Terrestrial Ecology – Forests

1. Our activity today is to find some mature forest in Waterloo. Less than 1% of the land area in Waterloo Region is occupied by original or mature forest, so it is exceptionally rare. The land was cleared either for agriculture or timber extraction. Most of the forest we see today is immature and still regenerating.

2. We will hike through a nearby forest (Sudden Tract) known to have a mix of mature and immature forest. We will stop a few times and record some information at each spot. At the end you will be asked to decide which spot was the most mature.

Characteristics to watch for:

Soil: Well-developed soil structure with a deep mulch layer, clear horizons, and deep roots. Immature forest, especially that on former agricultural land, will have weak or no horizons.

Topography: Steep hills often prevented early settlers from clearing the land so trees on steep slopes and the tops of tall hills were often left unharvested.

Exposure: A forest with a complete or closed canopy suggests an immature forest, as the trees are mostly the same age. A mature forest will have an incomplete canopy with numerous and large openings.

Structure: In mature forest, the abundance of herbaceous plants on the forest floor will be relatively high. The partial canopy and openings made by falling trees means that light reaches the forest floor, and therefore increases abundance. Diversity is often higher in mature forest, so there should be a greater diversity of species. The trees in mature forests will likely be farther apart. They will have a larger diameter, and generally be taller with few (if any) branches near the ground. Coniferous trees in Ontario are largely considered early successional, so the more conifers, the less likely the site is mature yet. Immature forest is essentially the opposite of the above.

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3. At the end we will average the data from all three stops to create a general description of the forests found at the Sudden Tract.

4. Along the way I will tell stories, record these stories and take pictures, post them to twitter or instragram @Wrigleycorners

Terrestrial Ecology

Names: _____

1) Determine your Pace Factor: (you will use this to measure distances)

Distance (20m) ÷ _____ (number of steps) = _____ (size of your step in meters).

2) Throw your quadrat to determine plot location, make all measurements in your plot.

3) At each stop, fill in the appropriate column.

Soil		1	2	3	Average
Soil Type:	Ball? (yes/no)				
	Ribbon? (yes/no)				
Use Dichotomous Key on back:	Length? (cm)				
Soil Name:					
Moisture (%): (probe)					
Leaf Litter Depth (cm)					
Forest Structure					
Herbaceous abundance (#):					
Herbaceous diversity (#):					
Distance to nearest log					
Distance to nearest tree (m):					
Diameter of nearest tree:					
Height of nearest tree (m):					
Height to lowest branch (m):					
Deciduous or Coniferous:					
Personal Observations: (Rocks? Animals? Tree Type?)					

Story 1	Story 2	Story 3

4) Which of the three stops was the most mature?

Soil Type (Ball/Ribbon/Texture Test)

Start: Fill your palm with soil. Add water until your sample is a putty like consistency.

1) Ball: Can you roll sample into a ball in your hand?

           Yes – Proceed to step #2

        No – **Sand**

2) Ribbon: Squeeze ball out of the top of your hand forming a ribbon. Squeeze it into a uniform thickness until it breaks.

           Does it make a ribbon?

           Yes – Proceed to Step #3

        No – **Loamy Sand**

3) Length: Measure how long the broken ribbon is.

           <2.5cm   -Gritty **(Sandy Loam)**

                     -Gritty and Smooth **(Loam)**

                     -Very Smooth **(Silt Loam)**

           2.5 - 5cm” -Gritty **(Sandy Clay Loam)**

                     -Gritty and Smooth **(Clay Loam)**

                     -Very Smooth **(Silty Clay Loam)**

           5cm+”   -Gritty **(Sandy Clay)**

                     -Gritty and Smooth **(Clay)**

                     -Very Smooth **(Silty Clay)**

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Which stop was the oldest? Why?

0   1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   17   18