Team BREATHE Thesis Proposal Transcription

Summary of question/answer

What is the point of the surveys?
The point is to see if people would be interested in what we are doing. Also, we would like to know that if we do create a successful mixture if we would we be allowed to actually apply it to the Chesapeake Bay. We would like to see if there would be significant public resistance since people are not comfortable with scientists putting things into the Bay. We would also like to know if what we are doing is easily understandable for laypeople.

Using what Mario has done in past, you don't need to reinvent so much. There might be some comparing that has to be done to apply to the Chesapeake Bay. You will have a lot of variables to compile. What is the purpose of comparing the nontoxic with the toxic strain?
The toxic strain causes more negative effects than the nontoxic strain. The Impacts subgroup plans to remedy the toxin, which binds to liver receptors, with dried powdered chicken liver. The toxins can lay on plants and good seed germination is important. Studying the effects of the toxic strain could help with improving our final product.

Do you expect the toxic strain to flocculate differently than the nontoxic strain?
We expect them to flocculate the same.

Why are you only testing the flocculant on the nontoxic strain?
We were originally worried about not being able to procure the toxic strain (feasibility).

About modeling, there are different types such as fluid modeling and mechanistic modeling. Could you elaborate on what type it is?
The model will simulate the flocculant particles' resistance to sinking. Our goal is to adapt current models to our system, which is a fluid model, to predict where the algae and flocculant will fall in relation to SAVs and such using aggregate size distribution.

Pertaining to the sentinel species, how fast do snail shells grow? Can we see a difference quickly?
Clams, when juvenile, grow fast. Measurable changes can be seen within two weeks.

Will you have to obtain approval for the use of animals?
No, we talked to Team FISH and approval is only needed for vertebrates.

What has your team been doing so far this semester in the lab?
Our team recently went on a trip to the Bay (Mattawoman Creek) to obtain water and soil samples. We prepared culture broth for the *Microcystis aeruginosa.* The seeds in the soil samples are currently growing and sample seeds were planted in and on top of the soil to see under which conditions it grows better. We also streaked cultures and about everyone has been in the lab.

What have you been doing about the survey?

We have been doing literature reviews and looking at surveys that Mario has worked with. We also have regular meetings with Doug Lipton, an expert who provides guidance.

Are you planning to survey in the fall?
We plan to get IRB approval by fall because it will take maximum 3-4 weeks because of our connections with Doug Lipton who helps graduate students get their approval.

What is the point of having a sentinel species?
The sentinel species will be used to gauge to see what effects will be. They will show if the flocculant has any adverse effects.

What is the point of bringing the algae down to the bottom?
We are bringing the algae down to see if it will cause more harm than if we do not flocculate at all.

Why use a sentinel species?
The sentinel species will provide proof that it is better to flocculate than to not do anything at all. It is also a visual indicator and easy to explain to the public.

Will you still be measuring water quality?
We will first incorporate the seeds into the mixture then test water quality afterwards to see if it makes any difference.

<u>General suggestions to the team</u>

- What we are saying during the defense is more doable than what is in the proposal.
- Eliminate modeling the algal life cycle.
- We are all a little overambitious.
- We need to trim down and focus on 1-2 goals/endpoints.
- The different subgroups could have been tied together more strongly.
- Incorporating seeds into the mixture has never been done before which is very good.
- The economics group is a little confusing because how will a survey be beneficial and lead back to the economic question? What is the cost of us making the mixture, how much would renting a boat to do the flocculating be, etc.
- Should the Economics team be renamed Outreach instead?
- Has there been any cost-benefit analysis on the relationships between HABs and hypoxia?
- Do more research on hypoxia and figure out how to measure.
- Maryland D&R is interested in HABs
- Read literature and call people. Find out how to do economic assessments of the effects of HABs.
- We did not go much into experimental details.
- We need to cut down on the number of treatments.
- We need to find out exactly under what conditions toxins are produced.

- We need to see if there are differences between toxic and nontoxic strains in terms of the effect of the flocculant.
- Modeling needs to be explained better.
- Regarding IRB approval, we should contact Rebecca soon because IRB approval goes through the Gemstone office.
- We are too optimistic if we expect to have the survey done by fall.
- Our budget is not very clear and concise.
- We need to spend more time breaking down the budget and describe how much we will need and how we will spend the money because we are sharing SeaGrant funds with Team FISH.
- We should establish a hierarchy of goals.
- We should find out the rate of decomposition versus the rate of SAV growth.