Welcome to AP Environmental Science. I am available at aharris@middleboro.k12.ma.us if you have questions or feel you’ve not been able to find out enough information. Please join the REMIND list by texting the code @bfc8f to 81010. I may be away from a computer on occasion (especially in early August), so please be patient, it could be few days for a response at times. The course syllabus draft is at https://goo.gl/23tLps and will be modified with feedback from this year by August.

The main goal of the summer work (TASK C below) is to write a conclusion about what stage of succession an easily accessible site in Middleboro may be experiencing. In addition you will get to know some plants that may be used as examples as well some experience identifying a plant. This is to be a BRIEF written assignment (a page). The rest is early notice for homework in the first week and is a good way to get ahead of a fast paced start to the course. The homework is useful to complete before task c if you don’t recall details about succession.

The homework will make you familiar with the text and briefly review some basic ecology that you had in biology. It is my hope that we will be able to use these sites during the year for data or examples on diversity, forestry values and soils. Suggestions for sites include Pratt Farm on East Main St, Rocky Gutter Wildlife Management area, Stuart Morgan Property on the corner of Long Point Road and Marion Road (Mad Mare’s Neck), Oliver Mill Park, Soule Homestead, MHS school grounds (including the YMCA property on hill behind the Y), “Field of Dreams” sports fields near the Nemasket on East Grove St., John T. Nichols Jr. Middle School grounds, Battis Field. (You can use other town’s open space, such as part of Myles Standish State Forest, or Savery Historical District road, or coastal open space if that is easily accessible to you and fits your interests). Pick something easy to go visit. If you are out of town all summer please let me know the location and pick an area there. Task A and B are advanced notice for some homework that will be due in the first week of classes, you may should want to get them out of the way to start the year off strong. For those who don’t recall “succession” from biology these assignments would be useful to do before the summer project task in C.

A) Succession. First a bit of review about succession, use guided outline attached to read about ecological succession p168-170. You can also watch this Ted-ed video on ecological succession (about 10 min) http://ed.ted.com/on/fPFboH47 This task should be brief perhaps an hour to 1.5 hour. . (This project is a 5 point grade and will be checked as homework on the second class)

B) Using the notes guide in “A” as a guide read and outline on your own Chapter three in Environmental Science for AP. We will develop more skills on how to use the text and how to get the most out of text resources. It should take about an hour (some may be quicker, most a bit longer) and two+ pages of outline. Use the headings of each section as topics and record a few details or main points for each topic. Leave space and keep track of questions you have. This chapter should be a review of biology unit on ecology. Chapters will be frequently given as homework, it is expected that you’ve given them a good bit of attention, expect an hour + for each. (This is another 5 point homework grade that will be checked after the third or fourth class depending upon school schedule, AND it will serve as some of your notes as we won’t cover it much in class, I’ll assume you are familiar with this concept, extra help is available if you are not confident about it).

C) 15 pt. This is your official SUMMER project: Visit a natural area to contribute data and write a convincing conclusion about what stage of succession your area is experiencing. This task may take a few hours and is due with the rest of your summer work and will count as a quiz grade. It is described in below:
Task C: Due by the first class.
Find a natural, accessible site as described above. You need to determine to your satisfaction what stage of succession you believe it is experiencing. You will then write your conclusion as a paragraph with a CLAIM (i.e. *This area is late or climax stage of succession*), EVIDENCE (i.e. *There are large trees with little undergrowth as 8 of the ten trees are measured were in the largest category of over 18 inches: …..*) and RATIONALE explaining how this evidence leads to your claim (i.e. *this site was last farmed and disturbed years ago so the 80% of the trees that were measured here are large and have shaded out quicker growing grasses and shrubs*).

Some hints to complete this task:
To gather some observations to use as evidence you could go to a site that has a few White Pine (*Pinus strobus*) (MHS school property, Pratt Farm, your backyard...see above..) White Pine is easy to identify with its tall straight trunk, long cones and long needles in bundles of five (w-h-i-t-e has five letters too!). If you have a hard time imagining what tree this is please view this 1.5 min video: [https://www.youtube.com/watch?v=s9omQnSNhG0](https://www.youtube.com/watch?v=s9omQnSNhG0). Here in Massachusetts White Pine can be a mature successional plant, it takes over and create our beautiful oak/pine forest that we like to walk in, but it MAY eventually be overtaken by hemlock or beech or other strong, mature competitors.

If possible find the coordinates using a gps or smartphone, if not - record the nearest street address (School is 71 East Grove St., Pratt Farm is 110 E. Main St.) From one place on that property record for the closest TEN white pine how many are:

- ___ 6 in (15 cm) or under
- ___ 6-12 in (15-30 cm) in diameter
- ___ 12-18 in (30-46 cm) diameter
- ____ more than 18 (more than 45 cm) in diameter

You can submit your data and question online at [http://tinyurl.com/whitepinedata](http://tinyurl.com/whitepinedata) You could also use this data in your concluding statement. Hints: estimate the diameter at about the height of your chest, A dollar bill is 6 inch and serves as a handy ruler.

You will then note how far along in succession from bare field (pioneer stage) to mature the area is where you counted these pine. Your description should include other plants that may be present - you can use these as examples when writing about succession in the paragraph due as summer work. You should identify a few (5 is a good number) other species. For identification there are web sites listed below, but you will find borrowing field guides to trees, ferns and wildflowers from friends or the library would be easiest. If the field guide says “usually found in fields” that it’s an early successional plant.

- [http://dendro.cnre.vt.edu/dendrology/idit.htm](http://dendro.cnre.vt.edu/dendrology/idit.htm)

Good luck and enjoy your summer. The grading rubric for task C follows:
http://tinyurl.com/apessummerwork

Claim-Evidence-Reasoning
(C-E-R) Rubric
<table>
<thead>
<tr>
<th>Points</th>
<th>suggestions/ compliments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claim</td>
<td></td>
</tr>
<tr>
<td>Evidence</td>
<td></td>
</tr>
<tr>
<td>Reasoning</td>
<td></td>
</tr>
<tr>
<td>Total points</td>
<td></td>
</tr>
<tr>
<td>Score (X 1.11)</td>
<td></td>
</tr>
</tbody>
</table>

Total Possible Points: 10
D) Summer reading for you….READ! *Extra credit work.* A summary of reading (see below) and a math practice sheet. I have changed my mind about extra points at the AP level and am encouraging those who want to improve their score on the AP exam to do some additional prep work. The math packet is strongly encouraged to keep your mathematical chops in shape over the summer. It is available at tinyurl.com/apessummermath The math packet will be credited with an additional 20 points out of 20 if completed by the first day. The reading assignment, if done, will be credited 20 out of 20 if completed by the first day as well.

Early in the class I’ll ask you to read and respond to excerpts from the “Tragedy of the Commons” you could read it ahead of time at http://tinyurl.com/excerptstoc the whole article is at http://tinyurl.com/hardintoc. You may want to actively read this ahead of time.

In my experience the AP Env. Science exam favors those who have widely read about environmental issues. Any good book on environmental concerns is an excellent start. Or if you like videos look for documentaries on issues like our food system and fracking, but don’t forget to read on line criticisms of these “infotainment” videos, they only present evidence and interviews from one side (often because the business side is pilloried in these videos are are not eager to participate) I won’t count these videos as the extra credit points unless you need some reading accommodations - please email or talk to me at the beginning of the summer.

Most importantly, read something that interests you. I ask for a brief written description of the main story or points of the work and your reaction to it giving details about how this might be important to you or not relevant to your life here in Middleboro in 2016-2017. (One page should be sufficient to prove you read and considered the work) Please consider one of the following. If you wish to take on a different environmental issue book, please email me at aharris@middleboro.k12.ma.us by August so I have a chance to read it as well. Remember you don’t need to agree with an author to find value in reading them.

Michael Pollan **THE OMNIVORE’s DILEMMA** (available also as a “youth” literature version which is somewhat shorter but still covers the same topics)
For those who like poetry and literature: **Walden** by Thoreau (really you need to read it sometime, why not now?); **Desert Solitaire** Edward Abbey (not politically correct, has some very very misogynist sections - read with care); **Prodigal Summer** - fiction by Barbara Kingsolver. Pretty much anything by Wendell Berry, he has well respected collections of poems, fiction like **The Memory of Old Jack** as well as pointed nonfiction essays about agriculture such as “The Gift of Good Land,” - if you read the gift of good land please give a one or two sentence description of which essays you read and read at least 12 of them. **The Outermost House** by Henry Beston; or **The Run** by John Hay (some love it, others find it too poetic) a book about herring by one of the forefathers of modern natural history writing; Rachel Carson’s **Silent Spring** (interesting for its role in the environmental movement), or any of her natural history books, I recommend **The Sea Around Us** or **The Edge of the Sea. Life and Death of a Salt Marsh** by John and Mildred Teal (John Teal - a scientist at Woods Hole, lives in Rochester); **Pilgrim at
Tinker Creek - Annie Dillard; My Green Manifesto by David Gessner has some profanity; The End of Night: Searching for Natural Darkness in an Age of Artificial Light by Paul Bogard and interesting book on the impact of light at night on our health and maybe our psyche, The God Species by Mark Lynas - lays out rationale for genetic engineering and nuclear power which are not generally well received by environmental activist. Sand County Almanac...by Aldo Leopold - an essay in here “The Land Ethic” serves as one basis for decisions about conservation, it is akin to Hippocratic oath…and gives one a historic view of the role of environmental scientist in conservation issues.

For Task A Due second or third class for homework. : Guided Outline for Friedland and Relyea, Environmental Science for AP, 168-170. (Note that the left margin is left wide to write in key words/terms and the bottom left open to add further notes and questions while preparing for tests)

Community Change
Ecological Succession (definition)

Primary Succession (& fig. 6.23)
Definition:

Early stage
examples of organisms

what changes are happening:

environmental conditions early on:

Mid stages
Changes and examples of organisms:

Late succession
Conditions and examples of organisms

Example case of Primary succession:
Secondary succession (and figure 6.24)
Definition:

Differences between primary and secondary succession

Examples of species (early, mid., late stages)

Climax stage (definition)

Aquatic succession (note the pic. 6.25 to help describe changes)
Marine example (give example species and location)

Freshwater example:

what changes in freshwater (lake or pond) succession:

(note the “check point” questions at top of p.171 to check your understanding of main points)

After the video http://ed.ted.com/on/fPFboH47 - how might diversity be impacted by which stage or succession an area is passing through? What are some economic, social or environmental impacts of having an area, like Middleboro, with mostly mature forest?