The DEDO Forest Conservation Culture a Means to Conserves the Ororo (Ekebergia Capensis) Tree.

Getaneh Haile Shoddo (✉ getanehhaile2007@gmail.com)

Jigjiga University

Research

Keywords: DEDO culture, Ororo trees, sacred tree, indigenous knowledge, forest conservation, spiritual

Posted Date: October 9th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-88906/v1>

License: This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background

*The forest people around the world through their indigenous knowledge contribute to the sustainable management of forests. This article argues that the Sheka people in southwestern Ethiopia by their ecological knowledge, values, and spiritual use could manage the Ororo tree (*Ekebergia capensis*). The Ororo tree (*Ekebergia capensis*) is one of the most important endemic tree species in the Sheka zone southwestern Ethiopia and, at the same time, one of the most endangered species.*

Methods

Data collected on the indigenous ecological knowledge of the Sheka people and how the Ororo tree could be managed and conserved through the DEDO culture documented and the spiritual connection between the Ororo trees and the Sheka people traditional belief system measured.

Results

*The findings revealed that through their traditional forest-related knowledge, the Sheka people conserve and manage a single larger tree called Ororo. The Ororo tree is a special type of tree that has cultural and spiritual attachments that are presently non-existent. This unique forest conservation practice has been referred to as the DEDO culture. Thus, The culture of DEDO described in this article shows that it still exists in every element of local forest protection, and management Ororo tree (*Ekebergia capensis*). As the study clearly shows, the DEDO culture is productive and efficient for forest management, and this useful culture has demonstrated its significance in the protection of various forest types and tree species, contributing to the conservation of biodiversity.*

Conclusion

*Thus, The culture of DEDO described in this article shows that it still exists in every element of local forest protection, and management Ororo tree (*Ekebergia capensis*). As the study clearly shows, the DEDO culture is productive and efficient for forest management, and this useful culture has demonstrated its significance in the protection of various forest types and tree species, contributing to the conservation of biodiversity.*

Introduction

Human interactions with nature have shaped both the attitudes and behaviors of people towards nature (Cristancho and Vining, 2004). Thus, every culture has a system of beliefs that guides their interactions with nature. The growing interest in the fundamental and consumptive values human attached to forest resource (Kruger, 2003), has led to the growing field of traditional forest-related knowledge (Parrotta and Agnoletti, Parrotta et.al, 2008). The role of indigenous knowledge in forest conservation have historically been connected with sustaining biodiversity and ecosystem services as well as increase forest

productivity (Becker & Ghimire, 2003). Whole forest resource and forest parts, and forest -based products have been used across the world for various purposes (Ali and Rahut, 2018, Shackleton, 2019). Besides use in human, forest and forests parts are important for spiritual rituals of many societies (Amots, 2007).

These associated values have resulted in the reverence of forest across culture. Among the Sheka people of south western Ethiopia, relationship with nature is cultivated in the societies traditional values and beliefs. There is emphasis on safeguarding the environment. For instance, the Sheka people in southwestern Ethiopia by their ecological knowledge, values, and spiritual use could manage the Ororo tree (*Ekebergia capensis*). The Ororo tree (*Ekebergia capensis*) is one of the most important endemic tree species in the Sheka zone southwestern Ethiopia and at the same time one of the most endangered ones. Those cultural practice have resulted in a wealth of biodiversity in most areas inhabited by the Sheka people (Getaneh, 2019, Melca Mahiber and the African Biodiversity Network 2007). The traditional forest conservation strategies of the Sheka people, is less in conflict with forest resource as compared to e.g agricultural land use form. As a result, approximately 2.7 million hectares, which is 24 percent of the country's territory, a huge segment is found in the South Western Highlands of Ethiopia (WBISPP, 1990).

Ororo tree (*Ekebergia capensis*) in these areas are increasingly facing threats such as local and extra-local economic activities and socio-cultural (counting IK and its connection to resource management) change. While tangible monetary benefit for forest resource conservation results, socio-cultural values may be relevant to Ororo tree (*Ekebergia capensis*) conservation efforts (Melca Mahiber, 2007). The Sheka zone landscape has undergone socioeconomic change with potentially negative consequence for forest conservation in Ethiopia (Woldemariam and Fetene 2007, Hundera 2013). Recent literature suggested that in Ethiopia, forest-based research has yielded valuable bits of knowledge into linkages between country employment, financial change, and ecological administration, with critical ramifications for advancement strategy (Yeraswork, 2000; Desalegn, 2000; Woldeamlak, 2003; Dereje, 2007; Gessesse, 2007)..

The Sheka forest has undergone socio-economic changes with potentially negative consequences for forest conservation in Ethiopia (Woldemariam and Fetene 2007, Hundera 2013). Tree cutting, habitat loss due to increasing demand for agricultural land continues to be a major challenge for Ororo tree (*Ekebergia capensis*) conservation. Considering that no current conservation approach fully address these emerging challenge , to Ororo tree (*Ekebergia capensis*) conservation, there is a need to consider the potential role of values and perception in conserving forest resource. Understanding the dimensions of these values perception can present new socioeconomic perspectives in Ororo tree (*Ekebergia capensis*) conservation. In this paper, we access the values and perception on Ororo tree (*Ekebergia capensis*) among the Sheka people in southwestern Ethiopia and discuss how this traditional forest conservation strategy can be integrated in forest conservation.

Methods

Study area

The Sheka Zone is located at about 670km from Addis Ababa. It is found in the South Nations Nationalities and Peoples Regional State. The Sheka zone shares boundaries with the Oromia Regional State in the North, Bench Maji Zone in the South, Gambella Regional State in the West, and Kefa Zone in the east. The total area of Sheka was 2175327 ha. Geographically, the Sheka Zone lies between 7°24'-7°52' N latitude and 35°31'-35°35'E longitude. The Zone has three woredas namely: Masha, Andracha, and Yeki. In the Zone, there are 56 rural and seven urban peasant associations (Pas) in three woredas.

Data Collection and Analysis

The study made used both qualitative and quantitative data. Quantitative data were collected through administration of questionnaires to the head of the household and interviews with key informants within the selected area. Qualitative data were collected through key informant interviews (KIIs) and focused group discussions (FGDs). Data for this study were obtained through an interview conducted over 4 weeks in July and August 2019. The first aim of the survey was to explain how the indigenous ecological knowledge of the Ororo tree could be managed and conserved through the DEDO culture and the second aim was to explore the spiritual connection between the Ororo trees and the Sheka people traditional belief system

Data Analysis

Data obtained were analyzed using descriptive statistics and presented in tables, means, percentages and frequency. This was based on the information provided by the respondents. Furthermore, computer software, known as statistical package for social sciences (SPSS) version 21.0, was employed in analyzing the data.

Results

Today, deforestation is one of the major environmental challenges affecting the world; however, the Sheka people through their indigenous knowledge of forest conservation strategies can sustainably manage the Sheka forest. The Sheka people have long been sustainably managing and conserving the Sheka forest by utilizing different procedures. Shockingly, these indigenous methods for normal asset administration and nearby adjustment techniques are ordinarily absent from scientific forest management and not archived. The DEDO culture demonstrates how the Sheka people through their indigenous culture can provide valuable, appropriate, and effective forest conservation strategies. Here under results of the analysis of " the DEDO culture" are explained in detail by considering key points

Traditional sacred tree, People's beliefs, and conservation mechanisms in the study area

Six belief systems were identified, and eight conservation mechanisms observed to be in practice in the area, which were relevant to sustainable conservation and management of the Ororo tree. The sacred tree

(*Ekebergia capensis*) and the DEDO culture are the most common cultural institutions in all villages, and they have a direct bearing on the lives and behaviors of the people.

People's knowledge of the sacred ororo tree (*Ekebergia capensis*)

The vast majority of respondents (97%) were aware of the presence of the Ororo tree (*Ekebergia capensis*) and the DEDO culture in and around their village. It is found near to villages of the community. Older people (>55 years of age) could more accurately describe Ororo tree and DEDO culture than younger people could, but this difference was not significant. All research participants from Masha and Anderacha woreda knew where these Ororo tree (*Ekebergia capensis*) stands. All of them worshiped at least once in the Ororo tree (*Ekebergia capensis*).

The spiritual connection between the DEDO forest conservation culture with the Ororo tree (*Ekebergia capensis*)

The forest people around the world through their indigenous knowledge contribute to the sustainable management of forests. The Sheka people in southwestern Ethiopia by their ecological knowledge, values, and spiritual use could manage the Ororo tree (*Ekebergia capensis*). The Ororo tree (*Ekebergia capensis*) is one of the most important endemic tree species in the Sheka zone southwestern Ethiopia and, at the same time, one of the most endangered species. Eighty-five percent (85%) of respondents confirmed that the sacred Ororo tree (*Ekebergia capensis*) is a cultural symbol related to indigenous beliefs and signifies spiritual connections to the forestland and with Sheka people.

The Sheka people in southwestern Ethiopia had a well-defined social structure that is closely associated with forest management. Through their traditional forest-related knowledge, the Sheka people conserve and manage a single larger tree called Ororo. The Ororo tree is a special type of tree that has cultural and spiritual attachments that are presently non-existent. This unique forest conservation practice has been referred to as the DEDO culture. The culture of DEDO comes up with worshiping around the Ororo tree.

Participants of FGD both in Masha and Anderacha woreda explained the historical connection of the Ororo tree with the DEDO culture. "According to Sheka people traditional belief once upon the time in the history of Sheka people, there was a drought for a long period. The drought had damaged all trees except the Ororo tree. The survival of Ororo trees from the rest made the Ororo tree as cultural symbols and related to the indigenous belief that signifies spiritual connections to God (Shemayo tato).

During drought time in the history of Sheka, there is a saying that the angel of GOD rest under the Ororo tree because of this if people pray or worship under the Ororo tree, the angel of God will take their prayer to God. As many Sheka people do believe that the angel of GOD rest under the Ororo tree because of this if people pray or worship under the Ororo tree, the angel of God will take their prayer to God. Because of the spiritual connection to this particular tree of Ororo, the Ororo tree will not be used for any other economic activities like the production of honey and other domestic uses. Therefore, the conservation of

the Ororo tree has a direct spiritual connection, and has contributed to the conservation and protection of the Ororo tree.

The Ororo tree and DEDO cultural ceremonies

Overall, 86% of respondents “agreed” with the Statement that the ororo sacred tree and the DEDO culture are used by sheka people as cultural symbols related to indigenous beliefs and signify spiritual connections to the forests” (Table 1). The belief that tender and lightening will damage the villager if the sacred Ororo tree (*Ekebergia capensis*) are felled in the village was very popular—86% “agree” response (Table 1).

The DEDO culture was celebrated once in a year in the months of December around Christmas as Thanksgiving Day. Offerings were made each year at this time. One of the key informants in Gecha Town explains how the DEDO culture was celebrated each year. During the months of December, when yields were harvested, people in the village were gathered together to celebrate Thanksgiving Day around the DEDO sacred tree (Ororo) under the advice of clan leaders (Gebi tato). The DEDO sacred tree (Ororo) culture was celebrated near to village according to their clan and the clan leaders (Gebi tato) as “traditional forest-related knowledge experts,” i.e., persons recognized by the Sheka community were responsible for making and enforcing rules related to the DEDO cultural ceremony.

The purpose of the offering was to giving thanks to GOD (Shemayo tato) for the harvest season. After giving thanks to GOD (Shemayo tato) for the good harvest of the season, the Sheka people pray to GOD (Shemayo tato) the next season to be a season of health, fortunes and good harvest. Therefore, the DEDO sacred tree (Ororo) was believed to bring health, fortune, and good harvest.

The other key informant in his description the way the DEDO culture was celebrated he cogently explained that the DEDO culture was celebrated each year seven days before Christ-mas. local cereals (Teff) were harvested around Christ-mas time and for the DEDO celebration foods and alcohol, drinks were mostly prepared from local cereals called Teff. Wednesdays is a day used for the celebration of DEDO culture. The aim of the DEDO culture was praying to GOD (Shemayo tato) for the next good harvest and for the health of the people.

Another relationship between the DEDO culture and the Sheka people is that long years before the Sheka people did not have health facilities access because of this many young and adult parts of the population died at an early age. In fear of this killing disease, all the village members gathered around the Ororo tree and celebrated the culture of DEDO and pray to GOD (Shemayo tato) about their health. Therefore, the Ororo tree is believed to bring health to the Sheka people. According to the Sheka belief, the DEDO tree is untouchable. No one was allowed to cut the Ororo tree. It is conserved and protected well for centuries for spiritual purposes.

The interview and FGD results provide useful examples of the DEDO sacred tree conservation culture and traditional forest-related knowledge possessed by the Sheka people. As an informant recalled:

In the past, the Sheka people have held ceremonies to pray for a successful harvest season and express their thanks to GOD (Shemayo tato). The Sheka people participate in rituals for GOD (Shemayo tato) on the month of December, according to the Ethiopian calendar each year. They collectively participate in traditional rituals of food preparation and beverages (made from Teff) before they put the harvest into the granary. These rituals play an important role in encouraging relationships between members of the community.

Cutting of Ororo tree (*Ekebergia capensis*)

The majority of respondents (80%) said they the DEDO tree conservation culture could manage and conserve the Sheka forest. Spiritual connections and beliefs were the main reasons why people worship around the sacred Ororo tree (*Ekebergia capensis*). The protection of the sacred Ororo tree (*Ekebergia capensis*) enables the conservation of natural forests from earlier anthropogenic disturbances, allowing trees and other plant species to reproduce. The entire the sacred Ororo tree (*Ekebergia capensis*) was put under the imposition of local cultural beliefs.

The Sheka people considered the Ororo tree to be sacred and believed to protect the village from natural calamities, famine, and diseases Therefore the culture of DEDO sacred tree (Ororo) contribute positively to the conservation of Ororo tree. Access to DEDO sacred tree (Ororo) is forbidden by Sheka culture, and the DEDO sacred tree (Ororo) is untouchable and no person is allowed to cut or make use of the DEDO sacred tree (Ororo) for another purpose. Therefore, the DEDO sacred tree (Ororo) is considered to be the king of the trees in the village.

The DEDO sacred tree (Ororo) once exists in every village as spiritual or sacred sites. These trees are usually very tall and long. The Sheka believe that these trees can provide safety, fortune, and good harvests for their villages. According to one of the key informants in Masha woreda, Yepo Kebele the clan leader (Gebi tato) said, "no one is allowed to cut down these trees, and any person who cuts these trees will be punished because of the curse that is associated with indigenous belief.

According to the research participant, there was a true story about a person who violated the culture of DEDO. In Masha woreda, there was a person who cut down a DEDO sacred tree (Ororo): he was dead by thunder and lightning immediately. The above quote about a person reminds that the Sheka people represent the DEDO sacred tree (Ororo) has direct connections to their GOD (Shemayo tato). According to Sheka traditional belief, if any person who cuts down the DEDO sacred tree (Ororo) rain will become abnormal, usually resulting in floods. There is a similar story in Anderacha woreda about the death of a young man after he cut down the DEDO sacred tree (Ororo) he died consequently.

Even though the younger generation has limited knowledge of the DEDO sacred tree (Ororo), all Clan leaders (Gebi tato), and older men who participated in this research work agreed that they firmly believe in the supernatural meanings attached to the DEDO sacred tree (Ororo). All twenty research participants from the study area knew how and where the DEDO sacred tree (Ororo) conservation culture was practiced. All of them had worshiped in the DEDO sacred tree (Ororo) for many years in their lifetime.

According to research participants from the community elderly: no one dares to touch the DEDO sacred Ororo tree. According to the research participant (KI-9, 28 Jan 2016 Masha Town), those who touched the DEDO sacred tree (Ororo) would be cursed and died. During the interview, both Clan leaders (Gebi tato) and older men told us that before 30 years ago, the DEDO culture was a very common traditional belief in almost every village in the Sheka zone. However, this tree conservation cultural has gradually disappeared, particularly in recent decades.

Discussion

Over the years, there have been increasing concerns about the decline of traditional forest-related knowledge, leading to calls for effective responses to ensure forest sustainability (Parrotta and Agnoletti, 2006). This concern has been increasingly recognized, documented, and utilized both in developing and developed countries (Berkes et al., 2000; Bürgi et al. 2013; Ramakrishna, 2007). In Ethiopia, forest conservation and management range from state-owned forest to privately owned forests. There was no room for traditional forest conservation and management approaches. The first approach such as state-owned forest management (Dessalegn Rahmato, 2001; FDRE, 2007). The latter approach advocates privately owned forests. However, it has been argued that both of this approach alone often fails biodiversity conservation unless it is supported by traditional forest conservation and management approaches.

The role of indigenous knowledge in forest conservation in Africa has also been recognized in recent years. Its potential contribution to Africa's ecology has not been well studied. Recently, very few studies have been conducted to depict the contribution of traditional knowledge to biodiversity, climate change, and combating desertification. Traditional forest-related knowledge has upheld the occupations, culture, personalities, and the woodland and farming assets of the neighbourhood and indigenous networks everywhere throughout the world (Parrotta and Trosper, 2012). Traditional forest-related knowledge (TFRK) is of specific significance to indigenous networks, people groups, and countries (Michel H & Gayton DV 2002). Numerous specialists have put accentuation on incorporating traditional forest-related knowledge and scientific knowledge for the protection of timberland nature forests (Michel H & Gayton DV 2002; Menzies, CR, & Butler, C 2006).

The negative attitude towards traditional forest conservation culture can undermine local, national, regional, and international conservation initiatives. Gadgil et al. 1993, Gadgil M, Berkes F 1991, and Gadgil M 1985 argue that traditional forest conservation culture plays a pivotal role in forest conservation and management. Therefore, it is crucial to recognize and incorporate the importance of such conservation culture into forest resource management plans. The recognition of traditional forest conservation culture in forest management will not only affect population viability but may also have broader environmental impacts. The recognition of traditional forest conservation culture is also necessary for ensuring that forest management policies are both effective and sensitive to local realities (Gupta, H.K. 2005 and Gupta, H.K. 2006). In this regard, it is important to continuously conduct studies on forest management to inform area-specific policies as the conservation culture toward forest often differs

from one setting to the other. Few studies to understand traditional forest conservation culture in forests are situated in Ethiopia (Desalegn Fufa, 2013). This is despite the fact that Ethiopia is wealthy in its flora, and it is evaluated to harbor more than 6000 types of higher plants, of which around 125 are endemic (Ib Frus 1982), requiring their protection and conservation.

A common thread in developing and applying conservation policies requires gaining the support of traditional forest conservation cultures and engaging these conservation culture in collaborative conservation efforts (Gadgil et al. 1993; Gadgil M, Berkes F 1991; Gadgil, M. 1985; Gupta, H.K. 2005, Gupta, H.K. 2006). Therefore, studies in traditional forest conservation culture contribute to the development of effective forest conservation and management policies that are sensitive and relevant to local conditions and the degree to which local communities are willing to coexist with forest resources (Gadgil et al. 1993; Gadgil M, Berkes F 1991, and Gadgil, M. 1985).

Traditional forest conservation culture in sub-Saharan Africa has vast indigenous knowledge that has kept its forest ecosystem pristine and protected for decades (Mumma, A. 1999, and Tengeza A, 2000). Other than the spiritual attachment to their environment, rural communities were historically dependent on forest resources for their livelihoods (FAO 2014). However, the introduction of state-sponsored deforestation and markets influencing agricultural expansion in the African continent resulted in centralized control over natural resources by state, which resulted in the taking away of decision-making concerning forest resources from rural communities (GRAIN 2008, Cotula et al. 2009; Deininger and Byerlee, 2011). Consequently, rural communities became passive observers of the forest resources around them. The state forest law of the southern nations, nationalities, and people's region (SNNPR) put community forest under state forest.

The government of Ethiopia adopted state forest laws that put community forest under state forest; therefore, these laws limit the local population forest resources utilization and introduced a total ban on using forest at one point (Dessalegn, 2001). This state of forest conservation practice is the detriment of local communities. As a result, there is an ongoing conflict between the state and the local people in southwestern Ethiopia, which is attributable to the hostile relationship between conservation and livelihoods of communities living adjacent to and within the sheka forest.

To our knowledge, this is the first study to analyze traditional forest conservation culture of forest, using DEDO tree conservation culture as a proxy, how the Sheka people through their indigenous culture can provide valuable, appropriate, and effective forest conservation strategies. The analysis is important in providing insights on how tree conservation culture and current practices may influence forest sustainability and its supporting institutions. This is crucial for rethinking the design of conservation policies that allow for effective management and planning, sensitive to local realities. Specifically, this study analyzes the spiritual connection between Ororo trees and the Sheka people traditional belief system could be managed and conserved through the DEDO culture.

Conclusion

The case study presented on DEDO Ororo tree (*Ekebergia capensis*) tree conservation culture demonstrates that the Sheka people have their own indigenous knowledge, beliefs, and management practices related to forest. This cultural and belief system is inherited from their ancestor since time immemorial and evolving over generation. The culture of DEDO described in this article shows that it still exists in every element of local forest protection, and management Ororo tree (*Ekebergia capensis*). As the study clearly shows, the DEDO culture is productive and efficient for forest management, and this useful culture has demonstrated its significance in the protection of various forest types and tree species, contributing to the conservation of biodiversity. Thus, the DEDO Ororo tree (*Ekebergia capensis*) conservation culture is illustrated in the Sheka people forest utilization, protection, and management provide important insights into the protection of various forest types and tree species, contributing to the conservation of biodiversity.

Declarations

Ethics approval and consent to participate: The study was approved by the CAES Research Ethics Review Committee at the University of South Africa (UNISA) on 10/02/2015 with Ref #: 2015/02/004, name of applicant: Mr GH Shoddo, student #:53342852. Decision: Ethics Approval, Supervisor: Prof Teshome Soromessa Aurgessa, Qualification: Postgraduate degree.

Consent for publication: “there is institutional consent form available based on request

Availability of data and materials: All data generated or analyzed during this study are included in this published article (see literature cited).

Availability of data and materials: Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

Competing interests: The authors declare that they have no competing interests

Funding: The study benefited from financial support from Association of African Universities (AAU) and bursary fund from university of South Africa (UNISA).

Competing interests: The author declare that there is no competing interests

Authors' contributions: I am sole author to this article

Acknowledgement

The Authors acknowledge the wise people of Sheka people for providing information on various IKS-related conservation of tree and forest resources.

References

- Ali, A.; Rahut, D.B. Forest-Based Livelihoods, Income, and Poverty: Empirical Evidence from the Himalayan Region of Rural Pakistan. *J. Rural Stud.* 2018, 57, 44–54.
- Becker CD Ghimire K 2003: *Synergy between traditional ecological knowledge and conservation science support forest preservation in Ecuador*. Retrieve from <http://www.consecol.org/vol18/isi1/art1/>
- Berkes, F.; Colding, J.; Folke, C 2000. Rediscovery of traditional ecological knowledge as adaptive management. *Ecol. Appl.* 2000, 10, 1251–1262
- Bürgi, F.; Gimmi, U.; Stuber, M 2013. Assessing traditional knowledge on forest uses to understand forest ecosystem dynamics. *For. Ecol. Manag.* 2013, 289, 115–122.
- Central Statistical Agency 2007: *population and housing census of Ethiopia*. Addis Ababa, Ethiopia.
- Cotula L, Vermeulen S, Leonard R, & Keeley J 2009: Land Grab or Development Opportunity? Agricultural Investment and International Land Deals in Africa. IIED, 2009.
- Cristancho S & Vining J 2004: Reciprocity as Principled Argument: The Ethics of Human-Nature Interactions for the Letuama. Department of Natural Resources and Environmental science.
- Dafni, A. Rituals, ceremonies and customs related to sacred trees with a special reference to the Middle East. *J Ethnobiology Ethnomedicine* 3, 28 (2007). <https://doi.org/10.1186/1746-4269-3-28>
- Deininger K & Byerlee D 2010: Rising global interest in farmland: Can it yield sustainable and equitable benefits? Washington: World Bank.
- Desalegn Fufa 2013: Indigenous Knowledge of Oromo on Conservation of Forests and its Implications to Curriculum Development: the Case of the Guji Oromo
- Dessalegn Rahmato (2001), Environmental change and state policy in Ethiopia: lesson from past experience, FSS monograph series, no. 2 Addis Ababa: Forum for Social Studies
- Federal Democratic Republic of Ethiopia (FDRE) (2007). Forest development, conservation and utilization proclamation no. 542/2007. *Negarit Gazetta* No 56. Addis Ababa, Ethiopia. pp. 1-14.
- Gadgil M, Berkes F 1991. Traditional resource management systems. *Resource Management and Optimization* 18: 127-141
- Gadgil M, F Berkes and C Folke 1993. Indigenous Knowledge for biodiversity conservation. *Ambio* 22:151-6
- Gadgil, M. 1985. 'Social Restraints on Resource Utilization: The Indian Experience'. In J.A. McNeely and D. Pitt, eds., *Culture and Conservation: The Human Dimension in Environmental Planning*, Croom Helm, Dublin

Getaneh Haile Shoddo 2019. The impact of traditional natural resource management practices and expansion of investment agriculture on forest resource: Sheka, zone, south-western Ethiopia. University of South Africa 2019.

GRAIN 2008: Seized! The 2008 land grab for food and financial security. GRAIN Briefing October 2008.

Gupta, H.K. 2005. Conservation and traditional knowledge systems: a case study of sacred forest groves of Himachal Himalays, India. Paper presented at USEFI and IIHS workshop on Conserving Hill and Mountain Ecology, Shimla, August 24-26, 2005.

Gupta, H.K. 2006. Joint Forest Management: Policy, Participation and Practices in India. International Book Distributors, Dehradun, India. 400 pp ICSU, 2002. Traditional Knowledge and Sustainable development. ICSU Series on Science for Sustainable Development No.4 International Council for Science, Paris. 24 p. Available from: <http://www.icsu.org/>.

Ib Frus 1982: Studies in the flora and vegetation of southwest Ethiopia. Institute of systematic botany university of Copenhagen K Denmark.

Kruger, Linda E., tech. ed. 2003. Understanding community-forest relations. Gen. Tech. Rep. PNW-GTR-566. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 162 p.

Martinez Cobo J1986/7: Study of the problem of discrimination against indigenous populations. UN Doc. E/CN.4/Sub.2/1986/7 and Add. 1-4 Available via <http://www.un.org/esa/socdev/unpfii/en/spdaip.html>.

Melca Mahiber and the African Biodiversity Network 2007: The Sheka Forest. Melca Mahiber Melkania NP 1997: Indigenous knowledge in traditional modes of forest and tree management in the Central Himalaya, India. In K. Seeland & F. Schmithusen (Eds.) Local knowledge of forests and forest uses among tribal communities in India. Zurich, Switzerland

Menzies, CR, & Butler, C 2006: Understanding ecological knowledge. In C. R. Menzies (Ed.), Traditional ecological knowledge and Natural Resource Management Lincoln: University of Nebraska Press.

Michel H & Gayton DV 2002: Linking Indigenous peoples' knowledge and Western science in natural resource management: A dialogue. B.C. Journal of Ecosystems and Management, 2(2), 1-12.

Michel H & Gayton DV 2002: Linking Indigenous Peoples' Knowledge and Western Science in natural resource management: A Dialogue. B.C. Journal of Ecosystems and Management, 2(2), 1-12.

Mumma, A. (1999), 'Legal Aspects of Cultural Landscapes Protection in Africa'. in: M. Rossler and G. Saouma-Forero (eds.), The World Heritage Convention and Cultural Landscapes in Africa, Expert Meeting - Tiwi, Kenya, 9-14 March 1999. UNESCO

Nouria Bricki, Judith Green 2002: A Guide to Using Qualitative Research Methodology. 2002 MSF Field Research.

Parrotta, J.A. 2000. Catalysing natural forest restoration on degraded tropical landscapes. Pages 45-54 in S. Elliot, J. Kerby, D. Blakesley, K. Hardwick, K. Woods and V. Anusarnsunthorn, editors. Forest restoration for wildlife conservation. International Tropical Timber Organization and the Forest Restoration Research Unit, Chiang Mai University, Chiang Mai, Thailand.

Parrotta, J.A., Agnoletti, M., 2007. Traditional Knowledge, Cultural Heritage and Sustainable Forest Management. *Forest Ecology and Management* 249, 1–139.

Parrotta, J.A., Agnoletti, M., 2007. Traditional Knowledge, Cultural Heritage and Sustainable Forest Management. *Forest Ecology and Management* 249, 1–139.

Parrotta, J.A., Agnoletti, M., Johann, E. (Eds.), 2006. Cultural heritage and sustainable forest management: the role of traditional knowledge. Proceedings of an International Conference held in Florence, Italy, June 8–11, 2006. Warsaw, Poland: Ministerial Conference on the Protection of Forests in Europe, Liaison Unit Warsaw, Vol. 2. Available from: <http://www.iufro.org/science/task-forces/traditional-forest-knowledge/>

Parrotta, J.A., Liu, J., & Sim, H-C., 2008. Sustainable Forest Management and Poverty Alleviation: Roles of Traditional Forest-related Knowledge. IUFRO World Series Vol. 21. Vienna, Austria: International Union of Forest Research Organizations, 224 pp.

Parrotta, JA & Trosper, RL. 2012. Traditional Forest-Related Knowledge: Sustaining Communities, Ecosystems and Biocultural Diversity. U.S. Forest Service Research and Development Branch and American Indian Studies The University of Arizona.

Ramakrishna, P.S 2007. Traditional forest knowledge and sustainable forestry: A north-east India perspective. *For. Ecol. Manag.* 2007, 249, 91–99.

Shackleton, C.M.; Pullanikattil, D. Considering the Links between Non-Timber Forest Products and Poverty Alleviation. In *Poverty Reduction through Non-Timber Forest Products*; Springer: Cham, Switzerland, 2019; pp. 15–28

Tengeza A, 2000, Traditional and Cultural Control of Indigenous Forest Resources: Kaya Rabai By-laws. Internal NMK/CFCU Note

Figures

Figure 1

Map of the study area