Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**How to make your own customized Biltmore Stick**

Materials

* A yardstick sized piece of wood
* A ruler or tape measure
* A fine point pen or marker
* Glue
* A “Making a Scale Stick” sheet
* Rubber cement

Instructions:

1. Review: What is the length of your pace: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Measuring your arm reach.

Two arm-reach measurements are needed, one for measuring dbh and the other for measuring height, because you hold the tree scale stick differently to measure each. Correct measurement of your arm reach is critical. A mistake here will result in an inaccurate scale stick. Therefore, repeat arm-reach measurements at least twice to check for errors. Your arm reach will also change as you grow, so every year check your arm reach, and if it has changed, make a new tree scale stick.

Measure arm reach for dbh first. Hold the yardstick sideways against a large tree, just as if dbh were being measured. Grasp and hold the stick on its lower edge near where the stick touches the tree. The upper edge will have the dbh measurement scale, and you do not want to cover it with your hand. In addition, hold your arm straight and in a comfortable position, since this is how you always will measure dbh. Have a friend use the tape measure (inches) and determine the distance from the bone next to your eye to the yardstick. See for help. Hold the tape straight and tight and round off the measured distance to the nearest inch. This is your arm reach for dbh measurement; please record it below:

My arm reach for measuring dbh is \_\_\_\_\_\_\_\_\_\_\_inches.

Now, determine arm reach for total and merchantable height measurements. Pace 66 feet (1 chain) from a tree, look back at the tree, and hold the yardstick vertical as if merchantable height were being measured. Again, make sure you hold your arm straight and comfortably since you must hold it this way for all future height measurements. As you did before for dbh, have your friend measure the distance form your eye bone to the yardstick and round off the distance to the nearest inch. This is your arm reach for height measurements. Please record below:

My arm reach for measuring height is \_\_\_\_\_\_\_\_\_inches.

1. Scale for DBH Measurement

Find Table1, the scale graduations for DBH measurements. The far left column is the actual tree DBH, while the remaining columns in the table show distances to mark off on the tree scale stick to measure DBH accurately. As you will notice, scale distances are in centimeters, not inches, making it easier for you to measure distances.

Look at the top of Table 1 for the length of your arm reach. Each number in that column below your arm reach is a distance on the scale stick that corresponds to a tree DBH on the same row.

Using a tape measure or ruler in centimeters, and a pen, mark the distances for each DBH along the scale line you already drew. Remember always to measure from the far left hand edge of the scale line, which is the zero point (DBH=0). Be sure to mark this scale.

1. Scale for Merchantable height

Find Table 2, Scale dimensions for merchantable height measurements. This table shows how to mark off distances on the tree scale stick to correspond to different merchantable heights. Use this table as you did Table 1. Find your arm reach for measuring heights, and place a mark at the correct distances along the scale line for each log and half-log length. Make sure that you write the numbers so you can read them while your Biltmore stick is facing straight up and down. Numbers written this way will be easy to read when heights are measured.

Place a title with the marked scale, e.g., Merchantable height (number of 16-foot logs).

1. Attaching the board foot conversion table

Take the Making a scale stick sheet you were given and cut out the Biltmore stick conversion table. You will notice that this is another Biltmore stick, but it will not be specific to your arm reach.

Once the template is cut out lay it end to end on the opposite side of your Biltmore stick than your custom measurements. Use rubber cement to glue it on. This will give you a board foot conversion scale.