

Enhancing Wildlife Education Through Mindfulness

Barbara Woods & Gianna Moscardo[†]
James Cook University

Abstract In recent decades there has been an increase in opportunities for people to view wildlife in tourism settings such as wildlife tours, national parks and captive environments such as zoos. This in turn has provided increasing opportunities to educate people of all ages about the value of wildlife and their habitats. One concept useful for enhancing learning is that of mindfulness. This concept suggests characteristics of interpretation that attract and sustain the focused attention of visitors. Using open-ended descriptions of best wildlife experiences from 790 respondents, this study found that 84% of descriptions contained at least one element consistent with the mindfulness concept. This paper argues that a mindfulness model can be used to understand visitor responses to wildlife tourism and direct the design of experiences that enhance learning and enjoyment.

Introduction

In recent decades there has been an increase in opportunities for people to view wildlife in a variety of settings. These increased opportunities include the emergence of specialised wildlife viewing tours, increased infrastructure for visitors in national parks, and the continued existence of captive wildlife settings such as zoos and wildlife sanctuaries. Along with this growth in opportunity to participate in wildlife viewing activities has been a growth in opportunity to educate people about the importance of the wildlife and habitats they are viewing. There is a lack of research into the success of educational activities in non-captive wildlife settings, and research into learning in zoo settings has yielded contradictory results. The concept of mindfulness (Langer, 1989; Moscardo, 1999) has the potential to enhance learning in wildlife tourism settings.

Although there are difficulties associated with obtaining accurate estimates of the number of people participating in wildlife tourism, there is a common opinion that people are "increasingly interested in active, experiential and educational activities involving wild animals in their natural habitat" (Amante-Helweg, 1996, p. 131; Roth & Merz, 1997). Some figures from international sources provide support for the claim that wildlife tourism is a substantial sector of the tourism industry. For example, a 1994 Gallup survey found that 90% of UK holidaymakers believed that enjoyment of wildlife was a holiday priority (Roe, Leader-Williams & Dalal-Clayton, 1997). In

[†]Address for correspondence: Dr Gianna Moscardo, School of Business, James Cook University, Townsville, Queensland 4811, Australia.
Email: Gianna.Moscardo@jcu.edu.au

an Australian example, a 1998 survey of visitors to Queensland found that 79% were interested in seeing animals in the wild, while 56% actually had viewed animals (Tourism Queensland, 1999). North America's national parks accommodate some 300 million visitors per year, and in countries such as Kenya, wildlife viewing has become the single biggest contributor to foreign exchange earnings (Kellert, 1996; Shackley, 1996). Zoos and wildlife sanctuaries also attract huge numbers of visitors: 120 million a year in the United States of America alone (Croke, 1997) and estimates vary between 350 million (Kellert, 1996) and 600 million visitors worldwide (Whitehead, 1995). According to a 1987 study, 98% of adults in the United States of America and Canada had been to a zoo, and one third had visited a zoo in the previous year (Croke, 1997).

The growth of interest in, and ability to access wildlife, has provided increasing opportunities to educate people of all ages about the value of wildlife and their habitats. These figures illustrate the magnitude of potential for such education. Outside of captive settings, there has been little research into how and what people learn while viewing wildlife. In captive settings, there is a long-standing dispute over the educational benefits of keeping animals in captivity. Shackley (1996) found that zoo visitors valued education and learning, however, studies of this topic have yielded conflicting results. Some authors maintain that zoos have value in educating people and increasing ecological understanding (e.g., Churchman, 1985). Others argue that zoos generally do not live up to their own goals, that educational or attitudinal benefits from zoo visitation are questionable, and that actual learning from zoo visitation is minimal (Churchman, 1985; Kellert, 1996). Some studies suggest, however, that learning may be experiential and informal rather than a digestion of facts, and that it is difficult to separate learning from the quality of the educational programs provided (Whittall, 1992).

In view of the conflicting opinions regarding learning in captive settings, it is clear that potential for wildlife education exists, but much depends on how the experience and information is structured and presented. The field of interpretation is of critical importance when discussing wildlife education in tourist settings. 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. Research on the most effective methods for designing interpretation is quite extensive and is the subject of numerous texts and papers (see, for example, Beck & Cable, 1998; Ham, 1992; Knudson, Cable & Beck, 1995; Pastorelli, 2003; Woods, 1998). Very little of this work, however, has been focussed on wildlife as the core theme or has been concerned with the development of broader theoretical models of interpretation.

Mindfulness and Interpretation

One theoretical approach that has been applied directly to interpretation is the concept of "Mindfulness and Mindlessness." This concept is taken from the social cognition field of psychology and argues that in any given situation people can be in one of two cognitive states - either mindful or mindless. Mindlessness, as the word suggests, refers to behaviour that is routine, does not involve active mental processing, and where people are paying only limited attention to what they are doing. It is characterised by people failing to process new information, and relying on existing behaviour or thought structures (Moscardo, 1996, 1999).

Mindfulness, on the other hand,

is the opposite state to mindlessness and can be defined as a mode of functioning through which the individual actively engages in reconstructing

the environment through creating new categories or distinctions, thus directing attention to new contextual cues that may be consciously controlled (Moscardo, 1999, p. 21).

People who are mindful pay attention to the world, react to new information, and create new routines, behaviour and views of the world. Mindfulness is therefore a necessary, although not sufficient, condition for learning to occur. Several authors have described links between mindfulness and better educational outcomes (Langer, 1989; Langer, Hatem, Joss & Howell, 1989; Salomon & Globerson, 1987) and to greater satisfaction in tourist settings (Moscardo & Woods, 1998).

Moscardo (1999) suggested a mindfulness model for communicating with visitors in interpretive settings based on studies conducted into interpretation. This model is depicted in Figure 1. In this model, a combination of communication factors and visitor factors encourage a cognitive state of mindfulness or mindlessness. Communication factors include the use of variety and change, multi-sensory media, novelty, conflict and surprise, visitor control, connections to visitors and use of questions. In the interpretive setting these can be achieved through the design of the exhibit itself, the design and wording of text, or the design of presentations. Visitor factors that encourage mindfulness include high interest in content, and low levels of fatigue. The consequences of mindful visitors as proposed by the model is that:

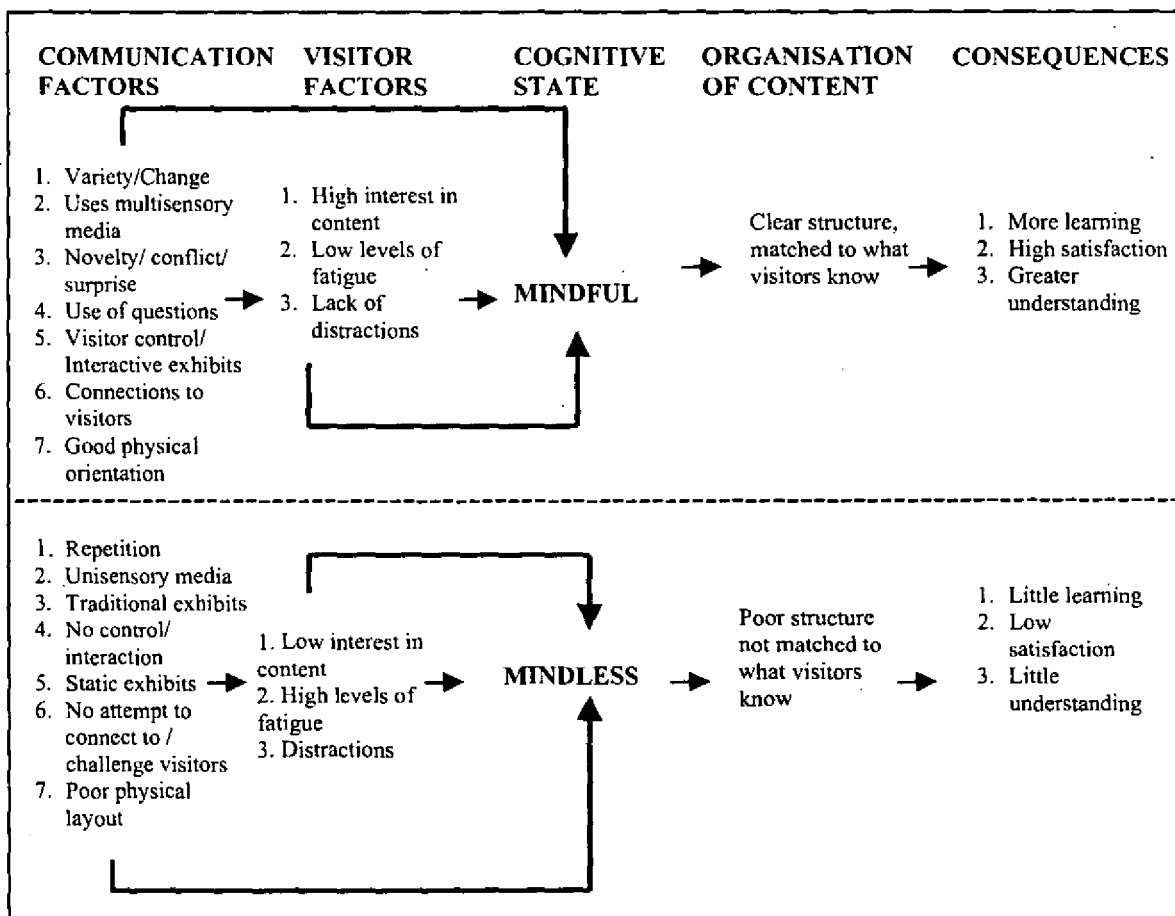


FIGURE 1: Mindfulness model for communicating with visitors

Mindful visitors will be more likely than Mindless visitors to enjoy their visit, express satisfaction with their visit, learn more from their visit and be interested in discovering more about a topic or place. Mindful visitors should also be more aware of the consequences of their behaviour and more appreciative of the ... site (Moscardo, 1996, p. 382).

Although this figure describes a number of factors that are predicted to be associated with mindfulness in interpretive settings, it is important to note a core distinction between them. Some factors are associated solely with attracting visitors' attention, a necessary but not sufficient condition for mindfulness. Others have been argued to be more likely to contribute to the sustained deeper processing that characterises mindfulness (Screven, 1995). In particular the variables of variety, perceived control, authenticity, and personal relevance have been shown to be particularly important in encouraging mindfulness (Langer, 1989; Moscardo, 1999). Table 1 summarises the factors that have been shown to be related to mindfulness and separates them into two categories, those that are likely to generate the attention necessary for a mindful state and those that more directly encourage mindfulness.

Wildlife Interpretation

As previously noted there is limited research evidence on the effectiveness of different forms of wildlife interpretation. Further, what does exist is almost exclusively related to captive settings such as zoos and aquaria. As with other interpretive situations there are several elements of the wildlife tourism experience that can encourage mindfulness including the visitors, the setting, and the design of interpretation. However, wildlife interpretation contains the additional element of the animals themselves. According to theories of attention, individual animals should create curiosity and attract human attention regardless of other setting factors (Berlyne, 1960, 1966, 1967). Kellert (1996) goes further and argues in the "biophilia hypothesis" that humans are instinctively

TABLE 1: Precursors and conditions for mindfulness in interpretive settings

Precursors – Attracting Attention	Core Conditions – Encouraging Mindfulness
<ul style="list-style-type: none"> • Extreme stimuli – large, colourful, loud, smelly dangerous, large numbers, close proximity • Movement/ activity of animals • Use of contrast, patterns • Unexpected, surprising things • Other living things generally, especially infant animals 	<ul style="list-style-type: none"> • Variety, diversity • Multisensory experiences • Interacting with animals, visitor control • Things personally connected to the visitor • Unique, rare animals • Authentic, natural environments or habitats • New experiences, new animals seen • Visitor interest in the topic • Good physical orientation*

* Good physical orientation in directly encourages mindfulness by allowing visitors to concentrate on the wildlife rather than their own location.
Adapted from Moscardo (1992, 1999).

drawn to other animals particularly in natural environments and thus might argue that the presence of animals alone could be sufficient to encourage a mindful state.

The present study, therefore, has the aim of exploring visitor perceptions of wildlife experiences, paying particular attention to the occurrence of features predicted to enhance mindfulness. More specifically, the study will explore which mindfulness factors, if any, are most likely to be associated with a memorable wildlife experience. Such an analysis should provide further evidence on the usefulness of the mindfulness concept for explaining wildlife encounters and suggest ways in which wildlife education can be enhanced or improved.

Method

A primarily open-ended, self-completion questionnaire format was selected to allow the respondent freedom in expression and spontaneity (Oppenheim, 1972). Respondents were asked to describe their best experiences with wildlife, and given a full page to describe their experiences. Basic demographic data was also collected. This method of asking respondents to describe best experiences has been termed the "critical incident" methodology, and is most appropriately used where the researcher is aiming to identify complex or less well-defined factors (Flanagan, 1954). The advantage of using this approach is that because the incidents described are "critical", the subjects usually have good recall, and are able to recount the factors and events that were important to the incident. Using this technique across a number of respondents and sites enables the researcher to look for evidence of commonalities in themes (Chell, 1998). Furthermore, it could be argued that the best experience that is remembered is likely to be one that was associated with a state of mindfulness. Thus, the method allows for an examination of the relative frequency with which different themes are associated with a mindful or memorable wildlife experience.

The total sample of 790 respondents was made up of 350 residents of Townsville, Australia, 50 second-year tourism students, and 390 tourists visiting Townsville. Surveying was conducted during August 1999. The resident sample was obtained using a convenience approach, whereby the second-year tourism students each completed a questionnaire, and then gave the questionnaire to five friends and/or family members to complete. The tourist sample was obtained using a structured sampling method at tourist transport nodes in the region. Sampling times were spread over weekend, weekday and public holiday days, as well as spread throughout the day. Research staff approached as many tourists as possible in the 45 minutes prior to scheduled departure of buses and ferries at the transport nodes.

These non-random methods of sampling were selected primarily because the study was not aiming to obtain a representative sample of the opinions of Townsville residents and tourists. The purpose was to obtain a wide range of the types of experiences people have with wildlife, and the features they identified as memorable or important. Sampling a range of students, residents and tourists increased the likelihood of obtaining a range of different experiences both internationally and locally.

Each respondent's experience was examined and each different feature or reason given for their best experience was recorded. These were initially recorded individually, and later re-coded into common or similar themes. The qualitative research program QSR NUD.IST was used to assist this process.

The data collection process yielded a total sample size of 790, with 43% males and 57% females. The average age was 31.2 years, with 66% of the sample aged 15-30 years, 22% aged 31-50 years, and 12% aged 51 and over. The usual place of residence for respondents is provided in Table 2. All respondents were English-speaking. The origin of overseas visitors was 10.7% from the United Kingdom; 6.4% from European

TABLE 2: Usual place of residence

Usual place of residence	Percent of sample
North Queensland	53.2
Other Queensland	9.7
Other Australia	8.4
Overseas	28.7

countries; 5.7% from the United States, 2.1% from Japan and the remaining 3.8% from South East Asia, Africa, South America, New Zealand, Middle East and Russia.

Results

The questionnaires yielded a wide range of wildlife tourism experiences. The experiences reported ranged from safaris in India and South America, to family visits to local national parks and wildlife sanctuaries. Experiences occurred in a variety of environments including coral reefs, mountains, rainforest, grasslands, coastlines, and oceans, as well as captive places. Overall, 67% of best experiences occurred in Australia, 24% occurred overseas and the remaining 9% were not stated. For best experiences, 46% occurred in captive environments; 8% with non-captive habituated wildlife; and 46% with wild animals.

The first stage in the analysis was to seek the major themes that emerged in people's descriptions of their best wildlife experiences. These themes were then examined to see which, if any, could be classified into the categories listed in Table 1 as either precursors to, or core conditions for, mindfulness. This first stage yielded a number of themes and overall 84% of the respondents described at least one factor that had been predicted to be associated with mindfulness. The remaining respondents described aspects of the environmental setting that the encounter took place in, issues related to animal welfare, the perceived nature of the animals, or features of the built facilities or service provided by the management of the place where the encounter occurred.

The second stage of the analysis focussed on those respondents who included at least one of the factors predicted to be associated with mindfulness. The following excerpts illustrate some of the responses that were included under each theme.

Extreme stimuli:

- 32 year old female: "the bright colours of the reef fish in the reflected sun was amazing".
- 24 year old male: "unbelievable being in such close proximity to such huge creatures" (whale sharks).

Authentic, natural environments or habitats

- 32 year old female: "we saw Elk and Moose in the Rocky Mountains. They were in their own environment, in the wild, there for their own pleasure and not ours. It was a rare treat ...".

New experiences, new animals seen:

- 29 year old male: "first time to see and actually touch these animals, I hadn't even seen many of them in picture books".

Unexpected, surprising things:

- 48 year old female: “we were sailing – there were dolphins playing around the boat. Natural beauty – unexpected. An unpredictable, delightful experience – like a blessing”.

Variety and diversity:

- 23 year old female: “the huge variety of animals in the zoo was the best thing”.
- 44 year old male: “the marine diversity was amazing”.

Interacting with animals, visitor control:

- 43 year old female: “I got to hold the koala, and feed it some food from a syringe – it was wonderful”.

Multisensory experiences:

- 48 year old male: “I didn’t expect the wombat’s fur to be so stiff. They look cuddly, but when you touch them they are solid. They have a curious smell too”.

Movement/ activity of animals:

- 42 year old male: “the agility and speed of the monkeys swinging through the trees was astounding”.

High visitor interest in animals/habitats:

- 30 year old male: “I am really interested in marine mammals (I graduated in marine biology), so seeing these wonderful mammals was particularly special to me”.

Rare or unique animals:

- 24 year old male: “Komodo dragons are such unique animals. Rare and amazing!”.

Good physical orientation:

- 50 year old male: “the layout of the zoo was great for people and animals. It was easy to find my way around and I didn’t feel like I was missing exhibits”.

Infant animals:

- 64 year old male: “Out the back they were showing us how they care for baby birds that are injured. It was really interesting, seeing how to feed them so that they can get nutrition”.

Things personally connected to the visitor:

- 48 year old male: “I love seeing Moose in the wild. Seeing them reminds me of the many lovely holidays I had with my family as a child”.

Patterns/contrast:

- 41 year old female: “the colours and unusual patterns of the fish on the reef was great”.

Table 3 provides the frequency of occurrence of each of the mindful themes in the sample of best experiences. Overall, the pattern of results supports the predictions made by the mindfulness model. All of the respondents included at least one of the core conditions for mindfulness in their descriptions. In addition, just over half of the respondents included a precursor factor or feature that drew their attention. Of

TABLE 3: Mindfulness factors mentioned in descriptions of best experiences

Mindfulness Factor	Percentage of Responses*	Percentage of Cases
Precursors		
Extreme stimuli – large, colourful, loud, smelly, dangerous, close animals	18.0	29.9
Unexpected, surprising things	10.4	17.4
Movement/activity of animals	3.1	5.1
Infant animals	1.0	1.7
Patterns/contrast	0.1	0.2
Core Conditions		
Authentic, natural environments	16.1	26.8
New experiences, new animals seen	15.5	25.7
Variety, diversity	9.8	16.3
Interacting with animals, visitor control	9.6	16.0
High visitor interest in animal/habitat	3.4	5.6
Multisensory experiences	3.2	5.3
Rare or unique animals	2.8	4.7
Good physical orientation	1.0	1.7

* Multiple themes were identified for many cases.

particular interest is the relative frequency of occurrence of the individual factors within each category. For precursors, or attracting features, extreme stimuli dominate. In the case of the core conditions two features are substantially more frequently mentioned than the others - the authenticity of the experience and the fact that the experience involved seeing new animals.

Discussion

Overall the results suggest that the theoretical framework of mindfulness (Langer, 1989) and its application to tourism and interpretation (Moscardo, 1996, 1999) appears to be relevant and useful in connecting together various components of the wildlife tourism experience. This framework indicates that there are several predictable factors which, if present in an experience, will encourage visitors to pay attention to the experience and process the experience in a mindful manner. According to this theory, the presence of these factors should result in visitors enjoying and remembering their experiences, and learning from them (Moscardo, 1999).

More specifically, the results suggest that the core conditions that are necessary to encourage a mindful or memorable wildlife experience are, in order of importance:

- a perception that the encounter is authentic or natural;
- the involvement of animals that haven't been seen live before;
- a variety of wildlife;
- perceived interaction with the wildlife;
- perceptions of personal control over the encounter;

- multi-sensory experiences; and
- the involvement of rare and/or unique wildlife.

While the importance of the natural environment and/or natural behaviour to a satisfactory wildlife experience has been mentioned in the literature (Shackley, 1996; Duffus & Wipond, 1992; Pearce & Wilson, 1995), the critical role played by perceptions of authenticity or naturalness has not been fully appreciated. One implication for wildlife education programs is the need to include descriptions of natural behaviours and responses to encourage and enhance visitors' abilities to detect and appreciate these. In captive settings it may be particularly important and useful to include descriptions of enclosure design features and management activities which encourage natural behaviours. In natural settings there is an opportunity to build upon this strong link between perceived authenticity and naturalness with educational programs on the need to conserve natural habitats for wildlife.

The second most frequently mentioned core mindfulness factor was that the experience was new to them, or the animals seen had never been seen before. New experiences or novel situations are strongly linked to mindfulness, because people are less likely to have routine behavioural scripts to rely on in such situations. Wildlife tourism has the initial benefit that visitors are likely to be engaging in an activity that is not part of the everyday routine, and this in itself may encourage them to be mindful, at least initially. An ongoing challenge in wildlife education is to focus visitor attention on smaller, harder to see, less extreme wildlife. One tool for encouraging mindfulness here may be to emphasise the opportunity to see these less well-known creatures for the first time. The use of novelty in themes, titles and introductions to less well-known species may be a valuable educational tool.

Variety and perceived visitor control were the third and fourth most frequently mentioned core mindfulness factors. Variety can be easily incorporated into educational programs associated with wildlife encounters. Tours, for example, can focus on a range of different species, instead of exclusively on a single animal or group of animals. If this is not practical then educational activities designed to give visitors skills in spotting differences between individual animals and changes in their behaviour can introduce an element of variety. In addition, educational activities can vary in terms of the physical or mental effort required on the part of the visitor, the media used, and the themes that are explored. Perceived control is more challenging but again educational programs that enhance the skills of visitors in spotting wildlife or features of wildlife may contribute to greater perceptions of control.

The following diagram (Figure 2) proposes a model for enhancing learning in wildlife tourism experiences. This model incorporates results from the present study, as well as results from research by Moscardo (1992, 1999) previously reported. Features of the animals likely to encourage mindfulness include those with extreme characteristics such as loud, colourful or dangerous animals, large numbers of animals, rare or unique species and moving or active animals. Features of the interpretation encouraging mindfulness have already been well documented by Moscardo (1996). Features of the experience that are likely to induce mindfulness include natural habitats, interaction with animals, new experiences, close proximity to animals and unexpected, surprising elements of the experience. Finally, features of the tourists such as high interest in wildlife viewing can also have an impact on how mindful they are. While tourism operators may not always be able to influence the features of the tourists themselves, they can certainly adapt the design of the experience and the use of interpretation to improve the overall mindfulness of their visitors. Such changes are likely to improve

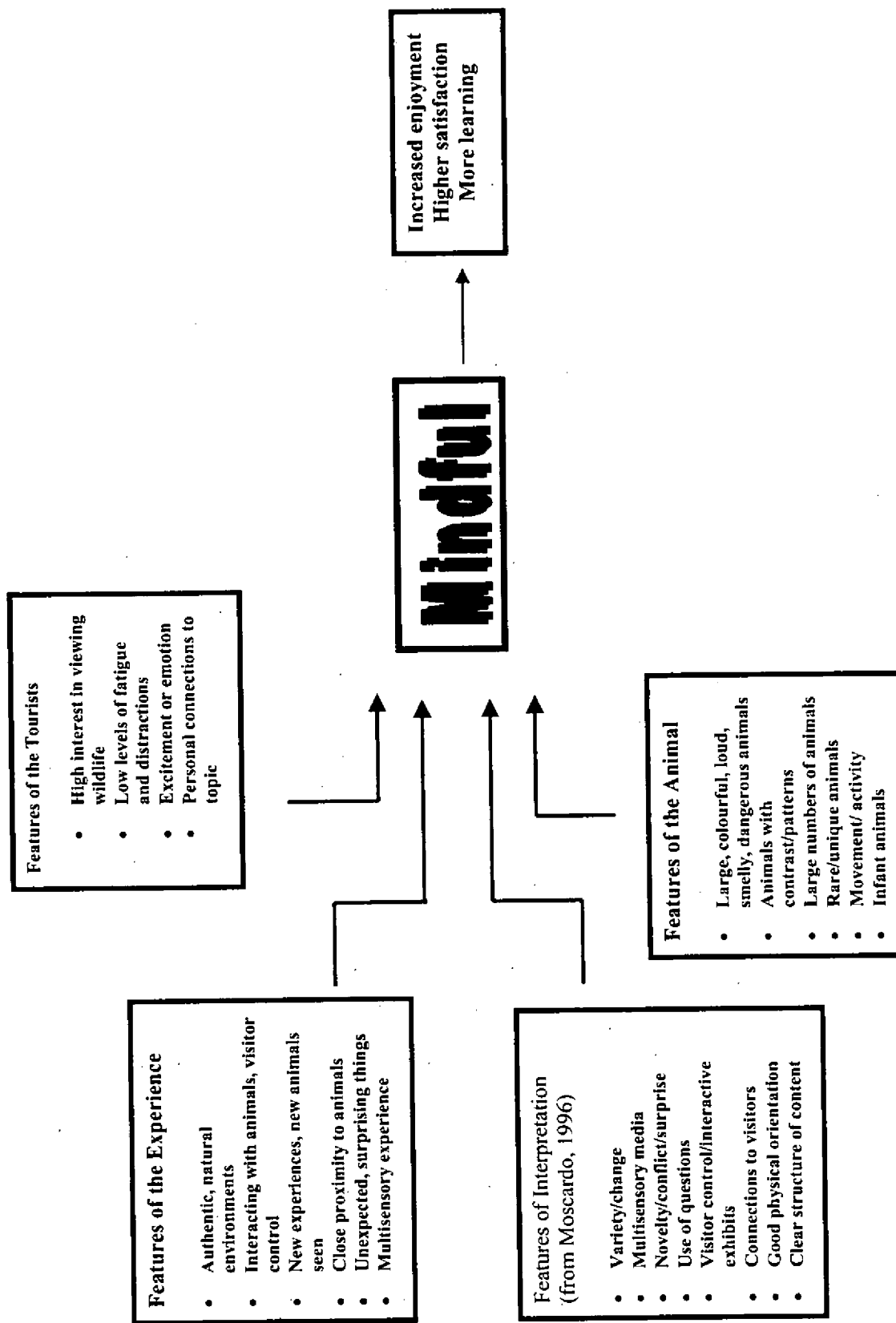


FIGURE 2: Mindfulness model for wildlife tourism

the outcomes of the wildlife tourism experience, being increased enjoyment, higher satisfaction and more learning.

Conclusion

This study confirms the importance of certain features of wildlife tourism experiences that have been reported in the literature. The advantage of applying mindfulness theory to wildlife tourism is the opportunity to organise these features into a coherent framework for understanding why they are important. Not all features will be possible in every wildlife tourism situation, but improving the overall mindfulness of wildlife tourists engaging in wildlife viewing experiences will enhance their ability to learn.

Acknowledgements

Financial support for the research reported in this article was provided by the Rainforest CRC and the CRC for Sustainable Tourism.

Keywords: Mindfulness, wildlife, interpretation, learning.

References

- Amante-Helweg, V. (1996). "Ecotourists" beliefs and knowledge about dolphins and the development of cetacean ecotourism. *Aquatic Mammals*, 22(2), 131–140.
- Beck, L., & Cable, T. (1998). *Interpretation for the 21st century: Fifteen guiding principles for interpreting nature and culture*. Champaign, Illinois: Sagamore.
- Berlyne, D. E. (1960). *Conflict, arousal and curiosity*. New York: McGraw Hill.
- Berlyne, D. E. (1966). Conflict and arousal. *Scientific American*, 214, 82–87.
- Berlyne, D. E. (1967). Arousal and reinforcement. In D. Levine (Ed.), *Nebraska Symposium on Motivation, 1967* (pp. 1–110). Lincoln, Nebraska: University of Nebraska Press.
- Chell, E. (1998). Critical incident technique. In G. Symon & C. Cassell (Eds.), *Qualitative Methods and Analysis in Organisational Research* (pp. 51–72). London: Sage Publications.
- Churchman, D. (1985). How and what recreational visitors learn at zoos. *Proceedings from the Annual Western Meeting of the American Association of Zoological Parks and Aquarium Administrators* (pp. 2–32). Anchorage, March 1985.
- Croke, V. (1997). *The Modern Ark: The story of zoos, past present and future*. New York: Scribner.
- Duffus, D. A., & Wipond, K. J. (1992). A review of the institutionalisation of wildlife viewing in British Columbia, Canada. *The Northwest Environmental Journal*, 8, 325–345.
- Flanagan, J. C. (1954). The critical incident technique. *Psychological Bulletin*, 51(4), 327–358.
- Ham, S. (1992). *Environmental interpretation: A practical guide for people with big ideas and small budgets*. Golden, Colorado: North America Press.
- Kellert, S. R. (1996). *The value of life: Biodiversity and human society*. Washington D.C.: Island Press.
- Knudson, D. M., Cable, T. T., & Beck, L. (1995). *Interpretation of cultural and natural resources*. State College, Pennsylvania: Venture Publishing.
- Langer, E. (1989). *Mindfulness*. New York: Addison-Wesley.
- Langer, E., Hatem, M., Joss, J., & Howell, M. (1989). Conditional teaching and mindful learning: The role of uncertainty in education. *Creativity Research Journal*, 2, 139–150.

- Moscardo, G. M. (1992). *A mindfulness/mindlessness model of the museum visitor experience*. Unpublished doctoral dissertation, James Cook University, Queensland, Australia.
- Moscardo, G. (1996). Mindful visitors: Heritage and tourism. *Annals of Tourism Research*, 23(2), 376–397.
- Moscardo, G. (1999). *Making Visitors Mindful*. Champaign, Illinois: Sagamore.
- Moscardo, G., & Woods, B. (1998). Managing tourism in the wet tropics world heritage area: Interpretation and the experience of visitors on Skyrail. In E. Laws, B. Faulkner & G. Moscardo (Eds.), *Embracing and managing change in tourism: International case studies* (pp. 304–324). New York: Continuum.
- Oppenheim, A. N. (1972). *Questionnaire design and attitude measurement*. London: Heinmann.
- Pastorelli, J. (2003). *An interpretive approach to tour guiding: Enriching the experience*. Sydney: Hospitality Press.
- Pearce, D. G., & Wilson, P. M. (1995). Wildlife viewing tourists in New Zealand. *Journal of Travel Research*, 2(1), 19–26.
- Roe, D., Leader-Williams, N., & Dalal-Clayton, B. (1997). *Take only photographs, leave only footprints: The environmental impacts of wildlife tourism*. IIED Wildlife and Development Series, no 10, October 1997.
- Roth, H. H., & Merz, G. (1997). *Wildlife resources: A global account of economic use*. New York: Springer Verlag.
- Salomon, G., & Globerson, T. (1987). Skill may not be enough: The role of mindfulness in learning and transfer. *International Journal of Educational Research*, 11, 623–627.
- Screven, C. (1995). Visitor based exhibit planning: A question of survival. *Evaluation and visitor research in museums conference proceedings*. Sydney: Powerhouse Museum.
- Shackley, M. (1996). *Wildlife Tourism*. Melbourne: International Thomson Business Press.
- Tourism Queensland (1999). *Ecotourism consumer research: A national domestic survey*. Brisbane, Australia: Environmental Tourism Department, Tourism Queensland.
- Whitehead, M. (1995). Saying it with genes, species and habitats: Biodiversity education and the role of zoos. *Biodiversity and Conservation*, 4, 664–670.
- Whittall, R. (1992). A walk on the wild side: How do visitors perceive their zoo visit? *AAZPA/CAZPA Annual Conference Proceedings 1992*, 335–341.
- Woods, B. (1998). Animals on display: Principles for interpreting captive wildlife. *Journal of Tourism Studies*, 9(1), 28–39.