

## How to set out transect lines

Transect and quadrat positions can be re-located relatively easily using Total Station surveying equipment<sup>1</sup> or a GPS with real time correction giving an accuracy of <5 cm. If such equipment is not available, transects can be set out carefully using tape measures and a compass as follows:

### Equipment:

- Sighting compass
- 50m tape measure
- GPS if available
- Marker posts for the end of the transect or a means of marking existing features (*e.g.* paint or tape)
- 1.5 m long bamboo canes to mark out a line and 0.9 m long canes to mark sampling locations along it
- Metal plates to bury at known places along the line, if a metal detector is available

### Procedure:

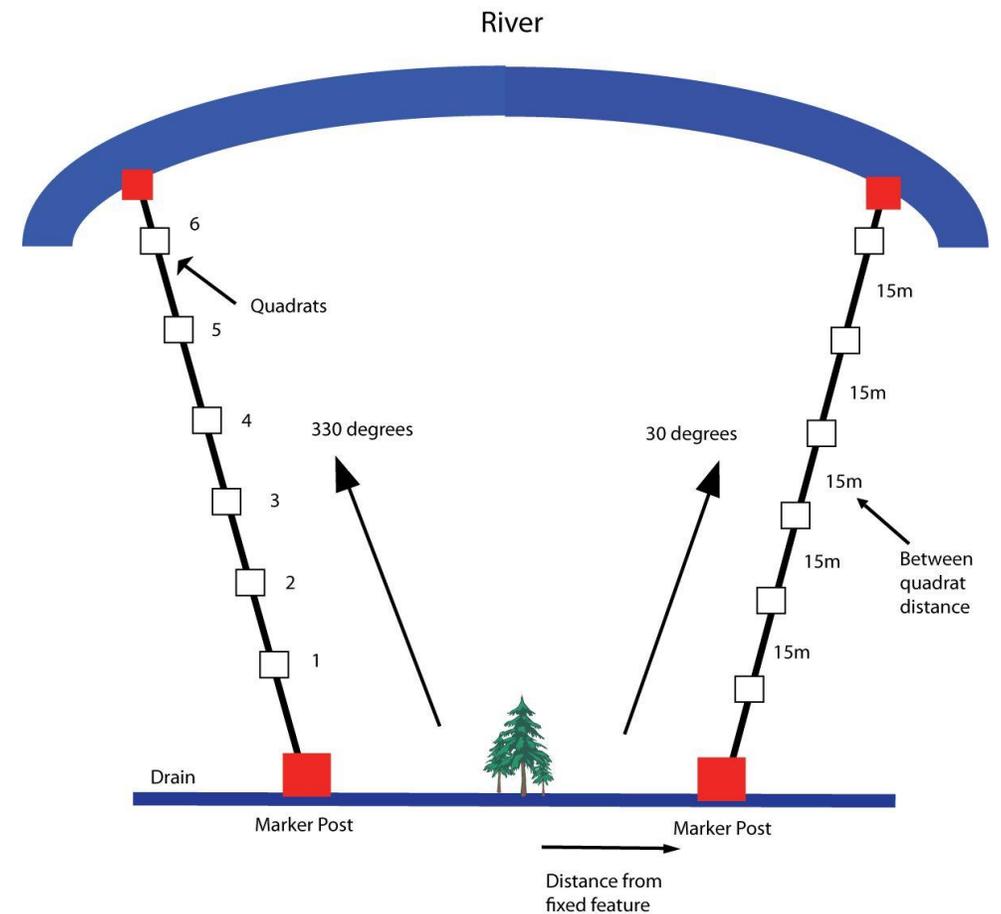
- Start from a point that is easily relocated or put in a robust marker post (fence posts are ideal).
- From this marked point, choose an obvious feature on the other side of the site, or put in another marker, and note its compass bearing. Measure the location of marker posts from a fixed feature that is unlikely to move (*e.g.* a gate post) in case they go missing or are replaced.
- If available, use a GPS to record the approximate grid reference of the marker posts (most GPSs are accurate to about 5 m) to help future surveyors find them.
- Note the bearing between the two posts and mark out a line using the long canes at regular intervals (this will require two people - one at the start point to keep the other on-line whilst placing the canes).
- Once the line is defined with the long canes, use the tape measure and short canes to mark quadrat positions at given distances along the line. A spacing of at least 10 m is necessary if the locations are to be treated as independent samples; typical spacing ranges from 15 m to 30 m depending on the size of the site.
- Record the position of the marker posts relative to other features, the orientation of the line and the distances between markers on a sketch map.
- Photograph the end points and the transect line with the quadrat marker canes in place, and record where the photograph was taken from.

### How many quadrats?

The number of quadrats required depends on the size and variability of the vegetation being monitored. Eight samples is the minimum number required to do any statistical assessment of change. Where correlations between 2 parameters (such as hydrology and management) then 12 -16 is a more appropriate number. More detailed discussion on how to determine the number of quadrats can be found in Chapter 15 of The Lowland Grassland Management Handbook<sup>[1]</sup> (Crofts and Jefferson 1999).

<sup>[1]</sup> <http://publications.naturalengland.org.uk/publication/35034>

<sup>1</sup> a theodolite with an electronic distance metre used to read slope distances from the instrument to a particular point.



Schematic diagram of quadrats arranged along a transect line