



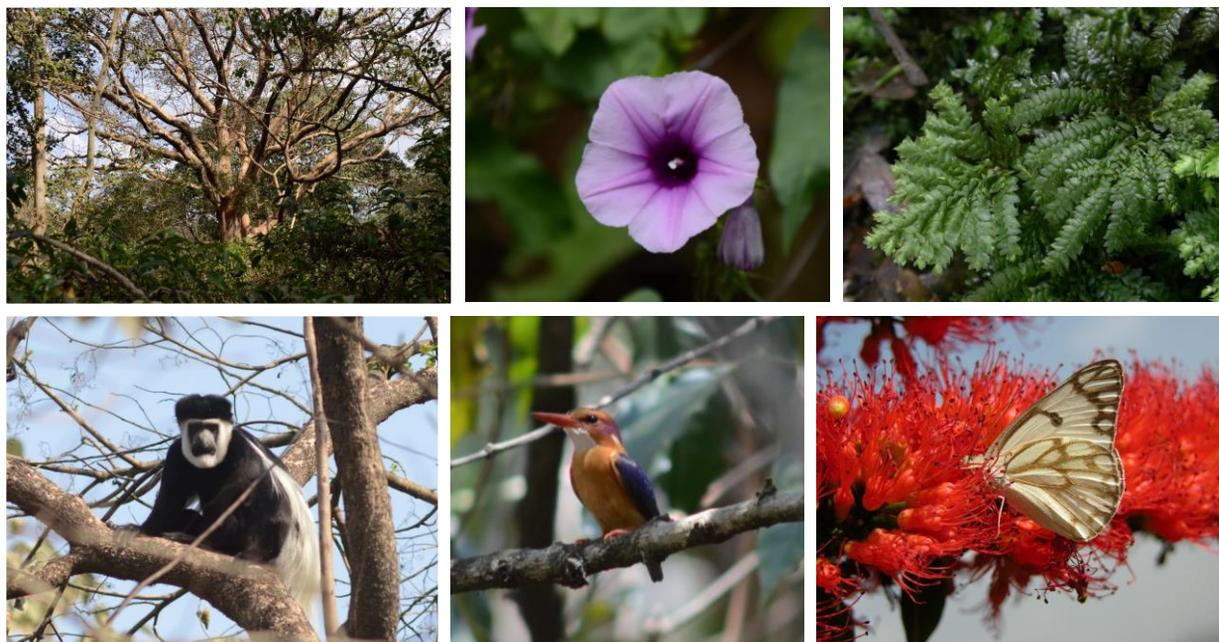
# Is it possible to conserve biodiversity and produce coffee on the same farm?

When coffee is grown under a dense cover of different shade tree species it creates a perfect environment for a wide array of birds, flowers and insects. However, if the farmer wants to intensify the management to get higher yields, the quality of the site as a home for plants and animals might decline. We have studied this potential conflict between different goals: maintaining or improving biodiversity or increasing the coffee yield. We found that the forest sites with very low coffee yield have the highest values for wild plants. This means that intensification of the management of forest coffee will lead to loss of biodiversity. However, in sites which give a bit higher yields it seems like there could be possibilities for both increasing yields and biodiversity, and we encourage farmers to experiment with ways of improving yield and biodiversity at the same time.

## *Possible conflicting goals*

In Ethiopia, coffee is generally grown under a canopy of indigenous trees. The mere presence of trees is positive for many other species. For example if you look up in the tree crown you can find flowers hanging from the branches and in early mornings you will hear a variety of singing birds and beeping insects (Fig 1). For this reason, shade grown coffee farms are an important place for biodiversity in the landscape. However, the coffee producer might generally be more concerned about getting a revenue from his or her coffee than how many

birds or flowers there are. Coffee management also varies a lot among coffee growers – some pick wild coffee in the deep forests, others manage the coffee that they have inherited since many generations in a traditional way, while yet others try to maximize the yield by using agricultural inputs and investing a lot of time on their sites. This variation in management also affects the structure of the place including the canopy cover and composition of shade trees, which likely also will affect the composition of the biodiversity.



*Fig 1. Shade grown coffee is home to a variety of plants and animals. We focused on trees, herbs and bryophytes (first row).*

### Yield and biodiversity in 60 sites

We focused on 60 sites with coffee production in the Gera and Gomma woredas in Jimma zone in SW Ethiopia. In each site we studied the trees, shrubs, herbs (including those high up in the trees) and bryophytes (the tiny green stuff growing on stems and branches). The study included all types of coffee management intensities, ranging from forest coffee to commercial plantations. In each site we also collected data on coffee yield during three years.

### What did we find?

The highest number of species of trees occurred in the sites with lowest coffee yield, but among the sites with a medium to high yield there was no pattern of a decline in richness with increasing yield (Fig. 2). Species richness of herbs and bryophytes did not decline with increasing yield. However, the species composition of the herbs and bryophytes differed between the sites with the lowest yields and those with intermediate to high yields.

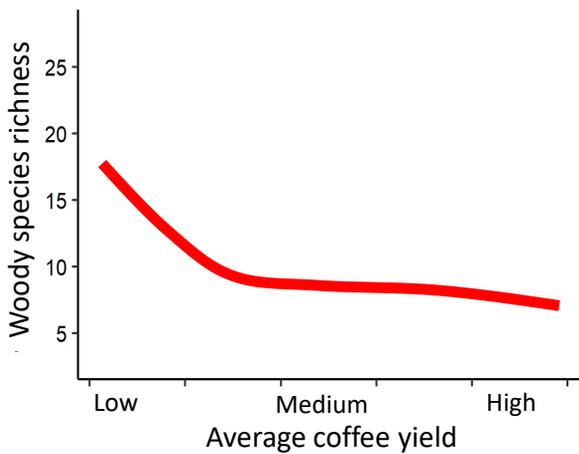


Fig 2. The number of tree and shrub species is very high in the sites with lowest coffee yield. Sites with intermediate to high yield have a lower number of trees and shrubs.

### Conclusion, recommendations and further unanswered questions

From our study it is obvious that the sites with lowest yield have a unique biodiversity. This also means that intensifying the management of those sites would reduce biodiversity values within the landscape. However, within the range of yield values outside this very low-yielding group there seem to be opportunities to combine a high yield and moderate levels of biodiversity.

Here it could be worth thinking of opportunities of how to simultaneously increase biodiversity values and the revenues for the coffee producers. Yield could perhaps be increased by better management, including pruning. Revenues could increase if farmers got certified by organizations promoting sustainable production systems. Biodiversity could be increased by increasing the number of shade tree species and allowing some parts of the farm to have a more dense canopy.



Fig 3. At intermediate to high yield systems there might be opportunities to both increase coffee yields and improve biodiversity. We encourage everyone to strive for that in areas outside the lowest yielding forest system.

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