

Obtaining forest foods from timber trees in Cameroon:

How far do people walk to collect fruits and caterpillars?

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Abstract

Approximately 61% of timber species in the Congo Basin also bear locally used non-timber forest products. Amongst these are edible fruits of Moabi (*Baillonella toxisperma*), and edible caterpillars on Sapelli (*Entandrophragma cylindricum*) and Tali (*Erythrophloeum suaveolens*). Participatory mapping combining GPS coordinates and interviews was carried out with 5 female and 5 male collectors in each of two villages adjacent to each of two logging concessions in Cameroon to: (1) locate the trees from which men and women obtained these foods, in space and on maps that included the boundaries of nearby logging concessions; (2) determine the distances travelled by men and women to collect these wild resources (3) gather information on the trees and the collection, transformation and sale of these NTFPs, and (4) assess the potential impacts of logging activities on local people's access to these food resources.

During one day collecting trips **people walk an average of 2.7 km (± 1.42)** from the village to trees where they collect these resources. Food resources are typically **collected by both men and women**, and this is generally an **organised activity** where people will go specifically to the forest to collect resources. However, **men will travel further to specific trees 3.52 km (± 2.37)**, combining this with hunting excursions further into the forest. **72% of Sapelli, 81% of Moabi and 100% of Tali** from which non-timber resources are collected were **larger than their legal felling diameters**, indicating a potential conflict between timber felling and resource collection. **The majority of these trees (86%) were not within logging concessions**; but an extensive informal logging sector in rural communities nevertheless means the trees may be felled.

Tiles below: Maps of the trees located around each of the four study villages, in relation to the forest concession boundaries (in grey). Overall average distance (2.8km) and maximum distance radii (6.2km) are marked by concentric circles. Forest paths are marked by dotted lines. Light grey squares indicate Sapelli; grey circles indicate Moabi; and dark grey triangles indicate Tali

Bottom left: Boxplot of the distances between villages and trees according to the gender of the collector. On the x-axis, 'm' indicates men, 'mw' indicates men and women, 'mwc' indicates men, women and children, 'w' indicates women and 'wc' indicates women and children.

Bottom right: Number of trees located within 1km distance bands from the village (all four villages, all three species)

Multiple-use Tree Species

Sapelli (*Entandrophragma cylindricum*) hosts vast quantities of *Imbrasia* (*Nudarelia*) *oyemensis*, one of the 82 species of caterpillars and larvae commonly consumed in Central Africa. It is also the second most important timber species in terms of volume exported from the region, contributing 1.3 million cubic metres of wood annually to the export market (Bayol et al., 2012), and is considered vulnerable to extinction as a result of this level of demand (Hawthorne, 1998).

Another edible caterpillar, *Cirina forda*, feeds on Tali (*Erythrophloeum suaveolens*) (Lewis, 2001; Hoare, 2007; Balinga, 2003; N'Gasse, 2003; Vantomme et al., 2004) which accounts for around 200 000 cubic meters of timber annually for the export market (Bayol et al., 2012).

Moabi (*Baillonella toxisperma*) produces an edible fruit and seed-oil, which are both consumed and sold. It occurs at low densities and is also considered vulnerable to extinction (White, 1998) but accounts for close to 200 000 cubic meters of timber annually to the export market (Louppe, 2005).



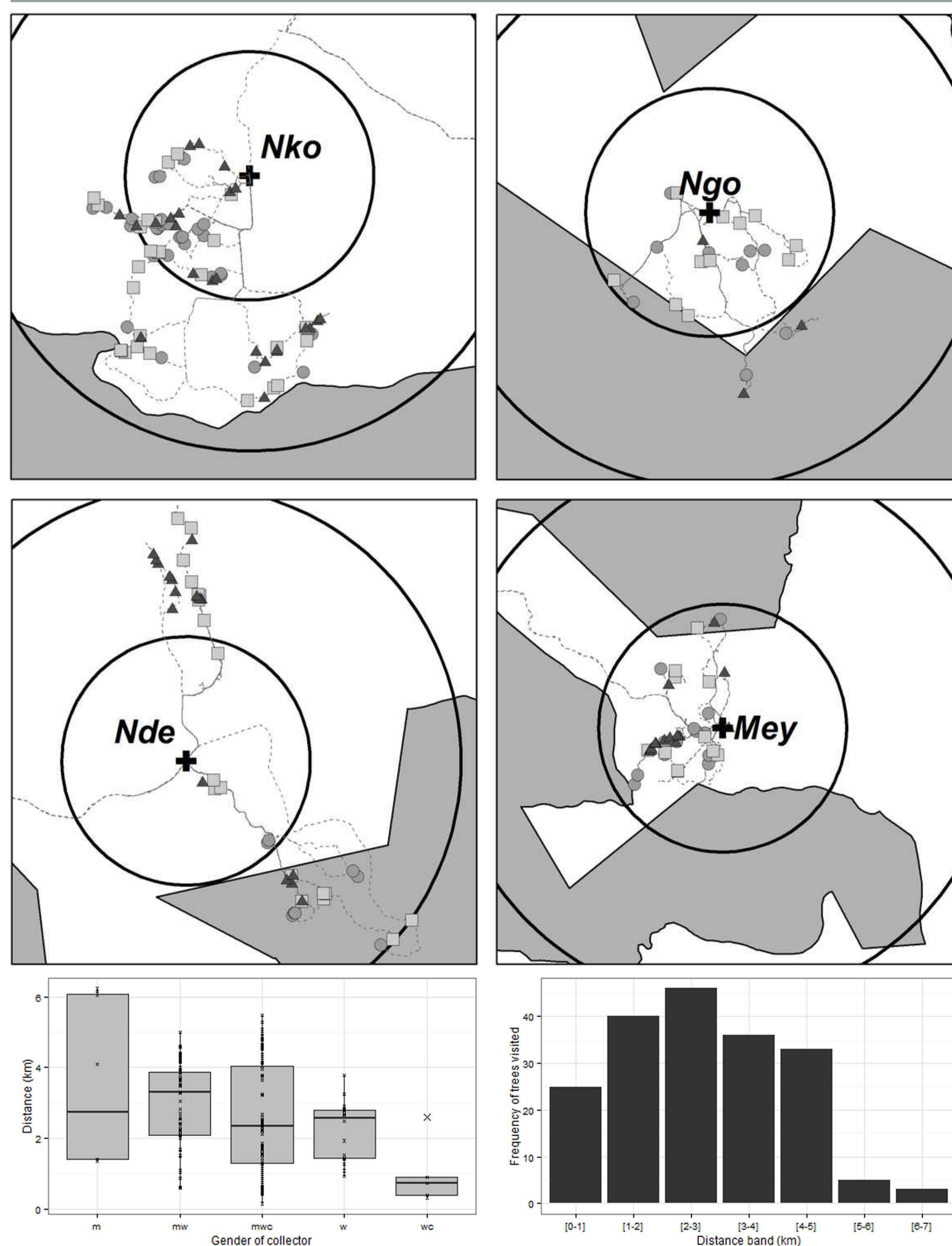
Multiple-use forest management

In Cameroon, legislation does not provide a formal structure to mediate between the interests of those who fell timber and those who collect forest resource from multiple-use tree species. The felling of Moabi is prohibited in Gabon due to its local importance, but this is not the case in Cameroon (Asseng Ze, 2008 ; IUCN-CARPE, 2009); also, despite the local importance of caterpillars to nutrition, there are no regulations protecting the timber species which host these caterpillars. **The majority of the source trees were found to be of an appropriate size for felling;** meaning the trees within logging concessions could still be legally felled by the concession operator, or were felled in previous logging operations during the tenure of the concession.

Most of the Moabi, Sapelli and Tali from which men and women gather food resources on one-day collection trips did not fall within logging concession boundaries; but they are nonetheless vulnerable to logging. Most of these trees are located within gazetted community forests or in unclassified forest estate. The main activity in community forests is timber production, and the majority of benefits from community forestry are obtained only by individuals or specific groups (Ezzine de Blas et al., 2011; Ofoulhast-Othamot, 2014; Logo, 2003). There is also a poorly regulated informal timber sector, which is estimated to be larger than the export sector in terms of annual sawn wood production volume (Lescuyer et al., 2012). Many of the locally felled species include these multiple-use trees.

Decision-making processes at the local level now include arrangements to determine whether a tree should be felled or conserved. As the formal timber industry has existed for so long, it is likely that the overt conflicts over trees between local communities and logging concessions have already passed to some extent; and as a burgeoning market for domestic informal lumber exists, the real conflict may now be mainly between individuals and groups within communities, who have different degrees of bargaining power and control over forest resources, and different priorities in the use and values of timber or non-timber resources.

Participatory mapping exercises are likely to always demonstrate an overlap between current land-use plans and local forest-use patterns. Simply by using this study's average of 2.7km as a radius to represent a 'resource shed' around a database of 4115 villages in the dense forest zone of Cameroon, a total area of around 5.8m ha would be required to safeguard village activities. This is a very conservative estimate, given the maximum collection distances recorded in this study, yet of this total area 335 000 ha around 838 villages would overlap with the boundaries of logging concessions, and a further 89 000 ha would overlap with protected areas.



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References

- Asseng Ze, A. (2008). Gestion durable des produits forestiers non-ligneux dans la concession forestière de Palisco. Rome: FAO.
- Balinga, M. (2003). Les chenilles et larves comestibles dans la zone forestière du Cameroun. In N'Gasse (Ed.), Contribution des insectes de la forêt à la sécurité alimentaire. L'exemple des chenilles d'Afrique Centrale. Rome: FAO.
- Bayol, M., Demarquez, B., de Wasseige, C., Eba à Atyi, R., Fisher, J.-F., Nias, R., et al. (2012). Forest Management and the Timber Sector in Central Africa. In C. de Wasseige, P. de Marcken, N. Bayol, F. Hiel Hiel, P. Mayaux, B. Desclee, et al. (Eds.), The Forests of the Congo Basin – State of the Forest 2010 (pp. 43-61). Luxembourg: Publications Office of the European Union.
- Ezzine de Blas, D., Ruiz-Pérez, M., & Vermeulen, C. (2011). Management conflicts in Cameroonian community forests. Ecology and Society, 16(1), 8.
- Hawthorne, W. (1998). Entandrophragma cylindricum. IUCN Red List of Threatened Species (Version 2013.1). Retrieved September 13, 2013, from www.iucnredlist.org
- Hoare, A. L. (2007). The use of non-timber forest products in the Congo Basin - Constraints and opportunities. London: The Rainforest Foundation.
- IUCN-CARPE. (2009). Recueil des textes juridiques en matière de conservation et d'utilisation des ressources naturelles au Gabon. Washington: USAID.
- Lescuyer, G., Cerutti, P., Mendoula, E., Eba à Atyi, R., & Nias, R. (2012). An appraisal of chainsaw milling in the Congo Basin. In C. de Wasseige, P. de Marcken, N. Bayol, F. Hiel Hiel, P. Mayaux, B. Desclee, et al. (Eds.), The Forests of the Congo Basin – State of the Forest 2010 (pp. 97-107). Luxembourg: Publications Office of the European Union.
- Lewis, J. (2001). Indigenous uses for the sapelli tree in northern Congo. In Sold Down the River: The Need to Control Transnational Forestry Corporations: A European Case Study (p. 7). Forests Monitor.
- Louppe, D. (2005). Baillonella toxisperma Pierre. (Prot. 711). Timbers/Bois d'œuvre 1. (D. Louppe, & A. A. Oteng-Amoako, Eds.) Wageningen, Netherlands: PROTA.
- N'Gasse, G. (2003). Contribution des chenilles/larves comestibles à la réduction de l'insécurité alimentaire en République centrafricaine. In G. N'Gasse (Ed.), Contribution des insectes de la forêt à la sécurité alimentaire. L'exemple des chenilles d'Afrique Centrale. Rome: FAO.
- Ofoulhast-Othamot, G. (2014). Decentralization of natural resources management and improvement of rural livelihoods: empirical evidence from the Dimako Council Forest experiment in eastern Cameroon. Forests, Trees and Livelihoods, vol. 23(3), pp 175-187.
- Vantomme, P., Gohler, D., & N'Deckere-Ziangba, F. (2004). Contribution of forest insects to food security and forest conservation: The example of caterpillars in Central Africa. London: Overseas Development Institute.
- White, L. 1998. Baillonella toxisperma. In: IUCN 2013. IUCN Red List of Threatened Species. Version 2013.1. <www.iucnredlist.org>. Downloaded on 13 September 2013.