



# Protocol for creating trails for grids and modules

## MATERIALS

- GPS
- Compass
- 50m measuring tape.
- Machete
- File
- ½ " PVC tubing, 1m lengths.
- Saw
- Aluminium labeling tags.
- Telephone wire
- Set of Alpha-numeric stamps.
- Hammer

## Location of Trail

- 1) The location of the grid or RAPELD module should reflect the questions that the research wants to answer.
- 2) If the researcher wants to monitor the effect of human activities on the environment, the position of the grid or module should take this into account.
- 3) Choosing a location that contains a wide variety of landscapes is important if the research is about biodiversity.
- 4) The logistics of the site is also an important consideration. If there is no river or road access with 1km of the module or grid, it is unlikely that researchers will want to use it.

## RULES for opening grid or module trails.

1. No plant, tree or vine, with a stem diameter of more than 10cm may be cut.
2. It is not allowed to cut parts of trees or vines that are on the trail.
3. Any plants that are to be removed, must be cut close to the ground for safer walking along the trail.
4. It is not permitted to leave any type of rubbish along the trail.
5. No hunting.

ALL WORK ON THE CONSTRUCTION OF THE TRAIL SHOULD BE OBSERVED OR MONITORED BY A RESEARCHER OR OTHER RESPONSIBLE PERSON.

## Making the pickets

- 1) On a trail of 5km there will be 101 pickets. I.e., one every 50m.
- 2) The pickets are cut to a length of 1m.
- 3) One end of the picket has a hole for attaching a label. The other end should be pointed to make it easier to insert it into the ground.
- 4) The tags can be made from aluminium strip, or purchased pre-made from a forestry supplier. The information is stamped in place.

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- 5) The tags are tied to the pickets using telephone or galvanized wire.

## RECOMMENDATIONS

- 1) After selecting the appropriate location for the grid or module, it can be installed by a surveying company or by a surveyor and his team. Usually the team consists of the surveyor and 5 assistants.



Figure 1. A DGPS station.

- 2) Before starting, it is necessary to geo-reference the area of interest. We recommend a three point triangulation network using differential GPS (Figure 1). These points will be used for determining the bearing and starting point of the first trail and should be permanently set in concrete. (Figure 2.)



Figure 2. A permanent geo-reference point.

- 3) The bearing taken at the start of the trail must be used to determine the direction of the trail until the end. (Figure 3)

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Figure 3 Compass showing magnetic North and the bearing for the trail (marked in yellow).

- 4) To ensure that the bearing for the trail remains constant, the “observer” stands at the end of the trail and instructs the “trail marker” where to stand with their orange coloured rod.

Figure 4 Taking a bearing.



Figure 5. The trail marker with orange pole.

- 5) Next, someone will start to cut a straight trail along the line indicated from the observer to the trail marker.

Figure 6 – Cutting a trail to the next marker.



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- 6) The observer moves to where the trail marker is standing and indicates to the trail marker where to stand for the subsequent section of the trail to be opened. The distances should be relatively short in order that the marker is easy to see.
- 7) The trails need to be straight and 1m wide. If it is necessary to avoid a tree you must make an angled trail around it and return to the main trail on the same bearing as soon as possible.
- 8) After you have gone around an obstacle, it is recommended that you take a sighting back along the trail to confirm that it continues in a straight line.
- 9) At every 50m picket the team must measure the altitude and GPS coordinates.
- 10) The distance between pickets must be measured with a taut, horizontal, 50m tape. If the trail is hilly or rugged, a series of shorter distances can be measured until a total of 50m is obtained. (If the tape is not horizontal, the distance measured will be shorter than that obtained by looking at a 2 dimensional map.)
- 11) At each 50m point, the trail is marked by a labelled picket indicating the name of the trail and the distance along it.



Figure 7- Measuring the distance along a recently cut trail.



Figure 8- 1m PVC tube with aluminium label showing the location along the trail. This label has been attached using a rivet.