**Ground Spider Abundance and Diversity Sampling**

**Summer 2023**

**Field Methods**

Establishing Transects

To meet the goal of collecting species richness and abundance data, students will utilize three 10 meter long, 2 meter wide transects. To establish a transect students will use a measuring tape to run through the sampling area and systematically collect data within the established area.

1. Locate habitat of interest, based on class discussion. These can be areas along habitat gradients such as ecological or anthropogenically induced. Included examples will compare lawn environment and deciduous forest environment. Visit the habitat before nightfall to establish transects.
2. Choose area in which to establish the first transect. In a group use the measuring tape to run a 10 m transect.
   1. Have one group member throw their pen or pencil in the air. This will determine the direction in which you will establish the transect and aid in the process of randomization.
   2. Place the first flag here. Align the quadrat by placing on corner where the flag is located, while following the direction of the pen/pencil with the adjacent side. Take the tape measure and stake the end close to the flag. Ensure that the tape measure follows the line created by the quadrat, then have one group member walk 2 meters with the tape A white pipe with a yellow tape and a blue object on the ground

      Description automatically generatedmeasure.
   3. Place a flag at the 2-meter mark on the tape.A person standing on the ground

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   4. Without moving the quadrat, pick up the tape and follow the line of the quadrat that is perpendicular to the second flag you have placed. You may have to adjust the way the measuring tape is pinned to the ground to do so.
   5. A tree with a measuring tape

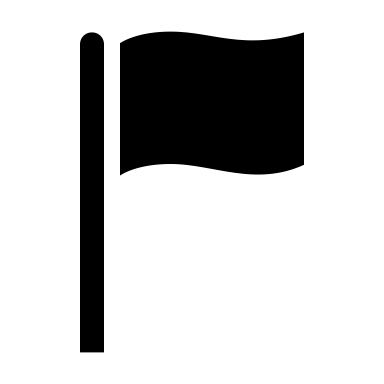
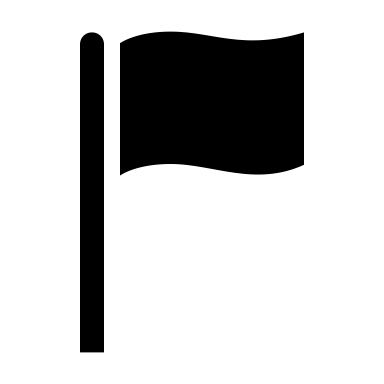
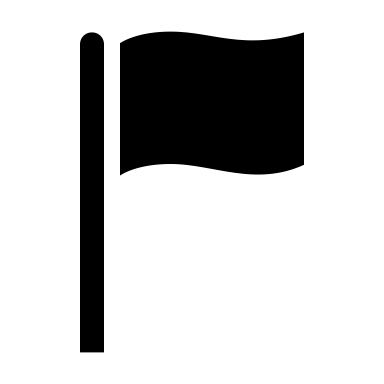
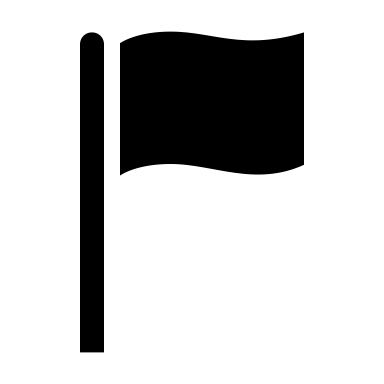
      Description automatically generatedA tape measure next to a red object

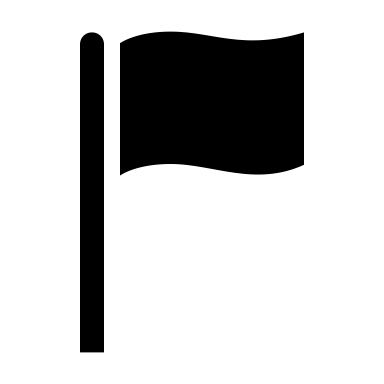
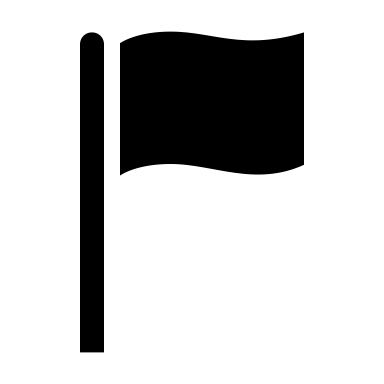
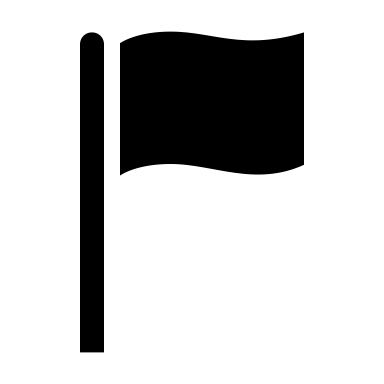
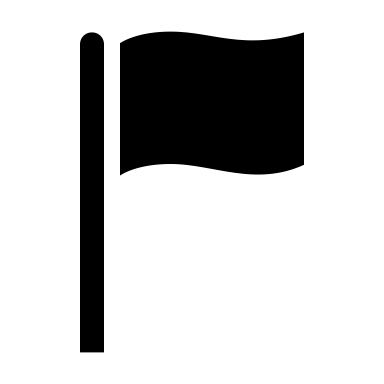
      Description automatically generatedThen have one group member walk 10 meters in that direction, ensuring that the tape measure is parallel with the quadrat. Place the third flag when you have reached 10 meters. Then place the fourth flag at the 5-meter mark without moving the tape. Next place the tape measure on the ground while maintaining the line and move the quadrat to the 10-meter mark, parallel with the tape and with one corner meeting the third flag.
   6. A plant growing in the ground

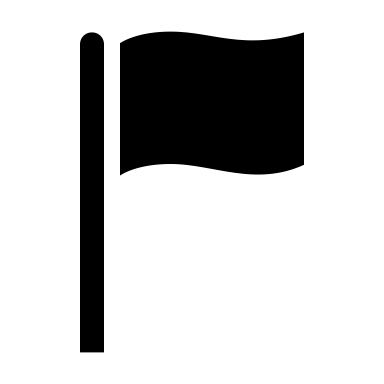
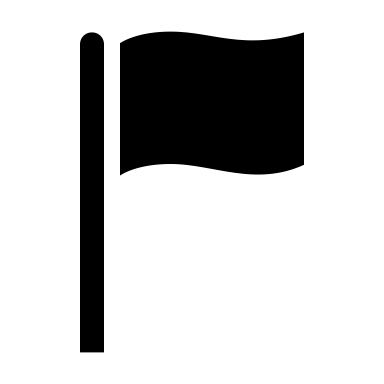
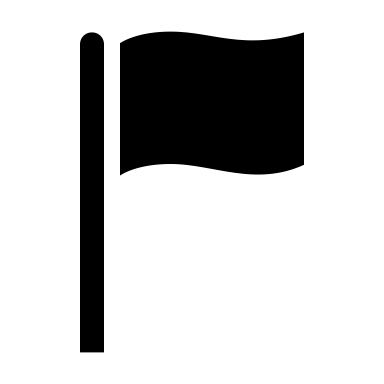
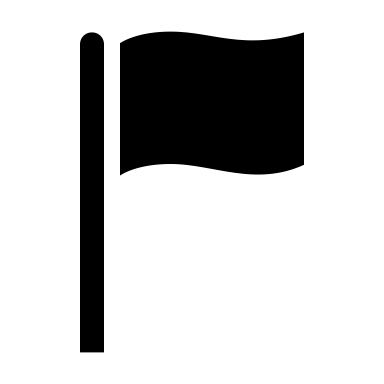
      Description automatically generatedA white pipe on the ground

      Description automatically generatedUnpin the measuring tape from its original location and re-pin at the third flag in line with the quadrat’s corner. Have one group member walk 2 meter parallel with the first line you walked (used to place the second flag). Then place the fifth flag at this 2-meter mark.
   7. Move the corner of the quadrat to the fifth flag without moving the measuring tape to, ensure that it is parallel. Then re-pin the measuring tape near the fifth flag and walk to the second flag keeping the line parallel with the quadrat. Place the final flag at the 5-meter mark.
   8. Ensure that there is at least 20 m between your group and the nearest group. See the figure below for a visual representation.

At least 20 m

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Transect B

Transect A

1. Record the GPS location of your group’s transects as you complete them. Ensure that all transects are completed and accessible before sunset.

Recording Data

1. This section will be completed after sunset when spiders are most active. Navigate to your first transect, ensuring that your headlamp is on the red setting when approaching. This will allow you to gather data without altering spider abundance within the transect. Start by recording start time, then data on habitat and weather conditions on the provided Data Collection Sheet. Utilize an anemometer or a weather application on your mobile device to gather data on weather conditions. Proximity can be included by utilizing the measuring tape and can be recorded when establishing the transect before nightfall. Areas that extend the reach of the measuring tape can be noted as non-influential for the interests of this exercise. Other habitat observations may pertain to habitat of interest determined by class discussion, light pollution, proximity to nearest sampling group, experimental interruptions, etc. Two columns of the Data Collection Sheet have been left blank for class derived variables.
2. Have one member place their headlamp, in beam mode, on their forehead, as close between the eyes as possible. Walk along the transect in one direction audibly counting the visible eyeshine. Another group member should record these counts with tallies then as a whole number on the Data Collection Sheet. Record the cardinal direction in which you are counting.

Eye shine occurs as the light from the headlamp’s beam is reflected in the spider’s eyes. The number of eye shines is indicative of the number of spiders present within the transect. For an example of the results of this method view the image below.



Figure 2. A dark fishing spider with visible eyeshine.

https://spiderid.com/picture/56744/ (replace image with one taken yourself)

1. Students will then locate three specimens within the transect. Then capture them within specimen collection jars. Record the stop time. Once specimens have been collected utilize iNaturalist and a field guide of your area to identify the family of these organisms. Take pictures of all specimens with a mobile device, trying to capture the dorsal (upper) and ventral (lower) sides of the animal. Upload these photos to iNaturalist to capture geographical data embedded within the photos. This can be uploaded while in the field; however, if there is not reliable internet connection this can be upload once the class has returned from the field.
2. Record the identification data of the three specimens in Data Collection Sheet.Assign a number to the specimen, starting with one at transect 1 and ending with nine at transect 3. This can be done in the order in which you upload the photos to iNaturalist. Note the name of the group member who is responsible for uploading the information. The links to these observations will be required for data analysis.
3. Once photos have been taken and identification has occurred, release the specimens. Collect all materials and repeat the process at your remaining transects.