

# Volcán Masaya National Park Visitor Profile, Nicaragua

## **FINAL RESEARCH REPORT** **(AED Order 222429-7P-068)**

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# Volcán Masaya National Park Visitor Profile

## Executive Summary

This study of visitors to Parque Nacional Volcán Masaya was conducted between August 1, 1997 and May 10, 1998. Data collection consisted of three main components. First, and most comprehensive of the three, was a quantitative assessment of adult visitors' characteristics, tastes and preferences using a questionnaire. (For the purposes of this study, "adult" was defined as having 18 years of age or more.) To allow comparisons and to explore trends across different times of the year, data were collected in each of the following four quarters: (1) August 1-October 1, 1997, (2) October 2-December 31, 1997, (3) January 1-March 1, 1998, and (4) March 2-May 10, 1998. The data were analyzed both within and across quarters so that comparisons could be made. Where appropriate, discussions are included of findings considered to have clear implications for management, interpretation and marketing related to Parque Nacional Volcán Masaya.

The second component was a qualitative analysis of visitors' reactions to the visitor center exhibits, and to the park generally, utilizing 16 focus groups composed of men, women and 6<sup>th</sup> grade students. Although the primary focus of the quantitative research (component one) was on adult visitors, students were included in the focus groups at the park's request because they constitute such an important audience for PNVM community environmental education program.

The third component consisted of systematic anonymous observations of the interaction between park employees and park visitors both at the crater area and in the visitor center. Twenty-five separate observations were recorded, each lasting 1 to 15 minutes.

## Results of Questionnaire Study

Nearly 800 (791) usable questionnaires resulted from the 862 that were distributed to randomly selected visitors during the study period (August 1, 1997 to May 10, 1998). Only 35 refusals (4%) were recorded, indicating that bias due to non-response is not a statistical concern. Visitors were selected at random for participation in the study at two locations, the crater area and the park visitor center. Data resulting from all questions were disaggregated by gender to explore gender-based differences. *No* significant differences between male and female responses were found.

### Visitor Characteristics and Activities

- Visitors have a mean age of 33.6 years, with about 70 percent between 21 and 40 years of age. The average age of men and women visitors were almost the same (34.3 and 32.8, respectively). Only slightly more men than women visit the park (54% men and 46% women).
- The typical visitor arrives at VMNP in a small group of 2-6 persons. Nearly half are family groups or families with friends, and about 40 percent arrive in groups composed only of friends. About 10 percent of the visitors arrive in a commercial tour group.

- The VMNP visitor population is very international. About 40% of visitors are Nicaraguan nationals, while 60% are from other countries. Although there is some variation across the year, US nationals account overall for 15% of the visitor population. Neighboring Central American countries, Costa Rica, El Salvador and Guatemala, account for 16% of the use, and Spain accounts for 5%. The remaining visitors come from more than 30 other countries in North and Central America and Europe.
- Over half of the Nicaraguan visitors reside in the Department of Managua, while 10 percent are from Granada. The departments of Masaya, Rivas and Carazo together account for another 20% of the visitors.
- VMNP visitors are *highly* educated compared to the national population, having completed an average of 16.7 years of formal education (roughly equivalent to a university degree). Nearly 75% of the visitors have completed 15 or more years of formal education. No differences were found in the education level of men (16.8 years) or women (16.6 years), nor between Nicaraguan visitors (about 16 years) and foreign visitors (about 17 years).
- Almost three quarters (72%) of the visitors report Spanish as their native language, but English is the native language of 20% of the visitors.
- The most common recreational activities reported by visitors are visiting the crater (93%), going through the visitor center (90%), and nature appreciation or study (76%). Hiking (34%), seeing the lava tubes (16%) and picnicking (13%) were relatively popular activities.
- Although about 60% of the visitors were seeing VMNP for the first time, a significant proportion (40%) were making a repeat visit to the park.
- Visitors to VMNP do not stay in the park very long. About half of the visitors stay less than one hour, and over 80% of them stay less than 2 hours. Only 7% reported staying as much as 3 hours.

### **Visitors' Evaluation of Their Experience, Services and Facilities at VMNP**

- Visitors are more than satisfied with almost all of the recreational activities they participate in at VMNP. The only exception was picnicking, for which the mean satisfaction level was slightly below "satisfied."
- VMNP visitors are satisfied with some interpretive services (visitor center exhibits and explanations received from park employees) but not with others (brochures and maps).
- Overall, almost all (99.4%) visitors would recommend VMNP to their families or friends as a place to visit. The main reasons given for recommending the park are that it is a good place to relax (41%) and the park's beauty (20%).
- The things visitors liked most about the park were seeing the crater (41%), the park's beauty (18%) and the park's flora and fauna (10%). Another 10% said they like "everything" about the park.

- When visitors would not recommend the park, the main reasons were the lack of park employees to explain things, the high cost, and the lack of bilingual interpretation.
- The things visitors liked least about the park were the lack of a place to buy food (15%), the general lack of infrastructure (11%), lack of access to other features and views (9%) and the gases from the crater (9%). About 20% of the visitors said there was nothing they did not like.
- The most common comments made by visitors about improving their experience at VMNP were that the park should sell fast food (26%), provide more information to visitors (16%), and lower the entrance fee (5%).

### **How Visitors Obtain Information About VMNP**

- Before their visit to VMNP, the main source of information used by visitors was family and friends (53%). Printed tourist publications were mentioned by 18% of the visitors, and commercial tour guides or companies were mentioned by 16% of the visitors. Nearly 10 percent of the visitors had access to no information prior to arriving at VMNP.
- Once inside the park, the main sources of information visitors used were exhibits (70%), park employees (69%), brochures (53%) and the park map (43%).
- The sources of information visitors would like to have access to were a video about the park (69%), guided walks and talks given by park employees (46%), informational brochures on specific topics such as birds of the park, plants of the park, etc. (42%), interpretive signs at the crater (37%), and a slide show in the visitor center (37%). About 27% said they would take advantage of special exhibits for children if they were available.
- What visitors learned about at the park did not correspond closely with what they said they *would like* to learn about at the park. Whereas they reported mainly learning about “geology” (38%), their main interests were in the human history associated with the volcano (72%). Although 46% reported an interest in “how a volcano works,” all the rest of the remaining interest areas mentioned by visitors focused on some aspect of the wildlife or plants of the park.

### **Comparisons Across the Year**

- No differences were found in the age, gender or education level of visitors across the year.
- No differences were found in visitors’ satisfaction with interpretive services across the year.
- The percentage of first-time visitors to VMNP was higher between October and December than during other times of the year, probably due to Christmas vacation.

- The percentage of foreign visitors was higher between October and December (64%) than during other times of the year. Nevertheless, foreign visitors accounted for over 50% of the visitors during all months of the year.
- Three differences were found in visitors' satisfaction with their recreational activities in the park. The satisfaction of visitors with picnicking is lowest during the months of October through March. During this period, visitors reported being less than satisfied with their picnic experience in the park, possibly due to hot weather. In addition, visitors who went to the lava tubes between the months of March and October reported a higher satisfaction level than visitors who visited the lava tubes at other times of the year, again possibly due to extreme temperatures outside the much cooler lava tubes. Likewise, visitors who engaged in nature study between March and May reported a higher level of satisfaction than visitors who were sampled between August and October. Reasons for the latter finding are unclear according to the park director. Overall, however, visitors were generally satisfied both with the lava tubes and with nature study in all four quarters.

### **Results of Focus Groups**

Results of the 16 focus groups largely corroborated the results of the questionnaire survey:

- Visitors were satisfied with the existing exhibits but desired more information, especially written information such as maps and brochures.
- As with the questionnaire respondents, many visitors in the focus group discussions mentioned they would be interested in seeing a video about the park.
- As with the questionnaire respondents, many visitors in the focus groups said they learned primarily about geology at the park but were more interested in the human history surrounding the volcano.
- As with questionnaire respondents, many visitors in the focus groups mentioned that more orientation signs are needed as well as safety signs and infrastructure such as: speed limit signs, benches, and shade.
- Students were particularly interested in having more information about the history and the flora and fauna of the park. Wildlife appeared to be a topic of special interest.
- No discernible differences emerged in the viewpoints of men and women visitors.

### **Results of Observational Study**

During the study period (August 1, 1997 to May 10, 1998), 25 separate observations were recorded. The duration of the interactions ranged from a few seconds to several minutes. Almost 75% were under 5 minutes in length, and 50% were under 2 minutes. Of these interactions:

- 21 were initiated by the park ranger (4 by the visitor)



- Of those initiated by the ranger, 17 were categorized as “giving general information,” while 3 were for “regulation.” In only 1 of the 20 did the ranger attempt to explain or interpret for the visitor the significance of some feature or phenomenon in the park.
- Of the 4 interactions that were initiated by the visitor, 2 were for soliciting general information from the ranger, and in 2 cases the visitor requested an explanation about a park feature or phenomenon.
- In almost all of the interactions observed, the ranger appeared to speak respectfully to the visitor.
- In 18 of the 25 interactions, the ranger had good eye contact with the visitor. In 7 cases, eye contact was lacking.
- In 18 of 25 interactions, the ranger smiled at the visitor. In 7 cases, the ranger did not smile.
- No differences were observed in the interactions that would suggest that the gender of the visitor or ranger was important.

### **Conclusions and Recommendations**

Based on the results of the questionnaire responses and corroborating evidence from the focus groups and observational study, 13 major conclusions and recommendations are offered:

1. The park’s publications and maps need to be improved. Although respondents were generally satisfied with other information sources in the park, they reported being less than satisfied with current publications and maps. In addition, they expressed a desire for a greater variety of publications than are currently available.
2. Having food services available in the park is important to visitors. Respondents saw lack of food service within the park as a problem. Inviting individuals from local communities to operate food concessions within the park might serve the recreational interests of VMNP visitors as well as the economic development interests of local populations.
3. Recreational and interpretive opportunities at VMNP should be expanded in order to increase visitors' length of stay and to focus more specifically on reported educational interest areas. Examples of expanded opportunities might include food service, more shaded picnic and resting areas with benches, self-guided interpretive trails and interpretive signs at predominant features.
4. VMNP visitors’ current length-of-stay defines at least 3 different audiences for interpretation in the park. These include people who stay less than one hour in the park, those who stay between 1 and 2 hours, and those who stay more than 2 hours.
5. Increasing visitors average length of stay could benefit stores, restaurants, and other tourism related businesses adjacent to or even within the park. Visitors staying longer in the park may be in need

of food, gasoline lodging when they leave. In addition, sales of souvenirs, film and other accoutrements might increase. Currently, half the visitors spend less than one hour at VMNP and more than 80 percent stay less than 2 hours.

6. The VMNP interpretive program should be expanded in order to include a more conspicuous focus on the human history of the volcano, as well as on the flora and fauna of the park. These interests areas repeatedly emerged from respondents in the questionnaire study.
7. Expansion of the communication media used in the interpretive program should be considered. Respondents mentioned particular interest in video about the park, guided interpretive walks and talks by rangers, interpretive signs at the crater observation area and near other predominant features, and the availability or sale of informational brochures that interpret the park's natural and cultural history.
8. Training of park rangers at VMNP is an immediate need, especially in basic hospitality, customer service and interpersonal communication, including nonverbal communication.
9. Support for conservation in Nicaragua should be solicited from VMNP visitors. Such efforts could range from recruiting visitors to join a "Friends of VMNP" group, to inviting other conservation NGOs to put their own recruiting materials in the visitor center.
10. VMNP should explore the possibility of gradually providing both guided and self-guided bilingual interpretive services. Although more than 70 percent of visitors report Spanish as their native language, 20 percent speak English as a first language. If this figure increases with political and economic stability in the region, the VMNP interpretive program may want to respond with increased attention to bilingual interpretive services.
11. The park should continue monitoring the native language of its visitors so that it can determine when bilingual interpretive services are necessary during different parts of the year. This may be particularly important during winter months in North America and Europe when visitors may be seeking the warmer climes of Nicaragua, or during the North American and European summer vacations when families with children are more likely to travel abroad.
12. Ways of attracting a more diverse segment of the Nicaraguan population to VMNP should be explored. The current visitor population is highly educated and predominantly from Managua province.
13. VMNP must maintain and update selected components of the data-base provided by this study. Tracking changes in the data over time will be an important decision-making tool.

# Volcán Masaya National Park Visitor Profile

## Study Background

The U.S. Agency for International Development, as part of its mission in Nicaragua, supports the rational use of natural resources in protected areas. Through a two-year delivery order, the Environmental Education and Communication Project (GreenCOM) is working toward this goal by: (1) strengthening the Environmental Education and Communication (EE&C) competencies of the staff of the Ministry of the Environment and Natural Resources (MARENA) in protected area management; (2) developing, implementing, and evaluating protected area environmental interpretation and education strategies; and (3) developing, implementing and evaluating buffer zone EE&C strategies. GreenCOM is jointly funded by the Center for Environment, Center for Human Capacity Development, and Office for Women in Development of the Bureau for Global Programs, Field Support and Research of the U.S. Agency for International Development. Technical support is provided by the Academy for Educational Development and its subcontractors Chemonics International Inc., The Futures Group, Global Vision Inc., PRC Environmental Management, North American Association for Environmental Education, Porter/Novell, and the World Resources Institute.

One of GreenCOM's principal activities in Nicaragua has been a study of the audiences and interpretive services in Volcán Masaya National Park (VMNP). Located 30 kilometers from Managua, Masaya receives over 90,000 visitors per year making it one of the most heavily visited parks in Central America. It is also one of the only parks in Nicaragua with the infrastructure and interpretive services to accommodate visitors.

The current interpretation at VMNP consists primarily of exhibits in the visitor center. Brochures about the park in both English and Spanish are usually handed out but are not always in supply. A brochure in English about the lava tubes is handed out to those visitors who take the guided

tour. Also available is an audio-visual auditorium, but it is used only for school groups who request it. In addition, a staffed information desk in the visitor center exists, but is informally operated. There have been discussions about developing one or more self-guided interpretive trails in the park's dry forest and adjacent hillsides, but additional progress toward planning these trails has not yet occurred. Rangers are stationed at the observation area, but it appears that their primary function is enforcement of regulations rather than interpreting for visitors. Some interpretation for visitors comes from commercial tour guides who are reportedly trained by the park.

In conjunction with USAID/Nicaragua and the GreenCOM project, this study describes the characteristics of visitors to VMNP and their opinions of the existing interpretation. The purpose of this research is to provide the park with information about visitors that can be used in future planning and in improving interpretation within the park. Also, this study sets a baseline for future data collection and provides insight for the development of new environmental education and communication activities, which GreenCOM or donor organizations can support.

### **Research Questions**

The GreenCom Project and USAID/Nicaragua requested that the research address the following three questions:

- What are the characteristics of the visitors to VMNP?
- What are the interpretive interests of the visitors?
- How might interpretation at the site be improved or expanded to better reflect the characteristics and interests of the visitors?

### **Research Objectives**

In addressing these questions, the research was guided by three principal objectives:

1. Construct a visitor profile (e.g., socio-demographic characteristics and origin, length of park visit, first time vs. recurrent visitor).
2. Determine visitor interests and satisfaction with current interpretive services at the park.

3. Explore possible changes in visitor knowledge, opinions, and satisfaction due to the implementation of such EE&C activities and materials.

## **Research Approach**

Following a survey research methodology, this study relied principally on a questionnaire to collect quantitative data corresponding to the three research objectives. In addition, participant observation of interpersonal interactions between park visitors and employees and a series of focus groups with different segments of the visitor population were employed to supplement and expand upon the questionnaire data.

A Nicaraguan national trained in using surveys and focus groups carried out data collection over a period of nine months. The project period was from June 1, 1997 to July 30, 1998. Pre-testing and refinement of the instruments occurred in July of 1997. Data collection commenced August 1, 1997 and continued through May 10, 1998. In addition, participant observation was used to systematically record the nature of the interaction occurring between park employees and park visitors.

## **Research Methodology**

The study consisted of three main component. First was a quantitative assessment of visitor characteristics, tastes and preferences using a questionnaire. Second was a qualitative analysis of visitors' reactions to the visitor center exhibits, and to the park generally, utilizing 16 focus groups composed of men, women and 6<sup>th</sup> grade students. The third component consisted of participant observation involving 25 systematic and anonymous observations of the interaction between park employees and park visitors at both the crater area and in the visitor center.

## **Questionnaires**

The quantitative assessment was accomplished using a questionnaire administered personally by the research field assistant. This approach helped to insure an adequate response rate, thus greatly reducing the potential for non-response bias in the data. Given the lack of tradition of mail-back surveys in Nicaragua and the nature of the mail system itself, response rate was *the major* factor in our decision to use the personally administered questionnaire. Formal interviews of respondents might have been possible, but only one at a time could have been conducted. The personally administered questionnaire allowed simultaneous data collection from two or more visitors on especially busy days. Having the field assistant nearby also allowed respondents to ask questions or request clarification while filling out the questionnaire. A clear advantage of the personally administered questionnaire was that it allowed the characteristics and views of visitors with limited reading skills to be included in the study. Careful training of the field assistant prior to data collection also helped to reduce potential bias in the study. English and Spanish versions of the questionnaire are included in Appendix A.

## **Focus Groups**

The qualitative assessment of visitors relied on the use of focus groups. Although focus groups usually do not produce systematic data useful in quantitative analyses, in qualitative research they allow us to stimulate thinking and group information processing and to elicit a wide range of ideas on a particular subject. Also, focus groups can be used in formative research for generating group impressions of products, programs, services, institutions, or other topics of interest to a social scientist.

A topic of central interest in this study was visitors' interests and satisfaction with the current interpretive services at VMNP, which currently consist only of exhibits in the visitor center, brochures, and occasional ranger-led tours. Focus groups were used specifically to gather more in-depth information about visitors' reactions to the exhibits, what they felt they learned from them, what they are interested in, what they liked and disliked, and why. (A list of the questions asked is included in

Appendix B.) Our use of focus groups in the qualitative component of this study allowed us to obtain information from visitors quickly and in the visitors' own words. Additionally, the group-interview format not only allowed interaction between the interviewer and the visitor, it allowed the visitors to build upon *each other's* responses. In this way, the focus group discussions provided GreenCOM a rich impression of the exhibits and other aspects of VMNP from the visitor's perspective.

In addition to the focus groups with adult visitors, we conducted one focus group per month with 6th grade students visiting VMNP with their classes. According to park records, school groups account for approximately 30 percent of the park's visitation, and thus constitute an important audience for interpretive services. Because of potential differences in the views of students who live in buffer zone communities around the park and those who live in other communities, we attempted to conduct separate focus groups for buffer zone and non-buffer zone children. However, due to the way the school groups scheduled their field trips, we were not able to separate the groups easily on the limited days we had available for the focus groups. Thus we conducted seven student focus groups with no separation of buffer zone or non-buffer zone communities. These focus groups asked the students what kind of information would make their visit more enjoyable and what exhibits in the visitor center they found to be most interesting.

## **Participant Observation**

In the final component of the study, the data collector conducted participant observation of the interaction between rangers and visitors at the observation area one day every other month (see attached observation instrument). Key variables included: (1) who initiated the contact, (2) the duration of the contact, (3) distance between the ranger and the visitor, (4) whether the ranger smiled during the contact, (5) body language of the ranger, (6) eye contact between the ranger and the visitor, (7) whether the ranger gave the information requested and whether or not that information was

accurate, (8) whether the contact was for rule enforcement or to provide information, (9) whether the ranger spoke respectfully to the visitor, and (10) gender of both the ranger and the visitor. Recording data for some of these variables required the data collector to position herself in close proximity to the conversation being monitored. We increased the reliability of the observation instrument by comparing the observations of the data collector with those of the field study coordinator during the same contacts, and refining observational and data recording procedures accordingly. The data recording form for the observations is included in Appendix C.

## **Variables of Special Interest to GreenCom**

GreenCOM's expressed interest in the following variables guided the design of the questionnaire and focus group instruments:

- Date of visit
- Type of visitor according to sampling typology (visitor center vs. observation area)
- First-time or repeat visitor (number of prior visits)
- Socio-demographics (gender, age, educational level) and country of origin
- Satisfaction with existing interpretive services and materials and recreational activities
- Other Nicaraguan national park visitation experience
- Information that would help make decisions about visits to other parks
- Motivation/barriers to future trips to VMNP
- Material or concepts learned from existing interpretive exhibits

## **Sampling and Data Collection Procedures**

### **Questionnaires:**

The quantitative component of the study used a questionnaire (see attached draft in English) distributed by a local-hire Nicaraguan data collector. Randomly selected respondents at both sites received similar questionnaires. Those in the visitor center received questionnaires as they left the exhibit area. Those at the observation area received the questionnaire after they passed a certain point on the wall at the viewpoint. The questionnaires contained questions about exhibits in the visitor center, questions about their overall satisfaction with interpretation in the park, and demographic questions. Respondents at the crater observation area received a similar questionnaire but were asked if they had been to the visitor center; and if so, they were asked briefly about what they learned from the exhibits. The data collector was available if the respondents had questions or needed clarification of questions and collected the questionnaire as the visitors completed it. Visitors were assured of confidentiality and told that the surveys were numbered for coding purposes only.

A total of 791 usable questionnaires resulted from the 862 that were distributed to randomly selected visitors during the study period (August 1, 1997 to May 10, 1998). This corresponds to a 92



percent response rate. Only 35 refusals (4%) were recorded, indicating that bias due to non-response is not a statistical concern. For all 35, "lack of time" was cited as the reason for not participating in the study. Comparing respondents with non-respondents, no statistically significant differences were found in gender, age, education, country of origin, native language, or in a global measure of the individual's overall satisfaction with his/her park experience. Visitors were selected at random for participation in the study at two locations, the crater area and the park visitor center. In both locations, every "nth" visitor (with a random start) who crossed a defined invisible line was selected for participation in the study. The magnitude of "n" varied each day according to visitor numbers. At least 15 completed questionnaires per day were collected.

### **Focus Groups:**

Focus groups were used for qualitative data collection. Each month one group of *Spanish-speaking* visitors in the visitor center and one student group were asked if they would be willing to participate in a focus group discussion of approximately 15 minutes. (As mentioned earlier, although adult visitors were the primary focus of the study, students were included in the focus groups at the park's request because of their importance in the VMNP environmental education program.) We conducted separate focus groups for men, women, visitors to the crater, and visitors to the visitor center, to see if their interpretive interests differ. Once convened, the group of six to ten visitors answered questions related to the visitor center exhibits. The data collector invited selected visitors, as they were leaving the exhibit area, to participate in the focus groups. Although some attempt was made to diversify the make-up of each group in terms of age of adult men and women visitors and gender of the 6<sup>th</sup> graders, a random sample was not attempted. Questions asked during the group interviews called for visitors' judgments about the quality and interest level of the current exhibits in the visitor center.

### **Participant Observation:**

In the observational component of the study, the data collector spent a four-hour period once every two months systematically observing and recording the nature of the interaction between park employees and visitors. During each four-hour period, interactions were observed in the order in which

they occurred within defined “observational areas” at crater and in the visitor center. Twenty-five separate observations were recorded, each lasting between 1 and 15 minutes.

As previously mentioned, the main variables recorded were (1) who initiated the interaction (the park employee or the visitor), (2) the purpose of the interaction (regulation/enforcement of park rules, provide general information, or to provide an explanation of a park feature or phenomenon), (3) whether the employee smiled and looked the visitor in the eye, and (4) whether the employee spoke respectfully to the visitor.

### **Major Findings of the Quantitative Study**

Results of the analysis of questionnaire data are discussed in this section of the report. The 26 supplementary graphics referred to in the presentation of findings can be found near the end of the report, beginning on page 36. As previously detailed, 791 usable questionnaires resulted from the 862 that were distributed to randomly selected adult visitors between August 1, 1997 and May 10, 1998—a response rate of 92 percent. (For the purposes of this study, “adult” was defined as visitors of at least 18 years of age.) Only 35 refusals (4%) were recorded, indicating that bias due to non-response is not a statistical concern. For all 35 visitors who declined to fill out a questionnaire, “lack of time” was cited as the reason for not participating in the study. Comparing respondents with non-respondents, no statistically significant differences were found in gender, age, education, country of origin, or in a global measure of the individual’s overall satisfaction with his/her park experience. In addition, the data resulting from all questions were disaggregated by gender to explore gender-based differences. *No* significant differences between male and female responses were found.

#### **What are the Characteristics of VMNP Visitors?**

- Slightly more men than women visited the park during the study period (54% men and 46% women).

- Visitors to VMNP have a mean age of 33.6 years, with about 70 percent between 21 and 40 years of age. The average age of men and women visitors were almost the same (34.3 and 32.8, respectively). See Figures 1 and 2, respectively.
- The typical visitor arrives at VMNP in a small group of 2-6 persons (Figure 3). Nearly half are family groups or families with friends, and about 40 percent arrive in groups composed only of friends. About 10 percent of the visitors arrive in a commercial tour group (Figure 4).
- The VMNP visitor population must be considered relatively international. About 40% of visitors are Nicaraguan nationals, while 60% are from other countries. Although there is some variation across the year, US nationals account overall for 15% of the visitor population. Neighboring Central American countries, Costa Rica, El Salvador and Guatemala account for 16% of the use, and Spain accounts for 5%. The remaining visitors come from more than 30 other countries in North and Central America and Europe. See Figure 5.
- Although Nicaraguan visitors travel from throughout the country to visit VMNP, over half of the them reside in the Department of Managua (see Figure 6). Slightly more than 10 percent are from Granada. The departments of Masaya, Rivas and Carazo together account for another 20% of the visitors.
- VMNP visitors are *highly* educated compared to the national population, having completed an average of 16.7 years of formal education (roughly equivalent to a university degree). Nearly 75% of the visitors have completed 15 or more years of formal education (see distribution in Figure 7). As Figures 8 and 9 illustrate, no differences were found in the education level of Nicaraguan

visitors (about 16 years) and foreign visitors (about 17 years), nor between men (16.8 years) versus women (16.6 years).

- Almost three quarters (72%) of the visitors reported Spanish as their native language, but English is the native language of 20% of the visitors. See Figure 10.

### **What are the Principal Activities of VMNP Visitors and How Long Do They Stay in the Park?**

- As the distribution in Figure 11 illustrates, VMNP visitors participate in a wide range of recreational activities, the majority of which rely on the natural setting and physical features of the park. The two most common recreational activities reported by almost all respondents are visiting the crater (93%) and going through the visitor center (90%). Nature appreciation or nature study was reported by 76 percent of the respondents. In addition, hiking (34%), seeing the lava tubes (16%) and picnicking (13%) were relatively popular activities. Note that the percentages in Figure 11 do not add to 100 because a respondent could report multiple activities.
- Although about 60% of the visitors were seeing VMNP for the first time, a significant proportion (40%) were making a repeat visit to the park.
- Notably, visitors to VMNP do not stay in the park very long (Figure 12). About half of the visitors stay less than one hour, and over 80% of them stay less than 2 hours. Only 7% reported staying as much as 3 hours, and no respondents reported staying as long as 6 hours.

### **What are Visitors' Opinions of Their Experience, Services and Facilities at VMNP?**

To assess respondent's evaluations of their park experience and of the services and facilities provided at VMNP, a five point Likert-type measurement scale was used as follows:



procedure, the initial verbatim comments by respondents were first categorized by one of the researchers according to their prevailing meaning. Second, another individual unrelated to the study was asked to independently assign each comment to one of the predefined categories. Comments on which both persons assigned the same category were retained in the analysis. This included almost all statements. Comments on which there was disagreement were labeled as ambiguous and omitted from the analysis. Following these procedures allowed the researchers to be certain of the reliability of the comment categories that were ultimately used in the analysis. Results of the analyses conducted for these data follow.

- Overall, almost all (99.4%) of visitors would recommend VMNP to their families or friends as a place to visit. The main reasons given for recommending the park (see Figure 15) were that it is a good place to relax (41%) and the park's beauty (20%). Representative comments from visitors included "It's pretty here," "Because the park is a good place to relax," and "Because my family had never before seen an active volcano." A notable proportion (33%) gave reasons that were different from the prevailing responses, yet individual enough that they could not be further consolidated. These were put into an omnibus category labeled "other." Examples of statements put into the "other" category were, "Because I like it here," and "I just think I would (recommend it)."
- When visitors would not recommend the park, the main reasons were the lack of park employees to explain things, the high cost, and the lack of bilingual interpretation. Because the proportion of respondents who would not recommend the park was so small (0.6%), these comments were not subjected to content analysis.

Respondents were asked in two additional open-ended questions to tell what they *liked most* about their visit to the park and what they *liked least* about their visit to the park. Their responses were subjected to content analysis as described previously.

- The things visitors *liked most* about their visit to VMNP were seeing the crater (41%), the park's beauty (18%) and the park's flora and fauna (10%). Another 10% said they like "everything" about the park. About one fifth made comments that were too general to categorize further. See Figure 16.
- The things visitors *liked least* about their visit to the park were the lack of a place to buy food (15%), the general lack of infrastructure (11%), lack of access to other features and views (9%) and the gases from the crater (9%). About 20% of the visitors said there was nothing they did not like. See Figure 17. Again, a sizable proportion of respondents (36%) made comments that were either too general or too idiosyncratic to be consolidated into separate categories. Examples included "Not fun," "I don't know exactly," and "It's not a very interesting place."

In a final open-ended question, respondents were given an opportunity to make any other comments about anything related to their visit to VMNP. Again, these responses were recorded verbatim and subjected to content analysis.

- Although most respondents did not offer additional comments, those who did tended to focus on what could be done to improve or enhance their visit to the park. The most common comments were that the park should sell fast food (26%), provide more information to visitors (16%), and lower the entrance fee (5%). As mentioned later, these results were largely corroborated by sentiments expressed during the focus group discussions.

## How Do Visitors Obtain Information About VMNP Before and During Their Visit?

In order to identify avenues for marketing, publicity, and interpretation at the park, and to explore opportunities for the private tourism sector to capitalize on the regional and international popularity of VMNP, respondents were asked a series of questions pertaining to the sources of information they relied on to get information about the park both *before* and *during* their visit.

- Consistent with most studies analyzing tourists' pre-travel information sources, the main source of information used by visitors before their visit to VMNP was family and friends (53%). Printed tourist publications were mentioned by 18% of the visitors, and commercial tour guides or companies were mentioned by 16% of the visitors. Nearly 10 percent of the visitors had access to no information prior to arriving at VMNP. See Figure 18. Note that percentages do not add to 100 since respondents could indicate multiple information sources.
- Once inside the park, the main sources of information visitors used were exhibits (70%), park employees (69%), brochures (53%) and the park map (43%). See Figure 19. Note that percentages do not add to 100 since respondents could indicate multiple information sources.
- In addition, respondents were asked to indicate what other sources of information they would use if they were available to them. The sources of information visitors would like to have access to were a video about the park (69%), guided walks and talks given by park employees (46%), informational brochures on specific topics such as birds of the park, plants of the park, etc. (42%), interpretive signs at the crater (37%), and a slide show in the visitor center 37%). About 27% said they would take advantage of special exhibits for children if they were available.



## What Do Visitors Learn at VMNP and What Would They Like to Learn?

In order to explore opportunities for improving and expanding VMNP's interpretive program, respondents were asked in two separate open-ended questions to indicate something new they had learned during their visit to VMNP and something they would like to learn about while in the park.

- What respondents said they learned about at the park during their visit did not correspond closely with what they said they *would like* to learn about at the park (see Figures 20 and 21, respectively). Whereas respondents reported learning mainly about “geology” (38%), their main interests were in the human history associated with the volcano (72%). Although 46% reported an interest in “how a volcano works,” all the rest of the remaining interest areas mentioned by visitors focused on some aspect of the wildlife or plants of the park. As discussed shortly, focus group discussions also pointed to a need for increased focus on wildlife interpretation at the park.

## Comparisons Across the Year

The data were analyzed across the four quarters of the study in order to identify differences in study variables over time and to explore apparent trends in the data. The four quarters were as follows:

1 <sup>st</sup> Quarter:	August 1 to October 1, 1997
2 <sup>nd</sup> Quarter:	October 2 to December 31, 1997
3 <sup>rd</sup> Quarter:	January 1 to March 1, 1998
4 <sup>th</sup> Quarter	March 2 to May 10, 1998

Results of all analyses were compared across the quarters using statistical tests appropriate for the type of data being analyzed. In comparisons of nominal-level data, a Chi Square test of independence was used. In the case of interval-level data (such as means), a t-test was used. In all cases, a minimum significance level of .05 was applied.

- No differences were found in the age, gender or education level of visitors across the year.

- No differences were found in visitors' satisfaction with interpretive services across the year.
- The percentage of first-time visitors to VMNP was higher between October and December than during other times of the year, probably due to Christmas vacation ( $p < .05$ ). See Figure 22.
- The percentage of foreign visitors was higher between October and December (64%) than during other times of the year ( $p < .05$ ). Nevertheless, foreign visitors accounted for over 50% of the visitors during all months of the year. See Figure 23.
- Three differences were found in visitors' satisfaction with their recreational activities in the park ( $p < .05$ ). The satisfaction of visitors with picnicking is lowest during the months of October through March. During this period (see Figure 24), visitors reported being less than satisfied with their picnic experience in the park. In addition, visitors who went to the lava tubes between the months of March and October reported a higher satisfaction level than visitors who visited the lava tubes at other times of the year (Figure 25). Likewise, visitors who engaged in nature study between March and May reported a higher level of satisfaction than visitors who were sampled between August and October (Figure 26). Overall, however, visitors were generally satisfied both with the lava tubes and with nature study in all four quarters.

### **Results of the Focus Group Discussions**

In total 16 focus groups were conducted as follows (see table below):

- 7 focus groups of **students** from communities in the buffer zone. [Again, although adult visitors were the main focus of the qualitative (questionnaire) study, students were included in the focus groups at the request of the park because of their importance in the VMNP environmental education program.]

- 4 focus groups of **men** who had gone through the visitor center
- 1 focus group of **men** who had visited the crater area
- 3 focus groups of **women** who had gone through the visitor center
- 1 focus group of **women** who had visited the crater area

These are further summarized in the following table:

<u>Type of group</u>	<u>Visitor center</u>	<u>Crater area</u>	<u>Total</u>
Men	4	1	5
Women	3	1	4
Students	7	0	7
Total	14	2	16

The data collected from the 16 focus groups largely support the findings of the quantitative component of the study. In the focus groups, the largest single group of visitors was Nicaraguan and the majority of these were from Managua. Visitors were satisfied with the existing exhibits but desired more information, especially written information such as maps and brochures. Many visitors in the quantitative study mentioned they would be interested in seeing a video about the park and this response also showed up in the focus groups. Students were particularly interested in having more information about the human history and the flora and fauna of the park. In the quantitative study, visitors said they learned about geology but were more interested in human history and these results also showed up in the focus groups. ("Human history" refers to the history of human perceptions of and interaction with the volcano.)

Several other comments outside of the specific questions also matched the quantitative results. Visitors in both components of the study mentioned that more orientation signs are needed as well as safety signs and infrastructure such as: speed limit signs, benches, and shade.

These responses were compiled from the tape-recordings of each focus group discussion. The tapes were then transcribed by our native Nicaraguan data collector and subsequently translated and summarized by the researchers. Responses relating to the main focus group questions (see below) were tallied to determine which were most frequently given. There were no noticeable differences between the responses of men and women in the focus groups.

### **Questions and Overall Responses of Visitors to Crater:**

#### **1) Where are you from?**

The visitor profile in the focus groups matched that of the quantitative study with the largest single group being Nicaraguans from Managua and the rest of the visitors being from other Central American countries. Since the focus groups were conducted in Spanish, U.S. nationals were not included.

#### **2) How often do you go on recreational trips to the country?**

Answers to this question ranged from weekly trips to only going on school field trips. There was no obvious pattern in these answers.

#### **3) What new things did you learn on your visit to the crater today?**

Visitors stated that they learned several things at the crater:

- The history of the Cruz de Bobadilla
- That the crater is slowly crumbling
- That the crater is something natural, strange, and impressive

#### **4) Do you have any questions about what you saw at the crater today?**

- "When was the last eruption of the Santiago volcano?"

Other visitors stated they had no questions about the crater.

5) To make your visit more interesting and enjoyable, what types of information would you like to see presented at the crater?

- "More information in brochures, books, and a person to explain things"
- "More signs and safer infrastructure"
- "Signs in each place with brief explanations so people can get an idea of the importance of what they are seeing"
- "It would be good to have someone to orient and talk about the craters"
- "It would be valuable to have more scientific information"
- "More information about dates and which things are which"
- "It is good to reinforce what you see with what you read because you understand it better"

6) Is there anything else you would like to mention about your visit to Masaya National Park?

"The park needs to give out more written information about the park in general"

"There should be more signs"

"There aren't enough places to sit"

"There should be more benches and shade"

"There should be more signs with information"

### **Questions and Overall Responses of Visitors to Visitor Center:**

1) Where are you from?

Again, the visitor profile matched that of the quantitative study with the largest single group being Nicaraguans from Managua and the rest of the visitors being from other Central American countries.

Since the focus groups were conducted in Spanish, there were no U.S. nationals included.

2) How often do you go on recreational trips to the country?

Answers ranged from twice a week to once every two or three months. Again there were no noticeable patterns in these answers.

3) What new things did you learn on your visit to the visitor center today?

- "Everything was new for me"
- "I learned something about volcanoes"

4) Do you have any questions about what you saw at the visitor center today?

- "Are there a lot of visitors to this park?"
- "I think everything is very complete"
- "I needed more time to see and read things"
- "I would like to know how many volcanoes there are in this park and where they are located"

5) To make your visit more interesting and enjoyable, what types of information would you like to see presented in the visitor center?

- "More written information and someone to explain things"
- "Binoculars or telescopes to see the lava"
- "It would be nice to have guides in the museum who would give an orientation talk, not only to students"
- "Many of the exhibits need more explanations. Some of them have no explanations and you don't know what you are looking at"

6) Is there anything else you would like to mention about your visit to the park today?

- "The museum needs better lighting"
- "A bigger variety of stuffed animals"

- "More signs around, in the picnic area for example"
- "It would be good to have the rangers doing roving interpretation"
- "It might be good to have specific guides for specific visitors. One guide for nationals, one for foreigners, one for students, etc."
- "There should be more general information"

### **Questions and Overall Responses of School Groups:**

1) To make your visit your visit more enjoyable and interesting, what type of information would you like to see exhibited in the visitor center?

- "Information about what types of animals are in the park and how many"
- "All the information I want is in the visitor center"
- "More information about the history of the volcano, how many eruptions etc."
- "It would be good to have a graphic with facts about the 1970 eruption"
- "Everything in the visitor center is fine"
- "It would be nice to have a zoo in the park"
- "More activities for primary school children"
- "Put in an exhibit about what our country looked like before it was settled"
- "That the national laws are enforced"
- "I would like to see more in-depth explanations"
- "I too would like to see more in-depth explanations, not such short ones"
- "More exhibits about Indians"
- "Some of the pictures are missing, they should replace them"
- "That they have the history of the park in videos"
- "The tours should be slower so we have time to see things"
- "More information about the Indians and what they did"
- "They could put pictures of the important trees that are in the park"
- "Each part of the visitor center could represent one part of the park"
- "More photos of the caves and the areas around the volcano"

- "More paintings would be good"
- "They could put in a large picture of the cross"

23) Which of the exhibits caught your attention?

- "The maps and the video (slideshow?)"
- "I liked the video because it explained what happened here"
- "I liked the animal exhibits"
- "The stuffed animals"
- "All of the exhibits were good"
- "The paintings"
- "The paintings at the entrance"
- "The signs about not contaminating the lake"
- "The exhibits about plate tectonics"
- "The exhibits about natural resources because the soil is very fertile"
- "The exhibits about the geological formation of the Coco and Caribe plates"
- "The exhibits about the parrots that live in the crater"
- "Exhibits about the vegetation, flora and fauna"
- "The exhibit about Comalito"
- "The exhibits about the size and history of the park"
- "The information about the Indians and priests"
- "I liked the maps and photographs of all the Nicaraguan volcanoes"
- "The information about the effects of the gases"
- "The legends and the paintings"

### **Results of the Observational Analysis**

Once every two months, the data collector spent a four-hour period systematically observing and recording the nature of the interaction between park rangers and visitors. Key variables recorded were (1) who initiated the interaction (the ranger or the visitor), (2) the purpose of the interaction



(regulation, give general information, or give an explanation of a park feature or phenomenon), (3) whether the ranger smiled and looked the visitor in the eye, and (4) whether the ranger spoke respectfully to the visitor. The data collection form is included in Appendix C.

During the study period (August 1, 1997 to May 10, 1998), 25 separate observations were recorded. Of these:

- 21 were initiated by the park ranger (4 by the visitor)
- Of those initiated by the ranger, 17 were categorized as “giving general information,” while 3 were for “regulation.” In only 1 of the 20 did the ranger attempt to explain or interpret for the visitor the significance of some feature or phenomenon in the park.
- Of the 4 interactions that were initiated by the visitor, 2 were for soliciting general information from the ranger, and in 2 cases the visitor requested an explanation about a park feature or phenomenon.
- In almost all of the interactions observed, the ranger appeared to speak respectfully to the visitor.
- In 18 of the 25 interactions, the ranger had good eye contact with the visitor. In 7 cases, eye contact was lacking.
- In 18 of 25 interactions, the ranger smiled at the visitor. In 7 cases, the ranger did not smile.

Overall, the interaction between ranger and visitors appears satisfactory. Greater attention, however, could be paid to smiling and eye contact as important nonverbal communication skills. In addition, rangers could improve their service to visitors by being more assertive and by offering explanations of the features of the area, rather than only giving general information and orientation.

No differences were observed in the interactions that would suggest that the gender of the visitor or ranger was important. In other words, it did not matter which genders were involved in the interaction.

The duration of the interactions ranged from a few seconds to several minutes. Almost 75% were under 5 minutes in length, and 50% were under 2 minutes.

## **Conclusions and Recommendations**

Based upon the results of the questionnaire study and corroborating evidence from the focus groups and participant observation analyses, 13 conclusions and recommendations are offered.

- 1. The park's publications and maps need to be improved.** Results of this study indicate that VMNP visitors frequently rely on printed materials for their information even though they are not very satisfied with the usefulness or quality of existing maps and publications. In addition, the availability of printed brochures on specific topics of interest was one of the most frequently mentioned interpretive media desired by visitors. A revenue-generating opportunity exists for VMNP and/or private entrepreneurs to fill this demand. According to the results of this study, illustrated brochures on the human history, wildlife and plants of VMNP might be especially popular.
- 2. Having food services available in the park is important to visitors.** Lack of food concessions was mentioned directly by significant numbers of visitors both in questionnaire responses and in focus group discussions. The possibility of operating a cafeteria or inviting individuals from local communities to operate food concession "stands" in the park should be explored. The lack of food services in the park may be reflected in VMNP visitors' short length-of-stay. Inviting individuals from local communities to operate in-park food concessions might serve both the recreational interests of VMNP visitors as well as the economic development interests of local populations. In addition, the expansion and improvement of the park's current picnic area should be explored.
- 3. Recreational and interpretive opportunities at VMNP should be expanded.** Half of VMNP visitors stay less than one hour in the park, and more than 80% stay for less than two hours. This unusually short length-of-stay might well be a reflection of the sheer lack of recreational opportunities in the park. According to the results of this study, new opportunities should include provision of a food concession (perhaps in the visitor center), expansion and improvement of the

picnic area, provision of more guided and self-guided interpretation (such as talks, demonstrations, a facility for viewing a park video and slide show, signs and self-guided trails), and the creation of more shaded rest areas with benches. Some of these expansion ideas lend themselves well to involvement of the private tourism industry. Production of a park video tape and slide/tape program and the design and development of flora and fauna guides are good examples which, like the media listed above, emerged as priorities from the study results. The newly developed “Deer Viewpoint” and trail to the lava tubes are good examples of the kind of sensitive developments that can be considered at VMNP. Access remains a challenge for people who are on foot, and parking areas must be well designed and maintained at roadside developments where congestion and potential hazards will otherwise result. In addition, the newly formed “Grupo Pinolero” (a cadre of Nicaraguan interpretive specialists whose training was financed by USAID and the GreenCom Project) could and should be contracted to carry out some of the recommended expansions (e.g., interpretive signs at the crater area, self-guided trails, flora and fauna brochures, trail guides, etc.).

- 4. VMNP visitors’ current length-of-stay defines at least 3 different audiences for interpretation in the park.** The first of these is the 50% who remain in the park less than one hour. For these visitors, quick and readily accessible self-guided interpretation is required. A second audience is comprised of the 31% who remain in the park 1-2 hours. For these visitors, more extensive reading of signs and exhibits can be expected. In addition, some would take advantage of scheduled interpretive talks at the crater observation area or the visitor center, were they to be offered. The third audience consists of the 19% that remains in the park more than 2 hours. Some of the visitors will avail themselves of guided walks and talks if they know in advance when and where they are to take place. In addition, they are more likely to read written or printed interpretive materials (such as signs, exhibits and brochures) and to approach park employees for more detailed information than members of the other two audiences.

**5. Increasing visitors average length of stay could benefit stores, restaurants, and other tourism related businesses adjacent to the park.** Visitors staying longer in the park may be in need of food, gasoline, and perhaps lodging when they leave the park. In addition, sales of souvenirs, film and other accoutrements related to park-going might increase were visitors to spend longer periods in VMNP.

**6. The VMNP interpretive program should be expanded in order to include a more conspicuous focus on the human history of the volcano, as well as on the flora and fauna of the park.**

Questionnaire respondents and focus group participants, alike, repeatedly reinforced an unmet demand for more interpretation focusing on the colorful human history surrounding the Masaya Volcano and on the abundant wildlife and associated habitats that are protected at VMNP. (Used in this context, "human history" refers to the history of human perceptions of and interaction with the volcano.) A variety of media might be used to strengthen the park's interpretation of these topic areas, but especially important might be those that emerged from the study as visitor priorities (park video, signs at the crater area, self-guided trails, ranger talks and guided walks, and topic-specific brochures).

**7. Expansion of the communication media used in the interpretive program should be considered.** As emphasized above and elsewhere, visitors might be especially interested in a video about the park, guided walks and talks presented by rangers, interpretive signs at the crater observation area and near other predominant features, and the availability or sale of informational brochures that interpret the park's history, plants, birds, geology, etc.

**8. Training of park rangers at VMNP is an immediate need.** Current visitors to VMNP are highly educated compared to the national population (and probably relatively wealthy), and they come

from many countries of the world—more than 60 % from *outside* Nicaragua. In addition, a significant proportion already has some familiarity with the park as evidenced by the number of repeat visitors. This reality reinforces the importance of providing ranger training programs that would emphasize not only the human and natural history of the park, but also the cultures that the visitors bring with them. Rangers need to be more aware of the perspective of both national and foreign visitors and how to serve their needs and their interests. In addition, the training should stress basic principles of hospitality that might significantly enhance current operations and interpretive services (e.g., smiling, eye contact, initiating conversations in order to interpret the park, not just to enforce regulations, or give directions, etc.). The VMNP visitor population seems relatively sophisticated when compared to the probable characteristics of visitors at other Nicaraguan protected areas. Recognizing this, MARENA might place added importance on ongoing training for VMNP staff. Because of the significant benefits to the private tourism sector engendered by VMNP, funds to support this training might be solicited from private companies and retailers who stand to capitalize on the park’s success.

9. **Support for conservation in Nicaragua should be solicited from VMNP visitors.** The high education level of VMNP visitors and their commitment to the park (as evidenced by their high rate of repeat visitation) suggests that these visitors may represent an important audience for soliciting funds earmarked for the protection and interpretation of the park, if not for conservation, generally, in Nicaragua. In addition, the park might consider recruiting visitors for an NGO “Friends of VMNP,” or invite existing conservation NGOs to recruit them.
10. **VMNP should explore the possibility of gradually providing both guided and self-guided bilingual interpretive services.** A significant proportion of VMNP visitors come from English-speaking countries. This suggests that bilingual interpretive services be considered in future expansion efforts. During certain times of the year (particularly between October and December—and possibly during North American summer vacations in July—a period not covered

by this study), hiring bilingual rangers could be especially important. In the current visitor center, a brochure in English that contains appropriately translated texts of the exhibits might be available free or for sale at the reception desk.

- 11. The park should continue monitoring the native language of its visitors so that it can determine when bilingual interpretive services are necessary during different parts of the year.** Currently, about one fifth of VMNP visitors are native English speakers—a sizable market segment by any measure. As peace and political stability solidify, not only in Nicaragua but in Central America as a whole, the numbers of English-speaking visitors from the US, Canada and Europe will continue to increase. Monitoring these changes throughout the year may identify certain time periods when being able to offer guided and self-guided interpretive opportunities in Spanish and English is most important. Logically, however, it seems inevitable that, at some point, year-round emphasis on bilingual interpretation will be necessary.
- 12. Ways of attracting a more diverse segment of the Nicaraguan population to VMNP should be explored.** As a national park, VMNP represents a part of Nicaragua's *national* patrimony and protects some of the country's most important natural features. To supplement current aggressive efforts to bring local schools to the park, VMNP might also explore ways to offer reduced or subsidized admission to visitors who live in buffer zone communities. Commercial agreements with grocery store and gasoline companies might include two-for-one tickets or other trade-outs in which a purchase of a particular product also purchases an admission for a buffer zone resident, etc.
- 13. VMNP must maintain and update selected components of the data-base provided by this study.** A significant long-term benefit of this study is that it has created the first baseline data on visitors to VMNP. We realize that the park does not have the human or financial resources to continue collecting data on the full range of variables addressed in this study. But we strongly recommend that the park establish, as a matter of priority, the continued collection of certain of these data so that it can continue over time understanding the characteristics and point of view of its visitors. With a very brief instrument and the investment of one or two person-hours per week, the

park could maintain a useful and insightful data-base on the variables it feels are most useful and important to the management and interpretation of VMNP.

## **SUPPLEMENTARY RESEARCH GRAPHICS**

**(FIGURES 1 – 26)**



Figure 1. Age of Respondents

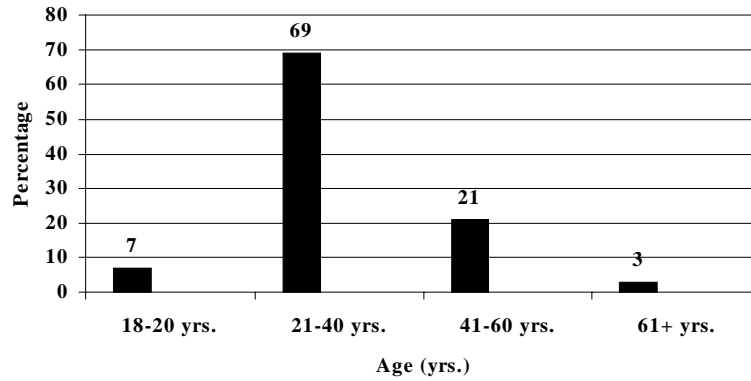


Figure 2. Average Age of Men and Women Visitors

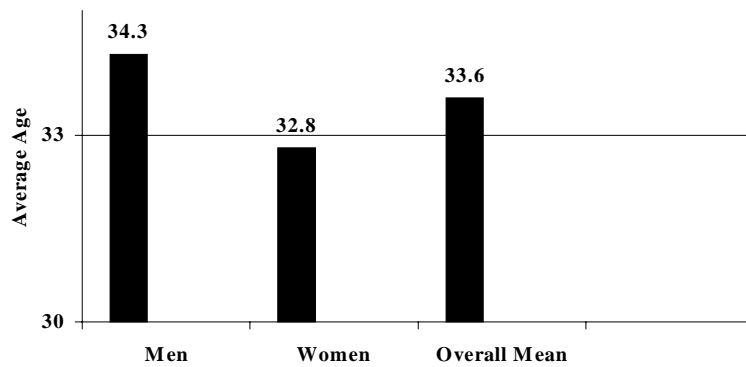


Figure 3. Group Size

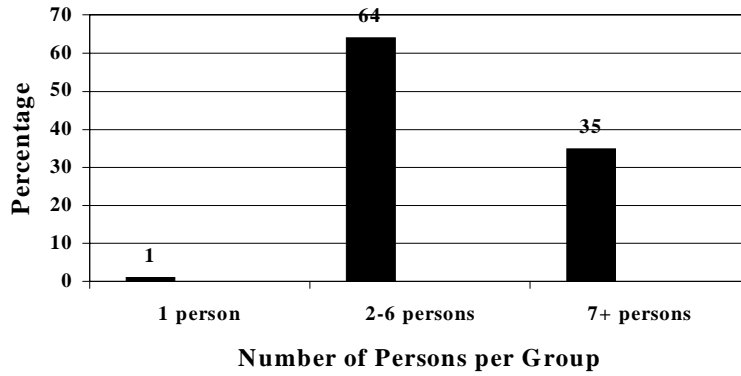


Figure 4. Type of Group

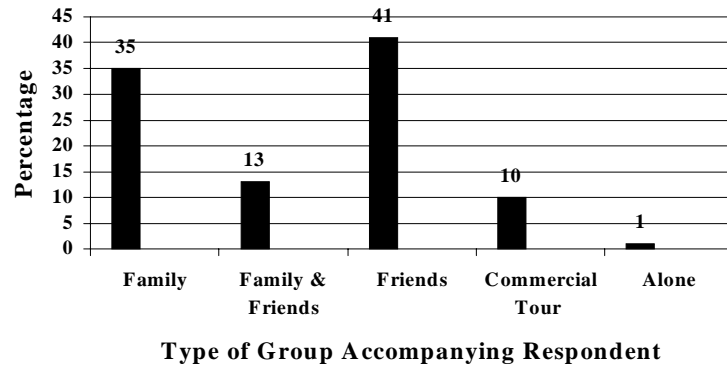


Figure 5. Country of Origin

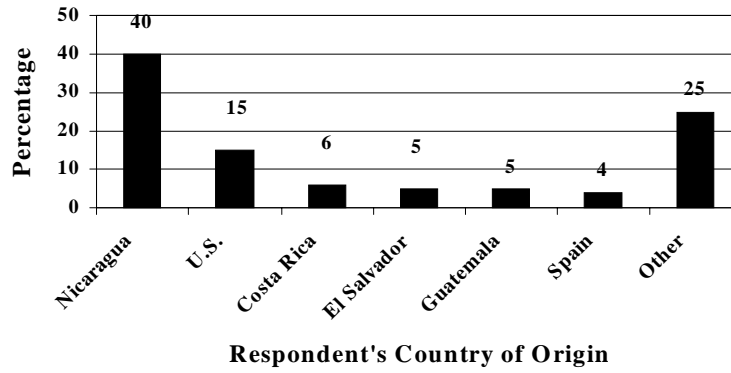


Figure 6. Department (Province) of Origin of Nicaraguan Visitors

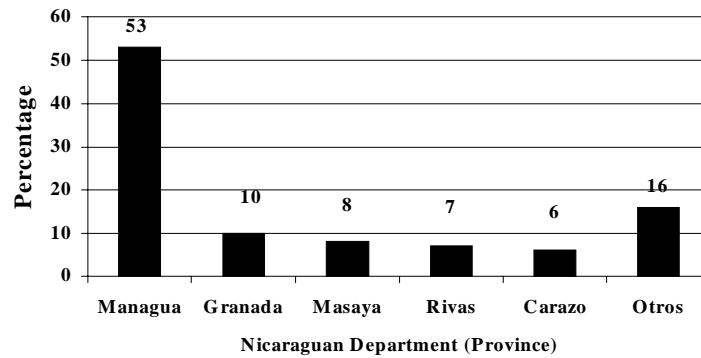


Figure 7. Years of Formal Education Completed by Respondents

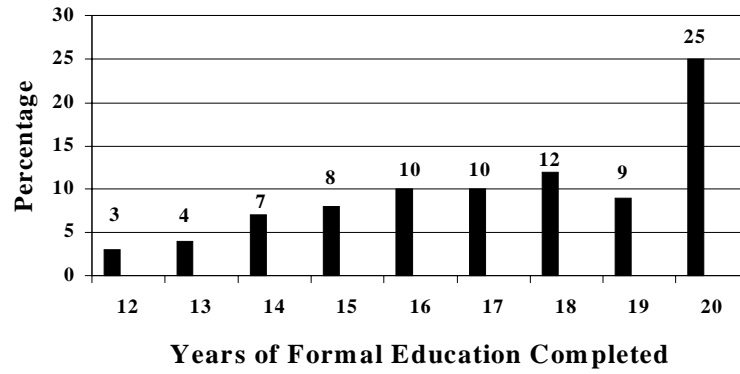


Figure 8. Mean Education Levels of Nicaraguan versus Foreign Visitors

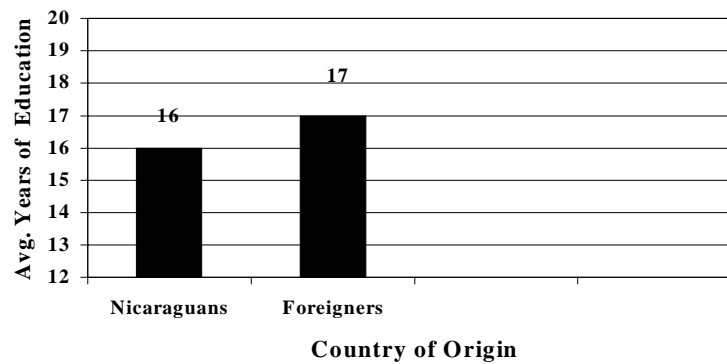


Figure 9. Mean Education Levels of Men and Women Visitors

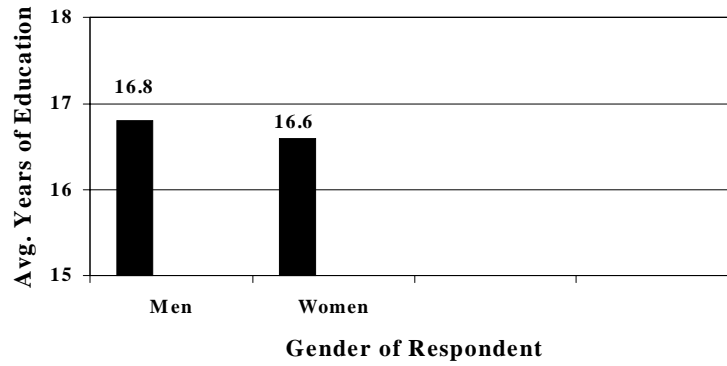


Figure 10. Native Language of VMNP Visitors

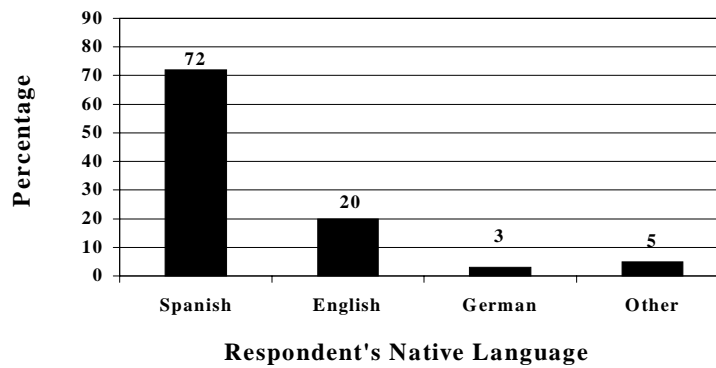


Figure 11. Recreational Activities Participated in While at VMNP

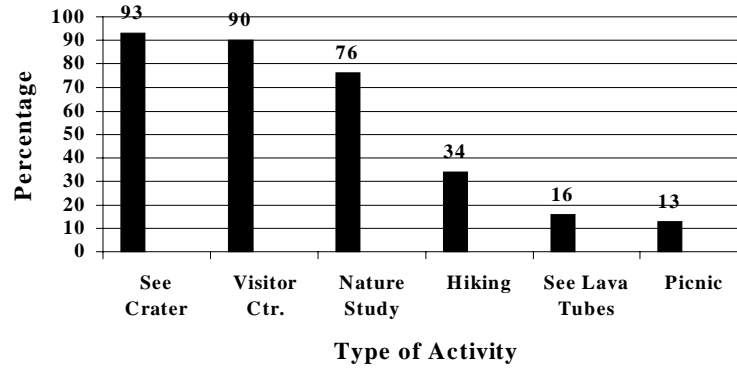
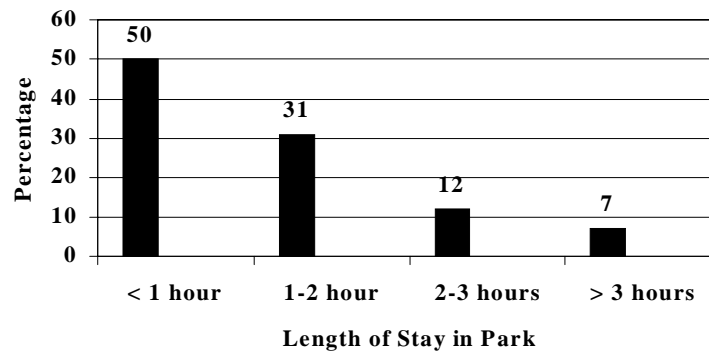
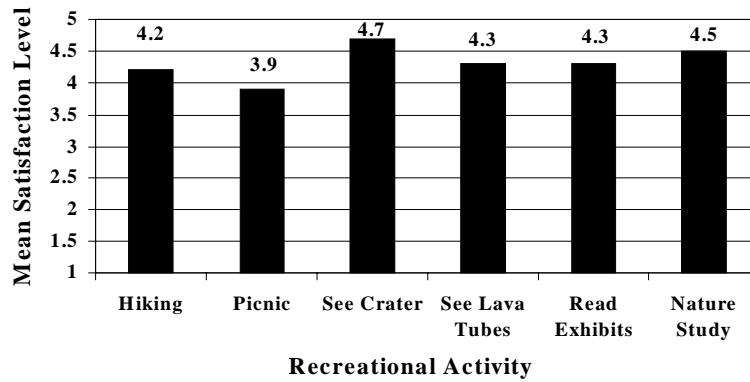


Figure 12. Duration of Visit



**Figure 13. Satisfaction with  
Recreational Activities**

5 = Very Satisfied / 1 = Very Dissatisfied



**Figure 14. Satisfaction with  
Interpretive Services**

5 = Very Satisfied / 1 = Very Dissatisfied

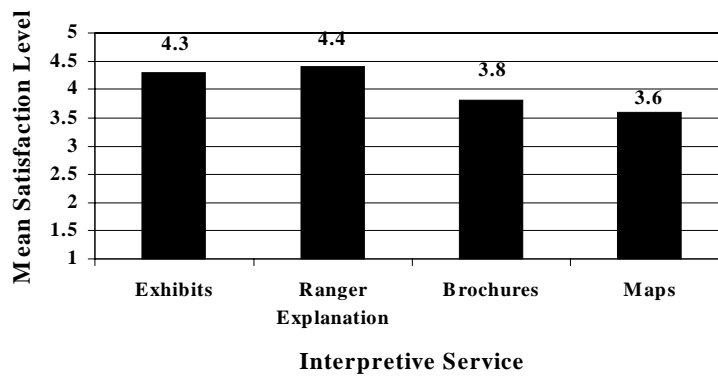


Figure 15. Results of Content Analysis:  
 “Why would you recommend VMNP to  
 your family/friends as a place to visit?”

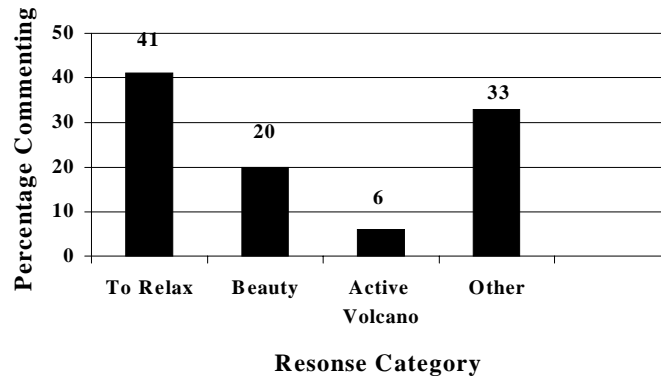


Figure 16. Results of Content Analysis:  
 “¿What did you like *most* about your  
 visit to VMNP?”

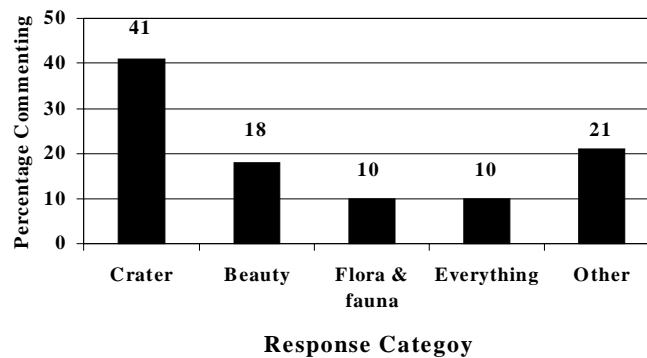




Figure 17. Results of Content Analysis:  
 “¿What did you like *least* about your  
 visit to VMNP?”

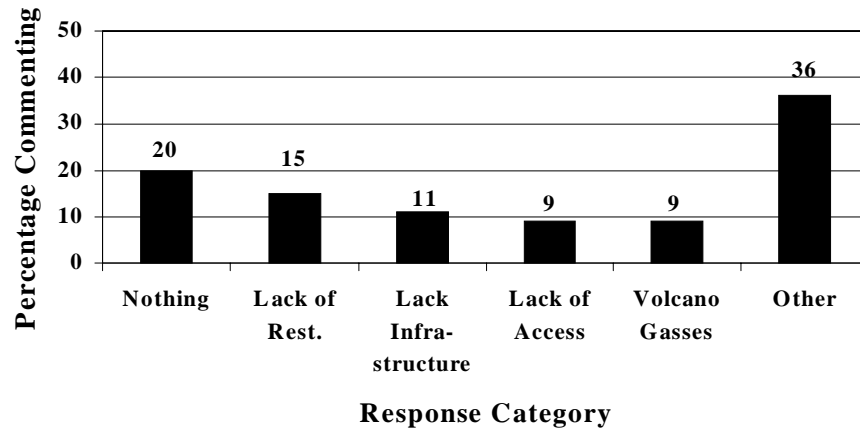


Figure 18. Information Sources Used by  
 Respondents Before Arriving at VMNP

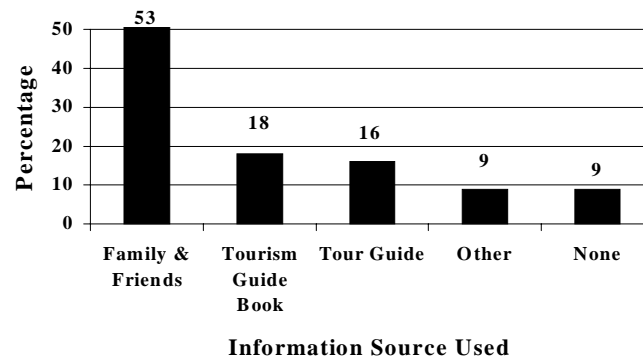


Figure 19. Information Sources Used by Respondents Once Inside VMNP

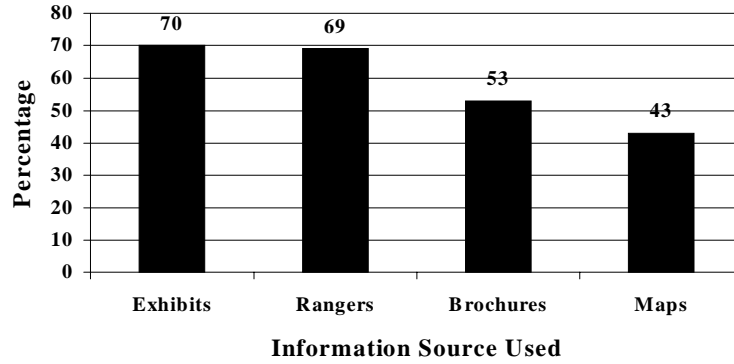


Figure 20. Mention Something New that You Learned During Your Visit to VMNP.

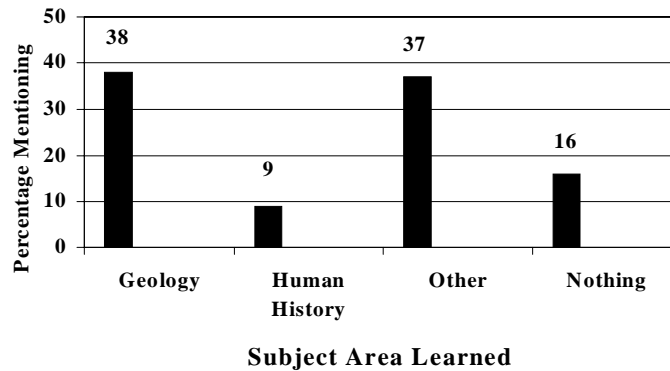


Figure 21. Main Interest Areas Expressed by Respondents

- Human history of the volcano 72%
- How a volcano works 46%
- Wildlife of the park (general) 30%
- Flora of the park (general) 30%
- Parrots that live in the crater 28%
- The dry forest of the park 17%
- Bats of the park 15%
- Birds of the park (general) 11%

Figure 22. Percentage of First-Time Visitors Across the Year

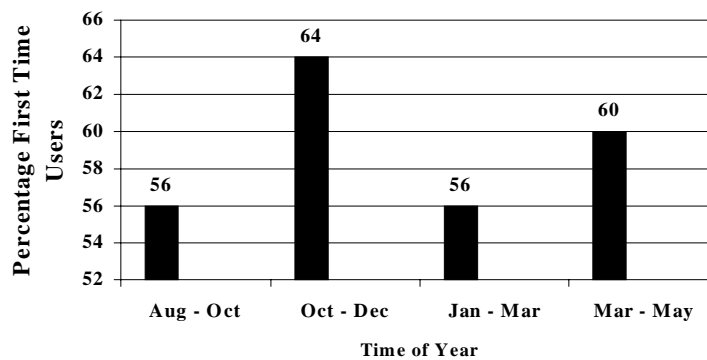


Figure 23. Percentage of Foreign Visitors Across the Year

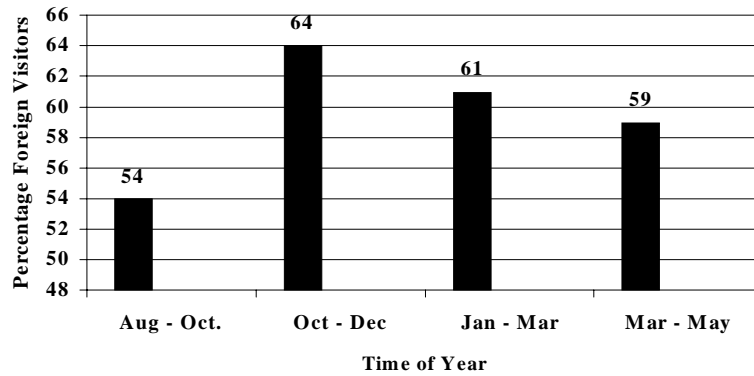


Figure 24. Visitors' Satisfaction with Picnicking Across the Year  
5 = Very Satisfied / 1 = Very Dissatisfied

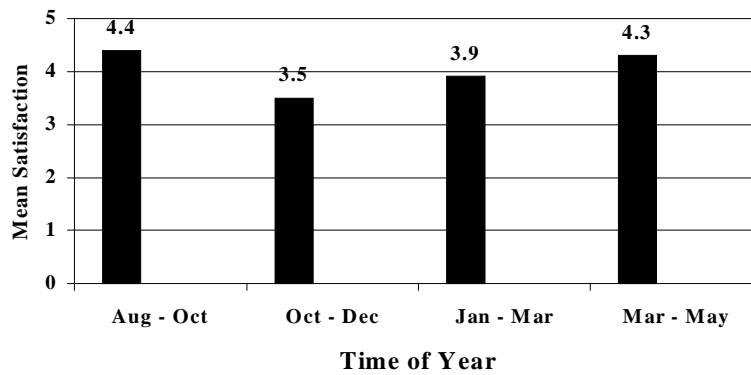


Figure 25. Visitors' Satisfaction with Seeing the Lava Tubes Across the Year  
5 = Very Satisfied / 1 = Very Dissatisfied

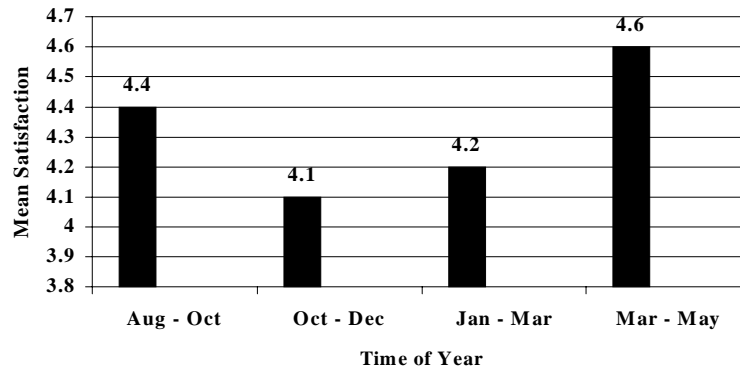
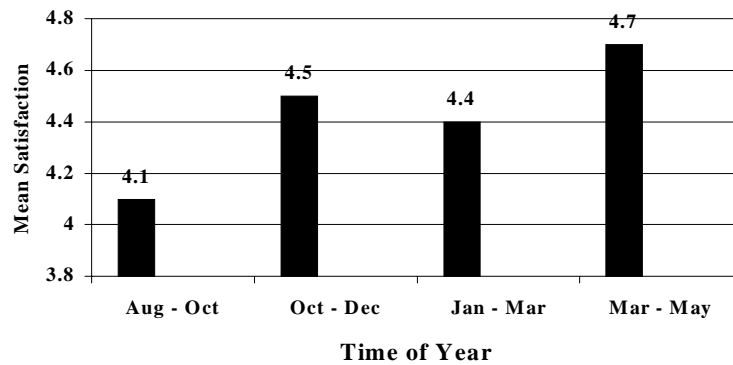


Figure 26. Visitors' Satisfaction with Nature Study Across the Year  
5 = Very Satisfied / 1 = Very Dissatisfied





**APPENDIX A**  
**QUESTIONNAIRE IN ENGLISH AND SPANISH**

# Volcán Masaya National Park Visitor Use Survey

## Your opinions are important!

1) What hour did you arrive at Masaya National Park?

\_\_\_\_\_ TIME \_\_ a.m. \_\_ p.m.

2) Approximately what hour will you leave?

\_\_\_\_\_ TIME \_\_ a.m. \_\_ p.m.

3) Is this your first visit to Masaya National Park?

\_\_\_ YES

\_\_\_ NO ⇒⇒ **3a)**

Including this visit, how many times have you

visited in the last 3 years? 1 2 3 4 5 6 7 8 9 10

↓

↓

4) On this visit, how many people were in your group (including yourself)?

\_\_\_\_\_ NUMBER OF PEOPLE

5) PRIOR to your visit today, where did you get your information about Masaya National Park?

*Please mark ALL that apply*

\_\_\_ RECEIVED NO INFORMATION PRIOR TO VISIT

\_\_\_ LOCAL NEWSPAPERS

\_\_\_ LOCAL TOURIST/VISITOR INFORMATION CENTER

\_\_\_ LOCAL RADIO/TELEVISION ADVERTISING

\_\_\_ PARK BROCHURES

\_\_\_ TOURIST GUIDEBOOKS

\_\_\_ FRIENDS/FAMILY

\_\_\_ COMMERCIAL TOUR GUIDE

\_\_\_ IN SCHOOL

\_\_\_ OTHER (*please specify*) \_\_\_\_\_

6) On this visit were you with a commercial tour guide?

\_\_\_ NO \_\_\_ YES ⇒⇒

**6a)** What is the name of this company?

↓

↓

↓

**6b)** Where did you find out about these services?

\_\_\_\_\_

\_\_\_\_\_

Please go to number **7**



7) On this visit, what kind of group were you with? *Please check only one*

- ALONE  
 FAMILY  
 FRIENDS  
 FAMILY AND FRIENDS  
 OTHER (*please describe*) \_\_\_\_\_

8) On a future visit to Masaya, what subjects would you be most interested in learning about?

- HOW A VOLCANO WORKS  
 DRY TROPICAL FORESTS  
 PARROTS THAT LIVE IN THE CRATER  
 OTHER BIRDS IN THE PARK  
 BATS IN THE PARK  
 OTHER ANIMALS IN THE PARK  
 PLANTS IN THE PARK  
 HISTORY OF THE VOLCANO  
 OTHER (*please specify*) \_\_\_\_\_

9) On a future visit to Masaya National Park, would you make use of the following?

*Please mark all you would use*

- RANGER-LED WALKS                     YES  NO  
 SLIDESHOW                             YES  NO  
 BROCHURES                             YES  NO  
 EXHIBITS FOR CHILDREN  YES  NO  
 OVERNIGHT CAMPGROUND            YES  NO  
 VIDEOS ABOUT THE PARK            YES  NO  
 SIGNS AT CRATER VIEWPOINT       YES  NO  
 OTHER (*please specify*) \_\_\_\_\_

10) What did you like MOST about this visit to Masaya National Park?

*Briefly explain why*

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11) What did you like LEAST about this visit?

*Briefly explain why*

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12) Please CIRCLE the word that best describes your level of satisfaction with each recreational activity you used on this visit to Masaya.

HIKING	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use
PICKNICKING	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use
VISIT TO THE CRATER	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use
VISIT TO THE LAVA TUBES	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use
VISIT TO THE VISITOR CENTER	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use
NATURE STUDY	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use
OTHER (please specify)	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use

**13)** Please CIRCLE the word that best describes your level of satisfaction with the educational services you used on this trip to Masaya.

VISITOR CENTER EXHIBITS	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use
CONTACT WITH RANGERS	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use
PARK BROCHURE	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use
PARK MAP	Very satisfied	Satisfied	Neither satisfied/ dissatisfied	Dissatisfied	Very Dissatisfied	Didn't use

**14)** Please list one NEW thing you learned on this visit to Masaya National Park.

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15) Would you recommend Masaya to your friends or family?

YES

NO

15a) Reasons I WOULD or WOULD NOT recommend Masaya to my friends and family.

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16) Is there anything else you would like to tell us about your visit to Masaya National Park today?

---

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17) If you were going to visit other Nicaraguan natural areas (e.g. protected areas, reserves, etc.) what type of information would help you make your decision?

*Please mark all that apply*

LOCATION

DISTANCE

PARK CHARACTERISTICS

ACCESSIBILITY

OTHER (*please specify*) \_\_\_\_\_

18) What is your age? \_\_\_\_\_

19) Please mark the number of years of formal education you have:

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20+

20) Are you: \_\_\_MALE \_\_\_FEMALE

21) Please indicate the country or Nicaraguan department you are from:

COUNTRY \_\_\_\_\_

NICARAGUAN DEPARTMENT \_\_\_MANAGUA \_\_\_RIVAS  
 \_\_\_MASAYA \_\_\_CARAZO  
 \_\_\_GRANADA OTHER\_\_\_\_\_

22) What is your native language?\_\_\_\_\_

23) Have you been in the visitor center during this visit?

\_\_\_YES \_\_\_NO =>> 23a) Do you intend to go to the Visitor Center on this visit to Masaya National Park?  
 \_\_\_YES \_\_\_NO  
 ↓  
 ↓  
 ↓

**Thank you, please return the questionnaire.**

24) Did you read any of the exhibits in the visitor center?

\_\_\_YES \_\_\_NO =>> (If no please go to question 26)

↓

25) Please list one NEW thing you learned from the exhibits in the Visitor Center.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

26) From what other sources did you get information while in the Visitor Center.

\_\_\_FROM A PARK MAP OR BROCHURE  
 \_\_\_FROM A PARK RANGER OR OTHER EMPLOYEE OF THE PARK  
 \_\_\_FROM ANOTHER VISITOR  
 \_\_\_OTHER (please specify)\_\_\_\_\_  
 \_\_\_DIDN'T USE OTHER SOURCES OF INFORMATION

**THANK YOU!**  
**Volcán Masaya National Park,**  
**USAID/Nicaragua and GreenCOM/Nicaragua, University of Idaho**



7) ¿En que clase de grupo se encontraba usted? *Marque solamente uno*

- SOLO  
 FAMILIA  
 AMIGOS  
 FAMILIA Y AMIGOS  
 OTROS (*por favor especifique*) \_\_\_\_\_

8) En una visita futura ¿cuáles de los siguientes temas serían de mayor interés?

- COMO FUNCIONA UN VOLCAN  
 BOSQUES TROPICALES SECOS  
 LOROS QUE VIVEN EN EL CRATER  
 OTRAS AVES DEL PARQUE  
 MURCIELAGOS DEL VOLCAN  
 OTRA FAUNA DEL PARQUE  
 FLORA DEL PARQUE  
 HISTORIA DEL VOLCAN  
 OTROS (*por favor especifique*) \_\_\_\_\_

9) En su próxima visita al Volcán Masaya, ¿usaría lo siguiente?

*Por favor, marque todo lo que usaría.*

- |  |   |
|--|---|
| CAMINATAS CON GUARDAPARQUES            | <input type="checkbox"/> SI <input type="checkbox"/> NO |
| MUESTRA DE DIAPOSITIVAS                | <input type="checkbox"/> SI <input type="checkbox"/> NO |
| FOLLETOS                               | <input type="checkbox"/> SI <input type="checkbox"/> NO |
| EXHIBICIONES PARA NIÑOS                | <input type="checkbox"/> SI <input type="checkbox"/> NO |
| AREA PARA ACAMPAR                      | <input type="checkbox"/> SI <input type="checkbox"/> NO |
| VIDEOS SOBRE EL PARQUE                 | <input type="checkbox"/> SI <input type="checkbox"/> NO |
| LETREROS SOBRE EL VOLCAN EN EL MIRADOR | <input type="checkbox"/> SI <input type="checkbox"/> NO |
| OTROS (especifique) _____              |   |

10) ¿Qué es lo que MAS le gustó de su visita del Parque Nacional Volcán Masaya?

*Por favor explique*

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---

11) ¿Qué es lo que MENOS le gustó? *Por favor explique*

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12) De todas las actividades que usted hizo por favor califique el nivel de satisfacción de cada una de ellas, según su criterio (*por favor marque con un círculo*).

CAMINATAS POR SENDEROS	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo
PICNIC	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo
VISITA AL CRATER	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo
VISITA A LAS CAVERNAS	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo
VISITA AL CENTRO DE VISITANTES	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo
OBSERVACION DE FLORA Y FAUNA	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo
OTROS (especifique)	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo

13) De todos los servicios educativos que usted usó, por favor, marque con un circulo su nivel de satisfacción.

EXHIBICIONES DEL CENTRO DE VISITANTES	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo
EXPLICACIONES DE GUARDA- PARQUES	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo
FOLLETOS DEL PARQUE	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo
MAPAS DEL PARQUE	Muy Satisfecho	Satisfecho	Ni satisfecho Ni insatisfecho	Insatisfecho	Muy Insatisfecho	No lo hizo

14) Por favor, mencione algo NUEVO que aprendió en esta visita al Parque Nacional Volcán Masaya.

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---

---

15) ¿Usted recomendaría el Parque Nacional Volcán Masaya a sus amigos o familiares como un lugar a visitar?

- SI
- NO

15a) Por qué razones usted RECOMENDARIA o NO RECOMENDARIA el Parque Nacional Volcán Masaya a sus amigos o familiares como un lugar a visitar.

---

---

---

16) ¿Hay algo más que usted quiere mencionar acerca de su visita al Parque Nacional Volcán Masaya?

---

---

---

17) Si pensara visitar otros lugares naturales (ej. áreas protegidas, reservas naturales etc.), ¿qué tipo de información le ayudaría a decidir?

- UBICACION
- DISTANCIA
- CARACTERISTICAS DEL AREA
- ACCESIBILIDAD
- OTROS (por favor especifique) \_\_\_\_\_

18) ¿Cuántos años tiene usted? \_\_\_\_\_

19) Usted es  HOMBRE  MUJER



20) ¿Cuántos años de estudios tiene?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20+

21) Por favor, indique de qué país o departamento Nicaragüense es usted.

PAIS \_\_\_\_\_

DEPARTAMENTO	___MANAGUA	___MASAYA
NICARAGÜENSE	___GRANADA	___CARAZO
	___RIVAS	OTRO_____

22) ¿Cual es su idioma nativo? \_\_\_\_\_

23) ¿Ha visitado el centro de visitantes durante esta visita?

\_\_\_SI            \_\_\_NO ⇒⇒ 23a) ¿Tiene intención usted de visitar el centro de  
visitantes en esta visita?

\_\_\_SI            \_\_\_NO

↓  
↓  
↓  
↓  
↓

**Gracias, favor entregar la encuesta.**

24) ¿Ha leído las exhibiciones en el centro de visitantes durante esta visita?

\_\_\_SI            \_\_\_NO (si su respuesta es no, por favor siga a 26)

↓

25) Por favor, mencione algo NUEVO que aprendió en el centro de visitantes.

---



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---

26) ¿Donde obtuvo otra información en el centro de visitantes?

\_\_\_DE UN MAPA O FOLLETO DEL PARQUE

\_\_\_DE UN GUARDAPARQUE

\_\_\_DE UN OTRO VISITANTE

\_\_\_OTRO (por favor especifique)\_\_\_\_\_

\_\_\_NO OBTUVO OTRA INFORMACION

**¡GRACIAS!**

**Parque Nacional Volcán Masaya**

**USAID/Nicaragua, GreenCOM/Nicaragua, Universidad de Idaho**

**APPENDIX B**

**FOCUS GROUP QUESTIONS**

## **Focus Group Questions – English**

### **Visitors who had seen the crater:**

- 1) Where are you from?
- 2) How often do you go on recreational trips to the country?
- 3) What new things did you learn on your visit to the crater today?
- 4) Do you have any questions about what you saw at the crater today?
- 5) To make your visit more interesting and enjoyable, what types of information would you like to see presented at the crater?
- 6) Is there anything else you would like to mention about your visit to Masaya National Park?

### **Visitors who had walked through the visitor center**

- 1) Where are you from?
- 2) How often do you go on recreational trips to the country?
- 3) What new things did you learn on your visit to the visitor center today?
- 4) Do you have any questions about what you saw at the visitor center today?
- 5) To make your visit more interesting and enjoyable, what types of information would you like to see presented in the visitor center?
- 6) Is there anything else you would like to mention about your visit to the park today?

## Questions for school groups

- 1). To make your visit your visit more enjoyable and interesting, what type of information would you like to see exhibited in the visitor center?
  
- 2). Which of the exhibits caught your attention?

## **Focus Group Questions – Spanish**

### **Visitantes al crater:**

- 1) ¿De dónde es usted?
- 2) ¿Con que frecuencia salen a hacer excursiones al campo para divertirse?
- 3) ¿Qué cosas nuevas aprendieron de la visita a la zona de crateres?
- 4) ¿Qué dudas le quedaron sin aclarar después de la visita a los crateres?
- 5) Para hacer mas amena o mas interesante su visita, ¿qué tipo de información debería darse en los crateres?
- 6) ¿Algun comentario adicional que le gustaria hacer sobre su visita al Parque Nacional Volcán Masaya?

### **Visitantes al centro de visitantes:**

- 1) ¿De dónde es usted?
- 2) ¿Con qué frecuencia salen a hacer excursiones al campo para divertirse?

- 3) ¿Qué cosas nuevas aprendieron de la visita al museo?
- 4) ¿Qué dudas le quedaron sin aclarar después de su visita al museo?
- 5) Para hacer mas amena o mas interesante su visita, ¿qué tipo de información debería darsele en el museo?
- 6) ¿Algún comentario adicional que le gustaria hacer sobre su visita al Parque Nacional Volcán Masaya?

**Preguntas para grupos escolares:**

- 1) Para hacer mas interesante o amena su visita, ¿qué tipo de información debería exhibirse en este museo?
- 2) Cuál de las cosas exhibidas les pareció mas especial?

**APPENDIX C**  
**OBSERVATION DATA COLLECTION FORM**

## Guía de Observación

### Iniciado por Guardaparque

#### No Verbal

Sonrió

Si  No

Distancia entre ellos

+1.5m  
 -1.5m

Contacto visual del Guardaparque

Ninguna  
 Rara  
 Predominó

Duración del contacto

Minutos  
 Segundos

Se incorporó por conversar

Si  No

Hora \_\_\_\_\_  
Fecha \_\_\_\_\_  
Lugar \_\_\_\_\_

#### Verbal

Dio información solicitada

Si  No

¿Precisa?

Si  
 No  
 No sé

Habló respetuosamente

Si  No

Propósito del contacto

Vigilancia  
 Dar información  
 Ofrecer explicaciones

Sexo del guardaparque  
Sexo del visitante

### Iniciado por Visitante

#### No Verbal

Sonrió

Si  No

Distancia entre ellos.

+1.5m  
 -1.5m

Contacto visual del Visitante

Ninguna  
 Rara  
 Predominó

Duración del contacto

Minutos  
 Segundos

Se incorporó por conversar

Si  No

#### Verbal

Solicitó información al Guardaparque

Si  No

¿Precisa?

Si  
 No  
 No sé

Habló respetuosamente

Si  No

Propósito del contacto

Solicitar información

Solicitar explicaciones

Solicitar regulaciones del parque

Hombre  Mujer  
 Hombre  Mujer



**APPENDIX D**

**SUPPLEMENTARY DATA**

## Supplemental Data

### Questionnaires

The final numbers for the questionnaire component of the study are as follows

- Questionnaires randomly distributed: **791**
- Usable questionnaires returned by respondents: **791**
- Male respondents: **444**
- Female respondents: **347**
- Foreign respondents: **474**
- Nicaraguan respondents: **317**
- Spanish-speaking respondents: **578**
- English-speaking respondents: **213**
- Number of refusals: **36**
- Number of participant observations conducted: **17**
- Number of focus groups conducted: **16**

**Questionnaire Breakdown by Month**

<b>MONTH</b>	<b>LOCATION</b>	<b>MEN</b>	<b>WOMEN</b>	<b>TOTAL</b>
<b>AUGUST 1997</b>	Visitor Center	29	27	56
	Crater	25	15	41
<b>SEPTEMBER</b>	Visitor Center	16	26	42
	Crater	25	16	41
<b>OCTOBER</b>	Crater	19	18	37
	Visitor Center	22	21	43
<b>NOVEMBER</b>	Crater	24	12	36
	Visitor Center	37	16	53
<b>DECEMBER</b>	Crater	21	18	39
	Visitor Center	18	20	38
<b>JANUARY 1998</b>	Visitor Center	31	25	55
	Crater	11	14	25
<b>FEBRUARY</b>	Visitor Center	23	14	37
	Crater	20	16	36
<b>MARCH</b>	Crater	21	16	37
	Visitor Center	31	23	54
<b>APRIL</b>	Crater	40	18	58
	Visitor Center	17	24	41
<b>MAY</b>	Crater	4	3	7
	Visitor Center	10	5	15
<b>TOTAL</b>		444	347	791