Ecotourism and the Conservation Ethic: Recruiting the Uninitiated or Preaching to the Converted?

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Ecotourism is being promoted as a sustainable alternative to mass tourism, although critics suggest that it may be just as damaging because it encourages increased use of natural areas. One of ecotourism's claimed benefits is the promotion of pro-environment attitudes and behaviours. However, this may not occur if ecotourists are already 'converted' to the pro-environment cause. To test this claim, a study was undertaken of ecotourists visiting Lamington National Park in southeast Queensland. A pre-/post-visit questionnaire survey was conducted on-site, as well as a follow-up mail-out survey four months later. This paper presents results of that study in terms of four ecotourist groups. Results indicate that ecotourism can increase environmental knowledge and influence conservation views and behaviours. Of the four groups, coach day tour visitors were the least pro-environment initially but had relatively strong ecotourist motivations. They achieved the highest gains in knowledge and in the short term were influenced the most by the visit. In the long term, respondents who were the most pro-environment and who had learnt most during their visit were influenced the most. Therefore, for immediate effects of the experience on the uninitiated to endure, motivations need to be stimulated to encourage further involvement in and learning about nature. The question remains as to whether encouraging such involvement will have net benefits for the environment.

Introduction

Ecotourism is being promoted by government and industry as a sustainable alternative to mass tourism. However, some critics have suggested that ecotourism is just as damaging to the natural environment as mass tourism. Rather than providing a solution to the impacts of tourism, it will simply exacerbate them by encouraging increased use of natural areas and greater penetration into sensitive environments (Butler, 1990; Nelson, 1994; Steele, 1995; Wheeller, 1993).

Nevertheless, the advocates of ecotourism assert that it has benefits for the environment that outweigh the potential negative impacts (Department of Tourism (DoT), 1994; Hvenegaard, 1994; Queensland Department of Tourism, Small Business and Industry (QDTSBI), 1997). By definition, ecotourism must not only occur in a natural setting but must also be ecologically sustainable and provide environmental education or interpretation (Beaumont, 1998). Therefore, as well as economic benefits that contribute both directly and indirectly to conservation and sustainable use of natural areas, they claim that the environmental education component of ecotourism fosters awareness and understanding of natural environments and consequently promotes pro-environment attitudes and responsible environmental behaviour.

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The combination of environmental education with firsthand nature experiences is said to be the key to these outcomes (Charters, 1996; Oliver, 1992). Indeed, some writers suggest that the nature experience itself leads to greater appreciation of nature and promotes pro-environment attitudes and behaviours (Brown, 1991; Gray, 1985). It has been assumed by many that all ecotourists will become active advocates for the environment following their visit. However, to date there has been little evidence to support these claims.

In addition, there has been a long-held view that ecotourists already have pro-environment attitudes. Therefore, attitudes would not alter after involvement in an ecotourism activity due to a 'ceiling effect'. A number of studies have found that ecotourists generally have motivations of wanting to experience and learn about nature (Ballantine & Eagles, 1994; Eagles & Cascagnette, 1995; Forestry Tasmania, 1994; Hatch, 1998; Saleh & Karwacki, 1996). However, both research and anecdotal evidence tends to suggest that not all ecotourists are already 'converted' to the pro-environment cause or interested in matters related to the environment (Beckmann, 1993; Cater, 1994; Elkington, 1992; Forestry Tasmania, 1994; Goss, 1994). Indeed, many take part in an ecotourism activity as part of a larger, overall trip, and those people tend to be the least pro-environment in their attitudes (Uysal *et al.*, 1994). Studies of outdoor education programmes indicate that those who have the least environmental experience and lowest attitude scores initially will be influenced the most by involvement in such a programme (Dresner & Gill, 1994; Lisowski & Disinger, 1991). Accordingly, they would represent the group with the most potential to be influenced by involvement in an ecotourism experience. Nevertheless, even in cases where pre-existing environmental concern is high, participation in an ecotour has been found to strengthen those existing attitudes (Asfeldt, 1992).

This paper presents results of a study designed to test the major hypothesis that ecotourism contributes to conservation by fostering awareness and understanding of the natural environment and thus promoting pro-environment attitudes and responsible environmental behaviour. In particular, it examines that hypothesis in the context of the participants' pre-existing environmental awareness and involvement and in terms of their particular ecotourism experiences. Accordingly, it presents these results in terms of four distinct ecotourist groups: two commercial groups – coach day tour visitors and guests – and two independent groups – day visitors and campers. The specific aims of the paper are to:

- present a psychographic profile of the four ecotourist groups to determine any differences in terms of their environmental interest and involvement and ecotourist motivations;
- compare the ecotourism experiences of the four ecotourist groups and the environmental interpretation provided to them;
- identify the short- and long-term effects of the ecotourism experience on participants' environmental knowledge, attitudes and behaviours and determine any differential effects on the four ecotourist groups.

A review of the relevant literature is presented first, followed by an overview of the methodology used in the study. The results are then presented in detail. Finally, conclusions are drawn regarding the implications of the findings and recommendations are made on the basis of those conclusions.

Ecotourism: Tourism *for* the Environment?

As the environment is tourism's main resource, tourism and the environment are to a large extent interdependent, and one would expect strong support from the tourism industry to ensure preservation and protection of those resources. However, this is often not the case and there are many examples of sites preserved because of real or expected benefits which have soon become damaged due to inappropriate or over use (Butler, 1991). Ecotourism has been considered the form of tourism most likely to achieve the potential benefits to the environment without the negative impacts (Australian Conservation Foundation (ACF), 1994).

Since the term first appeared in the early 1980s, ecotourism has been defined in various ways. However, according to Beaumont (1998), it has generally been accepted that ecotourism should be defined as a normative concept according to a number of key principles, the main ones being that it should take place in a natural setting, it should be ecologically sustainable and it should include some form of environmental education or interpretation. Some definitions also include the principles of contributing to conservation and providing net benefits for local communities. Although it can encompass both small- and large-scale activities, the focus is expected to remain on small-scale activities.

Despite the benefits that could be expected from this form of tourism, some critics maintain that ecotourism is as damaging to the environment as mass tourism (Butler, 1990; Nelson, 1994; Wheeller, 1993). They suggest that, regardless of the type of tourism business, persuading customers to purchase the product is the fundamental objective, and the cumulative effects of many small groups of ecotourists that interact with sensitive environments may be more damaging than one large group of mass tourists. Whilst ecotourism can generate foreign exchange and economic rewards for conservation, it often threatens the resources on which it relies. Specific instances of negative impacts caused by ecotourism have now been documented and examples abound of garbage being dumped by tour boats, wildlife being harassed by enthusiasts, sensitive areas being trampled by trekkers, and coral reefs being damaged through pollution, siltation, boat anchors, walking and diving (Blane & Jaakson, 1994; Boo, 1990; Hall, 1994; Steele, 1995; Valentine, 1992).

Despite these impacts, ecotourism is being promoted by governments of both developed and developing nations, as well as by the tourist industry and some conservation organisations, as a sustainable alternative to mass tourism (ACF, 1994; DoT, 1994; Hvenegaard, 1994; QDTSBI, 1997). They maintain that ecotourism has benefits for the environment that far outweigh its potential negative impacts. Ecotourism can stimulate the economy and generate direct funding for conservation, as well as provide employment and entrepreneurial opportunities that justify conservation of natural areas and protection of assets upon which the industry depends (Boo, 1990; Cater, 1994; Lindberg & Huber, 1993).

In addition, the advocates of ecotourism claim that it contributes to conservation by providing environmental education or interpretation to participants which leads to awareness and understanding of the natural environment and promotes pro-environment attitudes, support for conservation and responsible environmental behaviour (ACF, 1994; Boo, 1991; DoT, 1994; Goudberg *et al.*,

1991; QDTSBI, 1997). According to the *Queensland Ecotourism Plan*, 'ecotourism enhances awareness and appreciation of the natural environment, encouraging values which benefit the environment' (QDTSBI, 1997: 27). Goudberg *et al.* (1991: 30) suggest that 'those who are informed are more likely to support conservation of natural resources because they can appreciate the full range of natural resource values and identify with the resource at risk'. Accordingly, ACF (1994: 12) contends that 'genuine ecotourism [will facilitate] the education and inspiration of visitors who will continue their commitment to the protection of the area … after visitation'.

Changing Environmental Attitudes and Behaviours by Environmental Education

The experiential form of environmental education provided by ecotourism is deemed more efficient in altering attitudes than classroom learning methods (Oliver, 1992). Enjoyable experiences in the natural environment associated with learning about natural processes are said to be the stimulus for developing a rapport with nature and a desire to protect and care for it (Fien, 1992; Orr, 1992; Van Matre, 1990). According to Charters (1996: 84), 'people obtain a greater understanding of the values of the resource if they experience it first hand – understanding leads to appreciation, appreciation leads to protection'.

Indeed, many definitions of interpretation specifically include a goal of fostering support for conservation not only in relation to the particular natural resource being interpreted but support for conservation values and principles in general (e.g Aldridge, 1989; Moscardo, 1995; Queensland National Parks and Wildlife Service, 1984; Wet Tropics Management Authority, 1994). For example, according to Moscardo (1995: 2):

> Interpretation is 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 to conservation.

Despite these claims, there has been considerable debate about whether providing environmental education can lead to a change in attitudes, particularly by the intervention of a short interpretive programme. Early social scientists put forward a simple linear model which linked the attainment of knowledge to attitude change and subsequent changes in behaviours (Hungerford & Volk, 1990). However, recent evidence has demonstrated that the relationship is far more complex, and the psychological theories surrounding learning and attitude change are diverse and the subject of much debate. Attitudes involve a process of evaluation of an object or issue based on cognitive, affective and/or conative antecedents (Eagly & Chaiken, 1993). For example, they may be based on beliefs acquired via cognitive learning processes, the pairing of an object with a stimulus that evokes an affective response, or inference from observing one's own behaviours. However, whether attitudes change via any of these processes depends on numerous intervening factors related to both the individual and the experience.

Research undertaken with regard to various outdoor environmental education and interpretive programmes has produced unclear results. Some studies

have found increases in both environmental knowledge and attitudes (Burrus-Bammel *et al.*, 1980; Coleman & Lamond, 1993; Davis *et al.*, 1980; Padua, 1994), while others have found increases in environmental knowledge but not in attitudes (Keen, 1991; Salt, 1993). Some studies which simply measured environmental attitudes have found small increases in those attitudes (Beckmann, 1989; Shepard & Speelman, 1985/86), whereas others have found no significant improvement (Eagles & Demare, 1995; Shepard & Speelman, 1985/86). Other studies have produced results which indicate that some learning, strengthening of attitudes and stimulation of interest or behavioural intentions have occurred (Beckmann, 1989, 1993; Woods & Moscardo, 1996). The reasons for these discrepancies are many and may include factors related to the programmes and the presenters, as well as those of the recipients, or indeed the ways in which knowledge and attitudes were conceptualised and measured.

With regard to programme factors, many researchers argue that to promote strong feelings towards the natural environment which lead to a commitment to conservation, interpretation should place emphasis on affective processes and provide opportunities for self-discovery, participation and sensory involvement (Peart, 1986, Bruner, 1991 in Markwell, 1996; Oliver, 1992). However, despite the emphasis in interpretive philosophy on the use of the affective domain, much contemporary interpretation concentrates on the cognitive domain of learning which emphasises 'the transmission of large amounts of knowledge by the expert 'teacher'' (Markwell, 1996: 10). According to Ham (1992), successful interpretive strategies involve avoiding classroom approaches and creating an informal atmosphere, and this can be achieved by the interpreter through various techniques, including the use of humour, stories, metaphors, analogies, comparisons and examples, as well as presenting interpretation in a logical sequence that provides a message or a moral. Oliver (1992) suggests a variety of practices that engage participants' sensory involvement, as well as participatory activities involving identification, role-playing and problem-solving. In addition, the role of the presenter is considered important in terms of his or her communication skills which, according to Risk (1982b), should include articulateness, enthusiasum, self-confidence, sense of humour, warmth and credibility.

Changing Environmental Attitudes and Behaviours by Nature Experiences

Some writers suggest that the nature experience itself, because it leads to appreciation of the natural environment, promotes positive attitudes towards the environment and responsible environmental behaviour (Brown, 1991; Gray, 1985). This may be related to classical conditioning theory in psychology which states that the pairing of an object with a stimulus that produces an affective response will eventually result in that object eliciting the same response (Eagly & Chaiken, 1993). According to this theory, enjoyable experiences in the natural environment would produce a positive response. Eventually, the natural environment alone will produce the same response and result in a positive attitude towards nature and its conservation. Mere exposure is another psychological theory which may also explain this phenomenon. According to Zajonc (1968: 1),

'mere exposure of the individual to a stimulus is a sufficient condition for the enhancement of his [*sic*] attitude toward it'. On this basis, simply going into the natural environment would promote a positive attitude towards it. However, according to Dunlap and Heffernan (1975: 18):

> … involvement in outdoor recreational activities creates an awareness of environmental problems by exposing people to instances of environmental deterioration; creates a commitment to the protection of valued recreation sites; and, also, cultivates an esthetic taste for a 'natural' environment which fosters a generalized opposition to environmental degradation.

Research that has examined the effect of nature experiences and outdoor recreation on environmental attitudes has produced conflicting results. Studies of wilderness experiences conducted by Gillett *et al*., 1991, and by Asfeldt, 1992, found no change in environmental attitudes when measured on a scale immediately after the experience. However, Perdue and Warder (1980) found environmental attitudes became more positive when measured six weeks after a visit, and Asfeldt (1992) found two-thirds of his respondents reported that the experience had had a positive effect on their concern for the environment. A number of studies found a positive, though weak, relationship between participation in outdoor recreation and environmental attitudes, particularly when the activities were appreciative or non-consumptive such as camping, hiking or visiting parks (Atkinson, 1981; Bikales & Manning, 1990; Dunlap & Heffernan, 1975; Jackson, 1986, 1987). However, others found no relationship (Pinhey & Grimes, 1979; Van Liere & Noe, 1981). In addition, some questioned the cause and effect sequence in that existing environmental attitudes may influence participation in outdoor recreation activities rather than vice versa (Atkinson, 1981; Jackson, 1986). This may then result in a circular effect whereby continued involvement in those activities leads to strengthening of environmental attitudes (Jackson, 1986).

The Role of Pre-existing Environmental Interest and Involvement

Beckmann (1991) notes that there has been a long-held view that visitors to natural areas who participate in ecotours or interpretive programmes are already 'converted' to the pro-environment cause. According to this view, these people are already interested and involved in the natural environment and, therefore, attempting to change their attitudes is simply a waste of time.

Studies of ecotourists, both on commercial ecotours and travelling independently, have found that they generally share motivations of wanting to view or experience a natural area and to learn about nature (Ballantine & Eagles, 1994; Eagles & Cascagnette, 1995; Forestry Tasmania, 1994; Hatch, 1998; Saleh & Karwacki, 1996). Indeed, Ballantine and Eagles (1994) developed a system for classifying travellers as ecotourists based on their having a prime social motivation of 'learning about nature' and a prime attraction motivation of visiting 'wilderness/undisturbed areas', as well as their spending at least one-third of their vacation participating in firsthand nature experiences.

However, anecdotal evidence suggests that not all ecotourists are environmentally aware and sensitive (Cater, 1994; Elkington, 1992; Goss, 1994). In

addition, a number of empirical studies that have been undertaken indicate that, while the majority of people who participate in ecotours and interpretive programmes are interested in the environment, only those involved in intensive ecotourism activities such as research expeditions, bushwalking and Arctic cruises are highly active in conservation and similar groups (Beckmann, 1989, 1991, 1993; Ballantine & Eagles, 1994; Blamey, 1995; Forestry Tasmania, 1994). Those involved in short national park interpretive programmes and more diverse nature-based activities were far less inclined to be actively involved in behaviours aimed at conserving the natural environment. One of the few studies to evaluate the environmental attitudes of tourists found that tourists whose major destination was a national park were more ecocentric in their views than those who visited the park as part of a larger, overall trip (Uysal *et al.*, 1994).

Nevertheless, a number of studies have found that the pre-test attitudes of individuals participating in outdoor education, interpretive programmes and wilderness experiences were already strongly pro-environment and did not change significantly following participation in the programme due to a 'ceiling effect' (Asfeldt, 1992; Beckmann, 1991; Eagles & Demare, 1995; Gillett *et al.*, 1991). Dresner and Gill (1994: 40) found limited changes in environmental attitudes following participation by children in a voluntary outdoor education programme and suggested that 'previous environmental experience seemed to diminish attitude and behavior change'. Similarly, Lisowski and Disinger (1991: 23), who measured knowledge levels only, found that the only consistent predictor of post-test scores was previous knowledge. In other words, 'students with the lowest pretest scores showed the greatest gains'. Based on these and their own findings, Eagles and Demare (1995) suggested that participants who enter such programmes with minimum environmental experience and low attitude scores will be influenced the most. However, Asfeldt's (1992) findings revealed that even where existing attitudes were high, participation could influence concern for the environment, particularly by strengthening existing concern. Nevertheless, Petty *et al*. (1992) suggest that enduring changes in attitudes and behaviour will only occur in such programmes if people are motivated to attend and learn, and if this learning results in favourable cognitive or affective reactions.

Methodology

Study site

The study was undertaken in Lamington National Park in southeast Queensland, which is part of the Central Eastern Rainforest Reserves (Australia) [CERR(A)] World Heritage Area. The park has an area of 20,500 hectares and comprises the largest remaining tract of undisturbed sub-tropical rainforest in Australia, as well as cool temperate rainforests, eucalypt forests and montane heath (Cronin 1994; World Heritage Unit, Environment Australia, 1997). The park is known for its pristine beauty and abundance of vegetation and wildlife and contains over 160 kilometres of walking tracks (Mather, 1997). It has been a popular recreation area for many years and has more recently become a popular ecotourist destination. Management of the park is undertaken by the Queensland Parks and Wildlife Service (QPWS).

There are two separate sections of the park: Binna Burra and Green Mountains. At each section are a picnic area, camping ground, QPWS information centre, walking tracks of varying lengths, and a guesthouse or lodge with retail food and gift outlets situated on private land adjacent to the park.

Survey

The study involved two commercial ecotourist groups – coach day tour visitors and guests, and two independent ecotourist groups – day visitors and campers. The three latter groups were surveyed in both the Binna Burra and Green Mountains sections of the park, while the coach day tour group visited only the Green Mountains section.

Members of these groups were considered to be ecotourists on the basis of their taking part in an activity that included the three key principles that define an activity as ecotourism, namely that it occurs in a natural setting, it includes some environmental education or interpretation and it is ecologically sustainable. As the study area is a national park, it was defined as a natural setting even though some commercial development exists adjacent to the park. Environmental education was provided to both commercial groups. Guests at both sections were provided with fully guided walks and other activities, and coach day tour visitors received driver commentary during their trip to the destination area. The independent groups were considered to fulfil the environmental education criterion on the basis that travelling to a natural area for the purpose of observing nature represented a prime ecotourism social motive of 'learning about nature' as identified by Ballantine and Eagles (1994). In addition, interpretive material in the form of signs and brochures provided by QPWS was available to them, as well as to other visitors. In all cases, ecological sustainability was treated more as a goal than as an achievement (see Lindberg & McKercher, 1997).

To determine the short-term effects of the ecotourism experience, a survey of 488 respondents was undertaken on-site. A convenience sampling method was used insofar as only those ecotourists in the study area during the survey periods were approached to take part in the survey. However, various methods were adopted to minimise sampling bias based on the recommendations of Veal (1992). An overall response rate of 73% indicated that non-response or self-selection bias was minimal.

Half the respondents completed a pre-visit questionnaire and the other half completed a post-visit questionnaire. This method has been recommended by McArthur and Hall (1993) as a technique that can be used for evaluating interpretive programmes where it is not possible to survey the same visitors both pre- and post-visit. It has been used by Beckmann (1989) and by Olson *et al.* (1984) in such circumstances. Initial analysis revealed that there were no significant differences between the pre-visit and post-visit groups in the distribution of sociodemographic and psychographic variables. This enabled the two groups to be compared directly.

A follow-up mail-out survey was undertaken some four months later of participants who had provided their names and addresses. This was designed to determine the long-term effects of the ecotourism experience but also enabled a comparison to be made of the pre-visit and post-visit responses of the same group of individuals. A total of 258 respondents completed a follow-up

questionnaire, representing an overall response rate of 88%. Initial analysis revealed no significant difference between the overall on-site group and the follow-up group in levels of environmental knowledge, attitudes and behaviours, which indicated that there was no response bias in favour of respondents who were more environmentally conscious.

Measurement of variables

Environmental interest was measured on the basis of two variables: (1) regular readership of environment, nature or wildlife magazines, and (2) membership of environment, conservation or outdoor recreation organisations. Two variables were also used to measure environmental involvement: (1) the proportion of the holiday spent visiting natural areas, and (2) the number of times per year that respondents usually visit natural areas. Ecotourist motivations were based broadly on the classification developed by Ballantine and Eagles (1994) for identifying ecotourists. Respondents were classified as 'not', 'peripheral', 'strong' or 'complete' ecotourists based on their conforming by varying degrees to the following criteria: (1) a motivation to learn about nature, (2) a motivation to visit a natural area, and (3) spending at least one-third of their holiday visiting natural areas or, if not on holidays, usually visits natural areas more than 10 times per year.

Ecotourism experiences were measured (1) by asking guests to check which guided activities they had undertaken from a comprehensive list provided for each accommodation house, and (2) by asking all respondents to check which independent activities they had undertaken from a comprehensive list provided for each section of the park. This latter list included activities defined in the results as 'independent interpretive activities' (visit to National Parks information centre, talked to a National Parks ranger/volunteer, read environmental information such as books, signs or brochures) and activities defined as 'independent environmental activities' (specific nature walk, other short nature walk, half-day walk, full-day walk, birdwatching, fed birds or animals, other specified activity).

Respondents were asked to rate various aspects of the interpretation provided on a five-point scale of 'poor', 'fair', 'good', 'very good' or 'excellent'. Guests and coach day tour visitors were asked to rate their guides/drivers on information about the natural environment, presentation style, and friendliness/helpfulness. The three criteria were then used to calculate an overall score and results were categorised as 'poor/fair/good', 'very good' and 'excellent'. Campers and day visitors were asked to rate the information about the natural environment provided in the park.

The researcher used a variety of techniques to assess the different forms of interpretation provided to respondents. These included obtaining details of the interpretive programmes, brochures and signs, having guides at the accommodation houses and coach drivers complete a questionnaire, observing guides and coach drivers conducting their tours, analysing the content of their commentary and assessing their interpetive and communication skills, and assessing the content and interpretive qualities of the signs and brochures provided by QPWS. These assessments were based on definitions of desirable interpretive qualities and skills as described by Ham (1992), Oliver (1992) and Risk (1982a, 1982b).

Self-rating of five general environmental concepts particularly relevant to the area visited was used to determine environmental knowledge. Respondents were asked to rate their understanding of rainforest ecology, conservation of natural areas, biodiversity, national parks, and World Heritage principles on a five-point scale of 'none', 'vague', 'general', 'good' or 'detailed'. Scores were allocated to each point on the scale for each response and were summed to calculate an overall score. The range of scores was then divided into the categories used for each individual concept and later collapsed to 'none/vague', 'general' and 'good/detailed'.

This method of assessing knowledge was based on research which indicated that the understanding of concepts is a better predictor of environmental attitudes than fragmented items of factual knowledge (Borden & Schettino, 1979; Maloney & Ward, 1973; Maloney *et al.*, 1975; Richmond, 1978). In addition, the self-rating method was used in preference to a knowledge scale, as a scale comprehensive enough to adequately measure a respondent's understanding of these environmental concepts would have been too time-consuming to include in a tourist questionnaire. The self-rating method has previously been used by other researchers assessing the impact of interpretive programmes on environmental knowledge (e.g. Coleman & Lamond, 1993; Forestry Tasmania, 1996).

In addition, respondents were asked to rate their levels of discovery or learning during the experience on a seven-point scale from 'nothing' to 'a lot'. On this basis, self-rated learning was categorised as 'none', 'low', 'medium' and 'high'.

Environmental attitudes were measured using a scale based on the Ecological Social Paradigm (ESP) developed by Olsen *et al*. (1992). Eight statements related to general ecological beliefs and values, four positive and four negative, were evaluated by respondents on a five-point scale of 'strongly agree', 'agree', 'neutral', 'disagree' or 'strongly disagree'. Points for each response were allocated and overall scores were calculated and divided into categories of 'non ESP holder', 'weak ESP holder', 'moderate ESP holder' and 'strong ESP holder'.

Environmental behaviours were assessed on the basis of the frequency that eight specific environmentally friendly behaviours were performed. Respondents were asked to indicate on a five-point scale of 'never', 'seldom', 'sometimes', 'frequently' or 'always' their actions regarding recycling, use of environmentally friendly products, donations to environmental organisations, water conservation, public transport use, minimum impact practices, local environment group participation, and writing to politicians, signing petitions or attending meetings. Overall scores were calculated on the basis of points allocated to each response and performance of environmental behaviours was categorised as 'none/low', 'medium' and 'high'.

Respondents were also asked direct questions as to whether the ecotourism experience had influenced their conservation views and whether it had influenced behaviours they intended to adopt in the future.

A number of other questions were also included in the questionnaires. However, as the study was a large project and the basis for a doctoral thesis, it is not possible to report all results in this paper.

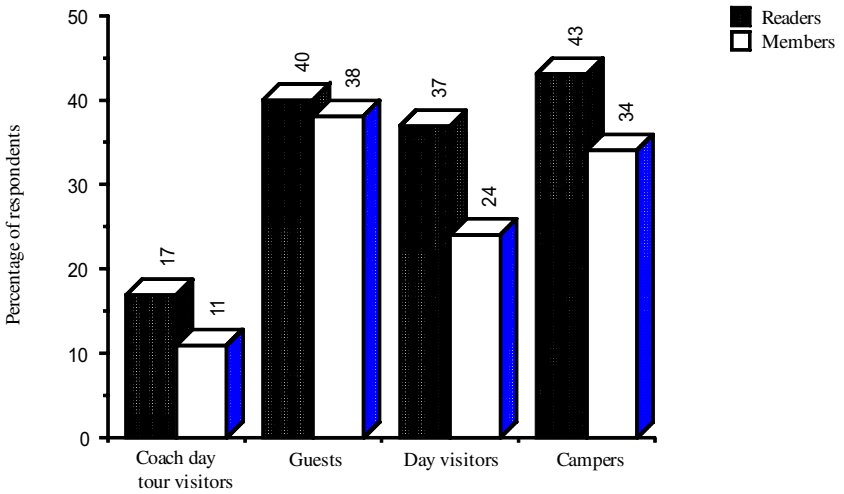

Figure 1 Environmental interest – regular readers of environment, nature or wildlife magazines and members of environment, conservation or outdoor recreation organisations – of four ecotourist groups

Analysis of data

Various data analysis procedures and statistical tests were used to interpret the data gathered in the study. However, for the purpose of this paper, data were analysed using cross-tabulations and the significance of differences between groups was determined using chi-square (χ^2) tests. Significance levels were set at $p < 0.05$.

Psychographic Profile of Ecotourist Groups

Environmental interest

Just over 34% of all respondents were regular readers of environment, nature or wildlife magazines. Almost 27% were members of environment, conservation or outdoor recreation organisations. As indicated in Figure 1, there were significant differences between the ecotourist groups, with coach day tour visitors being significantly less likely than all other groups to be regular readers of environment magazines or to be members of relevant organisations. In addition, fewer independent day visitors were members of organisations than both guests and campers.

Environmental involvement

Some 62% of respondents who were on holidays were spending one-third or more of their holiday visiting natural areas, and 48% of all respondents indicated that they usually visited natural areas six or more times per year. Again, as Figure 2 reveals, coach day tour visitors were significantly less inclined than other groups to be spending one-third or more of their holidays visiting natural areas or to say that they visited natural areas six or more times per year. In addition, a

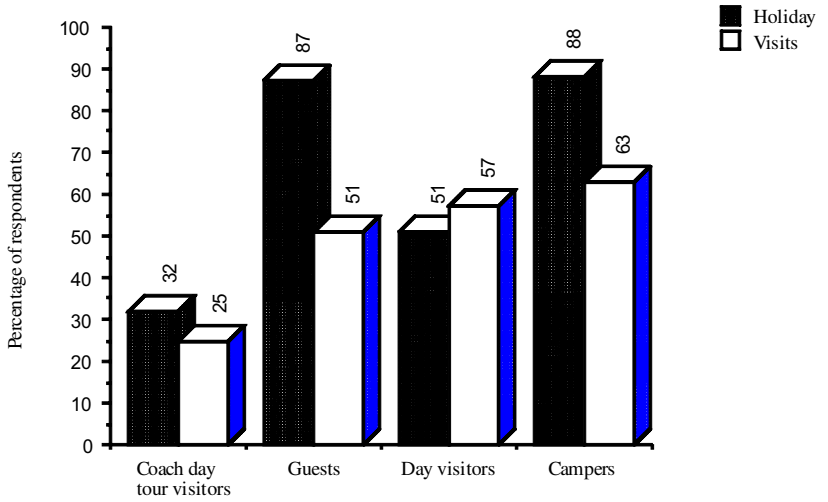

Figure 2 Environmental involvement – one-third or more of holiday in natural areas and six or more visits to natural areas per year – of four ecotourist groups

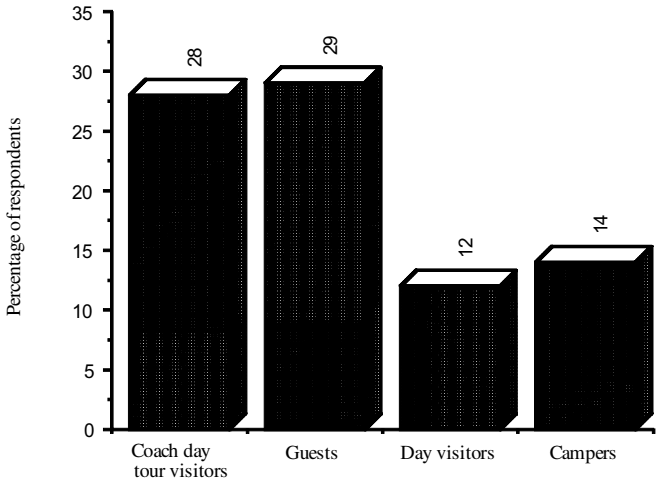

Figure 3 Ecotourist motivations – respondents classified as strong/complete ecotourists – of four ecotourist groups

smaller percentage of independent day visitors were spending one-third or more of their holidays visiting natural areas than guests or campers.

Ecotourist motivations

Only 21% of all respondents were classified as strong or complete ecotourists. In this instance, as Figure 3 reveals, the two commercial groups of coach day tour visitors and guests were significantly more inclined to be strong

or complete ecotourists than the independent groups of campers and day visitors. However, less than 30% of each of these groups were classified in these categories.

Ecotourism Experiences and Interpretation

Guided interpretive activities

Guests at the two accommodation houses had access to fully guided activities, including walks, four wheel drive bus trips, and nature video and slide presentations, and over 90% of them took part in at least one guided activity. Forty per cent of them undertook three or more different activities.

Coach day tour visitors were provided with driver commentary during their trip to the destination area. This was primarily a description of the route and points of interest, but included a small proportion of environmental interpretation.

Table 1 reveals that the majority of guests rated the overall interpretation provided by their guides as excellent, whereas the majority of coach day tour visitors rated the interpretation provided by their drivers as very good. These differences were significant. When ratings of information about the natural environment are separated (see Table 2), it is clear that this component was not regarded as highly as the other interpretive components included in the overall rating (presentation style and friendliness/helpfulness) by either group. Only half the guests rated this information as excellent. In addition, coach day visitors rated this aspect significantly lower than guests, with more than one-third rating it as poor/fair/good.

Researcher assessment of the interpretation provided by guides concluded that overall their environmental knowledge was excellent. On average, their interpretive techniques and communication skills were assessed as good, although there were some differences amongst the various guides. The major emphasis was on rainforest ecology and cognitive learning, although some did include overt conservation messages and affective components in their style and approach. However, there was little or no inclusion of sensory or participatory techniques. Drivers' environmental knowledge was assessed as good and their interpretive techniques and communication skills were considered fair. It should be noted, however, that their major role was driving the coach rather than providing environmental interpretation. Accordingly, their commentary was no more than a series of facts and sightings and did not include affective learning components.

Table 1 Rating of interpretation by ecotourist group

Ecotourist group	*Rating of interpretation*		
	Poor/fair/good	*Very good*	*Excellent*
Coach day tour visitors (N = 58)	9%	52%	39%
Guests (N = 63)	6%	27%	67%

Chi-square = 9.07, df = 2, $p < 0.05$

Table 2 Rating of information about the natural environment provided by interpretive programmes/materials by ecotourist group

Ecotourist group	*Rating of information about natural environment*		
	Poor/fair/good	*Very good*	*Excellent*
Coach day tour visitors (N = 58)	34%	47%	19%
Guests (N = 64)	11%	39%	50%
Day visitors (N = 69)	65%	26%	9%
Campers (N = 40)	63%	28%	10%

Chi-square = 62.906, df = 6, $p < 0.001$

Independent interpretive activities

All visitors had access to interpretive displays, signs and brochures at the information centre and on sign boards at each section of the park. Rangers were available on a very limited basis to talk to visitors, although volunteers staffed the information centres all day on weekends. Forty-three per cent of all respondents undertook an independent interpretive activity. However, there were significant differences between the groups, with campers being the most inclined to undertake such an activity (68%) followed by guests (47%), day visitors (35%) and coach day tour visitors (30%).

Table 2 indicates that both campers and day visitors rated the information about the natural environment provided in the park significantly lower than coach day tour visitors and guests who were rating the information provided by their guides or drivers. In fact, the majority of them rated this information as poor/fair/good.

Researcher assessment of the displays, signs and brochures rated them as fair. They emphasised cognitive elements only and did not include any sensory or participatory components to encourage affective responses.

Independent environmental activities

Nearly 99% of respondents undertook at least one independent environmental activity, such as a short nature walk, a half day or full day walk, birdwatching or birdfeeding. There were significant differences amongst the ecotourist groups in terms of the number of different activities undertaken. Campers and guests engaged in more activities than coach day tour visitors and independent day visitors. However, this was undoubtedly a function of the time limitations involved for day visitors.

Short- and Long-Term Effects of the Ecotourism Experience on Environmental Knowledge, Attitudes and Behaviours of Ecotourist Groups

Environmental knowledge

Prior to the visit, 36% of respondents rated themselves as having good or detailed knowledge. There were significant increases in both the short and long

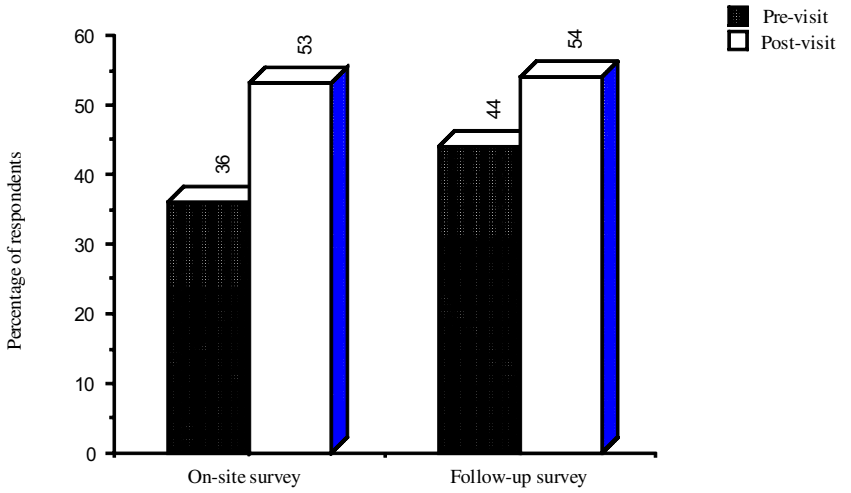

Figure 4 Respondents with good/detailed envionmental knowledge – pre-visit and post-visit – in both on-site survey and follow-up survey

term. As indicated in Figure 4, significantly more post-visit respondents rated themselves as having good or detailed environmental knowledge than pre-visit respondents. In addition, as also shown in Figure 4, the number of follow-up respondents reporting good or detailed knowledge increased significantly from 44% prior to the visit to 54% when they were tested four months after the visit.

Coach day tour visitors reported significantly lower knowledge levels than all other groups prior to the visit. However, they were the only group which increased their knowledge levels significantly both in the short and long term. As indicated in Figure 5, in the on-site survey significantly more coach day tour visitors rated that they had good or detailed knowledge post-visit than pre-visit. In the follow-up survey, as Figure 6 reveals, the percentage of coach day tour visitors reporting good or detailed knowledge increased significantly from 20% pre-visit to 37% four months after returning home. Although the other groups had slight pre-/post-visit differences and some pre-visit/follow-up differences, none of these increases was significant. As a consequence, the post-visit and follow-up environmental knowledge levels of coach day tour visitors were not significantly different to those of the other ecotourist groups.

Almost 73% of post-visit respondents and 68% of follow-up respondents indicated medium to high levels of self-rated learning following their visit. In both instances, there were differences between the ecotourist groups, though not significant, with coach day tour visitors and guests indicating higher learning levels than independent day visitors and campers.

Environmental attitudes

Prior to the visit 34% of respondents were found to be strong ESP holders. Coach day tour visitors had significantly lower attitude levels prior to the visit

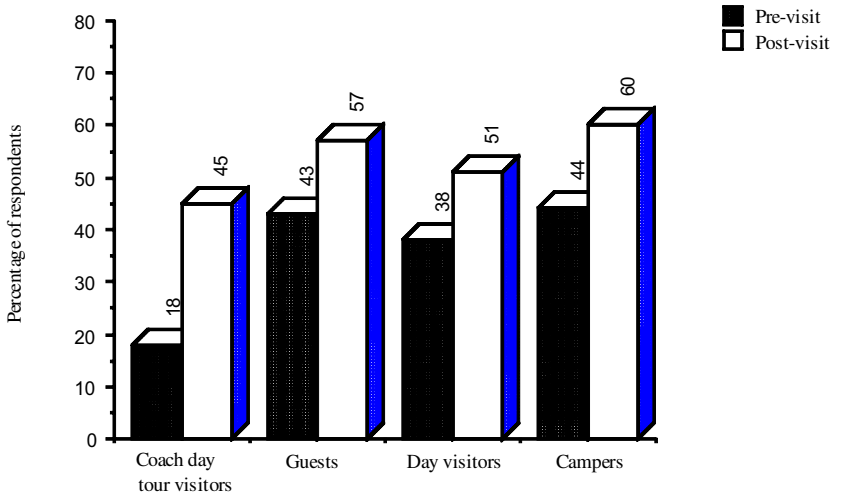

Figure 5 On-site respondents with good/detailed environmental knowledge – pre-visit and post-visit – by ecotourist groups

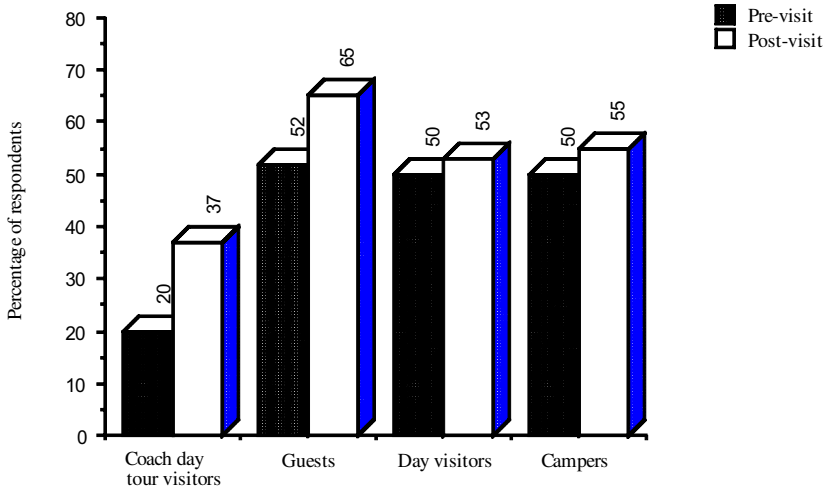

Figure 6 Follow-up respondents with good/detailed environmental knowledge – pre-visit and post-visit – by ecotourist groups

than all other ecotourist groups. Only 25% were strong ESP holders compared to 32% of independent day visitors and 40% of both campers and guests. However, neither they nor any of the other groups recorded a significant increase after the visit either in the short or long term.

Environmental behaviours

Prior to the visit, 36% of respondents performed high levels of environmentally friendly behaviours. Coach day tour visitors again had the lowest pre-visit levels of all ecotourist groups. Just under 27% performed high levels of

environmentally friendly behaviours compared to 35% of both day visitors and campers and 43% of guests. However, no significant increases were recorded for any groups when pre-visit and follow-up levels were compared.

Influence of the experience on conservation views and behavioural changes

Despite the fact that environmental attitudes and behaviours did not change when measured according to the scales described above, just over 18% of post-visit respondents and 29% of follow-up respondents gave an affirmative response to the direct question asking whether the experience had influenced their conservation views. The largest percentage of these groups specifically mentioned the need to protect and preserve remaining rainforests and other natural areas whilst many others said that it had reinforced existing views or made them more aware or appreciative of nature and/or conservation issues.

Responses to a similar question regarding the influence of the visit on future behaviours were not as strong, with only 9% of post-visit respondents indicating they would make behavioural changes when they returned home or when visiting natural areas in the future. However, 14% of follow-up participants indicated that they had actually implemented some changes since returning home. The largest number specified environmentally friendly behaviours around the home and garden and minimum impact practices when visiting natural areas.

As indicated in Figure 7, coach day tour visitors were the most likely of all ecotourist groups in the on-site survey to indicate that the experience had influenced their conservations views and behavioural intentions. However, there were no significant differences between the groups in the follow-up survey. In the long term, as Table 3 reveals, it was found that respondents who had stronger environmental interest and had higher environmental knowledge, attitude and

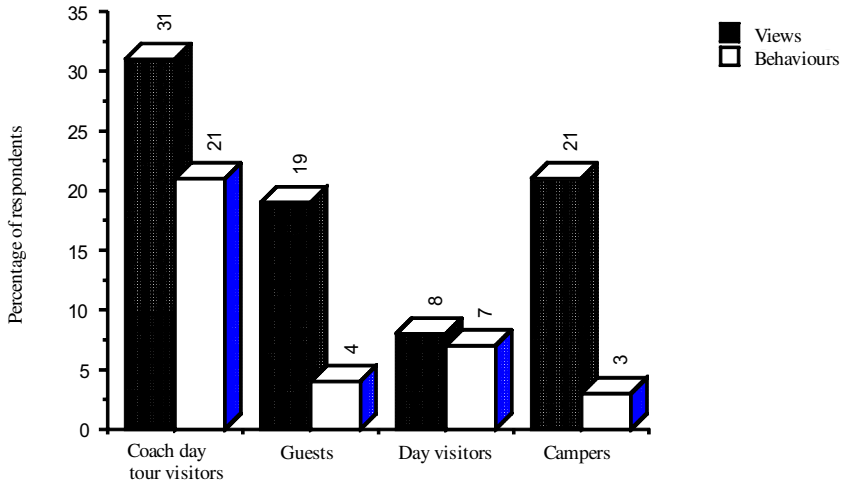

Figure 7 On-site respondents who said visit had influenced their conservation views and behaviour changes by ecotourist groups

Table 3 Follow-up respondents who said visit had influenced their conservation views by environmental interest, environmental knowledge, environmental attitudes, environmental behaviours and self-rated learning

Variable	*High levels*	*Low levels*
Environmental interest	Magazine reader 42%	Non-reader[a] 22%
	Organisation member 39%	Non-member[b] 25%
Environmental knowledge	Good/detailed 35%	None/vague/general[c] 23%
Environmental attitudes	Strong ESP holder 41%	Non/weak/moderate[d] 23%
Environmental behaviours	High performance levels 41%	None/low/medium[e] 21%
Self-rated learning	High 39%	None/low/medium[f] 24%

[a] Chi-square = 12.362, df = 1, $p < 0.001$;
[b] Chi-square = 4.771, df = 1, $p < 0.05$;
[c] Chi-square = 4.509, df = 1, $p < 0.05$;
[d] Chi-square = 8.917, df = 1, $p < 0.01$;
[e] Chi-square = 11.287, df = 1, $p < 0.001$;
[f] Chi-square = 5.506, df = 1, $p < 0.05$

behaviour levels than others, as well as those who said they had learnt the most during the visit, were the most likely to say that their conservation views had been influenced by the visit.

Conclusions

Overall, the ecotourists in this study had relatively low levels of environmental interest and involvement and unlike other studies cited earlier in this paper, their motivations were not strongly ecotourist-oriented in terms of wanting to see and learn about nature. However, there were differences among the various ecotourist groups. Coach day tour visitors had the lowest levels of environmental interest and involvement of all the groups. In addition, independent day visitors were less likely than guests and campers to be members of environment, conservation or outdoor recreation organisations and were spending a smaller proportion of their holiday visiting natural areas than those groups. By contrast, coach day tour visitors and guests, the two commercial groups, had stronger ecotourist motivations than the independent groups of day visitors and campers, although less than a third were classified as strong or complete ecotourists.

Interpretation provided at the site was predominantly knowledge-based and involved few sensory, message-based or participatory techniques conducive to generating strong feelings for the environment. However, guides at the two

accommodation houses provided interpretive experiences that were more informative and entertaining than either the commentary provided by coach drivers or the written interpretation provided by QPWS at the park. The majority of guests took part in a guided activity and two-thirds of them rated such experiences as excellent. By contrast, more than half of coach day tour visitors rated their interpretation overall as very good and were disappointed with the nature content with less than one-fifth rating it as excellent. Nearly two-thirds of campers and independent day visitors rated the interpretation provided by QPWS as poor, fair or good.

Nevertheless, the findings of overall increases in self-rated knowledge and predominantly medium to high self-rated learning levels indicate that ecotourism does have the ability to increase participants' knowledge or understanding of the natural environment and this persists in the long term – at least four months after the visit. Of the four ecotourist groups, coach day tour visitors achieved the highest gains in self-rated knowledge. Although one might attribute this to the fact that they received some environmental interpretation in the form of driver commentary, the assessment of such interpretation indicates that it was far from comprehensive and was of relatively poor quality. In addition, this group was the least likely to seek out interpretive information at the destination area. It appears that this increase occurred because they had the lowest knowledge levels initially. Guests, who also received environmental interpretation from their guides, which was superior in terms of content and interpretive techniques to the driver commentary, did not record significant increases in knowledge but had relatively high knowledge levels prior to the visit. Therefore, the results indicate that the strongest predictor of gains in knowledge is previous knowledge, and this corresponds with the findings of Lisowski and Disinger (1991). That is, those with the lowest prior knowledge achieved the highest gains. In addition, the coach day tour group had the lowest levels of environmental interest and involvement prior to the visit but relatively strong ecotourist motivations and this may also explain their propensity to learn from the experience.

Environmental attitudes and behaviours did not increase correspondingly with environmental knowledge. These findings tend to indicate that ecotourism is not having the desired outcome of promoting pro-environment attitudes and responsible environmental behaviour. As Salt (1993) suggests, it is easier to provide people with environmental knowledge than to influence them to change their environmental attitudes, and it would be particularly difficult to change deeply entrenched attitudes and behaviours based on worldviews by a single ecotourism experience. This difficulty would be intensified if the major emphasis of the interpretation provided was on cognitive rather than affective learning processes. Nevertheless, the results may be due to a 'ceiling effect' in that most people had reasonably strong environmental attitudes and high levels of environmentally friendly behaviours prior to taking part in the ecotourism experience. As found by Asfeldt (1992), Beckmann (1991), Eagles and Demare (1995) and Gillett *et al.* (1991), people who enter programmes with already strong pro-environment attitudes do not intensify those attitudes significantly as a result of participation in the activity. In fact, 75% of participants in the present study had moderate to strong environmental attitudes and more than 85%

performed medium to high levels of environmentally friendly behaviours prior to their visit.

Despite these findings, the fact that almost one-fifth of on-site participants and nearly one-third of follow-up participants did indicate that the experience had influenced their conservation views is a reasonably positive finding and indicates that ecotourism does have the potential to make people more aware and appreciative of conservation issues. Although Asfeldt (1992) found that a higher percentage expressed this sentiment, it must be noted that his study involved ecotourists on a specialised, guided wilderness canoe trip, whereas almost half of the participants in the present study were independent ecotourists who were not involved in guided interpretive activities.

Immediately after the visit, coach day tour visitors were the most likely of all ecotourist groups to say that the visit had influenced their conservation views and behavioural intentions. They were the least pro-environment initially in that they had the lowest levels of environmental interest, involvement, knowledge, attitudes and behaviours prior to the visit. This accords with the findings of Dresner and Gill (1994) and Eagles and Demare (1995) that those with the least environmental experience and weakest attitudes initially will be influenced the most by the experience. However, they had relatively strong ecotourist motivations and, as Petty *et al.* (1992) noted, motivation to attend and learn is an important intervening variable for promoting attitudinal and behavioural changes. These findings have important implications, as they demonstrate ecotourism's potential to influence the views of people who are not particularly pro-environment by a short ecotourism experience with limited environmental education, especially if they are motivated to experience and learn about nature. However, the results indicate that this effect was only short term and did not persist once the group had returned to their daily lives when the immediate cognitive and affective impacts of the visit had dissipated.

In the longer term, people who were more environmentally aware and conscious and those who had learnt more than others during their visit were the most likely to have been influenced. This accorded with Asfeldt's (1992) findings regarding strengthening of existing environmental concern. It also indicated that a circular process was operating whereby continued involvement in experiencing and learning about nature resulted in strengthening of existing knowledge, attitudes, views and behaviours, confirming the circularity theory put forward by Jackson (1986). Therefore, it seems that in the long term ecotourism may in fact be 'preaching to the converted' but still acts as a reinforcer.

In order to induct the uninitiated into the beginnings of a conservation ethic, the motivations of those with the lowest levels of environmental consciousness need to be stimulated to have further involvement in experiencing and learning about nature so that any immediate effects of an experience will endure in the long term. This has important implications, as the ecotourism market tends to be widening to include larger-scale activities which the *Queensland Ecotourism Plan* labels 'popular ecotourism' (QDTSBI, 1997: 12). This includes motorised tours in high capacity transport such as large buses and catamarans and has no maximum size placed on it. People taking part in such tours often do so as part of a larger, overall trip and, as found in this and previous research, tend to be the

least environmentally aware and conscious of all ecotourists. Therefore, it is important that this group be stimulated to adopt a conservation ethic.

Perhaps the implementation of a comprehensive intepretive programme at national parks or other natural recreation areas visited by such groups might provide the necessary stimulation. This could include short, guided walks, interpretive talks or activities that incorporate affective techniques designed to encourage strong feelings which lead to a commitment to conservation. In addition, self-guided walks and more detailed information about the natural environment and conservation issues in signs and brochures could be effective. A facility where visitors could place their names on a mailing list to receive regular updated information about nature, national parks, environmental education and interpretive programmes, and conservation organisations might also encourage continued interest and involvement after the initial nature encounter.

Nevertheless, the question remains as to whether such involvement will have net benefits for the environment. Encouraging increasing numbers of people to become involved in nature experiences may develop a conservation ethic in them. However, it may also put sensitive environments at risk of damage with increasing use. In addition, crowding and environmental degradation can lead to impairment of tourists' experiences. Both government and the tourist industry will need to carefully weigh up the costs and benefits of encouraging such involvement. They will need to implement appropriate planning procedures, including consultation with all relevant stakeholders, legislation and regulations that ensure appropriate uses and visitor levels, as well as provide interpretation that explains the significance, sensitivity and need for preservation of these areas, if they wish to ensure the sustainability of both the natural resource and the ecotourism industry.

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