



## How to set out transect lines and record quadrats

Using quadrats to record plant community change over time is a very accurate and reliable method to determine what is occurring at your site. Ideally you will be able to set up locations for quadrats such that they can be re-visited in the future.

Transect and quadrat positions can be re-located relatively easily using Total Station surveying equipment<sup>11</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
- 50 m tape measure
- GPS if available (a GPS app on a smart phone is usually adequate)
- 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:**

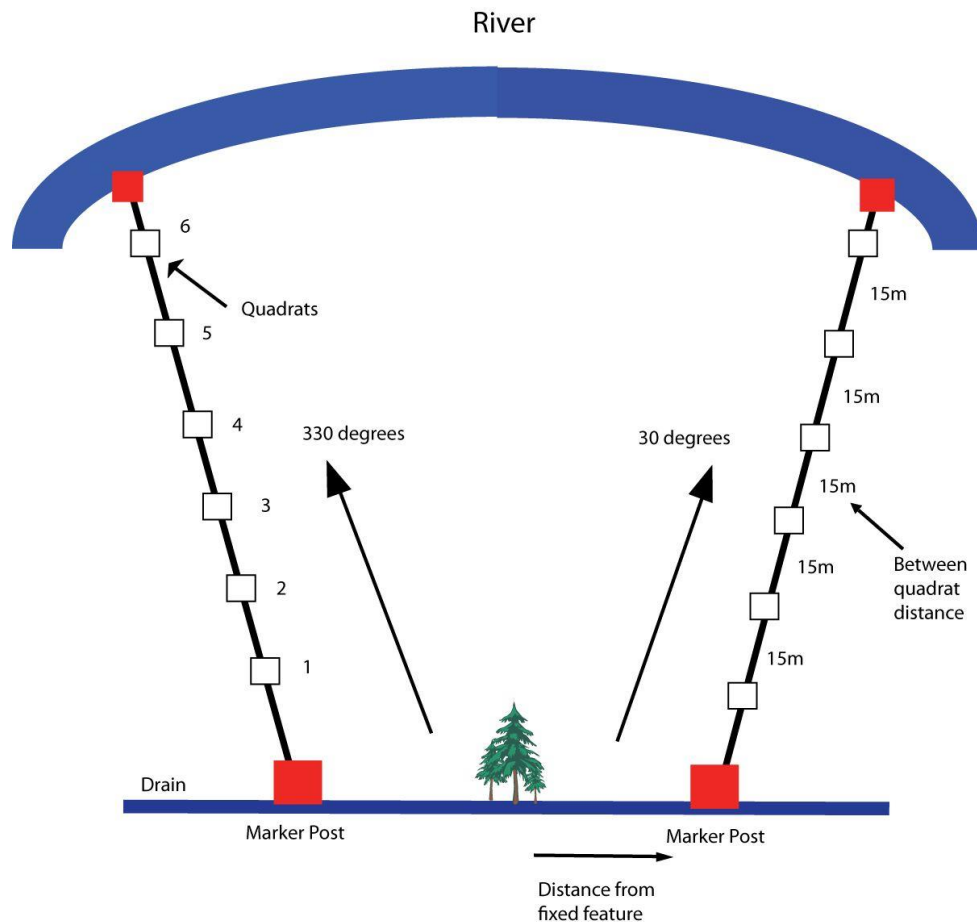
1. Start from a point that is easily relocated or put in a robust marker post (fence posts are ideal).
2. From this marked point, choose an obvious feature on the other side of the site, or put in another marker, and note its compass bearing. Measure the location of marker posts from a fixed feature that is unlikely to move (*e.g.* a gate post) in case they go missing or are replaced.
3. 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.
4. 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).
5. 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

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<sup>11</sup> a theodolite with an electronic distance metre used to read slope distances from the instrument to a particular point.

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.



**Schematic diagram of quadrats arranged along a transect line**

### ***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 are required (such as hydrology and management) then 12 -16 is a more appropriate number.

## How to record vegetation using quadrats

- Place a 1 m x 1 m quadrat centrally over the cane quadrat marker, orientated parallel with the line.
- Record all species of vascular plant (grasses, sedges and herbs) and principal mosses (data sheets with pre-entered species names save time and make data entry easier)<sup>1</sup>
- Assign a visual estimate of percentage cover to each species listed. The cover is the percentage of the ground area that the target species would shade if lit from above. A useful guide is that your hand placed flat in the quadrat is approximately 1% of the area.
- Check the total – the combined estimates may be over 100%, but on floodplain meadow vegetation, totals rarely exceed 130%, so check the figure recorded for the dominant species if this is the case. Record the presence of species at <1% cover with a '+' on the data sheet.
- Always record actual percentage cover rather than using scales or measures of relative abundance such as DOMIN or DAFOR, as these are less sensitive and are less easy to integrate with other datasets.