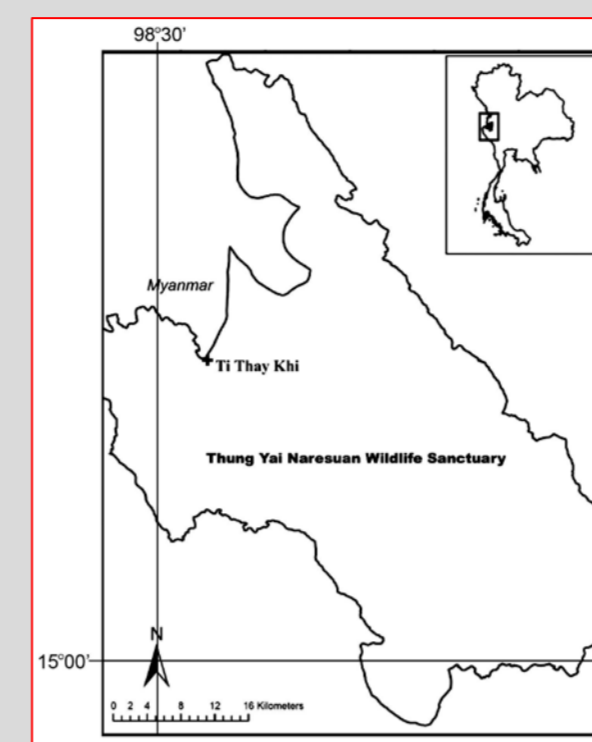


# Spatial partitioning between bamboo and trees in tropical deciduous forest, western Thailand

## Introduction

- Bamboo is common, often dominant, in understory of tropical deciduous forest and can affect tree regeneration.
- This study examined the spatial partitioning between trees and bamboo in mixed deciduous forest.
- Deciduous forest is common in Southeast Asia but has received far less research attention than evergreen forest types.



Location of 1 ha plot (Ti Thay Khi), 700 m elev. in Thungyai Naresuan Wildlife Sanctuary, western Thailand.

Disturbances include periodic fire, and occasional browsing by domestic water buffalo and native ungulates.



## Tree composition and structure

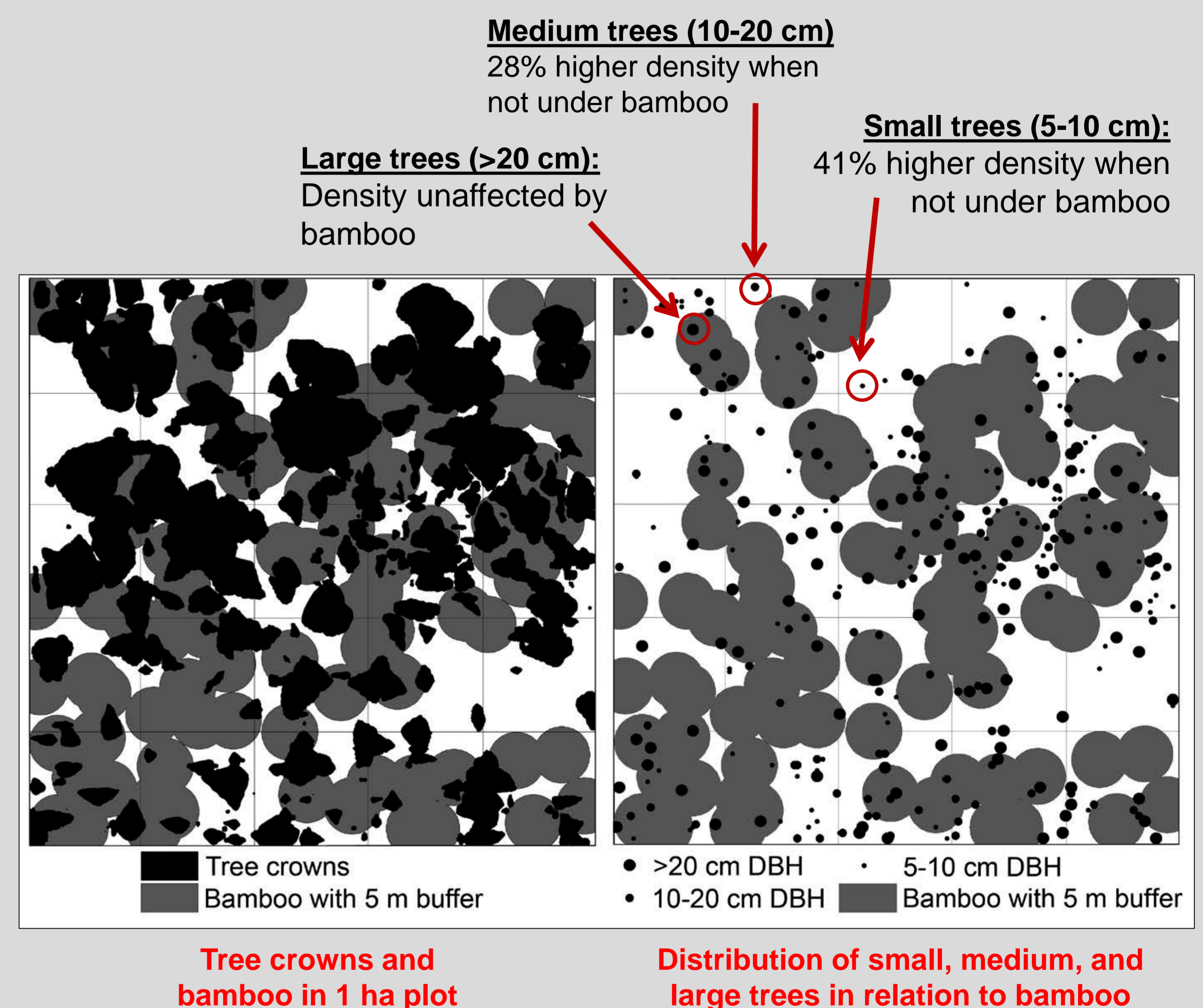
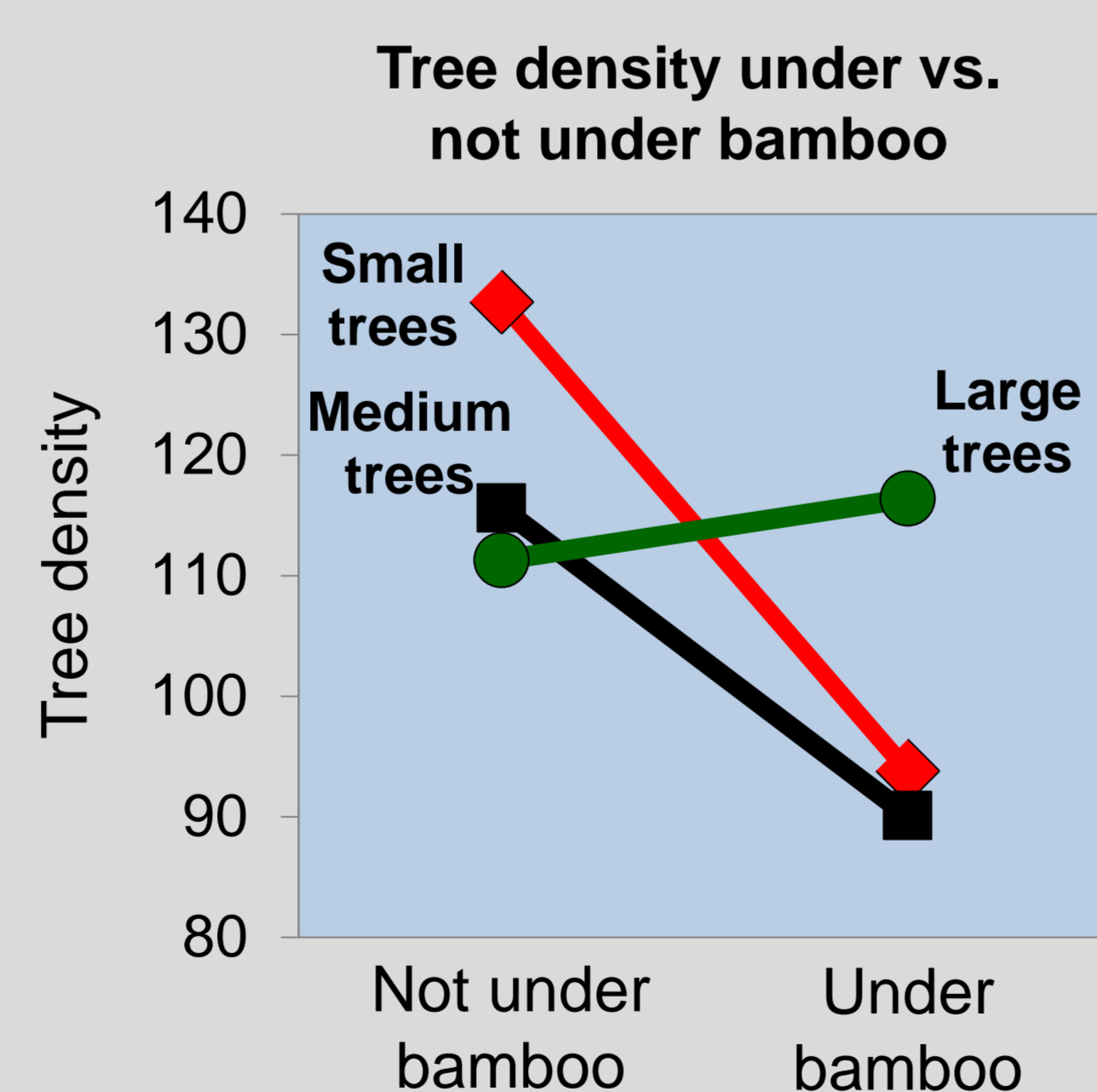
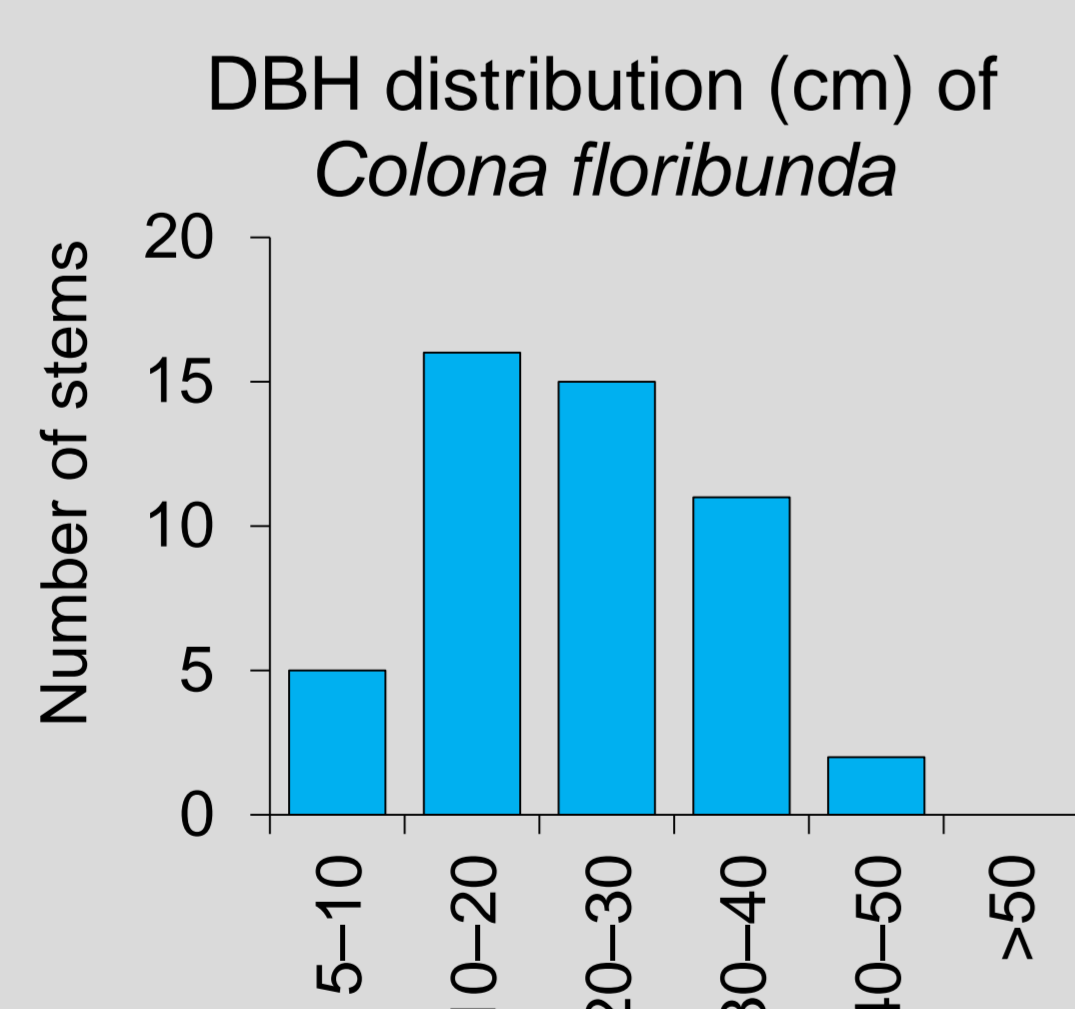
- Tree density (>5 cm dbh): 343 /ha
  - Basal area: 18.5 m<sup>2</sup> /ha
  - 60 tree species
  - 2 bamboo species
- The bamboo *Gigantochloa nigrociliata*, with 84 clumps, was twice as abundant as any tree species

### Most abundant trees:

- Colona floribunda*, Tiliaceae (49 trees)
- Wendlandia scabra*, Rubiaceae (31)
- Castanopsis tribuloides*, Fagaceae (26)
- Schima wallichii*, Theaceae (25)
- Eurya acuminata*, Theaceae (23)
- Microcos paniculata*, Tiliaceae (17)

## Effect of bamboo on tree distribution and abundance

- The density of small trees (<10 cm) and medium-sized trees (10-20 cm) was significantly lower under bamboo canopy (map and graph below).
- The effect of bamboo was even greater in terms of basal area—tree basal area (all sizes) was 60% lower under bamboo.
- The hump-shaped size class distribution of *Colona floribunda*, (the most abundant tree in the plot), suggests a single cohort established after disturbance, roughly 30-40 years ago. This coincides with the history of bamboo flowering and death at the site.



## Conclusions

- Bamboo appeared to suppress tree regeneration, with spatial distribution of smaller trees most heavily affected.
- Tree regeneration might be largely restricted to periods of bamboo death, which occurs in 20-40 year cycles.
- Periodic bamboo death probably maintains a dynamic tension between tree dominance and bamboo dominance in this ecosystem.

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