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# Nature Interpretation

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## What is Nature Interpretation?

One of the founders of interpretation, Freeman Tilden (1977, p. 8), defined interpretation as “an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information.” Interpretation Canada suggests that, in fact, no single definition can capture the vibrancy of the field, but each effort provides a place in which to begin understanding. They put forth that “interpretation is any communication process designed to reveal meanings and

relationships of cultural and natural heritage to the public, through first-hand involvement with an object, artifact, landscape or site” (Interpretation Canada, 1976). Based on these definitions, interpretation is different from other methods of communicating information in that it reveals meanings about that information and that interpretation seeks to provoke (Tilden, 1977) and inspire visitors (Gilson, 2020). The purpose of this chapter is to describe the characteristics of interpretation (compared to education), its history in Canada, and research on the positive impacts and effective strategies of interpretation.

Interpretation occurs in many ways and in various locales (e.g. zoos, museums, parks and protected areas, outdoor recreation landscapes, ecotourism settings), but has two basic categories. First, personal interpretation consists of direct contact between the interpreter and the visitor. Here are several instances.

1. Guided tours and hikes, led by interpreters, encourage interactions between visitors and the natural environment.
2. Outdoor theatre programs integrate acting, costumes, singing, dancing, and audience participation in an effort to entertain, educate, and inspire visitors.
3. Prop talks, using artifacts as focal points of a talk, also provide valuable first-hand involvement.
4. Point duty involves stationing an interpreter at a prominent feature or gathering place during periods of high visitation and may include exciting props or interactive activities.
5. Travelling point duty and roving duty are similar, but the interpreter moves through an area, informally interpreting sites and objects to people who are encountered.
6. Living interpretation demonstrates a historical lifestyle that is different from that of the visitors. Living interpreters in period costumes and authentic settings carry out day-to-day activities, showing visitors how people actually lived, often talking with visitors about technical information or showing authentic products.

Second, non-personal interpretation connects visitors through the use of inanimate interpretive media. Here are some examples.

1. Visitor centres (or information centres) provide visitors with important information about an area and its special features and opportunities for the visitor; at the same time, visitor centres provide opportunities for staff to engage with visitors directly.
2. Exhibits at the visitor centre or around the park or outdoor setting may include kiosks, dioramas, artefacts, reconstructions, and models.

3. Signs interpret natural or cultural features in the immediate vicinity; readers can decide what to read and how fast to read it.
4. Self-guided interpretive trails use signs or brochures to guide visitors to interesting features that might otherwise be overlooked or not fully appreciated.
5. Publications and pamphlets provide more detailed information, and can be taken home as souvenirs and referred to many times after a visit.
6. Digital resources such as websites, blogs, social media groups, e-newsletters can be referenced off-site, allowing the visitors to be better informed pre-visit and carry on being engaged and learning about conservation sites post-visit.

Effective interpretation typically embraces the following attributes (adapted from Hvenegaard and Shultis, 2016):

- Interpretation occurs on-site, and emphasizes first-hand experiences with the natural environment (i.e., visitors directly see, hear, smell, and touch landscapes, wildlife, and water).
- Interpretation provides an informal form of education (i.e., interpretation does not employ a classroom-based approach).
- Interpretation involves a voluntary, non-captive audience, most often during the visitor's leisure time.
- Interpretation satisfies a visitor's expectation of gratification.
- Interpretation is inspirational and motivational in nature.
- Interpretation's goals are to provide satisfying leisure experiences, increase knowledge, shift attitudes, promote environmentally-friendly behaviour, develop connections to places, and to create positive memories.

Nature interpretation regularly occurs in zoos, parks and protected areas, museums, and other outdoor recreation contexts. At the same time, much nature interpretation also occurs within the context of ecotourism, a form of tourism

(e.g., birding, whale watching, nature photography, and botanical study) in which visitors engage in nature-based activities that have a significant educational component and promote a conservation ethic (Weaver, 2002). In contrast, environmental education programs offered by nature-related agencies typically target K-12 children to fulfil part of their school curriculum). Overall, interpretation provides important benefits to participants, through learning and enjoyment, but also to the natural environment, conservation agencies, parks and protected areas, wildlife, and society in general, through enlightened attitudes, changed behaviours, and connections to place.

### **History of Nature Interpretation in Canada**

In Canada, nature interpretation began with various park, outdoor recreation, and municipal agencies. James Harkin (1957, p. 15), Canada's first Commissioner of National Parks, while reflecting back on a long career in public service, argued that Canada needs "an informed public opinion which will voice an indignant protest against any vulgarization of the beauty of our National Parks." Nature interpretation in the national parks began in 1887, two years after what would become Banff National Park was established, when a guide led interpretive walks in the lower Hot Springs cave. The first park interpretive museum was established at Banff in 1895, and interpretive tours began in the Nakimu Caves in Glacier National Park, British Columbia in 1905. The national parks hired seasonal interpreters in 1929 and permanent interpreters in 1931. In the 1940s, Hubert Green lobbied the federal government for dedicated funding for environmental education in Banff and, over the course of the next 20 years, was able to build support, funding, and policy to hire the first permanent naturalist in 1964 (Federation of Alberta Naturalists, 2005).

Outside of the national parks, interpretive programs in Ontario's provincial parks began in 1954; Alan Helmsley was hired in 1955, almost 10 years after his first summer as a seasonal naturalist in Algonquin Provincial Park. Under Helmsley's supervision, the Ontario interpretive program grew

to be internationally recognized and a leader across Canadian parks, expanding from two to eleven parks and seeing participation rise four-fold from 1956 to 1964 (Killian, 1993). Other provinces and territories soon followed, with Alberta Provincial parks hiring their first park naturalist in 1968 to establish an interpretive centre in Cypress Hills Provincial Park (Alberta Parks, 2018) and continuing to expand over the past 50 years to now serve more than 450,000 participants annually (Alberta Parks, 2016).

Outside of national and provincial parks, the first Canadian Wildlife Service interpretation centre opened in 1965 at Wye Marsh, near Midland, Ontario. Interpretation Canada, the nationwide organization that promotes networking, professionalism, and hiring, was established in 1977. Many municipalities across the country now have nature interpretation centres and interpretive programs.

Interpretation in Canada has often changed, in response to coordinated planning efforts, policy shifts, hiring and training of interpreters, demands of visitors, and new technologies. These changes suggest four phases (Hvenegaard and Shultis, 2016). Phase 1 concentrated on familiarising visitors with the most unique and majestic features of an area (e.g., hot springs and waterfalls) and providing explanations. As public awareness of the environment increased in the early 1960s, Phase 2 focussed on the broader landscape, the many interrelationships in ecosystems, and management issues (e.g., crowding and environmental impacts of recreation). In the early 1970s, Phase 3 saw interpretation begin to address broader ecological mindfulness among visitors by focussing more on regional ecosystems. Finally, in the 2000s and beyond, Phase 4 saw interpretive agencies move off-site to engage with people who have not visited parks and nature sites (e.g., young people, new Canadians, ethnic minorities, and urban residents), often employing rapidly improving technology such as virtual reality depictions of remote and difficult to access conservation areas and social media messaging to reach younger generations who are digital natives. While interpretation has

changed over the decades, elements of stewardship and broader systems level approaches have continued throughout the phases.

**Why interpret nature?  
Does it even work?**

As humans increasingly degrade the natural environment, the need grows to effectively communicate stewardship principles and environmental ethics. While environmental education serves a similar purpose, interpretation is unique in its provocation approach and focus on free choice learning and people in leisure settings. As a result, there are many reasons for providing nature interpretation.

First, interpretation has the ability to instil passion in participants, influence values, attitudes, and behaviours towards sustainability and stewardship, and create awareness of relevant environmental and cultural issues (Stern & Powell, 2020). Research shows that interpretation generates significant improvements in the knowledge and awareness of environmental issues. For example, visitor knowledge increased from 37% correct before a white-water rafting trip in Grand Canyon National Park to 60% correct after the trip (Powell et al., 2009). Similarly, more than three quarters of participants in an “animal talk” at the Wellington Zoo (New Zealand) increased their knowledge and were able to recall the conservation message (MacDonald et al., 2016).

Second, many visitors want interpretation because it adds value to their experiences. In general, people visiting parks expect and value contact with interpretive staff. Moreover, attending interpretive programs increases satisfaction of visitors (in parks and in almost all settings), when compared to those who do not attend personal interpretative program) (Ham & Weiler, 2007; Stern et al., 2011). More than 80% of visitors to the Panama Canal Watershed area reported being highly satisfied with their overall experience, and were particularly satisfied with the personal interpretation presentations and exhibits (compared to other services or non-personal interpretation). Furthermore, satisfaction (as a result of

interpretive programs) increased both pro environmental behavioural intentions and conservation attitudes of ecotourism resort visitors (Lee & Moscardo, 2005).

Finally, depending on the setting, interpretation is provided under the jurisdiction of the federal, provincial and territorial governments, or municipalities. Thus, interpretive goals and approaches are shaped by relevant legislation and policies. For example, national parks are created for the “benefit, education, and enjoyment” of the people of Canada (Government of Canada, 1990: 3). Similarly, the vision for provincial parks in Alberta is to “inspire people to discover, value, protect, and enjoy the natural world (Government of Alberta, 2009). Interpretation supports park agency goals through enhanced visitor experiences, increased stewardship behaviours, and improved awareness and education. These results allow policy and management decisions to be actioned in tangible ways (Hvenegaard et al., 2023).

Despite the many reasons for providing nature interpretation opportunities, there are also barriers for many potential participants. Participation in personal interpretive activities can be low, ranging from 10 to 25% of visitors (Stern et al., 2011; Hvenegaard, 2011). Constraints include the amount of time, awareness of programs, information availability, life stages of the potential participant, perceptions about programming choices, competing activities, cost, and timing (Hvenegaard, 2017).

**Canadian Case Studies**

There are a few Canadian studies on the effectiveness of nature interpretation that illustrate uniquely Canadian approaches. In Pacific Rim National Park Reserve, BC, Randall and Rollins (2006) examined the role of kayak tour guides in educating visitors and influencing attitudes. About 82% of guided visitors were less-experienced kayakers, whereas 71% of non-guided visitors were more-experienced kayakers. For visitors on non-guided trips, pre-trip knowledge scores (based on ten true/false questions) did

not differ from post-trip scores; however, for visitors on guided trips, scores rose from 5.3 before the trip to 6.5 after the trip. For attitudes, researchers asked only guided visitors whether they supported, opposed, or were indifferent to a policy promoting visitors to voluntarily give up fishing on their trips because of potential impacts on the threatened rockfish population. When guides commented on the 'no fish policy', visitors were more likely to support the policy than when guides did not comment on the policy. Overall, tour guides were influential in developing knowledge and shaping attitudes of visitors.

Bueddefeld et al. (2023) developed learning materials, post visit action resources, and defined interpretation outcomes for Elk Island National Park with a focus on human wildlife coexistence. Because of Covid-19 restrictions, the research team used innovative digital technology to produce an online interpretive video, with the goal of helping visitors understand how to safely co-exist with wildlife in the park. The video followed dialogic-narrative interpretation methods and four stages of the Arc of the Dialogue: (1) building community; (2) sharing personal experiences; (3) exploring experiences of others; and (4) synthesizing and bringing closure. Visitors' knowledge increased significantly after their exposure to the video, as did their likelihood to engage in pro-environmental behaviours such as keeping a safe distance from wildlife. The interpretive video was a success and should inspire other interpreters to employ dialogic narrative storytelling and digital tools.

Hvenegaard (2017) examined the use and perceptions of interpretive programs at Miquelon Lake Provincial Park (MLPP) in Alberta. Among all visitors, 85% agreed that interpretive programs were important to the mission of AB Parks and 68% agreed that interpretive programs increased the value of their experience. Visitors participated in interpretive programs because they thought it would be good for members of their group, be entertaining, be educational, offer learning about a particular topic, and "it was something to do in the park." Most attendees (>80%) agreed or strongly agreed that the in-

terpretive programs helped increase knowledge about nature in MLPP, interest in attending future programs, appreciation for MLPP, and appreciation for Alberta Parks. Cook et al. (2021) expanded this study in Bow Valley Provincial Park, William A. Switzer Provincial Park, and MLPP. Visitors again reported high levels of enjoyment/satisfaction with the programs, most indicated increased knowledge and awareness of environmental topics, and almost 80% of respondents indicated positive shifts in attitudes.

In Banff National Park, Macklin et al. (2010) examined the impact of innovative interpretation (i.e., improvisational theatre games) on children's enjoyment and perceived learning (see Hvenegaard et al., 2008). Children enjoyed improvisation theatre activities the most because they offered fun, physical activity, creativity, challenge, positive group dynamics, and novelty. However, the activities from which children learned the most were more traditional interpreter-led nature walks and talks which included sensory awareness, physical involvement, guided interaction, peer collaboration, and simple messages. Clearly, a combination of suitable approaches is needed for children.

Kath (2009) describes an education program in southern Alberta that promoted awareness of invasive species among stakeholders. The most effective component was an evening campfire program that involved handing out 'attractive' bouquets of invasive weeds to visitors; throughout the program, visitors were asked to throw the flowers into a fire to symbolically represent their efforts to "purge the park of its weeds" (p. 12).

Wolfe's research (1997) highlights a few older Canadian studies. In Kananaskis Country, Alberta, an innovative poster campaign illustrating commonly picked flowers (e.g., 'Wanted ALIVE not dead') helped to reduce by 50% the number of visitors reprimanded by park staff for picking flowers. By providing guided interpretive hikes into the restricted-area of Dinosaur Provincial Park, Alberta, the number of unauthorized visitors observed within the restricted areas decreased by nearly 90% (Wolfe, 1997).

### How can Nature Interpretation Become More Effective?

In addition to using various theories to understand mechanisms at work within nature interpretation (Hvenegaard & Shultis, 2016), two recent systematic reviews highlight the value of interpretation and the need to continue expanding understanding and practices (He et al., 2022; Kidd et al., 2019). The need for innovative communication tools has been documented by scholars through gaps in current strategies and promising results of recent studies (He et al., 2022; Byerly et al., 2018; Kidd et al., 2019; Skibins et al., 2012). Opportunities to expand and improve interpretation practices include incorporating theory-based programming and messaging, audience segmentation, evoking affect and emotional impacts, providing post visit action resources, soliciting pledges and promises from visitors, and employing virtual and augmented reality. Both reviews indicate the need for more robust research and a focus on longitudinal outcomes of interpretation, as well a better understanding of diverse participants and their experiences. All of these ideas provide direction for the future and opportunities to improve. Here are some further insights into two topics for consideration.

1. **Lean into values, emotions, and ethics-based programming.** Blye and colleagues (2023) investigated the role of emotions (among other psychological factors) to better understand what influences pro-environmental behaviours of park visitors who attended an in-person interpretation program in Alberta's provincial parks. Emotions (both positive and negative) significantly influenced visitors' likelihood to engage in pro-environmental behaviour. A sense of pride inspired by positive environmental changes through action can be very motivating to people and encourage new or renewed commitment to pro-environmental behaviour (Blye et al., 2023). When people feel fearful about the future of the natural environment or guilty about the ways in which we are influencing nature

(such as the rate of climate change), interpretation programs can use those emotions to support change. Consider how you feel after seeing images of wildlife tangled up with garbage. Does the sense of guilt make you more likely to dispose of waste properly? Or think about the (overly) successful Smoky the Bear campaign and the resulting fear that all fire is bad, resulting in decades of fire suppression practices that have contributed to more intense wildfires. The fear response can be very powerful. However, it is very important to ensure that negative emotions are supported with suggestions for positive changes and actionable behaviours (Whitburn et al., 2020). Otherwise, visitors will experience despair-inducing inaction and apathy. Interpretation allows for the opportunity to provoke emotion but also educate and provide solutions, where possible.

2. **Focus on innovations and commitments (go beyond education).** Parks, conservation agencies, zoos, and ecotourism agencies have recently begun using pledges and commitments as a tool to facilitate behavioural change (Ballantyne et al., 2018). The use of pledges provides an opportunity to combine persuasive communication with commitment actions, both of which have been effective in influencing pro-environmental behaviours (Byerly et al., 2018; He et al., 2022). Mann and colleagues (2018) had visitors to a wildlife exhibit write down "promises" of behaviours to help support penguins and their environment (e.g., use less water, choose sustainable seafood, and reduce electricity consumption). Almost half of all participants remembered their promise more than one year later and claimed to have kept it. Those who wrote more specific actions were more likely to both remember and keep their "promises" compared to those who wrote more general "care for penguins and animals" statements. Another study from Australia, New Zealand, and the USA, investigated zoos' use of specifically designed websites to support visitors after their visit (Ballan-

tyne et al., 2018). The websites provided content based on the on-site experiences and interpretive programs while also motivating ongoing engagement and commitment to learn more about wildlife. These websites included the opportunity to make a commitment regarding specific pro-environmental behaviours (e.g., pick up at least one piece of litter each day, and use re-usable shopping bags). Participants who visited the websites described the commitment as being motivating and helpful. Those who visited the websites increased pro-environmental behaviour more than those who hadn't visited the website (Ballantyne et al., 2018).

### Conclusion

Nature interpretation enhances visitor experiences and supports effective management of sites for biodiversity conservation. In spite of these benefits, nature interpretation faces many challenges. Interpretation is often underfunded, reducing its ability to achieve its goals. In many cases, an agency cuts interpretation budgets before other sectors, and restores funding to interpretation well after other sectors. Interpretive staff are often relegated to seasonal and part-time positions, as opposed to permanent and full-time positions. Furthermore, many sites offering nature interpretation poorly integrate interpretation into the planning and management of the agency's overall operations. In addition, many agencies have not been able to fully evaluate interpretation to determine cause-and-effect relationships for particular interpretive programs and techniques. Similarly, many frontline and supervisory staff are unacquainted with published research on the effectiveness of interpretation. Moreover, many site managers in charge of budgets do not have a background in, or an appreciation for, interpretation's potential benefits.

In order to improve the benefits from, and appreciation for nature interpretation, the field has several needs. First, nature interpreters and researchers can engage in broader research, based on sound theoretical frameworks to test for the

effectiveness of various techniques. Second, nature interpreters should engage in offsite educational programs to develop new bonds between nature and current and future visitors. Third, interpreters should seek to integrate their work in all aspects of a site's operation. In fact, all site staff are and can be interpreters in some sense. Last, nature interpreters should collaborate across all interpretation and environmental sectors to increase synergies and outcomes (Ostrem and Hvenegaard 2023).

In conclusion, nature interpretation can provide visitors, tourists, recreationists, and local residents with meaningful information and experiences that will increase their awareness and understanding of the natural environment, and relate these experiences to modern life. Achieving this goal will help people to have a deeper appreciation for their area's natural and cultural heritage, desire further learning, and transfer these values and experience into their daily lives. While nature interpretation cannot be the only mechanism to transform people into engaged and caring citizens, interpretation—and the related techniques of environmental education and tour guiding—appears to be the best approaches we have for making such substantial changes at the individual and societal level in protected areas.

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