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# Ecotourism, environmental awareness and green living in Costa Rica

Alexandra Sanserino

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## ABSTRACT

Over the past 30 years, Monteverde, Costa Rica, has adopted ecotourism as its primary source of revenue. Since the inception of ecotourism in tropical regions, many studies have been done on both the positives (more conservation) and negatives (littering, pollution, etc.) associated with it. With the knowledge of both the benefits and consequences associated with ecotourism, the government of Costa Rica has adopted an environmental education program to make residents aware of environmental issues and give them the tools to protect the environment through their daily activities. But just how effective is this program? The current study compares environmental awareness and green living for two communities in Costa Rica: Monteverde and Las Juntas, a similarly size community with little or no ecotourism. Surveys of 66 people in Monteverde and 30 people in Las Juntas were performed. Overall, there was a significant positive correlation between scores for environmental awareness and green living for Monteverde. Participants were then placed into groups based on their age, occupation and level of education for Monteverde. There was no significant difference between age groups in environmental awareness, but older people (over 36) showed to be more significantly green (mean  $\pm$  sd = 7.63  $\pm$  36.8) compared to the young (13-21) age group (mean  $\pm$  sd = 3.65  $\pm$  30.2). Likewise, participants who worked in ecotourism centric settings (mean  $\pm$  sd = 8.63  $\pm$  2.26) were statistically greener than those who did not (mean  $\pm$  sd = 5.72  $\pm$  4.91). There was no significant difference between participants of differing education levels. Combining all participants for each community, there was no significant difference between ecotouristic Monteverde (mean  $\pm$  sd = 7.01  $\pm$  4.12) and Las Juntas (mean  $\pm$  sd = 8.48  $\pm$  5.01). Therefore, despite the fact that those who work directly in ecotourism score higher in both awareness and green living, Monteverde does not have a stronger environmental culture. This suggests that ecotourism is limited at instilling environmental knowledge and values. That, and the fact Monteverde youth score lower in green living than older people, suggests a need for strong environmental education, even in communities where ecotourism is the foundation of the economy.

## INTRODUCTION

Minimizing impact, building environmental awareness, providing positive experiences, providing financial benefits to both conservation and residents. These are some of the key principles of ecotourism set by The International Ecotourism Society (TIES). As it is defined by TIES, ecotourism is, "Responsible travel to natural areas that conserves the environment and improves the well-being of local people" (The International Ecotourism Society 1990). Ecotourism has been a flourishing market in many developing countries. From the mountains of Africa in Kenya and Rwanda to the tropical Costa Rica and Ecuador's Galápagos Islands, ecotourism has made an economic impact as well as land preservation efforts in the areas (Vanasselt 2000). Although ecotourism brings many positive impacts on the local economy and may aid conservation efforts, it may also bring a negative impact on the environment both locally and globally (Buckley 2004). Besides the obvious impacts of increased littering in forests, fragmentation and increased air pollution in the local region (Vanasselt 2000), it is important to take into account travel to and from ecotourism destinations which involves significant energy consumption from flights (Hunter and Shaw 2006). With the multitude of research found on the effects of ecotourism on the environment as well as local people, there has been little research done on the impact of ecotourism on environmental attitudes. It seems as though that with the aforementioned benefits and consequences, ecotouristic community members would have a higher awareness and environmental concern.

Benefits and consequences accounted for, ecotourism continues to be a growing trend in

developing countries over the past 50 years. It can be seen in the region of Monteverde, Costa Rica. In the early 1950's, Quakers began settling in Monteverde, altering many natural habitats for agriculture to sustain themselves with crops and cattle, though conserving the mountaintop for clean drinking water. This land use continued until biologists entered the picture in the late 1970's and convinced the Quakers to preserve their watershed more formally as a nature reserve. Concerned townspeople, including biologists, began buying out lands in an attempt to enlarge the watershed and maintain more of the natural habitats (Nadkarni and Wheelwright 2000). By the mid-1980's, rates of tourists started to slowly increase and by the early 1990's, ecotourism in the region was growing at a rate of 50% per year (Honey and Littlejohn 1994). With this increase in ecotourism and the knowledge of its negative effects on the environment, the government of Costa Rica sponsored an environmental education program in public schools to teach residents about making environmental decisions (Amador 2004). In addition, Monteverde's private schools began their own environmental education programs, as did the Tropical Science Center, who protects what has become the Monteverde Cloudforest Preserve (Nadkarni and Wheelwright 2000).

Holl et al. (1995) found that, despite the aforementioned attempts at environmental education, many Costa Ricans do not have a significant awareness of environmental problems. One of the biggest issues noted by Holl and colleagues was that many residents did not understand the connection between population growth, consumption and environmental degradation. Also, when asked to note the most pressing issues in the country, environmental issues were rated as the least pressing, behind others such as drugs, unemployment and crime. Differences were noted between members of lower-class neighborhoods than those of urban, upper-class or rural communities. The implications here were that people living in lower-class neighborhoods would more likely be subjected to water contamination or trash pile-up, which are both environmental issues that these community members are witnessing first-hand.

The current study involves an analysis of environmental awareness and attitudes in the ecotouristic region of Monteverde, Costa Rica. It tests the relationship between awareness and its effect on a person's environmental impact, here referred to as green living. More specifically, green living is characterized as a willingness to take responsibility for a person's own trash, spend a little bit of extra time and money buying locally grown and organic produce, taking small steps in their own daily life to improve the environment and supporting the cause of sustainable development. The study involves a regional analysis with focus on separate age groups, occupations and levels of education. The study goes further and involves a comparative analysis of Monteverde as an ecotourism town and Las Juntas, a town close to Monteverde whose residents do not depend on ecotourism for a source of revenue. It is hypothesized that: a) participant's environmental awareness will be correlated with their green life style, b) younger members of a community will have higher environmental awareness, but lower green living, c) participants whose jobs rely on the revenue from ecotourism will have a stronger environmental awareness and green living d) members of a community who have completed more schooling will have both higher environmental awareness and green living, and e) between Monteverde and Las Juntas, due to Monteverde's reliance on ecotourism (and therefore environmental upkeep) as a source of revenue, members of the Monteverde community will have higher awareness and green living than residents of Las Juntas.

## **METHODS**

### **Study Site**

Surveys were conducted in the region of Monteverde, Costa Rica and Las Juntas, Costa Rica. The region of Monteverde included the towns of San Luis, Monteverde, Santa Elena and Cañitas all of which rely on ecotourism for a means of economic growth. Las Juntas, although only 6 km from the Inter-American Highway does not receive a substantial number of tourists and therefore finds other means, such as mining, to support its economic prosperity. Both communities are comparable in population size with each containing between 5,000 and 6,000 residents. Surveys were taken between the dates of July 19, 2010 and July 31, 2010. Sixty-six participants from Monteverde and 30 from Las Juntas ranging from ages 13-71 were surveyed. Monteverde was chosen due to the influence of ecotourism in the area. Much of the economic prosperity in the region of Monteverde is due to the influx of tourists each year. Las Juntas was chosen due to the proximity to Monteverde and was used comparatively because of its lack of ecotourism as an economic driver.

### **Survey**

The survey included two sets of quantitative questions, one set of environmental awareness questions and one set of green living questions. Respondents were given a statement and asked to rate on a scale from -2 to 2, whether they disagree or agree with the given idea. Responses were quantified and each set of responses was valued between -12 and 12 for both environmental awareness and green living. The survey also included a ranking question, allowing participants to indicate which problems they feel are most pressing in Costa Rica today. Participants were also asked to respond to which environmentally friendly actions they would adopt to help the environment. Respondents were also asked to indicate their community, age, sex, occupation and level of education. For age, groups were split up between ages 13-20 (either of student age or just finishing with education); 21-35 (a generation who grew up alongside the growing ecotourism industry); and 36+ (a generation that was able to see Monteverde before and after the rise of the ecotourism industry). Occupations were split up between those whose jobs (or if participants were students, those whose parents' jobs) depend on ecotourism (i.e. tour guides and taxi drivers) and those who do not (i.e. school teachers and housewives). Levels of education were split up as follows: Current students, participants who only completed up to a level or through all of primary school, participants who only completed up to a level of or through all of secondary school and those who have taken classes or received degrees from university (See Appendix).

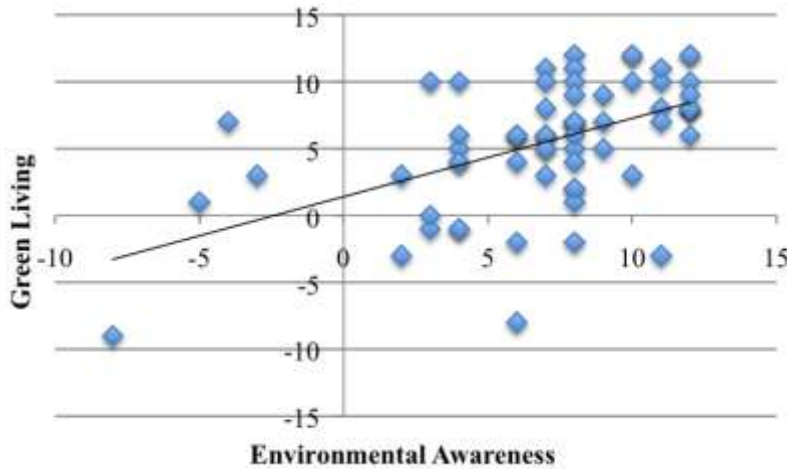
## **RESULTS**

### **Monteverde Regional Analysis**

A trend was observed between participants' environmental awareness and green living in Monteverde. A correlation analysis was performed and it was found that, on average, as a person's environmental awareness increased, their green living increased as well (Regression,  $R^2 = 0.26$ ,  $p = 0.0001$ ; Fig. 1).

When compared for differences in environmental awareness, those among the 36+ age group had the highest mean score (mean  $\pm$  sd =  $7.48 \pm 4.71$ ). Given that 12 is extremely environmentally aware, these scores show reflect a relatively high level. Those among the 21-35 age group had the second largest mean score (mean  $\pm$  sd =  $7.10 \pm 3.78$ ). Those among the 13-20 age group had the lowest mean score (mean  $\pm$  sd =  $6.42 \pm 4.42$ ). This score was still high for environmental awareness, but was a

full point lower than for older people. There was no significant difference between members of differing age groups overall (1-Way ANOVA,  $F = 4.17$ ,  $p = 0.48$ ,  $df = 64$ ) and further posthoc tests suggested no difference between pairs (Fig. 2a).



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Figure 1. A correlation between participants' environmental awareness and green living. A positive correlation is displayed with a regression of  $y = .59x + 1.41$ , indicating as participants' environmental awareness increases, green living increases ( $R^2 = 0.26$ ,  $p < .05$ ).

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When compared for differences in green living, those among the 36+ age group had the highest mean score (mean  $\pm$  sd =  $7.63 \pm 3.68$ ). Those among the 21-35 age group had the second largest mean score (mean  $\pm$  sd =  $5.05 \pm 5.04$ ). Those among the 13-20 age group had the lowest mean score (mean  $\pm$  sd =  $3.65 \pm 5.07$ ). In this case, there was a significant difference between age groups (1-Way ANOVA,  $F = 4.17$ ,  $p = 0.018$ ,  $df = 64$ ; Fig. 2b). A Scheffe's Test was conducted to see where these differences could be found. A significant difference was noted between the 13-20 age group and the 36+ age group ( $t = 4.30$ ,  $p = 0.018$ ). In fact, the older group had a score over twice that of the youngest. There was no significant difference between members of the 13-20 age group and the 21-35 age group ( $t = 1.5$ ,  $p = 0.23$ ) or between members of the 21-35 age group and the 36+ age group ( $t = 0.66$ ,  $p = 0.53$ ), however.

A t-test was used to examine the differences between the environmental awareness of Monteverde's occupation groups (or if participants were students, the occupation of their parents) as part of ecotourism or outside of ecotourism. Mean scores were higher in participants who have ecotourism centric occupations (mean  $\pm$  sd =  $8.63 \pm 2.26$ ) than those with non-ecotourism centric occupations (mean  $\pm$  sd =  $5.72 \pm 4.91$ ). There was a significant difference between the members of these two groups ( $t = 2.01$ ,  $p = 0.01$ ,  $df = 51$ ; Fig. 3a). The same test was used to examine green living between the two occupation groups. Mean scores were higher in participants who have ecotourism centric occupations (mean  $\pm$  sd =  $7.21 \pm 4.01$ ) than those with non-ecotourism centric occupations (mean  $\pm$  sd =  $4.2 \pm 5.54$ ). The t-test revealed a significant difference between the two groups, as well ( $t = 2.01$ ,  $p = 0.03$ ,  $df = 51$ ; Fig. 3b).

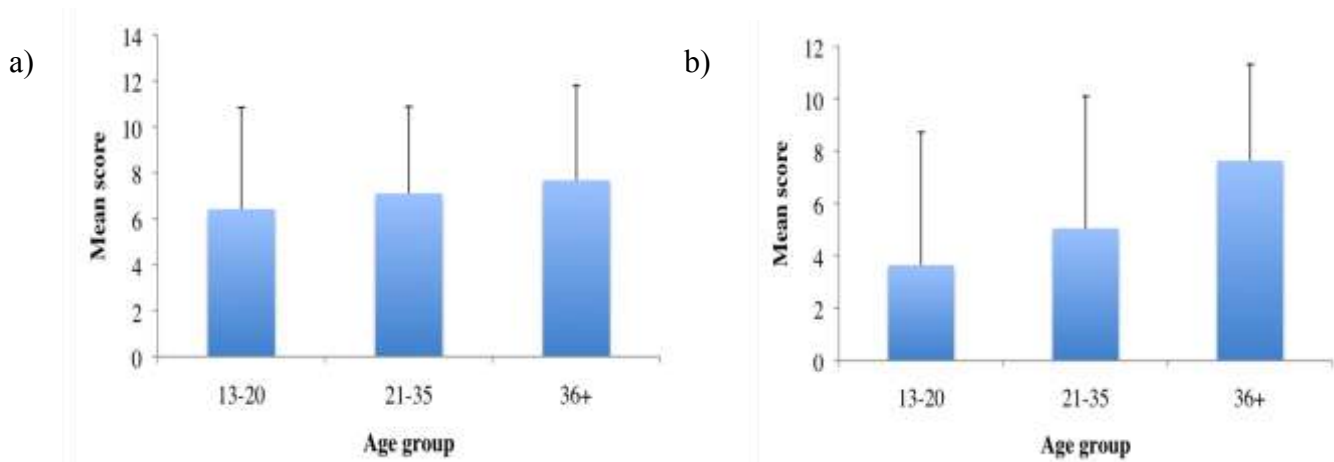


Figure 2. a) Mean environmental awareness scores ( $\pm$  sd) are displayed for separate age groups. No significant difference is indicated ( $F = 4.7$ ,  $p = 0.48$ ). b) Mean green living scores ( $\pm$  sd) are displayed for separate age groups. Differences were significant ( $F = 4.7$ ,  $p = 0.018$ ).

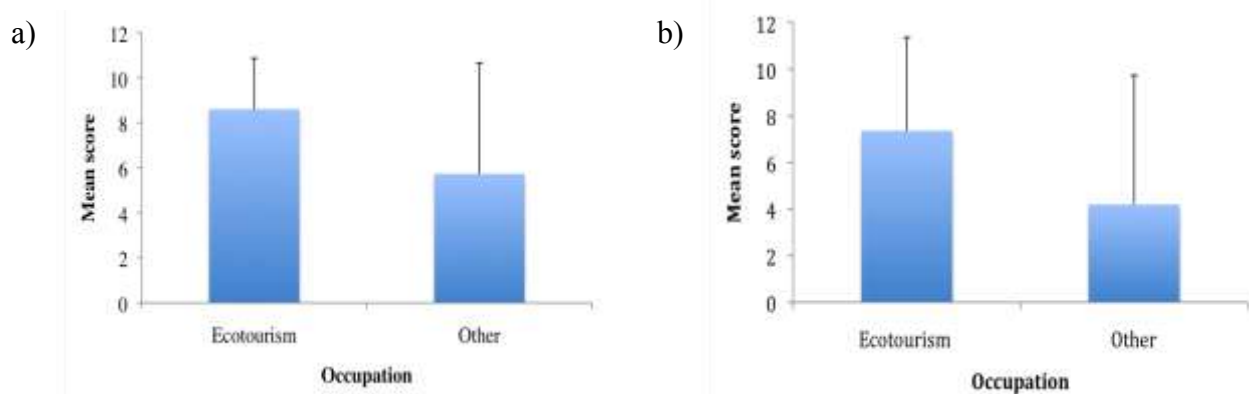


Figure 3. a) Displays the mean environmental awareness score ( $\pm$  sd) for members of the Monteverde community with ecotourism centric occupations and those without. Differences are significant ( $t = 2.01$ ,  $p = 0.01$ ) b) Displays the mean green living score ( $\pm$  sd) for members of the Monteverde community with ecotourism centric occupations and those without. Differences were significant ( $t = 2.01$ ,  $p = 0.03$ ).

Different levels of education were examined for differences in mean scores of environmental awareness for Monteverde residents, as well. Those who attended or completed university had the highest scores (mean  $\pm$  sd =  $8.54 \pm 2.46$ ). Those who attended or completed secondary school had the second highest (mean  $\pm$  sd =  $8.27 \pm 4.01$ ). Those who are currently attending school had the second lowest mean (mean  $\pm$  sd =  $6.82 \pm 4.51$ ). Those who attended or completed primary school had the lowest mean score (mean  $\pm$  sd =  $6.06 \pm 4.23$ ). No significant difference was found between members of differing education levels (1-Way ANOVA,  $F = 3.53$ ,  $p = 0.22$ ,  $df = 64$ ; Fig. 4a). Levels of education were also examined for differences in mean scores of green living. Those who attended or completed university had the highest mean (mean  $\pm$  sd =  $6.64 \pm 4.65$ ). Those who attended or completed secondary school had the second highest mean (mean  $\pm$  sd =  $6.60 \pm 4.98$ ). Those who attended or completed secondary school had the second lowest mean (mean  $\pm$  sd =  $6.44 \pm 4.4$ ). Those who are currently attending school had a much lower mean score than the rest (mean  $\pm$  sd =  $3.69 \pm 4.96$ ). No significant difference was found overall between members of differing education levels (1-Way

ANOVA,  $F = 3.53$ ,  $p = 0.13$ ,  $df = 64$ ; Fig. 4b).

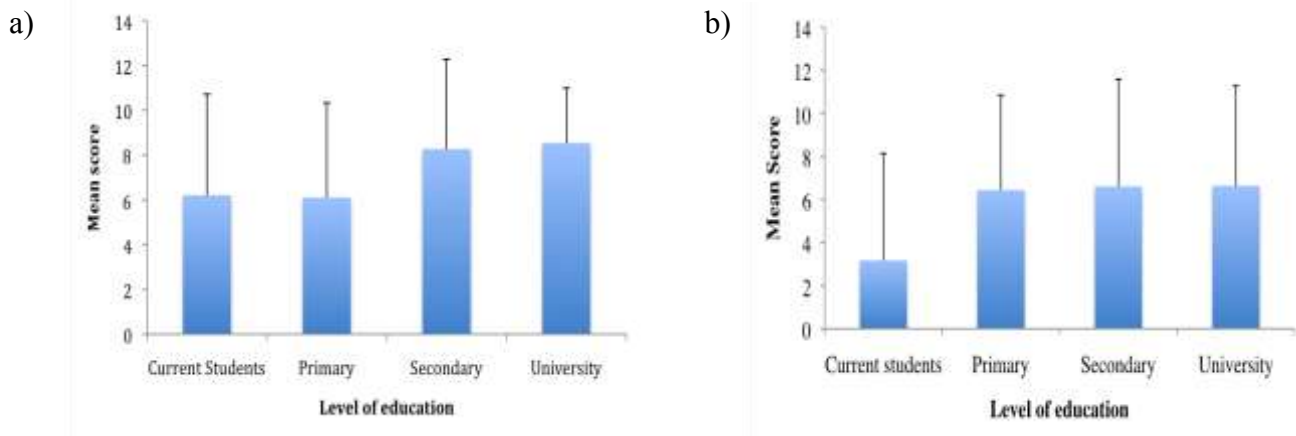


Figure 4. a) Displays mean environmental awareness score ( $\pm$  sd) for members of the Monteverde community across different levels of education. Differences were not significant ( $F = 3.53$ ,  $p = 0.22$ ). b) Displays the mean green living score for members of the Monteverde community across different levels of education. Differences were not significant ( $F = 3.53$ ,  $p = 0.13$ ).

### Comparative Analysis of Monteverde and Las Juntas

T-tests were performed to examine the difference in environmental awareness of the two communities: Monteverde and Las Juntas. Las Juntas had a higher mean (mean  $\pm$  sd =  $8.48 \pm 5.01$ ) than Monteverde (mean  $\pm$  sd =  $7.01 \pm 4.12$ ), though the difference between the two was not significant ( $t = 1.45$ ,  $p = 0.15$ ,  $df = 92$ ; Fig. 5a). The same test was used to determine if there was any difference in green living between the two communities. Again, Las Juntas had a higher mean (mean  $\pm$  sd =  $6.07 \pm 5.01$ ) than Monteverde (mean  $\pm$  sd =  $5.52 \pm 4.7$ ). The difference between the two was not significant ( $t = 1.98$ ,  $p = 0.39$ ,  $df = 92$ ; Fig. 5b).

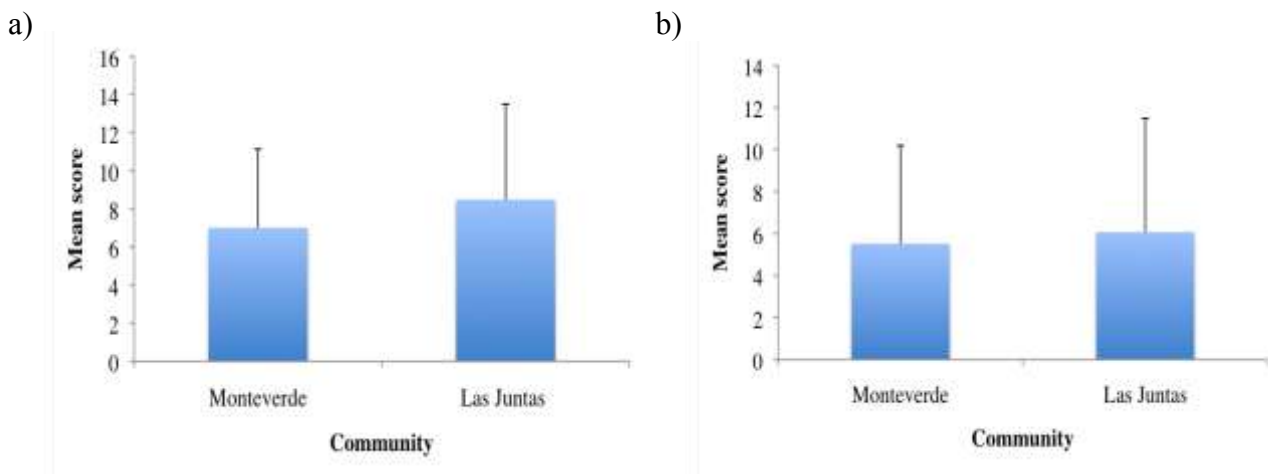


Figure 5. Displays the mean environmental awareness score for members of the Monteverde community and members of the Las Juntas community. Differences were not significant ( $t = 1.45$ ,  $p = 0.15$ ). b) Displays the mean green living score for members of the Monteverde community and members of the Las Juntas community. Differences were not significant ( $t = 1.98$ ,  $p = 0.39$ ).

Communities were also asked to respond on which problems they thought were greatest in Costa Rica between crime, health, political issues, environmental issues, drugs, unemployment and other. Chi-square tests were used to determine if there was a significant difference between participants' choices. Between Monteverde and Las Juntas there was no significant difference between the numbers of responses for any category (Fig. 6).

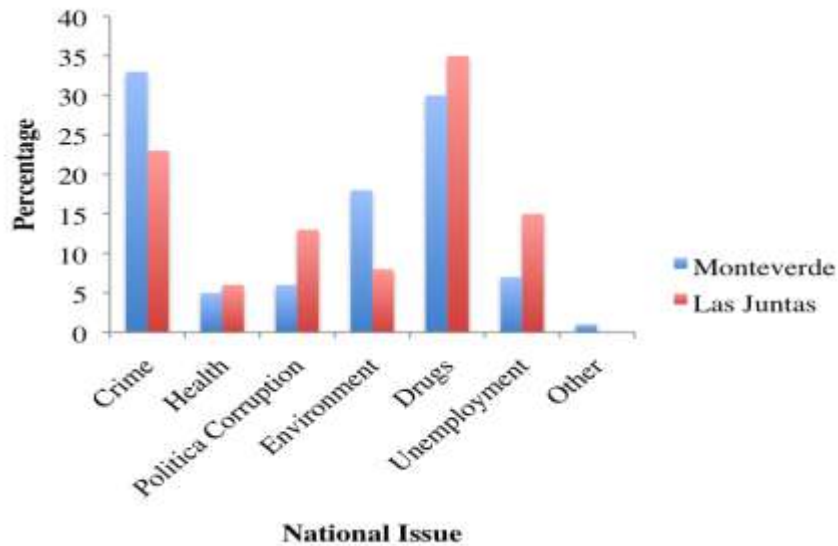


Figure 6. Displayed are the percentages of total responses of each community for top two national concerns (Monteverde – n = 138, Las Juntas – n = 52). No significant difference is found between either community in each response.

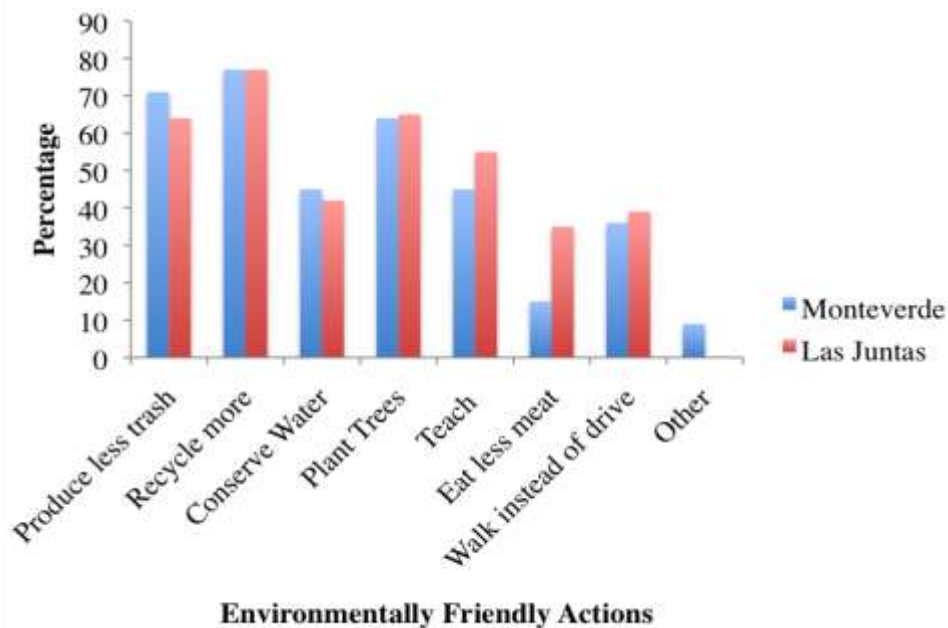


Figure 7. Displayed are the percentages of respondents who replied that they would each of the environmentally friendly actions for both communities (Monteverde – n = 66, Las Juntas – n = 30). No significant differences were found between community responses.



Members of communities were also asked to respond on which environmentally friendly actions they would be willing to take, including: Producing less trash, recycling more, conserving water, planting trees, teaching others about environmental issues, eating less meat, walking instead of driving and others. Chi-square tests were used to test for any significant differences between any individual question and results were not significant (Fig. 7).

## DISCUSSION

Overall, there was a statistically significant positive relationship between participants' environmental awareness and green living. This may be due to the fact that the more environmental issues are made aware to members of a community, the more willing they will be to live a greener lifestyle, be that in taking responsibility for their own waste, or spending a little extra on locally grown crops. May (1991) examines this relationship in his analysis of ecotourism as a driving factor for the value a community places in its land. He observes that many times, the value a human places on something is directly related to how much it is needed for survival. Because of the results found between Monteverde and Las Juntas, it seems apparent that this environmental awareness was not instilled due to the prominent ecotourism in the area. In fact, means at both sites were moderately high indicating high awareness in various types of towns throughout Costa Rica.

Contrary to my hypothesis, respondents in Monteverde showed a consistent mean across age groups for environmental awareness, though younger tended to score lower. A significant difference between green living was noted between age groups, specifically between the youngest and oldest age group. These findings are in direct contrast to most studies that indicate a negative correlation between age and environmental awareness and attitudes (Ewert and Baker 2001). There have been multiple studies from several countries that have verified this negative correlation between age and environmental attitudes. Holl et al. (1995) did not find a significant concern for environmental issues among any groups throughout Costa Rica, including age groups. This is contrary to the aforementioned studies that have found negative correlations between age and awareness. Most of these studies, however were performed in various parts of the world from the United States to Hong Kong. The current lack of trend may be due to several reasons including differences in income, human bias and population differences between these countries and Costa Rica. The difference between members of age groups and green living that takes an opposite trend comparatively to other studies may be related to the economic structure of Costa Rica. This may fall subject to two different economic situations. Many times, to be green in Costa Rica is very expensive. This means that going to the farmers market and buying organic or locally grown produce may be out of the question for some families. However, many times to conserve is to live a cheaper lifestyle. This means that those living a simpler lifestyle, such as conserving water and consuming less, are subsequently living a greener lifestyle even if it's not by choice. These differences could be examined in future studies if the right questions were asked.

The significant difference observed between Monteverde community members with eco-centric jobs and those without may be due to many differing factors. First, many people involved in ecotourism, such as tour guides and park managers began those positions with an already well established background on environmental issues. In an ecotourism study conducted by Ormsby and Mannle (2006) in Madagascar, it was found that the majority of tour guides in the area initially wanted to become tour guides in order to help protect the environment. Along with this yearning for preservation, another study indicated that people directly involved with ecotourism are not just more likely to have an awareness of the local environment, but through the course of their work they will develop a broader understanding of general issues relating to the environment as well (Waylen, et al. 1990).

This difference in environmental knowledge was investigated between individuals with

different levels of education. There is no significant difference between the level of education of participants and either their environmental awareness or green living, though current students score tend to score lower on green living. This may be due to various factors. The relationship between education and environmental attitudes has been studied considerably throughout the years. One study in particular noted a direct relationship environmental knowledge and environmental attitudes (Arcury 1990). One explanation for the inconsistency in responses between groups may be due to insufficient environmental education leading to a lack of awareness. It has also been observed in past studies that members of communities in other countries that have completed further education will have a better understanding of government organizations that deal with environmental issues. This is important in understanding national policies that deal with environmental concerns, therefore raising awareness (Preston, et al. 2000). It may be possible that these resources are not as readily available to the public in Costa Rica, so this trend may not be apparent in the region.

In the case of Monteverde compared to Las Juntas, there was no significant difference between the awareness and green living of these two communities. In order to understand this similarity, it is important to define the three types of environmental attitudes investigated by Schultz and Zelezny (1999). They include: egoistical, protecting the environment for one's own good; social-altruistic, protecting the environment for society's sake; and biocentric, protecting the environment for the sake of the animals and plants that inhabit it. If my theory, that many people in the region of Monteverde are concerned for the environment because it plays such a hand in their economic prosperity, holds true, members of this community would be displaying both a social-altruistic drive to preserve, enhancing the well-being of the society as well as an ego-centric drive to preserve, enhancing the well-being of one's own self. Because community members of Las Juntas do not have a direct benefit from the environment that can be seen in their lives every day, their awareness and actions may be more biocentric. This known, it may be the case that Monteverde and Las Juntas differ in their environmental attitudes, not in how much they are aware or care to preserve the environment, but instead how they arrive at these attitudes.

Many conclusions can be made on this study. First off, it seems imperative that environmental education systems are more efficient throughout Costa Rica. The fact that age groups do not show a significant difference is astounding. The majority of older generations that were surveyed did not matriculate past 6<sup>th</sup> grade, some of them less. Therefore, these environmental education programs were not being taught yet. Younger generations should have a much higher awareness than older generations. If we can push a stronger curriculum in environmental awareness, it seems apparent that we can counteract environmental degradation by subsequently raising green living, as was implied by the results of the environmental awareness and green living correlation found in this study. Another conclusion that can be made deals with the fact that, as it can be seen in the relationship between Monteverde and Las Juntas, ecotourism is not a driver of environmental awareness. This may cause problems for the future when levels of ecotourism continue to grow, leading to more pollution and environmental degradation. If ecotourism does not instill a need to live a greener lifestyle, residents may not see the need to counteract the pollution and emissions that are brought by mass amounts of tourists. But if we can utilize the tools available to instill awareness in community members, it seems that this need for greener habits will not be a request, it will already be a lifestyle.

## ACKNOWLEDGMENTS

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## APPENDIX

Survey:

Comunidad: \_\_\_\_\_

Edad: \_\_\_\_\_

Sexo: \_\_\_\_\_

Nivel de educación: \_\_\_\_\_

Ocupación (para estudiantes – ocupación de los padres): \_\_\_\_\_

### Conocimiento de la realidad

Por favor escoger los dos problemas más importantes en Costa Rica hoy en día:

Crimen \_\_\_\_

Salud \_\_\_\_

Corrupción política \_\_\_\_

Degradación ambiental \_\_\_\_

Drogas \_\_\_\_

Falta de empleo \_\_\_\_

Otros \_\_\_\_

Por favor escoger los dos temas ambientales más importantes en Costa Rica hoy en día:

Recolección de basura \_\_\_\_

Deforestación \_\_\_\_

Calentamiento Global \_\_\_\_

Contaminación del agua \_\_\_\_

Disminución de la biodiversidad \_\_\_\_

Contaminación del aire \_\_\_\_

Daño a la capa de ozono \_\_\_\_

Otros \_\_\_\_

Para las siguientes preguntas por favor encierre en un círculo una, indicando si:

Está totalmente en desacuerdo                      -2

Está en desacuerdo                                      -1

Le es indiferente                                        0

Está de acuerdo                                        1

Está totalmente de acuerdo                      2

1. Estoy preocupado por el calentamiento global.

-2           -1           0           1           2

2. Las vidas de nuestros hijos van a ser peores por la forma en que tratamos el ambiente.

-2           -1           0           1           2

3. Globalmente, la gente está cambiando mucho los usos de los hábitats naturales.

-2           -1           0           1           2

4. Debemos proteger las especies de la extinción, aunque signifique que algunas tierras privadas no deban ser usadas para la agricultura o el comercio.

-2      -1      0      1      2

5. Debemos rebajar los estándares ambientales para aumentar el crecimiento económico.

-2      -1      0      1      2

6. Es importante que se enseñe educación ambiental en las escuelas, aunque signifique que habrá menos tiempo para matemáticas, música o educación física.

-2      -1      0      1      2

## Vivir verde

Para poder ayudar el ambiente, yo estaría dispuesto a hacer lo siguiente:

Producir menos basura \_\_\_\_

Reciclar más \_\_\_\_

Usar menos agua \_\_\_\_

Sembrar más árboles \_\_\_\_

Enseñar acerca de temas ambientales \_\_\_\_

Comer menos carne \_\_\_\_

Caminar en vez de manejar \_\_\_\_

Otros \_\_\_\_

1. Nunca echo basura en la calle.

-2      -1      0      1      2

2. Con frecuencia asisto a la feria del agricultor para comprar productos locales u orgánicos.

-2      -1      0      1      2

3. Las acciones diarias individuales pueden hacer una diferencia en los problemas ambientales.

-2      -1      0      1      2

4. Pagaría más por un producto si supiera que es orgánico.

-2      -1      0      1      2

5. Hago un esfuerzo consciente para comprar productos con menos envoltura.

-2      -1      0      1      2

6. El desarrollo sostenible es importante, aunque signifique que genera menos dinero.

-2      -1      0      1      2