Ver. 07.02.2023 (previous version: 30.8.2018)

**HOW TO HARVEST PLOTS?**

**Plant** **biomass**

Plant biomass sampling should be combined with insect sampling. After you cut off some of the vegetation, cover it with mosquito netting, knock down the insects with insecticide, and collect all the specimens, you should conduct a simplified biomass sampling.

Separate each plant by species and weigh stems and leaves together to determine total biomass. Leaves don't need to be separated from the stem. It's not necessary to measure the DBH of each stem. Record each species and its total weight (leaves + stems) on the data sheet [simplified form without separate boxes for each dbh]. Don't throw the leaves away. You'll need them for the leaf frame and leaf disks.

**COLLECT THE FOLLOWING** TRAIT IN THE FIELD FOR EACH PLANT SPECIES:

1. **Life form**: tree, shrub, herb, fern etc...

2. **Pubescence**: 0 – no hairs, 1 – some hairs, 2 – abundant hairs

3. **Latex** (sap): 0 – no latex, 1 – latex present.

**Insects**

# General collection

We simplify the way you'll collect insects. There is no need to collect insects separately from species or individual trees. The point here is to collect insect communities at the plot level. This means that entire sections of mixed vegetation can be cut for insect collection. However, it's important to select the part so that when cutting, the rest of the vegetation isn't disturbed too much.

Cut the tree/lower vegetation close to the ground. Spray the trapped insects with MORTEIN and collect all downed insects after a few minutes. Collect insects from each mosquito net into a container labeled only with a plot code and vial counter. Insects should be collected in containers filled with 70% ethanol. Place all containers in a separate zip-lock container that should be labeled with the plot code and date.

# Gallers

Look for any patterns on the leaves formed by mine insects and gallers. Collect these leaves in a separate zip-lock bag and label them with the code of the box from which they were collected. In the camp prepare each morpho species to be photographed. There should be a ruler attached to the side of the photo and a completed label with the plot code, plant species, date, morpho species number for that plot, and the number of live and dead mines of the same species.

Place the mine, ruler, and label on a white board. Set the camera to MACRO mode and take one photo with flash and one without. You should take the photos during the day in good sunlight. You only need to take one photo of a particular morpho species and indicate its abundance on the label. You can see an example of a completed label below.

Plant code: OG3P1-MACAQU

Date: 15 April 2016

Mine/Gall: Mine Type 1

Dead mines: 12

Life mines: 0

**Leaf samples**

# Herbivory (leaf frame)

A leaf frame for feeding damage should be established for plant species whose total biomass on the plot is at least 80%. The code for the frame should include the plot code, the first 4 letters of the genus, and two letters of the species name: OG3P1-MACAQU.

Set up the camera and tripod so that the lens is just above the center of the board. The edges of the 50x50 cm square on the board should be visible on the screen and parallel to the edges of the screen.

Remove all the leaves from the Zip Lock. Prepare the new paper label for the frame based on the label from the box. Take random sheets from the leaf sample and line them up on the board until all leaves are used or the 50x50 cm square on the board is filled. For extra large leaves, you can cut off the leaf blade and place the pieces on the board. Don't use leaves that have been damaged in any way other than by herbivores. For severely damaged leaves, place it as if it were an undamaged leaf. Choose a leaf of similar size to see how much space it'll take up. The leaves shouldn't overlap and should stay within the drawn 50x50 cm square and not cross the drawn line.

# Leaf disks (SLA)

After you have determined the weight of the leaves, take up to 20 leaf disks. Similar to the leaf frame, select only mature leaves that haven't been damaged in any other way than herbivory. If there isn't enough foliage for the leaf disks, don't worry. These can be collected from the same species on another plot. Place the collected leaf disk sample in a separate zip-lock bag filled with silica gel. Label the bag with a field code and the name of the plant species.

**Soil** **samples**

Put on latex gloves. At a given plot take 1 dm^3 of soil from the control and fungicide plots using a small shovel. Take a sample from the center of the plot and one from the center of each quarter quadrant of the box, as shown in the figure below. Spred the soil on a piece of stretch plastic through a sterilized sieve, mix the sample, and take 3 soil samples. One sample is approximately equal to one spoonful of soil. Place each sample in a separate tea bag. Staple the tea bag together and put it in a zip-lock bag filled with 100 g of fresh silica gel.

Label each bag with the location, garden number, plot type, date and the collector. The example code will look like this: W-G4-C-S1 (Wanang, garden number 4, control plot, first sample)