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RESEARCH ARTICLE

ETHNOECOLOGY OF BUSHFIRES IN AND AROUND THE MOUNT CAMEROON NATIONAL PARK

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ABSTRACT

Diverse cultures have elaborated outstanding variety of ways of relating with nature. Many of these are ecologically adaptive, but this is not to say that all of them make ecological sense. Ethnoecology of bushfire among the rural Bakweri people indicates that bushfire is an ancient practice though local practices altered slightly over time in response to larger political and environmental events. The effects of bushfire on the livelihoods and on the ecosystem in Cameroon have more and more become damaging over the years. The increasing frequencies of bushfires in the face of forest conservation and climate change require that researchers focus attention on such anthropogenic activity over which man has control. Current understanding of the fire practices in and around the Mount Cameroon National Park remains rudimentary. The study uses some ethnographic techniques such as in-depth interviewing and Participant observation to establish local practices, perception and behaviour of bushfires in the area. To rural Bakweri people, the forest seems to be all-encompassing and an indispensable link in the circle of growth and death. The study concludes that local cultural knowledge and perception of the forest substantially influence bushfires practice among farmers in the area.

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INTRODUCTION

The loss of biodiversity has become an important scientific and political issue since 1970 and is increasingly addressed by anthropologists (Orlove 1996). "Ethnoecology is the science of how people understand the relationship between humans, animals, plants and physical elements of a local environment" (Davison-Hunt 2000). The understanding and application of this relation brings to fore another very important concept referred to as Traditional Ecological Knowledge (TEK). Indigenous ecologies cover a wide range of approaches, spanning academic fields from biology to anthropology to the humanities, and discussing a myriad of issues from the nature of knowledge to how to conduct collaborative research with indigenous peoples. One of the definitions is that "TEK is a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment. Another definition is, "TEK is a body of knowledge built by a group of people through generations living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use (Studley 1998). Further, TEK is an attribute of societies with historical continuity in resource use practices; by and large, these are non-industrial or less technologically advanced societies, many of them indigenous or tribal" (Berkes 1993).

However, there is consensus among scientists about the fact that such knowledge is linked to a specific place, culture or society; it is dynamic in nature; it belongs to groups of people who live in close contact with natural systems and it contrasts with "modern" or "Western formal scientific" knowledge" (Warren 1991). As the Convention on Biological Diversity points out, traditional knowledge is of great importance not only to those who depend on it in their daily lives, but to the western society, as well. Traditional ecological knowledge can also help to achieve a sustainable development (Turner 2004). Most indigenous and local communities are situated in areas where the vast majority of the world's plant genetic resources are found and many species have been cultivated and used in a sustainable way for thousands of years (Berkes 1993). Indigenous ecologies cover a wide range of approaches, spanning academic fields from biology to anthropology to the humanities, and discussing a myriad of issues from the nature of knowledge to how to conduct collaborative research with indigenous peoples. The skills and techniques of these indigenous and local communities provide valuable information to the global community and can be a useful model for biodiversity policies. Community bushfire practices do not easily fit into categories designated and deemed important by western science. Validity assessments based on a western science rubric may eclipse important subtleties in local knowledge and practice or completely miss other aspects such as intentionality. Critics of using TEK for conservation purposes often are concerned about the validity of local knowledge derived from stories, songs, artwork, and religious

practices and its translation into information useful to scientists and protected area managers (Berkes 1999). Misconceptions about local TEK and practice intentionality feed into conflicts over TEK use stemming from power struggles between western science and traditional science practitioners. "Western experts and aboriginal experts… have different political agendas and… relate in different ways to the resource in question" (Berkes 1999: 11). Again, Berkes (1999) references an ongoing argument between those who want to preserve nature apart from human use in protected parks and reserves and those who restrict personal use of a natural resource in order to ensure its future use in their home territories. Unfortunately, this division influences how government and non-governmental organizations interact with local communities and results in policies that prevent residents from accessing necessary resources. Socio-economic and TEK studies of anthropogenic fire in contemporary indigenous African, Australian, and South American communities highlight the use of controlled burns to expand or maintain subsistence livelihood activities and resources, and reduce wildfires (Kepe and Scoones 1999, Yibarbuk *et al.* 2001, Kull 2002, Laris 2002, Kepe 2005, Mistry *et al*. 2005, Sheuyange *et al*. 2005). This intentionality of purpose suggests that despite their different worldviews, indigenous and western fire experts share a common goal in maintaining and fostering biodiversity. The rise of ecological modernisation in Cameroon is reflected in the forestry policy which promote collaborative management (Co-management) of the forest. Though forest legislation in Cameroon seeks to discourage forest fire, the forestry framework is often applied with little regard for local socio-cultural or environmental reality. Reason why among other things bushfire has been and is still a common phenomenon throughout the history of rural peasant farmers in the Mount Cameroon area. It is also noticed that one of the most popular forms of protest against conservation is fire, found in most of the cases of the villages of the four cluster zones in the Mount Cameroon national Park (MCNP). Kuhlken (1999), thinks, the popularity of bushfire throughout the history of most rural African countries today is a reflection perhaps as a tool for rural protest. It derives its popularity from the way it mixes the common practices of continuing livelihood practices with strong symbolism, and as such, it is a common strategy of resistance throughout the history of conservation. Fire is often at the heart of conservation conflicts, as it is a widespread livelihood practice, used for clearing land, creating new grazing, clearing pests and many other activities, yet it is also one that is widely considered by conservationists to be destructive (Kull 2004). Its status as both a long-standing livelihood practice and as a major enemy of conservation has given a strong symbolism to the setting of fire in a protected area. A fire or patch of burnt forest is a very visible and powerful claim against attempts to restrict the right to set fires, much more so than foot dragging or a boycott, while at the same time providing a livelihood opportunity through freshly cleared land or regenerated pasture. Adding to the popularity of fire as a tool is its physical properties that give comfort to the protestor. A fire burns the traces of what causes it, it can be attributed to many causes (an illegal fire can be disguised as a legal fire that got out of control, or as a natural fire caused by lightning), and it is virtually impossible to prove who set a fire, making it an anonymous form of protest (Kuhlken 1999). This makes fire a key form of resistance. It allows a powerful statement to be made, with some livelihood benefits, while it has fewer constraints than other forms of protest because of its anonymity. Many livelihood activities practiced in rural Cameroon and the Mount Cameroon area in particular involve fire. These bushfires are use to clear land for crops, gather honey, deter wildlife from eating crops, fuel woods etc. If such burns are left unmanaged, they can affect tens to hundreds of hectares and destroy the natural resources that the community depends upon for food, medicine, and construction materials. In order to minimize the undesirable effects of fire in the landscape, the people have developed knowledge, practices, and beliefs for regulating bushfire. Therefore, a clear understanding of the local people`s cultural knowledge, attitude and practice of bushfire is necessary. Understanding of how local people practice and manage bushfire is key to any sustainable collaborative approach to forest-fire management in the MCNP.

MATERIALS AND METHODS

Setting of the study Site: This study was carried out in remote rural communities around the Mount Cameroon Region in Fako Division of the South West Region of Cameroon. Mount Cameroon is one of Africa's largest Mountains and active volcano and rises to 4,100m above sea level and recorded as the highest point in the whole of West and Central Africa. The World Conservation Union (IUCN) considers this area as a biodiversity hot spot because of its high concentration of endemic species of both flora and fauna. Though it is home of the Bakweri minority group, the area is not homogeneous in culture because it is dominated by non-indigenes migrant population from other parts of Cameroon and from Nigeria. This cultural mix engenders different occupations varying from farming through fishing to harvesting of non-timber forest products. The study covered the rural communities of Ekata, Bafia, Munyenge and Ekona at the foot of Mount Cameroon. Agriculture around the Mountain is dominated by the Cameroon Development Cooperation (CDC) estates of oil palm, rubber, bananas and tea (the tea plantations are currently privatized to an indigenous businessman). There are also privately owned plantations of oil palm, cocoa, Plantains and coffee are grown in small holdings and plantations, both for domestic consumption and the relatively lucrative urban markets of Fako Division and Douala. Forlemu,(2013) estimated that there were about 10,000 families involved in full-time farming in Fako Division and another 10,000 living on the estates or in towns had small plots. The main crops were plantains, cocoyams, cassava and maize. Among, different tree species found in this rainforest, are African Cherry (*Prunus africana*), the most endangered (Forlemu 2013). Prunus africana represents the fourth most popularly used species that is collected by 80% of households in Mt. Cameroon region (Ekane 2000).

Data Collection Techniques: We principally engaged in ethnographic research. We find this method suitable because, ethnography, as presented by Ingold (2007) is based on the direct observation of living people rather than on written records or material remains attesting to the activities of people in the past[and the present]. This mode of fieldwork generated insightful and in-depth comprehensive details. Understanding what is going on from the insiders`(Emic) perspective with knowledge of the outsider (Etic) perspective can hopefully bridge the gap between what are two distinct, although overlapping moral worlds. Observation and Participant Observation, Field observation through systematic walk with farmers on individual farms and Participant observation of park and village life were conducted.

In-depth interviews and conversation and key informants were the principal data collection techniques.

RESULTS AND DISCUSSION

Perception of forest: For the Bakweri, the forest not only provides a source of food, but is also a place of peace and security and a refuge from external aggressions. In the past, mobility, one of the characteristics of the people`s culture, cannot be explained by the quest for food security alone. While in the forest, the Bakweri people have a keen appreciation of the songs of forest insects and birds. In fact, in the midst of myriad forest 'sounds' they can identify the humming of bees. There is a multiplicity of traditional legends and folk tales in the Bakweri culture that point to the intricate relationship between the people and the so-called lesser creatures. The common belief is that there is a supernatural force locally called '*ihvarza moto*' (half-man) that control all living forms and that there are some lesser creatures (in forms of plant or animal) that exist as the totems of some villages, clans or individuals in the land. This is known in anthropological terms as totemism, which includes the sacredness of some creatures as well as the ability of some individuals to transform into lesser creatures and live what could be described as 'double existence'. This means that such a human being has a representation of himself or herself in a completely animal or plant form that dwells in the natural habitat. Although the human representation, aptly referred to as totem, lives with and like other animals of its kind, it seems to be influenced, behaviourally and intellectually, by the human host. This should not, however, drive us to hope to find an animal with the intelligence or behaviour of a human. The animal traits predominate. According to the bakweri, the totem is far cleverer than the ordinary animal, and can perform some tasks or activities in accordance with the desire and plan of the human-host. For example, a human whose totem is an elephant or whale may decide to rescue a hunter or a drowning man or just kill him. It is not strange to hear that an elephant has killed someone; but there are also instances where whale or crocodiles have saved drowning men by pushing them carefully ashore. Traditionally, it is known that humans who have elephants as their totems are known to organise themselves into groups and move about from village to village, raiding farms. The common belief in the Oroko, Banyangi, Bakossi and Bakweri ethnic groups, to name but a few, is that members of one village may belong to an elephant cult that includes members of one or more other villages. The general rule is that every member must take the group to his or her own village and leads them to the farms that are condemned to face destruction. It is said that members' farms are hardly destroyed, and that, most often, the targets are the most progressive farmers in the village. Originally, the essence of people transforming into animals or owning totems was connected with personal security, super-natural powers and prestige. Some of our elderly informants during our interview told us situations about some great men of the Mount Cameroon area .One of the popular stories was that of a then skillful hunter specialised in killing elephants around Bova community who quickly transformed to an elephant and join the rest of the elephants before killing them. While in the forest, he draw a circle and positioned his porters inside. It is believed that once inside the circle, his porters became invisible in case of any attack by elephants. There is that inseparable bond between the totem and the human-host, so much so that what affects one affects the other. There are stories of men and women who have lost their lives as a result of the fact that their totems have been killed by hunters. Unfortunately, animals that are commonly used as totems such as elephant, buffalo, chimpanzee, gorilla, leopard, crocodile, python and bush pig are easy prey to hunters. It is important to note that habitat destruction contributes even more to the rapid extermination of animal species, including the totems. Recognizing this, the Bakweri culture have used various methods to protect some forest areas or water bodies, basically to safeguard the lives, especially, of totems that belong to an entire human community. A case in point is the secret forest in Bokwango, Bova and Bonakanda. These areas are also associated with '*ihvarza moto*' and enforced by *maley* and *nganya* secret cults. This important association helps to instill fear in the inhabitants and, therefore, ensures the full protection of the forest. The general belief is that any unauthorized entry into the forest, especially for an illegal activity such as hunting, can provoke serious punishment that may lead to dead or banished from the village.

The role of the forest among the Bakweri people: This portion of the work shows that local people have a detailed understanding of ecological processes associated with particular habitats, and of the role of forests in their survival and search for livelihoods. To rural Bakweri people, the forest seems to be all-encompassing. It is an indispensable link in the circle of growth and death. The Bakweri regard the forest as a sacred place and the pursuit of certain activities related to the collection of produce and extraction of resources requires solemn behaviour. It is the place of sacrificial rites and worship, for seeking the protection and assistance of the Spirit of the ancestors spirit in carrying out activities planned for the forest (such as hunting, fishing and use of medicinal plants).It is clear to affirm that the interest in or disregard for the conservation and sustainable management of an ecosystem of a given people is closely linked to the various roles that this ecosystem plays in their life. In this sense, the rural and traditional Bakweri people have developed very deep-rooted ties with the forest because of the multiple benefits they derive from it. For the Bakwerians, the forest fulfils many economic, social, cultural and recreational roles. Productivity would appear to be the most important role and the one most visible to external observers of Bakweri culture. It is, in fact, its function as producer of food that makes the forest a source of life and a reserve of lands for agricultural production and para-agricultural activities. With its fruit trees, bark of trees, honey, mushrooms, caterpillars, etc., the forest offers an extensive array of elements essential to the nutritional and biological needs of the populations. It also offers economic opportunities and the possibility of inter-family and inter-community exchanges. The forest is a reservoir of medicines to treat all sorts of health problem. Thus, tree bark, roots, plants, leaves, honey, etc. are used to guard against various lethal diseases. Apart from its function as supplier of food, the forest also provides the Bakweri person with the materials needed for constructing their homes and for making hunting, fishing and farming tools. Powerful spiritual symbols are used to pass on moral codes, ecological knowledge, and management systems to future generations.

Causes of bushfires around the Mount Cameroon Region: Fire has been a constant companion of these indigenous subsistent farmers and they have used it to their benefit though a threat to the ecosystem as well. Indigenous Bakweri people use fire to reduce thick bush, to improve the environment for hunting wildlife and to create openings and prepare land to

plant their crops. Traditionally, the people used fire for hunting. On the other hand, scientific knowledge of ecology tells us that fire is damaging to the environment and an impediment to appropriate forest management. Many portions of the forests have been subjected to deliberate fire, though some are accidental fires. The local people often set fires to claim more portions for farming and to reduce thick bush and to prepare land to plant their crops. These fires often get out of control and burn large areas. Advocates of conservation suggest that such practice should be heavily discouraged in forest and farmland. The incidence of bushfires in the area is seasonal. There are two main seasons in Cameroon. The first is the rainy season, which starts from May and ends in October, and the Dry season, which runs from November to March. Almost 100% of bushfires in the country are recorded in the dry season. The dry season is one that usually comes with very dry atmosphere, strong dry winds and also comes with lots of sunshine. The conditions during the dry season usually leave the vegetation very dry. It might be quite clear at this point that the dry season is one that supports burning of any kind especially secondary forest. some of the main causes of bushfires in the Mount Cameroon region. Majority of these fires occur in the rural communities and are largely caused by the anthropogenic activities of the people. These range from farming practices, to hunting activities, honey harvesting accidents, charcoal burning accidents etc. Fire is a major tool used in clearing the forest for agriculture. Sometimes, the fire is uncontrollable, causing the destruction of large position of the forest. Recently, many forests have been subjected to deliberate and accidental fires in Efolofo, Ekata and Bova villages around MCNP to which they have little resistance, and to which they are rarely naturally subjected. People often set fire to cut-over areas adjacent to forests to clear them for farming. These fires often get out of control and burn large areas, extend into the forest interior, killing pioneer forest vegetation. Burning is embedded in the cultural values and traditional farming systems of most rural farmers in the area. In preparing land for farming, which occurs at the end of March, most farmers clear and gather rubbish on their farms from previous year's harvests and burn them and quite often these land preparation process result in bushfires. Small-scale farmers, mostly in the area, cut down the forest, let the wood dry for a few weeks, and then burn it, clearing the land for cultivation. Another practice that potentially often starts off a bushfire is hunting with fire. Some rural residents hunt for rats and other bush meat that live in holes beneath the ground by trying to smoke them out. A lot of the time they fail to put out their fires, which result in bush fires. Furthermore, a great deal of bush fires has also been caused by wild honey harvesting activities. In rural mount Cameroon region, wild honey is harvested during the night using naked fire. In this way, villagers try to burn out bees from the hive so as to collect the honey. Out of negligence, some of them sometimes fail to put out the fires when they are done, and potentially cause bushfires. Last but not the least charcoal burning has also been one of the main causes of bushfires in the area over the years. Charcoal is a domestic fuel that is used mostly for cooking. The process of producing charcoal requires burning logs and tree stamps and putting the fire out right before they burn out completely so as to collect the incomplete substance called charcoal. A lot of the charcoal burning process usually ends up with a bushfire.

Bakweri TEK on Bushfires: Many livelihood activities practiced in the rural bakweri land involve fire. The effects of these fires on the forest landscape range from minimal to extensive, and target specific habitats depending on the season. Small fires used to prepare farmland for foodstuff and gather honey have minimal effects on the landscape unless they get out of control. Controlled burns are used to hunt, clear land for crops, discourage wildlife from eating crops, and encourage the growth of new crops. These practices target specific habitats and generally burn a few hectares or less. However, if such controlled burns are left unmanaged, they can affect tens to hundreds of hectares and destroy the natural resources that such community depends upon for food, medicine, and construction materials. In order to minimize undesirable effects of fire in the landscape, communities have developed knowledge, practices, and beliefs for regulating fire size, timing, and frequency. Certain plant species, many of which are useful to local people as sources of food and medicine are adapted to survive and even thrive in post-burn environments. This knowledge-practice-belief complex, or TEK, is based on long-term, cumulative observations and interactions with the surrounding landscape through the course of daily activities (Berkes 1999, Berkes *et al*. 2000). Powerful spiritual symbols are used to pass on moral codes, ecological knowledge, and management systems to future generations. These observations alone are sufficient to justify serious consideration of the role that restoration of traditional burning might play in conservation of biodiversity. Collectively, these actions suggest that local people in this area will, within the limits of the resources available to them, seek to re-assert at least some measure of control over fire in the landscape, in ways that are consistent with customary practice. The Bakweri clan has strong totemic ties with these montane elephants, *Loxodota Africana* known as *njoku*. Members from the *maley* group are believed to transform into elephants to do many spiritual manipulations and protections. This made them protect the specie, but due to erosion of the traditional beliefs the specie is getting scarce on the mountain because of indiscriminate harvesting. Logging is also a major reason for their disappearance since the Makore tree (Tieghemella heckelii), which is a major food source for elephants is threatened by logging. That the maley dance was used to appease the gods and fellowship with the bakwerian such that they can bring prosperity to the land. One woman in Bova Bomboko said;

> Gone are the days when elephants or 'njoku' were living with people, all was well. The chief passed orders and people obeyed his orders. The gods are angry and the elephants are far from us, which is why all is going wrong. The land need cleansing 'tanirze' to appease the gods, she said.

The Maley group, which is the elephant dance, is meant to portray the powers behind the elephants 'njoku' over the area and the people. The *nganya* dance (by men) is also used to cleanse the area in order to appease the gods. Many rituals and libations are done in the process. During this process, the young females are not allowed to see the *moseke* masquerade if they do it is believed they will get barren. This masquerade is released only at night during the cleansing period. The *nganya* dance is also a cleansing dance which is accompanied by *malowa*, done by the old women naked late at night to accompany the males in the cleansing or '*tanirze*' process. After cleansing the food production of land is expected to increase and the women will become fertile. These are traditional procedures which were followed strictly to enable cleansing and boys were initiated early in the culture to allow

continuation of culture, Plate 1&2. They complained that traditions are eroding. An old man commented on this saying;

> These are the issues which made the place productive and people feared the gods, now Christianity has taken over and there is no fear of nature and the gods anymore, even the 'magic stick' (with spiritual values) on the mountain was cut down without fear that is why all is going wrong. There is need to appease the gods by incorporating traditional beliefs into natural resources management. We have abandoned our mooka/ikuma or shrines that are why all is going wrong. The powers 'nginya' given to us by the gods are not as they should be because the beliefs are not respected, this is not correct. God 'Lohwa'who gave us these beliefs knows why, therefore, they should be respected and incorporated in the resources management process. Now we have Christianity infiltrates our traditional beliefs, mojeeli (strangers) increasing exploitation and disobeying our customs. The management has undermined our beliefs and customs and preventing us from our resources. who shall we trust then?

It was evident from the findings that all the villages had shrines 'mooka' as is common with the Bakweri tradition. It is here that libations are done by each village to appease the gods of the land so that plants, animals and man will be productive and live in harmony. There are three group of people they accuse the government, strangers (or *mojeeli*) and Christianity as being responsible for the degradation as a result of not practising the beliefs. It is well known that major cause of depletion and deforestation of forest is unethical government system of forestry sector, which has also institutionalized the corruption, has become a big challenge for minimizing and stopping the deforestation. As a result, illegal cutting and trading (smuggling) of the valuable timber of the area occur tremendously. To hide all these evidences, unfortunately the government is blaming communities for deforestation and depletion of forest area and trying to downsize the community power through amendment of existing forest policy and law. Our government, companies and investors share a huge amount of the blame. Nearly 20 years after the state began to hand over the forest to local communities for protection, management and utilization, the community forestry appears to be a victim of its own success. The forests that communities nourished have become so *valuable* that some corrupted community leaders, political parties' leaders and government officials have been attracted by the timber mafias to plunder woodland. Every day forest area is being depleted and destroyed for smuggling valuable timbers and other forest related products. It is time to need to work together to protect our forest from smugglers and timber mafias.

Conclusion

The path that local people might take to restore control over the incidence and impact of fire and extend their influence over much larger areas is the focus of the remainder of this article. Fire presents one of the major conservation challenges in the MCNP with varied causes, but the majority are due to human influences. For example, a direct cause of deforestation on the landscape in the Mount Cameroon area is generally the conversion of forests into some other forms of land uses. These include agriculture, particularly shifting cultivation, increased population and over-exploitation of forest products for industrial or domestic use, such as timber and charcoal processing. Generally the existing forest around Mount Cameroon is no longer attractive to industrial timber companies as most of the more accessible forest has been logged. However, local entrepreneurs use chainsaws to convert trees to planks for local use. The causes of tropical deforestation have changed in the twenty-first century, which has required changes in the policies necessary to protect tropical forests. For many years, tropical deforestation was attributed largely to growing numbers of subsistence farmers moving into forests and cutting trees down to plant food crops such as corn, beans, and cassava. But today, deforestation is driven by large commercial enterprises, not subsistence farmers. Large commercial agricultural (CDC, PALMO) and timber enterprises not subsistence farmers are the principal agents of deforestation. The timing of burning in the area is clearly linked to particular livelihood activities to convert forest and thick bushes to agricultural uses such as creation of cash crop, food crop and bee farming. In the MCNP, fire is exclusively ignited during the early dry season to facilitate the burning, improve pastures and to encourage tree growth and species biodiversity. In recent decades, causes of tropical deforestation have changed, which has required changes in the policies necessary to protect the forests. It should be clear that for many years, deforestation in the area was attributed largely to growing numbers of subsistence farmers moving into forests and cutting trees down to plant food crops such as corn, beans, and cassava. But today, deforestation is driven principally by agents such as large commercial agricultural and timber enterprises, not just subsistence farmers. Conflict between protected areas conservators and local people can erode local support for conservation. Local livelihoods-based benefits are intended to upset cost and encourage tolerance stewardship, but where the linkage between benefits and livelihoods is not understood, benefits may be ineffective at strengthening conservation efforts. On this account, we agree with Andersen(1999) that a good deal of institutional confusion about different approaches to fire management derives from failure to clearly articulate and seek consensus on the conservation objectives fire management might be expected to serve and, as a consequence, how different groups can contribute. Understanding indigenous fire knowledge, respect to local attitudes toward conservation, combined with western ecological approach could support current community economies and conservation efforts in the MCNP.

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