**Baltimore Partnership for**

**Environmental Science Literacy**

**Cary Institute of Ecosystem Studies**

**PO Box AB**

**Millbrook, NY 12545**

**Phone: (845) 677-7600 ext. 311 Fax: (845) 677-5976 E-mail: BerkowitzA@caryinstitute.org**

***Tree Transects***

|  |  |  |
| --- | --- | --- |
| **Source** |  | Alan Berkowitz, Cary Institute of Ecosystem Studies. |
|  |  |  |
| **Questions** |  | · Do different tree species occur along the edge versus the interior of a forest?  · Does the total number of tree species differ in different parts of a forest stand?  · Does the mix of young versus old trees differ from edge to interior? |
|  |  |  |
| **Overview** |  | Compare how the tree species vary from the edge to the interior of a forest by sampling tree saplings and adults along a transect. |
|  |  |  |
| **Background** |  | A *plant community* includes all of the plants living in a given place. One of the most obvious patterns evident in most schoolyards is the dramatic difference (at least in appearance) between the open meadow and lawn communities and the closed forest communities. However, are these forests themselves homogeneous, or are there interesting patterns of variation within them? There are many interesting things to study about forest communities. One concerns changes in the forest community that might occur while going from the edge to the middle of a patch of forest. Forest edges are receiving a lot of attention these days, in large part because human activity has created so many edges and small patches where there used to be larger expanses of contiguous forest. Are there species that require conditions found only in the interior of an intact forest. If so, how big does a patch need to be for these species to escape the “edge effect”? |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Materials** |  | 🞏 1 measuring tapes at least 5m long  🞏 1 12m long transect rope or string with marks at 1m, 6m and 11m  🞏 1 meter stick  🞏 flexible measuring tape for measuring tree circumference (*optional*)  🞏 tree and shrub identification books and keys  🞏 stakes for anchoring transect  🞏 data sheets and clip boards |
|  |  |  |
| **Procedure** |  | **☼ Locating and running transects.**  1. Locate the starting point for your transects randomly.  2. Each transect should start approx. 2m into the forest, and then will run 12m in a straight line as perpendicular to the forest edge as possible.  3. Run the 12m transect rope or string from a stake at the starting point into the forest. You will be sampling a the 1m, 6m and 11m points along the transect.  **☼ Collecting data at each sampling point.**  1. Think of each point as the center of a "plus" sign. The transect line is one part and an imaginary line through the sampling point at right angles to the tape is the other. This identifies four "quadrants" for sampling. You can lay the meter stick perpendicular across the transect line to help you visualize the quadrants.  2. Find and identify the adult (dbh > 10cm) and the sapling tree (dbh < 10cm) closest to the sampling point in each of the four quadrants. NOTE: dbh means diameter at breast height, or 4.5' above the ground.  3. Record the distance from the sampling point to each tree in meters.  4. Repeat this procedure at each sampling point along the transect.  **☼ Interpreting your data.**  1. Calculate the average distance from the sampling point to the four adult and the four sapling trees. Then, square this distance to get the average amount of space (in square meters) per tree in that part of the forest. The inverse of this number is the average number of trees per square meter in this part of the forest!  2. Record the **diversity** or **species richness** of adult and sapling trees in each of the three parts of the forest. This is simply the number of different species you recorded at each spot.  3. Compare the **species composition** of each type of tree in each part of the forest, and for adult versus sapling trees. This could be the proportion or percentage of each species, etc. |
|  |  |  |

**Tree Transects Data Table**

Teachers: Date:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Adult Trees (> 10cm diameter) | | Sapling Trees (< 10cm diameter) | |
| Species | distance to sampling point (m) | Species | distance to sampling point (m) |
| 1m  E  D  G  E | 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |
| 4. |  |  |  |
| Average Area Per Tree |  | Average Area Per Tree |  |
| Number of Species |  | Number of Species |  |
| 6m  M  I  D  D  L  E | 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |
| 4. |  |  |  |
| Average Area Per Tree |  | Average Area Per Tree |  |
| Number of Species |  | Number of Species |  |
| 11m  I  N  T  E  R  I  O  R | 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |
| 4. |  |  |  |
| Average Area Per Tree |  | Average Area Per Tree |  |
| Number of Species |  | Number of Species |  |