

Learning objectives

In this chapter we will explore:

- methods of doing long transects and belt transects;
- the use of kite diagrams to present transect data;
- the use of transects in urban areas.

Why use transects?

To use a **transect** means to sample along a line. Transects are useful in both physical and human geography if you want to investigate how something varies over distance. For example, you could use transects to investigate each of the following hypotheses.

- Pebbles get smaller as you go along a beach.
- Wind gets stronger as you go up a slope.
- Quality of life improves as you get further away from the city centre.

You can use any of the four main sampling strategies to collect data along each transect (see pages 14-15). Before sampling along any transect you will need to take the following steps.

Step One Do initial research to identify the most appropriate transect sites and decide where the transect should begin and end.

Step Two Decide on the sampling strategy which best meets your needs. This will depend on the length of your transect and the variable you are measuring.

Step Three Select equipment to collect the data. For example, you may need an app to record elevation or a noise meter. You may want a digital camera or mobile phone so that you can collect photographic evidence.

Step Four Design data collection sheets.

Why and how to do a belt transect

Belt transects are used to sample data across small features. They usually involve the use of quadrats (see pages 16-17). Quadrats are metal frames, often half a metre square, which are divided into small squares. The number of variables (for example, species of plant) within the area of the quadrat can be counted. You should take control readings before beginning the belt transect. This provides a control against which you can compare the data collected along the transect.

Data collection along belt transects can either be continuous or interrupted. A continuous belt transect is made by turning each quadrat over, end-to-end, along the transect. An interrupted belt transect is made by placing the quadrats at regular intervals along the transect. Figure 1 shows each type. Interrupted belt transects are used when the feature being studied covers a relatively long distance.



Figure 1 Continuous belt transect (top) and interrupted belt transect (bottom)

Strengths and limitations of using quadrats in a belt transect	
Some strengths	Some limitations
Belt transects enable detailed information about the amount, as well as presence, of variables to be collected at each sampling location. Quadrats are divided into smaller squares so that it is possible to estimate the percentage distribution of whatever feature is being measured.	Interrupted belt transects can save time but important variations in the data may be missed in the gaps between samples.

Distance across footpath (cm)	C1	0	50	100	150	200	250	300	350	400	450	500	550	600	C2
% bilberry	75	60	30	0	0	0	0	0	0	0	0	10	35	60	55
% heather	15	25	15	0	0	0	0	0	0	0	0	0	10	25	30
% grass	0	0	10	10	5	0	10	25	20	0	0	5	5	0	5
% other vegetation	10	15	15	10	5	0	5	5	0	0	0	10	5	15	10
% bare ground	0	0	30	80	90	100	85	70	80	100	100	75	45	0	0

C1 and C2 are control quadrats sampled at locations away from the footpath.

Figure 2 Results of a continuous belt transect across a footpath in a honeypot location in Shropshire Hills AONB

How to draw a kite diagram

One suitable technique that can be used to present information of percentage distribution of variables collected using quadrats is a **kite diagram**. To plot a kite diagram, take the following steps.

Step One Draw a series of horizontal lines across a piece of graph paper. Each horizontal line corresponds to the centre line for each one of the species for which data was collected. The length of the horizontal lines corresponds to the total length of the transect. The vertical scale corresponds to the percentage of each species present.

Step Two For each species, plot points equidistant from the horizontal central line, equivalent to half of the value recorded on the data collection sheet. Each point is plotted along the line at the distance where the data was collected.

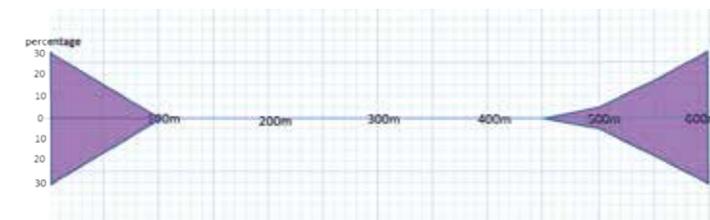


Figure 3 A kite diagram showing the percentage of bilberry along the transect in Figure 2

Step Three Join all the points above the horizontal centre line with a ruler.

Do the same for the points below the horizontal centre line. Colour the shape between the lines you have drawn.

Step Four Repeat this process for each species. You should use different colours for each species.

Activities

- 1 Study Figure 1. Suggest one advantage and one disadvantage of using the continuous belt transect to investigate how plants are affected by trampling by walkers.
- 2 a) Draw kite diagrams to show the percentage of heather, grass, other vegetation and bare soil across the footpath.
b) What conclusion can you reach about the effect of trampling on these plants?