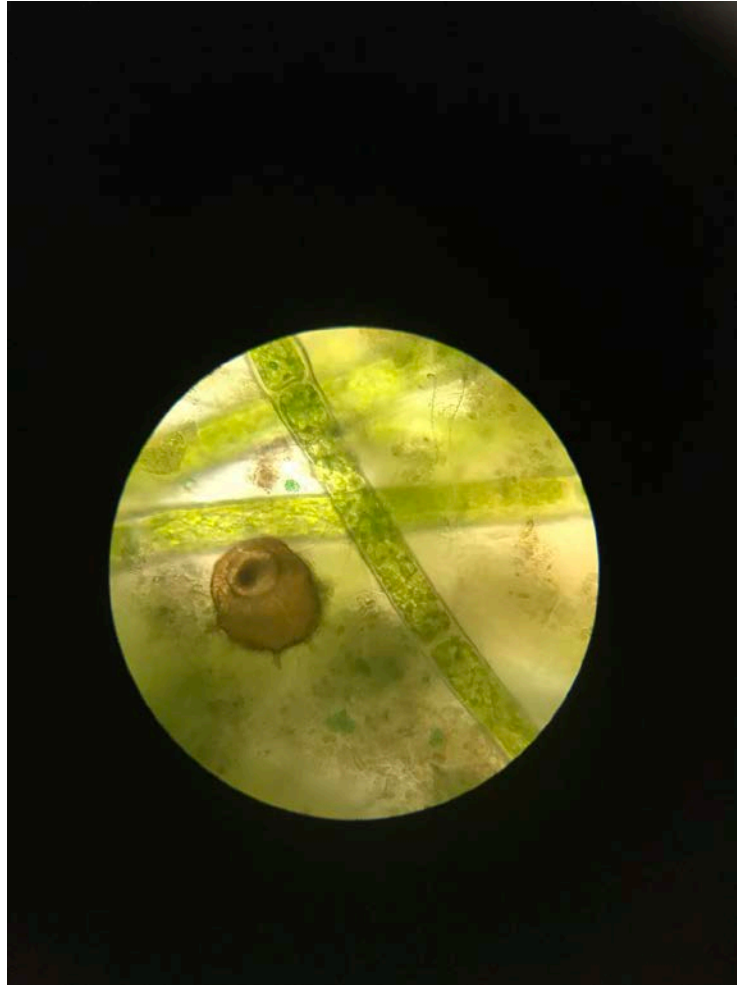# Algae Identification

Types of Algae that Grow in an Aquatic Ecosystem Model

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Introduction: AEM stands for aquatic ecosystems model. The AEM that is being monitored now will be used to analyze what types of algae will grow in it. The main point of making the AEM is to show the components of an ecosystem. The question this project addresses is: What types of Algae are living in my AEM?

Background Information: An ecosystem is an area where abiotic and biotic factors interact with each other. Biotic and abiotic are living and nonliving things in an ecosystem. For example, an aquatic ecosystem would have a similar type of ecosystem as in an ocean or a pond. A model is a physical representation of something. Those are the main points of an aquatic ecosystem model. Many processes like the nitrogen cycle can also develop the growth of algae. Since the nutrients helps the algae grow, the algae are dependent on it. An aquatic ecosystem model (AEM) represents an ecosystem of organisms that depend on each other to live. Algae provide oxygen and form the base of the food chain. Algae are important because oysters eat algae and we need oysters to restore the Harbor. Because each oysters can restore up to 50 gallons of water.

Hypothesis : The AEM will have one or two different types of algae living in it like *Ulva* or filamentous green algae.

Materials

Item	Quantity	Function
Netpots	2	Holds the basil seeds that grew
Filtered water	1,800ml__	Necessity for organisms to live
Bottom Filter	1	Filters the water
Gravel	200ml	Increases surface area for microorganisms
Fluorite	200ml	Helps Bacteria and organisms grow
Containtair	1	Contains your ecosystem
Basil seeds	8	Helps observe interaction
Ammonia	0.0270g	Kills pathogens
Proline Bacteria	5ml	Keeps ecosystem healthy
Air stone	1	Provides oxygen
Lid/cover	1	Avoids evaporation

Slides	6	Put the algae in
Microscope	1	To get a closer look
Dichotomous Key	1	To identify the Algae

Procedure :

1. <u>Disinfect AEM with chlorine</u>
- Add 1088 ml of chlorine to your AEM
- Let it sit for 2 hours
2. <u>Remove chlorine from the AEM with vinegar</u>
- Fill a bucket up with water
- Put EM in the bucket
- Measure 32 ml of vinegar and put it in the bucket
- Let it soak for a day
3. <u>Adding components to the AEM</u>
- Put the gravel in
- Add 1,500
- Put 200 ml of Fluorite
- Mix it
4) <u>Adding proline and Ammonium chloride</u>
- Add 4.68ml of Nitrifying Bacteria
- Add .1036 of ammonium chloride
- Mix it
- Add the air pump
5) <u>Observing Algae</u>
- Grab a microscope and clean it
- Get a tiny sample of your algae
- Place it on a slide and put the coverslip over it
- Place it in the microscope
- Fix your microscope to where you can see the algae clearly
6) <u>Algae identification</u>
- Go to the first line and read it
- See if the statements true
- If not go to the next line and see if that's true or not
- One of them will most likely be true
- For the one that's true go to the side and go to the number it says

<u>Results</u> : After taking samples from both the tanks where the algae was taken from to be put in the AEM, it was found that algae from both tanks and the AEM have the same

species of algae. Using the dichotomous key It was found that there is tentative only one species of algae in the AEM we identified as *Pithophora*.

Analysis : In the beginning the AEM was unbalanced, the pH was too high and it affected everything. So we had to do a water exchange to lower the ammonia levels. For the pH we used acids and bases to adjust the pH levels. After a while the AEM started adjusting itself. During a thorough examination of the *Pithophora* algae i found what seemed to be an egg however it's still unclear what it is.

Date	In.	Time	E.C.* uS/cm	pH units	NO_2 ppm	NO_3 ppm	NH_3 ppm	PO_3 ppm	Hard ppm	Alk ppt	Sal ppt
3/10/17	R.E	11:33		7	0	20	7	50	120	0	
3/10/17	A.O	11:20		7	0	20	6	50	120	0	
3/15/17	R.E	11:48			0	20	1.0	50	120	0	
3/30/17	A.O	11:30		6.85	0	20	1.0	50	120	0	
3/31/17	R.E	11:19	190	6.75	0	20	0.5	50	120	0	
4/3/17	A.O	11:28	149	7.29	0	20	0.5	50	120	0	6
4/7/17	R.E	11:38			0	20	0	50	120	0	
4/24/17	R.E	11:24			0	0	0.5	30	25	0	

Conclusion : My hypothesis was that there was more than one species of algae in the AEM. My hypothesis was not supported as is evident from the data that was collected. Tentatively speaking there is only one species of algae in the AEM. Using the dichotomous key I have come to conclusions that the algae species is tentatively *Pithophora.* Looking at tank 1 and 2, where I took the algae I found a brown embryo. We're not sure what it is but it's something I will look into.