, one interpreter cites the views of one of the major influences regarding interpretation: “This boils down to some of Freeman Tilden’s stuff…relating to people’s experiences is one of them.”

In attaining this connection with the visitor, interpreters noted that “reading” the audience was crucial. As one interpreter noted, “I think that you can tell when an interpreter and you have eye contact, and you have all the pieces together, and sometimes it’s just a knowing thing, it’s just not there, and other times, you just know it’s happening; you can feel it, be in their shoes and feel it coming back; and even though it was nonverbal, it’s happening, one-on-one, you can tell you’re connecting.”

Many interpreters interviewed believe that relating to the visitor would be strengthened through a direct connection to the park resources. As one interpreter noted, “A knowledgeable ranger uses his/her knowledge, not just to present theory, but to build a story that relates some meaning or significance of the resource in a way that lets visitors find meanings
themselves.” Achieving this outcome would enhance the actual meaning for the visitor. As an interpreter from this study explains, “If they understand why this park is here, or why this place is here, or why this program is even being presented, then it means it is more successful because people can apply it to themselves.” This connection was often seen by respondents as a way to share issues related to the park: “The critical issues for the park, those what some people would call compelling stories, whether it is for preservation of the air quality or water quality. Making that connection and having that sort of a theme for the entire park.”

Documentation analysis showed similar interest in promoting a strong relationship between the park and the visitor via the interpreter. The overall mission of Yellowstone’s long range interpretive plan makes the case, “While it is important to retain the successful aspects of interpretation used during the past century, it is incumbent on us to ensure that Yellowstone remains relevant to today’s visitors” (Yellowstone National Park, 2000, p. 25). The Comprehensive Interpretive Plan for Shenandoah National Park (2000) bases its interpretive themes on communicating Park significances to the visitor: “They are the key ideas through which the Park’s significant resource values are conveyed to the public. They connect Park resources to the larger processes, systems, ideas, and values of which they are a part” (2000, p. 24). Observations from the Park sites yielded strategies to connect to the visitor through relating the Park’s significance. Consistently, campfire programs, walks, and

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<td>• Connection to the visitor</td>
<td>• Avoid didactic techniques</td>
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<tr>
<td>• “Reading” the audience</td>
<td>• Promote interactive / active approaches</td>
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<tr>
<td>• Connection to the resource</td>
<td>• Promote critical thinking skills</td>
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<td>• Offer a variety of interpretive techniques</td>
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<th>Basic Program Needs</th>
<th>Community Outreach</th>
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<td>• Ability of the interpreter</td>
<td>• Promote relations with gateway communities</td>
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<tr>
<td>• Program theme</td>
<td>• Improve formal school program delivery to surrounding communities</td>
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<td>• Connection to Park mission</td>
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Figure 1. Themes associated with successful interpretation.
programs were presented through a talk format that relayed important Park information in an attempt to provide significance to the visitor.

**Innovative Techniques**

All interpreters who were interviewed related that a successful interpretive program must offer participants innovative techniques that would aid in accomplishing program outcomes. When describing innovative techniques, interpreters consistently and emphatically noted that the program must not become a lecture. Follow up questioning by the researchers regarding this term revealed that virtually all respondents associated this term with a traditional didactic technique. A representative response from a chief of interpretation described the negative connotations the lecture format entails: “When they’re [interpreters] leading a hike and they go to a spot and they spew off a whole lot of facts with no opportunity for the audience to interact with the interpreter and they’re just passively listening.” This, for many interviewed, was an unsuccessful strategy: “From mouth to ear - I think that’s not successful.” Lecturing was the single most mentioned technique which impeded an interpretive message. One interpreter used a historical reference to convey her dislike for lecture: “The ones that use the Napoleon position and do a lecture style presentation…you just see people’s eyes glaze over.” The clear disdain for lecture as an interpretive method with school programs was evident as well: “When you get to the point where you’re lecturing at the kids, the program is not nearly as successful.” As one interpreter summed it up, “Lecturing…that’s my bugaboo. If you just go do a lecture, I’d rather you tape it. Then I can rewind you or fast-forward you!”

A majority of interpreters wanted their programs to be interactive / active and considered these approaches to be innovative. All respondents felt it important that their constituents be actively involved during a program. Comments such as, “break it up so it’s not just a constant one-way dialogue,” and, “the more hands-on and the more active a program can be, in a lot of cases, it will work well” were prevalent from respondents at all five park units. A ranger from one unit summarized this point, “I think that it [interpretive program] needs to be interactive, that makes it work, by asking questions and getting the audience involved. I think there needs to be some hands-on element where people are either touching things or looking at things.” This view also coincides with interpreters who work with school groups: “What’s successful is when students are actually taking part in the experience at some point. So, getting them involved in data collection, artistic things, or other things are helpful in our outcomes.” Data from these interviews consistently pointed to successful programs as being very interactive and hands-on, rather than lecture-based.

One aspect of interaction that several of the interpreters found appealing was the promotion of critical thinking skills. As a field operation supervisor suggested, “My program is basically posing a question to the audience [such as wetland protection] and causing some conflict, and then the visitor[s] can come to their own determination using critical thinking.” Additional viewpoints were represented through the use of critical thinking in school programs: “We’re really working now to try to incorporate more student-centered learning and inquiry-based learning.” Although not prevalent, some of the observed interpretive programs utilized questioning techniques as an aspect of their program. On one walk, the interpreter would set up questions to ask her participants prior to each discussion related to her topic. Thus, her walk was guided by the answers from the participants.

The interest in offering a variety of experiences marked another important aspect of
innovative methods. A park ranger explained the need for a diverse repertoire of techniques: “Don’t just do touchy feely stuff alone because then the people who want auditory or visuals aren’t as happy. Tell me something about it, I want to hear it, and the visual people, are like, show me.” The variety of techniques offered by the interpreters in this study suggests the potential and importance of individualizing an interpretive experience. From music to storytelling, and art to props, a range of techniques were suggested by interpreters as ingredients to a successful program. Several of the programs observed utilized a variety of interpretive techniques. One program for families offered theatrics, puppets, group exploration, storytelling, discussion, and art work. Documentation analysis also revealed the interest from each park to offer a variety of interpretive techniques. For example, the Great Smoky Mountains National Park includes diversity of program techniques in its resource education goals. A general mission in their documentation states that the visitor should “receive resource education messages about the Park through a variety of services that meets the needs of diverse learning styles and cultural traditions” (Smoky Mountain National Park, 2001, p. 28).

Basic Program Needs

Beyond the importance of relating to the visitor through innovative techniques, this analysis found that interpreters saw other program factors as being important to the successful outcomes of an interpretive program. Ability of the interpreter, program theme, and relationship to the Park’s mission are all considered basic program needs by the interpretive profession (Ham, 1992; Knudson, Cable, & Beck, 1995). These three variables were cited by most of the participants in this study.

Ability of the Interpreter: The first of these basic program needs hinges on the abilities of the interpreter: “I’ve seen a ranger take a terribly structured program and do a great job. I’ve seen a poor ranger take a well-structured program and give a really crummy program. So, I think a ranger can make or break a program.” A “more confident and comfortable” approach was an example of a helpful variable, while an “introverted” individual sometimes impedes program objectives. One respondent underscored how the interpreter can help relate to the visitor through his/her own attributes, “How engaging the ranger is, how knowledgeable the ranger is, and how well the ranger uses his/her knowledge to build a story that relates some meaning or significance of the resource is crucial.” The traits that the interviewees supported as being important to successful programs were present in many of the interpreters that were observed at the five park sites. A majority of those observed had the ability to interface with visitors in a comfortable and engaging style.

Program Theme: In addition to the attributes of the interpreter, respondents also considered the theme of the program an important element to the success of the interpretive experience. Many felt that it was essential that the program have a clear theme with coherent objectives. Not having these components was tantamount to failure: “I think that a lack of organization or focus is going to be a big problem with any program. I think that it would be a definite deterrent.”

Park Mission: Although not prevalent, some of the interpreters interviewed expressed their belief that the success of the interpretive experience would not only include clear
program themes, but also a message which represented a strong association to the Park mission: “If you get non-mission based, you can get off on a limb, so it needs to be brought back into legislative mission based.” An interpreter from one park unit felt that focusing on the mission during the programs has actually aided in his staff growth: “Our staff has grown from the early 90’s of a seasonal staff, to a staff of five permanent employees based on the fact that we have been able to prove that our programs help our park’s mission.” Not surprisingly, documentation from all five National Park sites placed the park’s mission as the primary importance when offering interpretive experiences. The focus on conveying the mission by each park was also clearly supported by the program observations. Virtually all programs began their talks / walks / programs with a review of the mission of that particular park.

Community Outreach

A component considered necessary for a successful park-wide interpretive plan was the use of community outreach. Although outreach in and of itself may not be a variable essential to successful program interpretation, it has been viewed as an attribute to the ultimate success of a park’s interpretive mission (Atkinson & Mullins, 1998). Its referral by a majority of the study’s respondents made it an important variable to address. Respondents from all five park units felt that community outreach was a vital aid to their current interpretive options, and was a strategy that should be further developed. Specifically, community outreach was considered most crucial with the parks’ gateway communities: “I think you have to be dedicated to, and involved with, your gateway community and your park neighbors. Whether that be involved with off-site programming, special events, chamber of commerce’s, things like that. You have to concentrate on your gateway communities and your neighbors.” The respondents believed that these partnerships should entail all of the community’s resources and not be limited to occasional church or school group visits. Many of the interpreters believed that not promoting community outreach was a mistake: “Any manager who is not on board with using and getting partners outside the boundaries is missing the boat.” As suggested by a field supervisor, “We’ve got to have a major effort to go out. This park can spread the message of the National Park Service to millions of people within a 20-30 minute drive. And we just have not made that a priority.”

The majority of comments promoting community outreach were associated with different ways in which to improve formal school program delivery: “I think if we have that type of personal relationship with the school, then it’s all the more meaningful than if they just appear and participate in the program. Then they don’t have the ownership that we’re in this together.” Some of the interpreters have noted that they have strengthened the bond with their local school partners by, “getting our park programs tied in with curriculum standards.” A few went further by suggesting that a facility be built in their park that could be utilized as an education / science center and used by community schools.

Community outreach, through interpretation, was also a consistent and important variable addressed in all of the parks’ documentation. For example, the long range plan for Cuyahoga Valley National Park (2001) includes outreach and community relations as its top priority. Yellowstone National Park’s (2000) long range plan places outreach as its highest priority for personal services interpretation requesting expansion of its community outreach program into the Park’s surrounding 21 counties.
Limitations
The results from this case study serve to support current literature related to interpretation, as well as suggest a future area of investigation for further promotion of successful interpretation. However, this type of qualitative research has inherent limitations. First and foremost, is the potential bias caused by having one researcher conduct program observations. In an attempt to offset this limitation the researcher developed a case study data base that included detailed notes on all aspects of data collection, including transcripts and coding of interpretive programs reviewed for this study. The data base from this study was used for reporting the results, and made available for other researchers to analyze. This process was established to allay reliability concerns, such as researcher bias (Yin, 1994).

Another potential limitation is that the criterion for the interview respondents was based on the assumption that the NPS interpreters were adequately trained. No previous evaluation of the participants’ depth of knowledge and understanding was conducted, which led to the assumption that the respondents were capable of offering rich responses regarding successful interpretation. Also, due to the fact that all study participants were from the NPS, training backgrounds could be similar thereby decreasing a variance in observations related to successful interpretation.

Finally, this study focused on what is perceived to be successful interpretation. The data collected from both the interviews and documentation analysis relied on subjective accounts as to what the interpreters and parks believed to be successful strategies/techniques. Specific programs were not assessed with reference to the elements of success espoused by the interpreters. Despite these limitations, this study is useful in confirming previous literature regarding successful interpretation, and suggests a theoretical framework for future development.

Discussion
Results from this study are consistent with previous literature findings which examined components of successful interpretation. In particular, the wide-spread consensus of the importance of relating to the visitor is firmly established in the literature. In the inaugural issue of the *Journal of Interpretation Research*, Ham and Krumpe assert that, “interpretive programs must be relevant if they are to capture and maintain attention” (1996, p. 13). Many other researchers support this position, such as Bourdeau, who states that, “Interpretive program designers know their message must be relevant to their audience to have a lasting impact. Appreciation of an idea or site begins when it has been made relevant to the learner through a well-designed program” (2002, p. 35). As Webb (2000) claims, “The general source of affect is personal relevance” (p. 18).

Two other major themes that were found in this study, innovative techniques and attainment of basic program needs, are also well documented as elements which many researchers in the field suggest are keys to interpretive success. In the NAI’s sourcebook for certifying interpretive guides, Brochu and Merriman note the importance of innovative methods, and urge interpreters to utilize techniques such as multimedia programs, demonstrations, activities, performing arts, and living history (2001). Loomis refers to Csikszentmihalyi’s Flow Theory as a product of using creative methods: “Interpretation must be more than didactic; it must also challenge the visitor often by giving alternative perspectives. An ideal situation exists when the visitor is caught up in a challenge and experiences a highly intrinsic, or flow, involvement” (1996, p. 41). Interpretive development also
includes the basic program needs that many of the respondents noted as important to successful interpretation. Leaders such as Ham (1992) and Tilden (1957) urge professionals to produce thematic, organized presentations that promote the park’s mission.

The fourth theme constructed from this study, community outreach, is less recognized in traditional interpretation literature but is an element becoming highly regarded by both interpreter and manager alike. Atkinson and Mullins summarizes its importance: “As the demand for resources and recreational opportunities increases and the availability of resources per capita decreases, the connection with the community will need to increase to continue the current level of service and public support” (1998, p. 52). Ballantyne and Uzzell urge interpreters to plan with communities, rather than for: “interpreters have a responsibility to ensure that they are sensitive to the ideas and views of different interest groups and stake holders [within the community]” (1999, p. 65).

Results from this study suggest that successful interpretation should continue to include components that have been touted since Tilden’s (1957) seminal work, Interpreting our Heritage. The categories that surfaced through this analysis only reinforce the historical support for relating information to the visitor in a dynamic way. This approach should be made in an organized / thematic fashion so that it can have direct meaning, not only for visitors from afar, but also for people / constituents in surrounding communities.

An Issue for Further Analysis

This study, however, did find an important area that would need further analysis. Consistently, the interview results and the park documentation, along with relevant literature, supported a fairly aggressive approach to relating information to the visitor and promoting connections between their constituents and the park site. However, in virtually all observations made at the five parks, these connections were attempted in a “one-way” fashion. Specifically, the interpreter would offer messages to the visitor with no attempt at receiving responses from the participants. In the observed walks, campfire programs, and presentations visitors had few opportunities to offer their own responses to interpretive messages. In virtually all of the observed programs the interpreter would interchange briefly with the visitors prior to the start of the program. This would occur in different ways, such as informally talking to a group before a campfire program, and inquiring where participants were from before the interpretive walk would begin. In all settings, when the interpretive program actually began, dialogue with the visitors generally ended, establishing a one-way form of communication. The lack of “two-way dialogue” limited the actual knowledge the interpreter could have regarding his/her audience (i.e., emotional, cognitive, and/or physical state at the time of the interpretive experience) debilitating the chances for connections desired by the field.

The omission of two-way dialogue runs counter to the basic premise to both NAI and NPS’s goal of visitor connections. Specifically, strategies that were missing in the program observations are those promoted by the Interpretive Development Program. As one training coordinator for the NPS states:

We need to know more about our audiences! Accurate and up-to-date knowledge of audience perceptions, the meanings they bring to our resources, the way they make personal connections, and how interpretive experiences affect them over time are tremendously valuable... The Interpretive Development Program is
encouraging interpreters when they informally encounter audiences to ask questions like, “What did you hope to find here? What do you hope your children will take from this experience? If you had my job what would you tell people?” (Larsen, 2002, p. 22)

Chen’s exhaustive research into visitor connections reinforces the importance of feedback from the visitor. As Chen (2003) states, “without actual input from visitors to verify and document that connections are being made, the validation of the conceptual model [of meaningful interpretation] cannot be made” (p. 94).

**A Constructivist Learning Approach**

The clear emphasis from the literature on promoting connections with the visitor and enhancing meanings they acquire from their park visit counters the one-way communications consistently found in the observations conducted in this study. Therefore, one of the recommendations from this work is for the interpretive field to look closer at constructivist learning theory that promotes interactions between the learner and teacher, or in this case, the interpreter and the participant.

A major theme in the constructivist framework developed by Bruner (1966) is that learning is an active process in which learners (in this case the visitor) construct new ideas or concepts based upon their current / past knowledge. The learner selects and transforms information, constructs hypotheses, and makes decisions, relying on a cognitive structure to do so. The interpreter and visitor could therefore engage in an active dialogue (i.e., Socratic learning) with the interpreter presenting information that matches with the visitor’s current state of understanding.

This learning theory has been previously suggested for use by interpreters. As Balentine and Uzzell explain, “Recent theory and research in education have postulated that learners play an important role in learning situations and construct meaning regarding such experiences. This constructivist approach to understanding the process of learning has important implications for interpreters concerned with the design of visitor learning experiences” (1999, p. 66). Ballentine and Uzzell also suggest that the one-way dialogue must be corrected: “If interpreters are to apply constructivist theory to the design of visitor learning experiences, they need to go beyond a consideration of themes, stories, and messages. This traditional approach generally fails to consider what visitors bring to the site” (p. 67).

Other related fields have also promoted a constructivist learning approach. Current research and teaching in environmental education is often based on constructivist approaches (Loughland, Reid, & Petocz, 2002). A belief held by many in environmental education is a reorientation of traditional teacher-led curriculum to include the perspectives of the student throughout the educational process (Lord, 1999). Informal science education has noted the importance of a constructivist approach with regards to learning and “connecting” topics to their participants. In setting an agenda for research for informal science education, leaders in the field noted, “The impact made on the formal education arena by the constructivist theory of knowledge with its emphasis on the individual’s prior knowledge [has] also reached the informal scene” (Rennie, Feher, Dierking, & Falk, 2003, p. 116). Kelly (2000) also noted that the constructivist process in museum settings was a “particularly effective” method of conveying informal science education topics (p. 770).

An important principle of a constructivist approach is the notion that the educator, at
times, takes on a facilitation role. Learning occurs through interactions with the environment and is mediated by the educator (Falk & Adelman, 2003). This view of an interpreter as a facilitator to promote meaningful connections is also held by some leaders in the profession (Goldman, Chen, & Larsen, 2001). In essence, constructive learning would be enhanced through interpretive led discussions and dialogue with the participants and not at the group. Therefore, an interpretive experience should include input from the visitors throughout the program. This, in sum, marks the difference between a one-way and two-way approach to promoting meaningful connections.

**Conclusion**

The results of this study support key philosophical and theoretical tenets upheld and promoted by the interpretive profession. Specifically, organizations such as NAI and NPS, and their associated training programs, are conveying variables that interpreters from this study believe can lead to successful interpretive experiences. Making connections to the visitor, offering innovative techniques, and meeting basic program needs, are variables that are prevalent in this study’s interviews, documentation, and observed programs. They are also ones that are espoused by leaders in the field (Brochu & Merriman, 2001; Ham, 1992; Knudson, Cable, & Beck, 1995; Larsen, 2002; Tilden, 1957). However, this study suggests that the attempted connections are being conducted through one-way communication strategies. This finding suggests that further research regarding the use of constructivist learning approaches in interpretive programs is warranted. Understandably, this direction would be a more challenging interpretive style, but one that, in the end, may produce more meaningful experiences.

Finally, the “gap” between what interpreters believe were important variables to successful interpretation (innovative techniques and connections with the visitor) and their actual use (or lack there of) underscores another issue for further investigation. In this study the authors defined successful interpretation when program goals were being met. Overwhelmingly, the interpreters interviewed in this study felt that accomplishing their goals meant employing innovative techniques to help relay their topics as well as making attempts to connect with the visitor. However, program observations found few of these techniques being administered and limited attempts to connect with their audience. The gap in what is perceived to be successful and what is being implemented sets up an important question. What techniques are having the most impact on visitors? For example, does an interpretive program that utilizes a talk format with a “one-way” emphasis have the same impact as one that attempts to involve the visitor? Assessment of the elements to successful interpretation reviewed in this study seems to be the next logical step. Those findings would be crucial to the future planning and training of interpreters.

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References


The Effects of a National Wildlife Refuge’s EE Programs on Elementary School Classes’ Knowledge and Attitudes

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Abstract
In 1997, the Neal Smith National Wildlife Refuge-Prairie Learning Center began offering on-site environmental education (EE) to school groups visiting their reconstructed tallgrass prairie. To evaluate the EE program, fourth-, fifth- and sixth-grade classes from central Iowa completed a pre- and post-visit knowledge and attitudes survey and results were compared with similar classes that did not visit the refuge. Results indicate a significant increase in knowledge and a positive change in attitudes in the treatment group two weeks after visiting the refuge compared with the control group. This research also tested the effectiveness of hands-on stewardship activities in changing knowledge and attitudes. No differences were detected in either knowledge or attitudes between treatment classes that participated in stewardship activities and treatment classes that did not.

Keywords

Introduction
Environmental education (EE) has become increasingly popular as an extension to classroom science curricula and as a
family activity for teachers and parents who want to expand children’s exposure to the natural world. In 1977 the International Conference on Environmental Education held in Tbilisi, Georgia (USSR) established three goals that define EE. The goals of environmental education are: (1) “to foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas”; (2) “to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment”; and (3) “to create new patterns of behavior of individuals, groups, and society as a whole towards the environment” (United Nations Educational, Scientific and Cultural Organization [UNESCO], 1977). Nature centers, camps, state and national parks, and national wildlife refuges, for example, have continued to develop numerous programs and facilities to increase people’s awareness, sensitivity, and knowledge about environmentally relevant subjects.

Environmental education is one of the goals of the U.S. Fish and Wildlife Service (FWS). According to a 1996 Executive Order, the FWS is directed to provide in its National Wildlife Refuges “important opportunities for compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation” (Blanchard, 1996a). Management of the FWS is also guided by a document, which is a set of “Promises” to guide the NWR System into the 21st century. Among them is a promise to “focus on education of young and urban audiences, increase public involvement in decisions, and rededicate ourselves to exemplary customer service” (Blanchard, 1996b).

The Neal Smith National Wildlife Refuge-Prairie Learning Center (NSNWR-PLC), located near Prairie City, Iowa, is a refuge that was created with the above directives in mind. Officially opened in 1997, this refuge was created under the premise that Iowa needed a place that represented an ecosystem once abundant in the state. Two hundred years ago, Iowa was covered with nearly 30 million acres of tallgrass prairie and prairie wetlands, about 85 percent of the state’s land cover (Shimek, 1911). The refuge is charged with bringing back a small, yet substantial, piece of this native landscape, including many of the wildlife species that are native to tallgrass prairie.

The refuge has a three-fold mission. The first part is biodiversity preservation, reconstructing up to 8,654 acres of tallgrass prairie on former row-crop and pasture land to enhance existing and future wildlife populations. The second part is environmental education (EE). The refuge has hired several interpretive staff trained in developing and delivering environmental education programs to the public. The refuge’s primary audience, however, is school classes. The third part is conducting research to track the transformation back to tallgrass prairie, hosting various research projects on vertebrates and invertebrates, as well as conducting its own studies on native plant propagation and planting success.

Environmental education is at the heart of NSNWR-PLC’s mission. The refuge master plan guides the NSNWR-PLC to: (1) “provide innovative on-site and outreach programming for a variety of audiences with an emphasis on developing an awareness and appreciation of wildlife and wildland resources”; (2) “provide visitors with varied program opportunities to acquire the ecological knowledge and practical skills necessary to participate in the protection and enhancement of wildlife and wildland resources”; (3) “incorporate environmental education theories and methodologies throughout the public use programming including state of the art technology in visitor and learning facilities”; (4) “coordinate envi-
ronmental education opportunities at the Refuge with other programs throughout Iowa, the region, and beyond” (U.S. Fish and Wildlife Service [FWS], 1992). These goals are met wholly or in-part through EE provided to area school districts as a part of their curricula and/or field trip experiences. At the time of this study, approximately 31,000 school-aged children had already participated in the refuge educational program (T. Bodeen, former NSNWR Outdoor Recreation Planner, personal communication, June 2, 2000).

Highest priority is given to schools wishing to experience refuge EE. Teachers schedule their day-long visit to the refuge up to one year in advance. Guided by refuge interpreters, teachers arrange the types of programs that will be presented to their class. Approximately 98 percent of the refuge programs were given by the interpreters, with the remainder given by trained volunteers or trained student interns.

The Prairie Learning Center
The center of EE at the refuge is the Prairie Learning Center (PLC) visitor center, and it is important to have a basic understanding of its contents and curriculum in order to understand this research. The PLC offers an introductory movie called “Return to Wildness,” hands-on and flat-work exhibits, a tallgrass prairie diorama, video vignettes covering fire ecology and management and tallgrass prairie conservationists, a 2.5 mile trail system through reconstructed tallgrass prairie, interpreter-led environmental education programs, and hands-on stewardship activities. The main themes brought out in the exhibit area ask visitors: (1) what is the natural history of tallgrass prairie?; (2) what is the history behind the people and events that changed tallgrass prairie?; and (3) what is the NSNWR-PLC doing to bring tallgrass prairie back to Iowa? The third content area emphasizes the reconstruction and stewardship efforts by NSNWR.

Refuge curriculum
Another way that the NSNWR-PLC is meeting its EE goals is by disseminating the refuge’s curriculum, Project Bluestem (Pease & Aplin, 1995). This curriculum was designed by and for teachers to use before, during, and after a refuge visit. Project Bluestem is divided into elementary, middle, and high school activities, and includes pre- and post-visit activity sections. Teachers and other educators attend a 1-day training workshop in order to obtain Project Bluestem. Some activities offered to classes by refuge interpreters during a school visit come directly from this curriculum. It is up to the teacher to provide their class with further activities from Project Bluestem before and after they visit the refuge. In general, though, refuge interpreters encourage some sort of pre-visit unit or other learning activity as a part of the refuge visit, either from Project Bluestem or another source.

Research in EE
The effectiveness of EE has been shown among various programs of differing locations, lengths, and topics. These include formal and non-formal learning environments. Within formal (classroom) learning environments, the effects of environmental education on knowledge and attitudes have been varied. Armstrong and Impara (1991) found that an 8-week in-class curriculum had limited effects on fifth- and seventh-grade classes. Only one in-class program had a significant effect on knowledge and no program had significant effects on attitudes. Leeming et al. (1997) found a significant positive effect on attitudes of first through third and fourth through seventh-grade classes after exposure to environmen-
tally relevant in-class activities (recycling projects, planting trees and flowers, adopting an endangered species, participating in environmental organizations, etc.).

Other studies have looked at the effectiveness of residential or on-site EE. Ryan (1991) showed that children who attended a conservation program were more likely to respond in a way that showed environmental awareness specific to the study site. He found limited effects on attitudes dealing with broader conservation issues. Dettman-Easler and Pease (1999) found significant differences in attitudes toward certain wildlife species in fifth- and sixth-grade students after experiencing various residential EE programs. They found that attitude changes were retained for at least 2-3 months after residential EE exposure. They also found a correlation between outdoor activities done on their own and attitudes toward various wildlife concepts.

Wildlife is an important component of the content at the PLC and refuge programming. Kellert & Westervelt (1983) did much of the early work on children’s attitudes toward wildlife. They found that the more familiar children are with certain species, the more positive their attitudes are toward those species.

Studies showing changes in conservation behavior have been limited. Asch and Shore (1975) tested conservation behavioral changes in fifth- and sixth-grade boys after giving treatments ranging from classroom EE programs, projects, and a four-day field trip to a nature center. When put into outdoor situations and asked to perform certain conservation activities, the experimental group with conservation training and education performed more positive conservation practices and less destructive behaviors than the control group with no conservation training or education.

**EE in resource management and stewardship**

The reconstruction and management of tallgrass prairie at NSNWR-PLC are integral to their environmental education. To reach the goal of “environmental protection,” the refuge staff are attempting to “retain and enhance the visual integrity of the Refuge” and “sustain the connection between people and the prairie...” (U.S. Fish and Wildlife Service [FWS], 1992). Research on educating visitors about agency management goals shows some promise. Olson, et al. (1984) found that there was a significant increase in knowledge and positive changes in attitudes toward various management practices when state nature preserve visitors were given off-site presentations and on-site guided hikes. Carlson and Baumgartner (1974) found that at two resource management camps, where instruction was given by public and private natural resource professionals, boys aged 13-19 had more favorable attitudes toward such things as timber harvest, watershed management, and multiple-use management, and “may reflect the personal attitudes of the instructors.”

Olson, et al. (1984) pointed out that the increased use of resource lands has created a need to educate the user public about management goals. They called for “systematic presentation of information pertaining to agency mission, policies, and regulations to visitors and other clientele.... Interpretation and environmental education should be seriously considered as management tools.”

At NSNWR, the management and education goals are met, in part, through public involvement in tallgrass prairie reconstruction. The refuge staff, through a friends group, leads volunteer groups on stewardship activities designed to improve the appearance and quality of the tallgrass prairie. Volunteers engage in brush clearing, invasive species control,
seed collection, seed cleaning and sorting, and seed planting. School groups, based on the teachers’ preference, have the choice of involving their class in these stewardship activities as part of their refuge EE program.

A search of the literature revealed no studies that evaluated the direct effects of stewardship on knowledge and attitudes. Perhaps closely related to stewardship is “service learning”, a growing component of classroom learning. Service learning is a way to enhance learning through hands-on experiences (Chapin, 1998; Myers-Lipton, 1998). Chapin (1998) states that service learning is the “integration of community service with academic course work...a thoughtfully organized community service experience that enhances what teachers have chosen as the objectives and curriculum in their classrooms.” However, service learning can vary widely in terms of the types of activities that students do, and this can make it difficult to assess the effects that service learning has on the learner (Chapin, 1998).

A pre- and post-test study of college seniors that completed a 2-year comprehensive service learning program showed “moderate to strong” improvements in civic responsibility (Myers-Lipton, 1998). Parker-Gwin and Mabry (1998) found that where service learning was optional for college students, “self-oriented motives” for doing service work declined. However, the research showed that requiring service learning in class caused a decline in the mean “importance of community service.” Optional service also showed some potential to increase academic ability. Their research also points to the importance of “reflection” in fostering positive outcomes. Reflection includes writing in journals, writing research papers, directed readings, and class presentations (Bringle & Hatcher, 1999).

Chapin (1998) looked at the National Longitudinal Study of 1988, to determine the extent of youth participation in community service. The study found that 44 percent of high school seniors had participated in community service during the previous two years, while only 17.4 percent of the respondents indicated that their schools required community service. The study found that 13.5 percent indicated conducting service learning with various recycling groups or conservation organizations such as the Sierra Club or The Nature Conservancy. Chapin’s research suggests that teachers should build upon student interest in community service and integrate it into class curriculum service learning.

The stewardship activities that NSNWR-PLC incorporates into the EE programs may be considered a type of service learning. However, unlike the research indicated above, stewardship at the refuge is short-term, part of a single day, at best, for class groups. Refuge stewardship is typically interpreter-guided and about one-half of the classes choose to participate.

**Research Questions**

This research evaluates the effectiveness of the EE Program at the Neal Smith National Wildlife Refuge-Prairie Learning Center. The goals are: (1) to determine the effects of refuge EE programs on the knowledge and attitudes of elementary classes; and (2) to develop an evaluation tool that can continue to be used by refuge interpretive staff to measure the effectiveness of their EE programs.

Specifically, this research will measure:

- the effects of naturalist-led programs on a class’s knowledge and attitudes toward tallgrass prairie, tallgrass prairie reconstruction and management, and prairie wildlife;
the effects of stewardship activities on the knowledge and attitudes of participating classes toward tallgrass prairie, tallgrass prairie reconstruction and management, and prairie wildlife.

**Methods**

**Procedures**
A pre- and delayed post-survey design was used to measure knowledge and attitudes of fourth-, fifth- and sixth-grade classes visiting the refuge. Surveys for both treatment and control groups were sent through the mail and administered within the classroom. Teachers, principals, and parents from both control and treatment groups were required to sign an informational consent letter before participating in this research. Surveys were accompanied with detailed instructions for teachers and students on how and when to administer the survey. Upon completion of all phases of the survey, treatment and control group teachers were sent a thank you letter and given a book as a thank you gift for participating in our research.

**Treatment**
While at the refuge, classes participated, at the minimum, in the introductory movie, a tour of the exhibits, and an interpreter-led program. Program content varied based on teacher preference and ranged from learning about bison and/or going on a prairie hike to participating in an interpreter-guided stewardship activity, such as prairie seed collection, brush clearing, invasive species removal, or seed planting.

**Treatment Groups**
A total of 59 fourth-, fifth- and sixth-grade classes from 30 schools that attended the NSNWR-PLC during the 1999-2000 school year chose to participate in this research. Schools were selected from those that had scheduled visits in advance of the school year. The experimental unit was the class, not the individual student.

Pre-visit survey materials were mailed to each school approximately two weeks before classes visited the refuge. The post-visit survey materials were mailed approximately two weeks after the refuge visit. The pre-test was administered to each class no later than one week prior to the refuge visit and the post-test was administered at least two weeks after the refuge visit. Both the pre-test and post-test were administered by the classroom teachers.

Classes that participated in a stewardship activity were given an additional 5-question “stewardship activity survey” on their attitudes toward their specific stewardship activity.

Teachers were given a questionnaire to determine the type of experience they had at the refuge, the extent of their pre- and post-visit prairie curriculum, the range of firsthand experiences the class had previously with prairies, and the teacher’s knowledge of the refuge curriculum.

**Control Groups**
Control groups consisted of 68 fourth-, fifth- and sixth-grade classes from 27 school districts that did not visit the NSNWR-PLC. Classes were chosen at random from schools within the central Iowa Area Education Agency (AEA) 11. An AEA is a geographical area set up to disseminate curricular resources and guidance to area school districts. The AEA represented the same geographical area encompassing the treatment groups.
Classes in the control group were administered the same survey as classes from the treatment group. Survey materials were mailed out to the control group classes and administered by the classroom teachers during the same time period, the 1999-2000 school year, as the pre- and post-visit testing of the treatment group. The surveys were completed and mailed back within two weeks of each class receiving them.

The control was used to measure any differences between two cognitively similar groups to ensure there were no differences inherent in the treatment group. Control group classroom teachers filled out a survey asking whether they had taken classes to the refuge before, the extent of their classroom curriculum about prairies, the range of firsthand experiences the class had with prairies, and the teacher’s knowledge of the refuge curriculum.

The Survey Instrument

The Prairie Survey was designed to measure how classes felt and what they knew about various animals and prairie-related topics. The survey content was drawn from every aspect of the refuge EE program, including interpreter-led programs, PLC displays, and stewardship activities. Questions were adapted from Kellert & Westervelt (1983) and Dettman-Easler and Pease (1999). The survey consisted of 31 scaled attitude questions, 33 multiple-choice knowledge questions, and 6 multiple-choice demographic questions. Attitude questions were Likert-type questions asking “likes and dislikes” and “agreements and disagreements” (Likert, 1957). The Prairie Survey served as a pre- and post-test for treatment groups and as a one-time survey for the control groups.

The knowledge portion tested classes on various prairie topics. Seventeen questions dealt with the natural history of tallgrass prairie, eleven about the historical human influence upon tallgrass prairie, and five about current efforts employed by refuge biologists to reconstruct prairie.

Tallgrass prairie, tallgrass prairie reconstruction and management, and prairie wildlife were the main categories for the attitude questions. Nineteen questions asked about attitudes toward specific animals found in prairie, seven questions asked about attitudes toward conservation and stewardship efforts within prairies, three questions were concerned with general attitudes on prairies, prairie fires, and agriculture, and two questions were about the historical significance of human influence on prairie.

The unequal distribution of knowledge and attitude questions in each category was based on a previous preliminary observational survey, which showed that groups spend less time in the reconstruction section compared to the other two sections (Pease, unpub. data.). Also, there is less available information from which to draw upon within the reconstruction section relative to the natural history and historic changes sections.

The demographic questions asked about the involvement of classes in extra-curricular nature related activities, youth group involvement, and geographical/individual demographics.

A preliminary Prairie Survey was piloted to two fourth-grade classes, four fifth-grade classes, and three sixth-grade classes in central Iowa. The students and teachers were observed first-hand to monitor their response to the survey and the length of time it took the classes to complete the survey. Misleading questions were revised or eliminated based on class performance and teacher feedback. The second, revised Prairie Survey was then used as the final survey (available from the authors). Reliability of the survey was not tested because the survey was adapted from previously tested survey questions.
(Kellert & Westervelt, 1983, Dettmann-Easler and Pease, 1999). Also, because the survey targeted very specific aspects of the refuge, some questions were necessarily unique for purposes of testing knowledge and attitudes about the NSNWR-PLC.

**Survey Analysis**

The experimental unit for this research was the class, not the individual student. Teachers were given specific instructions to label each class’s survey answer sheets with their name or class section, and keep them separate from other classes within the same school. This was done to match pre- and post-visit answer sheets for the purpose of analysis. Not all teachers followed this direction, however, and as a result, some classes within a school had to be treated as one class. Mean scores from these schools were pooled. Analysis was completed using weighted means, according to number of classes, for treatment group pre- and post-visit comparisons. Analysis was completed using un-weighted means when comparing the treatment group pre-visit and post-visit with the control group. Classes completed the survey on a General Purpose Mark Reflex® NCS™ answer sheet (National Computer Systems, Inc., 1994). The answer sheets were collected and then scanned by the Iowa State University Test and Evaluation Services. Final analyses were completed using SAS System for Windows v8.00 (SAS Institute Inc., 1999). Two-tailed t-tests were completed on the data with a significance level of p < 0.05.

**Results**

**Treatment and control groups - knowledge**

A comparison of the pre-visit treatment group and control group showed no significant difference in their knowledge about tallgrass prairies (p=0.2726, Table 1). This indicated that the samples of treatment classes and control classes were from the same population. A paired comparison of the treatment group pre- and post-visit knowledge scores showed a significant gain in knowledge (p=0.0001, Table 1).

An item analysis of the knowledge questions based on lumped responses from all classes indicated that 10 questions out of a total of 33 improved significantly post-visit (p < 0.05). Out of all knowledge questions, 45 percent of the history questions (5 of 11), 40 percent of the reconstruction questions (2 of 5), and only 17 percent of the natural history questions (3 of 17), showed significant improvement.

**Treatment and control groups - attitudes**

Attitudinally, there were differences between pre-visit treatment and control groups, despite no differences between these groups in knowledge. Attitudes toward 10 of 13 animals were significantly more positive in the pre-visit treatment group compared with the control group (Table 2 B, p < 0.05). A paired comparison of treatment group pre- and post-visit scores showed significantly more positive attitudes post-visit toward 8 of 13 animals (Table 2, A). All but one attitude toward an animal, the jackrabbit, were significantly more positive in post-visit scores compared with control scores (Table 2, C).

Again, there were differences between the control and treatment groups, as attitudes toward 9 of 18 tallgrass prairie, prairie wildlife, and reconstruction and management questions were significantly more positive in the pre-visit treatment group than in the control group (Table 3, B). A paired comparison of treatment group pre- and post-visit scores
Table 1: Probabilities of differences between computed pre- and post-visit mean knowledge scores of fourth-, fifth-, and sixth-grade classes that participated in one-day visits to Neal Smith National Wildlife Refuge-Prairie Learning Center

<table>
<thead>
<tr>
<th></th>
<th>Mean Scores&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Mean Difference</th>
<th>Prob &gt; T</th>
</tr>
</thead>
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<tr>
<td>Pre-visit (N=59)</td>
<td>16.71</td>
<td>19.45</td>
<td>2.74</td>
</tr>
<tr>
<td>Post-visit (N=59)</td>
<td></td>
<td>0.0001&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.0001</td>
</tr>
<tr>
<td>Pre-visit (N=59)</td>
<td>16.71</td>
<td>16.26</td>
<td>0.45</td>
</tr>
<tr>
<td>Control (N=68)&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td>0.2726</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Mean scores are the mean number correct out of 33 possible

<sup>b</sup>Bold value indicates significant differences (p<0.05)

<sup>c</sup>Control group classes of 4th, 5th, and 6th grade classes were randomly selected from school districts in central Iowa, completed the survey once, and did not visit the refuge

Table 2: Probabilities of differences in computed mean scores of attitudes toward animals in fourth-, fifth-, and sixth-grade classes that participated in one-day visits to Neal Smith National Wildlife Refuge-Prairie Learning Center

<table>
<thead>
<tr>
<th>Attitude Questions&lt;sup&gt;d&lt;/sup&gt;</th>
<th>A. Pre-visit &amp; Post-visit&lt;sup&gt;e&lt;/sup&gt;</th>
<th>B. Pre-visit &amp; Control&lt;sup&gt;f&lt;/sup&gt;</th>
<th>C. Post-visit &amp; Control&lt;sup&gt;f&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Difference</td>
<td>Prob &gt; T</td>
<td>Mean Difference</td>
</tr>
<tr>
<td>Bull Snake</td>
<td>0.09&lt;sup&gt;d&lt;/sup&gt;</td>
<td>0.0004</td>
<td>0.09</td>
</tr>
<tr>
<td>Prairie Rattlesnake</td>
<td>0.07</td>
<td>0.0001</td>
<td>0.16</td>
</tr>
<tr>
<td>Spider</td>
<td>0.10</td>
<td>0.0001</td>
<td>0.02</td>
</tr>
<tr>
<td>Striped Skunk</td>
<td>0.18</td>
<td>0.0001</td>
<td>0.17</td>
</tr>
<tr>
<td>Earthworm</td>
<td>-0.03</td>
<td>n.s.&lt;sup&gt;d&lt;/sup&gt;</td>
<td>0.10</td>
</tr>
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<td>Crayfish</td>
<td>0.06</td>
<td>0.0055</td>
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<td>Grasshopper</td>
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<td>0.09</td>
</tr>
<tr>
<td>Coyote</td>
<td>0.03</td>
<td>0.0268</td>
<td>0.10</td>
</tr>
<tr>
<td>Red-tailed Hawk</td>
<td>0.03</td>
<td>n.s.</td>
<td>0.19</td>
</tr>
<tr>
<td>Pocket Gopher</td>
<td>0.05</td>
<td>n.s.</td>
<td>0.35</td>
</tr>
<tr>
<td>Field Mouse</td>
<td>0.15</td>
<td>0.0001</td>
<td>0.14</td>
</tr>
<tr>
<td>13-lined Ground</td>
<td>-0.02</td>
<td>n.s.</td>
<td>0.29</td>
</tr>
<tr>
<td>Squirrel(squinney)</td>
<td>-0.00</td>
<td>n.s.</td>
<td>0.05</td>
</tr>
</tbody>
</table>

<sup>d</sup>Positive mean differences in column A indicate a positive change in attitudes pre- to post-visit

<sup>e</sup>Positive mean differences in columns B & C indicate more positive attitudes in the treatment group pre- and post-visit compared with attitudes of the control group

<sup>f</sup>How do you feel about the following animals? Like=1; Neutral=2; Dislike=3; Don’t know animal = (not scored)

<sup>g</sup>Bold values indicate significant differences (p<0.05); n.s. = not significant (p>0.05)
Table 3: Probabilities of differences in computed mean scores of attitudes toward tallgrass prairie topics in fourth-, fifth-, and sixth-grade classes that participated in one-day visits to Neal Smith National Wildlife Refuge-Prairie Learning Center

<table>
<thead>
<tr>
<th>Attitude Questions</th>
<th>A. Pre-visit &amp; Post-visit(^{a})</th>
<th>B. Pre-visit &amp; Control(^{b})</th>
<th>C. Post-visit &amp; Control(^{b})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Difference</td>
<td>Prob &gt; T</td>
<td>Mean Difference</td>
</tr>
<tr>
<td><strong>Tallgrass Prairie Oriented</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FeelPrairies</td>
<td>0.04 ns</td>
<td></td>
<td>0.12 0.0270</td>
</tr>
<tr>
<td>FeelCornFields</td>
<td>-0.13(^{c})</td>
<td>0.0008</td>
<td>0.17 0.0019</td>
</tr>
<tr>
<td>MorePrairie</td>
<td>0.30 0.0001</td>
<td>0.03 ns</td>
<td>0.38 0.0000</td>
</tr>
<tr>
<td>NativeHunt</td>
<td>0.11 0.0078</td>
<td>0.13 0.0303</td>
<td>0.25 0.0001</td>
</tr>
<tr>
<td>ChangePrairie</td>
<td>0.07 ns</td>
<td>-0.04 ns</td>
<td>0.04 ns</td>
</tr>
<tr>
<td><strong>Prairie Wildlife Oriented</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FeelBadger</td>
<td>0.17 0.0001</td>
<td>0.20 0.0077</td>
<td>0.34 0.0000</td>
</tr>
<tr>
<td>FeelElk</td>
<td>0.09 0.0048</td>
<td>0.10 ns</td>
<td>0.18 0.0013</td>
</tr>
<tr>
<td>FeelBuffalo</td>
<td>0.06 0.0289</td>
<td>0.15 0.0027</td>
<td>0.22 0.0000</td>
</tr>
<tr>
<td>FeelPrairieChicken</td>
<td>0.06 ns</td>
<td>0.08 ns</td>
<td>0.16 0.0153</td>
</tr>
<tr>
<td>FeelPheasant</td>
<td>-0.01 ns</td>
<td>0.12 0.0478</td>
<td>0.13 0.0446</td>
</tr>
<tr>
<td>FeelSnake</td>
<td>-0.02 ns</td>
<td>0.18 0.0112</td>
<td>0.16 0.0237</td>
</tr>
<tr>
<td><strong>Prairie Reconstruction and Management Oriented</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FeelPrairieFires</td>
<td>0.65 0.0001</td>
<td>0.32 0.0002</td>
<td>1.05 0.0001</td>
</tr>
<tr>
<td>WeedPrairie</td>
<td>0.20 0.0001</td>
<td>0.03 ns</td>
<td>0.26 0.0002</td>
</tr>
<tr>
<td>CollectSeeds</td>
<td>0.14 0.0001</td>
<td>0.07 ns</td>
<td>0.23 0.0003</td>
</tr>
<tr>
<td>PrairieWork</td>
<td>0.10 0.0127</td>
<td>0.20 0.0000</td>
<td>0.33 0.0000</td>
</tr>
<tr>
<td>BackyardPrairie</td>
<td>0.06 ns</td>
<td>-0.04 ns</td>
<td>0.04 ns</td>
</tr>
<tr>
<td>PlantSeeds</td>
<td>0.02 ns</td>
<td>0.10 ns</td>
<td>0.12 0.0283</td>
</tr>
<tr>
<td>SchoolPrairie</td>
<td>-0.02 ns</td>
<td>0.04 ns</td>
<td>0.06 ns</td>
</tr>
</tbody>
</table>

\(^{a}\)Positive mean differences in column A indicate a positive change in attitudes pre- to post-visit

\(^{b}\)Positive mean differences in columns B & C indicate more positive attitudes in the treatment group pre- and post-visit compared with attitudes of the control group

\(^{c}\)Bold values indicate significant differences (p<0.05); n.s. = not significant (p>0.05)

Table 4: Probabilities of differences between computed pre- and post-visit mean knowledge scores of fourth-, fifth-, and sixth-grade stewardship and non-stewardship classes that participated in 1-day visits to Neal Smith National Wildlife Refuge-Prairie Learning Center

<table>
<thead>
<tr>
<th></th>
<th>Stewardship(^{a}) (N=33)</th>
<th>Non-stewardship(^{a}) (N=26)</th>
<th>Mean Difference</th>
<th>Prob &gt; T</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Scores(^{b})</td>
<td>Mean Difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-visit</td>
<td>16.56</td>
<td>16.91</td>
<td>0.35</td>
<td>0.6215</td>
</tr>
<tr>
<td>Post-visit</td>
<td>19.00</td>
<td>20.03</td>
<td>1.03</td>
<td>0.1630</td>
</tr>
<tr>
<td>Mean Difference</td>
<td>2.44(^{c})</td>
<td>3.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob &gt; T</td>
<td>0.0001</td>
<td>0.0001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^{a}\)Stewardship classes participated in reconstruction activities (seed collection, seed planting, etc.); non-stewardship classes did not participate in these activities but did participate in other refuge activities

\(^{b}\)Mean scores are the mean number correct out of 33 possible

\(^{c}\)Bold scores indicate significant differences (p<0.05)
showed significantly more positive attitudes towards 9 of 18 tallgrass prairie-related questions (Table 3, A). When compared with control groups, the mean differences of six attitude questions went from not significant to significant pre- to post-visit (Table 3, B & C). For the question, “How do you feel about corn fields?” there was a significant attitude change in the opposite direction (FeelCornFields, Table 3). The mean attitude pre- to post-visit for this question trended from “like them and would like to see one” to “like them, but would not like to see one”. The attitude toward the question “I would like to help collect prairie plant seeds at a prairie” (Table 3, B & C, CollectSeeds) indicates there may be some impact from stewardship activities.

**Stewardship activity survey - attitudes**

Ninety-five percent of the stewardship encompassed three activities: collecting prairie seed, planting prairie seed, and removing brush. Forty-two percent of the classes collected seed, 26.5 percent removed brush, and another 26.5 percent planted prairie seed. Just over 3 percent pulled invasive species, while the remainder participated in some other activity. The majority of students reported enjoying participating in the activity and learned something from it. In particular, 49 percent of the students felt they “gave something back to the Refuge.” Only 11 percent felt that they didn’t enjoy the activity, but still learned something from doing it. Accordingly, 88 percent of the students disagreed with the statement, “I didn’t see the point of this activity and did not learn anything from it.”

**Stewardship and non-stewardship groups - knowledge**

We found no difference in the knowledge scores between those treatment classes that participated in stewardship activities at the Refuge and those treatment classes that did not (p=0.1630, Table 4). Thus, prairie-related stewardship activities did not have an apparent effect on knowledge about tallgrass prairie. Both groups scored the same on the pre-visit survey, indicating that stewardship and non-stewardship groups were cognitively the same (p=0.6215, Table 4). Mean knowledge scores did show a significant increase between pre- and post-visit in both stewardship and non-stewardship classes (p=0.0001 for both stewardship and non-stewardship groups, Table 4).

**Stewardship and non-stewardship groups - attitudes**

Both stewardship and non-stewardship classes changed attitudes pre- to post-visit and few attitudinal differences between the two groups could be found. Those that were, cannot readily be attributed to the stewardship activity, with the exception of the seed planting (PlantSeeds) question. Attitude scores from pre- to post-visit toward 8 of 13 animals were significantly more positive in the stewardship group, while attitudes toward 6 of 13 animals were significantly more positive in the non-stewardship group. More positive attitudes were seen in questions about the bull snake, prairie rattlesnake, spider, striped skunk, and field mouse in both the stewardship and non-stewardship groups.

In attitudes related to tallgrass prairie, prairie wildlife, and prairie reconstruction and management topics, the stewardship group showed significantly more positive attitudes toward six questions between pre- and post-visit. The non-stewardship group had significantly more positive attitudes in nine questions. The non-stewardship group was the only group that had significantly more positive attitudes on the question, “How do you feel about prairies?” (p=0.0340).
Few questions showed significant differences in attitudes toward prairie wildlife in classes that participated in a stewardship activity versus classes that did not. Attitudes toward only two animals, the crayfish and coyote, were significantly more positive on post-visit scores in stewardship classes compared with non-stewardship classes. Attitudes toward the pocket gopher were significantly more positive on post-visit scores in non-stewardship classes compared with stewardship classes.

Attitudes related to prairie topics showed few significant differences in post-visit scores. Two questions were significantly more positive in stewardship classes pre-visit and remained positively significant for stewardship classes post-visit (CollectSeeds & SchoolPrairie). One question, “I would like to help plant prairie plant seeds to make a new prairie,” showed a significant shift towards more positive attitudes post-visit in stewardship classes, indicating a possible effect from the stewardship activities (p=0.0175).

In general, most questions on animals and tallgrass prairie topics showed a shift in attitudes in the positive direction for both stewardship and non-stewardship classes. From our data, it is not possible to attribute positive attitudinal changes to the stewardship activity in which classes participated. Both stewardship and non-stewardship classes exhibited similar, though not identical changes in attitudes. This seems related to their overall learning experience at the refuge and is not necessarily due to the stewardship experience, per se. Also, because we compared class stewardship activities grouped together rather than separated by type of activity, we cannot determine whether a particular activity had a greater effect than another. We grouped all stewardship activities together because separating them out by activity would not have resulted in large enough sample sizes for meaningful analysis.

Teacher Survey

More than 66 percent of treatment group teachers indicated they had visited the refuge one or two times before, while nearly 92 percent of control group teachers had never taken a class to the refuge (Table 5). The remaining 8 percent of control group teachers, representing only two school districts, indicated that they had gone once before, though not during the school year in which this research took place. Also, 82 percent of control group teachers indicated they have never taken their class to any other prairie. Nearly 37 percent of treatment group teachers said they had visited the refuge twice before and nearly 92 percent of this group said that the refuge visit was a part of their class curriculum.

A wide variety of topics were represented in treatment group curricula including prairie, wildlife, geography, social studies, Iowa history, and ecology. A majority of control group teachers, more than 59 percent, said they do not have a unit on prairie in their curriculum. However, teachers who said they did have a prairie unit indicated a variety of topics. These included prairie, Iowa history, social studies, geography, science, and reading the book *Sarah, Plain and Tall* (MacLachlan, 1985).

Of treatment group teachers, just over 15 percent had not spent any time and 68 percent had spent less than three hours facilitating pre-visit classroom discussions, projects, and activities on tallgrass prairie. Just over 4 percent spent more than six hours facilitating pre-visit tallgrass prairie discussions, projects, and activities. Similarly, in post-visit discussions, projects, and activities about tallgrass prairie, more than 15 percent spent no time, nearly 53 percent spent less than three hours, and almost 17 percent spent over six hours. At the time of the survey, 57 percent of control group teachers said they had not spent any time and more than 30 percent had spent less than three hours in the classroom discussing, doing
projects, or doing activities about tallgrass prairie. Just 8 percent had spent more than six hours on prairie-related topics. Some 48 percent of control group teachers said they would be spending less than three hours teaching tallgrass prairie topics after the survey.

Of the treatment group teachers, 23 percent and 22 percent respectively, indicated that they use the Refuge’s prairie curriculum, Project Bluestem, for pre- and post-visit lessons. A majority of these teachers, 59 percent, said they did not use Project Bluestem. Of control group teachers, 98 percent had never used Project Bluestem, while only one teacher indicated that he/she had used the refuge curriculum. Likewise, 92 percent of control group teachers had never heard of Project Bluestem.

### Discussion

Our research found that a visit to the refuge did increase knowledge and positively changed attitudes toward tallgrass prairie, tallgrass prairie reconstruction and management, and prairie wildlife in fourth-, fifth- and sixth-grade classes. The knowledge and positive changes in attitudes are retained for at least a 2-week period after visiting the refuge. While the gain in knowledge is relatively small, in that 2-week period classes undoubtedly switched units or

### Table 5: Treatment and control group teacher responses to selected teacher survey questions

<table>
<thead>
<tr>
<th>Selected Survey Questions</th>
<th>Treatment Group Teachers (N=74)</th>
<th>Control Group Teachers (N=50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have visited refuge 1-2 times</td>
<td>66 (%)</td>
<td>8 (%)</td>
</tr>
<tr>
<td>Have curriculum on prairie</td>
<td>92</td>
<td>41</td>
</tr>
<tr>
<td>Pre-visit: &lt; 3 hrs. of classroom prairie activities</td>
<td>68</td>
<td>31&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Post-visit (during 2 week period before post-test): &lt; 3 hrs. of classroom prairie activities</td>
<td>64</td>
<td>NA</td>
</tr>
<tr>
<td>Post-visit (after post-test): &lt; 3 hrs. of classroom prairie activities</td>
<td>53</td>
<td>48&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Have participated in classroom stewardship activity (current school year)</td>
<td>45</td>
<td>58</td>
</tr>
<tr>
<td>Have visited any prairie besides Neal Smith NWR</td>
<td>38</td>
<td>18</td>
</tr>
<tr>
<td>Use Project Bluestem</td>
<td>41</td>
<td>2</td>
</tr>
</tbody>
</table>

<sup>a</sup>Control groups did not visit the refuge. The question asked control group teachers how many hours they had spent on prairie concepts before taking the Prairie Survey.

<sup>b</sup>Control groups did not take a post-test. The question asked control group teachers how many hours they would be spending on prairie concepts after taking the Prairie Survey.
covered other topics. In addition, our survey of treatment group teachers found that a majority spent less than three hours covering tallgrass prairie concepts in class after the refuge visit. It is likely that learning and retention would be enhanced with additional time spent covering pre- and post-visit tallgrass prairie topics. Schools exposed to an on-site learning excursion at the Minnesota Zoological Garden, in addition to seven pre-visit activities, and seven post-visit activities, plus schools just exposed to the same pre- and post-visit activities had significant cognitive improvements compared to schools who either had an on-site excursion alone or received no zoo activities or visits at all (Stoneberg, 1981).

**Treatment and control groups - knowledge**

Our results showed that gains in knowledge scores were limited in the natural history and reconstruction concepts of the survey. No significant gains were seen in all wildlife oriented knowledge questions, as well as most of the natural history questions. Because wildlife is a major component of tallgrass prairie, more could be done to emphasize native Iowa wildlife in refuge EE programs and relate them to the learners.

Most questions that did not show significant changes asked about the natural history of tallgrass prairie. However, 57 percent of the natural history questions (10 questions) showed that more than one-half the students in all treatment classes were getting the answers correct pre-visit. This may suggest that there was little room for improvement in natural history knowledge.

Proportionally, questions about reconstruction did not have the lowest number of significant improvements. However, of the five questions in the survey that covered reconstruction, only two showed significant improvements. The placement of the reconstruction exhibit area tends to be outside the flow of a typical group, meaning that this area is often overlooked. For schools, it is the last thing they typically get to if they get to it at all, and may have much to do with these results. Still, even a limited improvement in the reconstruction questions indicates that the management principles of a particular site can be taught.

Additionally, our analysis of the knowledge questions showed gains in questions with general natural, historic, or reconstruction content. For example, a significant gain in knowledge occurred in the more general true/false question, “There is as much or more life below ground in a prairie as there is above ground in a prairie.” Yet, there was no significant change in knowledge for the more specific question, “What type of prairie covered Iowa 150 years ago?”

Since one of the primary missions of the NSNWR-PLC is to educate the public about the importance of the tallgrass prairie ecosystem in both a historic and contemporary management context, these results should be considered significant for this refuge. Failing to instill a sense of the past about the tallgrass prairie has implications beyond simply knowing our history. If we value the direction this and other refuges are heading in the management of critical habitats, then we ought to ensure a solid grasp of what we’ve lost. It may not be enough that refuge interpreters merely emphasize certain specific information so that classes leave the refuge with knowledge of the natural history of tallgrass prairie. It also means that the interpreters must strive to make what has occurred and what is occurring on the refuge relevant to this audience of learners. The FWS and other management agencies and organizations must realize the importance of this if they are to successfully perform the primary mandate of managing wildlife and its habitats into the future.
Treatment and control groups - attitudes

Our analysis of control classes indicated they were the same in their knowledge of tallgrass prairie compared with the pre-visit treatment classes. Differences in attitudes did exist, however, between the pre-visit treatment group and control group. These differences could very well be sampling differences or statistical noise, yet we believe the differences may be associated with teacher differences. Neither treatment group teachers nor control teachers spent much time covering tallgrass prairie concepts before taking the survey. Perhaps teachers planning a trip to the refuge, despite little in-class preparation, create excitement, build anticipation, and even directly influence attitudes in their classes.

In order to gauge the overall attitude towards prairie, the question was asked, “How do you feel about prairies?” (FeelPrairies, Table 3). From our analysis, there seemed to be a generally positive attitude toward tallgrass prairie in both control and treatment groups. A positive attitude toward prairies is not surprising. Tallgrass prairie is home to such charismatic wildlife as American bison, American elk, badgers, coyotes, and hawks (Kellert & Westervelt, 1983). No significant positive change occurred in attitudes toward prairie due to the refuge visit (FeelPrairies, Table 3, A), but this may be caused by a positive pre-visit attitude. Again, anticipation for the visit could have influenced this pre-visit attitude. Still, the refuge visit had a positive influence on the attitude towards the tallgrass prairie, as the treatment group had significantly more positive attitudes toward nine prairie-related questions after visiting the refuge (Table 3, A).

Preliminary analysis of our data using principal component analysis indicated a distinct grouping of animal species. Those species that tended to group, or vary, together were the bullsnake, prairie rattlesnake, spider, earthworm, crayfish, and grasshopper. These species, the “non-charismatic” animals, are in general, known to illicit negative attitudes (Dettman-Easler & Pease, 1999; Kellert & Westervelt, 1983). Overall, the refuge visit influenced class attitudes toward animals in a positive direction. Yet, attitudes for the most part changed significantly in the animals known to have negative stereotypes. This is interesting, especially because the refuge doesn’t explicitly or actively interpret these species. However, most of the species that we put in our attitude survey exist in the refuge in various places in the displays and are accessible to classes that tour the exhibit area.

Our research also points out the power of the “charismatic megafauna” that are, arguably, the major attraction at the refuge. Attitudes toward the questions asked about bison, elk, and badger were significantly more positive post-visit (Table 3). Classes need only peer out of their bus windows to see the herd of bison and elk that roam the reconstructed prairie. If a class fails to see these living wildlife, they can see scenes of stampeding bison and bugling elk in the introductory movie. A trip through the subterranean tunnel puts the students face to face with the gigantic head of a badger. The powerful imagery that exists throughout the visitor center does, it seems, have a positive impact on class attitudes.

Fire is another concept showing improved attitudes and knowledge. Fire is a major component of the Prairie Learning Center. Classes begin their visit with the introductory movie “Return to Wildness.” A refuge interpreter introduces the class to the role fire played historically and plays today in maintaining and managing tallgrass prairie in Iowa. The class watches the movie and is then asked by the interpreter, “Is fire a bad thing in the prairie?” From the results, it is apparent that this exposure to fire has a definite impact on their attitudes toward the question, “How do you feel about prairie fires?” (FeelPrairieFires, Table 3). Of the prairie topic attitude questions, this exhibited the most positive change. In the dis-
play area, the “Fire Theater” showed 90 to 150 second vignettes to further acquaint classes with various fire facts. Four knowledge questions where asked about prairie fires specifically, and three of them showed significant improvement. This suggests that other management agencies currently facing fire management issues may be effective at changing the public’s knowledge and attitudes toward wild fires.

Agriculture and modern life are not ignored in the Prairie Learning Center; however, the refuge primarily interprets the transformation of agricultural land back to its original state, tallgrass prairie. The movie and displays describe the role that early settlers had in converting Iowa tallgrass prairie to agricultural land, roads, and cities. Although the refuge does not present a negative picture of agriculture, there seems to be an attitudinal change in the treatment group that moves in the negative direction for the question “How do you feel about corn fields?” (FeelCornFields, Table 3). The change, however, occurs within the “positive” end of the scale. The pre-visit mean score was in the “like them and would like to see one” range, while the post-visit mean score was in the “like them, but would not like to see one” range. This, by no means, indicates that children leave the refuge disliking cornfields. It may just reflect the emphasis that the refuge places upon native systems. Likewise, while at the refuge, classes see more tallgrass prairie than cornfields.

Stewardship activities - effects on knowledge and attitudes

Our results provide no evidence to support the idea that the stewardship activities had a greater impact on knowledge and attitudes compared with classes visiting the refuge that did not participate in stewardship activities. Pre- and post-visit knowledge was similar between stewardship and non-stewardship classes (Table 4). Yet, both stewardship and non-stewardship groups gained a significant amount of knowledge from the refuge visit.

Positive gains in attitudes in stewardship and non-stewardship classes were also similar. Most differences seem to be random variability among classes, and not due directly to the stewardship activities. Positive post-visit changes in attitudes occurred toward the “crayfish” and “coyote,” which are difficult to link to stewardship activities.

For a few specific questions, a stewardship activity effect may exist, however. In questions specific to stewardship, there seem to be differences. Two examples are the differences seen in the questions, “I would like to help plant prairie plant seeds to make a new prairie” and “I would like to help collect prairie plant seeds at a prairie.” Planting and collecting seeds were the majority of stewardship activities, as more than 26 percent of stewardship group classes planted seeds and 42 percent collected seeds for their activities. There was, however, a significant positive difference in pre-visit stewardship group scores compared with non-stewardship groups for the collecting seeds question. Perhaps this is again due to teacher differences, as treatment teachers may prepare classes for the activity during in-class discussions prior to their visit.

Despite the result in Table 3A showing that the post-visit classes felt there needed to be more prairie in Iowa (MorePrairie), when questions were asked about locations close to the class and student, that is, the school and backyard, their attitudes showed no significant change. The questions “I would like to help plant a prairie at my school” and “I would like to plant a prairie in my backyard” showed no significant positive differences post-visit for the treatment group (SchoolPrairie & BackyardPrairie, Table 3, A). The visit did not increase the belief that a prairie should be planted at school or home. Perhaps these results are just a reflection of the scale at which the refuge is planting...
prairie. The classes may feel that it is impractical or impossible to plant that kind of prairie in settings like backyards and schoolyards. It could also indicate a lower level of importance attributed by the classes to prairie versus existing areas of their schoolyards and backyards, such as ball fields and other open areas.

While two questions seem to support the finding that stewardship activities have an effect, these are limited questions dealing with reconstruction and stewardship directly. There is no evidence from our results that stewardship activities had any affect on either knowledge or attitudes in general. It seems that the entire refuge experience had the greatest influence. Because the stewardship was such a short activity, classes may not have had the time to absorb the connection between stewardship and the rest of the refuge experience. Ignatiuk (1978) found that students’ attitudes toward science and certain environmental concepts were significantly more positive after they had been exposed to at least two and a half days of field trip activities. Also, it is possible that the stewardship activity was one of several activities that attracted the attention of the teachers when scheduling the visit, and had little, if anything, to do with the context of the remaining refuge visit. As Parker-Gwin and Mabry (1998) indicate, further reflection upon the stewardship activities by classes while at the refuge may also have had more impact on overall knowledge and attitudes. Yet, it is extremely important that the responses of those who took part in stewardship activities be taken into account. The stewardship activity survey indicated that a majority of classes felt gratified by such activities and left feeling they gave significantly to the refuge and learned something from the experience. This may indirectly reflect positive attitudinal changes in the treatment group. These positive feelings are possibly the seeds, which may one day sprout into the attitudes that propel engaged and active adult stewards of the land. Continuing research on the impact of these activities (duration, type, age appropriateness, etc.), however, is needed to better determine the actual effects specific hands-on stewardship has on knowledge and attitudes.

**Teacher effects**

While it is entirely possible that some of the changes in knowledge and attitudes within the treatment group are attributable to teacher influences, it is arguable that this effect is relatively small when compared with the refuge visit. Over 83 percent of treatment group teachers spent zero to three hours in pre-visit classroom discussions, projects, and activities, while only four percent spent over six hours. Treatment groups spent a relatively low number of hours on post-visit prairie-related materials, with 68 percent spending zero to three hours. Also, only 41 percent of treatment classes used the Project Bluestem curriculum specific to this refuge. While it is important to account for these factors, it is important to realize that the pre- and post-visit exercises, whether utilizing the official refuge curriculum or another all-together, are integral to the refuge visit, and should not be considered separate. Most importantly, the process undertaken by students and teachers of treatment classes had a positive impact on knowledge and attitudes.

This research assessed the impact on knowledge and attitudes due to environmental education at a National Wildlife Refuge. We believe that our method of using a pre- and post-visit survey instrument to measure knowledge and attitudes is an effective one. The information gathered by analyzing our results has the potential of assisting the refuge interpreters in updating and improving their programs. The survey could easily be
adapted to other refuge programs and interpreters and managers at any center, NWR or otherwise, would benefit from an in-depth survey such as this. It is important that further research be pursued to better determine the actual effects hands-on stewardship has on knowledge and attitudes. This research would benefit agency resource managers concerned not only with habitat reconstruction, restoration, and preservation, but with the attitudes of the public who are using this land for a wide variety of reasons and the children who will, as adults, be responsible for the management and education decisions at each of our significant natural areas.

**Acknowledgements**

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**References**


IN SHORT:
REVIEWS
AND REPORTS
Introduction
To help journal readers decide whether to purchase this book or to seek out its contents, I will provide an overview of its context, its purpose, for whom it is written, and how it is organized. I will then provide a somewhat longer summary of its contents, and I will end with a critique.

Context
This book, *Interpreting the Land Down Under*, is the fifth in Fulcrum Press’s Environmental Communication Series, a series edited by Sam Ham. The content of the book includes 11 chapters or papers presented at a 2002 seminar sponsored by Australia’s Monash University on research to enhance tour guiding and heritage interpretation in Australia.

Purpose and Audience
In the foreword, Sam Ham states that the singular value of the book is to demonstrate “how good research reveals and informs us about the nature and causal pathways of [human responses to communication], providing the attentive interpreter ways to capture audiences and to make a difference....” Both Sam Ham and the book’s editors see the book as a primary reference for graduate students or young scholars and as a valuable source book for professionals in governmental, nongovernment, nonprofit, and commercial organizations. They believe, and I concur, that the research findings contained in the book have relevance outside Australia.

Organization
The papers contained in the book are purposely selected to represent the broad range of issues, topics, audiences, and research methods covered by Australian researchers on interpretation. The eleven chapters (papers) come across as a hodgepodge of topics with little or no flow from one paper
to the next. To their credit, the book editors do give a good overview in the introduction, but some grouping of the papers into sections, e.g., tour guiding, heritage interpretation, and nature interpretation each with its own introduction and overview, would have been helpful.

**Content**

For purposes of discussion, I divide the content of the book into five subject areas: status of training of tour guides and interpreters in Australia; certification of knowledge and skill levels of tour guides; construction, review, and evaluation of interpretive texts; expert-driven interpretive planning; and visitor and other stakeholder evaluation of interpretive services.

**Status of Interpreter and Tour Guide Training**

Chapter 2, “Nature, Heritage and Interpretive Guide Training,” provides an analysis of changes in the number, type, and location of various interpretive and tour guide training courses available in Australia at two points in time. Secondary data are used in the analysis, and the training is evaluated in terms of relevance, accessibility, and vocational orientation.

**Certification of Knowledge and Skill Levels of Tour Guides**

Two of the chapters, Chapter 1, “Industry Stakeholders’ View on Tour Guide Certification in Australian Ecotourism Industry” and Chapter 10, “Chinese Tour Guiding in Australia,” address this topic. In the study of tour guiding in Australia for the growing number of Chinese tourists (Chapter 10), both Chinese travel agencies and Australian tour operators identify the role and the competencies required of Australian tour guides. The tour guides generally acknowledge their role, but point to low pay, low status, and little training to meet their role expectations. Guide certification is seen as a possible solution.

Chapter 1 describes a multi-population, multi-method study to obtain broad industry stakeholder views on the desired outcomes and likely obstacles to putting in place a certification program for interpreters and tour guides. Tour guides, tour operators, and protected area managers differ in their perceived benefits of certification, but the majority or near majority of each of these groups feels that it would improve guide standards, training opportunities, and professionalism in companies and guides. Perceived obstacles to certification include administration of the program, more red tape/paperwork, costs and time, overlap with other accreditation programs, and assessment problems.

**Construction, Review, and Evaluation of Interpretive Texts**

Three of the book chapters—Chapter 9, “Kangaroo or Gangurru? Indigenous Wildlife Interpretation in Australia”; Chapter 5, “Travel Knowledgably: The Question of Content in Heritage Interpretation”; and Chapter 7, “Listening Between the Lines: Using Research-Based Knowledge to Support the Development of Interpretive Text”—address the issue of procedures, problems, and practice of creating and communicating interpretive text. This is the subject area where the book makes a substantial contribution. These chapters remind all of us that the stories we interpreters and guides choose to tell represent only one of many possible stories/truths we might tell about our subject matter. Choosing the one story we do tell is a grave responsibility, and one that should be taken very seriously.

Chapter 9 reports results of telephone interviews with administrators and interpretive staff of wildlife parks to determine the extent to which signs, displays, brochures, and verbal...
presentations tell the story of the meaning, value, and “ecology” of wildlife from the perspective of indigenous people. Also, respondents, some of whom are indigenous, indicate how the indigenous perspective might increase the quality of the tourist visit.

In Chapter 5, Australian researchers provide a postmodern critique of guidebook interpretation of Botticelli’s painting, “Primavera,” housed in Florence, Italy. This paper is by far the most difficult for me to understand; dare I say there are real problems of message content and message meaning? Why couldn’t the authors have used interpretation at Ayres Rock or the Sovereign Hill gold mining site as their examples? But I think their analysis may have the most new material to add to our interpretive stock of knowledge. I believe that one of the main messages of the paper is that culture does not represent a unified and comprehensible whole. It instead represents a collage of many texts, voices, and representations. When we attempt to follow Tilden and present the “whole,” we do so with peril. We are constructing something that may not be there, or at best we are presenting one of many possible wholes, any one of which is probably as “truthful” as the one we have chosen to tell.

Chapter 7 summarizes an effort by managers of the Australian Alps national parks to develop a comprehensive set of minimal impact messages for their diverse visitors. This represents a huge task, and to do this the managers based their work on theories of persuasive communication, past research evaluating interpretive messages in parks and protected areas, and a formative evaluation process to get feedback from park visitors, other stakeholder groups, and ranger staff. A limited number of minimal impact content areas were selected, and for each, a hierarchically nested structure of interpretive message texts (i.e., slogan, key messages, key message support, and extended sub-text) was devised. Focus group discussions with relevant clientele groups helped in message development and evaluation at every step of the four tiered hierarchy. What remains to be done now is field research among park visitors to determine if the interpretive texts and accompanying visuals convey the desired messages and to see if problem behaviors are reduced.

This application of communication theory and interpretive research findings represents one of the most thorough and well-informed of any I have ever seen. It represents “must reading” for all park and protected area managers with visitor impact problems.

**Expert-Driven Interpretive Planning**

Two chapters in the book reflect a thoughtful analysis of what story and how a certain story should be communicated at an interesting park or protected area. No new empirical data are collected.

Chapter 8, “Layers of Meaning,” reports an analysis of park visitor characteristics and site attributes at the Naracoorte Caves, a World Heritage Site in South Australia. This analysis shows a very diverse visitor population, and a failure of current interpretation to connect events and processes of today with those of the past and of the surface with those in the caves. Given this, the author develops a variety of messages and message delivery systems based on the notion of layers of meaning.

In Chapter 12, “A Pile of Rocks and a Hole in the Ground,” the author struggles to find an interpretive theme and system of interpretation that will attract acceptable numbers of tourists to an area of great historical importance for its gold mining heritage. As called for by traditional interpretive planning texts, he inventories the potential of the interpretive site to find a theme and story. He inventories existing heritage interpretation in the region to
avoid duplication (i.e., avoid duplication of the nearby Sovereign Hill gold mining site with its living history interpretation). Finally, he speculates on the number, nature, and preferences of potential visitors to the gold mining area.

**Visitor and Other Stakeholder Evaluation of Interpretive Services**

The final three chapters are of special interest to a greater readership and unique in questions asked, methods used, and sometimes in their application of communication theory to the problem addressed.

Chapter 6, “They Said What to Whom,” reports a study of actual messages given by tour operators and guides to determine how often they gave messages in support of park protection policies and low impact behavior. Guide messages on various kinds of tours are taped and content analyzed. A surprisingly few park policy and low impact messages are given, even though the tours are typically operating in a park or protected area.

Chapter 4, “Once Upon a Time... Interpreting the Past for Young Children,” is my favorite paper in the entire book. It comes closest to doing what Sam Ham in the book’s Foreword says good research does, i.e., good research reveals causal pathways. The study of children’s field trips to historic houses rests on theory (i.e., the Interaction Experience Model that emphasizes the importance of personal, social, and physical context) to test whether program structure enhances children’s learning. Equivalent children visited two different historic houses, and in one program the children received extensive pre-trip visit information, the program on-site had carefully planned goals, activities, and discussions, and program was delivered in age-appropriate language and content. The field trip of children visiting the second house had no such planned structure. Knowledge outcomes were measured immediately before the trip, immediately after the trip, and four months later. As expected, the children in the structured program learned more, but perhaps more importantly, they learned more and remembered longer the story the teachers wanted them to learn.

Chapter 3, “Experiences from the Strahan Visitor Center, Tasmania,” represents a thorough and thoughtful analysis of a visitor center at the edge of the Tasmanian Wilderness World Heritage Area. This visitor center has lofty goals in addition to information and education: environmental, cultural, and economic sustainability. Economic sustainability includes the visitor center paying its own way and contributing to the economic viability of communities in the tourist region. To accomplish these goals, the visitor center includes interpretation, tour information and bookings, souvenirs, and a fee-based daily theatrical event at an outside amphitheater. In addition, the visitor center includes a fee-based display room that includes panel displays, lifelike models, audio-visual exhibits, and “hot” interpretation about issues of protection and management of the Tasmanian wilderness. (I have no idea what “hot” interpretation is, but it sounds provocative.)

To assess whether the visitor center is meeting its objectives, both quantitative and qualitative methods are used to measure opinions, assess feelings, and map behavior of visitors and/or key informants. Key informants include interpretive designers and representatives from state and local government, the tourist industry, and interest groups.

**Critique and Conclusion**

This book was published to demonstrate that interpretation is alive, well, relevant, and mature in the land down under. Maturity is demonstrated by interpretation’s professional-
ism, e.g., its willingness to be informed and evaluated by science. In addition, the book was published to demonstrate high quality service and relevance to practitioners and researchers in Australia and the world.

Given these lofty goals, I would say the book is “pure mostly.” All the papers in the book indicate critical self-analysis. Many of the papers use multiple methods and measures to find “truth.” Some measure critical audience or visitor responses. A few of the studies are overtly informed by theory. One of the studies comes close to using an experimental design to permit causal analyses.

In terms of new information, I found the book had a few gems among much “same old stuff.” I found the involvement of the Australian interpretive profession in private tour guiding to be refreshing, and I believe the rest of us can learn from this effort. Second, certain chapters in the book helped me think more deeply about developing the interpretive story to be told and how best to develop a coherent set of interpretive messages. Finally, Australia seems to be conducting critical analyses of the effectiveness of visitor centers and visits to historical houses, and making innovative recommendations about how to improve such programs. This we can all applaud.
IN MY OPINION
In 2001, the National Park Service (NPS) published a new mission statement and a set of five “core values” as a result of a re-examination of its purpose and mandate. In my opinion, the challenges to interpretation in the NPS over the next several years and the critical skills that the profession must develop to address these challenges relate directly to the revised NPS mission statement and core values. These skills include partnership development, serving non-traditional audiences, and responsiveness to social, demographic, and technological changes.

The new mission statement emphasizes the acceptance and importance of “park partners”—non-NPS organizations and individuals including government and non-government private foundations, corporations, and individuals—in accomplishing its resource conservation and outdoor recreation mandate. For the first time, the National Park Service mission statement formally acknowledges, accepts, and embraces the idea that the NPS could not accomplish its charge alone. This is one of several concepts which I believe is foundational to the future of interpretation.

Assuming that the appropriated federal funding for national parks, and interpretation specifically, will at best remain flat during the next several years, one implication for interpretation is that our future growth will be determined by our ability to work with other people through partnerships. In addition, the degree to which we will be successful in meeting the NPS mission of resource preservation and visitor enjoyment as we move through the first quarter of the 21st century will depend, to a significant degree, on our partnership skills.

National parks become involved in partnerships for many reasons, among the more common are pragmatic and financial; partners often bring funding that allows us to pilot innovative and creative programs and activities. We some-
times call upon partners to provide expertise or bring a citizen-based viewpoint. While most if not all national parks are involved in partnership activities to some extent, those that have embraced the idea that non-NPS entities can truly help the parks achieve their missions—and those that have developed the skills in developing partnerships—are doing the most innovative and impactful programs. Yet, many parks report conflicts, differing expectations, and disappointments with partnerships. To paraphrase the words of Longfellow’s nursery rhyme, *There Was a Little Girl*, to describe NPS partnership efforts, “When they are good, they are very, very good. But when they are bad, they are horrid.”

The challenge for interpreters is to develop skills in creating and maintaining “very, very good” partnerships. Skills in structuring projects, clarifying roles, understanding, defining, and focusing efforts where the missions of each of the partner organizations overlap and giving up unilateral control while maintaining the park mission will become an increasingly significant part of the daily work of interpreters.

Interpreters will need to become skilled at developing complex, highly “entangled” partnerships. In my experience, the greater the “entanglement” of government and non-government partners in carrying out a program, the stronger, and potentially more long-lived the program will become. This means entangling a program so deeply with a partner that the program could not survive if either the NPS or the partner pulled out. This is a very pragmatic perspective on partnerships. It’s like growing a monoculture of a crop—one disease can wipe it out. But if the crop (interpretive program) depends on a mix of government and non-government funding and support, it is much more resistant to being undone by a single force. Most managers are much less likely to eliminate a particular program during tight budget times if cutting that program will cause harm to the non-government partner. But, partnership skills are only one dimension of the evolving needs in the development of interpretation as a profession during the next several years.

Among the five “core values” that I referred to earlier were statements related to concepts that few would argue: shared stewardship, excellence, integrity, and respect. Perhaps most progressive was a statement about the core value of tradition. It said, “We are proud of it; we learn from it; we are not bound by it. We use only the best from our past to meet the challenges of the future.” Tradition: *we are not bound by it*. As I read those words, I feel that they are directed to NPS interpreters. Among all of the professions within the NPS, the profession of interpretation has been the most ardent in embracing and guarding the traditions of the National Park Service. The NPS is steeped in interpretive traditions: campfire talks, nature walks, exhibits with dioramas, etc. We give talks on the history and mission of the NPS. We teach our staff to be the traditional ranger that the public expects. We work so hard to perfect and maintain the traditional ranger image that some of us become rigid and protective of values that may not be current among the majority of our visitors.

Our visitors are changing—our programs and approaches need to change, too. This isn’t to say that the status quo is bad; we should keep doing what is effective. However, I believe that if interpretation as a profession is to thrive—or even survive—we must be highly informed about and responsive to the social, technological, and demographic changes occurring in this country.

As interpreters, we are challenged to design programs that ensure that the next generation is well-informed and has a strong personal connection with the parks so that they can pass on a sense of ownership and caring to the next generation. To do this, we need to be able to see, understand, and respond to complex change. We must be proactive about socie-
tal trends. We must be nimble. We need to constantly ask ourselves if we are truly engaging the public on values and issues in our parks. Are our techniques appropriate for the audience and the time? What, in their world of experience, is relevant to the resources we are trying to protect? Who are we missing and why?

The July/August 2004 issue of American Demographics magazine features the thoughts, predictions, and concerns of several of the country’s leading “futurists” about the year 2020. In providing the context, they share the following: “Among the 335,805 million Americans the Census Bureau predicts for 15 years from now, some 54.6 million of us will be age 65 and older, versus about 35 million in that age group in 2000. The white non-Hispanic population will have grown a mere 2.4 percent during that decade and a half, while the Hispanic portion of our population will have increased 25 percent and the Asian portion 26-plus percent.”

The challenge to interpretation during the next several years of being relevant to an increasingly multicultural society will accelerate. Park interpreters are not a representative cross section of the American public. We will need to become more worldly in terms of culture and cultural perspective. Our education will need to be more inclusive of history, people, and places.

The dynamics within traditional American families will also continue to change. Grant McCracken, adjunct professor, McGill University, (American Demographics, 26(6):39) predicts that people are going to have more difficulty keeping order in their personal lives. Because children now live in a very dynamic culture, they’re highly individualized and they change faster than they used to. Creating a family and getting everyone on the same page is going to be a significant challenge.

What about Generation Y? In the year 2012, the last of that generation will become 18 years old. This is the generation that watches nearly an hour less of prime time television than the average household. What are they doing instead? They are instant messaging their friends, surfing the Internet, and playing computer games all night long.

As interpretive professionals, we can react to this kind of information in many ways. We can be dismissive of this audience; we can say they have their values skewed, we can say that there are plenty of people who would rather spend their time in parks. Or, we can ask, “What are the implications? What does it mean? What new things should we be doing to remain relevant and meaningful?”

At Yellowstone National Park, we have placed a great emphasis on Web-based programming. We have launched a series of “electronic field trips” that reach audiences in more than 100 countries. We have online tours and games. We are developing online interpretive programs and “virtual” visitor centers. We are attempting to broaden our reach of a growing audience that is well educated, savvy, and an increasingly sophisticated consumer of electronic and audiovisual media.

The world is changing fast, and if interpretation’s ultimate goal is protection of park resources, then we need to do more. We must get out of the comfort zone of dealing only with grateful and appreciative publics, and we must reach people who do not know about or necessarily care about national parks. Interpreters need to develop skills in dealing with adversarial audiences—and seek out those audiences. That is what we are now doing in Yellowstone. During the past few years, we have made community outreach activities a core part of our function. Six permanent interpretive staff members attend over 100 community meetings each year and talk to everyone from chambers of commerce members to cattle-
men. We talk about controversial issues: winter use and snowmobiles; bison and Brucellosis, wolf reintroduction and wolf predation on livestock. We provide the superintendent with information about the needs of the communities surrounding the park. We talk about plans and policies that preserve parks resources and that impose restrictions on their use. And, sometimes we get verbally beat up. These are not the kinds of contacts that result in “Tilden Moments”—but they are critical to the protection of parks. We know that the success of Yellowstone’s management programs depends on an informed public. We don’t regularly change attitudes, but we do dissipate anger with correct information. That is a start.

If we are going to keep our parks meaningful, relevant, and valued to our diverse and increasingly sophisticated public, interpretation has to take on a much broader role than the traditional campfire talks and nature walks. We must stay nimble, become more proficient at partnership activities, understand and respond to societal trends, and seek out nontraditional and sometimes adversarial audiences.

Have our goals for interpretation at Yellowstone National Park changed? No. Our ultimate goal is for park visitors to understand and appreciate the significance of Yellowstone and to become inspired by this extraordinary place so that after their visit they become lifelong partners in its preservation. It is our skill set for interpretation that has and continues to change. It’s not the end that has changed, it’s the means.

References


I think that a major weakness with National Park Service interpretation today is its continuing overemphasis of personal services interpretation. The interpretive talk and guided walk are at the core of the NPS Interpretive Development Program (IDP). It’s an excellent program. The vast majority of the creative and intellectual energy of park interpreters goes into personal services interpretation. Most interpreters give excellent programs. Yet the proportions are out of balance. Most park visitors spend most of their time doing things other than attending interpretive programs.

About one in 20 National Park System visitors attend interpretive programs (National Park Service, 2003). Most visitors do other things. More than one-third visit visitor centers with exhibits and videos; more than that use brochures and read wayside exhibits. About 100 percent have experiences.

Why do people visit parks? There are multiple perspectives on that. The IDP says it’s to seek something of value for themselves (National Park Service, 2004). The NPS Intermountain Region observes that visitors “seek a personal connection to the stories found in these powerful special places” (National Park Service, 2002). A plurality (40 percent) of recent National Park System visitors answered: “go sight-
seeing” (National Park Service, 2001). Second place was “vacation with guests, family, company, relatives” (16 percent). “View exhibits, park information, educational sites” and “go day hiking” were next at six percent. “Take a ranger-led interpretive tour” was 20th at less than 1 percent.

Surveys of more than 2,500 visitors to Yellowstone and Rocky Mountain National Parks (Eisenberger & Loomis, 2003) showed that the top four reasons for visiting these parks were sensory experiences, shared (social) experiences, photography, and peace and quiet. Responses established a clear link between desire for sensory experiences and desire for related information (interpretation).

We’re out of balance. Visitors spend most of their time experiencing parks while most NPS interpreters concentrate on personal services interpretation. The National Association for Interpretation (NAI) is no exception. In a recent NAI conference proceedings, I hunted past page 100 to find an article on something other than personal services interpretation. Look in any issue of *Legacy*: articles and features invariably use “interpretation” as synonymous with ‘personal programs’ (while most ads push non-personal media).

In the Park Service there is no group that attends to the spectrum of visitor experience issues. Try to find a recreation specialist outside of the planning branch. Nonpersonal media and orientation issues rarely excite audiences of interpreters. Interpreters are too seldom at the table to address visitor experience issues other than personal programs. Other managers too often see interpreters engaged in esoteric practices involving some tangible, intangible, or universal stuff that contact few of our visitors and barely relate to the practical realities of managing visitor use, protecting resources, and meeting shrinking budgets (especially for personal services).

Fortunately, things seem to be changing. Several chiefs of interpretation are effectively managing major media and facility development projects, and have fashioned balanced and effective visitor services programs. Recent media development training courses were well-attended and highly rated. The IDP is starting to address non-personal media. Some interpretive planners are becoming visitor experience planners. NAI’s 2004 National Interpreters Workshop seemed to attend more to interpretive media and visitor studies. But many more interpreters need to widen their horizons. The Park Service and NAI need to recognize the importance of visitor experience management, which would encompass the spectrum of visitor experiences in parks.

What if NPS interpreters were also visitor experience specialists: what might they do?

• Manage, supervise, and/or deliver interpretation and education programs (that would include tangible and intangible resource meanings, experiences, and connections).
• Expand involvement in nonpersonal interpretive media and improve orientation services.
• Encourage enjoyable, low-impact visitor experiences. Connect interpretation with sensory experiences.
• Become local experts in visitor-related resource protection issues. Know and apply the latest research.
• Know audiences beyond basic demographics: What are useful segments and groupings and what are their different backgrounds? What are different beliefs, attitudes, and
expectations (psychographics)? What park experiences do they want? How do they
want to get information? Who is not coming to the park and why? What does social
psychology have to offer? How might we encourage behavior change?

• Evaluate facilities, media, programs, and services.
• Take a place at the planning and design table:
  ◦ Help determine purpose, mission, charter, goals, and themes.
  ◦ How do you relate to partners, stakeholders, and neighbors?
  ◦ What facilities and media are needed? What functions and goals? What
    experiences?
  ◦ Do you need a visitor center or contact station? Where? What functions? Size?
    Arrival and entry experiences? Formal theater and/or multipurpose room?
    Classroom? Balance between orientation and interpretation? Sustainability?
    Primary audiences? Visitation patterns? Education programs?
  ◦ What kinds of outdoor experiences? Where should trails go? How long? Should
    there be brochures, wayside exhibits, and/or trailhead signs? Accessibility?
    Compatible uses? Carrying capacity?
  ◦ Picnic and/or camping areas? Where? Should they accommodate extended fami-
    lies? Large groups?
  ◦ What are visitor impacts on park resources? How can you decrease negative and
    increase positive impacts? What are safety issues? How to decrease injuries and
    accidents?
• Keep learning about human experience of parks. Know the research. Watch and talk to
visitors. Reach out to neighbors—those who visit and those who don’t.

As visitor experience specialists, our overriding goal would be to ensure that people have
park experiences that are enjoyable and beneficial to them and to parks. Interpretive pro-
gams would be one of our tools, along with other approaches. Interpretation, education,
and orientation would be linked with sensory experiences.

I’ll go back to Utah next year. I want to see critters, plants, rocks, and more sunsets.
Hear and smell the high desert at night. More hikes and campfires. Imagine long-ago life
at an ancestral Puebloan site. Visit visitor centers—look at exhibits and videos, and watch
visitors. Read nearly every wayside exhibit I encounter. Maybe be there (at a safe distance)
when a flash flood cascades off the Waterpocket Fold. I’ll share these experiences with
wife and friends. And I’ll take in a program or two.

References

Harpers Ferry, WV.


Sam Vaughn is the chief of interpretive planning for the NPS Harpers Ferry Center. Previously he was a National Park Service interpreter for 17 years. His views are his and do not represent the position of the National Park Service.
The interpretive profession is no different than any other in that it requires thoughtful research and relies on resulting data to guide developments in the field. Trends that emerge within any profession tend to define the direction of research in that field. The National Association for Interpretation (NAI) national office is in a unique position to identify trends from observations of almost 5,000 members in 32 countries and from contacts made with thousands of non-members through telephone, Internet, and participation in varied U.S.-based and international activities. Managers and researchers in heritage interpretation may want to consider some of the following observations when determining how to allocate resources most effectively.

1. Organizations must do more with less.

This theme seems to be a recurring message during recessions, but since September 11, 2001, the message may not change even if the economy does. The tragic losses of 9/11 may have changed the landscape of American resource management and recreation for a very long time. Resources committed to homeland defense, rebuilding Iraq, rebuilding Afghanistan, and the hunt for terrorists will likely dominate Congressional funding for decades and leave other areas with less money to contend with more work.

Working smart or “doing more with less” will continue to be essential, but interpreters can view this daunting task as a
unique opportunity to encourage the use of interpretation as a management approach in parks, forests, and on public lands. Interpreters who effectively help solve management problems will be saving expenses related to maintenance and law enforcement. They have to demonstrate their value by setting and meeting measurable objectives that matter to managers. Doing more with less requires that practitioners know what works and what does not. Instead of cutting training and travel, which is often done first in a recession, a greater investment in professional development must be considered as an investment in management and protection of the resource.

Investing scarce funds more strategically begins with a thoughtful approach to interpretive planning. Training key staff members as interpretive planners gives them the tools needed to manage planning projects efficiently, regardless of whether an outside contractor is hired to assist with a specific project (Brochu, 2003). Since some contractors claim knowledge or experience in interpretive planning without any formal training in the process, it is important to check credentials and references before awarding a contract. NAI’s Certified Interpretive Planner credential and training courses are designed to meet this deficit but agencies must use due diligence when hiring planners.

2. Volunteers often comprise the front line and first contact.

The trend for using volunteers and concessionaires as interpreters has increased with the reduced funding support in many organizations. Nonprofit nature centers, museums, zoos, and aquariums have always relied on volunteers, but docents have become the primary interpretive contact in many settings. They are the public face for many organizations but are often left to their own devices regarding their portrayal of the organization’s mission. However, these individuals, if well-trained and mindful of their organization’s mission, have an opportunity to help guests connect with the resource in meaningful ways that may promote stewardship of the resource. Evaluating the impact of visitor contacts by trained volunteers is essential to prove the value of training dollars and the overall worth of the interpretive program.

3. Social marketing adds value to interpretation.

Social marketing is often described as the use of public relations and advertising to change human attitudes, beliefs, and behaviors. Interpretive communication combines a variety of techniques that are essentially social marketing constructs. The role of interpretation in achieving voluntary compliance among resource users as stewards is essential. No other approach to resource management and protection has the ability to deliver this value. Influencing people’s attitudes and behavior from curiosity about resources to awareness, understanding, caring, and commitment is a slow process, taking place over multiple visits, but there are ways to test success in-stream while providing programs.

NAI’s CIG training focuses on teaching interpreters to write program scope objectives that can be easily measured to make what we do more responsive to our social marketing goals. When the measurable objective for an interpretive program is, “50 percent of my audience will stay after the program to help clean up the nature sanctuary,” the objective is easily measured and demonstrates a real commitment from the visitor that has positive impact on the resource. NAI has adopted an approach commonly used in environmental education (Marcinkowski, 2004) to writing objectives that measure outputs, outcomes, and impacts. This approach emphasizes that measuring the effort to change behavior is not
4. **Interpretation may have important economic impact.**
There is a trend in scenic byways and public lands management to view a visitor center as an economic panacea for remote communities with high quality natural and cultural resources. The “build it and they will come” philosophy is often unsuccessful, leaving an underused center that requires a substantial financial commitment to maintain. Careful interpretive planning helps identify the most effective ways to achieve organizational goals and objectives. Sometimes the planning process will identify a center or building as a key resource but often other media will provide better solutions to meet the needs of managers in serving specific audiences with the varied constraints of the resources, budgets, and staffing levels.

Many organizations believe that quality interpretation creates positive economic benefits for communities, but those beliefs are often based upon anecdotal evidence. Economic research is needed to better understand how interpretive experiences provide economic benefits through longer stays by people at interesting sites, more frequent return visits, word-of-mouth advertising, and creating a strong sense of place. Comparing interpreted to non-interpreted experiences would yield useful data. Comparing sites with personal interpretation to sites with non-personal media only would also be helpful to better understand the impact of these differing approaches.

5. **Interpretation creates experiences.**
The American economy functions in a variety of ways. Pine and Gilmore (1999) have written about four economies—agricultural, manufacturing, service, and experience. They describe a business shift toward the experience economy in the U.S., and they characterize experience economy businesses with five key traits. These businesses 1) theme the experiences, 2) harmonize impressions with positive cues, 3) employ all five senses, 4) eliminate negative cues, and 5) mix in memorabilia that recall the experience. Starbucks, REI, Barnes and Noble, and Disney theme parks are some of the many businesses that use an experience economy approach to serving customers.

Market research on decision-making by visitors and evaluation of effective programming can reveal more about the power of experiences. Common sense suggests that holistic experiences create context and should be more powerful based on what is known about whole-brain function, but it would be useful to test those ideas with careful research in interpretive settings.

6. **Interpretation builds advocacy for agencies and organizations.**
Mission statements of natural and cultural history organizations use words such as appreciate, understand, encourage, and inspire in most cases. Usually maintenance, research, and law enforcement have limited ability to achieve goals under these mission statements, but interpretation can make significant progress towards them.

Careful planning can also result in building advocacy for the agency itself through interpretive programming. Organizations need advocates in the community, but citizens may not understand how the organization is funded and managed. Thoughtful planning can suggest messages and media that are explicitly targeted to key audiences to develop criti-
cal support for the organization. Most resource agencies and organizations take it for granted that they are delivering messages about their core values to key constituents. However, because interpretive planning is ignored in many organizations, the opportunity to craft careful messages for well-defined audiences is missed. Internal markets, such as administrators, legislators, advisory groups, and boards of directors are often missed with the assumption that they already know the intent of on-site management. These internal audiences control budgets and deliver the mandates to function. They must understand the value of interpretation and have buy-in.

7. Early childhood experiences create outdoor enthusiasts.
Recent research by the Outdoor Industry Foundation conducted by Harris Interactive suggests that most national forest users are white males (69 percent) and minorities are a very small market segment (7.2 percent) (Outdoor Industry Foundation, 2004). The implication of much of this kind of research is that participation in a recreation activity is a learned behavior. If children begin taking part in outdoor activities at an early age, they will likely continue that practice throughout life. Some recreational behaviors like hiking, biking, and camping seem to be “gateway” activities that prepare people to try other outdoor experiences. Nature centers and other heritage interpretation organizations that specifically work with pre-school children may be key in building the future audiences for zoos, parks, museums, historic sites, and public lands by providing that important initial experience.

A better understanding is needed of the role that early experiences play in forming values for children and establishing their areas of interest. The competition of video games, television, and the Internet for playing outside, bike riding, and nature exploration is considerable. Interpreters have an important role to play by designing experiences for these youngest citizens.

8. Heritage tourism continues to grow as a leisure activity.
A variety of tourism and social trends converge around interpretation of heritage sites. While fewer hunters and anglers in the U.S. take to the outdoors, there is a growing audience for non-consumptive activities such as birding, wildlife watching, and photography. Ecotourism continues to expand around the idea of people wanting travel that connects them to their natural and cultural heritage. Global travel and tourism represents one-ninth of the world’s economy (Naisbitt, 1994). Despite the obvious role that interpretation plays in these areas, the vast majority of guides in these industries lack training in interpretive techniques of communication and focus more on simple delivery of facts. Ecotourism training manuals reviewed in the NAI national office contain content only and indicate no emphasis on process.

9. International interest in improving interpretation is on the rise.
In 1985, a group of Canadians organized the First World Heritage Congress in Banff, Canada, as the start of an international interpretive network called Heritage Interpretation International (HII). Though they successfully held a meeting every three years for the next decade, the network disbanded after a planned meeting in Denmark did not attract enough participants.

Developed nations such as Australia, Spain, Great Britain, and Canada have professional organizations for interpretation but tend to lack resources to network across borders.
without some facilitation and leadership. Developing nations with World Heritage Sites and protected areas want interpretive services, but need financial and technical assistance through sponsorships and international networking to increase the benefits of their ecotourism efforts.

The Certified Interpretive Guide course has been taught successfully in Mexico, Panama, China, and Kenya. Materials for the course have been translated into Spanish to make the program accessible throughout Latin America. As the number of Certified Interpretive Trainers who speak Spanish and reside in Spanish-speaking countries grows, this Latin American network is likely to grow and develop. NAI is studying options for rebuilding a global international network to benefit all in the profession and will host its first international workshop in 2006.

10. Interpretation adds value to education.
At many museums, zoos, and nature and science centers, the program may be called “education”, whether connected to curricular standards or not. Parks and commercial ventures tend to call programming “interpretation.” Few programs are truly one or the other, but many focus on delivery of cognitive material (education) without the emotional context typical of interpretive programming. Interestingly, the Association of Nature Center Administrators recently devoted the spring 2004 issue of Directions to addressing the notion that staying in the cognitive domain may be less successful than an interpretive approach that creates both intellectual and emotional connections.

Some sites have begun to distinguish between educational and interpretive programs but many do not and use the terms interchangeably. NAI, the U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service are collaborating in 2005 with a Definitions Project designed to bring 15 agencies and non-governmental organizations together to discuss non-formal education and interpretation. This project attempts to build consensus in definition of terms while also building cooperation amongst the varied groups working in these areas.

11. Accreditation and standards add credibility to the profession.
After decades of discussion, NAI started a program to certify individual professionals in 1998. The program has four professional categories that recognize existing skills and knowledge of people in the field. These categories, Certified Heritage Interpreter, Certified Interpretive Trainer, Certified Interpretive Manager, and Certified Interpretive Planner, reflected a job analysis of NAI’s membership at the time the program was created. In 2000, NAI began to look at the profession beyond NAI’s membership, adding the Certified Interpretive Guide training course to address the needs of those who had not had the benefit of education or experience in the field. The Certified Interpretive Host training course was developed in 2003 to address the needs of those who have public contact at interpretive sites but who do not typically deliver programs. State parks, some federal agencies, private sector tour companies, and many municipal and county agencies have adopted the programs as they have realized added value from training and certifying their staff and volunteers. NAI will be undertaking research to determine the extent of the impact of certification to individuals and organizations that choose to participate in the program. Accreditation of programs and public lands has been discussed but has been more challenging to attempt. A description of the seven best management practices
was put forth as a starting point (LaPage, 2001).

In 1996 the National Park Service (NPS) created the Interpretive Development Program (IDP) as a certification of competencies program for entry and mid-level professionals. Instructional modules are taught for each of the categories by NPS trainers. The National Parks Conservation Association has undertaken a program for evaluating individual national parks in their State of the Parks reports. This approach has been used with 18 parks to establish a baseline for natural and cultural resources in the national parks studied, but a comprehensive program supervised broadly by resource professionals has yet to be attempted.

12. Interpretive audiences are changing.
Demographic trends suggest that most of our American audiences in the coming years will be ethnic minorities. Hispanic people will be the dominant culture in American society in just a few years, and Spanish may well be our second language by use, if not by law. Yet the same studies of recreation participants by the Outdoor Industries Foundation mentioned earlier make it clear that minorities are a small part of our current outdoor audience.

Although seniors have always made up a significant percentage of the tourism market, their numbers are growing as life expectancy beyond retirement increases and the “bubble” of baby boomers begin to retire and travel more. The physical abilities and interests of seniors will require thoughtful planning in programming and media development.

Interpreters have an opportunity and perhaps an obligation to develop strategies for engaging diverse audiences. Advocacy for natural and cultural resource sites in the future will depend on knowledge and interest in them by the entire electorate. Partnerships with other organizations will be needed in a continued effort to understand these new audiences and design experiences that meet their needs.

Conclusion
The interpretive profession faces many challenges in this recession economy but has also made great progress in recent years. The varied trends and issues in the field should be viewed as opportunities to attempt improvements in the profession. Ultimately, the profession becomes stronger over time because the individuals within it plan better, evaluate their efforts, and seek to improve professionally in all areas. The Journal of Interpretation Research provides a place to publish peer-reviewed research at academic standards. It will continue to be a place where individuals can contribute to the body of knowledge that helps determine and address trends in the profession.

References


The mission of the National Park Service has long been to preserve the tangible and intangible values of our world. These are the combined treasures of scientific fact and the hearts of men and women. The cherished lands that cradle our national parks represent, in living systems and stories, our collective heritage. The loss is great if these stories are ignored or denied. The social implications of stories left untold are ominous.

Generations to come may never know the stories of cultures gone-by, of life ways, celebrations, sacrifices, and struggles. Generations to come may never hear the relevance found in the intricacies of living systems as told by the men and women wearing the well-loved flat hat of the grey and green National Park Service uniform. Generations to come may never have the rich experience of listening to the words of a dedicated ranger as I did when a child of 11. Kerry Jones, an interpretive ranger at Shenandoah National Park, inspired and encouraged me and helped to lay the foundation of what I would grow to be.

Ranger Jones led a hike on a trail that was rough, rocky, and steep. She wore what was required, a skirt, pumps, and that iconic flat hat. Kerry never missed a beat and carried herself with such pride and dignity that I knew she must be the most amazing woman in the world. I don’t remember a word she said about Shenandoah, but I do remember how she made me feel and how she changed my life. I wanted to be part of what she believed in. I wanted to be just like Kerry. She was smart, proud, and dedicated. She was a ranger, an interpreter, and a role model big enough to change the world.

“We do act as guardians of our country’s land. Our National Park Service uniform which we wear with pride does command the respect of our fellow citizens. We have the spirit of fighters, not as a destructive force, but as a power for good. With this spirit each of us is an integral part of the preservation of the magnificent
heritage we have been given, so that centuries from now people of our world, or perhaps of other worlds, may see and understand what is unique to our earth, never changing, eternal.”

—Horace M. Albright, Director of National Park Service, 1933

All educators and interpreters face challenges in today’s world. As the interests of our society change, the skills of interpreters must adapt. Maintaining the interests of a culturally diverse society demands that we find and develop new and effective presentation techniques. Our job is to expose the visitors to many perspectives, allowing them to experience and find their own definitions of significance. Assisting the visitor through a process of discovery that results in personal meaning is the heart of our purpose. The very word “interpretation” speaks to this and has in its root meaning, “to uncover or reveal the mystery.” We do this to impart meaning to present generations and to honor past generations. We do this to preserve the stories and the systems.

“I did what I did for all those sailors who had drowned in the nineteenth century and who, when I started to speak, crept in the back of the room, in their high-heeled boots for climbing ratlines, and their dirty clothes and their hair pulled back in clubs, and sat down in the empty chairs and waited for me to say something that made their deaths meaningful, that gave them some sort of life beyond the terrible graves they had faced. They were my Real Audience; they were the ghosts who sat just behind my shoulder as I wrote and they were the people to whom I owed allegiance.”

—Victoria Brehm, author/historian 2001

Interpreters are torch bearers who conduct their craft on the edge of the past and the future, where fear and hope keep diligent watch over what will be. These edges are where we are exposed and where we learn, embrace, disagree, compromise, and choose to be blind or brave. Interpreters play a pivotal role in the preservation of the tangible and intangible treasures the world holds most dear. Visitors are immersed in an experience—seeing, hearing and touching the most complete representations of what once was and what is. The impact reaches far beyond that which we can know or measure. We must remember that the integrity of interpretation is not found in the pride of ourselves but rather in what we can instill in the hearts of those who experience and are inspired. The interpreter leads the visitor to an edge where they can look at the whole, where science and the heart connect.

“We can show the government that science and the heart mix. We can show them that to be kin and to love the earth works in harmony with the land. The government agencies have their studies, models, and plans but we can show them a new way.”

—Norman Deschampe, Minnesota Chippewa President, 1996.

The disparity of understanding and priorities between those who hone the craft of interpretation and those who allocate funds for interpretation is immense. How do we demonstrate value for service without turning inward and expending our creative energies in this manner? Is the interpreter able to save his or her self in a world of decreasing funds? Is the value of our profession clear?

We will become ineffective if we turn inward, allowing self-pity to draw our focus and
cloud our vision. It has been said that failure’s recipe is to maximize the issue and minimize the resource. This will be the great battle for interpretation over the next five years. Will we continue to fight for a cause that for generations has been dear or will a new cause emerge? Will the new cause be one of self-preservation and inward focus? Will our worries, our fears, and our frustrations drive us inward and away from our calling, our cause, our legacy? If so, this will be our swan song.

Lack of funding, changing technology, and competitive sources are merely symptoms of the greater issue. Why is the value of interpretive services diminishing? Why are we expendable? Why are we noncritical?

The term *benign neglect* has long been used when speaking of historic structures that are allowed to fall into disrepair and ruin. Eventually all that is left are the stories of what once was. It has been, for many, overwhelming to see that benign neglect applies to the interpretive ranger as well. If we are ignored, we will fade away and all that will remain are the hollowed out stories of what once was. And if we fade away, will there be a suitable defense when there is no Ranger Jones to inspire the children?

> “Neglect implies a failure to carry out some expected or required action, either through carelessness or by intention.”
> —Webster 2000

We will either demonstrate our value or we will perish. The question perhaps is, how do we demonstrate value to those who refuse to listen? The best counsel I can offer is to plead that we, as a profession, continue to focus on our mission and our goal while refusing to turn inward, or to use our energy complaining and bemoaning our condition. I still believe, as I did when I was 11, that we exist because we have the ability to inspire connections that save treasures and compel involvement. Do we need strong torch bearers to carry our value to higher levels? Of course, but until those empowered to orchestrate change come to the field and hear, in the context of a visitor, the stories, smell the campfire, and are nurtured by the men and women dedicated to revealing the mystery, will they truly know the value? The understanding of value isn’t carried by briefing papers; it is embraced through experience and understanding. Here lies the challenge.

I understand the impacts and the seemingly untouchable futility. I watch my seasonal interpretive staff cut and cut and cut again until a fraction remains. Next year, none may remain. I worry because I know these interpreters were dedicated individuals who knew they were the front line emissaries for the resource, for the stories. The rangers I speak of were there after hours for frightened and confused visitors. They were there to share cheese, crackers, or whatever they had with the lost and hungry visitor. They were there, placing their own dry clothing on the wet and frightened visitor’s shoulders. They were there, not just to tell the stories but to impact lives. I saw lives changed. I heard the stories of visitors returning and looking for the ranger who so impacted their lives—they came with grandchildren and friends so that they too could meet the ranger who changed the world. The rangers are gone now, the visitor can’t find them. The rangers are gone now, the protector of the fragile systems, the stories—the warm light and friendly assurance to the visitor far from home. The rangers are gone because somewhere someone, who hadn’t heard the stories and didn’t know the cause, thought that silence was an option. The rangers are gone, the legacy is denied.
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Purpose

The purposes of the *Journal of Interpretation Research* are to communicate original empirical research dealing with heritage interpretation and to provide a forum for scholarly discourse about issues facing the profession of interpretation. The *Journal* strives to link research with practice. The *Journal of Interpretation Research* is published by the National Association for Interpretation, the preeminent professional association representing the heritage interpretation profession.

General Information

The primary function of the *Journal* is to disseminate original empirical research regarding interpretation. However, the *Journal of Interpretation Research* takes a broad view of the field of interpretation and publishes manuscripts from a wide-range of academic disciplines. The primary criteria for deeming a manuscript appropriate for the *Journal* are whether it adds to the current state-of-knowledge for practitioners, researchers, academics, or administrators who work in the field of interpretation.

In recognition of how diverse the relevant literature is, the *Journal* will also publish reviews of recent books, government publications, original literature reviews, and bibliographies dealing with interpretation. Abstracts from dissertations, private consultant materials, and reports from public agencies will be published in the *Journal* in a section called, “In Short: Reports and Reviews.” This section will also provide an outlet for summaries of research studies with limited scope. Interpretation research often consists of small “in-house” program evaluations and basic visitor studies. The purpose of this section is to communicate current research activities, allow readers to identify colleagues with similar interests, and provide practitioners and administrators with useful information and direction for conducting their own mini-research projects. Submissions for the “In Short: Reports and Reviews” section should be limited to 800 to 1,000 words and will be reviewed by the editor and two associate editors.

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