

Oral presentation

Patterns of NTFP harvest for the multi-use *Khaya senegalensis* (Meliaceae) by indigenous people in Benin and its impacts on population structure

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Introduction. The combining of traditional ecological knowledge (TEK) and quantitative ecological studies can be used to help identify the processes involved in human-ecological systems and assess their ecological impacts. In West Africa, Fulani people heavily harvest foliage of *Khaya senegalensis* (Meliaceae) as an important dry season fodder for their livestock and the bark of the tree is harvested as a source of malaria medicine.

Objectives. The objectives of this study were to 1) investigate rates and patterns of *K. senegalensis* foliage and bark harvest in Benin; 2) assess their impacts on *K. senegalensis* population structure and 3) identify the ecological and human variables that influence both harvests patterns and their impacts.

Methods. The traditional Fulani ways of classifying the level of threat to harvest were identified and this knowledge was used to survey and establish plots in twelve populations in two ecological regions (Sudano-Guinean versus Sudanian) of Benin. Half of the populations had low or no harvest and half were highly harvested. Diameter at breast height, pruning and debarking intensities, time since pruning (using Fulani TEK) and seedlings/sapling densities were measured in two 0.5ha rectangular plots in each of the populations.

Results. Patterns of pruning and debarking were size-specific, with harvesters tending to prefer larger trees. Foliage harvest pressures were very high across both regions, with >70% of trees harvested for 100 % of their crowns. A significantly greater proportion of trees were harvested for foliage in the wetter Sudano-Guinean region than in Sudanian region. The reverse was true for the proportion of foliage and bark harvested per tree. In the Sudano-Guinean region, high harvest populations had significantly lower densities of seedlings and saplings than low harvest populations. The size-class distribution co-efficient of skewness was significantly correlated with rainfall, habitat, and soil type.

Conclusion. Variation in harvesting patterns and their ecological impacts can be explained in large part by differences in water availability between the two regions. Effective conservation plans for *K. senegalensis* require close consideration of the environmental and land-use context in which populations occur.

Keywords: Ecological variation; Non timber forest products; distribution of harvest intensities; Size-class distribution; West Africa.

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