Suggested Sampling Techniques

Square sampling areas, called quadrats, are commonly used in the study of biodiversity and provide a standard area for each sampling site. One or more quadrats with a defined size are placed in a location and the species within are identified and recorded. The biodiversity measured within the quadrat is an estimate of the biodiversity found in the habitat being studied. The size or number of quadrats that are sampled can vary depending on the biodiversity or available area being studied. Quadrats can be made from PVC piping, measuring sticks, or any other rigid material. Alternatively, temporary quadrats can be made with string and stakes when collecting from the ground.

When possible, sample one or more areas using quadrats or sample a defined volume of soil, sand, or water. It may be possible to collect organisms inhabiting the soil or the sea floor by taking core samples. A simple “corer” can be made with a strong plastic or metal tube. If the tube is long enough, it can allow underwater sampling. If not, samples can be collected with garden implements, including spades or shovels.

For collection of invertebrates from soil or litter on the ground, a Berlese funnel can be very effective. Soil or leaf litter of a defined volume should be collected, along with a record of the location, depth, and qualities of the soil or litter. A photograph to record the nature of the material and collection site should also be taken. Samples can be stored in sealable containers, including zip-lock bags, jars, or Tupperware containers. Once back at the laboratory, soil samples are placed in the Berlese funnel over a collection vessel containing ethanol and placed under a light bulb to heat the soil or litter, encouraging organisms to leave the medium and enter the funnel. These organisms are collected in ethanol, which prevents them from escaping and preserves them for later study.

For flying insects, collection at night can be very effective if done with a light trap. Small invertebrates on the ground can also be collected with a pitfall trap. A butterfly net can be used to trap visible organisms in the air or on plants at the collection site.

For aquatic samples, a plankton net may help with collection of very small organisms. Note that these organisms may only be visible with a dissecting microscope. Water samples can be filtered through appropriately sized mesh (the size will depend on the project) or nets. When collecting organisms from muddy marine sites, it may be necessary to remove some of the mud by rinsing the filter bag using water from the collection site. Collect a defined volume of mud or other material from a defined location and place in a filter bag, seal the bag with clips, and place in a bucket with water from near the collection site. Move the filter bag gently to rinse as much mud from the sample as possible, being careful not to damage or lose organisms. The water in the bucket may be replaced several times, if necessary, although this may allow small organisms to escape, so this should be avoided if these organisms are needed for the project.

Organisms may also attach to rocks or other solid surfaces within the designated sampling site. In some cases, it may be possible to collect small rocks with attached organisms, while in other cases the organisms may need to be removed for collection by hand or with a scraper.