

# Agroforestry and biodiversity

## Reference 10

Najera, A; Simonetti, JA. 2010 Enhancing Avifauna in Commercial Plantations. *Conservation Biology* 24: 319–324. doi: 10.1111/j.1523-1739.2009.01350.x

## Background and objective

Plantations with a well developed understory or multiple vegetation strata ought to support more species than plantations that are structurally simple. To assess the responses of bird abundance and richness to habitat complexity in forests and structurally complex and simplified plantations. Here we focus on complex plantations (agroforestry).

## Search strategy and selection criteria

Database: ISI Web of Knowledge from January 2003 to May 2009. Search of literature that correlated bird species diversity with plantations with the terms plantation\* + bird\*. They selected only articles that compared bird richness or abundance between natural habitats and plantations with different structural complexity.

## Data and analysis

Assessment of bird responses at the assemblage level in all types of plantations regardless of the commodity cultivated. For each case, they registered how the bird assemblage responded to structural complexity within the plantation, in terms of increases or decreases in mean and total richness and abundance. To evaluate the consistency of the responses, data were analyzed with a sign test both for the plantation–plantation and for the forest–plantation responses. Increases in bird richness or abundance in more complex habitats were regarded as a positive response.

Number of papers	Population	Intervention	Comparator	Outcome	Quality score
286	Forest and tree plantations with different structural complexity.	Simple plantations (with thinned or cleared undergrowth, scarce or no shrub cover, or single-species canopy cover) and Complex plantations (multiple vegetation strata, dense undergrowth, abundant scrub, or multispecies canopy cover).	Natural forest.	Bird species richness and abundance differences between forest and plantations	50%

## Results

- Bird richness was significantly higher in natural forests than in tree plantations.
- Bird abundance in natural forests and tree plantations did not differ
- Bird richness and abundance were significantly higher in structurally complex plantations than in structurally simple ones.
- In plantations insectivorous birds were 0.6 times less frequent than in forests, whereas frugivores and granivores were 1.3 and 3.3 times more common in plantations, respectively. The reduction in insectivore abundance could be explained by managerial practices (pestcontrol agrochemicals).
- NA

## Factors influencing effect sizes

Habitat heterogeneity could provide shelter and feeding resources for generalist species and increase species number.

## Conclusion

Structural complexity within plantations enhanced the avifauna assemblage and promoted increased bird species richness and abundance. Management practices that allow or promote structural complexity and understory growth should be promoted to aid in conserving biodiversity.