

What the Heck is a HAB? What should I do about them?

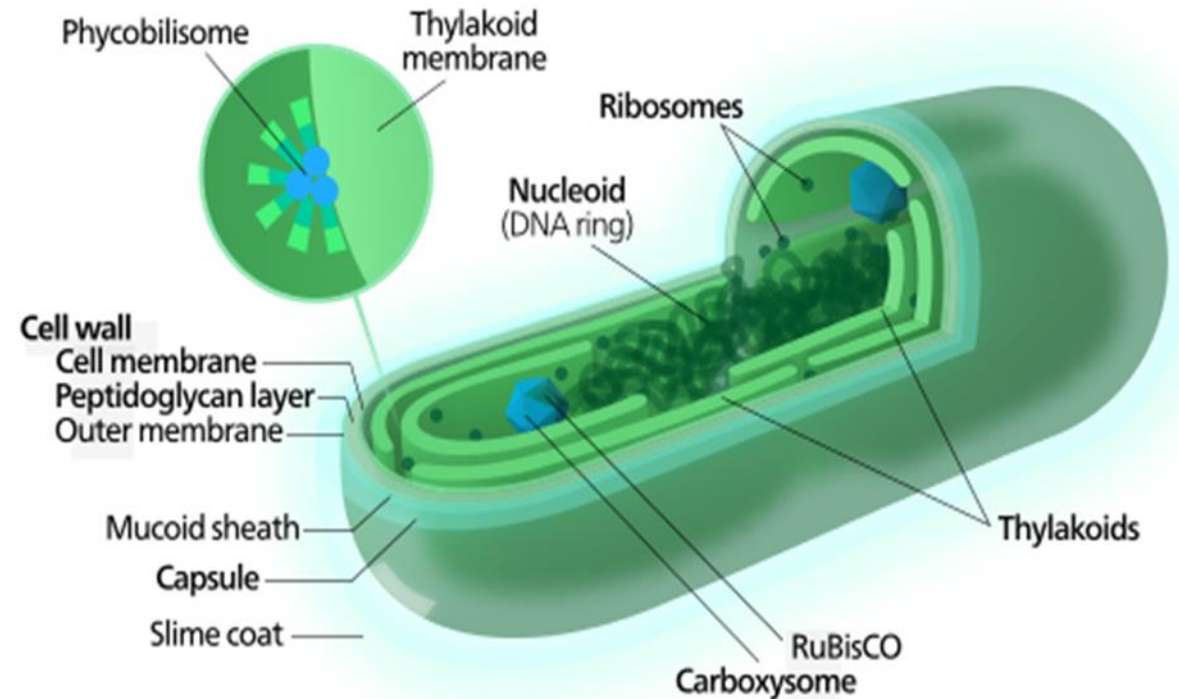


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What is “blue-green algae”?

- Bacteria not algae!
- They are a type of bacteria
 - Cyanobacteria
 - *Cyano-* = blue or dark blue (Greek origin)
 - *Bacteria* = bakterion = staff or cane
 - First ones discovered were rod shaped



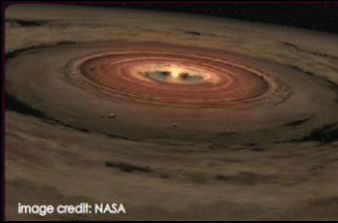


Image credit: NASA

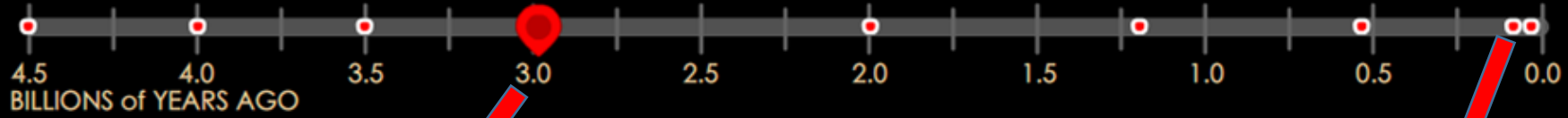


Image credit: AMNH / wallya / flickr

Cyanobacteria have been
around a very, very long
time!

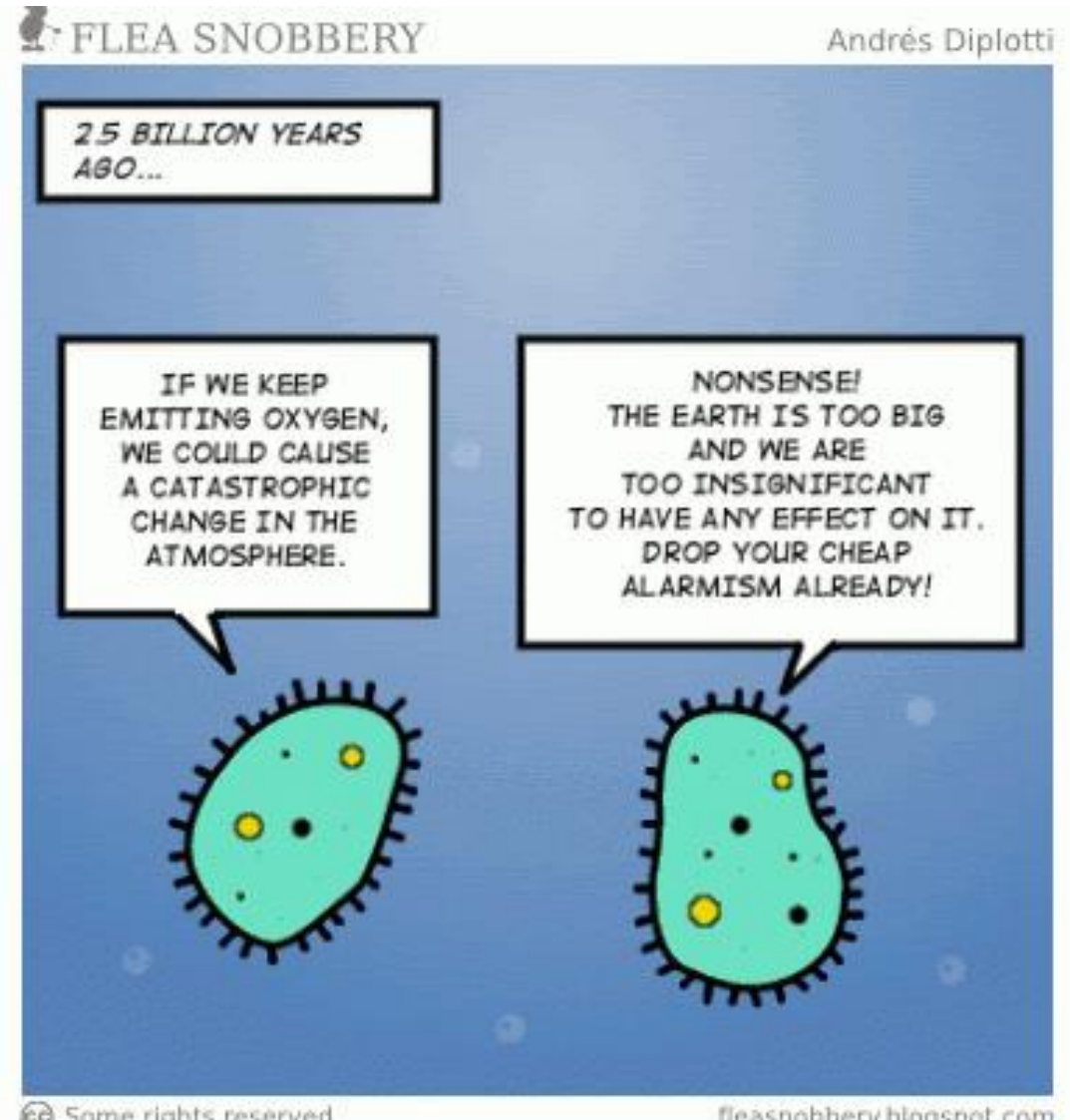


Image credit: Cristina Rizk



Cyanobacteria are Vital for Human Life

- Without them, we probably wouldn't be here
- Very important
 - Important element in forming earth's oxygen rich atmosphere
 - Oil deposits attributed to cyanobacteria activity
 - "Fix" nitrogen
 - Like beans, peas, and other legumes
 - Plants originated from cyanobacteria
 - chloroplasts

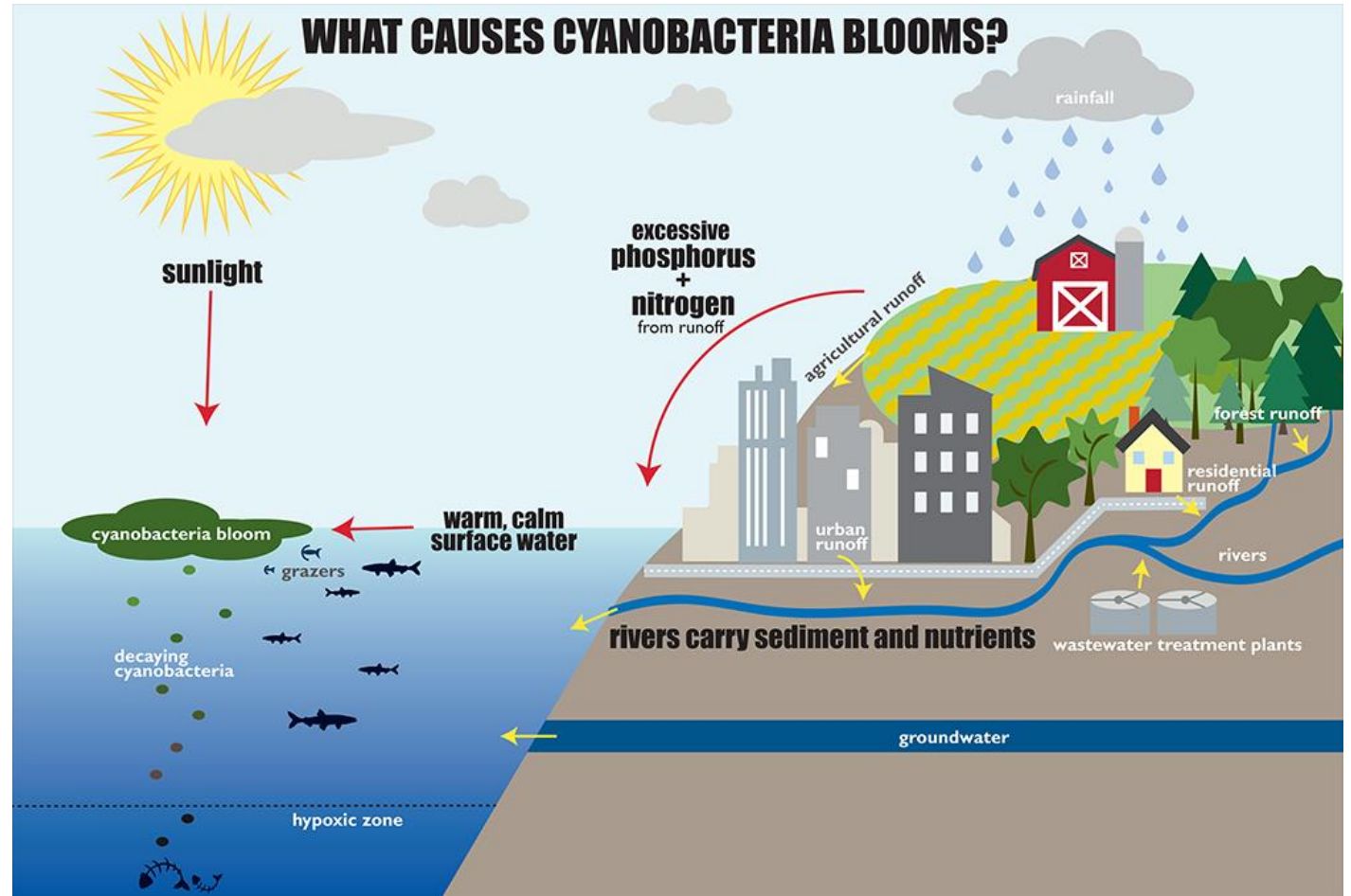


Where are they found?



Aquatic Cyanobacteria Can Become Abundant

- Aquatic cyanobacteria
 - Known for highly visible and extensive “blooms”
 - Happens when conditions are favorable
 - Lots of food
 - Good temperature
 - Calm water
 - Blooms can look “blue-green” hence the misnomer “blue-green algae”



HABs and NABs

- NAB – Nuisance algae bloom
 - Just like it sounds – it's annoying
 - No health impacts
 - May actually be algae
- HAB – Harmful algae bloom
 - Can be comprised of cyanobacteria
 - Toxin production
 - Negative health impacts
 - Humans (children especially)
 - Pets (dogs that swim in water)



Why do we care?

- Toxins can be extremely potent
 - Worldwide, 60% contain toxins
- Skin
 - Dermal toxicity
 - Lyngbyatoxins



Why do we care?

- Nervous system
 - Neurotoxins
 - Saxitoxins
 - Paralytic Shellfish Poisoning
 - Also associated with “red tides”
 - BMAA (long chemical name that even scientists don't remember)



Why do we care?

- Liver function
 - Hepatotoxins
 - Microcystins
 - Cylindrospermopsins
 - Nodularins



Why do we care?

- Toxins can be extremely potent
 - Toxicity has been shown to be cumulative
 - Tumor promoting
 - Effects variable based on exposure
 - Drinking water taste and odor



Harmful Algal Blooms - Impacts

Some are extremely fast acting – animal death in less than 1 hour.

No visual way to determine if a bloom is toxic

Mild blooms can produce high levels of toxin

Dense blooms can produce no toxin



Detecting HABs is Tricky

- Some blooms are not cyanobacteria
- Some cyanobacteria do not produce toxins
- Just because a cyanobacteria CAN produce toxin, does not mean it WILL
 - Scientists are working to discover what triggers toxin production
- Toxin can remain in the water, even after the bloom is over



So, what am I supposed to do about it?

Harmful Algal Blooms – What to do about it?

- First step – figure out if what you are seeing is blue-green algae
 - Check online resources
 - Submit photos to MPCA (Bloomwatch)



Duck Weed



Filamentous green algae



Cladophora and Bryozoa

BloomWatch app

- Free to download
 - Android
 - iOS
- Walks you through the steps of how to take a photo



Harmful Algal Blooms – What to do about it?

- First step – figure out if what you are seeing is blue-green algae
 - Jar Test
 - Stick Test



Photo 2 - *Lyngbya wollei*



Photo 1 - Filamentous algae

9. If the algae are all settled out near the bottom of the jar, then that is a likely indication that the lake does not have a lot of blue-green algae growing in it. (See arrow on Photo 2.)



Photo 2 – No Blue-greens

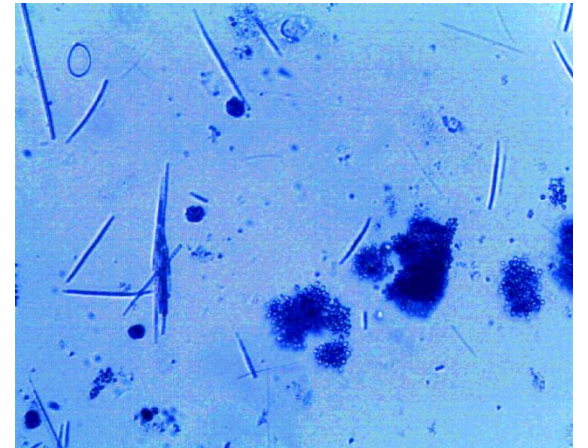
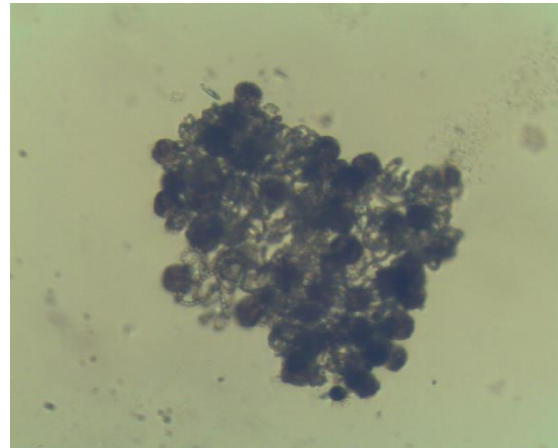
10. If the algae have formed a green ring around the top of the water in the jar, or just seem to be collected at the air/water divide, there is a strong possibility that the pond does have a blue-green algae community present. (See arrow on Photo 3.)



Photo 3 – Yes Blue-Greens

Harmful Algal Blooms – What to do about it?

- Minimize Risk
 - When in doubt, keep out!
 - Minimize ingestion
 - Rinse off animal coats when they leave the water
 - MDH/MPCA fact sheets
- Test options – note – each bloom can be different!
 - Test strips
 - Lab analysis



Harmful Algal Blooms – What to do about it?

- Short term Fixes
 - Scum on the shore?
 - Keep pets away! You can rake up the scum and take it to a local compost facility.
 - Algae at your beach?
 - Blooms often are localized – there may still be opportunities to recreate at a different beach or in open water.



Harmful Algal Blooms – What to do about it?

- Most blooms are reported on lakes with known nutrient issues
 - There is no quick fix
 - Reducing inputs of phosphorus are very important
 - This includes near shore (septic, shoreline vegetation) and contributing watershed (overland runoff, discharges from facilities and feedlots)
 - While there are products that will kill algae...if the cells contain toxins, killing them will release the toxins



Thank you!

Questions?

Survey time

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