

Mira Loma Group IV Project at Arcade Creek

HABITAT ASSESSMENT

What is Habitat Assessment?

Habitat Assessment measures the foliage coverage of trees above the banks of the creek; in other words, we measure the vegetation along the riparian corridor. The collected data can be used to assess suitability of habitats for various animal and plant species. Our task is to gauge how the creek and vegetation along the creek banks fluctuate from season to season and year to year.

So What Do We Do In This Study?

As a Habitat Assessment group member, you will be going out with your group to one of the seven sites and taking measurements at each of the ten transects. Below, you will find a more detailed description of the procedure and the measurements & observations you will have to make.

BASIC INFO

Samplings:

A sampling is a complete set of all of your data during a specific time frame. Habitat takes two samplings a year: Fall and Spring, which effectively corresponds with first and second semester.

Sites and Transects:*Terminology:*

Transect- A path that is parallel to the creek, in which one counts and records the occurrences of the phenomena of study, in this case trees and bushes. It is divided by transect lines.

Transect Line- An imaginary line extending from the markers across the channel and to the surrounding bank area. It is perpendicular to the transect and the water flow.

Quadrat- The 10x10 meter square, in which the habitat assessment is done, this is where all the trees and bushes are marked. It outlines the boundaries of where you're sampling. The transect point should be the corner of the quadrat that is furthest downstream.

Information:

There are seven sites for the Group 4 study at the Arcade Creek (A-G site). Each site is broken down into eleven points, called transect points, along the edge of the creek. Each

transect point is marked by a numbered washer nailed to a tree and a piece of brightly colored flagging. NOTE: The 11th marker **IS NOT** a transect point to measure from – it marks the end of the reach of the site.

The numbers on these washers correspond to their respective transects, and the numbers increase as you travel upstream. These transect points occur about every 10-20 meters and mark where quadrats should be measured from. You will have to fill out a set of data forms for each of these quadrats.

The “transect line” is an imaginary line extending from the markers across the channel and to the surrounding bank area. (Therefore, it is perpendicular to water flow.) This line is the **beginning** of the quadrat, so it is the side furthest downstream. Each quadrat should extend approximately ten meters upstream from the transect line.

However, at many sites the transect points may not be marked well, or at all. If your group has trouble finding any of the transects, ask the Long Mapping team to go out and help you find and mark your transects. Let your Senior Managers know if you have any problems.

Upstream, Downstream, Left and Right Banks:

Upstream and downstream refer to the direction of the creek’s flow. Downstream (generally west) is the direction the current flows in, while upstream (generally east) is the direction facing the current flow. When referring to the banks, left and right always refer to your perspective when facing downstream.

If there is no easily visible current at your site, remember that the transect numbers increase as you move upstream and decrease as you move downstream. So, Transect 1 is the farthest downstream, and Transect 11 is the farthest upstream. Site A is the farthest downstream and Site F is the farthest upstream, with the exception of Site G (which is in between C and D).

EQUIPMENT

Meter Tape:

Meter tapes are used to measure distances. If your measuring tape is not in meters, be sure to notate that on your data and make proper conversions. We have reeled meter tapes that will be long enough for your purposes.

Compass:

This is a small, square instrument that is used to determine magnetic north. This instrument will be used to determine what degree the tree, or bush, is from the center of the quadrat. Starting at 0 degrees, the tree and bush number should increase as the degree goes from 0 to 360.

Calipers:

This is used to measure the diameter of the trees in each transect. Extend the arms of

the caliper and adjust it to the size of the tree's trunk 1 meter from the ground. Trees with a diameter greater than 3.84 cm (that's a circumference of 11.9 cm) at 1 meter off the ground are considered "trees", and those with a diameter less than 3.84 cm are considered "bushes".

Flags:

13 flags are used to mark the corners, midpoints, midpoints between the corners, and the center of the quadrat.

Densiometer:

A small, rectangular instrument with a gridded, concave mirror at its, the densiometer is used to measure canopy/foilage coverage within the quadrats. When taking a reading, it should be held elbow level and approximately 30 cm from the body while the number of mirror squares reflecting the canopy is counted. To count, each etched square must be divided by 4, so that there are a total of 4 times as many squares on the face of the densiometer. The final number of these smaller squares with canopy coverage must be divided by 0.96, and then divided by 100 in order to get the percentage canopy cover of the area.

MAPPING PROTOCOL

Materials Needed:

- Meter tape
- 13 small metal flags
- Calipers
- Densiometer
- Compass

HOW TO MAP**SET UP:**

1. Ensure the header for your data sheets are fully filled out.
2. Mark mapped bank - left or right. You should map the same banks that were mapped last year.
3. Measure out a 10x10 meter quadrat (square). One side should be on the transect line, while a second side should be perpendicular to the first and run along the top of the wetted channel edge heading upstream towards the next transect.
 - a. Place a flag into the ground at each corner of the quadrat. Place a flag at the midpoint of each side.
4. If it's absolutely impossible to keep the line along the channel, due to steep slopes, Himalayan blackberries, or cottonwood thickets, you have two choices:
 - a. Move the quadrat away from the creek a little. (note: the quadrat should always be a 10x10 square, and one side of the square must always lie on the transect line. Therefore, if the quadrat is moved away from the creek, the tree with the transect marker may not be included in the quadrat)

- b. If a is impossible, measure the other bank. Ensure you mark the correct bank you are measuring for 1.
 - c. If a and b are impossible, note on your sheet the transect is unable to be mapped and be specific in your reasoning.
5. Once you have marked your quadrat, measure two diagonals from one corner flag to the opposite corner flag. Measure 3.5 meters from each corner on the diagonal. Mark this spot with a flag. Mark the midpoint of the first diagonal you measure with a flag. The midpoint of the second diagonal should be in the same spot as the midpoint of the first diagonal (this should be the center, if the quadrat was measured correctly). If the diagonals' midpoints do not match, use the midpoint flag of the first diagonal as your center.

MAPPING:

PART 1

1. Stand at plot center with a compass and locate north. Starting from north and working clockwise, choose a "tree" inside the quadrat.
2. Standing at plot center, measure and record the degrees-from-north of that tree or bush under "degrees."
3. Measure its diameter using the calipers. **If the diameter at 1 meter off the ground is greater than 0.038m, it is a tree. If smaller, record it as a bush.**
4. Measure the distance between plot center and the tree or bush. Record this under "distance."
5. Ask the Botany Liaison what tree/bush species you are measuring and record this information next to the tree number. Also, ask if the tree/bush is invasive and record this information.
6. The four flags placed on diagonals, 3.5 meters from the corners are the locations at which densiometer readings will be taken. You will take one densiometer reading for each of these four spots, and then the center flag. For each of these four spots, face the nearest corner flag while taking the densiometer reading, and face north while taking the densiometer reading for the center flag. The flag placed at 3.5 meters diagonally that is closest to North will be signified as the "N" densiometer reading. This will continue for East, South, and West. It will conclude with a final reading in the center of the quadrat. After these readings have been taken they must be averaged for a "Mean Coverage".

PART 2

1. Using the distance and degree measurements, draw the tree or bush (or grass patch) onto the map. Trees are circles, bushes/grasses are patches with ragged edges. **Each concentric ring is 1 meter from plot center, each square on the map is 1m, and each radius of the circle is 15 degrees from those adjacent to it.** A line should be drawn between plot center and trees, and labeled with the distance.
2. Number the tree/bush/grass-patch you just drew in. Numbers should start at "1" for whatever is closest to North, and increase as you travel clockwise. (If you had 4 trees, one at each cardinal direction, North would be 1, East would be 2, South

would be 3, and West would be 4.) **These numbers *MUST* correspond with the entries on the back side of the mapping sheet.**

3. Trees should be mapped as 1,2,etc, while bushes should be mapped as B1, B2, etc.

CONTINGENCIES:

1. If you have more trees/bushes/grasses per transect than will fit on your data sheet, take an extra data sheet, draw a large X through the map side, fill out the header, and use the “Vegetation Mapping - Plants” side of that sheet to fill in data for additional trees/bushes/grasses.
 2. Make sure to note grassy patches under the “Notes” section on the mapping sheet. Write degree measurements of where the grassy patches begin and end, as well as the distance of the beginning/ending from the center.
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EXPLANATION OF ITEMS ON DATA SHEETS

In ALL CASES, if you cannot take a piece of data, note why. BE SPECIFIC. If something is unsafe to measure, say why. This is far preferable to simply leaving it blank, and **falsifying data is NEVER permitted**. Blank spaces imply unfinished data collections, while a notation acknowledges a problem we need to solve. Always use **PEN** to preserve your data from year to year and make copying data easier.

Headers

Site: Indicate which site you are at. (A, B, C, D, E, F, or G site.)

Date: The date you’re taking data; month, day, **AND** year. ex. “Jan 19, 2012.”

Fall/Spring: Circle which sampling your data is from i.e. Fall or Spring

Transect: Indicate which transect you’re at. (Should never be 11!)

Recent Weather: List the significant weather when the data is collected.

People: List the names of people at the creek taking data on the date specified above.

Mapping Measurements

Plant/Bush #: Write the number of the tree/bush-patch/grass-patch. This begins with “#1” being the closest plant to 0 degrees north, and sequential numbers are assigned going clockwise. Circle either “yes” or “no” next to IS (meaning invasive species) according to whichever the Botany liaison specifies.

Species: The Botany team should supply this. If they don’t know, samples will be collected to identify later.

Distance: The distance from the quadrat's center point to the trunk of the tree/bush/grass.

Degrees: The degree measure from north (North = 0 degrees) of the tree/bush/grass.

Diameter: Using calipers take the diameter of the tree at a height of 1 meter. If the tree splits before 1 meter, measure the diameter at the split and indicate that there is in fact a split. Make sure the diameter is converted to meters before it is written down!

GENERAL NOTES

Oftentimes when we map, we come very close to the edges of people's property or places of business. While it is of course okay to talk and to have fun, **be courteous**. We don't want to give the Mira Loma study a bad name, and we should be considerate anyway. If you run into a homeless person, just finish your work and leave peacefully.

Watch out for poison oak – many of you haven't yet experienced the pleasure of rashes breaking out all over your body and having your eyes swollen shut... if so, you might want to keep it that way. Long pants may be advisable.

Because Habitat works at the creek, we have a better opportunity than most to pick up trash. **TAKE A TRASH BAG AND GLOVES to the creek each time you go out.** The Equipment Manager, Study Leaders, or Restoration Leaders/Managers can loan/provide these items to you. It'll also get you more hours!

You cannot go to the creek with less than four people. If members of your team are unavailable for the outing, check to see if Managers, other Habitat site team members, or Botany liaisons will accompany you. Also, it is important that you are **present and prompt at every meeting you have scheduled with your team leader.** It is understandable that things can come up at the last minute before a meeting, but don't miss a meeting more than once—your teammates are depending on you as well as the rest of your study.

Please record all of your data in meters, not centimeters. It makes everything easier for everybody. Any measurements taken in anything but meters should be converted.

Be honest in measuring/recording data. As teachers have stressed to you time and time again, we are not the only ones using our data for analysis! Being meticulous equates to more hours in the long run.

Leaders should be sending emails out to their teams regularly. They should cc Mr. Karagianes, Mrs. Jacks, and the Habitat Managers for all of their emails. Label the subject of each email as " Site __ Habitat (Date of outing MM/DD/YY)

Best of luck and Happy Habitating!

From your managers,

Summer Marsh & Ismael Javed