

Checklist for materials and equipment

1 For measuring the position of plots and of the corner points of the summit area:

- 2 • a **compass**
- 3 • a **clinometer** or **electronic spirit level** (e.g. Swiss Level)
- 4 • **two rolls of flexible 50-m measuring tapes**
- 5 • **two 3-m measuring tapes**

6 Optional (in addition):

- 7 • **altimeter**
- 8 • **Differential GPS** with sub-metre accuracy

9 For delimiting the *1m x 1m quadrats*:

- 10 • **four sampling grids of 3m x 3m** with 1m x 1m cell size (per *target region*; see Fig. AI.1 in Annex I).
- 11 • **about hundred pieces of ordinary 100 mm nails**
- 12 • **thin wire**
- 13 • **adhesive tapes** (for repairing grids)

14 For delimiting the *summit area sections*:

- 15 • **two rolls with a thin string** (each with about **500 m** length; can be shorter for steeper summits)
- 16 • **four rolls** with the same type of **string** (about **100 m** each; can be shorter for steeper summits).

17 For permanent marking:

- 18 • about **80 short aluminium tubes** per summit (0.8 to 1 cm in diameter, in various lengths between 10 and 25 cm) or other appropriate material
- 19 • **durable white or yellow paint** (as an option to the aluminium tubes)
- 20 • a **small chisel (or cold cutter)**

22 For photo documentation:

- 23 • a **24x36mm Single Lens Reflex camera** with lenses of **28mm** and **50mm** focal length; as an alternative, a digital camera is recommended
- 24 • **colour film material** (colour negative film is recommended, optional in addition slide film; about 100 exposures per summit)
- 25 • a **small blackboard** (e.g. 15 x 20 cm)
- 26 • **chalk** and a **small sponge** or something else to clean the blackboard
- 27 • a **signal stick or rod** (1.5 to 2 m)

30 For the recording procedures:

- 31 • **sampling forms** (see Annex II)
- 32 • **writing material** (including pencil for rainy conditions)
- 33 • **compass** (as above)
- 34 • **clinometer or electronic spirit level** (as above)
- 35 • **wooden (or aluminium) grid frame of 1m x 1m** for frequency counts (see Fig. AI.2 in Annex I)
- 36 • **templates for cover estimations** (see Fig. AI.3a & b in Annex I)

37 For temperature measurements:

- 38 • **miniature temperature datalogger(s)** (preferably Stowaway Tidbit); at least one, better two or four such devices per summit (see chapter 8.4.3).
- 39 • **permanent markers** (for marking the loggers with code numbers)
- 40 • **adhesive tape** (for protecting loggers)
- 41

UPDATE (Nov. 2008) to GLORIA Field Manual, ANNEX I,

Checklist for materials and equipment

Annotations refer to line numbers on previous page!

Line 4: flexible measuring tapes: 2 rolls of 50 m; PLUS 2 rolls of at least 15 m

Line 8: differential GPS; or 'normal' standard GPS

Line 22-26, Photo documentation: principally, a good and high resolution photo documentation has turned out to be vital in GLORIA! As digital cameras became standard now, these are preferred. IF ANY POSSIBLE, don't use pocket cameras but SLR (Single Lens Reflex) cameras, e.g., Canon EOS 400D (10 Megapixel) or comparable models. In order to make undistorted photos of 1m²-plots it is recommended to use a wide-angle lens with a minimum focal length of 11mm (e.g. 11-22mm). A good digital photo equipment providing high resolution images is a good investment!

Line 31: in addition to the standard forms, there is now a new additional form for the so called 'California quadrat' method.

Line 35, grid frames: (a) to facilitate teamwork, it is proper to have three such grid frames in the field

Line 35, grid frames: (b) mounting the frames onto the surface is sometimes difficult due to vegetation height, e.g., in paramo vegetation. A solution can be to lift the frame somewhat (but not to much!) up, parallel to the surface. For each frame, take 4 rods (e.g., of aluminium) of e.g. 0.5 m each with you. In the field, these rods can be mounted to the frame's cornerpoints (with tape or wire) to fix the uplifted frame. BEWARE: more than, lets say, 30 cm distance between frame and surface would bring too much noise into the record!!

37-39, temperate measurements: since mid 2008 we, preferably, do not use the Stoway Tidbits any longer, but instead a new type, GEOPRECISION M-Log5. Current standard are 4 loggers per summit.

After line 41: a small spade or other robust metal tool (e.g., a big stable knife) for digging into the soil, to bury the logger.