Week 7 – Field Activity

Wildlife (mammal) Surveys

This week's field activities are comprised of three short exercises: non-linear transect, block survey, and a drawing. These are best done when wildlife is active which is early morning or in the hours before sunset; if you have the time to do these then, rather than mid-day, you will likely see more.

(1) Non-linear transect

Select a local and nearby trail. You will be going for a slow walk looking for wildlife and sign. At the start of the walk on the trail record the time and, if you have a GPS, the coordinates of your starting point. Slowly walk along trail looking for live animals (birds, squirrels, mice, etc.) as well as sign (tracks, scat, cavities, nests, etc.). Walk at least 30 minutes, slowly, continually looking around. Stop often and listen. **Record all wildlife or sign you see and photograph sign**. At the end of the non-linear transect, record the time and estimate distance walked. Record location if you have GPS with you. If you can, start or end at a prominent landmark (e.g. parking lot; bridge over a stream) so another person would know where you ended. Once you have walked trail and ended your transect, complete a block survey (below).

Enhancing our observation skills is critical in all environmental work, and so also with wildlife study. To practice enhancing these skills to notice things, during either this non-linear transect, at the end of the following block survey, or the walk back to your car, select an item to sketch in your notebook – a leaf, a branch, track, bone, … something that catches your eye. Spend 5 minutes drawing it in your notebook. Really look deeply and carefully at it. Note shape, colour, imperfections. Create a detailed drawing of that object to the best of your ability.

(2) Block Survey

At the end of your transect, walk a short distance (20-50 m) into the forest. Find a comfortable place to sit quietly. Set the timer on your phone to sit quietly for at least 30 minutes. Sit and watch and listen. Do any squirrels or birds come around to check you out? While sitting there observe your surroundings. Are there any nests or cavities? Unusual marks on trees? Use all of your senses to watch, listen, and smell what is occurring around you as you sit for 30 minutes or more. After half an hour quietly leave the forest and return to your car.

Advanced Block Survey (optional)

To be most effective, block surveys are conducted when the animals are most active (that is, dawn and dusk). If you want to conduct a better block survey, go to a local area with long and clear sightlines (e.g., overlooking a farmer's field, a lakeshore or river's edge, a meadow or clearcut) either in the final hour of daylight at end of day or for the first hour after sunrise. Sit motionless with binoculars for an hour or so and watch the edges between forest and opening. Record location, start and end time, and any observations.

Stream Measurements

Not all students may have access to streams with running water as they may live in an arid environment, such as the Southwest or areas without nearby flowing water. Therefore, dependent upon the nature of the channels in the area you live, you will be doing a field exercise either in a wetted channel (one with water flowing in it) or a dry channel (lacking water). The exercises are described below for each of these situations.

Prior to going into the field, create the following table in your field notebook. You will be filling this out as you complete the stream measurements.

Stream Name:			
Site Location:			
Site Length:			
Bankfull width		**Wetted width**	
Stream gradient (%):			
Substrate (% fines, gravels,cobbles, boulder, bedrock)	**Fines: Gravel: Cobble**	**Boulder: Bedrock:**	
Riparian habitat (describe):			
Total area of site:			
Area of each habitat type	**Pool: Riffle: Glide:**		
Pool:riffle ratio (if applicable)			

Wetted Channel

Go to a local small stream or brook near your area. Even if the stream is only half a meter wide that is okay. Even a ditch with water flowing in it will be useful. We are just looking for a channel with water.

Once you get to your stream, if you can, walk on one side of the stream along the bank for a hundred metres or so, just looking and observing the channel. This is to give you a sense of the stream before we focus in on specific areas. Does the stream change? Is it similar throughout the 100 metres? Does it meander? Is it straight? Are there multiple habitat types or is it all one? Are there debris jams? Bridges? Culverts? Etc. The idea is to do a reconnaissance of a larger area to get a 'flavour' of the stream before focussing down on location. If you feel it is appropriate, draw a quick sketch map of the 100 m section that you walked.

Within that 100 metres select, if they are available, a short site that has a few habitat types: the pool, the riffle, and the glide. If your entire stream is one habitat type that is okay and we can still do the work with that. We are looking to choose a length of stream (called the 'site') in which to do our focussed work.

Estimate the bankfull width of the channel at the point you are at and record in your notes. Now multiply that number by 10. That will be your site length. For example, if my channel is 3 m bankfull width, my site would be 30 m long. Ideally this site length with include multiple habitat types (pools, riffles, glides); even if it is all one type (e.g., glide), that is okay.

- Start by drawing a sketch map of the site. Draw the channel banks and habitat units (if you have more than one habitat unit in your site) to scale as best you can. Once you have this base map add the following information to it.
    - Estimate the length and width of each habitat unit and include these dimensions on the map for each unit
    - Estimate the wetted width of the channel. Is wetted with equal to bankfull width or is it less?
    - What is the riparian habitat like? What are the dominant tree and shrub species? Does it appear to be a young forest or is it mature or old?
- Using your clinometer, determine the gradient (slope) of the stream. To measure a slope gradient, the observer stands straight up with their foot right at the water surface and they shoot on their partner, at the appropriate level to be their eye height above the ground (as emphasized in Week 4). The partner is also standing with their feet right at the water surface. This ensures that you are measuring the gradient of the water surface. It is critical that each observer be standing with their feet at the water surface. If you are working by yourself, hang a piece of masking tape or something you will be able to see for a branch at your eye level to replace your partner, then walk a ways upstream or downstream and shoot on the object you left at eye level. This will give you the gradient of the stream.
- Describe the stream bottom (what we call the 'substrate'). Is it 'fines' of sands, silts, and clays? Is it primarily gravel? Is it boulder? We can use the following guidelines to determine size of material on the stream bed.

Particle	Size rande	Examples
Fines (clay, silt and sand)	Sand size and smaller	
Gravel	Larger than sand but smaller than your fist	
Cobble	Larger than your fist but smaller than your head	
Boulder	Larger than your head but smaller than a VW bug (beetle)	
Bedrock	Larger than a VW bug (beetle)	

- From this table can you estimate the percentage of: (1) fines, (2) gravel, (3) cobble, (4) boulder, and (5) bedrock in the streambed of your site? To do this, visually estimate the percentage of the streambed composed of each of these classes. They must add up to 100%. Not all size classes may be present. For example, your site may not have boulder or bedrock, in which case the fines, gravel, and cobble together must add up to 100%. Estimate this and record in your field notes.

- Photograph your site. Standard site photographs in stream work are four per site. From the meddle of the site, photograph upstream, downstream, left bank, and right bank.

Once back at your home:

- Calculate area of each habitat unit and the total area of site the site. Include these in the table in your notebook. These areas are calculated simply by multiplying your estimated widths and lengths for each habitat unit and for the entire site. These are data that were to be recorded in the data table (site length and bankfull width) and on your map (length and width of each individual habitat unit).

- Calculate the pool: riffle ratio and include this in your notebook. This is calculated by dividing the total area of pools in your site by the total area of riffles.

Dry Channel

If you live in an arid environment without available running water easily available to you, using a dry ditch or a wash we can still collect much of the same information, even in the absence of water. With a dry ditch collect the following information using the methods described above.

- Site length
- Bankfull width
- Riparian habitat
- Channel gradient
- Substrate composition (% fines, gravel, cobble, boulder, bedrock)
- Total area of site
- Photograph site