

## Visitors to the Highlands of Itatiaia National Park, Brazil, and their Perceptions of Visitor Impacts

Maria Isabel A. Barros<sup>1</sup> & Teresa C. Magro<sup>2</sup>

<sup>1</sup>Instituto Ekos Brasil, Brazil  
isabel.barros@ekosbrasil.org

<sup>2</sup>São Paulo University, Brazil  
tecmagro@esalq.usp.br

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**Abstract:** The goal of this research was to characterize the visit and visitors to the highlands of Itatiaia National Park (PNI), located in the state of Rio de Janeiro, Brazil and, based on that information, to explore the guidelines of a visitor education program designed to encompass minimum impact techniques that would help minimize management problems. A questionnaire was applied to 605 people from February to August 2002 in order to collect information about visits and visitors. Among the information collected were group size, activities carried out by visitors, duration of visit, and educational level of visitors, their previous experience and perceptions of the impacts caused by visitors.

### Introduction

In Brazil, outdoor recreational activities are not yet adequately explored or advertised, but the appeals of ecotourism and recreation in protected areas such as national parks have increased significantly in recent years. Many protected areas now face the pressure of the increase in the number of visitors, often associated with a demand for a more varied availability of recreational opportunities.

The rise in the number of people who seek closer contact with natural environments, who are interested in outdoor activities and who call for a wider array of recreational opportunities aggravate the need for preparing protected areas to cater to those uses through planning and management actions. While several countries have developed great knowledge based on research about recreation management of protected natural areas, Brazil has little information and few successful stories to offer on the subject. Not surprisingly, recreational use is mostly seen as a big encumbrance and the increase in recreation-induced impacts is managed mainly by means of restricting use, closing areas and strictly regulating activities, thus leading to a reduction of the available recreational options and to restraints to visitor freedom.

Information concerning the user of a certain protected area is essential to planning and implementation of recreation management actions. That information, which should include the type of visit, visitor's expectations and perceptions, previous experience and knowledge of minimum-impact techniques is lacking in Brazil, thus hampering development of recreation management.

The highlands of Itatiaia National Park in the state of Rio de Janeiro were chosen for the study due to their unique characteristics of recreational use and also for being in Brazil's first national park.

### Methods

During the development of this study (February-August, 2002), the Park administration registered the entry of 6,700 visitors. Data on characterization of the visit and visitor's profile were obtained by means of a questionnaire comprising closed questions, answered by 605 visitors, selected randomly and interviewed during 10 weekends and/or holidays. Among the data collected are:

Characteristics of the visit: information that describes relevant attributes of the visit, among them:

A. Group size. Information about visitor group size is important to help planning management strategies related to groups.

B. Activities done by visitors. The knowledge about visitor's activities is important to help the understanding of recreation opportunities preferred at a specific protected area.

C. Duration of visit. The information about visit duration can be used as a success indicator of an area in attracting visitors.

Visitor's profile: describes visitor's attributes, such as experience, preferences and demographic data:

A. Educational level (schooling)

B. Previous experience: how long the visitor has come to the Park; how often she or he visits it during one year; whether she or he usually visits other natural areas; and if she or he usually camps.

Visitor's characteristics will help the planning of management priorities, communication methods and tools as well as measure the effectiveness of educational programs.

Visitor's Perceptions: visitors were asked about their subjective evaluation of conditions encountered during the visit and their impact on the quality of the experience. Visitors' opinions about the area's current conditions generate important information for monitoring programs. Because that information helps one get a good perspective on how important those problems are to the visitor, it can be used in setting priorities for management actions and strategies. Visitors were also asked to assess several items such as "trails with erosion and with poor maintenance" and "recovery of vegetation in campgrounds", occurrences noticed by users during their visit to the Park.

Due the fact that this information provides a good perspective about how important the problems are to the visitors, they can be used to prioritize management actions and strategies.

## Results

Itatiaia National Park is one of Brazil's most visited national parks, although the majority of visitors concentrate around the so-called "Lower Part" at the foothills of the park, where easier-access at-

tractions are located. The average number of visitors to the area under study, called "Planalto" (Highlands) between 1990 and 2002 was 10,173 people per year.

### Characteristics of the visit

#### A. Group size

Group visits predominate among users of the Highlands, probably due to local characteristics of wildness and the difficult access. Only 2% of total interviewees declared being alone, 53% said they were part of a group of 2 to 4 persons, 29% were in a group of 5-10 people and 16% were part of a group larger than 10 people strong. Therefore, 84% of interviewees visited the park in small groups of up to 10 people, although the Highlands occasionally receive groups of 100 or more. According to a comprehensive study by Roggenbuck and Lucas (1987), aimed at systematizing several studies on characteristics of recreational use and of visitors to protected natural areas in the United States, visitor groups are small and tend to become smaller with time.

#### B. User activities during visit

Hiking was mentioned by 41% of interviewees as the main activity done during the visit. Climbing the main peaks is done by 44% of interviewees and only 8% do technical rock climbing. Among interviewees, camping is not currently a very popular activity, either; it is the main activity for only 4% of users. Data show that almost all visitors (84%) flock to the two most famous peaks in the Highlands (Agulhas Negras and Prateleiras) or hike on trails that lead to their bases or on the road to Rebouças mountain shelter.

Although there are other options for excursions such as Couto Peak, Mt. Altar and Aiuruoca Falls, visitors hardly ever visit them, concentrating their activities in three places and consequently increasing impact to those areas. That happens in part due to the lack of information available at the park entrance about the Highlands and their attractions, preventing users from learning about other opportunities for excursions and trails in the area.

### C. Duration of visit

Most interviewees (83%) planned to stay overnight in the region, probably because access to the area is difficult and long and because of their interest in knowing all attractions in the area, mainly Agulhas Negras and Prateleiras peaks. In spite of the fact that other areas and studies show a trend towards short visits (Roggenbuck & Lucas 1987), that does not happen in the Highlands of Itatiaia National Park, despite the reduction in the number of opportunities and activities during the past years after camping was banned and access to some trails was closed. According to Kinker (1999), comparison of the duration of stay in three Brazilian national parks indicated that duration is proportional to the number of attractions available as well as to the degree of freedom the visitor enjoys to move around the area. One can thus infer that the time of visitors' permanence in the Highlands would increase if the offer of alternative recreational activities were also greater.

### Visitor Profile

#### A. Educational Level (schooling)

A very relevant characteristic of the visitors interviewed is their high level of schooling. Those who have completed some graduate schooling represent 20% of the total and 19% have completed college. Undergraduate students represent 33%, while 16% are either attending or have graduated from secondary school and 11% are either attending or have completed primary school. That proportion is much higher than the national average and than the educational data for the states where the park is located. That may contribute substantially to the public acceptance of a visitor education program as people who visit the Highlands already possess an educational background that helps them understand the importance of everyone's attitudes and actions in natural areas.

#### B. Previous experience

Assessment of interviewed visitors' previous experience is not very conclusive because, while 51% of people declared that they were visiting the park for the first time, 40% stated that they visit the Highlands up to three times a year and 72% stated that they usually visit other natural areas. That last

result was considered a high level of previous experience by Roggenbuck & Lucas (1987). At the same time, 9% of people said they have been visiting the park for two years, 10% for 2-4 years, 12% for 4-10 years and 18% have visited the park for more than ten years.

As to previous camping experience, 41% said that when they visit other natural areas they sometimes camp, 29% said they always camp, 23% stated they never camp and 7% did not respond. Therefore, it can be noticed that visitors to the Highlands usually do different activities from those found in the park's lower part or in other natural areas, including camping.

### Visitor's perception

Recent studies suggest that the impacts perceived by visitors may reduce the quality of the experience (Roggenbuck et al. 1993, Vaske<sup>1</sup> et al. cited by Leung & Marion 2000). Perceptions are based on how visitors believe that the impacts affect the general qualities of the place such as scenic attributes and the opportunities for isolation, and when the impacts are considered undesirable. In general, visitors are apparently more sensitive to impacts caused by inappropriate behavior such as littering, damaging trees and to examples of particularly excessive impacts such as exposed roots.

A well-established principle about recreational use in natural areas is that visitors' perceptions about the conditions of an area are strongly influenced by their expectations about those conditions (Cole et al. 1997). Questions on visitors' perceptions were therefore conceived so that answers would reveal how their experience in the Park was different from what they had expected. They were asked about the number of people they encountered during the visit to the Highlands, about the degradation of the natural areas caused by other visitors and also about the number of management actions that the administration executed to correct the impacts caused by the recreational use. Table 1 summarizes those results.

<sup>1</sup> VASKE, J.J., GRAEFE, A.R. & DEMPSTER, A. Social and environmental influences on perceived crowding. In: ANNUAL CONFERENCE OF THE WILDERNESS PSYCHOLOGIC, 3., Morgantown, 1982. Proceedings. p.211-227.

Table 1: Visitors' expectations and perceptions as to number of visitors, impact of recreational use and presence of management actions.

<b>Question</b>	<b>%</b>	<b>Question</b>	<b>%</b>
<u>Number of people seen during visit</u>		<u>What that represented to your visit</u>	
Fewer than expected	19	Did not alter the quality of the visit	55
Same as expected	30	Diminished the quality of the visit	20
More than expected	35	Improved the quality of the visit	25
No expectations	16		
<u>Degradation of natural areas</u>		<u>What that represented to your visit</u>	
Less than expected	50	Did not alter the quality of the visit	58
Same as expected	27	Diminished the quality of the visit	9
More than expected	7	Improved the quality of the visit	33
No expectations	16		
<u>Number of management actions</u>		<u>What that represented to your visit</u>	
Fewer than expected	21	Did not alter the quality of the visit	57
Same as expected	26	Diminished the quality of the visit	10
More than expected	31	Improved the quality of the visit	33
No expectations	22		

Most visitors (35%) reported that they ran into more people during their visit to the Highlands than they had expected, while 30% said they had met the same number of people they had expected. For 55% of visitors that did not alter the quality of their visit.

Likewise, the study by Cole et al. (1997) for six protected mountain areas in the states of Oregon and Washington (USA) revealed that most visitors reported that the number of people they met did not affect negatively the quality of their visit.

Half the visitors interviewed (50%) stated that degradation of the natural resources caused by visitors was smaller than they had expected and that it did not affect the quality of the visit (58%). In relation to management actions, 31% of visitors said that the number of management actions in the Park was greater than they had expected. For 57% of visitors, the number of man-

agement interventions did not affect the quality of their visit, while for 33% of visitors that number improved the quality of their visit. Those data show the public's reaction to a greater presence of management actions related to visitation as compared to that of the past. Since that study was initiated just after a major fire in the Prateleiras massif, which triggered a series of management actions affecting recreational use, visitors noticed the changes and that did not alter the quality of their visit or rather improved it. That shows that visitors are receptive to a greater presence of management interventions, which may help future strategies for recreational use in the Highlands. The impacts observed by visitors during their stay in the Highlands can be seen in table 2.

Shortcuts and/or secondary trails were the impact visitors noticed the most. Following are "eroded and poorly maintained trails", "over

Table 2: Impacts observed by visitors during their stay in the Highlands of Itatiaia National Park.

<b>Impacts</b>	<b>%</b>	<b>Impacts</b>	<b>%</b>
Eroded and poorly maintained trails	29%	People cutting grass or trees for firewood	0%
Overcrowded trails	28%	Trash/residues left by visitors	20%
Shortcuts and secondary trails	44%	Feces in inadequate places	8%
Recovery of vegetation in campgrounds	20%	Noise caused by visitors	24%
Cut or damaged trees	8%	Remnants of campfires	6%

crowded trails” and “noise caused by visitors”, showing that bad conservation of trails and the large concentration of visitors on two trails did not go unnoticed by people, either.

Impacts least observed were “remnants of campfires”, “feces in inadequate places” and “cut or damaged trees”. That probably was due to the fact that those impacts were not readily visible as they occurred in campgrounds whose use is currently banned. Those results also indicate which management actions must be set as priorities to reestablish adequate conditions for trails and visitation areas in the Highlands, seeking the public’s recognition and approval.

## Conclusions

Due to their pristine conditions, the number of visitors is increasing faster in the Highlands than in the Park’s lower part, demonstrating that the demand for activities connected with hiking, peak ascents, rock climbing and camping has also increased. However, 84% of visitors to PNI concentrate their activities in three places: Agulhas Negras Peak, Prateleiras Peak and Rebouças mountain shelter, adding to ecological and recreational impacts to those areas.

Although the high concentration of people in the same area has been noticed by visitors and most of them did not report that it affected the quality of their visit, for 20% of the people crowding diminished the quality of their experience. Just as in relation to problems connected with campgrounds, the magnitude of crowding is influenced by the frequency of interactions, the types of groups encountered, the behavior of individuals during group encounters and the place where they meet (Cole 1989). Therefore, even though the judgment as to how many people represent “overcrowding” varies from person to person, many visitors want little contact between groups and one of the objectives of management is to minimize crowding and encounters between groups.

Many impacts of recreational use at the study area are caused by management-related aspects, but some impacts are strongly influenced by visitor behavior. The high educational level of visitors and the fact that 90% of them mentioned that the

presence of management actions did not disturb or contributed to their experience, is an indicator that PNI visitors are receptive to a higher presence of recreation management and would accept a visitor education program. Therefore, considering the techniques recommended by specialized literature and adopted by Leave No Trace program, guidelines have been elaborated including techniques related to the following issues: deterioration of constructed trails, development of undesired user-created trails, proliferation of campsites, deterioration of established campsites, litter, human waste and crowding.

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