

Standard Operating Procedure #2:

Training

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Revision History Log

Date	Previous version	New version	Authors
2014	1.0	2.0	Suzanne Sanders and Jessica Grochowski
Appendices A, B, and C were added. The SOP now includes all aspects of training, not just plot establishment and plant ID.			
2024	2.0	2.1	Suzanne Sanders and Jessica Kirschbaum
Revised to: • reflect the fact that seasonal staff will not be federal employees; as such, they will not have charge cards, nor an EPAP; reflect the fact that first aid and CPR training will be completed in-house; • address that we now have permanent test plots for training; • address that we now use tablets, rather than paper data sheets and do not manually enter data after collection; • eliminate the appendix detailing the administrative requirements since these change annually; • eliminate the appendix detailing what the supervisor needs to do and complete since these change annually; • update the quizzes given to seasonal samplers; • update the list of training details to be emphasized; • improve wording and flow of text.			

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2.0 Introduction

This Standard Operating Procedure explains the training procedures to prepare seasonal employees for summer work.

2.1 Administrative, First Aid, and Safety Training

The initial two days of employment will focus heavily on administrative training. This includes mandatory computer training, as well as orientation to the GLKN long-term vegetation monitoring program (e.g., performance expectations, work schedule). The seasonal employees are also required to complete a first aid and CPR class during the initial three weeks of employment.

2.2 Familiarization with Species, Keys, and Sampling Rules

Following the initial two days of administrative training, the crew members will spend several days becoming familiar with the field-based aspects of the program. This will focus largely on species identification and use of dichotomous keys of the region. It is expected that all seasonals will already have an advanced understanding of their respective areas of expertise: either trees or herbs. Nonetheless, we have found that additional time allotted to plant identification is essential. Seasonals have not been out in the field for nine months so time to become reacquainted with the plants is needed. In addition, many of the seasonals may have a solid knowledge of a large percentage of the plants of a region, but not all. This period will help them fill in their knowledge gaps. This is also a good time to work through identifications, as a group, via the commonly used dichotomous keys of the region. Many clues are subjective (e.g., “spines and prickles weak, broad or roundish but not fan-shaped,” and, “leaves villous, at least when young”). Discussing these as a group will alleviate the subjectivity and ensure that all seasonals have worked through the common keys.

Herbaceous data collectors will likely spend a greater amount of time on pre-season plant identification, as there are substantially more herb species than trees at any given park. While the Botanist is spending this time with the herbaceous specialists, the Ecologist can begin to acquaint the tree data collectors with the sampling rules. This includes teaching them how to measure forking and leaning trees and all other unusual circumstances. All aspects of coarse woody material data collection will be discussed at this time as well.

In addition to species identification and sampling rules, the seasonals will also be trained on compass use during the first two days of field training, then repeatedly assessed on this skill over the course of the training period. An understanding of using the mirror for proper sighting, declination, and the high degree of precision necessary for plot establishment will be stressed.

2.3 Establishing Initial Test Plots

On approximately the fourth day of employment, the seasonals will begin the process of establishing the first test plot. Permanent test plots have been established in all parks and the UTM coordinates are loaded into the Garmin GPS for navigation, simulating a regular plot.

Typically, two seasonals will establish one plot, trading off on duties so that everyone gets to practice all aspects of plot establishment. Thus, two practice plots are being established at the same time; the Botanist will oversee one of these and the Ecologist will oversee the other. The seasonals will navigate to the plots, establish the endpoints, record the endpoints in the Trimble GPS, take photographs, select witness trees, and run out transects. Because these test plots are permanent, witness trees have been tagged and rebar has been hammered into the ground, simulating an actual plot. While this process normally takes two to three hours by mid-summer, during training this process can take as long as four to five hours. During this time, there is typically a great deal of questions and discussion between the seasonals and permanent staff on methodology.

Once the practice plots have been established, the seasonal crew will begin their training on sampling. The Botanist and/or Ecologist will go back and forth between the seasonal(s) collecting herb data and those collecting tree data. This process can take anywhere from three to six (or more) hours by mid-summer. During training, it will likely take the rest of the day and half or most of the following day.

During data collection, the Botanist and Ecologist must stress several points to ensure the integrity of the data. These include several obvious things such as 1) making sure the diameter tape is level when wrapped around trees for measurement, 2) making sure to check the distance from the transect for all trees estimated to be between 2 and 4 meters from the transect line, and 3) making sure that the herb quadrat is lying flat on the ground with one end directly in line with the transect. In addition to these obvious sources of error, there are a number of less obvious sources, and other places where details can be emphasized to promote consistency.

2.4 Establishment and Data Collection on Second Test Plot

The seasonals will spend two days establishing the second test plot and collecting data on it. This will be accomplished with minimal input from the Botanist or Ecologist, although they will be carefully watching every detail of the process. The minimal input from supervisors will allow the seasonals to think through the processes and develop their own individual systems for the necessary tasks (how/where to carry sampling gear, etc.). Typically, there are numerous mistakes made during this process (forgetting to bring to flags to Endpoint 1, failing to sum the distances when using the rangefinder, etc.). These problems are part of the learning process and the seasonals work through them. There are generally a lot of questions asked during the second test plot. Typically, completing the second test plot takes two full days.

2.5 Quiz

Following the second test plot, the seasonals will take a quiz covering multiple aspects of the protocol, but focusing on field sampling procedures. Supervisors will grade these, then go over them individually with each crew member to ensure that the seasonal understands any questions missed. Based on the seasonals' scores of the quizzes, the supervisors may decide additional training for the seasonals is needed. These quizzes are presented in Appendix A of this SOP.

2.6 Training on Specialized Equipment

In addition to the general equipment used for field sampling, seasonals will also be using some specialized equipment, including two-way radios, Spot Locators (see SOP 3: Safety), and Garmin GPS units (see SOP 4: Using the Global Positioning System). All seasonals will be taught the use of these in small groups and their understanding will be assessed during one-on-one meetings with either the Botanist or Ecologist.

2.7 First Official Plot

Following the quiz and assessment of specialized equipment, seasonals are ready to begin field sampling. For the first day of sampling, the seasonals may sample one site collectively, as a group.

Appendix 2A. Quizzes

Herb/Browse Sampler Quiz

Name: _____

What is the radius of the direct browse circle?

If branches from a shrub that is rooted outside of the browse circle grow into the circle, do you count this as a species present in the circle?

If branches from a shrub that is rooted inside of the browse circle grow out of the circle, and browse is observed outside of this circle, do you tally this as browse on the data sheet?

What is the molar zone for direct browse measurements?

What is the minimum height of seedlings on which we collect data? What other requirement must seedlings meet to be counted?

If a plant is rooted outside of the herb quadrat but is growing/arching over into the quadrat, is it counted?

How high is “breast height”?

If rebar is offset, do you take the azimuth from the rebar to the actual endpoint, or do you record the azimuth from the actual point to the rebar? Why?

When recording witness tree azimuth, do you record the azimuth from the tree to the endpoint, or from the endpoint to the tree? Why?

How many individuals of a given unknown species must be present to collect a specimen?

You encounter an unknown plant at plot 1003 that you’ve documented and collected at your two previous sampling plots (1002-3 and 1001-1). Provide a detailed description of how you would record the unknown if you don’t want to make yet another collection.

In the example given in the previous question, what would you do if you didn’t remember the exact unknown numbers of 1002-3 or 1001-1?

What do you need to make sure before you take endpoint pictures? Please list at least two things.

For the following scenarios, write down whether the quadrat should be Sampled with No Data (ND), or Not Sampled (NS):

 Quadrat lands on a paved trail:

Quadrat lands on a dirt path with no plants:

Quadrat lands on an area with water >3 ft deep (can't tell if there are plants):

Quadrat lands on muddy area with some shallow standing water and no plants:

Quadrat lands on steep cliff that you cannot access:

There is a yellowjacket ground nest where the quadrat lands:

There is a pile of coarse woody material (CWM) where the quadrat lands:

Quadrat lands on area with a big tree trunk and no plants that fit our criteria:

Draw an outline of the plot and write down all the endpoint numbers and transect numbers.

Tree/CWM Sampler Quiz

Name: _____

What is the minimum diameter of tree recorded?

How high is “breast height”?

For a tree growing on a hill, where does one stand to record DBH?

For a leaning tree, where does one stand to record DBH?

When one wants to determine whether a leaning tree is within 3 meters of the transect line, is the distance measured between the two taken from the tree at A) breast height or B) the base?

You encounter a tree in the 6-meter-wide belt transect that has healthy looking green leaves at knee level. Outside of that, there are no obvious signs of life. Do you record it as live or dead? Why?

What is the minimum amount of space left on a nail, used for nailing in a tree tag? What is the minimum diameter at transect recorded on coarse woody material pieces (decay classes 1–4)?

What is the minimum length a piece of coarse woody material must be to be tallied (decay classes 1–4)? What is the minimum diameter and minimum length on decay class 5 pieces?

What do you need to make sure before you take endpoint pictures? Please list at least two things.

What do you do when you can’t figure out a tree or shrub to species but only genus?

Under what conditions would you be permitted to eat berries or dig roots from either a plot or the area surrounding a plot?

If rebar is offset, do you take the azimuth from the rebar to the actual endpoint, or do you record the azimuth from the actual point to the rebar? Why?

When recording witness tree azimuths, do you record the azimuth from the tree to the endpoint, or from the endpoint to the tree? Why?

If there is no CWM on a transect, what do you record in the tablet?

If you do not have time to sample a transect for CWM, what do you record in the tablet?

Draw an outline of the plot and write down all the endpoint numbers and transect numbers.

Where along the transect does the herb sampler collect data? List specific meter locations, and whether they are on the north or south side of the transect.