

## Impacts of *Cycas circinalis* L. Leaf Harvest on Leaf Production: Implications for Conservation

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*Cycas circinalis* L. is a cycad endemic to tropical wet forests in the Western Ghats region of India. Leaves, fruit and pith of the cycad are heavily harvested within Tamil Nadu, with leaves sold to the floriculture industry and used locally. The species is considered critically endangered within Tamil Nadu, and reports exist of local extirpation due to overharvest.

Previous research has shown that leaf harvest leads to higher adult mortality and lower recruitment. But little is known about the phenology of the species and the impacts of leaf harvest. This study aims to 1) document leafing and fruiting phenology of the plant, 2) assess the impacts of leaf harvest, and 3) identify strategies to reduce the impacts of leaf harvest. Understanding the relationship between leaf harvest and plant growth and reproduction is important to conserving this endemic species.

Growth, reproduction, leaf production and harvest were monitored monthly over one year in 33 individuals across 4 populations subject to varying levels of leaf harvest. We find a significant positive correlation between the frequency of leaf harvest and frequency of leaf production. This suggests that leaf harvest may stimulate leaf production, at least over the short term. However, leaf harvest exceeded production during the study period in two populations, and observed reproduction was low. Further research is needed to determine annual sustainable rates of harvest. Conservation of this species will likely require multiple strategies including planting inside and outside of forests, and encouraging alternatives within the floriculture industry.

**Keywords:** *Cycas circinalis* L., NTFP Harvest, Sustainable Harvest, Conservation

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