

## Photomonitoring

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Photomonitoring habitat recovery and reforestation at Cloudbridge in Costa Rica. This project, conceived and initiated by Kate Moss, a Canadian biologist, is intended to compile a photographic record of the habitat conditions at key locations on Cloudbridge. The sites include those undergoing deliberate reforestation (see the Reforestation section) and others where natural recuperation is occurring (see Forest Recovery in the Nature Notes). Similar photographs are taken at approximately 6 month intervals, and stored in a computer database that can be queried and viewed in several ways. The results may be interpreted at a later date, and can be linked to the observations recorded in the Biomonitoring study. The tables below list the key identifying features of the sites and the photographs. They are designed to be replicable. We are seeking volunteer researchers to continue with this project.



### Photomonitoring Guide

by John Tingerthal (based on the original by Kate Moss)

The photomonitoring program at Cloudbridge is designed to document the changes in the cloudforest and plantation areas of Cloudbridge. The photomonitoring can be useful in evaluating the effectiveness of tree planting as well as providing information on the changes in second growth and non-planted regions. Monitoring should be repeated twice a year, preferably in different seasons.

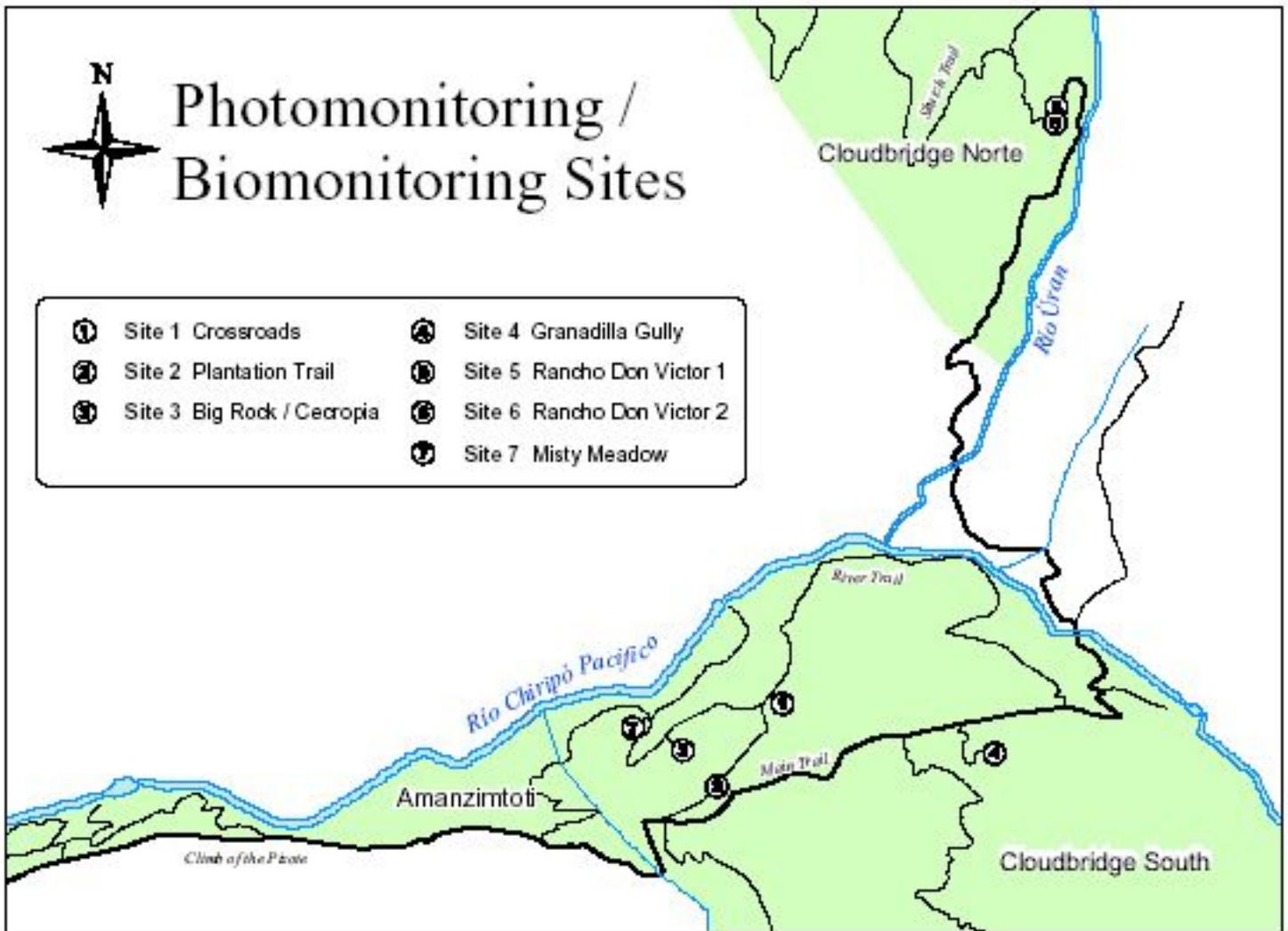
#### The Sites

At Cloudbridge there are currently seven different photomonitoring sites: three within the lower plantation; one above the main trail and one in the lower meadow in deforested areas; and two adjacent to Rancho Don Victor in a secondary growth area. Each site is marked by a numbered post which is used as a platform for the camera. Sites are shown on the photomonitoring map below.



# Photomonitoring / Biomonitoring Sites

- |                              |                              |
|------------------------------|------------------------------|
| ① Site 1 Crossroads          | ④ Site 4 Granadilla Gully    |
| ② Site 2 Plantation Trail    | ⑤ Site 5 Rancho Don Victor 1 |
| ③ Site 3 Big Rock / Cecropia | ⑥ Site 6 Rancho Don Victor 2 |
|                              | ⑦ Site 7 Misty Meadow        |



Reserva Cloudbridge

San Gerardo de Rivas P.Z.  
Costa Rica



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## Field Equipment Required

- Digital Camera (3.2 mpix min resolution) with extra batteries
- Photomonitoring binder (including site data, map and previous photos)
- Graduated measurement pole (3.5 meter with alternating 10 cm bands of contrasting color (white/orange with top of black band at meter marks)
- 10 meter (min) measuring tape
- Compass
- Field notebook
- Tools as necessary for post maintenance

## Method

Each successional photo should be as close to an exact duplicate of the original photo. It is necessary to take copies of the prior photos to the site to ensure consistent alignment. Use photo site data (bearing, camera angle, etc) as well as markings on the site post to assist in aligning photos.

Take photo at time of day and in weather conditions that produce images with the most contrast (avoid overly bright sun, fog or deep shadows).

Inspect post

Insure that post is solid, the top plate is flat and north indicator markings are properly aligned.

Measure height and compare with site data.

Repair and re-ink markings on pole as necessary.

Place the camera on the site post and align with previous photos.

Direction indicators for each photo have been marked on the post to assist in lining up the photo.

Hold compass away from site pole as the screws and nails may affect its accuracy.

Note that lens angle varies with terrain.

Using skylines, rocks and trees in the original photo to line the following photos is the easiest way to create a close duplicate. Do not rely on shrubs, grasses or other small plants as they are much more susceptible to change.

Plant or hold measurement pole at the given pole distance within the frame of the photo (usually 10 meters from the post). Avoid disturbing the biomonitoring quadrats found.

Take photo at highest possible resolution.

For the first few sites take multiple photos in each direction at slightly varying bearings and angles until comfort with good alignment is achieved. This will allow for selecting the best photo using the larger screen of a computer for comparison and may save return trips to the field.

To avoid confusion between different images while taking many photos in one day, take photos in sequence (1, 2, ...) and photograph the site pole before each set of photos (site pole is marked on the top with the site number and on the sides with the photo numbers and bearings).

## Digital Storage of Photos and Data

Each round of photomonitoring comprises a Photomonitoring Dataset, and both the photos and any new site condition data are stored on the Cloudbridge computer along with a backup on CD Rom. The instructions for storage and entry are provided to the photomonitoring volunteer. Researchers interested in the original photos and data may contact Cloudbridge.

Sample photos taken at some of the seven Sites are shown below.  
Photomonitoring Site 1 - West



Photomonitoring Site 2 - North



Photomonitoring Site 3 - looking west-northwest

