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Assessment of Impact of Socioeconomic Factors on Conservation Awareness in the Tarangire-Manyara Ecosystem

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Abstract:

This study was conducted in the Tarangire-Manyara ecosystem in the towns of Mto Wa Mbu, Kilimamoja, Esilalei, Losilwa, and Baraka. The purpose of the study was to see what the wildlife and environmental conservation awareness levels were among people in local communities, and to determine what socioeconomic factors affected awareness levels among people. The relevance of this study was to determine what factors influence, hinder, and encourage conservation awareness among people. With this information, communities may be able to spread conservation education more effectively. The study also examined what factors increased or decreased awareness levels among

people. The study was carried out by interviewing people and filling out a questionnaire about people's awareness levels and socioeconomic backgrounds. There were also group discussions with environmental committees from each village to determine what the committees were doing to spread awareness. The data was then analyzed using Statistical Package for the Social Sciences (SPSS) to find any correlations between socioeconomic factors and awareness levels. The main findings showed that there was a significant difference between awareness levels among men and women, and that tourism influenced people's awareness levels about environmental and wildlife conservation. Since this data shows that women are not as educated about environmental issues as men, communities should specifically target women in their environmental education programs so that women will have the same levels of awareness as men about these issues. The data also showed that people who benefited from tourism were more environmentally aware, therefore, communities should try to increase the amount of benefits that people receive from tourism.

1.0 Introduction:

1.1 Similar Research

Awareness levels about environmental issues and conservation within members of a community can be affected by a variety of socioeconomic factors, such as occupation, as seen in a study done on deer farmers in New Zealand (Payne and White). All of the farmers had some level of awareness about environmental issues, but their level of awareness was influenced by their specific farm context, and was affected by factors such as topography and soil type (Payne and White). The farmers in New Zealand also felt that they were dealing with their environmental issues "the best they could," and did not feel

the need to adopt any new environmental policies (Payne and White). .

Tourism may also be a driving factor in conservation awareness of local people; an example of this would be when how the Tanzania National Parks Authority (TANAPA) initiated the Community Conservation Service for communities outside of Serengeti National Park which gives people financial incentives for community conservation efforts and funding for community-initiated development activities (Emerton and Mfunda). Another example of economic incentives being used to promote tourism and conservation in local communities can be found by looking at the Aga Khan Fund for Economic Development, which provides jobs within the hotels and lodges to local community members, promotes economic development in under-developed communities with the revenues generated from the hotels, and promotes values of education, courtesy, and hospitality among employees from the local communities (Ashley, et al.).

Giving local people monetary incentives and helping communities develop economically from revenues generated by tourism may lead to an increase in education among locals as well as an increase in conservation awareness, since people would be making their money from tourists that want to experience the environment and wildlife, so people may be more willing to conserve the environment when they are generating some gain from it. However, revenues from tourism do not always reach local communities because although tourists that visit national parks in the Serengeti area believe that their money is going to local communities and helping local communities, they rarely ever spend money in local curio shops, restaurants, street vendors, or cultural manyattas (Okello and Wheat).

Aside from affecting economic development in countries, tourism can also affect social development. Tourism in Asia and the Pacific has changed gender roles in those countries because hotels and resorts are hiring women and there is an increase in women leaving their homes, getting jobs, and making their own money (United Nations). Tourism has also led to increase in Western values, such as education and gender equality, in Asia and the Pacific (United Nations).

1.2 Environmental Disciplines (education, history, and politics) in Tanzania

Education:

What is environmental education? The United States Environmental Protection Agency describes it as something that, "increases public awareness and knowledge about environmental issues or problems. In doing so, it provides the public with necessary skills to make informed decisions and take responsible action," (http://www2.epa.gov/education/). The North American Association for Environmental Education (NAAEE) gives a similar definition, saying that environmental education "teaches children and adults how to learn about and investigate their environment, and to make intelligent informed decisions about how they can take care of it," (http://www.naaee.net/what-is-ee).

But how is environmental education taught? And what exactly constitutes an environmentally aware person? According to the NAAEE, environmental education is usually taught in classrooms through a variety of school subjects like earth science, biology, chemistry, social studies, and even math and language arts. Environmental education can also be taught at community centers like museums, parks, or zoos (NAAEE). An environmental literate person is a person that knows that their actions

affect the environment, knows how their actions help or harm the environment, and knows what they need to do to keep the environment healthy and sustain its resources for future generations (NAAEE). The Campaign for Environmental Literacy also describes an environmental literate person as someone who is aware of the environment, knowledgeable of environmental problems, has an attitude of appreciation and concern for the environment, and takes action to protect and conserve the environment (http://www.fundee.org/facts/envlit/components.htm).

Environmental literacy has many benefits. Aside from promoting the overall conservation of the environment it can also lead to an improvement in human health by increasing clean air, clean water, and more sustainable farming methods that lead to healthier food (NAAEE). It can improve education in children as well. Students who are exposed to environmental education are more likely to perform better on standardized tests, have improved reading proficiency and learning skills, be more interested in science and math, and perform better in upper level science classes (Campaign for Environmental Literacy). Environmental education has also been shown to help level the learning field across socioeconomic boundaries (Campaign for Environmental Literacy).

In order to look at environmental education in Tanzania it is necessary to look at education in Tanzania first. According to the National Website for the United Republic of Tanzania, the Tanzanian education system consists of two years of pre-primary education, seven years of primary education, four years of junior secondary (ordinary level), two years of senior secondary (advanced level or a technical degree), and three or more years of tertiary levels (colleges, universities, bachelor's degree, etc.) The website also states that the main feature of the education system is the bilingual policy, which

teaches students to be fluent in both Kiswahili and English (http://www.tanzania.go.tz/educationf.html).

According to a website on the Tanzanian Educational System, the majority of primary school consists of teaching students to read, write, and speak Kiswahili and English (http://www.bibl.u-szeged.hu/oseas_adsec/tanzania.htm). Most children go into school not knowing Kiswahili and only speaking their tribal language, so it takes about three years to teach them Kiswahili and four to teach them English. In junior secondary school, students must take and pass seven classes which must include at least one subject in civics, Kiswahili, foreign languages, social science or technology, mathematics, natural sciences, and commercial studies or home economics. In senior secondary school students must also take and pass general studies and basic applied mathematics in addition to the previous seven courses listed (Tanzanian Educational System).

Pre-primary school is not compulsory, but primary school is. There is no tuition fee as of 2002, but parents still have to pay for their child's uniforms, testing fees, and school supplies. Secondary school is not mandatory, requires a yearly tuition fee of about $12 USD, and there are so few secondary schools throughout the country that many children do not have a school close enough which they are able to attend (Tanzanian Educational System). According to UNESCO, the statistics for education in Tanzania as of 2011 are as follows: 18% of children attend pre-primary school, 77% attend primary school, 41% attend secondary school, and 8% attend tertiary school or universities (http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=121&IF_Language=en&BR_Country=7620).

When comparing the definition of environmental education to the education

system in Tanzania, it is clear that environmental education is probably not very prevalent in the country. While primary school is mandatory and does have a high attendance rate of 77%, it mainly focuses on English and Kiswahili. There are some basic math lessons on things like addition and subtraction (Tanzanian Educational System) but there are not really any science courses, much less any environmental education courses. Secondary school does require that students take one natural science course a year, but the percentage of students who attend secondary school is only 41%, about half the number that attended primary school. The percentage of university students is a fourth of that number. The numbers decrease drastically with each level of education and if science only begins to be taught in secondary school, then that means that less than half of the population is learning about the environment. That does not lead to a very environmentally literate population at all.

The NAAEE did say that environmental education was not only taught in schools but could also be taught in community centers like museums. Tanzania is a third world country though and if people are struggling to pay for school supplies and tuition fees there is no way they would be able to afford trips to the local museums, and that is if there even are museums in their area. Most people do not have secondary schools nearby, much less recreational areas like museums or parks. There are the national parks but those are about $30-$40 USD per day not counting transportation, vehicle rentals inside the park, and accommodations. Lastly, most children have to work to provide their families with enough food and money. Many children are not able to attend school because of work and would probably not have time for educational recreational activities either. Without education or recreational opportunities, most citizens will not receive any

environmental information unless an environmental organization or NGO specifically brings it to them. Aside from that though, most environmental education is based on personal experiences of living amongst the wildlife and interacting with nature on a daily basis.

Environmental history:

To understand the environmental history of Tanzania it is important to understand two things about the country first: Its colonial history and its desire to shift from a third world country to an industrialized first world country. Tanzania was colonized by the Germans and became independent in the late 60s. During colonization though there was always a conflict between German colonizers and native Tanzanians over what to do with the land. Colonizers wanted to preserve the environment for its aesthetic beauty, but local inhabitants wanted to develop it further to enhance their economy.

In the book "Highland Sanctuary: Environmental History in Tanzania's Usambara Mountains," by Christopher A. Conte, the author talks about this issue more in detail. Conte writes that, "European colonialists and indigenous habitants of Usambara valued forests very differently. European- and particularly German- views of Usambara were shaped by a fundamentally aesthetic culture-bound appreciation of mountain landscapes. Yet, while Europeans gradually moved towards a more conservationist valuation of mountain forests, demographic pressure and incorporation into a market economy increasingly led the indigenous people of Usambara in the opposite direction. Mounting pressure to obtain money led villagers and pastoralists to clear and exploit their forests for commercial timbering and market farming," (Conte, pg. 212). This is a problem that is still widespread in Tanzania and other formerly colonized countries. It is very easy for

rich Europeans or Americans to go to third world countries and romanticize rural and impoverished indigenous communities instead of seeing them for what they actually are: A people that are struggling to survive in the wilderness with no food or resources.

Another issue that Conte writes about is the struggles for power not only between the locals and the colonizers, but between the local communities themselves. He says that, "Washambaa villagers surely were not simply critiquing colonial power, but were seeking to rein in members of their own communities who exploited their neighbors' labor, land, and forest as market opportunities widened dramatically. The fault lines of division ran not only between the colonial state and local communities, but also through the interior mountain communities," (Conte, pg 213). He then says that, "Another fault line ran between local residents and the outsiders who came to the mountains from Kenya and elsewhere for market farming and timber harvesting. The post independent TANU government sought to resolve this particular division by allowing national interests to override local and tribal claims to resources. Unfortunately, the primacy given national interests left the mountain communities, which had the most to lose from the rapacious exploitation of their forests, with little ability to control intruders," (Conte, pg. 213). Conte then ends by saying that environmental historians when looking at conservation history in Tanzania must take into account the struggles between colonizers and local inhabitants, local communities and outsiders, and between local communities themselves (Conte, pg. 213).

Although his book specifically focused on the Usambara mountains in Tanzania, the same problems can be seen throughout the entire country historically. The main issues that Tanzania has faced throughout the years are conflicting interests with colonialists

and a lack of regulation when it comes to exploitation of resources by both locals and outsiders. With colonialism, Conte mentioned that colonizers wanted to preserve the land for its beauty while locals wanted to develop it for economic gain. This is still a problem today even though Tanzania has been an independent nation for decades. As a country that is trying to become industrialized, Tanzania is facing rapid urbanization, population increase, and depletion of resources and deforestation. As mentioned in the section about education, the main goal of the education system is to teach Kiswahili and English so that students are able to communicate fluently with other communities in East Africa and around the world, thus improving their business prospects. These steps are taken to pull Tanzania out of poverty and increase the quality of life for its residents. However, industrialization and environmental conservation do not go hand in hand; in order to become industrialized a country must heavily tax its natural resources.

One must consider another issue as well though, which is that Tanzania's main source of economic income is from tourism. People want to see natural parks, undisturbed nature, exotic animals roaming free without cages, and they are paying lots of money to see that. NGOs and governments from Western countries are giving Tanzania much needed grants to protect their wildlife and environment. But a growing population needs land to settle on, food to eat, and resources to use. The people need secondary schools and hospitals close by to them, not the Serengeti or other parks. People who are hungry may kill an elephant for its meat and are not able to consider whether the animal is endangered or not if they are on the brink of starvation. Tanzania is a widely pastoralist society and people struggle with lions and cheetahs killing their livestock and often engage in revenge killings of these carnivores. It may be nice for tourists to visit the

Serengeti and see all the wide open space and wild animals, but to someone who lives there permanently all they see is land that could be developed, food that could be eaten, and animals that threaten their way of life.

There is also a long, negative history with colonialism to consider. European and American settlers first came to Africa to capture slaves and then to exploit their resources for Western societies. But now when these African countries are trying to grow and develop, Westerners want to preserve the land so they have a nice place to visit and go camping. Why should Africans care? When have colonizers ever tried to help Africa? Why should Europeans be allowed to exploit African resources for the growth of Europe, but Africans cannot do the same for the growth of Africa? North America and Europe destroyed their land so their people would enjoy a better quality of life, but now they do not want other third world countries to do the same. From the point of view of Tanzanians it looks like Westerners would rather keep the local people impoverished just so they can enjoy some rare wildlife and undisturbed nature.

The second issue that Conte talks about is the distribution of power after colonialists left. Who gets to control the resources? Is it the people who live on the land? Or the government? Or just whoever can pay the most? Conte writes that in Tanzania that government chose to control the resources so that they could use them in the best interest of the country, but that tends to exploit the people living on those lands who need those resources to survive day by day. And if there are people coming from outside countries to buy resources, the government is going to sell them to the highest bidder in order to facilitate economic growth. Again though, this ends up hurting poor pastoralists and farmers who live in these rural areas and survive off their resources. This is a problem

that can be seen not only in Tanzania but throughout the continent, like the precious minerals in the Congo or blood diamonds in Central Africa. All of Africa is struggling with trying to grow economically, while trying to sustain their rural and poor communities, while trying to gain money by selling their resources to their former colonizers. It creates a system of chaos, and sometimes even war and violence, which is not conducive at all to environmental conservation. That is why environmental history in Tanzania is so difficult to understand - because it is so stained by economic pressures and former colonialism. And for a rapidly developing third world country, conservation awareness is understandably not always a priority. So what can be done to ensure economic growth and environmental conservation?

Environmental politics:

To answer that question, one can look at environmental politics. The environmental politics class at Fordham University describes environmental politics as the ability to understand the most important environmental controversies and the way governments have responded to environmental problems, and the ability to analyze environmental issues from a political science point of view (http://www.umsl.edu/~robertsondb/248/sy248.html#OLE_LINK1). To understand environmental politics in Tanzania, one can look at the how the government and politics of the country influence environmental literacy and deals with environmental problems.

Under the "Environment" section on the National Website for the United Republic of Tanzania, it lists what the government is doing in response to certain environmental issues. The website starts off by saying, "Importance of environment in the economy of Tanzania is in our four-folds: It provides the basic resources for virtually

all socioeconomic activity in the country, it holds natural habitats, plants, and animals that are part of an irreplaceable global heritage, waste receptacle and a foundation for eventual alleviation of abject poverty." The theme of economy comes up a few times in that statement and it seems like the main concern of the environment of the government is how the environment can contribute to the economy. This brings us back to the problem of Tanzania trying to become industrialized and "first-world" that was discussed in the previous environmental history section.

The website then goes on to list their national environmental policies which are as follows: To ensure sustainability of the resources so that they will be able to support future generations without degrading or harming the environment; to prevent and control degradation of land, water, air, and vegetation; to conserve and protect man-made heritage, including the biological diversity of unique ecosystems in Tanzania; to improve the conditions of degraded areas both rurally and urban so that Tanzanians may live in healthy, safe, and aesthetically pleasing places; to raise awareness and understanding between environment and development and to promote community and individual participation in environmental action; and to gain the support of the international community in environmental conservation in Tanzania (National Website for the United Republic of Tanzania).

The government website acknowledges that it is the government's job to make local communities aware of their environmental situation, but it is the community's responsibility to implement programs that promote environmental conservation. The website suggests that communities adhere to private donors to receive funding for such programs. There are also some environmental action plans listed on the website such as

the Natural Environmental Action Plan (1994), National Biodiversity and Action Plan (2000), National Action Program to Combat Deforestation (1999), and National Action Plan on Global Warming (1997). However, there is no further information or details about these plans. Lastly, the environmental section of the website lists a few government environmental organizations within the country and their contact organization (National Website for the United Republic of Tanzania).

There seem to be a few problems with the government's environmental policies. First off, all of their policies and ideas are very vague. There are not any concrete solutions or steps that are being taken to fix environmental problems; the website just lists very broad and vague goals that the government would like to accomplish at some point. The environmental action plans listed have no further information about them or details about whether they worked or not, and there are only seven environmental action plans listed, all of which were created between 1993-2000. That means there have been no new action plans in Tanzania for thirteen years. There is generally not much information on environmental conservation issues or things that the government is doing to solve environmental problems. This is the Tanzanian government's national website, and they have no solutions listed for any of their environmental problems. The only solution offered was for communities to receive donations from private companies.

The government also does not foster environmental literacy or education. The main goal is economy and how to foster economic growth through the environment. Environmental conservation is just the means to the end of a greater goal: Increased economic revenue for the country. Educating people about environmental issues was only mentioned once on the website, and it even said that it was up to local communities to fix

their environmental problems and find funding for those solutions. So even if the government does educate local communities about environmental problems like it says it's supposed to, the government still will not help communities find solutions. And to be honest, it is quite unlikely that the government is actually sending out officials to educate community members on conservation and environmental issues. The main goal of the government in terms of the environment is to receive monetary donations from other countries or organizations for conservation, but the government itself does not seem to be doing too much to change anything. This may not completely the government's fault though since they are more focused on seeing economic growth in Tanzania, which is the more pressing matter in their opinion.

The website does list some very helpful environmental organizations at the end of the section. One of the organizations listed is Tanzania National Parks Authority (TANAPA) which I worked closely with while studying in Tanzania. TANAPA does try to spread information on environmental awareness and they have certain things they do like relocating people to different areas so they do not have to live near national parks, or giving people monetary compensation if they or their livestock are injured by wildlife from any of the parks. It seems that the people of Tanzania have to rely on government organizations like TANAPA for any environmental information or concerns they may have.

There are a couple of problems with this though. First of all, TANAPA is like Parks and Recreation in the US: Yes, it is a government organization with government funding and yes, its main goal is to help the people, but it is not very reliable. Many people complain that they never receive aid from TANAPA or that their problems are

never addressed by TANAPA and TANAPA itself does not receive that much funding from the government, so it may not be very efficient. Also, the National Website for the United Republic of Tanzania lists organizations like TANAPA with their addresses and phone numbers in case people have any problems or need any assistance from these groups. For a country that is struggling to go from third world to industrialized though, one would think the government would realize that most of its inhabitants probably do not have access to computers, internet connection, or telephones. So how are they supposed to get in touch with these organizations, or even know that they exist? Overall, the government in Tanzania seems too preoccupied with economic issues to be concerned about environmental ones and because of that environmental literacy and education in the country is suffering.

1.3 Statement of the problem

Environmental degradation is a growing problem in Tanzania. According to the United Nations, some of the root causes for environmental degradation are unsustainable farming and mining, overgrazing, uncontrolled forest clearing, and wildfires (http://tz.one.un.org/index.php/what-we-do/environment). Other factors leading to environmental degradation are inadequate alternative energy sources, a lack of financial institutions that provide credit to farmers to acquire or develop land, rapid population growth resulting on pressure on land and resources, excessive use of agro-chemicals that leads to soil and water pollution, and unsustainable irrigation that leads to water loss and soil erosion (United Nations). As of 2007, 36% of the land in Tanzania is covered in natural forest or woodland, a drop from 45% in 2005 (United Nations). It is also estimated that that the rate of deforestation in Tanzania is 412,000 ha per year (United

Nations).

These environmental and conservation issues affect people in the communities within the Tarangire-Manyara ecosystem, and the people's knowledge and awareness of environmental issues can largely influence whether the issues they are facing can solved or not. Therefore, it is important to educate people about conservation in order for them to find solutions that they can implement within their own community. However, education can vary among different socioeconomic statuses. Gender, class, age, spatial location, and occupation can all affect the amount of education a person receives. This creates a problem where not everyone is receiving equal information about conservation. Because people in these communities have different socioeconomic backgrounds, they have different levels of awareness on environmental issues. Unless everyone is educated on the importance of conservation and the negative results of environmental issues, such as global warming or deforestation, communities will not be able to fully implement conservation policies.

1.4 Significance of the problem

The significance of the problem arises from the need to educate people about conservation. If local people are educated about environmental issues and learn about the importance of conservation, they will be more motivated to come up with solutions for environmental problems. If people are educated about how serious problems like global warming are and how these problems can negatively affect their everyday life, they will be interested in solving the problems and in practicing conservation. Educating people will help them take environmental issues more seriously.

Education will not be as effective though if all the people in the community are

not receiving an equal education. This is why it is important to see how education varies among people from different socioeconomic backgrounds. By studying the driving factors of conservation education as well as the factors that hinder awareness, one can find solutions on how to educate all members of the community equally on conservation problems.

The research obtained from this study can be used by wildlife management agencies, government officials, and organizations such as TANAPA to see what demographics of people need to be further educated about environmental conservation. By seeing which socioeconomic groups of people are not as educated about conservation issues, government and conservation agencies can work to target those specific groups of people and increase their education. The research from this study can also be useful in determining what factors lead to an increase in environmental awareness, and what factors lead to a decrease in environmental awareness. With this information, NGOs, WMAs, and other government agencies can manipulate those factors to help increase environmental education and awareness among communities in the Tarangire-Manyara ecosystem.

1.5 Objectives

The main objective of this study was to analyze the impact that socioeconomic background has on environmental education and awareness within the Tarangire-Manyara ecosystem. Specific objectives included:

*Determining local people's awareness levels on environmental issues in local communities

*Determining how socioeconomic factors affect environmental awareness

*Finding ways to increase environmental awareness among local communities despite socioeconomic differences.

1.6 Research questions

This study looked at environmental awareness levels among different socioeconomic backgrounds and the main question that was asked was what are the factors that increase or decrease awareness among community members and how can those factors be manipulated in a way that benefits conservation efforts in the community?

1.7 Hypothesis and thesis

My thesis is that there is a correlation between environmental awareness and socioeconomic factors. The null hypothesis was that there would be a correlation between a person's socioeconomic status and their environmental education level.

2.0 Materials and Method:

2.1 Study Area

The study area was in the Tarangire-Manyara ecosystem, specifically in the towns of Mto Wa Mbo, Kilimamoja, Maasai land, Esilalei, Losilwa, and Baraka. Kilimamoja is described as a tourist centre with a rural setting as well, and poverty in the village is tied to the rural area (Luvanga). Kilimamoja is mainly comprised of rural farmers and their livestock, and it has a high poverty rate, poor social services, poor infrastructure, severe food insecurity, deteriorating livelihoods, and highly depleting natural resources (http://havennature.blogspot.com/). Kilimamoja also relies heavily on water from the Ngorongoro area which is not only unreliable, but the pipes from Ngorongoro are constantly damaged or destroyed by wildlife (http://havennature.blogspot.com/). Kilimamoja is located in the Karatu district of the Arusha region (2002 population and

Housing Census General Report).

Mto Wa Mbu and Esilalei are two administrative wards within the Monduli district of the Arusha region of Tanzania (2002 Population and Housing Census General Report). Esilalei has a total population of 7,824 and Mto Wa Mbu has a total population of 16,068 (2002 Population and Housing Census General Report). Esilalei is located in the heart of Maasai land, on the hills overlooking Lake Manyara National Park and the Great Rift Valley (africanrootsfoundation.org). Esilalei is comprised mainly of Maasai people whose primary source of income is cattle herding, and their per capita income is about one dollar a day (africanrootsfoundation.org). Baraka and Losilwa are also located within Maasai land, which is an area that is mostly comprised of Maasai, and is located within the Tarangire-Manyara ecosystem bordering Lake Manyara National Park and the Great Rift Valley (africanrootsfoundation.org).

2.3 Sampling Procedure

The sampling procedure was done in Mto Wa Mbu, Kilimamoja, Maasai land, Baraka, Losilwa, and Esilalei villages and involved the following steps:

(i) Performing transect walks at each village and choosing people at random at each point of the transect walk to interview and distribute questionnaires to.

(ii) Having group discussions with some of the community members to determine people's environmental awareness.

2.4 Data collection instruments

The instruments that were used to collect data are as follows:

(i) Questionnaires and interview questions that were distributed at random to people during our transect walks. The questions of the surveys asked about people's conservation

awareness levels and socio-economic backgrounds To determine a people's awareness levels, they were asked to define both environmental conservation and wildlife conservation. Then each answer was rated and given a number on a scale of one to three, one meaning that the person was very aware of environmental or wildlife conservation, two meaning that the person was somewhat aware, and three meaning that the person was not aware at all. The numeric results were used for the descriptive statistical results.

(ii) Group discussions with local organizations, both related to conservation and not related. The information from the discussions was also more qualitative and descriptive and again provided people with the opportunity to go into greater detail about environmental education and factors that influence it.

2.5 Data analysis

The types of data analysis that were used are:

(i) Descriptive statistics including graphs, charts, tables, frequencies, and percentages. The data for these statistics came from the qualitative information that was obtained from interviews, discussions, and questionnaires that survey people's conservation awareness levels and socioeconomic backgrounds.

(ii) Statistical analysis using Statistical Package for the Social Sciences (SPSS) to determine correlations between education levels and socioeconomic factors.

(iii) Statistical analysis using SPSS to determine correlations between awareness levels and factors that drive or hinder awareness levels

(iv) Statistical analysis using SPSS to determine what sources people are getting their information about wildlife and environmental conservation from and determining how effective these sources are at educating people.

Results:

The study found that there was no correlation found between wildlife or environmental awareness levels and age, religion, or primary occupation. The P-values for those three socioeconomic factors were all above 0.05 which showed that there was no significant correlation between age, religion, and occupation and conservation awareness levels. The biggest correlation observed was that between awareness levels and gender. For the correlation between conservation awareness levels and gender, the P-value was 0.00, which shows a strong significant correlation between gender and conservation awareness level. The data showed that 95.5% of males were given either a one (very aware) or a two (somewhat aware) for environmental conservation awareness levels, and 4% of males were given a three and were not aware at all about environmental conservation. However, only 67% of females were either given either a one (very aware) or a two (somewhat aware) for their environmental conservation awareness levels, and 33% of females were given a three and did not know what environmental conservation was.

There is a correlation between gender and wildlife conservation awareness levels, which had a P value of 0.00. 51.9% of women received a three and had no knowledge at all of what wildlife conservation was, while only 23% of men received a three and had no awareness levels of wildlife conservation. 10% of women and 37% of men received a one and were very aware of wildlife conservation. This again shows that men were more educated about conservation issues than women were.

There was no significant correlation between wildlife conservation awareness level and education level, but there was a correlation between environmental

conservation awareness level and education levels. The P value for correlation between environmental conservation awareness level and education level was 0.031, and the data showed that of the people that went to university, 100% of them were very aware of environmental conservation. And while there was no significant correlation between environmental conservation awareness levels within different villages, there was a significant correlation between wildlife awareness levels within villages. The P-Value was 0.00, so there was a very strong correlation, and the data showed that only 54% of people in Mto Wa Mbu and 52% of people in Kilimamoja received a one or two and had either strong awareness or some awareness on wildlife conservation issues. The percentage of people with some type of awareness increases dramatically in Losilwa, in which 77% of people received either a one or two and had some type of awareness; Esilaley, where 69% of people received a one or two; Maasai land, where 87% of people received a one or two; and Baraka, where 60% of people received a one or two for their wildlife conservation awareness levels.

In order to know whether tourism benefits local people and to the impact that tourism has on wildlife and environmental conservation, people were asked whether or not they benefited from tourism. People were then categorized into three categories: one meaning that they benefited from tourism, two meaning that they did not benefit from tourism, and three meaning that they did not know if they benefited from tourism or not. As Figure 1 below shows, 40% of people said they benefited from tourism, 57% said they did not benefit, and 3% said they did not know if they benefited or not.

Do you benefit in any way from tourism?

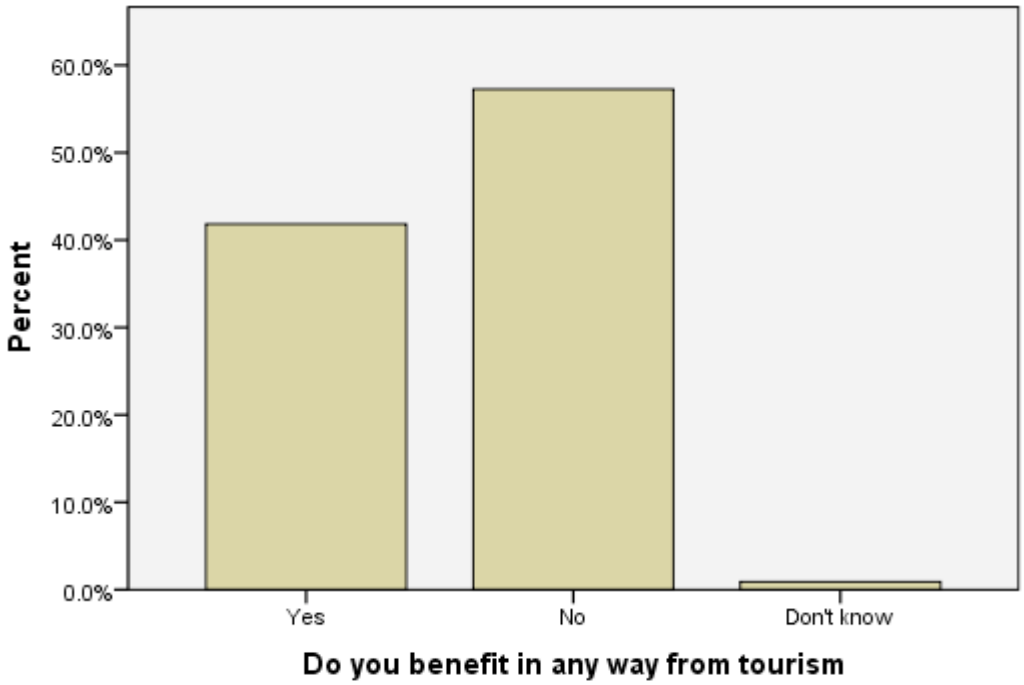

Figure 1: Percentage of People Benefiting From Tourism (1=Benefit from tourism, 2=Do not benefit from tourism, 3=do not know whether they benefit or not).

The correlation between wildlife conservation awareness levels and tourism benefits had a P value of 0.02, showing a significant correlation. The data showed that of people that benefited from tourism, 74.5% of them were either very aware or somewhat aware of wildlife conservation. Of the people that did not benefit from tourism, 44.4% of them were not aware at all about wildlife conservation, and of the people that did not know if they benefited from tourism, 100% of them were not aware about wildlife conservation.

For the correlation between environmental conservation awareness level and tourism benefits, the P value was 0.016 so again, there was a significant correlation between the two variables. However, the data showed that 80% of people that did benefit from tourism and 80% of people that did not benefit from tourism were either very aware or somewhat aware of what environmental conservation was. But again, out of the people

that did not know if they benefited from tourism or not, 100% of them were not aware of what environmental conservation was.

This study also examined whether there was a correlation between any socioeconomic factors and participation in environmental conservation. The study found that there is a strong significant correlation that was found was between gender and participation in conservation (the P value was 0.01). While 90% of males said that they participated in some way in environmental conservation, only 69.8% of women said they participated in conservation.

The next thing that the study looked at was where people were getting their information about wildlife and conservation from. First, people were asked if they had received any information about wildlife or conservation. 84% of men and 67% of women had received information, and 15% of men and 33% of women had not received any information about wildlife or conservation. The P value for the correlation between gender and whether the person received information or not was .0.003, so there was a significant difference between gender and whether they received information or not.

For the people that did receive information, their sources of information were analyzed. The categories for information sources are personal experience, mass media (radio, television, newspaper), school (primary, secondary, university), government officials and programs (TANAPA and national parks), village meetings, family members and word of mouth, multiple sources, and other sources. The correlation between information sources and gender was also analyzed. The P value was 0.015, so there was a significant difference between gender and sources of information. For men, 32% of them received their information from multiple sources, 20% received their information from

government officials and programs, 15% of them received their information from mass media, 12% received their information from personal experience, 7% received their information from schools, 7% from village meetings, 2% from family members and word of mouth, and 2% from other sources. For women, 30% received their information from mass media, 23% from multiple sources, 12% from personal experience, 11% from schools, 9% from family members and word of mouth, 5 % from village meetings, 5% from government officials and programs, and 2% from other sources.

Figure 2 below however shows that 30% of people received their information from multiple sources, 22% from mass media, 15% from government officials and programs, and 13% from personal experience. Only 8% of people received their information from schools, and only 6% received their information from village meetings. As for level of education, 20% of the people interviewed had no education, 65% had received primary level education, 15% had received secondary level education, and 1% received university level education.

Sources of information on wildlife and environmental conservation

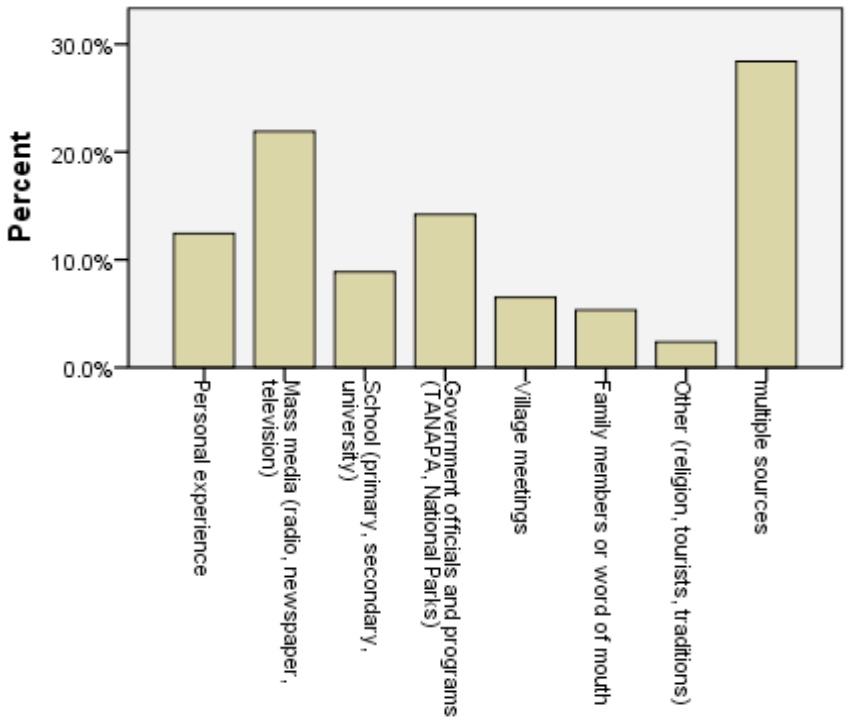

Figure 2: Information sources for wildlife and environmental conservation

Discussion:

My hypothesis for this study was that socioeconomic factors would affect people's awareness levels about environmental issues. But I found that only gender, village, education level, and tourism benefits affected people's awareness levels, so only some socioeconomic factors affect awareness levels according to my data. There was no correlation between conservation and wildlife awareness levels and age, religion, or occupation. This could be because there was not enough variety during the interviews of people from different religions, ages, or occupations. An overwhelming majority of people were Christian, farmers, or pastoralists, and there was not a wide enough range of religions or occupations to assess any correlation between those factors and education levels.

The fact that there was no correlation between occupation and awareness differs

from a study in New Zealand that found that occupation and farm context influenced the environmental awareness levels of deer farmers (Payne and White). That study found that awareness levels were influenced by the specific farm contexts such as topography and soil type, but in our study, we found no relation between farming or occupation and awareness levels. However, we did not study specific differences between farmers such as topography or soil type, and maybe if a study was done on that and on the difference in awareness levels among different types of farmers, there would be some type of correlation like the study in New Zealand found.

The study in New Zealand also found that farmers were unwilling to participate in conservation because they felt that they were already doing, "the best they could." Our study though, found that 90% of men and 70% of women participated in conservation. This difference in participation levels may be because people in the Tarangire-Manyara ecosystem are very influenced by tourism and benefit a lot from tourism, and as the results from our study shows, people who benefit from tourism are more likely to be aware of environmental issues and thus, more likely to participate in conservation. Perhaps the farmers in New Zealand did not benefit from tourism as much and therefore were not as educated about environmental issues or as interested in resolving those issues.

The biggest correlation was that of awareness levels and gender. Men were far more educated and had much more knowledge than women had on both conservation and wildlife awareness. This is unexpected because 40% of people said that they benefited in tourism in some way, which is a pretty high number. Other studies done in Asia showed that an increase in tourism led to an increase in Western values such as equality between

genders and education for women (United Nations). But although many people did say they benefit from tourism, women are still extremely uneducated about wildlife and environmental conservation in comparison to men, and it seems that even though tourism may be prominent in the Tarangire-Manyara ecosystem, it is not having a huge impact on some social aspects of the area. Unlike the study done in Asia, tourism in the Tarangire-Manyara ecosystem does not seems to have led to the adoption of Western culture when it comes to gender equality and education for women.

However, even though women are less educated than men about environmental issues, they generally received more schooling than men and in Tanzania, 82% of women attend primary school and 26% of females attend secondary school, while only 79% of men attend primary school and 24% attend secondary school (UNICEF). So the problem is not that women are not receiving the same education. The more likely issue gender roles. In a typical Tanzanian home, it may be the man's job to go out and collect information while the woman stays home to care for the house and children. That may be why our data showed that men receive most of their information from government sources and women receive most of their information from the media- because men are going out into the community more and interacting more with these government agencies, while women stay home where their only source of outside information might be the radio. So unlike the study in Asia that found that tourism and Western influences changed gender roles in Asia, it seems that tourism has not affected gender roles as much in the Tarangire-Manyara ecosystem, which may be why women are more undereducated about environmental issues than men.

Tourism does seem to have had an effect on the education levels of men though.

20% of men received their information about wildlife from government officials or programs such as TANAPA or national parks. This was one of the highest sources of information for men, second only to “multiple sources”, and these government programs, TANAPA, and national parks receive a lot of their funding from tourist revenues. So it is possible that tourism could be indirectly contributing to wildlife and environmental conservation awareness in men by funding the government programs that men utilize so much. There was also a significant difference between wildlife conservation awareness levels and whether or not a person benefited from tourism, and out of people that benefited from tourism, 74.5% of them were either very or somewhat aware about wildlife conservation. Only 44% of people who did not benefit from tourism were either very or somewhat aware of wildlife conservation. Again, this may show that tourism leads to an increased in conservation awareness levels, at least among men.

Even though there was a significant difference between environmental conservation awareness levels and whether or not a person benefited from tourism, the data does not seem to support that because both 80% of people that benefited from tourism and 80% of people that did not benefit from tourism had some idea of what environmental conservation was. But out of the people that did not know whether or not they benefited from tourism, 100% of them knew nothing about wildlife conservation or environmental conservation. So the correlation between tourism effects and conservation awareness may not mean that increased tourism leads to increased awareness, it could just mean that people who are not aware about tourism in their area are also probably not aware about conservation. Further testing should be done to test the correlation between tourism and awareness levels to see what factors are being affected by what.

The data from this study does agree with the work that TANAPA does that gives financial incentives to people who practice conservation (Emerton and Mfunda), and it does support the idea that increased tourism and an increase in tourism benefiting people will lead to increased conservation awareness among people (Emerton and Mfunda). These findings also show that revenues from hotel and lodge chains like Serena lodges, and companies like the Aga Khan Fund for Economic Development may actually be benefiting the community as well (Ashley, et al.). But since 60% of people answered that they did not benefit from tourism, that could also support the study that said that local people are not benefiting from tourism because tourists are not spending money on local curio shops, local restaurants, or cultural manyattas (Okello and Wheat). It is possible that even though people are not benefiting from tourism as much, the people that are benefiting are also gaining an increased understanding of conservation due to tourism. Again, more research should be done on the correlation between tourism and conservation awareness levels, possibly with a much larger sample size, to see how largely tourism effects awareness.

There was a correlation between education levels and environmental conservation awareness levels, but there was not a correlation between education level and wildlife conservation awareness levels. The data also does not seem to show a correlation between schooling and environmental conservation awareness because there was no huge difference in awareness and amount of schooling completed. However, there were two people that were interviewed who attended university, and both of them said that they were very aware of environmental conservation, meaning that 100% of university students interviewed were very aware about environmental conservation. But when asked

how much they knew about wildlife conservation, one university student answered that he was very aware, while the other university student answered that he was not aware at all. I think that is why the Chi square test did not show a correlation between schooling and wildlife awareness levels, because unlike the results for environmental awareness, 100% of the university students were not "very aware." In order to find out if people who go to college tend to have higher awareness levels about conservation issues, the study would have to interview more college graduates.

However, the number of college graduates in Tanzania is very low. In 1997, four million students were enrolled in primary school in Tanzania, 234,743 students were enrolled in secondary school, and only 17,812 students went on to universities (Tanzanian Educational System Overview). While nearly 80% of children are enrolled in primary school, only about 41% move on to secondary, and even less than that go to college (UNESCO). Even though it would help the study to find more college graduates to interview, there are so few people who attended universities, especially in impoverished areas like Kilimamoja or Esilalei that finding more college graduates may be very difficult.

There was also a correlation between awareness levels within different villages, but that did not quite make sense because there was no correlation between village and environmental awareness levels, but there was a correlation between village and wildlife conservation awareness. In Mto Wa Mbu and Kilimamoja about half of the people received either a one (very aware) or a two (somewhat aware) for their awareness levels of wildlife conservation. But the amount of people that received either a one or two for their wildlife conservation awareness levels was 77% in Losilwa, 69% in Esilalei, and

87% in Maasai land. At first I was wondering what about these places led to higher awareness levels; but the predominant tribe in these areas is the Maasai tribe, and most of the Maasai that we interviewed would not let us talk to the women, or the women would refuse to talk to us unless a man was present. When the women did talk to us, they would lie and pretend that they knew less than they did because they did not want the men to get angry. So the results from these towns are heavily skewed because we mainly only interviewed Maasai men and not very many women and as my data showed, women have a lot less knowledge on conservation than men do. If we interviewed an equal number of men and women in Mto Wa Mbu and Kilimamoja, then it would make sense that half the people had some knowledge and half the people had no knowledge, because theoretically, half the people we interviewed would have been women, who do not have much knowledge on environmental issues according to my data, and the other half would have been men, who usually have some knowledge on environmental issues according to my data. But in the Maasai areas where we only interviewed educated men, that would mess up the results and make it seem like a lot of people in Losilwa, Esilalei and Maasai land received either a one or two for their awareness levels when in fact, only the men in those areas received those ratings, and there are not many results for women‘s awareness levels because they were not allowed to give interviews most of the time.

This study looked at the sources where people were getting their information from as well. The data showed that most people received their information from government officials and programs and from the mass media, and very few people reported receiving information from schools and village meetings. Only 8% of people received information from schools, even though about 80% of people interviewed had received some type of

schooling, and 5% of people received their information from village meetings. The data also showed that women mainly receive their information mass media sources, while men mainly receive their information from government sources.

Recommendations:

I would recommend that community and government officials focus more on educating women about environmental issues, since the data showed that they had lower awareness levels than men about environmental issues. 33% of women had never received any information about conservation, so maybe government organizations should specifically target and educate women about conservation. Since men get most of their information from government agencies, maybe if women start getting their information from the government as well, they will become more educated. Educating women may also lead to an increase in the amount of women that participate in environmental conservation.

Most women said that they receive their information from the media, so if more programs about environmental education aired on the radio that might also be an effective method of educating more women. Schools and village meetings were the sources that people were least likely to have received their environmental information from, and maybe those institutions should be examined or studied more closely to see why their methods of teaching people about conservation have been so ineffective. People who benefited from tourism were also more likely to participate in environmental conservation and had higher awareness levels about conservation. If the government increased the amount of benefits that people receive from tourism, it could lead to an increase in conservation awareness and participation among locals.

Limitations of the study:

The main limitation from this study was the language barrier. We did not speak Swahili, the people we interviewed did not speak English, and sometimes they did not know Swahili either. We had to rely on our guides to translate for us and sometimes they would not translate everything that the person said, or they would ask the question in a way that influenced the person to give a certain result. We would have had much more accurate answers if we had been able to ask the people the questions directly, without a translator.

Another thing was that a lot of people would not speak to us or participate in the study because we were not paying them. I would say that out of everyone we approached and tried to interview, only about half actually agreed to be interviewed. The other half would only do it if we gave them something. This could have skewed our results because the people who talked to us were either just genuinely nice people or they were more likely to be legitimately concerned about the environment if they were willing to participate and help us for free. If only people who already cared about the environment participated, it would influence the results. If we were able to give people some money or somehow ensure that everyone in the villages participated in the interviews, we would have gotten a more accurate representation of environmental awareness levels in the community.

Lastly, as I mentioned before, a lot of the Maasai men did not allow the women to speak to us, and when they did the women were usually too scared to say what they actually thought. This led to us getting inaccurate results because we did not interview an equal number of men and women. Another problem was that women did not generally

like us or want to speak with us. Maasai men are polygamous and it was very common for men to flirt with us or even propose to us. One man proposed to me in front of his wife and she got so angry she threw a chain at me, which was pretty understandable on her part (although I personally think she should have thrown it at him). But that is just one example of how there were a lot of negative attitudes from women towards American women. There were also a lot of overly-positive attitudes from men towards American women. It is possible that men only participated to flirt with us and I suppose they could have lied and told us what they thought we wanted to hear, just like women lied and said what their husbands wanted to hear.

A way to fix this problem of cross cultural gender issues would be to have men and women conducting interviews. Our study abroad group ended up being all women by some strange coincidence, so we had no men conducting research or interviews. Maybe if we had men conducting interviews with us the women would have been less hostile and the men less flirty and more people would have participated. The ideal situation though would be to conduct the interviews without the interviewee knowing the race or gender of the interviewer that way they had no bias or preconceived notions about the interviewer. If there was a way to keep the people from seeing those asking the questions it could decrease biases and negative attitudes that locals have against Americans or foreigners and ensure that people actually focus on the question instead of the interviewer. And of course if we could ensure research projects where an equal amount of men and women are interviewed and give completely honest, unbiased answers, that would be perfect, but highly unlikely unfortunately.

Conclusion:

In this study, we found that women are less likely to be educated about environmental issues than men, and less likely to participate in conservation than men. The purpose of this study was to find ways to increase environmental awareness among people, and if we know that women are not receiving enough information about conservation, then something should be done to educate more women on environmental issues. The study also found that tourism leads to more conservation awareness and participation, and that government sources are one of the main sources from which people receive environmental education from. With this information, the government should work harder to increase the amount of benefits that people receive from tourism, and increase the amount of government-funded conservation and education programs, specifically targeting the education of women through these programs. By taking those steps, environmental awareness and conservation participation levels will increase among men and women in the Tarangire-Manyara ecosystem.

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