Lime Hollow Field Trip

Frequent /current disturbance
Disturbance= removes vegetation and/or exposes soil. Examples: roads, construction, trails and camping, logging, fire, tornado/hurricane. Different species live in recently disturbed areas than live in more mature vegetation. Areas that are frequently disturbed often provide habitat for species that are not native to the area ("exotic" or "alien") and/or are weedy ("invasive"—pushing out other species). Examples of alien species include "**Dandilion", "Burdock", "Common Mullien"** (from Europe). Burdock and Mullien are biennials that live two years, the first year's rosette overwinters as underground root, and in the second year they grow large, reproduce and produce a large number of seeds. Some native species also prefer more recently disturbed areas: a good example is the shrub "**Northern honeysuckle".**

Succession: recovery from a disturbance
After a disturbance, plants colonize in stages. You can tell the time since a disturbance by the size, spacing, and type of species. In areas where the disturbance happened more recently, you would generally see: more **honeysuckle, hawthorn, red maple,** trees closer together, smaller trees, fewer spring ephemerals. In general, mature areas have larger, more distantly spaced individuals of **American beech, black cherry, and red maple** as well as more spring ephemerals.

Edge habitat
Where a recently disturbed area comes in contact with a more mature area—including trails. This is a place where non-native or weedy species can colonize and move into a more mature area.

Secondary forest (mature)
This means a forest is in recovery from a disturbance. All forests in the eastern US are essentially "secondary"—even if they have reached a stable, mature point where the kinds of species are no longer changing due to succession ("climax stage"). With the exception of Joyce Kilmer National Forest in North Carolina and a few very tiny patches of land, all land east of the Mississippi has been cut down for timber, pasture or farming at least once. (Typically between 1890 and 1940). "Primary" forest such as that at Joyce Kilmer is often called "old growth."

Geological formations and pH
Much of the area is underlain by limestone: the calcium in lime will free-up nutrients in the soil (nitrogen), so the soil is rich from the perspective of the plants in the area. This geology fosters a lot of diversity among the spring ephemeral herbs. Glaciers have created hills that are essentially piles of gravel or cobble left when the ice melted, ridges due to the scraping action of ice movement, and depressions that have filled with water. The fingerlakes were created by the progression of glaciers southwards. The marl pond was created by glacial scraping that exposed of limestone and sandstone bedrock, and the bog pond was created by the crater left by water falling off the end of a retreating glacier. The pH of the marl pond is basic (calcium carbonate) and the pH of the bog is acidic (tannins and other acids that steep out of plant material like tea). Marl ponds have water that is clearer because aerobic respiration of microbes (and thus decomposition) can progress quickly. Bogs have brown water, ow oxygen, low decomposition and high amounts of organic material at the bottom. Bog areas have different groups of plants, because of the low nutrient availability: often plants are evergreen (do not drop leaves in winter) and it can be a good place to see carnivorous plants.

Spring ephemeral
A life history strategy of some herbs found in more mature forests. They come out first thing in the spring and typically complete their reproductive cycle very quickly---in the space of a month or less. They often emerge in mid April or earlier and produce seeds by mid-May. The advantage: rich deep soil of the mature forest floor and lots of sunlight because the trees don't have leaves out yet. The risk: being killed by frost before producing seeds. These herbs are not found in the summer because they are unable to photosynthesize enough in the shady conditions of the full tree canopy. Good examples include: **bloodroot, blue cohosh, trout lily, squirrel corn, trilliums, may apple, dutchman's breeches, spring beauty, wild ginger, wild leek.**

Pathogens

American Beech is being killed by an insect and fungus combination that attacks larger trees. Forest structure has changed dramatically due to pathogens (usually a fungus) introduced from Asia: American Chestnut and American Elm have been exterminated as dominant species, and large American Beech are being reduced in numbers.

Species you may have seen (you are responsible for only those we saw on YOUR class's trip): Burdock, Common mullein, honeysuckle, dandilion, wild leek, trout lily, blood root, may apple, trillium, hepatica, wild ginger, spring beauty, Dutchman's breeches, squirrel corn, blue cohosh, American beech, yellow birch, black cherry, white pine, hawthorn, red maple.