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Restoring Eden: The Role of Christianity on Environmental Conservation: A Case of Karatu District, Arusha, Tanzania

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Restoring Eden

The Role of Christianity on Environmental Conservation: A Case of Karatu District, Arusha, Tanzania



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Abstract

In order for environmental conservation to be effective it must have a method of translating to people's everyday values. Developing countries which include mostly bio-diversity hotspot areas are important to maintain sustainable development. Due to most of these countries following an organized religion, predominantly Christian, an alternative method of conservation may be successful to motivate citizens to participate in efforts. In order for this to be successful, members of the congregation must agree that there is a religious obligation to care for the environment. For Christianity this obligation is discussed by the creation story in the bible. This paper will use the town of Karatu, Tanzania as a case study of how successful Christianity can be related to environmental conservation. Data was collected using surveys (n= 155) distributed to members of various churches evaluating their beliefs on the meaning of the creation story as well as their churches involvement in conservation. Additional interviews were used to gain important information about the implementation of conservation by churches and the local government. The results of the study showed that a high majority of people who attended church agreed God commands humans to care for the environment. While churches participated in small acts of protection, mostly efforts to plant trees, they can be more beneficial as a method of gathering and spreading education on conservation. Pastors opinions and willingness to participate is very important for the church to be useful for conservation. Local government and conservation organizations should maintain positive relationships with church leaders in order to pass along beneficial conservation ideas and methods.

Key Words

Christianity, environmental conservation, Karatu, creation story

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Introduction

The two most powerful forces ruling our world today are science and religion. Both attempt to explain our reality as humans as well as shape decision making in our everyday lives. Due to inconsistencies, mainly biological topics, the two have been separated as contradicting beliefs in other fields. However, one of history's most awarded scientists was very vocal about the entwinement of the two. In 1940, Albert Einstein declared "science without religion is lame; religion without science is blind" (Einstein, 1940). Einstein is arguing that the two subjects do not make sense without the other. Continuing to keep the two separated may be prohibiting further progress to our world's greatest issues. Currently environmental issues are growing worldwide, and are only expected to get worse. Clean air, resource availability, and bio-diversity are all decreasing. Despite an increased number of terrestrial and marine protected areas and their overall land coverage, bio-diversity continues to drop rapidly (IUCN and UNEP, 2012). Researchers propose the lack of progress on successful conservation is due to efforts focusing on technical solutions as opposed to resolutions that relate to people's vision and values (Vucetich, 2010). A new strategy is needed to inflict urgency of environmental protection that can relate to any person's principles no matter their walk of life. For this reason, it is necessary to evaluate the legitimacy of religion as a possible motivation and tool to promote environmental conservation.

In biodiversity hot-spot countries, over 70% follow an organized religion. That is more than four billion people (Bhagwat, 2011). These areas of high religious following and bio-diversity are also some of the most undeveloped countries (Taylor, 2015). This means these countries have the most opportunity to maintain a sustainable development process. Since they are located at areas of high bio-diversity, it is crucial they continue minimal impact on the environment. Out of these hot-spot countries, the majority practice Christianity (Mikusinski, 2013). Not only is research on the acceptance of environmental issues by religious institutions important, but the successes of Christianity will be the most important for maintaining biodiversity in these communities.

In 1986, the first major attempt was made to bridge religion and conservation while celebrating the 25th anniversary of WWF at the Basilica of St. Francis in Assisi, Italy. The key outcome of this meeting was each major religion committing to preserving the environment, this

included Buddhism, Christianity, Hinduism, Islam and Judaism. Each religion composed a future plan of how to integrate conservation into its unique beliefs (Awoyemi, 2012). However, even if plans are proposed, it may remain difficult to have a successful result if the majority of religious teachings contradict conservation strategies. For a majority of religions such as Buddhism, Hinduism, and indigenous religions tend to strongly support connection with the environment. Yet, there is greater concern when it comes to the compatibility of Abrahamic religions and a concern for the environment.

It is a common notion in Western (mainly American) society to deny that there are any current changes to the environment. These are claims which are given by both Christians and non-Christians, have their own agenda for continuing unsustainable development. These claims have no evidential support and are easy to confront as false. However, there is a large Christian population who disregard the environment due to the fact that they believe God created the world for their own use. The results of a study done in the U.S. showed that Christians expressed greater belief of “dominion” over the environment. Whereas non-religious people expressed “stewardship” over the earth (Leary, 2016). Many people even blame Judeo-Christianity beliefs for causing environmental problems in Western countries (Mikusinski, 2013). The debate centers around the interpretation of the creation story in the Christian Bible, which explains how God created the Earth and humans. It is the most important scripture regarding human’s relationship to the environment found in the Bible.

After God created man and woman, the first thing he says to them was “Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground.” (Genesis 1:28). Argument has sparked over what the word “subdue” means in this passage, and has given room for a number of interpretations. The definition of “subdue” is “to overcome, to quiet, or bring under control” (Oxford University Press). Many Christians believe this means “to take control in order to protect”, and supports a need to protect the environment. Yet, throughout history this verse has been used for proving human’s status over the rest of wildlife and permission to use it however we wish (Grasse, 2016). A few verses following the scripture reads “The Lord God took the man and put him in the Garden of Eden to work it and take care of it.” (Genesis 2:15). While it is possible one could interpret “work” as another indicator to manipulate the earth or harvest

resources, that would be contradictory of the second command to “take care” of the creation. The power of differentiating these two opposing interpretations is up to the religious leader or organization and their opinion of the scripture. Since most humans’ act in their own selfish motivations, it would not be surprising for these leaders to interpret the scripture accordingly. The success of the U.S., which is predominately Christian has a lot to gain over believing that God wants them to “rule over the land”. Considering the amount of environmental damage the U.S. is responsible for alone, it is vital this perception of the creation story will not continue or spread in developing countries.

In order for Christianity to be able to be a tool for conservation, clarity over the creation story is vital because it has potential to be in direct contrast with environmental concern. To an extent all religions can in some way mold practices to encourage conservation, but if grass-root institutions do not accept these concepts as truth, they will be unsuccessful (Awoyemi, 2008). Christianity has many sects and divisions, along with cultural adaptations that shape the organization of the church. These differences are important to evaluate so adjustments can be made for the effectiveness of conservation efforts. While some religious leaders in the U.S. may support “dominion” over the land, it is not a global norm. The need to evaluate denominations of Christianity world-wide on their understanding of the creation story is important in the planning of conservation material. The current relationship between these interpretations and conservation adaptations by churches may shed some light for larger organizations on the effectiveness of partnerships.

One example of a successful use of Christianity for conservation is in Lebanon, where the Advocates for Religious Conservation (ARC) teamed with local government to encourage the Mennonite Church to protect their surrounding forest. Since 2000, the church has not only succeeded in protecting the forest, but two additional forests as well. They are responsible for developing environmental education programs in over 70 surrounding villages, and play a major role on conservation in Lebanon (McLeod, 2015). Another study done in Poland, compared bird diversity in church areas versus farmsteads. Churches took responsibility of the surrounding environment to beautify their holy meeting areas, but not necessarily for the purpose of maintaining biodiversity. The study found that bird diversity and abundance flourished in church areas compared to farmsteads, the results were even more impressive with the increasing age of

the church (Salerno, 2016). Most efforts that saw success using Christianity utilized partnerships between local government, non-profits, and churches (Bhagwat, 2011). Even if beliefs in church are promising, they will need help mobilizing their action. Currently in Tanzania the disappearing glaciers at the top of Mt. Kilimanjaro have caused the Northern Diocese of the Evangelical Lutheran Church to develop an environmental protection policy. Now “almost every religious institution is talking about the environment” Bishop Fridrick Shoo claimed (States News Service, 2011). While ideas are successfully spreading, there is no current data evaluating the acceptance of these ideas by congregations nor their translation into conservation action.

This study will attempt to assess Christianity’s current level of success relating to and adopting environmental conservation efforts in Karatu, Tanzania. This specific community will represent a small portion of the largely dominant Christian populations in bio-diversity hotspot countries. By researching current teachings or lack of teaching surrounding conservation by churches, the study will try to understand reason for failure or success of adopting these practices. After the current situation is assessed, then a proposed method to improve action or teaching can be proposed. This study will more specifically investigate the following questions: 1) How does the creation story relate to environmental conservation? 2) How are churches responsive to environmental conservation? 3) What is the way forward to enhance environmental conservation through Christianity? The hypothesis prior to the study is that Christians will interpret the creation story favoring stewardship for the earth. However, because of their strong focus on the gospel it is predicted that churches do not spend time discussing the environment during church nor have planned conservation activities outside of church. The following paper will divide the results and discussion of this study into the previously mentioned three sections.

Methods

Study Area

This study was conducted in the town of Karatu, located in the Arusha region, Tanzania (See Appendix I for map). According to Tanzania National Census, the population of the Karatu was 17,922 in 2002. (Tanzania Census, 2002). Karatu is bordered with Ngorogoro District to its north and Manyara District to its south. Both of these regions are home to important protected areas: Ngorongoro Conservation Area and Lake Manyara National Park. Karatu is an ideal study location, because citizens will be more familiar with the subject of conservation versus people in

the city. Populations located outside protected areas are vital for conservation, but also struggle with land loss and limited resources (Salerno, 2016). These circumstances may reveal additional problems with conservation adaption that might not have any connection to religion and is important to consider. Karatu is predominantly a Christian population with the remaining practicing Islam and traditional religions. There is a wide range of Church denominations present in Karatu, allowing a diverse set of Christian opinions to be evaluated. According to the environmental officer of Karatu, the largest environmental problems facing Karatu is water sanitation and erosion (Environmental Officer, 2018).

Data Collection and Analysis

All data was collected from November 2nd – November 22nd. The majority of data collected for this study was done through surveys that were distributed to practitioners of Christianity. Surveys included brief demographic related questions in order to gauge denomination and church involvement. Surveys consisted of 28 statements, written in Swahili, regarding personal beliefs about the creation story, church practices, and conservation involvement (See Appendix II). To ensure clear results, the surveys are formatted with a “likert scale” method ranging from “strongly disagree” to “strongly agree”. By correlating each option strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5), results will be given the same value when analyzing correlating relationships. Surveys (total n= 155) were distributed at churches after masses, bible studies, choir groups and other meetings. This includes the Lutheran Church (n= 30), Pentecostal Church (n=23), and Seventh-Day Adventist Church (n=37). They were also distributed during visits to Ganako Secondary School (n=65). Students were only asked to participate if they were above the age 18 and identified as Christian. Participators were chosen in a nonrandom manner due to only people who identified as Christian being asked to participate.

In addition to the surveys, interviews were conducted with key informants to get a more detailed explanation of religious beliefs and conservation efforts. Interviews were conducted with pastors from churches of denominations including: Lutheran, Pentecostal, Seventh-Day Adventist, and Tanzania Assembly of God (TAG). These interview’s main purpose was to give a more detailed picture of pastor’s beliefs about conservation and in what ways their church participates. In addition to church leaders, an interview with Karatu’s environmental officer was

conducted to gather information on environmental policies and the government's involvement with churches as well as larger organizations. Finally, an interview was conducted with a founder of a local NGO to understand their relationships with churches in the area. Other efforts included attendance to mass at a church of each major denomination (Lutheran, Pentecostal, Seventh-Day Adventist, Roman Catholic, and TAG) and visits to church's "conservation areas".

Surveys demographics and question responses were entered into IBM SPSS Statistic Data Software. Responses were analyzed to determine Christian's beliefs about creation and church's involvement in conservation. Pearson correlation tests were used to examine significance between the creation story and environmental conservation. All charts were created using SPSS. Interviews were analyzed for additional information not made clear in the surveys. They were also used to understand the participation of other stakeholders involved in conservation.

Ethics

During each survey distribution, permission was asked by church leaders. The study was explained and all surveys were completed anonymously. At the top of the survey there is a brief introduction that includes a consent statement (See Appendix II). Pencils were supplied and then gifted to participants who filled out my survey. Students at Ganako Secondary School were asked to participate only if they were 18 years old and identified as Christian. Teachers confirmed that the selected students were 18. Students were not given pencils, so that students who could not participate would be treated equally. Five surveys were completed by a translator who read the questions to participants who were illiterate.

Interviews with pastors were also completed anonymous. A consent form was explained and signed during each interview (See Appendix III). They were offered compensation for their time, however most declined the gesture. By participating in a mass at each pastor's church, relationships were able to develop past initial meeting or interviews. During each church service I introduced myself and contributed 10,000 shillings for tiding. After the services time was spend interacting with the congregation, usually having tea and answering questions. While the rest of the interviews continued as anonymous, they agreed that their status in the community did not have to remain unnamed, even if this meant they could be identified.

Results

Demographics

The representation of Christian denominations was 18.1% Pentecostal, 19.4% Catholic, 21.9% Lutheran, and 40.7% Seventh Day Adventist (See Figure 1). The most common occupation of those surveyed were students (n= 90), followed by self-employed entrepreneurs (n=41), formal employees (n=12), and farmers (n=12) (See Figure 2). Age, extent of Christianity, and church involvement are shown below in Figures 3-5.

Figure 1: Division of Christian Denominations

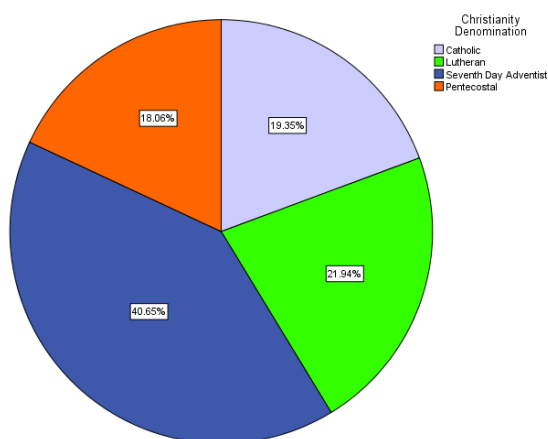


Figure 2: Occupation Status

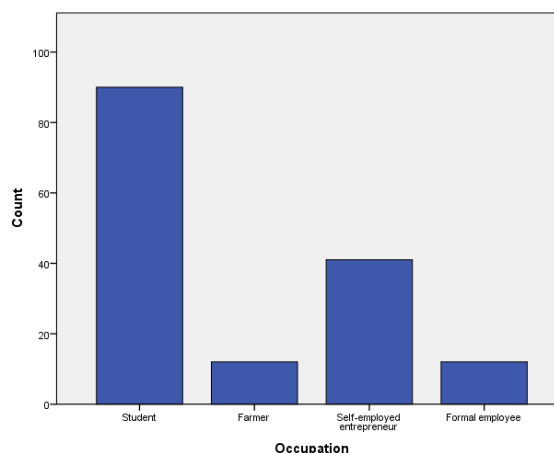


Figure 3: Distribution of Age

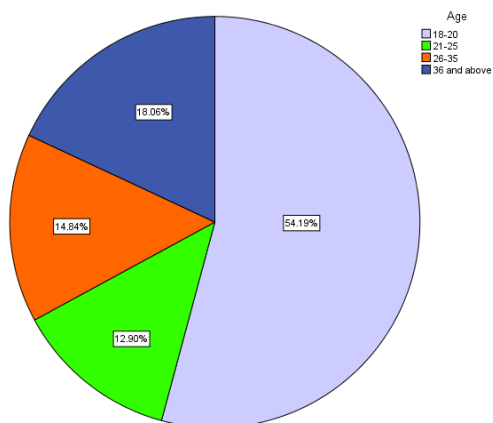


Figure 4: Duration of Christian Identity

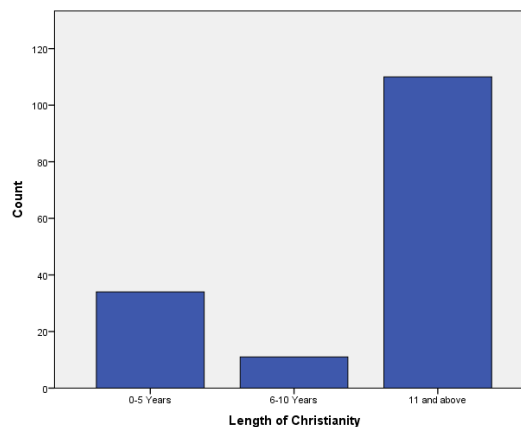
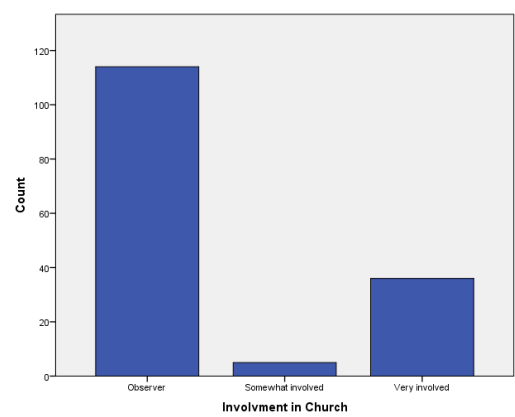


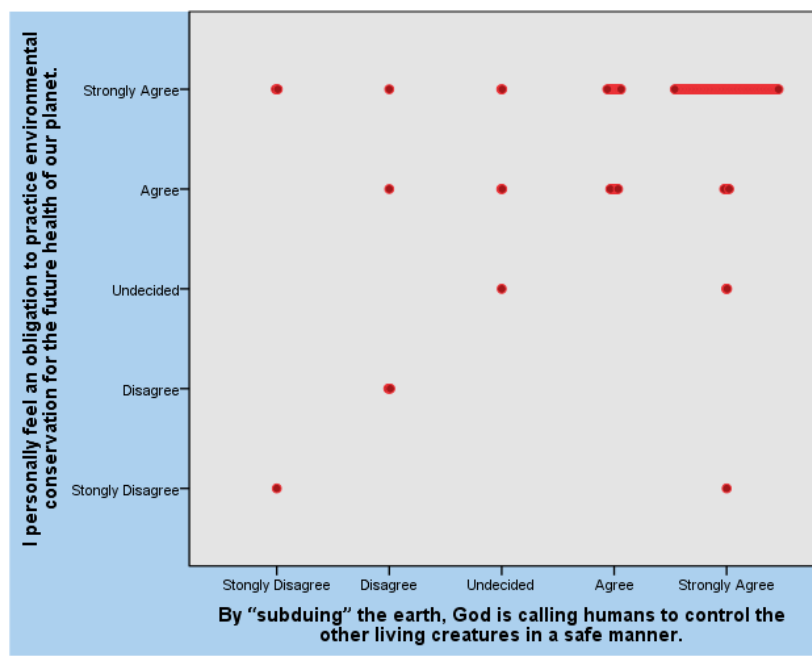
Figure 5: Involvement in Church Community



Creation Story

When asked if participants interpret God commanding Adam and Eve to “subdue” the earth as controlling the land in a “safe manner”, 91% people agreed or strongly agreed with the statement while only 8% disagreed or remained undecided. Below Figure 6 shows the correlation between the interpreted meaning of “subdue” versus a feeling of personal responsibility for conservation. The relationship between the two was a significantly positive relationship.

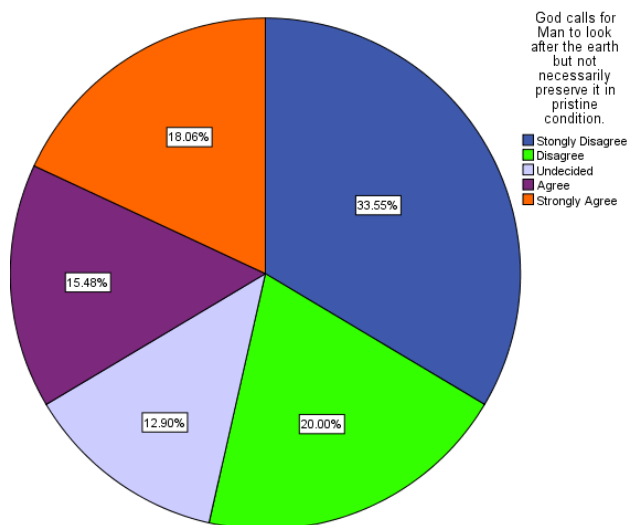
Figure 6: Creation Interpretation A



Pearson Correlation: +0.462 *Significant

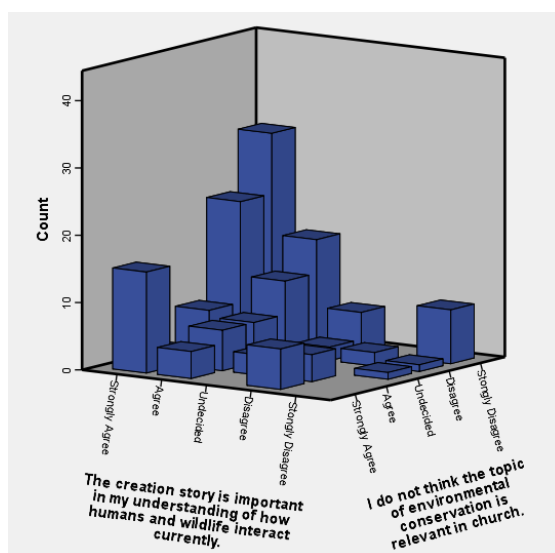
While 91% of people believed God calls them to treat the environment in a safe manner, there was a mixed opinion on the quality of conservation that falls under “safe manner” where 33.5% people agreed or strongly agreed pristine condition is not necessary (see Figure 7 below).

Figure 7. Opinion on Need for Pristine Environmental



For most people who found the creation story important to their understanding of human and wildlife interaction also disagreed with the exclusion of environmental topics in church. The two questions had a negative correlation of -0.043, but was not significant (see Figure 8 below).

Figure 8: Creation Story Relevancy



Pearson Correlation: - 0.043

When pastors were asked about bible scripture that related to the environment, pastors from all denominations agreed that Genesis chapters 1-3 (the creation story) were the most important. All agreed that in the creation story God commands Adam and Eve (implying all humans) have a duty to protect our earth. The Pentecostal pastor even said “this was man’s only job from the beginning of time” (2018).

Churches and Conservation

When asked if churches preached about the environment 72.3% of people agreed or strongly agreed with the statement, 8.4% were undecided, and 19.3% of people disagreed or strongly disagreed. While 40% of people “strongly agreed” that their church has organized conservation groups, 71% of people “strongly agreed” that they would attend these groups if their church organized them. This shows a large percentage of people who are willing to participate in conservation, but do not have organized groups to attend at their church. Figure 9 and 10 show the difference between churches with current conservation groups versus willingness of people to attend these groups.

Figure 9: Churches with Community Groups

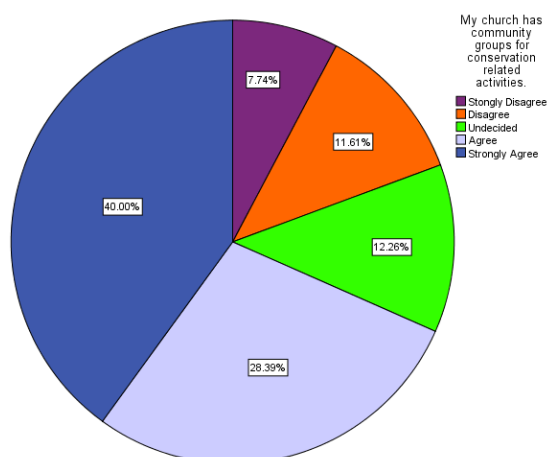
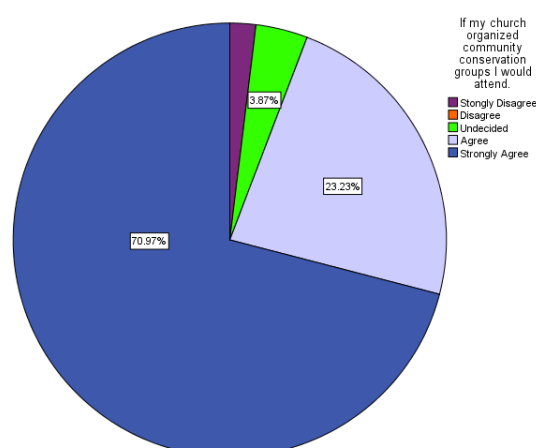
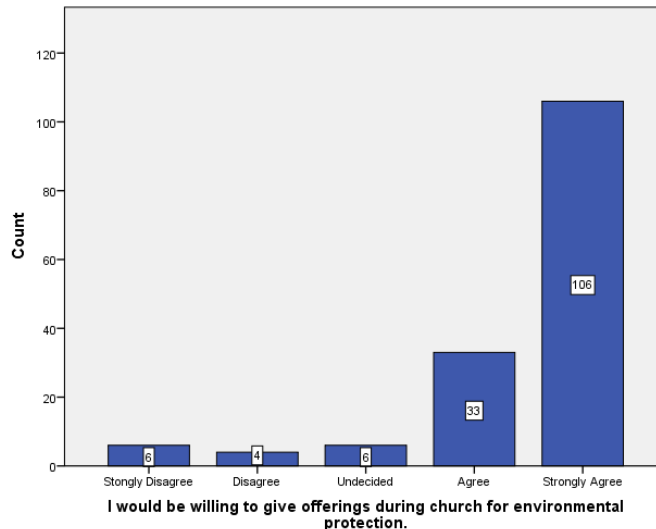


Figure 10: Willingness to Attend



While no churches collect offerings for conservation, 106 people said they “strongly agree” with being willing to give money during tiding collection. Figure 11 shows the distribution of willingness to tide towards conservation efforts.

Figure 11: Tiding Towards Conservation

During interviews with pastors, all pastors reported that their churches preach about the environment. However, asking further questions revealed that this didn't mean they talked about the environment during Sunday services. During visits to church services, the environment was never mentioned during preaching. Sundays are for "sharing the gospel", the TAG pastor explained. The Lutheran Pastor did say that before services they often remind people to plant trees. Most pastors revealed that the topic of conservation is addressed in small groups, or other days that are not on Sunday.

The Lutheran, Pentecostal, and Seventh-Day Adventist church all have one day a week designated to "cleaning" the church and surrounding environment. Although the Seventh Day Adventist "cleaning" only includes the church itself. Most of the churches had impressive gardens and small tree nurseries on the property that they took responsibility for (see Appendix IV). In addition, the Lutheran church has an organized environmental committee. The rest of conservation completed by churches is by individual members of the congregation. All pastors reported that they encourage members of the church to plant trees and "keep the environment clean". TAG pastor encourages people to plant trees but does not have a system to keep track of people's participation. In the Seventh Day Adventist church, two people are responsible for one tree on the property of the church, when the tree dies, they must cut it down and plant a new one. They are also encouraged to plant trees at home, which are evaluated by the pastor himself during a round of home visits. The Pentecostal church has future plans to start another tree

nursery on a 3-Hecter plot of land they recently purchased. The Lutheran church designates the month of April to “conservation”. In which everyone is responsible for planting trees in their home, and the number reported to the pastor.

Additional Stakeholders

Further interviews revealed that the local government pressures churches to tell their congregation to plant trees. The environmental officer felt the relationship to churches was vital for conservation to be enacted. The involvement of the local government in the environment was either policy or monitoring based. Conservation education is spread through seminars, but is hard to motivate people to attend. “The largest problem for conservation is people being uneducated about the environment” (Environmental Officer, 2018). The founder of an NGO in Karatu agreed that citizens do not have knowledge of how to help the environment. He also revealed most of their NGO’s Board of Directors are very involved in the church and often pass on environmental education to their churches (2018). Almost all suggestions included “planting trees” to help “clean the air, stop erosion, and cool the temperature”. There were no suggestions to help improve water sanitation that people could participate in.

Discussion

Creation Story

While there are mixed beliefs about the implications of the creation story for some worldwide, those who participated in my survey proved that the story implies humans are responsible for the environment. Many pastors described our current environment as the “Eden” God refers to in the story. Since no pastors, nor large group of people surveyed interpreted the creation story as an excuse to use the environment for human gain, there is no excuse for these church communities to reject the importance of the environment. The results found from interviews and surveys confirmed the predicted hypothesis that the creation story would be interpreted to support environmental conservation. This outcome will benefit motivational strategies that churches can use to increase participation involving conservation.

Churches and Conservation

While some churches are more involved in conservation than others, there is still room for improvement. All pastors and churches believe the environment is important, but it is not their main priority as a church. The TAG church, which has only been established for four years was the least concerned and participated the least out of the churches. It seems the longer the church is established, for example the Lutheran church, the more available time there is to expand church priorities. There is a large percentage of people who are willing to attend “conservation groups” that are not able to because most churches do not have them. This means there is potential for conservation that is being lost due to a lack of time and resources by churches. During the designated days for “cleaning”, this effort only reaches to the edge of the church boundaries. The environment surrounding the church is still cluttered with garbage and little wildlife.

The “conservation” at churches is more similar to a beautified garden than a natural environment. Hedges were trimmed and grass kept short (see Appendix IV)). While the environment was clean of trash had more wildlife than non-church areas, these efforts will only have minimal positive impacts on the environment. By suggesting people to continue these efforts at home, which many do, they will have the potential to make a larger impact. However, it should be emphasized that plant diversity will help improve the soil health. The churches with methods of evaluating at home effort are much more effective than the churches who don’t. By shifting the effort of conservation on to the individual, the church spends only a small amount of time checking individuals houses while making a bigger impact than would be possible by the church alone. It was predicted that churches would not have organized systems involved in conservation, however this was proved incorrect due to churches effort to plan days/months devoted to “cleanness” as well as encouragement of individual conservation efforts.

Possible Strategies for Improving Local Conservation Efforts

The previous research discussed has proven churches are in fact a possible outlet that can be related to conservation action. Since the greatest problem as viewed by non-religious stakeholders is spreading environmental education successfully, churches could easily be utilized for this purpose. Rather than depending solely on seminar attendance to help educate citizens, churches are helpful for gathering large amounts of people. Relationships between pastors and church leaders appear to be positive among local government officials as well as members of

NGOs. Whether pastors themselves are taught about environmental conservation, or the church from a visiting representative, the congregation will have a way of being educated. If the local government is already suggesting to pastors for their congregations to plant trees, there is potential to spread much more helpful information. Since the government sector related to environmental protection is only involved at the observer level, they need a mass of people who are motivated to physically take positive action.

Planting trees serves a purpose to offset carbon in the atmosphere, help soil erosion, as well as create a more comfortable environment (Dwyer, 1992). However, the direct effect that planting trees has on bio-diversity is not known. There are also more environmental issues that could easily benefit from more education and government planning. By educating people on safe and effective waste management, the quality of the water flowing into Lake Manyara could be improved. For churches to be successful at translating conservation ideas in to action, small manageable tasks should be given to churches rather than large vague ideas. Churches without designated days for cleaning can be pressured to add them by the local government. Churches with existing days can be extended in time and area covered. If organized groups can be established, an additional church activity could include collecting trash that would contaminate rain water. Funding for potential activates or compensation for committee member could come from the large percent of people who said they would be willing to tide towards conservation.

Since most churches follow suggestions given by their pastors, as well as seek the approval of their pastor, it is vital for the pastor and other church leaders to feel a personal obligation for the sake of their community. Local government officials and NGO leaders should continue to build strong positive relationships with church leaders. The pastor has a significant say about the topics the churches chose to concern themselves with. The more they stress the importance of “keeping Eden healthy” the more action the congregation will be willing to participate. While the outcome of this study suggests churches can be used for conservation efforts and have a positive effect on the environment, they can not be the only proposed method of conservation.

There are larger developmental issues that need to be addressed for maximum conservation effectiveness. An efficient drainage system is needed in Karatu to help water sanitation. There is also a need for a waste collection system, that does not require payment by

citizens. These are not things that can be established by churches alone. While the church holds the advantage of having masses of people, they do not have the power to make important development changes.

Conclusion

Gus Speth, a former UNDP Administrator says “The top environmental problems are selfishness, greed, and apathy... and to deal with those we need a spiritual and cultural transformation- and we scientists don’t know how to do that.” (Niamir-Fuller, 2016). While there is an abundance of scientists and engineers devoted towards research combating climate change, change will not occur until populations have a change of lifestyle. By strengthening relations between scientific and religious institutions, both have room to grow from the other. Almost all large religious institutions have come together and agreed to involve themselves in conservation. While institutions are on board, this information must be passed down to the individual level and accepted as significant. This study found that Christians in Karatu felt biblical texts support the ideas of environmental conservation. As long as churches agree they have a religious obligation to protect the environment, conservation can be implemented in some form. Current forms of conservation supported by churches involved, keeping their surrounding environment clean and planting trees in the community. The most successful way of conducting conservation is to give churches simple, but helpful tasks that everyone can participate in, such as planting trees or picking up garbage. Even if churches do not have the resources to fund these types of projects, they can serve as an outlet to educate people on healthy environmental interactions. To maximize churches full potential, partnering with local government and conservation organizations will help give the church guidance and structure concerning conservation. By being willing to devote a time for people to gather in the church, churches could create a new opportunity for adult education that may be unavailable elsewhere. Christian populations located in bio-diversity hotspots are vital communities that need to participate in conservation due to their location. However, this does not mean that conservation education and effort should stop at the border of these countries. These communities have a small impact on the environment as compared to industrialized countries. Religious obligations for the environment need to be adopted worldwide, especially by the countries who cause the most environmental damage. For the future of our planet every institution and individual must fully understand the value the environment has

in our lives. The personal reason for participating in conservation are unimportant, however without some type of action we risk the future of our existence.

Limitations and Recommendations for Future Studies

Even though this study proves churches have great potential to be used as an outlet for conservation, the results of this study can not measure the direct impact these efforts have on conservation or bio-diversity. This study shows most Christians strongly supported environmental conservation, however this may only have been because of the way the survey was formatted. Before distributing surveys my translator usually introduced me and explained that I was studying environmental conservation. I believe, while people were filling out my survey, they wanted their church to be reflected positively in my study. This could have lead them to exaggerate the conservation efforts at their church, whether true or not. The difference in results from this would possibly show less people willing to participate. There were also some issues giving directions to the survey. A lot of people skipped over the instructions and filled out the likert scale incorrectly, which meant I could not include these surveys in my results. If a study similar to mine is to be conducted again, I would recommend a questionnaire with answer choices included rather than rating an opinion on a scale. This is because it is hard to word your statements so that they are not leading toward a preferred answer. Other limitations included, not being able to interview a priest or meeting with the Lutheran environmental committee, who could have added key information how churches practice conservation.

Further studies that would be interesting to investigate are how church's environmental committees are run. Pastors and these committees make a big difference in the amount of conservation each church has the ability to participate in. Understanding how people are gathered and the level of education members have on current issues is important for how conservation will be successfully translated.

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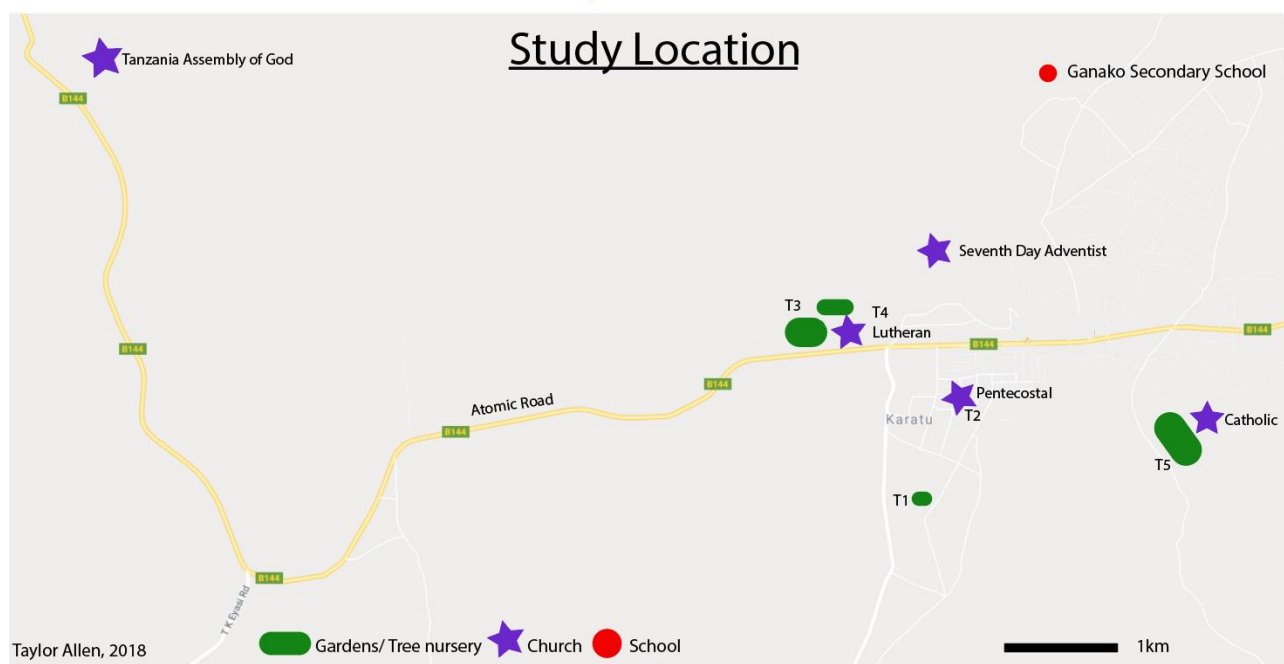
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Appendix I: Study Site

Karatu District



Google Maps, 2018



Appendix II: Survey

English

My name is Taylor Allen and I am an American College student studying abroad in Tanzania with the School for International Training (SIT)'s Wildlife Conservation and Political Ecology program. This survey will be used as part of my Independent Study Project but all responses will remain anonymous. By completing this form, you are consenting to participate in my study. If you are interested in learning more about my project or have any other questions please contact me at: taallen@pdx.edu

- 1) What church do you attend?
a) Catholic b) Lutheran c) Seventh Day Adventist d) Pentecostal e) Other
- 2) How old are you?
a) 18-20 years, b) 21-25 years c) 26-35 d) 36 years and above
- 3) What is your profession?
a) Student b) farmer c) self-employed entrepreneur d) formal employee
- 4) How long have you been Christian?
a) 0-5 years b) 6-10 years c) 11 years and above
- 5) How do you perceive your church involvement?
a) observer b) somewhat active c) active

Answer the questions below by use the following scale to rate your responses. Check the relevant number correlating with your opinion: 5= Strongly Agree (SA); 4= Agree (A); 3= Undecided (U); 2= Disagree (D); 1=Strongly Disagree (SD)

Please reference the following passages:

Genesis 1: 28 “God blessed them and said to them, ‘Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground.’”

Genesis 2:15 “The Lord God took the man and put him in the Garden of Eden to work it and take care of it.

Question	1 (SD)	2 (D)	3 (U)	4 (A)	5 (SA)
God created humans with a special purpose to guard the earth and take care of it.					
God created humans to rule over the land and use it however they please.					
God calls for Man to look after the earth but not necessarily preserve it in pristine condition.					
The creation story implies Man should farm, keep livestock, and use available resources.					
God created Man to be “gods” over His creation.					

God created Man to exist in harmony as one of his many creations.					
By “subduing” the earth, God is calling humans to control the other living creatures in a safe manner.					
The creation story is important in my understanding of how humans and wildlife interact currently.					

Question	1 (SD)	2 (D)	3 (U)	4 (A)	5 (SA)
I personally feel an obligation to practice environmental conservation for the future health of our planet.					
I feel environmental conservation is important based on what my church preaches.					
I think it is important to limit waste in our community.					
The conservation of the surrounding protected areas is important for tourist income.					
I believe the surrounding natural resources are available for my survival needs, even if they are limited.					
I have been educated on sustainable agriculture, and practice it.					
In the last 5 years I have seen changes in harvest quality and water availability.					
The well-being of communities surrounding conservation areas should be a higher priority over wildlife conservation.					

Question	1 (SD)	2 (D)	3 (U)	4 (A)	5 (SA)
I feel there is current problem of environmental issues in Karatu.					
My church preaches about agriculture or resource use.					
My church references Biblical text relating to our environment.					
My church has community groups for conservation related activities.					
My church is in partnership with larger conservation organizations.					
My church has activities outside of regular mass time that involve the environment.					

Question	1 (SD)	2 (D)	3 (U)	4 (A)	5 (SA)
I agree with what my pastor preaches during church.					
I take messages preached in church into account when making life decisions.					
I would like to participate in conservation efforts.					
If my church organized community conservation groups I would attend.					
I do not think the topic of environmental conservation is relevant in church.					
I would be willing to give offerings during church for environmental protection.					

Swahili

Jina langu ni Taylor Allen. Mimi na wanafunzi wa chuo cha Marekani na tunasoma hapa Tanzania kua masomo ya utafiti kwa shule ya (SIT) Uhifadhi wa wanyama pori na siasa. Utafiti huu utatumika kwa ajili ya masomo yangu lakini majina yenu na yote mtakayoniambia kwa utafiti wangu yatakuwa baina yangu tu ili kunisaidia kwa masomo yangu ni si vinginevyo. Tafadhali kama unapenda kujifunza zaidi kuhusu utafiti wangu tafadhali wasiliana na mimi kwa: taallen@pdx.edu

- 1) Unasali dhehebu gani?
a. Katoliki b. Lutherani c. Sabato d. Pentekoste e. au mengine
- 2) Una miaka mingapi?
a. 18-20 b. 21- 25 c. 26-35 d. 36 na kuendelea
- 3) Unafanya kazi gani?
a. Mwanafunzi b. mkulima c. mjasiriamali d. umeajiriwa
- 4) Umekuwa Mkristo kwa muda gani?
a. 0-5 miaka b. 6-10 miaka c. 11 na kuendelea
- 5) Una cheo chochote kanisani au wewe ni –
a. Muumini b. wadhifa wowote c. kiongozi yeyote

Jibu maswali yafuatayo kwa kutumia mtiririko huu. Angalia namba inayoendana na maoni au mawazo yako: 5= Nakubali kabisa; (NK) 4= Nakubali; (N) 3= Sijaamua (S); 2= Sikubali (Sik); 1= Sikubali kabisa (SK)

Tafadhali soma au pitia kifunga hiki-

Mwanzo 1:28- “Mungu akawabarikia, Mungu akawaambia, Zaeni, mkaongezeke, mkaijaze nchi, na kuitiisha; mkatawale samaki wa baharini, na ndege wa angani, na kila kiumbe chenye uhai kiendacho juu ya nchi.”

Mwanzo 2:15- “BWANA Mungu akamtwaa huyo mtu, akamweka katika bustani ya Edeni, ailime na kuitunza.

Question	1 (SK)	2 (Sik)	3 (S)	4 (N)	5 (NK)
Mungu aliumba mwanadamu na kusudi maalumu kuongoza dunia na kuitunza.					
Mungu aliumba binadamu kutawala nchi na kutumia kwa vyovyote vilivyoko.					
Mungu alimweka mwanadamu kutawala dunia na si lazima kuhifadhi vilivyoke kwa masharti.					
Uumbyi unamaanisha binadamu lazima alime na kufuga, na kutumia rasilimali zilizopo.					
Mungu aliumba mwanadamu kuwa miungu juu ya uumbaji wake (Mungu).					

Mungu alimwumba mwanadamu katika umoja na upendo kama mojawapo ya uingine vyote alivyoviumba.					
Kwa kuitiisha nchi, Mungu alimwita mwanadamu kutawala viumbe hai katika njia iliyo nzuri na salama.					
Hadithi ya uumbaji ni muhimu katika uelewa wango kwa jinsi binadamu na wanyama pori wanavyoshabihiana au wasiliana katika maisha ya sasa.					

Question	1 (SK)	2 (Sik)	3 (S)	4 (N)	5 (NK)
Mimi mwenyewe naona wajibu wa kuhifadhi mazingira kwa afya kwa kizazi chetu cha baadaye.					
Nafikiri kwamba uhifadhi wa mazingira ni muhimu kulingana na kile kanisa langu linacho hubiri.					
Nafikiri ni muhimu kuweka mazingira ya jamii yetu safi.					
Utunzaji wa maeneo yaliyotuzunguka ni muhimu kwa kipato cha utalii.					
Naamini maliasili zilizozunguka ziko kwa mahitaji yangu kimaisha hata kama ni chache.					
Nimepata, nimeelimishwa kuhusu kilimo endeleeu na kukifanyia kazi.					
Kwa kipindi cha miaka mitano iliyopita nimeona mabadiliko katika mavuno na upatikanaji wa maji.					
Ubora wa jamii zilizozunguka maeneo ya uhifadhi ni lazima yapewe kipaumbele kuliko uhifadhi wa wanyama pori.					

Question	1 (SK)	2 (Sik)	3 (S)	4 (N)	5 (NK)
Nafikiri hivi karibuni Karatu kuna tatizo katika swala la mazingira.					
Kanisa langu linahubiri kuhusu kilimo na utumiaji wa rasilimali.					
Kanisa langu inatumia mistari au vifungu vya biblia vinavyohusiana na mazingira.					

Kanisa langu lina vikundi vya jamil vinavyojihusisha na shughili za uhifadhi wa mazingira.					
Kanisa langu ni wadau wakubwa katika mashirika ya uhifadhi wa mazingira.					
Kanisa langu mbali na ibada au misa lina muda wa kujihusisha na mazingira.					

Question	1 (SD)	2 (D)	3 (U)	4 (A)	5 (SA)
Ninakubaliana na kile mchungaji wangu anachohubiri kanisani.					
Ninazingatia kile ambacho kinahubiriwa kanisani ninapofika kwenye maamuzi yangu ya kimaisha.					
Ningependa kujihusisha na jitihada za kuhifadhi mazingira.					
Kama kanisa langu watapanga makundi katika jamii kuhusu uhifadhi wa mazingira nitahudhuria.					
Sifikiri kama mada (topic) ya uhifadhi wa mazingira vinaendana na kanisa.					
Nitakuwa tayari kutoa sadaka kanisani kwa ajili ya kulina na kutunza mazingira.					

Appendix III: Interview Consent Form

PARTICIPANT INFORMED CONSENT

Title of the Study(s):

“The Role of Christianity on Environmental Conservation: A Case of Karatu District, Arusha, Tanzania”

Student Name(s): Taylor Allen

We are students with the SIT: Tanzania: Wildlife Conservation and Political Ecology program. I would like to invite you to participate in a study we are conducting as a part of our SIT study abroad program. Your participation is voluntary. Please read the information below, and ask questions as needed if you need further explanation, before deciding whether to participate. Please indicate your willingness to participate by signing this form below.

Purpose of the Study: To study the influence of Christianity’s practices on perceptions of environmental conservation.

Study Procedures: Your participation will consist of responding to a series of questions on your views of conservation as well as beliefs according to your religious beliefs.

Potential Risks and Discomforts: There are generally no foreseeable risks to participating in this study and no penalties should you choose not to participate; your participation is voluntary. During the interview, you have the right to not answer any questions or to discontinue participation at any time.

Potential Benefits and/or Society: Participation in this study will better help the understanding of the role of Christianity and if there are possible improvements that can be made to benefit conservation.

Payment/Compensation for Participation: Participants will receive a 2000 shilling compensation.

Confidentiality: Any identifiable information obtained in connection with this study will remain confidential. I will not release the names of any participant who partakes in this study. The information gathered from this interview will be used solely for the purposes of the study. When the results of the study are published or discussed, no identifiable information will be used.

Participation and Withdrawal: Your participation is voluntary. Your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights, or remedies because of your participation in this study.

“I have read and understand the above statements. I acknowledge that I am at least 18 years of age. By signing below, I agree to these terms and agree to participate in this study.”

Participant signature _____ Date _____

Student(s) signature _____ Date _____

Student’s Contact Information

If you have any questions or want to get more information concerning this study, please contact me for further information:
Taylor Allen – taallen@pdx.edu

Rights of Participant – SIT Contact Information

To uphold the ethical standards of all SIT Independent Study Project proposals, this study has been reviewed and approved by the Academic Director and Internal Review Board. If you have any questions, concerns, and complaints, and are unable to contact the student(s), please contact Felicity Kitchin, Academic Director, at: felicity.kitchin@sit.edu

Appendix IV: Church Conservation Areas

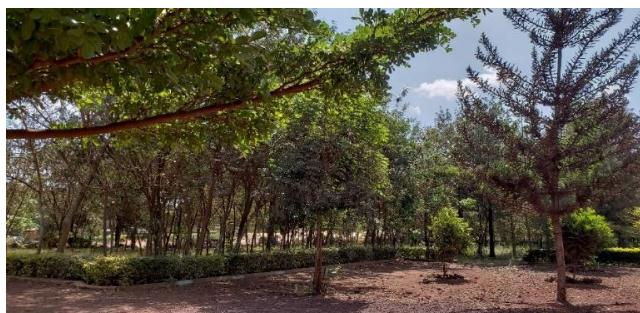
**Relative locations can be found in Appendix I “Study Location”*



Pentecostal managed garden. (See T1*)



(See T2*)



Lutheran garden and tree nursery (See T3*)



(See T4*)



Catholic garden and tree nursery (See T5*)

