Habitats & Biodiversity Lab by C Kohn, Waterford WI

Name: Hour Date:

Date Assignment is due:  Why late? Score: + ✓ - Day of Week Date If your project was late, describe why

In this lab you will be performing quadrat sampling to gauge the biodiversity and ecosystem health of different components of the same habitat. “Quadrat sampling” is a term for sampling portions of an ecosystem to indicate the health of the overall habitat. To perform this procedure, a series of squares ([quadrats](javascript:popUp('../../glossary/pop/quadrat.htm'))) of a set size are placed at random in a [habitat](javascript:popUp('../../glossary/pop/habitat.htm')). The species within those quadrats are identified, counted, and recorded.

Quadrat sampling can either be random or systematic depending on the nature of your research question. In random quadrat sampling, the habitat is broken down into a grid-like system of squares and each square is assigned a number. Drawing a predetermined set of numbers at random provides you with your sampling site. For this lab, we will perform transect sampling, which simply means that we will be moving along a predetermined number of paths straight from the edge of the habitat into the center. Along each path, samples will be taken at the same distances to compare the biodiversity of the edge of the habitat with the interior.

To conduct the sampling within your quadrat, simply count the number of species and the number of individuals. Our basic biodiversity score is calculated by dividing the number of species found by the number of individuals found. These scores will be averaged for each quadrat along the edge, intermediate, and interior portions of the environmental center.

**Direction**: for this lab you will need your research team and a quadrat. A quadrat is simply a square; PVC pipe, meter sticks, and broomsticks work as well as any piece of fancy equipment as long as they are consistent in size. Our quadrats are made from two pieces of PVC pipe and nylon rope. It is important for you to ensure that your quadrat is evenly square; if it looks more kite-shaped, adjust the cables to even out your sides.

Each group will be assigned a portion of the Environmental Center. After receiving your assigned location, move one pace (roughly a meter or 3 feet) from the outer path towards the interior of the Environmental Center (step carefully! Do not damage any vegetation). Lay down your quadrat and begin counting all the plant species that have stems within your square. Using this sheet, each person should record the total number of species and the total number of individuals within the quadrat (overhanging vegetation with stems outside of the square DO NOT count; only count species with stems within the square).

After you have completely counted all individuals and species, move 25 paces straight from the path towards the interior of the Environmental Center and repeat the procedure. Then move another 25 paces (or 50 paces total from the path) and repeat the procedure a third time. If you have time, move another 25 paces (or 75 paces total) and complete a fourth and final time. You will need to complete at least the 1, 25, and 50 pace quadrats.

Record your data and be prepared to discuss as a class. We will spend Wednesday, Thursday, and Friday (half day) on this lab. This means that by the end of class on Thursday, you will need to be started on your third or fourth quadrat.

1. As a group, what do you think will happen to the biodiversity of this habitat as we move from the edge of the habitat towards the interior? Given this is a relatively small habitat, will we see any difference between the edge and interior? Which should have a higher biodiversity score, the edge or the interior or will they be the same? Write your hypotheses below:
2. Record your counts and scores for each of your sampling sites below:  
   1. Edge Site (1 pace from trail): Species found: Individuals found:   
        
      Biodiversity score: (divide species by individuals)
   2. Intermediate site (25 paces from trail) Species found: Individuals found:   
        
      Biodiversity score: (divide species by individuals)
   3. Interior Site (50 paces from the trail) Species found: Individuals found:   
        
      Biodiversity score: (divide species by individuals)
   4. 2nd Interior Site (75 paces from trail) Species found: Individuals found:   
        
      Biodiversity score: (divide species by individuals)
3. Which site had the greatest biodiversity score? Why do you think this area had a higher score?
4. How the biodiversity of this habitat would be affected differently if we removed a quarter of an acre of vegetation from the interior than if we removed it from the edge? For example, if we were to build a house near this habitat, would it affect the habitat more to have it on the edge or in the interior? Explain: