Virtual Forest: Mammals and Habitats Module

Activity Instructions

Black Rock Forest covers a very large area with its 4000 acres. It would take many years to sample its entirety. Therefore, we, as scientists, use different techniques to sample an area or population. One of the most common methods to sample an area in ecology is the transect method.

A transect is simply a straight line that is measured out from a starting point for a given length. Transects can be a line or an area with a given width. One can either take measurements along the entire length (and width) of the transect, or take measurements (or in our case, place traps) at random locations along the transect's length.

Using the Research Grid Sampling Tool on the Virtual Forest's Mammals and Habitats Module, we will generate random bearings for each team to follow. These bearings are your team transect.

In this document, you will find instructions on:

1. How to find your pace
2. How to set your transect with team flags
3. How to use a compass
4. How to direct someone using a compass to set the transect
5. How to determine the location of a trap
6. How to set the various traps
7. How to find GPS coordinates

1. Finding Your Pace

Follow these instructions:

a. Stretch out a meter tape for a length of 25 meters.
b. Start walking along the length of the meter tape leading with your RIGHT** foot.
c. On your first step count 0.
d. The next time your RIGHT foot hits the ground, count 1. This will represent two steps: one with the left foot and one with the right foot.
e. When your RIGHT foot hits the ground again, count 2.
f. Proceed until you reach 25 meters. Your last count is the number of paces per 25 meters.
g. To determine your "pace":
    - Divide the number used for the length in meters (25) by the number of paces counted.
    - Round to the nearest whole number.

Example:

- Kate has counted to 12 when she reached the end of 25 meters.
- Her pace is **25/12= 2.0833 = 2 m**

** If you start with your LEFT foot instead of your right, no worries, just count every time your LEFT foot hits the ground.

2. Setting Transect with Team Flags

Now that you know your pace, you can more easily determine the distance you have traveled (or need to travel) by counting your steps. For example, as we calculated above, if Kate's pace is 2m and she needs to place a flag every 10 meters, then it means she should place a flag every 5 paces.

Black Rock Forest staff will use the Virtual Forest Research Grid Sampling Tool to randomly determine the number of bearings and traps to be set. Each team will be in charge of one transect and will have 10 team flags to "set" their transect in the forest.

Follow these instructions:

a. Determine the total length in meters of your transect by finding the distance of your furthest trap.
b. Divide this number by 10 to know how often to place a team flag.
c. Select one team member's pace to use.
d. Divide the number from **b.** by the pace chosen in **c.** to determine how many paces should be taken before placing the next flag.

Example:

- Kate and her team find that their last trap will be placed 125 meters from the center.
- Kate and her team have 10 flags and therefore should place a flag every 125/10 = 12.5 meters.
- The team decided to use Kate's pace for the calculation, which she determined earlier that it is 2 meters.
- Therefore, the team should place a flag every 12/2 = 6 paces.

3. Using a Compass

To determine where your transect will go, you will be given a bearing from the Virtual Forest Research Grid Sampling Tool. In order to follow that bearing you will need to know how to use a compass.

A compass is composed of the following elements:

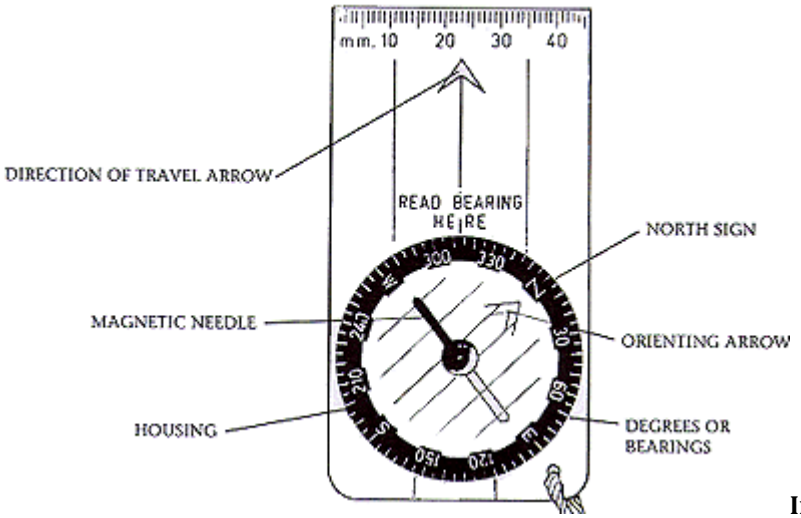


Image obtained from dnr.wi.gov

- The magnetic needle ALWAYS points NORTH (unless it is influenced by a metal object).
- Bearings range from 0^{o} (due North) to 359^{o}.

Follow these instructions:

a. Hold the compass flat in the palm of your hand.
b. Spin the housing (where the numbers are).
c. Notice what parts of the compass move and what stays the same as the housing moves.
d. Place the "N" (North) in line with the "Direction of Travel Arrow".
e. Turn YOUR BODY to put "Red Fred" (the red half of the magnetic needle) in the "Shed" (the orienting arrow).
f. You are now facing north!
g. Now turn the housing until your desired bearing number is in line with the "Direction of Travel Arrow".
h. Turn YOUR BODY to put "Red Fred in the Shed".
i. You are now facing in the direction of your desired bearing.

4. Directing Your Partners and Setting your Transect

Now that you are standing in the direction of your bearing, you will need to direct your partners in order to stay in a straight line when planting the team flags.

a. Decide who will give directions using the compass, and who will walk out and plant the team flags.
b. If you are giving directions, hold the compass up to eye level.
c. Using the "Direction of Travel Arrow" as a guide, determine an object directly in the path of your bearing.
d. Tell your partners to walk in a straight line towards that object (tree, rock, bush, etc.).
e. You partners need to count the paces and place flags as they walk out.
f. Once your partners reach the object, join them at that spot.
g. Repeat steps **b.** to **f.** until the entire transect is set, i.e., all 10 team flags are placed.

5. Setting Orange Trap Flags Along the Transect

Now that you have a straight line of approximately the right length, you need to measure the exact distance for each of your trap placement. The measuring tape is only 50 meters long, however, some traps will need to be put out further than 50 meters. Therefore you may need to perform some calculations to determine where your traps will go along the transect.

To measure trap distances along the transect:

a. Make calculations for distances between traps BEFORE going into the field. Write them on your data collection sheet. See example below.
b. One person can hold the end of the measuring tape while the other team members walk the transect.
c. Place orange trap flags at each of the distances you were assigned for the placement of a trap.

Example:

- Kate and her team will place 3 traps along their transect.
- They are at a distance of 15, 87 and 125 meters from the center.
- Trap flag for trap 1 will be placed 15 meters from the center.
- The trap flag for trap 2 will be placed at 87-15=72 meters from trap 1.
- Kate and her team will walk the meter tape out 50 meters, reel in the tape, and walk out another 50-72=12 meters and place a trap flag.
- The final trap will be placed 125-87=38 meters from trap 2.

6. Setting the Traps

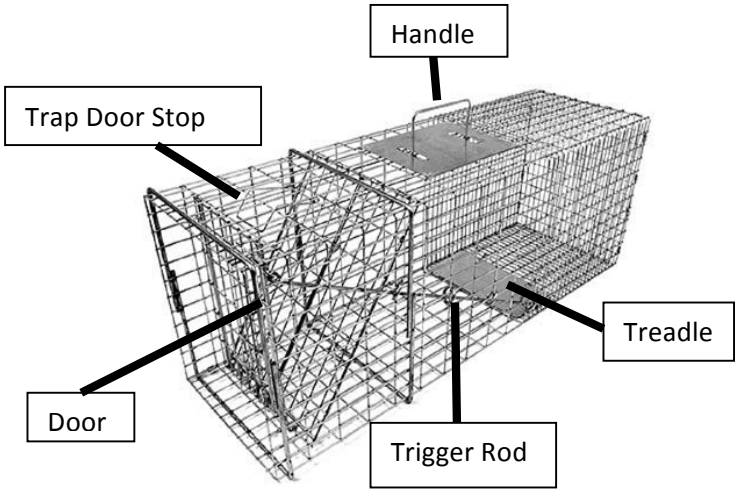
Now that the orange trap flags are placed, you may go back to the center to pick up your traps, and decide where to physically place them. The trap does not need to be placed directly on the transect (where the orange flag traps are), but should be within 10 meters of it. Also, make sure that the trap can still be seen from your team's transect.

For the bigger Tomahawk traps, look for shaded areas, tree bases and animal signs. If time permits you may even consider adding some camouflage on top or around your trap to increase success.

For the smaller Sherman traps look for fallen logs, tree bases, rocks or shaded areas to place the traps.

Move your orange team flag directly next to you trap once it is set. This way, you or someone else can easily find the trap the next morning.

Tomahawk Traps



To open and set a Tomahawk trap:

a. Lift the trap door stop.
b. Push in the door.
c. Lift the door.
d. Pull the trigger rod forward.
e. Place the hook of the trigger rod on the door.
f. Place the bait BEHIND the treadle.

Now the trap will stay open until something pushes down on the treadle causing the trigger rod to release the door.

Choose the bait you wish to use based on the type of animal you would like to try and catch. Keep in mind the types of food different types of animals may eat. For example, use meat if you want to catch a carnivore.

Sherman Traps

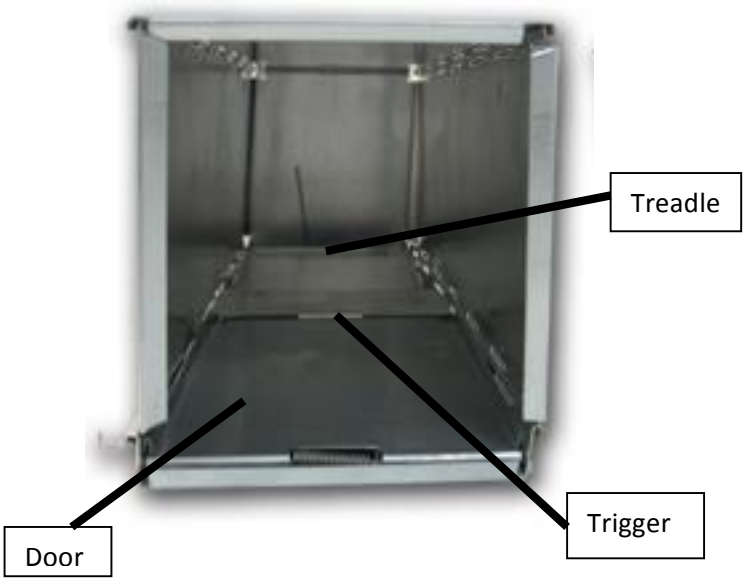


Image modified from rodenttraps.wordpress.com

To open and set a Sherman trap:

a. Push down on door
b. Keep pushing until door clicks underneath the trigger
c. Place the bait BEHIND the treadle.

The trap will now stay open until an animal pushes down on the treadle causing the trigger to release the door thereby closing the trap.

When you place the bait, make sure the bait does not get in the way of the treadle closing the trap. You can also sprinkle some bait in front of the trap to entice animals into the trap.

7. Finding GPS Coordinates

Now that the traps are set, camouflaged and flagged, it is important to take a GPS coordinate of the exact location of the trap. This will allow us to find the trap again, and to put it on a map that you can view later.

Refer to the **Marking and Finding Waypoints** guide to learn how to use the GPS units provided by Black Rock Forest.