Phase 5: Implementing Stropharia Mycofiltration at Lincoln Park for Harmful Algae Bloom Prevention

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Background Photo Taken From: Google Earth

What are algae?

Algae are microscopic organisms that range from single, one-celled bacteria to large, thick, seaweed like mats

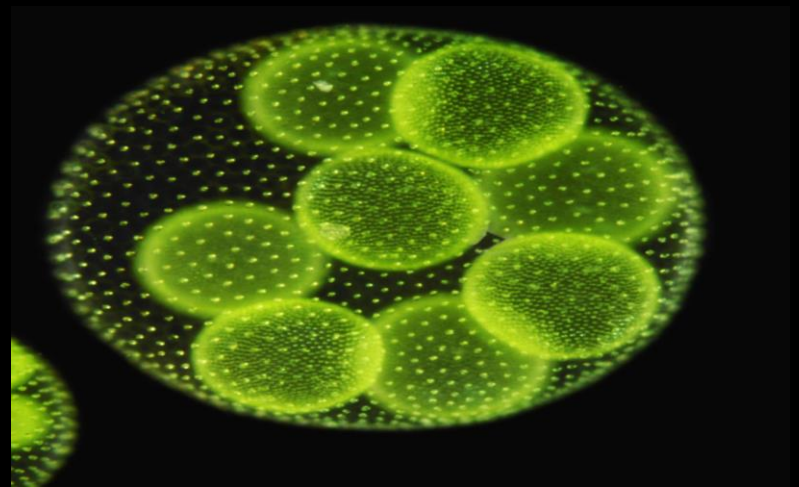


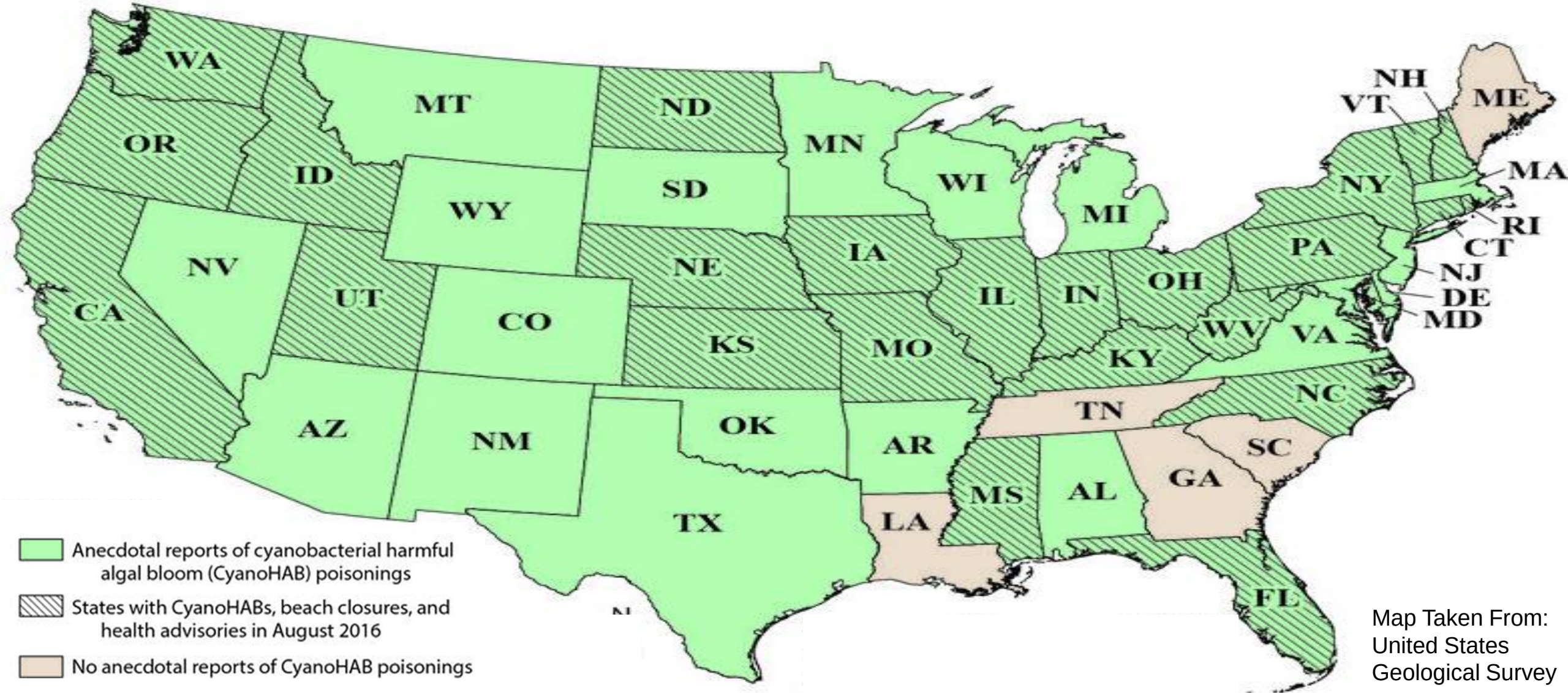
Photo Taken From: ucresearch.tumblr.com

What are Harmful Algae Blooms (HABs)?

HABs are simply the over growth of algae in a body of water due to Nitrate/Phosphate (nutrients) contamination

Photo Taken From: nationalgeographic.com

HABs are a massive problem in the continental USA, including our very own Hudson County



Map Taken From: United States Geological Survey

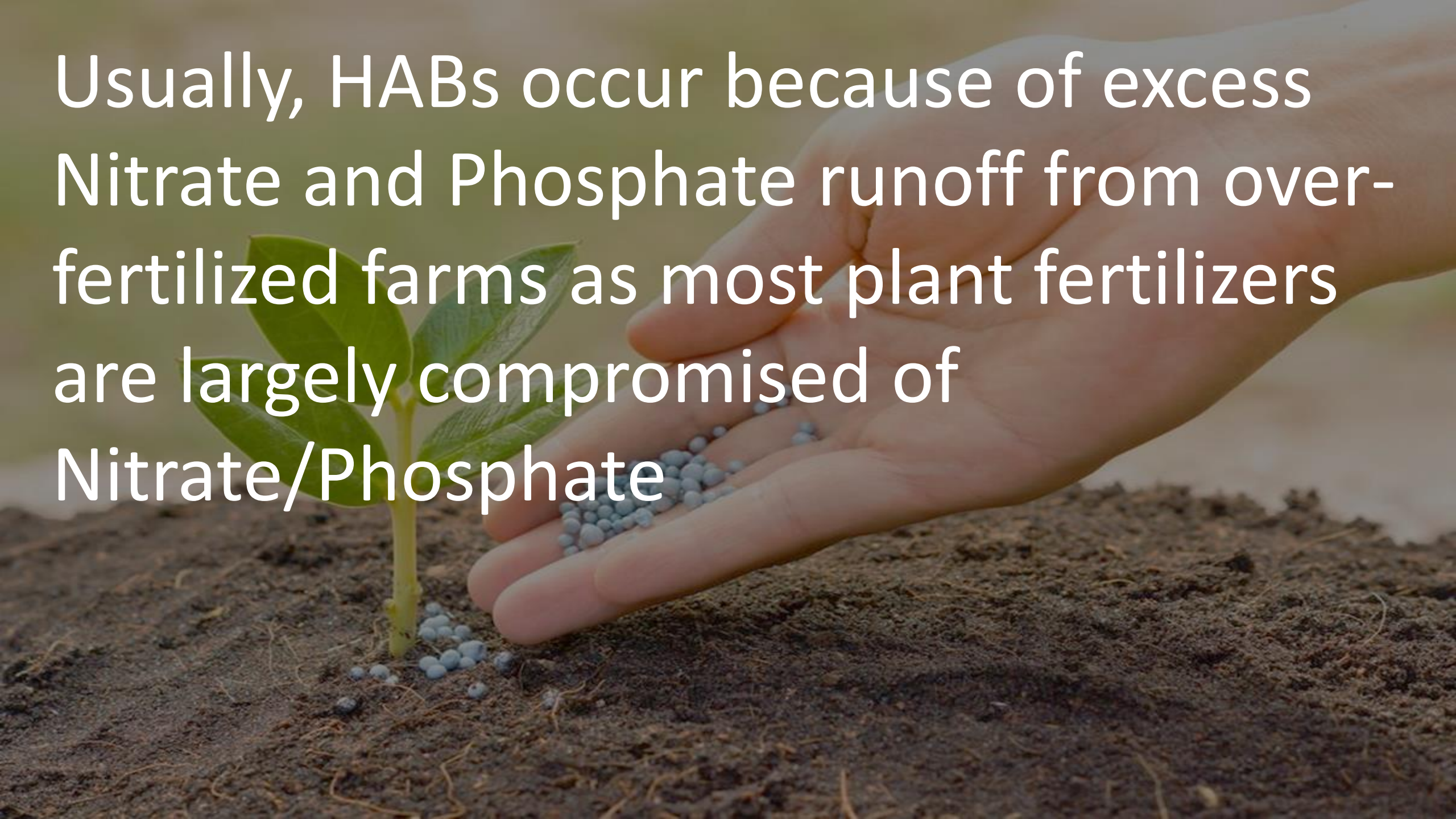
Why are Algae Blooms Harmful?

Toxic

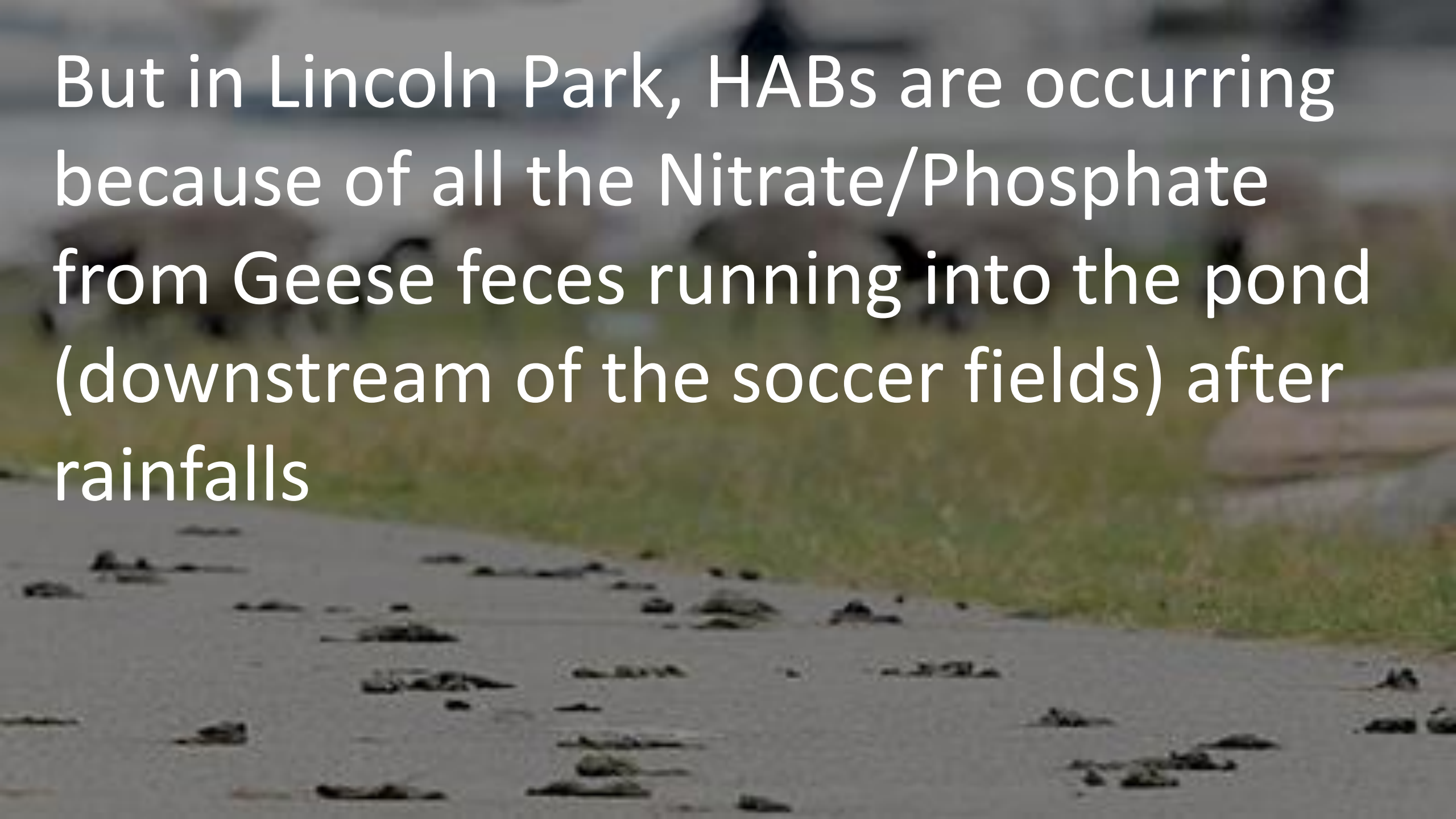
Deplete oxygen from the water

Costly to clean

Photos Taken From: hollabackhealth.com, nationalgeographic.com, and clipartpanda.com



Usually, HABs occur because of excess Nitrate and Phosphate runoff from over-fertilized farms as most plant fertilizers are largely compromised of Nitrate/Phosphate



But in Lincoln Park, HABs are occurring because of all the Nitrate/Phosphate from Geese feces running into the pond (downstream of the soccer fields) after rainfalls

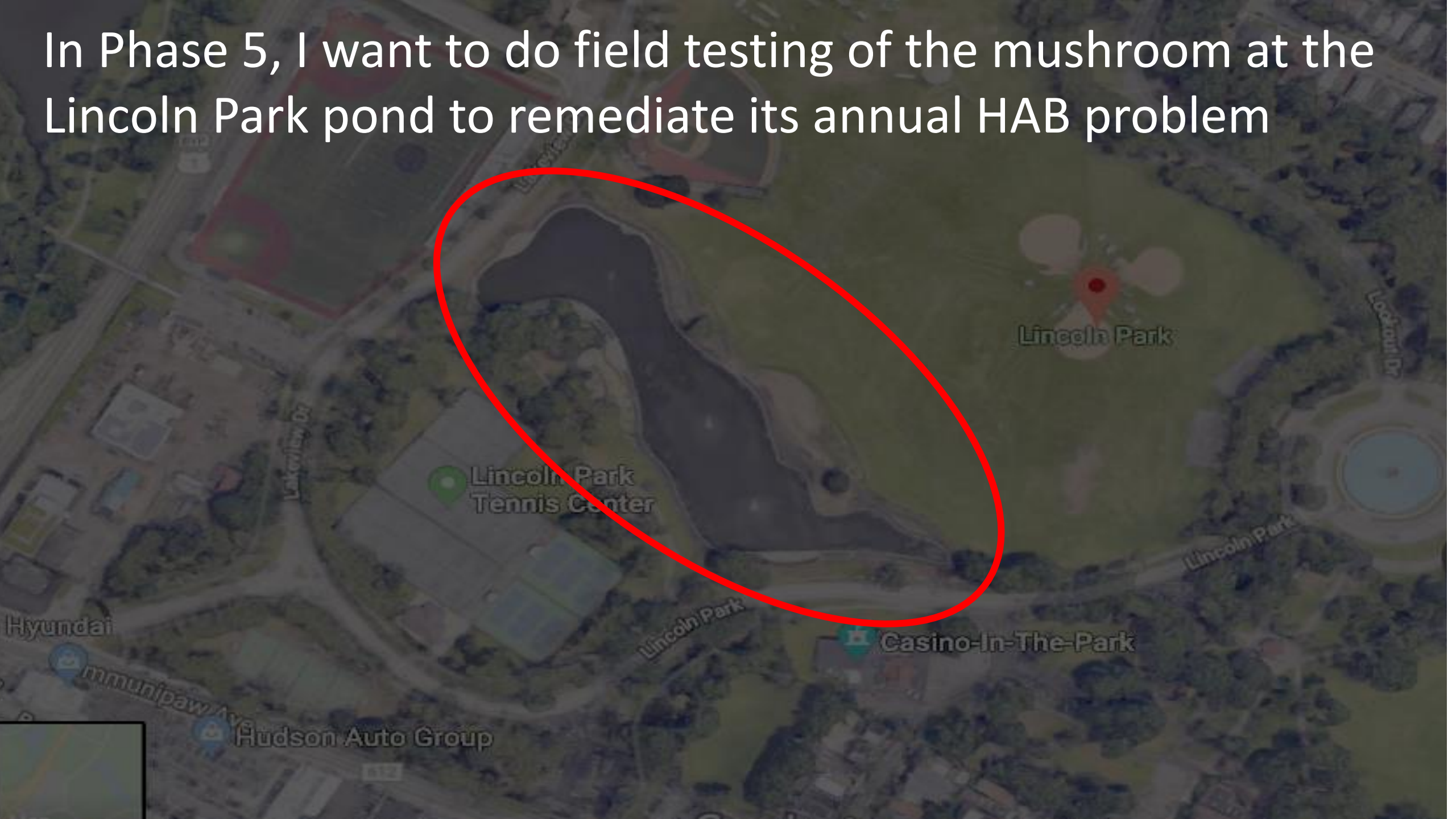
In 8th grade, I discovered that the Stropharia Mushroom (edible, safe, and non-hallucinogenic) could absorb Nitrate and Phosphate from running water and for the past four years, I've been doing thorough lab testing on the mushroom's filtration abilities

Photos Taken From: hollabackhealth.com, nationalgeographic.com, and clipartpanda.com

Progression of Research

Phase 1 (8th Grade)	Phase 2 (9th Grade)	Phase 3 (10th Grade)	Phase 4 (Current - 11th Grade)	Phase 5 (12th Grade)
Initial discovery made using elementary methodology	Testing in controlled settings using advanced methodology (inconclusive)	- Further testing using improved methodology - Initial determination of field-application potential - Discovery of Alder Sawdust's filtration properties	- Testing in simulated non-point sites - Thorough determination of field-application potential	Small-scale outdoor field implementation

In Phase 5, I want to do field testing of the mushroom at the Lincoln Park pond to remediate its annual HAB problem



Buffer Strips Surrounding the Lincoln Park Pond

Design of Study and Proposal:

- Collect and test pre-treatment samples from pond (Late-November)
- Colonization of existing buffer strips around pond with Stropharia Mushrooms (Early December – Late February)
- Collect and test post-treatment samples (Early March)
- Continue sampling into summer/next-year to see long term effectiveness

What I’m Asking For:

- Permission to colonize buffer strips with Stropharia Mushrooms
- Funding to cover the cost of Stropharia Spawn and sample testing (approximately $1000)
- Lending of tools such as wheelbarrows, shovels, etc. and 2 to 3 volunteers to help colonize buffer strips
- Data/results from previous testing of Lincoln Park Pond

For further information about myself or my research, please visit my website,
https://habprevention.weebly.com/