BES 316 2010

**DESCRIBING WETLAND COMMUNITIES IN THE FIELD**

Goals for Today

1. To apply skills and approaches learned in the previous lab exercise (indoor sampling of artificial communities) to a plant community in the field
2. To begin to develop familiarity with some common wetland plants of our region

***SCHEDULE for APRIL 8, 2010***

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| **Time Period** | **Activity** |
| 8:45 – 12:00 | Sampling wetland communities |
| 12:15 – 1:05 | Ecological concepts exercise presentations |

**NOTES FOR TODAY**

* **Meet outside at the end of the boardwalk – not in the classroom**
* **Bring boots for the wetland**
* **Dress appropriately (consider an umbrella if it is raining – it helps during sampling and data recording))**
* **Bring a field notebook for recording data in any kind of weather**
* **Read this handout carefully**

**OBJECTIVES**

We will take our community sampling techniques out to the field today.

**EQUIPMENT**

Your group will need to take the following equipment out to the field:

* 50-m measuring tape
* 2 metersticks
* 1 set plant guidebooks
* 20 bamboo stakes & 1 roll flagging
* 1-m2 quadrat sampling frame

**LOGISTICS / PROCEDURES**

You should work in a group of 3-4 students today. We will meet at the lab promptly at 8:45 in order to allow enough time for you to complete the measurements by the end of class (allow for traffic).

**Transect Sampling of Vegetation in the Field**

1. Using a meter tape, lay out a 20-meter transect through a vegetation community of your choice. Be aware that you are trying to characterize a single community in this exercise, so try to remain in a consistent vegetation assemblage (rather than cutting across multiple communities).
2. Moving along the line of the measuring tape, record the distance it intersects any plant canopy (record separately for each species). Use vertical projections of the canopies above to the ground surface. Record the entire extent of each canopy even if leaves do not occupy every bit of area within the canopy boundaries (this is a pragmatic approach that simplifies the true complexity of plant canopies). For overlapping canopies (multiple canopy layers) record each species independently. Thus, total cover of all species can exceed 100%.
3. Use your species list and campus wetland plant guidebook to help you identify plant species. If you still have trouble identifying a species, ask for assistance. To keep moving on your measurements, if help is not immediately available, you can put down a description and identify it later when help is available.

**Quadrat Sampling of Vegetation in the Field**

1. Establish 2 vegetation quadrats of a four meter by four meter size along each transect using your bamboo stakes and flagging. Place each quadrat with a corner at the 7 and 14-meter marks on each transect (see diagram on next page – dotted line indicates the transect).
2. The 4 x 4 meter quadrat is a commonly-used size for woody vegetation of shrubs and small trees (though 10 by 10 m or larger quadrats are common in mature forests). You will estiomate cover of all woody species throughout the 4 x 4 meter quadrat.
3. However, sampling herbaceous species over that large an area can be difficult. Thus, you should establish a small 1 x 1 meter quadrat in the center of your main quadrat. This smaller area will be where you estimate cover of all non-woody species.

**Herb Layer Sampling:**

A 1-m2 quadrat frame with grids will be provided to use for herbaceous vegetation. Locate one herb quadrat centrally within each of the woody plant quadrats that you have marked. Estimate and record the percent cover for each species of herb in each quadrat. For some taxa you may use general groups (e.g., moss, rhizomatous grass, etc.). Be sure to have more than one person make **independent** estimates, then discuss your independent results and use the consensus values (as you did yesterday in the lab).

**Shrub & Tree Layer Sampling:**

Mark out 4 m by 4 m quadrats for use in estimating shrub layer cover. **Estimate the % ground area of each quadrat covered by each shrub and tree species**. Do not make cover estimates for individual plants - the estimates should be a total % cover for each species (which may have one or many individual plants within the quadrat). Use a visual projection of the canopy crown of each shrub to the ground level to estimate the extent of ground area covered. Again, use the approach of independent estimates, discussion and eventual consensus to arrive at your values.

20 meters

0 meters

14 meters

7 meters

4 x 4 m

sampling quadrat

**Quadrat 2**

1 x 1 m herb sampling quadrat

**Quadrat 1**

***Layout for your transect (dotted line) and two associated quadrats***

**DATA & CALCULATIONS**

Next week we will discuss how to treat the data you collect today. Your group should enter your data into Excel in a **neat, organized fashion that reflects the example table below**. The raw data that you collect in the field should be carefully converted to the % cover data shown below. You must email the Excel file to me **by Monday, April 12 at noon** so I can examine it and send it out to the entire class. Your oral report will cover just your own group’s data, but your written report will use data from both groups. Details on the oral and written reports are provided in the April 13 lab handout.

Your data table (example below) should include a listing of all of the species found (**in all of your samples**) in alphabetical order and the % cover for each species by each sampling unit (transect, quadrat 1, quadrat 2). Include a column to indicate the growth form of each species (or taxon) listed. Use growth form categories of (1) Tree, (2) Shrub, (3) Herb (anything that is not woody except a grass-like species), or (4) Grass / Sedge (anything grass-like). Leave boxes blank if there was no data for a certain species in one of the sampling units (often a species will show up in a transect but not in one of the quadrats and vice versa).

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| **Plant Cover Data** | | | | |
| **Species** | **Growth Form** | **Transect**  **% cover** | **Quadrat 1**  **% cover** | **Quadrat 2**  **% cover** |
| *Alnus rubra* | Tree | 14.0 | 12.0 |  |
| *Acer circinatum* | Shrub | 12.0 |  | 10.0 |
| *Carex obnupta* | Grass/sedge |  | 14.3 | 2.4 |
| *Ranunculus repens* | Herb | 6.2 |  |  |
| *Salix sitchensis* | Shrub | 44.4 | 28.0 | 64.0 |