

Xaté palms (*Chamaedorea* spp.) in Belize: Conservation and sustainable management



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BACKGROUND

Chamaedorea is the most speciose palm genus in the Neotropics and one the most heavily exploited. The attractive wild-harvested leaves (xaté) of a few *Chamaedorea* taxa are prized for the international floral industry where they form part of bouquets. The most highly sought species is currently *C. ernesti-augustii*, known locally as fishtail due to the shape of its leaf. Traditionally leaves of this species have been harvested from natural forests in Guatemala and Mexico and exported to the USA and Holland for about 40 years. However, as populations have become depleted, xaté collectors (xateros) have been crossing into Belize threatening one of the last strongholds of this species. There is no legalised Belizean xaté industry at this time, and Belizean border incursions by Guatemalan xateros have caused diplomatic concern. The broad aim of this research is to provide information on the distribution and abundance of all *Chamaedorea* species in Belize, to evaluate the extent to which xaté species have been harvested, and to assess the potential of establishing a sustainable Belizean industry.



Fishtail leaf ready for harvesting



Fishtail with nearly all its leaves cut, a typical sight in the Chiquibul forest

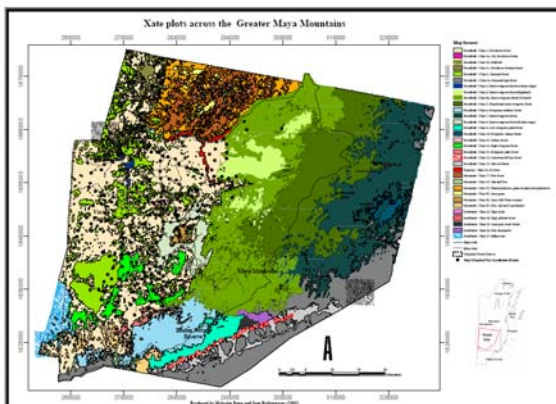
PROJECT AIMS

- (1) Understand the taxonomy and ecology of *Chamaedorea*
- (2) Quantify Belize's xaté resource base
- (3) Provide data on the effects of harvesting on wild xaté populations
- (4) Determine sustainable yields of xaté leaves and seeds
- (5) Develop a Management Plan for the Chiquibul Forest Reserve
- (6) Assess the genetic status of xaté to determine the danger of depletion of genetic variation and to assess the potential for genetic markers to underpin a trade verification scheme
- (7) Investigate the potential to cultivate xaté in different silvi-agricultural systems & improve public and farmer awareness of xaté
- (8) Publish a user-friendly palm guide for use in resource assessment.

The remainder of this poster provides data related to the resource inventory component of this project

METHODS

128 plots sized 20 x 20m were established in the Chiquibul Forest Reserve (CFR), an area of 147,821 acres adjacent to the Guatemalan border. A systematic sampling strategy was followed, with all vegetation types, altitudinal levels and topographies covered. Data collected included species present (all *Chamaedorea* species were recorded although only data for fishtail are presented here), height, stem length, leaf length, number of leaves, number of 'commercial' and cut leaves, and reproductive status. In addition, site characteristics were collected, including information on slopes, canopy cover, and substrate. Sampling is on-going within the CFR, and has now been amplified to other reserves within Belize.



The Chiquibul forest reserve and site localities

RESULTS

4,513 *Chamaedorea* palms were recorded comprising four species: *C. oblongata* (54% of total), *C. ernesti-augustii* (23.6%), *C. tepejilote* (8.5%) and *C. neurochlamys* (13.9%).

Only the data for fishtail are presented below.

Abundance

- 31 plots (24%) out of the 128 contained no fishtail
- Average number of fishtail individuals per 20 x 20 m plot = 8.3
- Highest amount of fishtail found in any 20 x 20 m plot = 84

Commercial leaves

- The average number of high quality leaves per 20 x 20 m plot = 4.5
- The highest recorded number of high quality leaves per 20 x 20 m plot = 44
- Only 5 plots (3.9%) had more than 20 high quality leaves per 20 x 20 m plot

Exploitation

- Only 18 plots (18.5%) out of those which contained fishtail (97 out of a total of 128 plots) showed no signs of harvesting.
- In plots where no harvesting occurred, the average number of leaves per fishtail plant = 5.7
- In plots where there has been harvesting, the average number of leaves per fishtail plant = 3.2

DISCUSSION

Detailed analyses have yet to be completed relating Belizean *Chamaedorea* distributions and abundances to forest type and topography. However, the initial results of this work are already providing the basic building blocks from which a sustainable xaté management plan for the Chiquibul Forest Reserve (CFR) is being built. What is clear is that current unregulated activities are threatening the long term sustainability of a Belizean wild-harvested xaté industry. An estimate of the value of fishtail leaf already illegally collected from the CFR is ca. US\$500,000 (at the 'harvesting' level, assuming that 100 leaves are sold for US\$1.50, the average price gained by a xatero in 2004. Export figures will be considerably higher). This figure is based on counting the number of cut petioles. Based on abundance data and an estimated leaf turnover rate of ca. 2 leaves/year (see below), the potential annual income per hectare of a sustainable harvest (at the harvesting level) is unlikely to be any higher than US\$1.00/hectare. This figure assumes that only half of the palms' new leaves are harvested each year. However, data is needed to elucidate the impact of such a harvest on fishtail reproductive capacity and population health. This research project will continue until April 2007.



Confiscated bundles of illegally collected fishtail leaves

RELATED RESEARCH

Two other ecological research projects are being conducted under this Darwin Initiative programme. To provide data on fishtail growth 50 permanent plots have been established in the Chiquibul Reserve by Nick Wicks (formerly NHM and now based at the Ya'axche Conservation Trust, Belize). These were revisited after a year and calculations made for leaf turnover. Fishtail growth rates are slow with average leaf turnover rates calculated at 1.56 (± 0.66) new leaves per plant per year. The impact of leaf harvesting on palm health and fecundity has been assessed by Holly Porter Morgan (New York Botanical Garden) who has established five 20 x 20m plots where contrasting harvesting regimes have been applied. Initial data from this research indicate that mortality of *C. ernesti-augustii* increases with harvesting, and that reproductive capacity decreases.



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