

1.1 Quadrats

Quadrats should be selected in separate habitat zones, focusing on those of most interest at the site: mobile dune, semi-fixed dune, fixed dune, dune slack and heath areas. Ground-truthing for the zonation surveys may help with the selection of some quadrat locations. Ideally there should be at least 30 quadrats in each dune zone, although more could be selected if there are volunteers available to survey them. The following steps can be followed to select and record quadrat locations. All quadrats will be 2 x 2 m.

1.1.1 Select quadrat locations on maps

- Start with site habitat maps, or rough mapping generated while ground-truthing the zonation surveys. Aerial imagery e.g. from Google Earth may help here.
- For each habitat separately, generate random coordinates for quadrat locations. Random coordinates within defined boundaries (polygons) can be generated using GIS software. If this is not available, you can use Google Earth to define the coordinates of the northern-, southern-, eastern- and western-most points of the different dune zones areas separately. These can then be entered into a website such as http://www.zonums.com/gmaps/kml_rand.html, along with the number of points you want to generate in each area (e.g. 30). The random points that are generated can then be downloaded and viewed in Google Earth. Depending on the shape of your site you may need to repeat this process until you generate enough points that fall within the area of interest. It is also a good idea to generate some 'reserve' points which can be used if the ground truthing exercise shows some of the initial points are unsuitable.
- Remember to set up quadrats at locations which are not receiving management, or not affected by interventions.
- Store the grid references of the random points you have generated in a spreadsheet.

1.1.2 Ground truth and mark quadrat locations

Use the grid references derived from the mapping exercise to navigate to each of the quadrats using a handheld GPS or equivalent smartphone app. Make sure that you are happy that the quadrat falls within the sand dune zone that was identified in the mapping exercise. In the mobile dune zone, where quadrats are not marked by a fixed post the quadrat will be a 2 x 2 m square with the grid reference in the south west corner; in all other habitat zones, the grid reference corresponds to the point 2 m south of the south west corner of the quadrat. If the quadrat will not fall within the intended zone, exclude it from your list and replace it with one of the reserve points, which will also need checking.

For all quadrats apart from mobile dunes, permanent marker posts should be installed to mark the location of the quadrat.

1.1.3 Monitoring the impact of management interventions

If a management intervention is taking place that you are interested in monitoring the effect of, additional 'control' quadrats should be selected to monitor the impact of the management

and make comparisons with unmanaged areas. One option for this would be to select an additional set of quadrat locations within the area where management is due to take place (the exact number will depend on the size of the managed area). Then identify an area of similar size where no management is due to take place but has similar properties e.g. habitat, topography. In this 'control' area, select the same number of quadrat locations as in the managed area. Evaluation of the effect of management interventions could then be done by comparing data from quadrats in the managed and control areas.



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