**Ground Spider Abundance and Diversity Sampling**

**Summer 2023**

**Materials and Site selection**

Individual Required Materials:

* Proper clothing and footwear. For comfort and safety while sampling outdoors. This includes long sleeves and full-length pants, preferably made of synthetic materials, and closed toed shoes, preferably hiking boots with ankle protection. These items aid in risk management.
* Bug spray. This will also aid in risk management. Additionally, giving written and oral instructions for tick removal is recommended.
* [Headlamps](https://www.amazon.com/EverBrite-Headlamp-Flashlight-Batteries-Included/dp/B01CTX7BX4/ref=sr_1_2_sspa?crid=1WKWOH4ABT18Q&keywords=headlamp+with+beam&qid=1687569784&sprefix=headlamp+with+beam%2Caps%2C67&sr=8-2-spons&sp_csd=d2lkZ2V0TmFtZT1zcF9hdGY&psc=1) with red and beam setting. For navigation to sampling sites, as well as eyeshine procedures.
* A computer with reliable internet connection. Needed for data visualization and analysis. This will not be required as in field material.
* A mobile device with reliable internet connection. This will be utilized in tandem with the iNaturalist app (download is available at the bottom of this [webpage](https://www.inaturalist.org/pages/about)). You may also use this to locate GPS points if a device is not accessible.
* Pencil/Pen. For recording information in the field. Be sure to bring back ups. There’s nothing worse than finding yourself in the field with no way to record data!
* Data Collection Sheet. For recording in field observations. This will be found on pages 11 to 16. Ideally these should be printed front to back as three pieces of paper, one per transect. They will be required to collect data in the field.
* Data Template (Excel Workbook). This will be utilized alongside module 5 (pages #-#), for data visualization and analysis.

Required Materials per Sampling Group:

* [Measuring tape](https://www.amazon.com/CRAFTSMAN-Measure-Classic-30-Foot-CMHT37330S/dp/B07R92S855/ref=sr_1_6?crid=1BI74TNIOZEJ2&keywords=30+foot+measuring+tape&qid=1687569851&sprefix=30+foot+measuring+tape%2Caps%2C94&sr=8-6). These will be used to establish 10m by 2m transects in which sampling will occur.
* 1 Quadrat. This will be used to insure that transects are established with square, 90° angle corners.
* 3 [Specimen Jars](https://www.amazon.com/Odowalker-Magnifying-Exploration-Collection-Entomology/dp/B07DW34QM1/ref=sr_1_3?crid=3P5XTL6LLTNM1&keywords=insect+specimen+jars&qid=1687569965&sprefix=insect+specimen+jars%2Caps%2C65&sr=8-3) per transect. These will be used to capture spiders.
* 6 [Marking Flags](https://www.amazon.com/Marking-Landscape-Irrigation-Distance-Measuring/dp/B09C1Y12FN/ref=sr_1_18?crid=3EVMVT3Y0P7ID&keywords=steel+rod+plastic+flags+safety&qid=1687570027&sprefix=steel+rod+plastic+flags+safety%2Caps%2C80&sr=8-18) per transect. These will be used to mark the sampling location.
* [Anemometer](https://www.amazon.com/Protmex-Selection-Anemometer-Temperature-Measuring/dp/B0BD7ZTLDP/ref=sxin_17_pa_sp_search_thematic_sspa?content-id=amzn1.sym.749943ff-94bd-4679-8f03-3b5488f65fae%3Aamzn1.sym.749943ff-94bd-4679-8f03-3b5488f65fae&crid=1KPS7MLFUZOX5&cv_ct_cx=anemometer&keywords=anemometer&pd_rd_i=B0BD7ZTLDP&pd_rd_r=b608b2e2-e213-46a1-b733-7a73f799b3f5&pd_rd_w=esDVV&pd_rd_wg=rmXEP&pf_rd_p=749943ff-94bd-4679-8f03-3b5488f65fae&pf_rd_r=SMA50VQX2PWTA6KA80FR&qid=1687570097&sprefix=anemometer%2Caps%2C83&sr=1-2-2b34d040-5c83-4b7f-ba01-15975dfb8828-spons&sp_csd=d2lkZ2V0TmFtZT1zcF9zZWFyY2hfdGhlbWF0aWM&psc=1) or weather application. To gather meteorological data in field.
* Clipboards to write on. This will aid in the data collection process while in the field.
* Spider field guide of your area. If applicable I recommend [Spiders of North America by Sarah Rose](https://www.amazon.com/Spiders-North-America-Princeton-Guides/dp/0691175616/ref=sr_1_1?keywords=spider+field+guide&qid=1687570148&sr=8-1). A family dichotomous key for the ground active hunter guild can be found on pages 327-330, as well as anatomical terminology on pages 8-10. This will be used in field, as well as in reference to photos from iNaturalist collection.
* 1 [Garmin GPS device](https://www.amazon.com/Garmin-Handheld-Display-GLONASS-GALILEO/dp/B07ZS7JYVB/ref=sr_1_14?hvadid=177213342660&hvdev=c&hvlocphy=9008419&hvnetw=g&hvqmt=e&hvrand=7268536343559451438&hvtargid=kwd-1452208344&hydadcr=17787_9817367&keywords=garmin+gps+device&qid=1690754606&sr=8-14) per group. This will be used to record the location of transects and navigate during the data collection process. If not accessible a mobile device can be substituted.
* [Compass](https://www.amazon.com/Orienteering-Compass-Backpacking-Navigation-Professional/dp/B07CK8B3R3/ref=sr_1_2_sspa?keywords=compass&qid=1690754826&sr=8-2-spons&sp_csd=d2lkZ2V0TmFtZT1zcF9hdGY&psc=1). These will be used to navigate, as well as record the direction that is walked on the transect when gathering data.

Hyperlinks have been added to access material pricing and collection.

Site Selection

The proper site for the activity is one that has relatively low human disturbance, low light pollution, and accessibility at night. This may be achieved by asking permissions from local public parks; however, this can be done in most lawn environments if forested area is not accessible. In this case, the creation of alternative tested variables is required. All that is required is the space to establish at minimum 3 transects per group with 20 meters between transects.

Before entering the field ensure that all students can safely navigate to their sampling locations and that there is an open line of communication in case of emergency or injury. Hazards can be minimized by selecting habitat with fewer tripping hazards and water features. Students should be well acquainted with their navigational and sight pertinent gear, as these things will be harder to learn once the sun has set. This exercise cannot be done in rain, so ensure dry weather conditions before entering the field.