



## *Chamaedorea alternans* Wendl.

**Status: Currently not internationally listed, listed as threatened in Mexico**

### Common name

Pacaya.

### Natural range

*Chamaedorea alternans* is endemic to the remaining forests of Veracruz, Mexico. These forests mark the northern limit of the tropical rainforest ecosystem and are floristically interesting due to the combination of elements from Caribbean, Central American, and mainland Mexican floras within a relatively restricted geographic area. This species is thought to be restricted to the Los Tuxtlas biosphere reserve, which includes various protected areas in the San Martín Tuxtla region of coastal Veracruz, including the Los Tuxtlas Biological Station. Detailed distributional data has yet to be collected, and much of the surrounding area has not been surveyed for this species. The Uxpanapa-Chimalapa region of Oaxaca, the northern mountain range of Chiapas and the southern range in Tabasco may all be possible new range extensions for this species if carefully surveyed.

### Recognition characteristics

*Chamaedorea alternans* is sympatric in the Los Tuxtlas region with seven other *Chamaedorea* species, *C. tepejilote*, *C. elatior*, *C. ernestii-augusti*, and *C. oblongata*, *C. pinnatifrons*, *C. elegans* and *C. woodsonia*, making correct taxonomic distinction somewhat difficult for an untrained eye, especially when only vegetative characters are at hand or when examining herbarium vouchers. *Chamaedorea alternans* is distinguished by its white-margined leaf sheaths which display distinct venation, whereas most other *Chamaedorea* species have green leaf sheaths that lack obvious venation. *Chamaedorea alternans* is a member of the subgenus *Stephanostachys* based both on traditional morphological studies and more modern molecular phylogenies. This species has a solitary life form and grows to approximately three meters. *Chamaedorea alternans* has multiple inflorescences per node, and the rachillae are bright orange.

### Natural history

Common throughout its very limited distribution, this species is represented by very few well-annotated collections in herbaria which include even less information about its natural history. Potential ecological differentiation has been identified for this species at the Los Tuxtlas Biological Station as it appears to prefer deeper soils with less exposed rock. Pollination has been studied in other species of *Chamaedorea* with results generally pointing towards anemophily (wind pollination). Seed dispersers have not been well characterized for *Chamaedorea*, although their black fruits on orange colored rachillae probably serve as an attractant to potential dispersers such as birds or other small mammals.

### Threats to survival

*Chamaedorea alternans* is included among the *Chamaedoreas* whose leaves are collected and sold to the international floral industry, but it is not harvested as heavily as some of its congeners. The

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greatest pressure on this species is loss of populations to deforestation. Although it is common in the Los Tuxtlas Biological Station, it is not thought to exist outside this area of 640 hectares, putting the species at extreme risk. The conversion of land from forest to agricultural and ranching areas has also caused loss of habitat, pollinators, and dispersers.

### **Current Conservation Measures**

*Chamaedorea alternans* is distributed in protected lands included in the Los Tuxtlas Biosphere Reserve. Besides being currently listed as a threatened species in Mexico and distributed primarily in protected forest, no other conservation efforts are known. Healthy *ex situ* collections exist in various botanical gardens and private collections around the world.

### **Additional Necessary Conservation Actions**

Genetic analysis of remaining populations would aid in their conservation and management. Molecular markers such as microsatellites can be used to compare populations to examine genetic diversity and health of the species. Other population genetic variables such as inbreeding and genetic distance between populations may assist systematists and government organizations to assess risk of genetic health to native populations. Morphological data should be measured for this species, especially since its recognition as distinct from *C. tepejilote*. A detailed distributional study should also be undertaken to insure that populations truly are endemic to Los Tuxtlas and no other viable populations are present in other areas in Mexico. Additionally, further ecological research is needed to understand the pollination and dispersal of this species, which can lead to better assessment of the evolutionary history of the genus.

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### Scientific Contributors

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*Chamaedorea alternans*. Multiple inflorescences per node.



*Chamaedorea alternans*. White-margined leaf sheaths with distinct venation.