

The Role of Interpretation in Wildlife Tourism

Gianna Moscardo, Barbara Woods and Rebecca Saltzer

Introduction

Interpretation aims to stimulate interest, promote learning, guide visitors in appropriate behaviour for sustainable tourism and encourage enjoyment and satisfaction. This chapter discusses the role of interpretation in sustainable wildlife tourism. For the purpose of this chapter the term wildlife tourism will be restricted to activities, attractions and tours that involve non-consumptive wildlife viewing or interaction opportunities. There is very little information available on the role of interpretation in consumptive wildlife activities such as hunting or fishing. A review of interpretive methods is provided and international examples are used to illustrate the potential roles of interpretation in wildlife tourism settings. Some issues specific to the practice of interpreting wildlife are discussed. A review of evaluation research in the area of wildlife interpretation will also demonstrate that little specific research is available and that there has been virtually no theoretical discussion of how to design effective wildlife interpretation. The authors have been involved in a long running program of interpretation evaluation and wildlife tourism research. This chapter presents a conceptual model based on both this research and theories from educational and social psychology. This mindfulness model is presented to assist readers' understanding of how to design interpretation that attracts attention and fosters learning and enjoyment.

What is interpretation?

Interpretation broadly refers to educational activities used in places like zoos, museums, heritage sites and national parks, to tell visitors about the significance or meaning of what they are experiencing. Interpretation includes such things as signs, brochures, pamphlets, and guided tours, as well as displays and exhibits in visitor centres, zoos and aquaria. The original definition of interpretation provided by Tilden stated that interpretation is: 'an educational activity which aims to reveal meanings and relationships through the use of original objects, by first hand experience, and by illustrative media, rather than simply to communicate factual information' (1977, p.8). A more recent definition from the Society for Interpreting Britain's Heritage (cited in Moscardo, 1999, p.8) describes interpretation as: 'the process of communicating to people the significance of a place or object so that they enjoy it more, understand their heritage and environment better; and develop a positive attitude toward conservation.'

While these definitions align interpretation with education, several authors have noted that the primary aim of this education is to provide visitors with sufficient information to further educate themselves (Markwell & Weiler, 1998; Moscardo, 1998). In addition the definitions indicate that interpretation is a form of persuasive communication in that it has the aim of encouraging the development of a conservation ethic. Further the second definition includes the component of enjoyment. Interpretation differs from environmental education in that it is provided in an informal fashion to people who are at leisure, thus enjoyment is an important element of interpretation (Ham, 1992; Screven, 1995; Bright & Pierce, 2002).

How does interpretation contribute to sustainable wildlife tourism?

Sustainable tourism can be seen as based upon three core principles. The first is quality. Sustainable tourism should provide a quality experience for visitors, while improving the quality of life of the host community and protecting the quality of the environment (Inskeep, 1991). The second core principle is continuity. Sustainable tourism requires continuity of the resources upon which tourism is based, continuity of the culture of the host community, and continuity of visitor support or tourist demand (Wall, 1993). Finally, sustainable tourism is about balance. It is tourism that balances the needs of the host, guest and the destination environment (Bramwell & Lane, 1993).

There are three main aspects involved in the argument for interpretation supporting sustainable wildlife tourism. Firstly, interpretation can be a means of managing the interactions between wildlife and tourists. The educational element of interpretation is critical in providing visitors with information on how to behave in a minimal-impact fashion with regard to the wildlife with which they are seeking to interact, in explaining management strategies, and in supporting safety messages (McArthur & Hall, 1993; Moscardo, 1998). Secondly, the educational element of interpretation can also raise visitors' knowledge and awareness of wildlife and habitats and thus can encourage pro-conservation attitudes and motivation to act on broader conservation issues (Gray, 1993). Thirdly, quality interpretation can enhance visitor satisfaction and through this can contribute to the commercial viability of tourist operations (Ham, 1992; Moscardo, 1998).

Supporting the management of tourist wildlife interactions

The damage tourism causes to people, economy and environment of the host area, especially in the long-term, remains hidden from the tourist. He has been left out of all discussion on the subject, 'They are therefore carefree and ignorant rather than devious. To lay all blame at their door would be as wrong as denying their responsibility. But they should certainly be made aware of the situation.' (Krippendorf, 1987, p. 43)

The argument made in this quote is a simple one. If managers of a tourist setting want visitors to behave in a particular fashion, then they have to tell the visitors what they want. While knowledge alone may not be sufficient to encourage appropriate behaviours in wildlife tourism situations, it is certainly a necessary condition (Larson, 1995; Bright & Pierce, 2002; Whittaker, Vaske & Manfredi, 2002). Thus an important role for interpretation in sustainable wildlife tourism is to inform visitors of the consequences of certain behaviours and to provide education to encourage minimal impacts.

There is a growing body of evidence that indicates that interpretation programs in natural areas can be effective in terms of informing visitors about appropriate behaviours and encouraging them to engage in those behaviours (see Roggenbuck, 1992; Ballantyne, 1998; Moscardo, 1999; and Garrod & Wilson, 2003, for examples and reviews of this research). There is much less research available on wildlife interpretation. The majority of the available research is, however, consistent with Roggenbuck's conclusions for nature interpretation in general.

An example of the effectiveness of interpretation in managing the interactions between humans and wildlife can be found in Frost and McCool's (1988) study of a bald eagle viewing site. This study found that well-explained regulations combined

with interpretation were successful in modifying visitor behaviour. After experiencing an interpretation program almost 90% of the visitors understood that the restrictions were necessary and 88% felt the restrictions either had no negative effect or facilitated their experience (Frost & McCool, 1988). In a similar fashion Newsome Moore and Dowling (2002) report successful learning outcomes from an interpretive program aimed at encouraging divers to behave in a minimal impact fashion. These authors provide evidence that the interpretive program resulted in less coral damage in areas along the Egyptian coast of the Red Sea (see also the example in Box 12.1). Kreger and Mench (1995) provide a review of interpretation evaluation research in zoos that concludes there is evidence that zoo interpretation programs can be successful in encouraging greater knowledge of wildlife and awareness of wildlife conservation issues.

Not all interpretation programs, however, are effective in encouraging minimal impact behaviours. De White and Jacobson (1994), for example, found that learning about elephants was significantly greater when zoo visitors experienced a structured, participatory education program about the elephants. Mere exposure to the elephants in their normal display areas with traditional signs was not sufficient to influence learning. These findings highlight the complexity of the link between exposure to information, retention of that information, changes in attitudes and then changes in behaviour. This complexity will be discussed in more detail in a later section on relevant psychological theory.

Box 12.1: Interpretation and coral protection in the British Virgin Islands

Coral reefs are major tourist attractions in Australia, especially the Great Barrier Reef, the Middle East, the Caribbean, South East Asia and the South Pacific. These marine environments are famous not just for the coral reefs themselves, but also for the opportunities they provide to see a wide range of other marine wildlife species. There is a number of ways tourists can view coral reefs including underwater observatories, glass-bottom boats, semi-submersible craft, snorkelling and scuba diving. Arguably the hardest to manage of these tourist activities are the last two. Divers have the potential to damage coral reefs through breakage resulting from handling the coral, standing or leaning on coral, and damage from equipment such as regulators and fins coming into contact with the coral as divers pass (Dinesen & Oliver, 1997).

Effective interpretation is one way to reduce these negative impacts on coral. Townsend (2003) provides an example of this in a study of divers in the British Virgin Islands. Prior to the study divers were typically given a basic briefing on the marine life likely to be seen at the target dive spots and basic safety and scheduling information. Minimal impact behaviours were rarely included in these briefings. This less structured interpretation was replaced with a more structured program which included the development of posters on coral species and minimal impact dive behaviours that were put on the dive boats and a request to the dive instructors to include three themes in their normal briefings. These three themes were:

- Coral is a living and fragile animal
- Divers should try to stay at least one metre above the coral
- Divers should try to stay horizontal to avoid accidental contact with the corals

Townsend evaluated this new interpretation program by observing diver behaviour both before and after the program. The analyses reported showed a major drop in the number of both voluntary and involuntary contacts between divers and the coral reefs.

Source: Townsend, 2003.

Encouraging conservation attitudes

Much of the available research into interpretive effectiveness has focussed on either changes in knowledge, levels of visitor enjoyment and/or changes in behaviour as the outcome measures. Actual changes in conservation attitudes have been rarely examined, except in the area of captive wildlife settings such as zoos and aquaria. A number of these captive wildlife studies that have demonstrated links between good-quality, structured interpretation and learning about wildlife, also reported connections between this increased knowledge and more positive wildlife conservation attitudes (de White & Jacobson, 1994; Kreger & Mench, 1995; Tarrant, Bright & Cordell, 1997; Bright & Pierce, 2002). As in the previous section, changes in conservation attitudes were associated with structured, quality, interpretation programs and not simply exposure to the wildlife (Swanagan, 2000; Manfredo & Driver, 2002). Morgan and Gramann (1988), for example, found that mere exposure to snakes did not improve attitudes, but interpretation through keeper talks using modelling behaviour and direct contact did.

Enhancing visitor experiences and satisfaction

One factor that has been found to be associated with effective interpretation programs is that of enjoyment (Kreger & Mench, 1995; Bright & Pierce, 2002). People who enjoy an interpretive program are usually more likely to learn from it and to change their attitudes and behaviours. Thus satisfaction can be an important precursor to other outcomes of interpretation. But interpretation can also be a major component of the actual wildlife experience and make significant contributions to satisfaction (see Box 12.2 for an example). Table 12.1 summarises the findings of several wildlife tourism studies identified through an extensive literature review. It shows that interpretive activities and learning are commonly-reported contributors to visitor satisfaction. In addition, effective interpretation programs have the potential to assist people to better see and identify wildlife and natural wildlife behaviour, which are also factors associated with satisfaction.

Box 12.2: Interpretation and tourist satisfaction on the Great Barrier Reef

The opportunity to see marine wildlife is a critical component of the promotion of Australia's Great Barrier Reef (GBR) as a major international tourist destination. Approximately 1.5 million tourists access the GBR each year with commercial tour operators, most of them on one-day reef trips. These reef trips are available on a number of different types and sizes of boats. The most popular of these options is large catamarans that take visitors to a floating pontoon moored near reef sites. Other boats use coral cays and islands as stopping points or simply anchor near reef sites. Most of these reef day trips, especially those using larger boats, offer visitors the opportunity to see the coral reefs and other marine wildlife from glass-bottom boats or semi-submersible craft, underwater viewing areas and first hand through snorkelling or scuba diving.

All commercial tour operators in the Great Barrier Reef Marine Park (GBRMP) must have a permit and these permits, in addition to plans of management, set out what activities are allowed in certain areas and guide the number and size of boats using certain sites. A standard permit condition for tour operators in the GBRMP is that they must provide interpretation to their guests about the GBR, its significance and its management. Many operators use a combination of briefings given by staff as the boat leaves the coast and written and video material. The large pontoon operations also provide interpretive staff who take guided snorkel tours, and give talks on the glass bottom boats and on the pontoon.

A survey of more than 740 passengers on eight different day trips from both Cairns and Airlie Beach found that opportunities to see marine wildlife were important factors in visitors' decision to visit the GBR. In addition the study found high levels of satisfaction with the overall experience with an average rating of 8 on a scale from 0 (not at all satisfied) to 10 (very satisfied).

A series of analyses were conducted to determine the relative importance of a variety of different variables in predicting overall satisfaction. A number of the results highlighted the importance of wildlife interpretation to visitors' overall satisfaction. For example, visitors who went on glass-bottom boat or semi-submersible tours, where interpretation is usually provided, were significantly more likely to be satisfied than visitors who stayed on the pontoon or main boat. A multiple regression analysis found that the three most important predictors of overall satisfaction were the range or variety of wildlife seen, the amount visitors felt they had learnt about the wildlife and how natural they thought the wildlife encounters were. Clearly interpretation plays a central role in visitor satisfaction. Further, it seems that there were links between interpretation and the other predictors of satisfaction. That is, interpretation offered a mechanism to assist people in recognising and identifying a wider variety of coral and fish and in turn this was then related to higher overall satisfaction.

Source: Moscardo, 2001

Table 12.1: Factors associated with visitor satisfaction with wildlife tourism experiences. Factors relating to interpretation are given in bold.

<i>Study</i>	Factors contributing to satisfaction/enjoyment*
Duffus & Dearden, (1993) Whale watching tours on Canada's Pacific Coast – killer whales	Seeing whales Getting close to whales Seeing displays of whale behaviour Seeing coastal scenery Having a naturalist/crew member to answer questions Seeing other marine mammals.
Davis et al., (1997) Whale shark tours in Western Australia	Being close to nature Seeing large animals Seeing many different types of marine life Excitement Learning about the marine environment Adventure Underwater scenery Freedom Relaxation Being with friends
Foxlee, (1999) Whale watching in Hervey Bay, Australia	Number of whales seen Distance from whales Whale activity Information available about whales Information available about other marine life Style in which information was presented
Tourism Queensland, (1999) Whale watching at several locations in Queensland, Australia	Number of whales seen Smaller boats Better weather Onboard commentaries
Bitgood et al., (1988) Review of factors associated with satisfaction at zoos and aquaria	Being able to get close or touch wildlife Educational shows and/or demonstrations Pleasant outdoor settings Naturalistic enclosures Being able to see wildlife easily

* Factors are presented in order of importance

The authors of this chapter have been involved in a series of visitor surveys conducted at 15 different wildlife tourism sites or businesses in New Zealand and Australia. These sites include a number of zoos and other captive wildlife attractions, as well as natural areas famous for their opportunities to view free-ranging wildlife.

The overall sample is made up of responses from nearly 5000 visitors and includes international visitors from a number of different countries and Australian and New Zealand domestic travellers, and both tour group participants and independent visitors. Overall, strong positive relationships were found between overall satisfaction with the wildlife experience and how much visitors believed they learnt about wildlife (Pearson's $r = .563$). This was the strongest correlation found in the analyses. This finding was also supported by an open-ended question included in all of the visitor surveys: 'What could be improved about this experience?' Visitors in all 15 of the case studies made suggestions for the provision of more information and/or to improve the information or guides at a site. Recommendations of this kind featured in the top five suggested improvements for 12 out of the 15 case studies. The most common types of comments made by visitors are listed in Table 12.2.

Table 12.2: Most common visitor suggestions to improve wildlife interpretation

<ul style="list-style-type: none">• More/improved information about wildlife/species specific• More information/signage around the park• Provide information handouts/brochures• A more exciting video with more information at the start of the tour• Better audiovisual presentation• More background information before viewing the wildlife• More information on where to find wildlife• Give visitors more information about the wildlife they see• More information on best times to see animals• Guides need to be more informed
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Types of wildlife interpretation

There is a number of methods by which visitors can be encouraged to learn about and appreciate the animals they are viewing. In many wildlife tourism settings, a number of methods is used, and together these methods constitute the interpretive experience. Methods used include interpretive signs, models, brochures, guides, demonstrations and shows, video, audio commentary, computers and books. Captive animal displays are made up of various combinations of these different media, while viewing areas and tours to view free-ranging wildlife typically use guides and interpretive signs to provide visitors with information. The prevalence of each method depends largely on the type of setting where the interpretation takes place, the aims of the interpretation, and the resources available for interpretation.

Interpretive signs and brochures

One of the most commonly encountered forms of wildlife interpretation is the interpretive sign. Interpretive signs are used extensively in captive settings and in settings where visitors are dispersed throughout a natural area, or where visitation is unpredictable and sporadic. They are particularly useful in places such as national parks where wildlife is often seen, so that visitors always have access to some information about the wildlife and are given any required warnings about getting close to, feeding or interacting with wildlife. Signs can also be used to enhance self-guided trails and as part of static displays in visitor centres or on viewing platforms (Bright & Pierce, 2002). On the other hand, signs can be expensive to install and maintain. Also they cannot provide personalised information to visitors (Knudson et al., 1995; Bright & Pierce, 2002). Another issue related to signs interpreting wildlife is that the sign

may not always be in the same place as the animal or may not relate to what the animal is actually doing when the visitors arrive. This reflects the mismatch between the static nature of interpretive signs and the dynamic nature of wildlife behaviour and is an issue both for settings such as national parks and zoos and aquaria.

Given the popularity of interpretive signs it is not surprising to find an extensive evaluation and design literature focussed specifically on this form of interpretation. Table 12.3 provides a summary of the design principles that have been proposed specifically for effective interpretive sign design by a number of authors based on evaluation research conducted with signs in a number of different interpretive settings (see also Woods 1998). Many of these principles also apply to interpretive brochures and pamphlets. These have similar benefits to signs, with the additional advantage of being able to be distributed to off-site places such as schools and libraries, and are able to be taken away from the site and read over again (Knudson et al., 1995). Many zoos provide colour guidebooks for purchase that serve the dual purpose of a souvenir and providing interpretation about the animals displayed at the zoo.

Table 12.3: Design principles for effective interpretive signs

General category	Specific guidelines
Warning signs	Must have 4 key elements: <ul style="list-style-type: none"> • signal word of danger, warning or caution • statement of the hazard • example of the consequences of not heeding the warning • instructions on how to avoid the hazard.
Placement of signs	Close to the centre of the line of vision of visitors as they approach. Perpendicular rather than parallel to the main visitors pathways.
Getting visitor attention	Use large colourful elements in the sign. Use sliding panels, lifting flaps. Use contrast in headings and titles. Use three-dimensional features. Add surprise to the title. Ask questions in titles. Use illustrations.
Making text readable	Use short, simple sentences. Use short, familiar words and avoid jargon and scientific expressions. Use an active rather than a passive voice and speak directly to the reader. Use larger well-spaced type. Use serif typefaces and a mixture of lower and upper case, not all upper case. Use a clear contrast between the type and the background.
Formatting text	Break the text in paragraphs and use headings and subheadings. Lines should be between 40 and 65 characters in length. Margins should be left-justified with even spaces between the words.
Use of illustrations	Use fewer illustrations and leave enough white space around illustrations and text. Illustrations should be relevant to the text. Illustrations should be simple and not require extra text to explain them.

Source: Moscardo, Ballantyne & Hughes, 2003, p. 510.

Captive animal displays

Captive settings such as zoos, aquaria and wildlife parks are popular wildlife-based tourist attractions (see Chapter 3). The design of animal displays in these settings is a complex and important task which must consider the needs of the animals being displayed, the needs of the staff whose job it is to care for these animals, and the needs of the visitors whose attendance supports these enterprises (Polakowski, 1987).

Over time there has been a number of changes in the way animals are displayed in zoos and other captive settings with an overall trend towards more naturalistic enclosures (Shettel-Neuber, 1988; see Chapter 3). Some designers claimed that there

were greater educational benefits associated with these more naturalistic displays as they provided information about the animal's habitat and allowed more natural animal behaviours to be observed. The available evidence indicates that visitors respond positively to some aspects of these enclosures including the presentation of a variety of animals in one place, the ability to see animals moving and a sense that animals were happier (de White & Jacobson, 1994; Ford, 1995). Despite this visitor preference, there is little published evidence that these displays resulted in greater visitor learning.

A more recent trend in the display of captive animals involves the combination of technology, new construction techniques and a variety of additional interpretive media such as displays, signs, interactive models and video footage of animals to create what is sometimes referred to as an immersion experience (Woods, 1998). Given the more extensive use of interactive and structured interpretive programs associated with these new captive animal displays it seems likely that they are more effective in achieving various wildlife interpretation goals. Broad and Weiler's (1998) study of visitor responses to tiger displays at two different captive wildlife settings provides some evidence to support this claim. This study compared visitors and their learning behaviours at two different tiger exhibits - one in the naturalistic style in an open-air zoo and one in the newer style at a theme park. In the latter cases the tigers are displayed in a naturalistic enclosure supported by interpretive displays, regular presentations by the keepers and a permanently available staff member to answer visitor questions. The researchers concluded that while there was evidence of visitor learning in both settings, the newer style of exhibit allowed for more interaction between the visitor and the interpreters and offered more learning opportunities (Broad and Weiler, 1998).

Guides

The Broad and Weiler study of interpretation of tigers demonstrated the importance of having on-site personal interpretation in the form of a guide or a keeper. Guides are another commonly used method of interpretation in wildlife tourism, especially in free-ranging settings. Guides are particularly useful because they can enforce and demonstrate minimal impact behaviours and can manage interactions between visitors and the wildlife. Guides are most useful in sites with a large numbers of visitors, where infrastructure is developed to restrict independent access to the wildlife, and where visitors can be contained in a concentrated area. Other benefits of having trained interpreters on site include their ability to attract the attention of visitors, to answer questions, to provide social interaction, and to tailor the information given to visitors to match what the animals are doing at the time. The disadvantages are that effective guides can be costly to train and employ and visitor numbers need to be managed for optimum communication with visitors.

Although there is a widespread belief amongst interpretive authors and protected-area managers that guides or on-site interpreters are the most effective method for increasing visitor learning, there is little published research into the effectiveness of this form of interpretation (McArthur & Hall, 1993; Moscardo, 1996). What is available suggests that as with other forms of interpretation, personal interaction with an interpreter can be effective but only if certain conditions are met. Horn (1980), for example, found that Boston Museum guides who followed a standard lecture style format were not as effective in enhancing visitor learning as those who asked visitors

questions and encouraged discussion and participation. In a study of guided nature tours in Ohio, Brockmeyer and colleagues (1983) found that visitor learning was significantly enhanced if the guide suggested multi-sensory activities for the tour participants to engage in.

Animal shows or demonstrations

Animal shows are popular at zoos and theme parks because they involve interacting with the animals, visitors can see the animals clearly, often the animals are moving, and visitors can have the opportunity to ask questions, to touch the animals and to develop an emotional response which encourages learning (Wolf & Tymitz, 1979; Robertson & MacKillop, 1997). Many of the studies that have been used to argue that interpretation can be effective in encouraging positive wildlife conservation attitudes have been evaluations of animal demonstrations or shows in these captive settings (de White & Jacobson, 1994; Kreger & Mench, 1995; Broad & Weiler, 1998). Despite the evidence of the success of this form of interpretation two key concerns have been raised about their use. The first is that animal shows or demonstrations will be effective only when they are part of a structured activity with clear interpretive or educational goals (Kreger & Mench, 1995; Breheny, 1998). The second is that it is important that steps be taken to avoid giving the visitors the impression that the animals are tame or are pets as this promotes unsafe behaviour and encourages visitors to think about the animals but not their habitats (Breheny, 1998).

Remote viewing technologies

Some other techniques used in wildlife interpretation include interactive computers and technologies for remote viewing of wildlife (see Box 12.3 for an example). Interactive computers are useful for presenting information in a self-paced, visitor-initiated format. However, they can be costly to install and maintain, and can only be used in indoor, supervised settings. Remote viewing involves the use of cameras to broadcast images of wildlife behaviour from within their dens, burrows, nesting or breeding sites back to a visitor centre. Such technology allows visitors to see animals in way not otherwise possible and also allows for large numbers of visitors to watch wildlife with minimal impacts on the wildlife (Turner & Speedie, 1998; Dyer, 1999).

Box 12.3: Wildlife interpretation in practice: The Royal Albatross Centre, New Zealand

Taiaroa Head on the Otago Peninsula near Dunedin on the South Island of New Zealand is a nesting site of the Northern Royal Albatross. The main breeding grounds for these birds are the outlying islands of New Zealand and this site situated so close to an urban centre offers a rare opportunity for visitors to see these animals and their nesting behaviours. The Northern Royal Albatross is a large seabird with an adult wingspan of about three metres. In 1964 the area was gazetted as a nature reserve and in 1971 the New Zealand Wildlife Service began to allow limited public viewing of the colony. Increased public interest resulted in the building of an observatory and more recently a visitor centre.

The visitor centre offers a number of interactive, audio-visual and static displays about the biology of the albatross, the colony, and the surrounding environment. Included in this centre is a live broadcast from cameras hidden within the nesting site. Various lookouts outside the centre offer views of the albatross returning from the sea and practising flying. Visitors who wish to view the nesting area must purchase a ticket for a guided tour. They watch a ten-minute video covering breeding, social habits and other interesting characteristics of the Royal Albatross, followed by opportunities to ask questions of the guide. The guide then escorts

visitors along the path to the enclosed bird observatory building above the nesting site. Visitors are able to use the observatory binoculars for a closer view of the nesting area. The guides provide further information and answer questions while at the viewing site. After the tour, visitors return with the guide to the visitor centre.

A survey of 312 tour participants found very positive ratings for this experience that combines several different forms of interpretation. Nearly three quarters of the visitors surveyed (72%) gave their experience a score of 8 or higher out of 10. In addition to contributing to a high level of satisfaction, the interpretive program also appeared to be effective in enhancing visitor knowledge of the Northern Royal Albatross with 90% of the surveyed visitors listing new facts or information that they had learnt about this species.

Sources: Parry and Robertson, 1998; Saltzer 2003.

Wildlife interpretation challenges

Interpreting hidden and inactive wildlife

In some habitats and captive enclosures it can be difficult to view animals. Many animals are nocturnal, and it can be difficult to view them during the day when visitor numbers are highest. Many animals sleep or rest for long periods of time, which may also be disappointing to visitors. Several authors have argued that visitors need to be educated about animal activity (Bitgood et al., 1986; Ford, 1995). Many species are rarely active and if visitors are told that they should not expect activity from these species their viewing experience may be less disappointing. It may be useful in such cases to use photographs, models or illustrations in adjacent displays that clearly depict the animal, or to advise visitors of times and locations when the animals are likely to be active. Interpretation can also draw visitor attention to other evidence of animals that can be seen, such as tracks, nibbled fruit, droppings, birdcalls and other wildlife sounds. Modern audiovisual equipment can also be employed to ease frustration in these situations. In addition this type of interpretation can provide contextual and extra information that can change visitor perceptions of the animals.

Feeding wildlife

A major management issue for wildlife tourism managers is that of whether or not to feed wildlife (see Chapter 5 for a review of this topic). Despite the ongoing debate over this issue in the literature (see Moore et al., 1997 and Orams, 2002 for reviews of the negative impacts from, and arguments against, this activity, and Rosenfeld, 1981 and Gill, 2002 for arguments in support of this activity), many settings have moved to ban this practice. A core component of the effective management of wildlife feeding involves developing an understanding of why visitors do it. Another component is the development of effective programs to support this management decision so that visitors don't feed the wildlife, are positive about the rules and are satisfied with their experience (Moore et al. 1997). To date there are few, if any, published evaluations of programs designed to discourage wildlife feeding.

Anthropomorphism

One ongoing criticism of wildlife interpretation is that it encourages anthropomorphism (Ford, 1995; Woods, 1998). Anthropomorphism can be defined as the use of human motives, values, and emotional responses to describe and explain animal behaviour. It can range from a situation such as can be found in children's story books where animals dress as humans and walk as humans, and have the capacity to

talk, through to less complex situations such as a visitor labelling an inactive animal as 'lazy' or 'bored' (Lerner & Kaloff, 1999). For some this is an undesirable activity that reflects and perpetuates an anthropocentric and sentimental view of the environment (Benson, 1993; Ford, 1995). Others argue, however, that 'anthropomorphic inference may deserve its bad reputation within the narrow confines of Cartesian science, but it is a highly useful tool' (Katcher & Wilkins, 1993, p. 187). The argument is that humans cannot learn without being able to connect new information to what they already know and thus wildlife interpreters have no choice but to build connections between the wildlife species being presented and human experiences (Rosenfeld, 1981; Sandford, 1997). Some sociologists have gone further and argued that charges of anthropomorphism are themselves based on a distinctly human centric view of the world which does not recognise the links and similarities between humans and other animals (Sanders & Arluke, 1993; Lerner & Kalof, 1999; Franklin & White, 2001).

Interpreting less-popular species

Interpreters have also been accused of focussing on popular animals at the expense of many other species, in particular, invertebrates. Invertebrates have suffered catastrophic losses from extinction, yet the public appears largely unaware of any impact on human wellbeing (Kellert, 1993). A growing area of interest lies in the interpretation of the least popular animals (see Gray, 1993; Glickman, 1995; Lerner & Kalof, 1999; Woods, 2000). While education is unlikely to encourage affection for these animals, an appreciation of the role they play in ecosystems and their contribution to human wellbeing may dampen the prevailing negative attitudes. A study by Broad (1996), for example, confirmed that awareness of endangered species was heightened after a visit to the zoo, especially for less charismatic and lower profile animals. Thus interpretation may assist the recognition of the positive values of invertebrates and least popular animals.

What is known about the effectiveness of wildlife interpretation?

Several themes have emerged in this review of the available research literature on the effectiveness of wildlife interpretation. The first is that mere exposure to wildlife is unlikely to have much impact on visitors' knowledge and wildlife conservation attitudes. Wildlife-based experiences need to be associated with structured, quality interpretation programs to be able to influence what visitors think and believe. The second is that there are several factors that are consistently associated with more effective interpretive activities. These are:

- Inclusion of multi-sensory activities
- Inclusion of participatory activities
- Building of personal connections to visitors
- Easily read interpretive signs

See Patterson and Bitgood, 1988 and Borun et al., 1997, for a review of these factors.

Relevant psychological theories of learning and attitude/behaviour change

According to Screven (1995) good interpretive design is the result of successfully combining principles of visitor psychology and communication design. In particular effective interpretation needs to be based upon a good understanding of the:

- Psychology of attention (Forestell, 1992; Screven, 1995)

- Psychology of learning (Forestell, 1992; Screven, 1995)
- Research into persuasive communication and theories of attitude change (Moore et al., 1997; Bright & Pierce, 2002; Whittaker et al., 2002)
- Psychology of attitude behaviour links (Whittaker et al. 2002)

Psychology of attention

There is a very large body of research evidence that has identified a number of features of settings that consistently attracts human attention (Myers, 1996; Moscardo, 1998). These are:

- Extreme stimuli - very large, very colourful, very loud things attract our attention
- Movement and action
- Contrast
- Unexpected, novel and surprising elements
- Features that are personally relevant and/or interesting

According to Screven (1995) there are two types of attention, casual and focussed. Focussed attention is associated with more mental or cognitive effort and is more likely to occur in the presence of the latter two features on the list above. Screven (1995) further argues that it is this type of attention that encourages visitors to keep paying attention to an interpretive message.

Psychology of learning

Attention is a necessary, although not sufficient, condition for learning. Learning requires active mental processing of information and some change in the cognitive schema that we hold. The term cognitive schema refers to the general knowledge structure that humans construct to help them understand and predict what is happening around them (Sternberg & Ben-Zeev, 2001). Piaget (1972) provides the most widely accepted theory of learning. In this theory people learn new information by a combination of two processes – assimilation and accommodation. Assimilation fits new information into an existing framework that has been built up over time through experience. Accommodation requires a change in the schema to fit the new information.

A young child, for example, may have a very simple schema for ‘dogs’, which could be described as ‘non-human objects that can be found in the yards around houses’. Her parents obligingly gave her the label dog to describe such a thing. As this child gathers more experience with different non-human objects in house yards she may begin to develop a more complex schema by adding new examples such as cats, bicycles, and lawn mowers. All these would still be called ‘dogs’ as they fit the existing schema. This is an example of assimilation or the fitting of new information into an existing structure. But it is likely that her parents will correct her use of the label ‘dogs’ and will highlight features that distinguish between these different non-human house yard objects. With this additional information it becomes clear to the child that she will have to create several sub categories of non-human objects in the house yard. This is accommodation and it refers to the adaptation and modification of a scheme to better fit the new information. It is important to note, however, that

accommodation is still built upon existing schema (Moscardo, 1998; Sternberg & Ben-Zeev, 2001).

Both of these processes require active mental processing of the new information and retention of that information in memory. Dual processing is a long-standing concept in cognitive psychology (Craik & Lockhart, 1972; Shiffrin & Schneider, 1977; Sternberg & Ben-Zeev, 2001) and refers to the existence of two different kinds of information processing – a shallow or superficial processing and a deeper processing. Shallow processing results in only temporary memory storage of information, while deeper processing is more likely to result in a greater retention of information. Longer memory retention is a necessary, but again not sufficient, prerequisite for any learning process to occur (Sternberg & Ben-Zeev, 2001; Gross, 2001).

Persuasive communication and attitude change

In addition to active mental processing, learning also requires the new information to be accepted by the receiver. In other words, a person may engage in active mental or deep processing of new information, but not accept its validity or reliability and so reject it. The area of social psychology focussed on persuasive communication is concerned with exactly this issue. In order to change the way people think a communication must not only encourage deeper processing to ensure that the information is remembered, it must also persuade the listener or receiver that the new information is correct and should be accepted (Baron & Byrne, 1997). In particular persuasive communication research has concentrated on changes in attitudes, which are a particular type of cognitive schema. Attitudes are schema that include an evaluative component and which direct actions (Baron & Byrne, 1997; Mannell & Kleiber, 1997). Petty and colleagues (1992) provide a summary of the main findings of research into the features of communication that are associated with knowledge and attitude change.

Two different pathways to attitude change have also been identified (Gross, 2001). Although different labels are used by different teams of researchers (Petty and Cacioppo, 1986 refer to central versus peripheral routes to attitude change, while Chaiken and Stangor, 1987 refer to heuristic versus systematic processing and Langer, 1989 uses the labels mindfulness and mindlessness), the core idea is similar. Certain features of persuasive communication encourage more active, detailed, cognitive processing of information and it is this type of information processing that is most likely to be associated with retention of new information and long-term changes in attitudes. The conditions of a persuasive communication that encourage mindful information processing include:

- Coverage or inclusion of topics of personal relevance or importance to the audience
- Asking the audience questions to encourage them to search for answers in the information available
- Introducing novelty or surprise
- Providing the audience with choices or decisions
- Using active mental and physical participation to encourage a search for information
- Variety in presentations

- Connecting the new information to existing schema, or to what the audience already knows.

See Screven, 1995, Moscardo, 1996 and Moscardo, 1998, for a more detailed review of these features.

Attitude behaviour links

Persuasive communication research is not just concerned with changing beliefs and attitudes. It is also focussed on changing behaviours. In terms of having an impact on conservation, it is behaviours such as the way people vote, the money they contribute to conservation projects and their own minimal impact behaviours that are critical. In general it is believed that there is a link between a change in attitude towards an object and a change in behaviour towards that object. This attitude-behaviour link is not, however, straightforward and a number of intervening variables have been determined and described (Ajzen, 1992; Baron & Byrne, 1997). Ajzen's (1992) Theory of Planned Behaviour is the most commonly used approach to understand the link between attitudes and behaviours (Baron & Byrne, 1997). According to this theory a number of variables mediate this relationship: situational constraints, skills and abilities and normative or social influences. For example a person may have an attitude that it is inappropriate to touch corals while snorkelling, but they may actually do so if they see others doing so, or they may do so accidentally because they have limited snorkelling skills. In another example, a camper may have an attitude that it is wrong to cut down trees in a National Park for firewood. But again they may do so, if no other fuel is provided or if they were not told far enough in advance that they would need fuel. Clearly an effective interpretive program may change people's knowledge of appropriate minimal impact behaviours and encourage a positive attitude towards these behaviours, but it must be part of a total management program that encourages and supports the desirable behaviour (Manfredo, 2002).

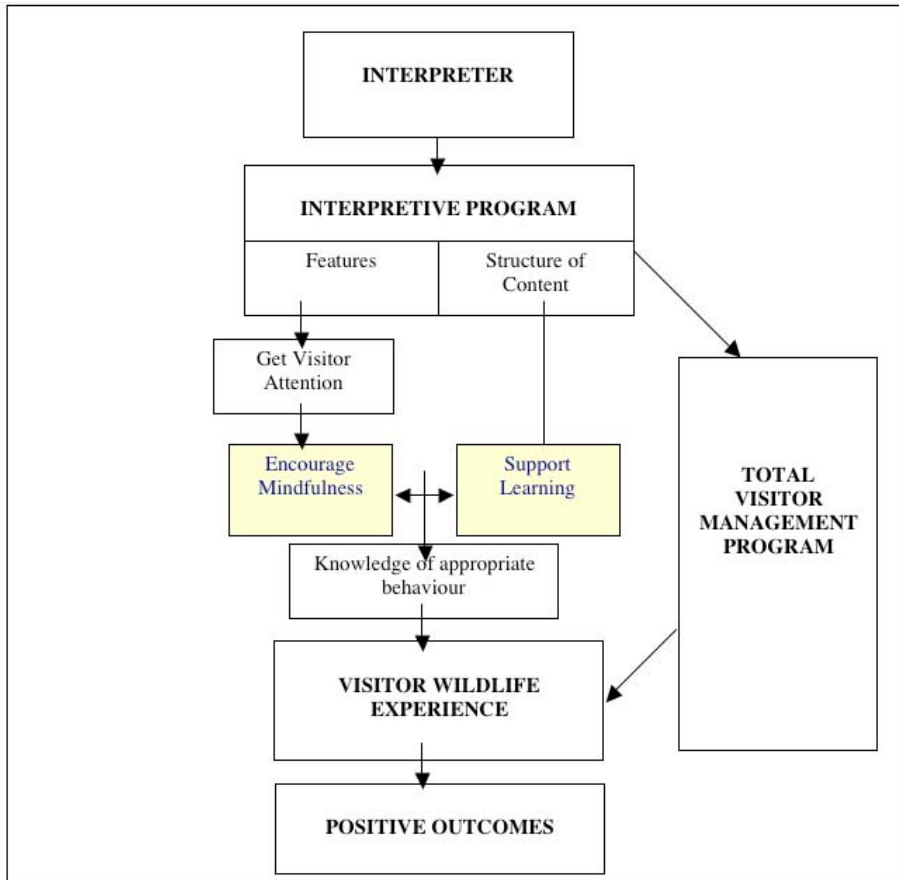
A mindfulness model of wildlife interpretation

In summary then there is a number of steps that have to be successfully completed before a wildlife interpretive program can effectively change visitors' knowledge, conservation and animal welfare attitudes, and behaviours. These are summarised in Figure 12.1. This figure is based on Langer's concept of mindfulness. Mindfulness is a cognitive state of active mental processing which allows people to learn new information, to detect and deal with problems, to take alternative perspectives on a problem or issue, to reassess and change existing cognitive structures and to be in control of their behaviours (Langer, 1989; Moscardo, 1999). Research into this state of cognition has also demonstrated that mindfulness is associated with feelings of control, interest, enjoyment and satisfaction (see Moscardo, 1999 for a review of the relevant research; see also Chapter 9 for discussion of mindfulness and its significance).

A number of steps to encourage mindful visitors and thus appropriate visitor responses to wildlife encounters are outlined in Figure 12.1. Firstly, the interpreter has to use the features of the interpretive activities to get the visitors' attention. Then the interpretive program must include features to encourage a mindful or active processing of the information provided. Thirdly, the information needs to be organised in a clear fashion so that it can be understood. Mindful processing of clearly organised, easy to follow information should then encourage visitors to behave in a minimal impact

fashion and provide them with the skills and motivation to make the most of their wildlife experience opportunity. Finally, if this effective interpretation is combined with an appropriate total visitor management program then the outcomes of the visitor wildlife interaction should be minimal impacts on the wildlife and the setting, and satisfied visitors with an increased awareness of wildlife conservation issues and actions.

Figure 12.1: Mindfulness model of wildlife interpretation and experiences



Principles for the design and use of wildlife interpretation programs

A number of principles can be set out to enhance the design and use of interpretation in wildlife tourism settings. These are based on the Mindfulness Model, the results of interpretation, evaluation, research (including the studies reviewed in this chapter and the broader literature on interpretation effectiveness not covered here) and more general psychological research. The following sections will provide an overview of each principle and some examples of their application in wildlife tourism settings. More details on these and similar principles can be found in a number of interpretive

texts (see Ham, 1992, Serrell, 1996; Beck & Cable, 1998; Moscardo, 1999; Manfredo, 2002; Pastorelli, 2003).

Make personal connections to visitors

Effective interpretation enables visitors to make connections between the information being given and their previous knowledge and experiences. This can be achieved by using clear, simple explanations to bridge the gap between new information and visitors' current knowledge. The importance of providing information and experiences that have meaning and personal value for visitors cannot be overstated. Indeed, dazzling graphics, interactive activities and educational content will count for very little if visitors are unable to make meaningful connections to their previous knowledge and experiences (Screven, 1995).

It is also clear from the comments made by visitors in survey and interview studies that being able to find or make a personal link is a major factor influencing their satisfaction and how much they feel they learn (Moscardo, 1999). These comments often include ideas for providing personal connections. These include the use of humour and analogies and metaphors to build links between the interpretive content and the everyday experience of the visitor. Visitors also appreciate the opportunity to ask questions. Another option is to give visitors information about what they can do in their everyday lives to improve wildlife conservation. A display at one end of the large cats display area at Chicago's Brookfield Zoo, for example, asked visitors to write a short note on what they think they can do when they leave to support the conservation of these animals. These notes were then attached to a large notice board so that all visitors could read and learn from other suggestions and contribute to the content of the display. This provided the visitors with an opportunity to make a direct personal contribution to the interpretation but also with links between their everyday lives and the conservation of the displayed animals.

Provide variety

Providing variety in the interpretive experiences offered to visitors is a very important way to encourage mindfulness (Moscardo, 1999). Any repetition will quickly lose visitor attention and without attention it is difficult to create successful communication. This variety can be achieved by designing wildlife interpretive programs that incorporate different media, for example, audiovisual presentations, models, displays, and objects such as casts of animal prints and skulls and feathers and skins. Guides can also vary the level of physical and mental effort required by combining some active components with quieter, contemplative activities. A wildlife cruise from Seward in Alaska provides an example of building variety into the experience for visitors. On this tour, visitors were given an information pack about the tour on boarding to read while waiting for the tour to begin. They were then given a series of short talks by different crew members based on various aspects of the environment and the wildlife that were likely to be seen. During the main part of the cruise a number of different wildlife examples was pointed out and discussed in an ongoing commentary, but this was punctuated by suggested activities and the passing around of different objects, such as skins and casts of skulls, related to the animals being seen. There was variety in the media used, the staff in charge, the pace of the tour and the senses used by the visitors.

Have well-structured content based around themes

To facilitate visitor learning and comprehension, interpretive information should be presented in a clear, logical order with an introduction that provides visitors with an overview of the topics or activities to follow (Screven, 1995; Moscardo, 1999). The main body of the interpretive program should then follow this introduction with information organised around a single main theme. Effective themes are specific, attract visitor attention, stimulate interest and enable visitors to make important connections between their experiences and the feature being interpreted (Ham, 1992; Serrell, 1996; Pierssene, 1999). Information in this main section can be presented using a variety of communication techniques such as analogies, comparisons, examples, metaphors, anecdotes and graphic illustrations. The conclusion reinforces the messages and concepts discussed and should include a 'take home' message that informs visitors how they can take positive actions to support wildlife conservation when they return home (Ham, 1992).

Be part of an overall management plan

Finally any interpretation program should be developed as part of an overall visitor management strategy so that it reinforces desirable visitor behaviours and so that it is in turn supported by the other features of the setting (Manfredo, 2002; see Chapter 11). Matt and Aumiller (2002) provide an example of this in their description of the development of brown bear viewing areas at McNeil River State Game Sanctuary in Alaska (see also Chapter 11 for another discussion of the management issues in this case). In 1973 a permit system was instigated to begin to manage increasingly negative confrontations between visitors and bears. The agency staff were given the responsibility of managing aggressive bears and began to determine and research the human actions that resulted in negative consequences both to, and from, the bears. Out of this experience grew a set of objectives related to providing safe and close contact between bears and visitors supported by appropriate minimal impact behaviours and infrastructure. One of the ways to achieve these management objectives was to develop a good fit between the type of visitors that were attracted to the area and the type of experiences provided in terms of minimal impacts on the bears. In addition to establishing campaigns to properly inform potential visitors about the Sanctuary, the management agency also developed a detailed visitor interpretation program that supports other management actions and rules. In addition the total management system relies upon monitoring and evaluation and the involvement of several stakeholder groups in management decisions (Matt & Aumiller, 2002, see Chapter 11).

Future directions

Although there is not a large body of scientific literature on the effectiveness of different techniques, structures and contents in wildlife interpretation, one consistent finding is that interpretation is a critical component of visitor experiences and satisfaction. In addition, there are examples of programs that have been successful in changing visitors' levels of knowledge and understanding of the wildlife, their conservation and animal welfare attitudes and their behaviours both during the encounters with the wildlife and when they return home. What is not clear are the finer details such as the relative merits of using anthropomorphic interpretive approaches, or the effectiveness of interpretation in raising the awareness and popularity of

unknown or disliked species. One important future direction then is the need for more systematic evaluations of current and potentially new interpretive programs and activities.

The available evidence does, however, show considerable consistencies with what has already been learnt from interpretation of other topics and in other settings. Thus it seems reasonable to argue that the principles set out above are sound and wildlife managers and tourism operators dependent upon wildlife encounters should explore the extent to which their current practices are consistent with these principles. A growing number of textbooks, manuals and guides for the effective planning, design and use of different interpretive techniques is now available and it seems wise to suggest that many of those currently involved in wildlife interpretation should be continually seeking to update their knowledge and skills in this area.

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