

Basic RAPELD Installation Protocol

MATERIALS LIST

GPS

Clinometer

Plastic string

Aluminium tubing for clinometer and target rod (Figure 1)

Compass and a cane (1.3m) to support compass

Alpha-numeric punch set (plus hammer).

10 meter measuring tape.

½" (brown) PVC tubes

Spool of aluminium tape for making labels. (Or you can buy pre-made tags.)

Telephone wire / galvanized wire



Figure 1: Clinometer and target rod

MAKING THE PICKETS



Figure 2: In a 250m survey plot, there will be 52 or more 50cm PVC pickets.

- 1) Cut the PVC tubing into 52x50cm sections. (Cut 26 aluminium tags.)
- 2) For the centerline pickets, make a hole at one end and attach an aluminium label or tag.
- 3) The tag for the first centreline picket (0) should include details about the location of the plot. The rest of the tags should be marked sequentially from 10 to 250.
- 4) Sometimes it may be necessary to increase the number of pickets and tags, so bring a few spares. (Pickets are also used to define one side of a movement corridor, but these do not require labelling.)
- 4) Make a point on the other end to facilitate pushing it into the ground.
- 5) Each metal plate must be made using aluminium coil and alpha-numeric marker game.
- 6) Attach the labels to the pickets using galvanized or telephone wire.

PLOT DESIGN

- 1) RAPELD plots are not square or rectangular as is generally used in surveys. Instead, they take into account the fact that topography is an important factor for determining the composition of the vegetation. The plot is therefore started from a point of known altitude which is kept constant throughout and thus follows a contour.
- 2) Plots are 250 m in length and although the width varies according to the group to be sampled, variations in altitude within the plot are kept to a minimum. This means that variations (due to altitude) in the soil, water level and so on are also kept to a minimum.
- 3) First, the central line of 25x10m straight segments is marked out with pickets. The width of each segment is then marked out according to the organism that is going to be sampled. A 1m wide corridor is marked out for the passage of researchers along the plot.

Where are permanent plots located?

The 250m long plots are systematically spread out along a grid or module with 1 km between each one. The first plot starts 500m from the start of the module or grid.

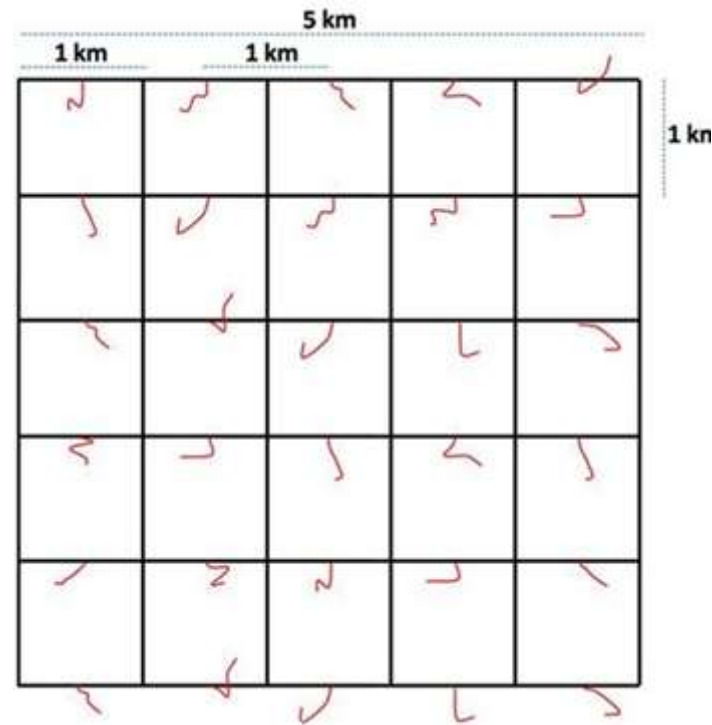


Figure 3. Example of a 5x5 km grid with RAPELD survey plots (in red).

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How to install RAPELD plots.

- 1) Laying out the central line of the plots has to be done by at least two people with the necessary equipment including a clinometer.
- 2) The central line follows the same contour as the picket on the main trail and is marked with a nylon string. It always consists of 10m long straight segments.

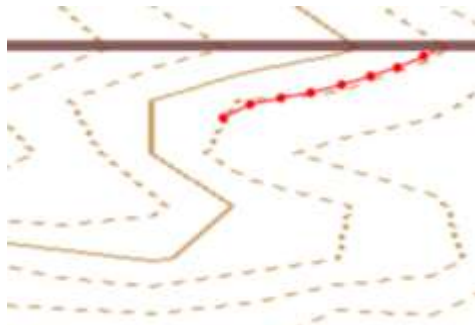


Figure 4. Survey plot central line following a contour with 10m long straight segments.

- 3) All the pickets must be 10m apart and on the same contour. Each picket should be geo-referenced where possible. Geo-referencing must take place at least every 50m.

- 4) The beginning of the survey plot is 10m from the picket on the main trail and at the same altitude. This 10m is not included in the total for the survey. This avoids any effect on the survey results of the edge of the trail.

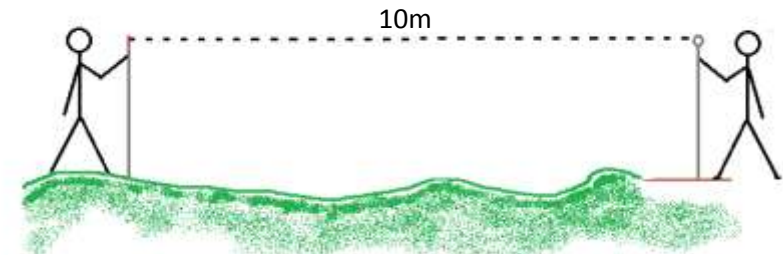


Figure 5. Ensure that the first picket of the survey trail is on the same contour.

- 5) Having arrived at the beginning of where you want to install the survey plot, (a 500m marker on the grid or module) one person, (the observer) stands by the picket on the main trail and uses a clinometer to guide the second person, (the trail marker) to a spot 10m away which is at the same level on the right-hand side of the main trail.



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- 6) The trail marker holds the pole with the target for the clinometer.
It may be necessary to move the marker from side to side, or even to the other side of the trail to locate a point on the same contour.
- 7) Check the estimated distance with the tape and confirm that the point still lies on the same contour.
- 8) Having confirmed the location of the beginning of the plot, mark it with a picket and attach a tag showing "0 m". Attach string from this "0" picket to the picket on the main trail. The initial picket should have information relating to its location on the main module.
- 9) The observer then moves to the new picket and the trail marker moves along the contour to repeat the process until a plot measuring 250m has been completed.
- 10) During the installation of the plot it is necessary to take and record the compass bearings from one picket to the next.

TAKING BEARINGS

- 1) The observer positions the compass on the support where first picket is located and the trail marker hold the target rod where the second picket is located.
- 2) Ensure that the compass is level and that both the target rod and compass support are vertical and not affected by nearby metal objects.
- 3) Look down the compass towards the target and take the bearing indicated by the needle.
- 4) Record the data.

Access/Movement Corridor

- 1) When the center line of the plot has been completed, an access trail to allow researchers to move up and down the trail needs to be established. This will ensure that there is no disturbance of the survey by trampling while measurements are being taken.
- 2) This corridor is 1m wide and is created on the LEFT of the centerline while returning to the start after the centerline has been completed.

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Note that from the start of the trail, the corridor will be on the RIGHT of the centerline.

- 3) The corridor is marked by pickets and string is attached between each one. When completed there will be two parallel lines of pickets joined together by string.
- 4) After this corridor has been marked out, the vegetation inside it can be cut down. Don't cut lianas, epiphytes or plants more than 1 cm in diameter (at chest height). Leave the cut material lying in the corridor.

SOME PROBLEMS THAT MAY OCCUR DURING THE INSTALLATION.

- 1) **CROSSING THE MAIN TRAIL.** Depending on the topography the centerline may cross the main trail of the module. Since the vegetation will have been altered, this section cannot be considered as an effective part of the survey. 10m sections that are inconsistent should be discarded and added to the end of the plot. See figure 6.
- 2) **ANGLES LESS THAN OR EQUAL TO 70°:** Contour lines are not always more or less straight and may significantly double back on themselves. In order to avoid excessive overlapping the second

segment of the angle should be discarded and added on to the end of the plot as shown in Figure 6.

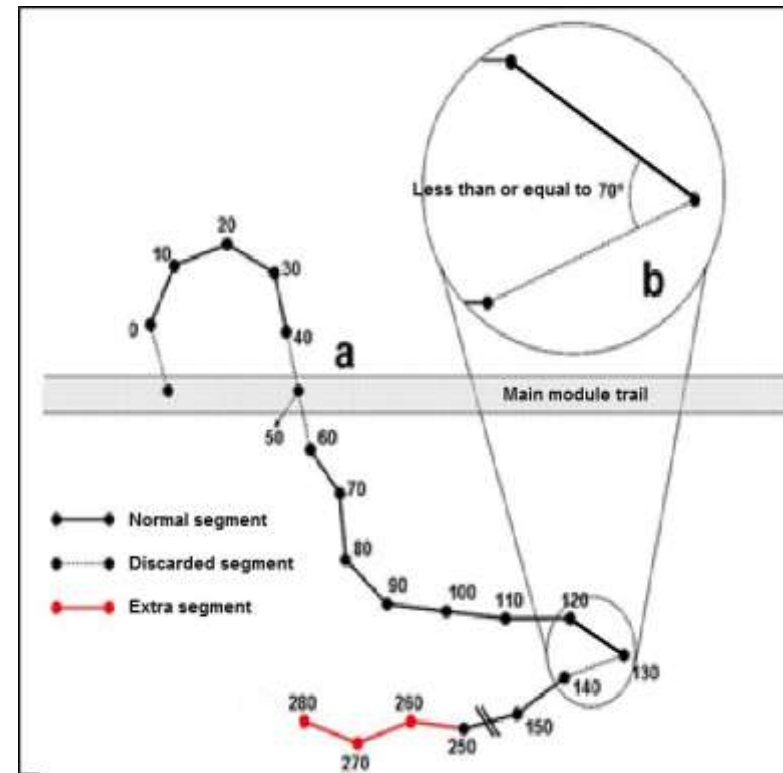


Figure 6: a. Plot crosses main trail

b. Angle between segments less than or equal to 70°