

Project Updates: May 2014

Theme: *The patterns of seed rain and predispersal fruit predation by birds*

Fieldwork was conducted in April 2014 with the aims to install seed trap experiments on the selected coffee stems and to quantify seed rain and predispersal fruit predation. The second activity involved monitoring and data collection from seed formation experiments which commenced in November 2013 and is intended to halt when fruit dispersal ends in June or July 2014. During the 10-day field work, we managed to bag coffee stems ($n = 16$) each with two experimental treatments and one control. The distribution of these experiments among the four sampling sites was strongly skewed towards one site, however. This situation was dictated by the only remaining coffee stems having fruits, as we observed several stems across Kihansi station, lower and upper wetland sites with extremely low number of green fruits consistent with the previous observations reported for these sites in June 2013 (see June project updates) when this project took off. Consequently the number of experiments (Fig 1a&b) were Mhalala



Fig 1 a&b: Bagging experiment and installed seed trap in Kihansi forest

($n = 10$ stems), upper wetland ($n = 3$), lower wetland ($n = 2$) and Kihansi station ($n = 1$). For each coffee stem, three branches were selected for experimental treatments. The first branch was bagged with green cloth, the second branch with green net and third branch was left free, as control. The number of fruits available in each branch was counted and recorded in a data sheet for subsequent monitoring of seed removal by birds. Additionally, we conducted two bird observations in the Kihansi station and Upper wetland sites for 4 hours (2 hours at each site) through random walks on trails to record bird species potentially preying the ripening coffee fruits.



Fig 2. Plant infestation by aphids

In the second monitoring activity, we searched for remaining fruits on the coffee stems ($n = 92$) from the four sites and quantified them. Premature fruit fall was high at Kihansi station, upper and lower wetlands sites, with more than 90% of the coffee stems having lost all the fruits reportedly available in March. It appears also that

premature fruit fall is highly caused by increased aphid infestation (Fig 2), stink bug pests (Fig 3) and yeast spot disease (Fig 4). We will continue monitoring the installed experiments



Fig 4. Yeast spot disease destroying fruits and plant leaves

and conduct more field observations to quantify effects of these factors on the population of *Coffea kihansiensis* in the area. Our next work will also attempt to harvest ripe coffee fruits to conduct post-dispersal seed predation and germination experiments in the Kihansi gorge forest.



Fig 3. Green stink bug on coffee fruit with a fruit-detached stalk.