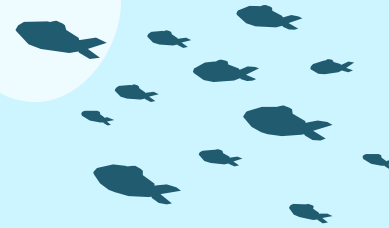
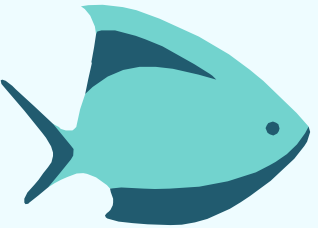
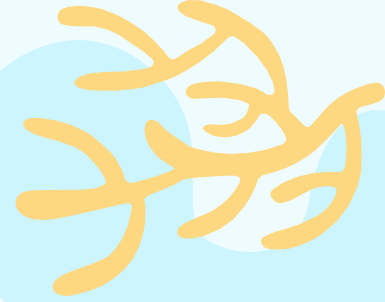


Scientific Modeling



What did we do last week?

1. Revisited the criteria for good models.
2. Looked at evidence in MEME.
3. Updated models based on the evidence.
4. Gallery walk - gave peer feedback.

Criteria List

- a) Supported by evidence
(no contradictory evidence)
- b) Shows all steps in
process
- c) Understandable
- d) Consistent (doesn't
contradict itself)
- e) Wrong order of the process**

What will we do today?

1. Gallery walk - give peer feedback.
2. Review comments you received on your models and revise models.
3. Whole class discussion of evidence.
4. Revise models.

Gallery Walk



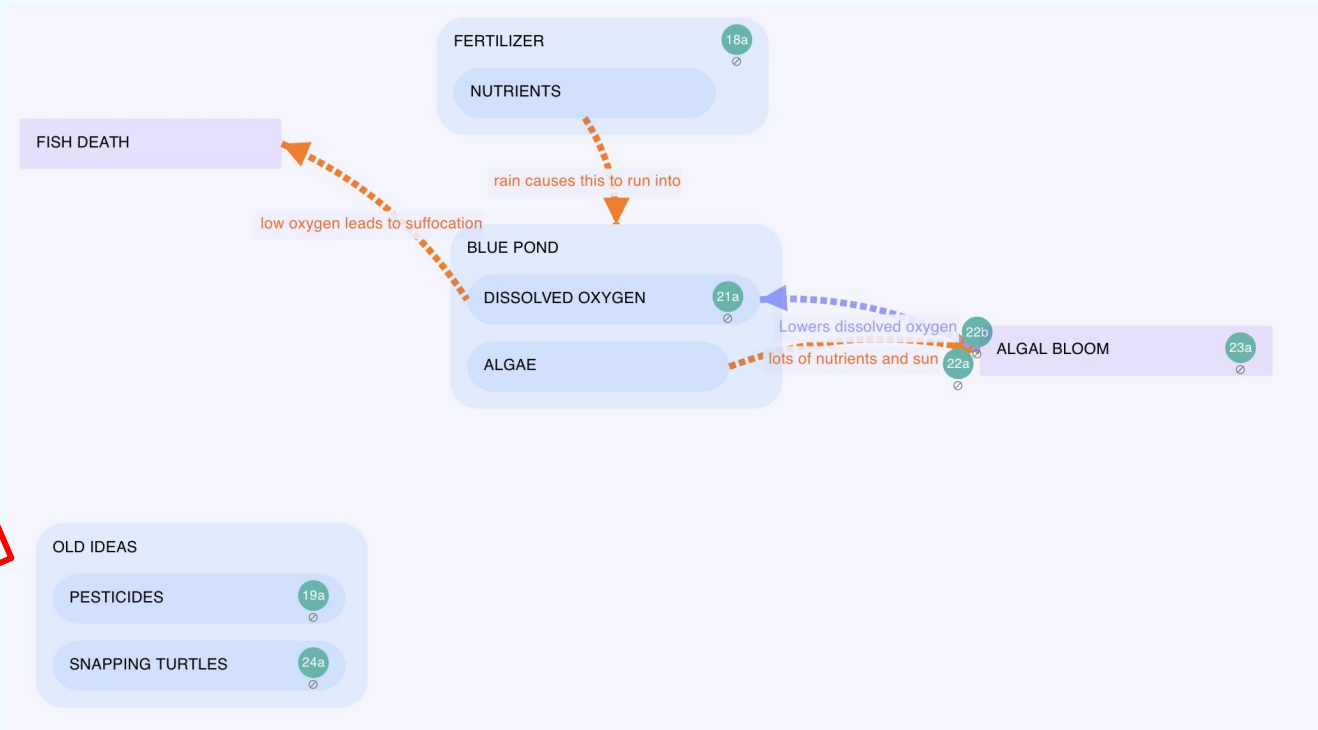
Be positive, be critical.

Revising Models

Work in your groups:

- Review the comments from the other group
 - Do you need clarification?
 - Do you think you can improve your model based on the feedback?
- Make updates to your model based on the comments.
- You can respond to the comments in MEME or go ask the reviewing group for clarification.

Revising Models



Discussion

- What did you learn from the evidence?
- Are these ideas different than our earlier evidence?
- How might we include these in our models?

Evidence -Algal blooms and Deadzones

Algal Blooms and Deadzones

Dead zones are areas of water bodies where aquatic life cannot survive because of low oxygen levels. Dead zones are generally caused by lots of nutrients washing into the water, and are primarily a problem for lakes and coastal waters since they receive excess nutrients from upstream sources, such as farms or factories.

Excess nutrients can cause an overgrowth of algae in a short period of time, also called algae blooms. The overgrowth of algae takes up a lot of oxygen and blocks sunlight from underwater plants. The lack of oxygen makes it impossible for aquatic life to survive. The largest dead zone in the United States is in the Gulf of Mexico and occurs every summer as a result of nutrient pollution from the Mississippi River.

The map below shows how water sources in Bloomington, like Blue Pond, meet up with other water sources, such as the Mississippi River, until the water eventually flows into the ocean at the Gulf of Mexico.

Evidence -Fertilizer and farmers

Fertilizer and Farms

What happens to farms without fertilizer?

When plants grow, they take up minerals and nutrients from the soil. When we grow a lot of plants in the same area - especially 'heavy feeder' crops like corn, rice, tomatoes, and wheat - the plants tend to take up nutrients faster than they are naturally built up in the soil. In order to make enough food to feed people each year, modern farmers normally fertilize their fields with nitrogen (N), phosphorus (P), and potassium (K), the minerals that plants take up the fastest. If these fertilizers aren't added, there aren't enough nutrients to go around and fewer plants are able to mature and produce food.

Harvest based on Fertilizer Use





Let's revise our models



See you next time!

