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FOREST CONSERVATION ACTIVITIES IN MOUNT BRACKETT (SACRED FOREST) IN SOUTH WEST MAU FOREST, KENYA

ACTIVIDADES DE CONSERVACION FORESTAL EN EL MONTE BRACKTT (BOSQUE SACRO) EN EL SUD OESTE DE MAU FOREST, KENYA

Clifford Kipngeno Langat[1], Eric Koech[1], Andrew Kiplangat[2] and Yuda Odongo Owino[1*]

[1]Department of Agroforestry and Rural Development, University of Kabianga, P.O.Box 2030 – 20200, Kericho, Kenya.
[2]Department of Environmental Planning and Management, University of Eldoret, P.O. Box 1125 Eldoret, Kenya

**Corresponding author: E-mail: yuda.odongo@yahoo.com*

ABSTRACT

The study investigated forest conservation activities in Mt. Bracket (sacred forest) in South West Mau Forest. South West Mau Forest if found within central coordinates of 35° 38. 88'E and 0° 33. 00'S and an altitude of 1800 – 3000 m above sea level. Mt. Brackett was purposively chosen for study due to its religious and cultural benefits. Three transects were laid at 0-2 Km, 2-5 Km and over 5 Km parallel to the edge of forest and one study site selected from each transect. 225 household questionnaires were administered during the data collection by randomly identifying the first household (HH) in each study site and there after systematically selecting a HH after every third HH at an approximate distance of 300 m. The data was analyzed using SPSS Version 12 package at significant test levels of $P < 0.05$. Sensitization on forest conservation (57.3%), research and policing (59.7%) and tree planting (64.0%) were the main forest conservation activities in the area. Chi-square test demonstrated that there was no significant association ($P > 0.05$) between forest conservation activities in Mt. Brackett forest and the study sites in all the transects. The paper recommends that households adjacent to forests need to be sensitized and educated on forest conservation especially through Community Forest Associations (CFAs).

Keywords: Conservation, Sacred, Forest, Mt. Brackett, Forest adjacent communities.

RESUMEN

El estudio investigó las actividades de conservación forestal en el monte. Soporte (bosque sagrado) en el bosque del suroeste de Mau. El bosque del suroeste de Mau se encuentra dentro de las coordenadas centrales de 35 ° 38. 88ˈE y 0 ° 33. 00ˈS y una altitud de 1800 - 3000 m sobre el nivel del mar. El monte Brackett fue elegido deliberadamente para estudiar debido a sus beneficios religiosos y culturales. Se colocaron tres transectos a 0-2 km, 2-5 km y más de 5 km paralelos al borde del bosque y se seleccionó un sitio de estudio de cada transecto. Se administraron 225 cuestionarios de hogares durante la recopilación de datos identificando aleatoriamente el primer hogar (HH) en cada sitio de estudio y allí después de seleccionar sistemáticamente un HH después de cada tercer HH a una distancia aproximada de 300 m. Los datos se analizaron utilizando el paquete SPSS Versión 12 a niveles de prueba significativos de P <0.05. La sensibilización sobre la conservación forestal (57.3%), la investigación y la vigilancia (59.7%) y la plantación de árboles (64.0%) fueron las principales actividades de conservación forestal en el área. La prueba de ji cuadrado demostró que no había una asociación significativa (P> 0.05) entre las actividades de conservación forestal en el monte. El bosque Brackett y los sitios de estudio en todos los transectos. El documento recomienda que los hogares adyacentes a los bosques deben ser sensibilizados y educados sobre la conservación de los bosques, especialmente a través de las Asociaciones Forestales Comunitarias (CFA).

Palabras clave: Conservación, Sagrado, Bosque, Monte. Brackett, bosque comunidades adyacentes.

INTRODUCTION

Forests play a vital role in the life and culture of people around the world. The reverence and adoration of trees has a strong psychological and social foundation in most human cultures. The variety of cultural values and symbolic functions ascribed to forests are as numerous and diverse as the communities and cultures (Mogaka *et al*. 2001). Forests feature in all aspects of culture includes languages, history, art, religion, medicine, politics and even social structure. In Kenya, natural and plantation forests occupy about 3.47 million hectares amounting to 6% according to the United Nation Food and Agriculture Organization, (FAO 2010).

In some regions of the world also, there exist a relationship between forests and spiritual realm. Buddha would sit alone in the depths of the forest in meditation and it was in the midst of a forest that He was shown the four great truths. The Dai people of Yunan province in China believe that the forest is the cradle of human life and that forests are at one with the supernatural realm (Casey *et al.* 2006). The forests in European culture were also considered to be more positive sites of miracles, the search of great spiritual awakenings and the forest itself was held to be form of primitive church or temple. African traditional religion recognizes that a divinity creates, sustains, provides for and rules all created reality (Mbiti 1991). Traditional African cultural values emphasize harmony not only among humans but also between humans and their animal, plant and inanimate environment in their day to day lives. Indigenous African people have numerous cultural beliefs and practices which control all aspects of their lifestyle (Mbiti 1991). In this respect, the way they perceive the environment and forests in particular, its role and importance in their lives, forms of its utilization and their efforts at managing it for sustainable utilization for themselves and posterity, guides how they relate to the environment.

The Kenya's Forest Act of 2005 has provides for the recognition Community Forest Associations (CFA) and spells out their roles in forest management. The Act enables members of the forest community to enter into partnership with KFS through registered CFAs. Some of the user rights granted to these association include collection of medicinal herbs, harvesting of honey, harvesting of timber or fuel wood, grass harvesting, collection of forest produce for community - based industries, ecotourism and recreational activities, on resident cultivation and contracts to assist in carrying out specified silvicultural operations (Ongogo *et al*. 2008).

In the developing countries, people living around forest areas are trained on the ecology of forest-dwelling species, the significance of forests both locally and internationally, and appropriate conservation measures. This has been used in creating awareness among communities to engage in Participatory Forest Management (Mogaka *et al*. 2001; Olson *et al.* 1993).

Sacred groves are the site of ritual and secret society initiations, a locale where social and political values, morals, secrets, and laws are passed on to the younger generation. Sacred groves house the most important religious and ritual relics. They are often the site of ancestral burials or places where people can communicate with their ancestors. (Amoah 1998) describes sacred groves in Côte d'Ivoire, noting that they are places where moral values are taught and passed on from one generation to the next. The trees within these groves are

viewed as sacred trees, housing spirits, and providing links to ancestors. In some areas, sacred groves are the only forested areas that remain (Tomalin 2009).

Mount Brackett in Kenya is regarded as a sacred mountain by the Kipsigis communities living around it. Several distinguished persons around this forest like the late Senior Chief, Arap Tengecha and the late Sigilai Arap Lelgo attempted to have the mountain set aside for the Kipsigis based on its values to the community. He met Kenyan political authorities and impressed upon them the value of the mountain to the Kipsigis Community (Adam *et al*. 2009; Kimani 2011 and Tomalin 2009).

This was to investigate the forest conservation activities around Mt. Brackett (sacred forest) in South West Mau Forest, Kenya. It is imperative to formulate conservation principles and guidelines for the protection and management of Indigenous cultural and religious heritage places and values in forested areas of the South west Mau, including consultation and decision-making protocols.

MATERIAL AND METHODS

This study adopted descriptive survey design to ascertain the forest conservation activities in Mt. Bracket of South West Mau forest which is part of the Mau Forest complex (MFC) in Rift valley, Kenya. It lies within central coordinates of 35˚ 38. 88ˈE and 0˚ 33. 00ˈS and an altitude of 1800 – 3000 m above sea level.

South-West Mau Forest Complex was gazetted as a forest reserve in 1932, vide legal Notice No. 44 (Figure 1). The forest occupied an area of 83,395.5 hectares and is the largest portion of the Mau Forest Complex (171, 251.5 hectares). This area has since been reduced to only 111,517.77 hectares after several excisions (KFS 2009).

Mt. Brackett (*Tulwab Kipsigis*) is situated in Kedowa location. It is approximately two kilometres opposite Londiani Junction on Kericho - Nakuru road. Mt Brackett is inhabited by the Kipsigis community. This mountain is of enormous importance to the Kipsigis for they regard it as a sacred mountain and has a total of 515 households living around the forest (Adam *et al*., 2009, Kenya Bureau of Statistics, 2010).

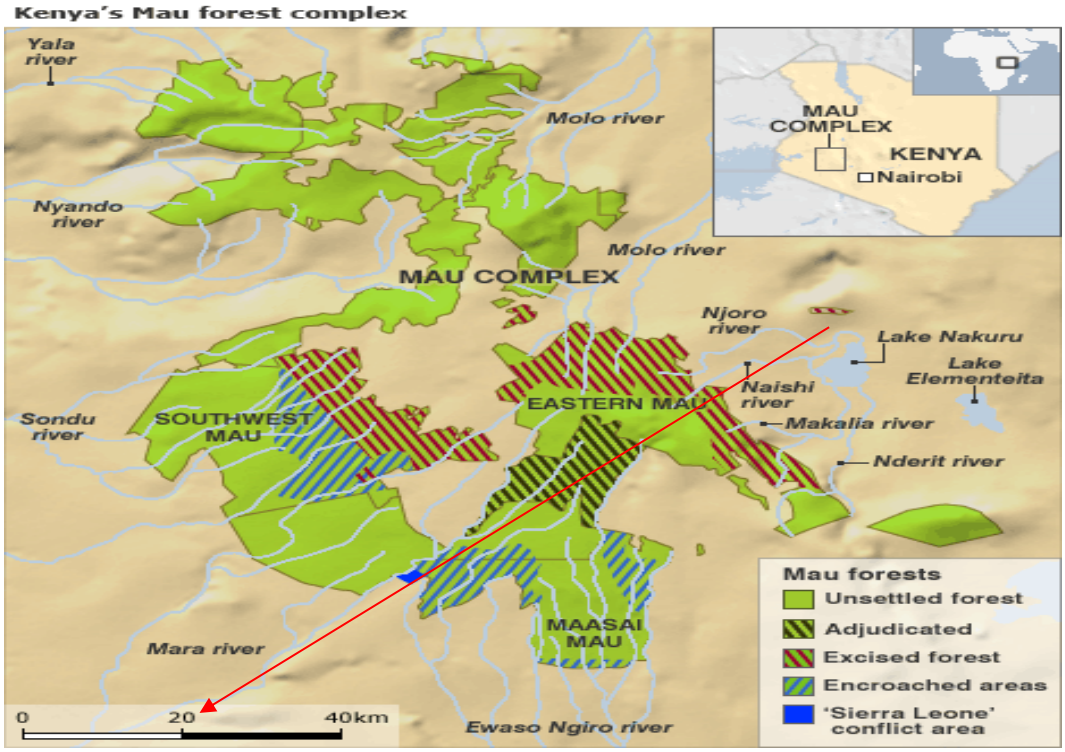

Figure 1: Map of South West Mau Complex (Source: GoK 2009)

The forest topography is mainly rolling terrain with some steep portions. Soils are mainly of fertile soils of volcanic origin, well drained shallow to moderately deep dark reddish brown, friable, gravelly, clay loam to clay with acid humic topsoil. The temperature of the area ranges from 16 ˚C to a maximum of 20 ˚C with average rainfall varying between 1400 mm and 2000 mm per annum. The area lies within Agro ecological zone LH_3 which is wheat/maize (barley) zone and supports a wide range of social economic activities such as production of wheat, maize, poultry in addition to providing medicinal plants and grazing for livestock (Jaetzold *et al.* 2010)

Data Collection and Sampling Methods: Mt Brackett was purposively selected for the study because of its cultural and religious benefits. Three transects were laid at 0-2 Km, 2-5 Km and over 5 Km parallel to the edge of forest. One study site was selected from each transect giving a total of three (3) study sites that were used in the study (Figure 2).

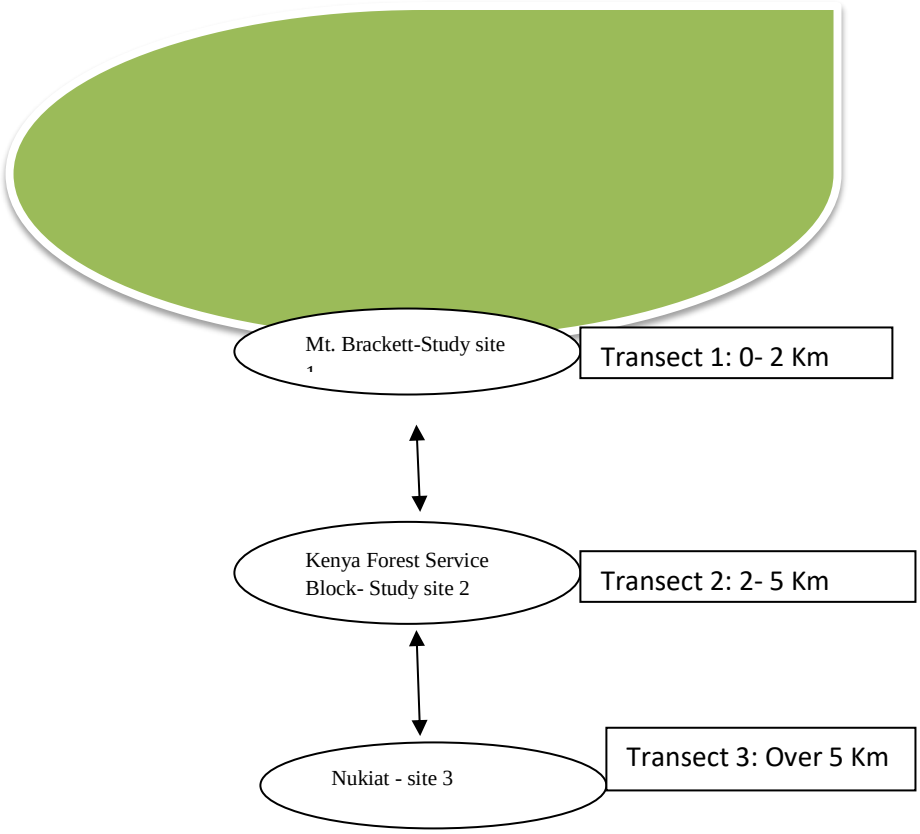

Figure 2: Layout of the Transect 0-2 Km, 2-5 Km and over 5 Km away from Mt. Brackett forest in South West Mau Forest Complex, in the northward direction.

The sample size was calculated based on Israel (2009) equation (equation 1) at 0.5 margin error

$$\boldsymbol{n} = [\frac{\mathbf{N}}{(\mathbf{1}+\boldsymbol{Ne^2})}] \quad \text{..... (1)}$$

Where n = Sample size

e = margin error = 0.05 corresponding to 95% confidence level

N= total population size = 515 households

Therefore: $\boldsymbol{n} = \left[\frac{\mathbf{515}}{\mathbf{1+515\times 0.05^2}}\right]$ = 225.13661202 = 225 households.

Household questionnaires were then administered to 75 respondents per transect: Random sampling technique was used to identify the first household (HH) in each study site and there after systematic sampling was done by selecting a HH after every third HH at an

approximate distance of 300 m. The data was analyzed using SPSS Version 12 package at significant test levels of $P < 0.05$.

RESULTS AND DISCUSSIONS

The study focused at various forest conservation activities within Mt. Brackett. These activities were mainly centred on sensitization, policing, research and tree planting activities. Observation made during data collection also provided information on utilization of forest products and control over forest fires.

Forest Conservation activities as rated along Transect 1, 0-2 Km from the edge of the forest: Study site 1: Mt Brackett. The results showed that respondents at Mt Brackett rated forest conservation activities in South West Mau Forest Complex in the order of: tree planting (66 %) > research and policing (60 %) > sensitization (54 %) on forest conservation policing (Figure 3).

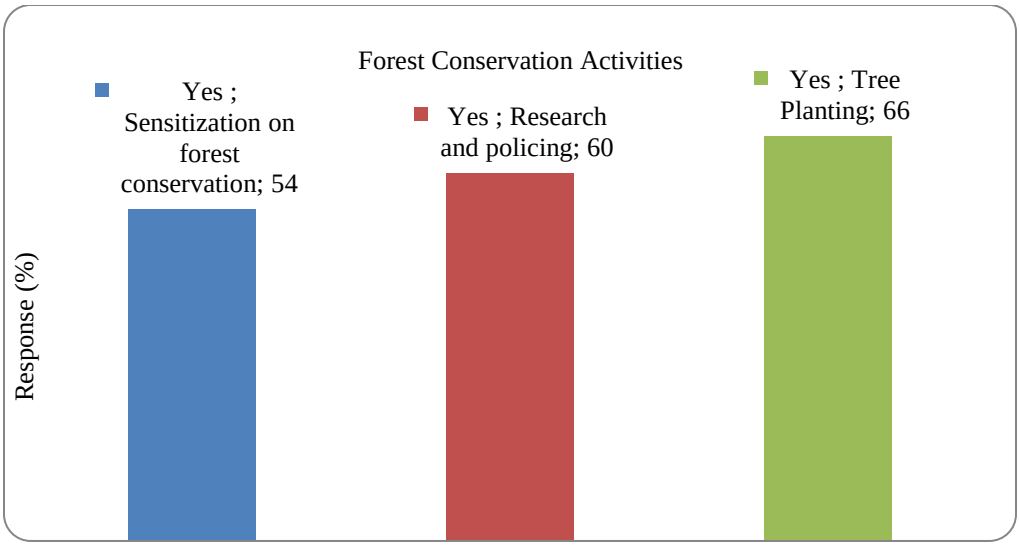

Figure 3: Forest conservation activities as rated by respondents at Mt. Bracket study site, within 0-2 Km from the forest edge of Mt. Brackett.

Forest Conservation activities as rated along Transect 2 - 2-5 Km from the edge of the forest Study site 2: KFS block. The results in study showed that respondents at KFS block study site ranked forest conservation activities in the order of: Research and policing (62 %) > Tree planting (58 %)and sensitization on forest conservation (54 %) (Fig.4.13)

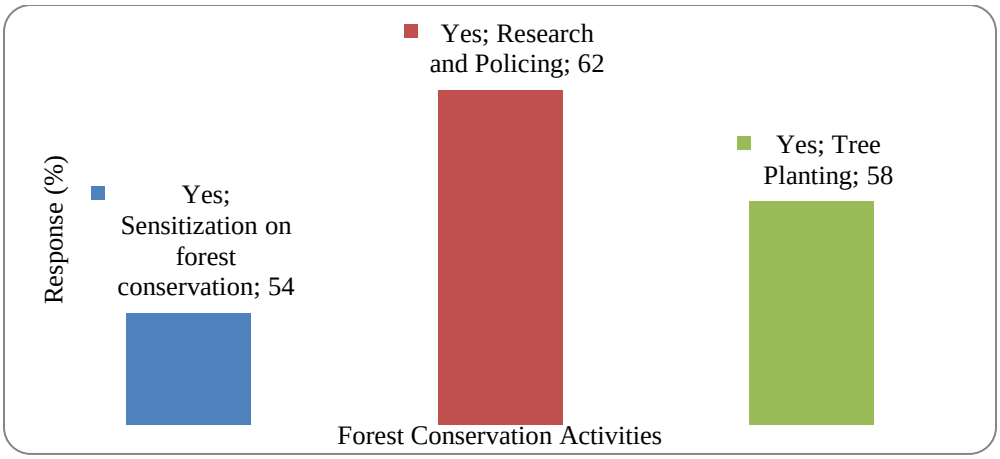

Figure 4: Conservation activities as rated by respondents at KFS block study site, within 2-5 Km from the forest edge of Mt. Brackett.

Forest Conservation activities as rated along Transect 3: Over 5 Km from the edge of Mt. Brackett: Study site 3: Nukiat.The results of the study demonstrated that respondents at Nukiat study site ranked forest conservation activities in the order of: tree planting (68 %) and sensitization of forest conservation (64 %) > research and policing (57 %) (Fig.4.16).

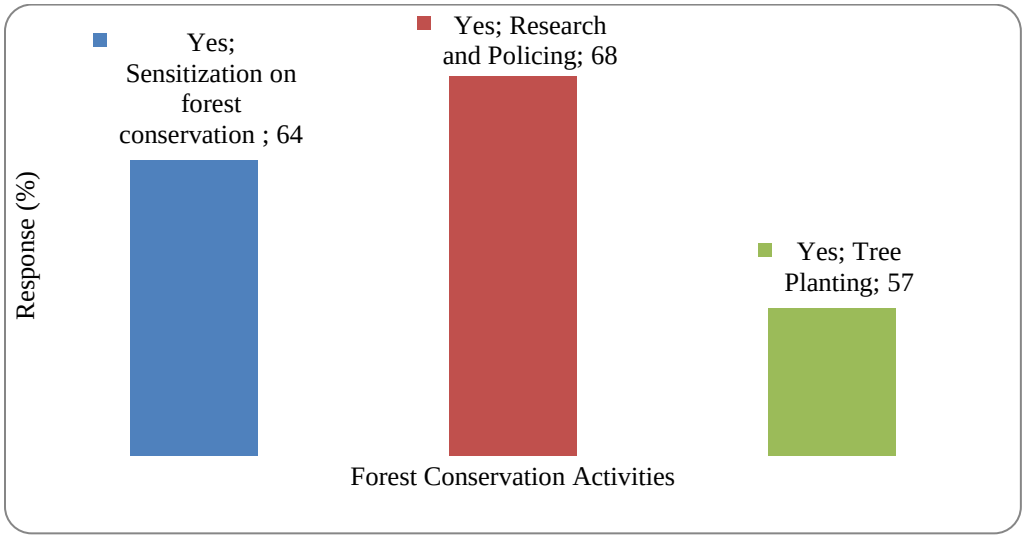

Figure 5: Forest conservation activities as rated by respondents at Nukiat study site, at over 5 Km from the forest edge of Mt. Brackett.

The results of the study as shown in Table 1, demonstrated that tree planting generally contributed more to forest conservation activities than policing or sensitization on forest

conservation as was indicated in the Transect 1 (0- 2 Km from the forest edge) in Mt Brackett and Kedowa.

Table 1: Summary of forest conservation activities to South West Mau Forest Complex at Transects 0-2 Km, 2-5 Km and over 5 Km from the forest edge

Conservation Activities	Percentage (%)			Mean % Response
	0-2 Km (Site 1)	2-5Km (Site 2)	Over 5Km (Site 3)	
Sensitization on forest conservation	54	54	64	57.3
Research and policing	60	62	57	59.7
Tree planting	66	58	68	64.0

It was evident that all the conservation activities are averagely adopted in Mt. Brackett with tree planting ranked high (64.0%) followed by research and policing (59.7%) and lastly sensitization on forest conservation (57.3%). Chi-square test demonstrated that there was no significant association ($P > 0.05$) between forest conservation activities in Mt. Brackett forest and the study sites in all the Transects (Table 2).

Table 2: Chi-Square Test between Transects and Forest Conservation Activities

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	5.042[a]	2	0.080	0.082
Likelihood Ratio	5.116	2	0.090	0.082
N of Valid Cases	83			

There was also no significant association ($P > 0.05$) between forest conservation and distance from the forest edge (Table 3).

Table 3: Chi-Square Test between distance from the forest edge and Forest Conservation Activities

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	4.054[a]	2	0.077	0.094
Likelihood Ratio	4.231	2	0.067	0.094
N of Valid Cases	83			

Insignificant association between the transect in forest conservation activities in Mt. Brackett may be attributed to the fact that the main agents being involved in forest management and conservation activities were more or less the same. The agents were mainly KFS, KWS, CBOs and the Ministry of Agriculture.

However, KEFRI was the main agent involved in forest conservation activities such as research and policing, sensitizing the community on conservation activities, fire control, and planting trees, followed by KWS in the study sites located in 0-2 Km, 2-5 and over 5 Km from the forest edge.

The study identified that the local communities, government and non-governmental agencies regardless of the distance from the forest edge were engaging in forest conservation activities. The identified conservation activities were mainly centered on tree planting, community sensitization on forest conservation, research and policing activities. In addition, the aim of forest conservation activities in the three study sites are the same, and they include increasing the reliability of rain, consistent supply of forest products and services, reduced soil erosion, clean water supply, increased forest cover, reduce fires, increase in wildlife, reduced poaching, religious and cultural issues. The results generally demonstrated that forests conservation require multiple strategies. This was in line with Cunningham (2001) who noted that forest conservation requires incorporation of multiple strategies. To increase and sustain forest cover and biodiversity, there is need to enhance afforestation through tree planting and sensitizing communities on ways to conserved forests. Research and policing as reported in study sites, has been adopted. Policing may work where conservation of forests has been threatened by illegal activities such charcoal extraction or logging.

Perhaps the best way to save Mt. Brackett is by developing new conservation policy based on the principle of sustainable use, as noted by Mogaka *et al*. (2001) that Kenya's forests sustainably require policies that can be adopted to accommodate both varying conditions and changing conditions over time.

This would require that incentives are put in place for community involvement in sustainable forest management (UNFF 2013). This agrees with Sachs (2005) who observed that conservation policies in Europe have been re-oriented to ensure that local communities obtain required benefits from the forest while engaging in forest conservation.

The study also demonstrated that the local communities, government and non-governmental agencies regardless of the distance from the forest edge were engaging in forest conservation activities. Several authors including Wabwoba (2012), Gathui *et al*. (2012) and Guthiga and Mburu (2006) also noted that planting trees to afforest and reforest, sensitizing the community to engage in forest conservation, and enforcing research-based policies as the major forest conservation activities. Sensitization entailed creating awareness to the community on the importance of Mt. Brackett to the local, community, on possible conservation measures to reduce forest destruction. This is in line with Mogaka *et al*., (2001), Guthiga and Mburu (2006), Wabwoba (2012), and Gathui *et al*. (2012) that the local communities should be sensitized in regard to ecological and economical values of forests and share government intentions of forest conservation.

Tree planting activities was an important conservation activity as it entailed afforestation and reforestation of the forest and plantation of on-farm trees. Afforestation and reforestation aimed at increasing the forest canopy, while on-farm tree plantation in people's farms and institutions aimed at providing alternative sources of forest products.

Mogaka *et al.* (2001), Sachs (2005) and Guthiga and Mburu (2006), emphasized that formulation of forest policies and effective enforcement through community participation enhances forest conservation. The presence of on-going research by individuals and organizations in Mt. Brackett are in line with studies of Phillips, (2002), Indigenous Information Network 2002), and Gathu *et al*. (2012) that point out that appropriate policies to deal with forest conservation threats including illegal logging and encroachment should be research based, and appreciate traditional forest related knowledge, and other available knowledge included.

As conclusions and recommendations, the findings of this study indicate that there are several forest conservation activities in Mt. Brackett. The results further show that a significant number of forest adjacent forest communities are not involved in forest conservation activities. Households adjacent to forests need to be sensitized and educated on

forest conservation especially through Community Forest Associations (CFAs), to effectively manage forests a resource that is necessary for their survival. Further they need to be informed on other sources of livelihood to diversify their income base and to participate in the wider economy of the country and allow efficient and sustainable utilization of forest resources.

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