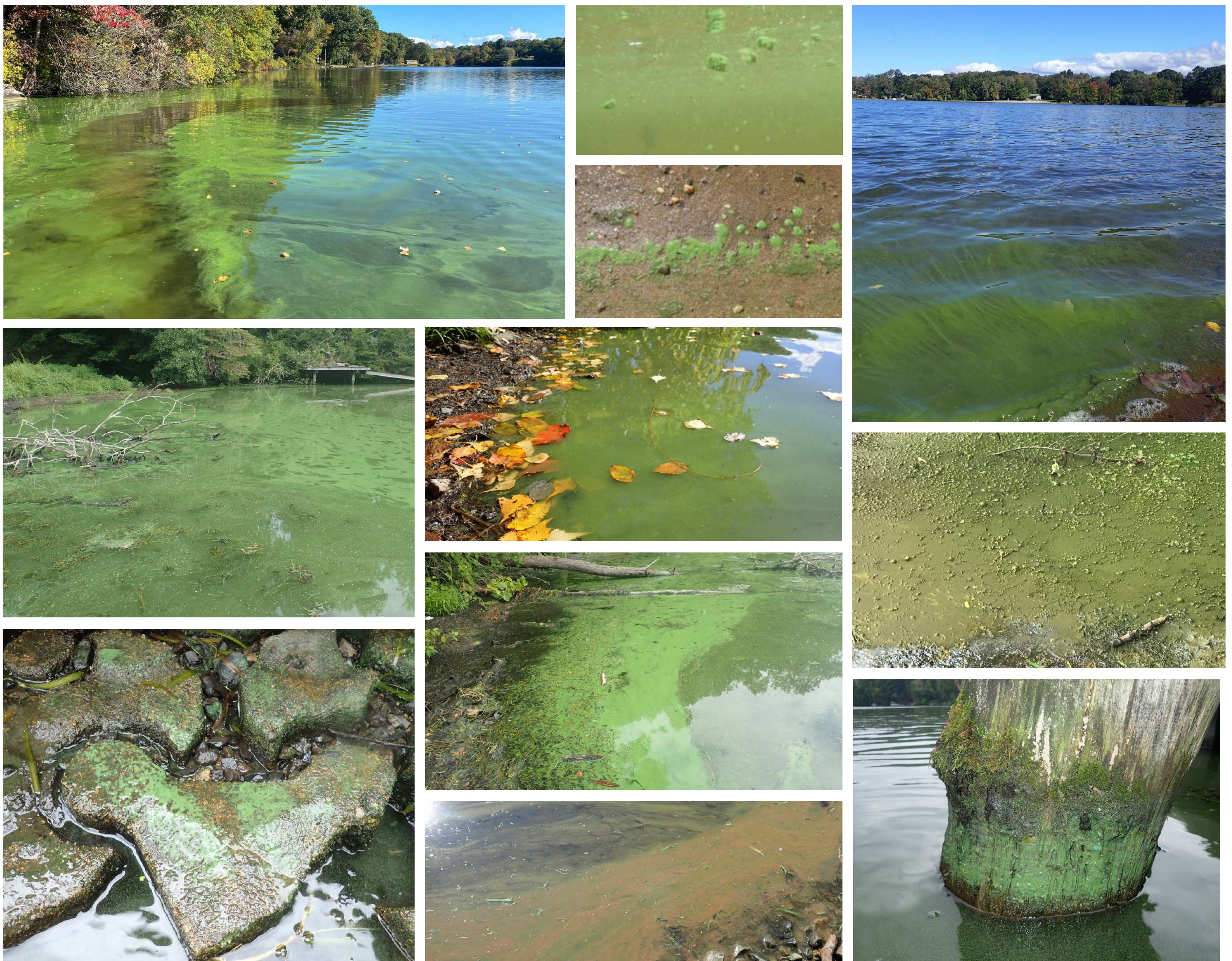


INTRODUCTION

The Connecticut Department of Energy and Environmental Protection frequently receives reports of suspected cyanobacteria blooms. There are several naturally occurring phenomenon that have a similar appearance to cyanobacteria. These “look-alikes” are not harmful and are very different from cyanobacteria. This guide is designed to help citizen scientists better distinguish between “look-alikes” and cyanobacteria blooms. The four most common naturally occurring “look-alikes” reported as suspected cyanobacteria blooms are pollen, duckweed, iron fixing bacteria and other algae and aquatic plants

WHAT DOES CYANOBACTERIA LOOK LIKE?

Individual cyanobacteria cells cannot be seen with the naked eye, but when cells multiply to form a bloom, they are more visible and may vary in appearance. Cyanobacteria typically vary in color and will commonly be different shades of green or turquoise but can also be brown, white, or red. Blooms can appear mat-like, foamy, scummy, streaky, or make the water appear murky. Cyanobacteria can also present as green clumps or globules, or look like spilled green paint across the water’s surface. Calm and sunny conditions may draw the cyanobacteria to the water's surface to form more concentrated blooms. Wind can also push these surface blooms along the shoreline so they may appear in one location and get blown to a different location later on. Storm events and strong winds may mix the cyanobacteria throughout the water. Larger blooms can appear less concentrated and instead look uniform throughout a waterbody. Sometimes cyanobacteria cannot be seen because the blooms stay below the surface. When cyanobacteria die, the bloom can give off an odor similar to that of rotting plants.



Identification and Look-Alikes

Cyanobacteria



Identification and Look-Alikes

Cyanobacteria



POLLEN

During the spring and summer months, pollen can often be confused with cyanobacteria blooms on the surface of rivers, lakes, and ponds. Pollen grains are very buoyant and are easily carried through the air to water surfaces where they can concentrate and float in large slicks. Many different kinds of plants and trees release their pollen across the U.S every year.

In Connecticut, pollen season typically starts in the spring (May and June) with trees such as birch, maple, oak, juniper, and pine producing waves of pollen, which tend to leave heavy coatings. If you see heavy coatings of pollen on your vehicle, this is a good reminder that it is pollen season. Some weeds and grasses are responsible for pollen releases throughout July and August. Transitioning into the fall, weeds such as ragweed and sorrel produce heavily in August through September.

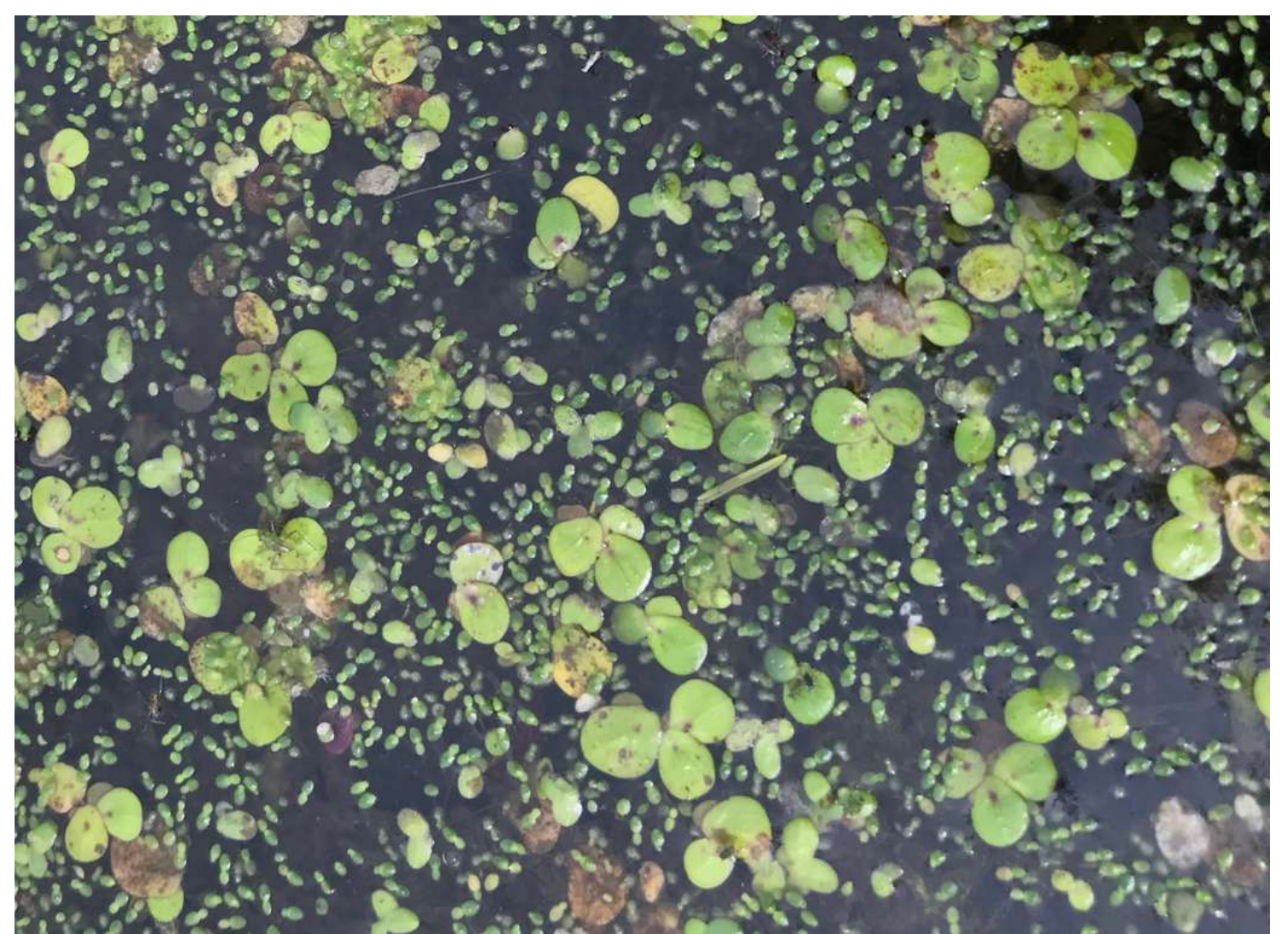
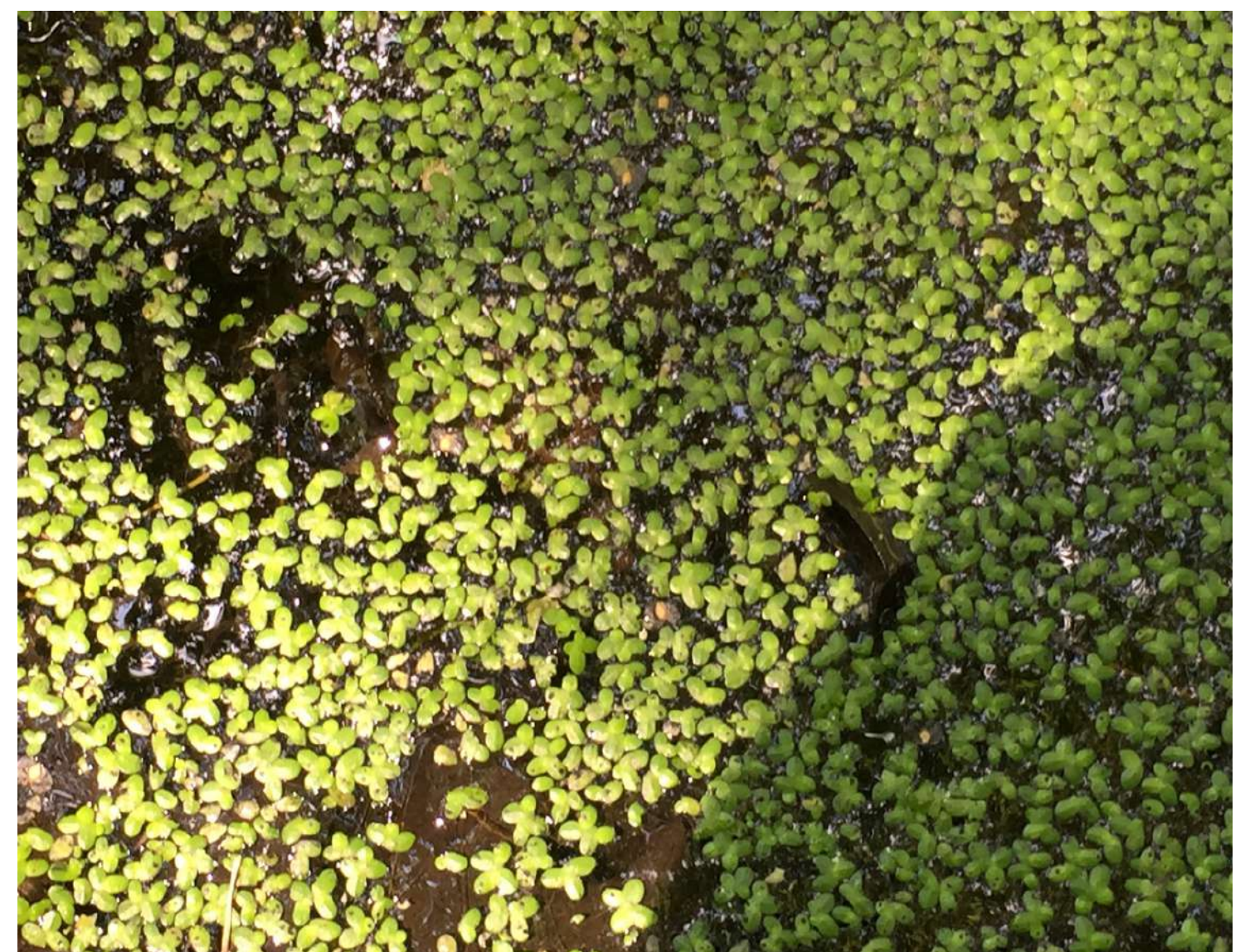
Weather has a large impact on the distribution and severity of pollen. Daily precipitation can quell airborne pollen by washing it into soils or rivers, lakes and ponds, and Long Island Sound. Depending on wind direction and human activities such as boating, wind and waves can cause pollen to concentrate against shorelines or in coves of lakes and ponds. This is often when pollen is mistaken for cyanobacteria because it looks like the typical paint slicks or shoreline concentrations of a cyanobacteria bloom. However, pollen is easily distinguished from cyanobacteria because of its yellow color.



Cyanobacteria

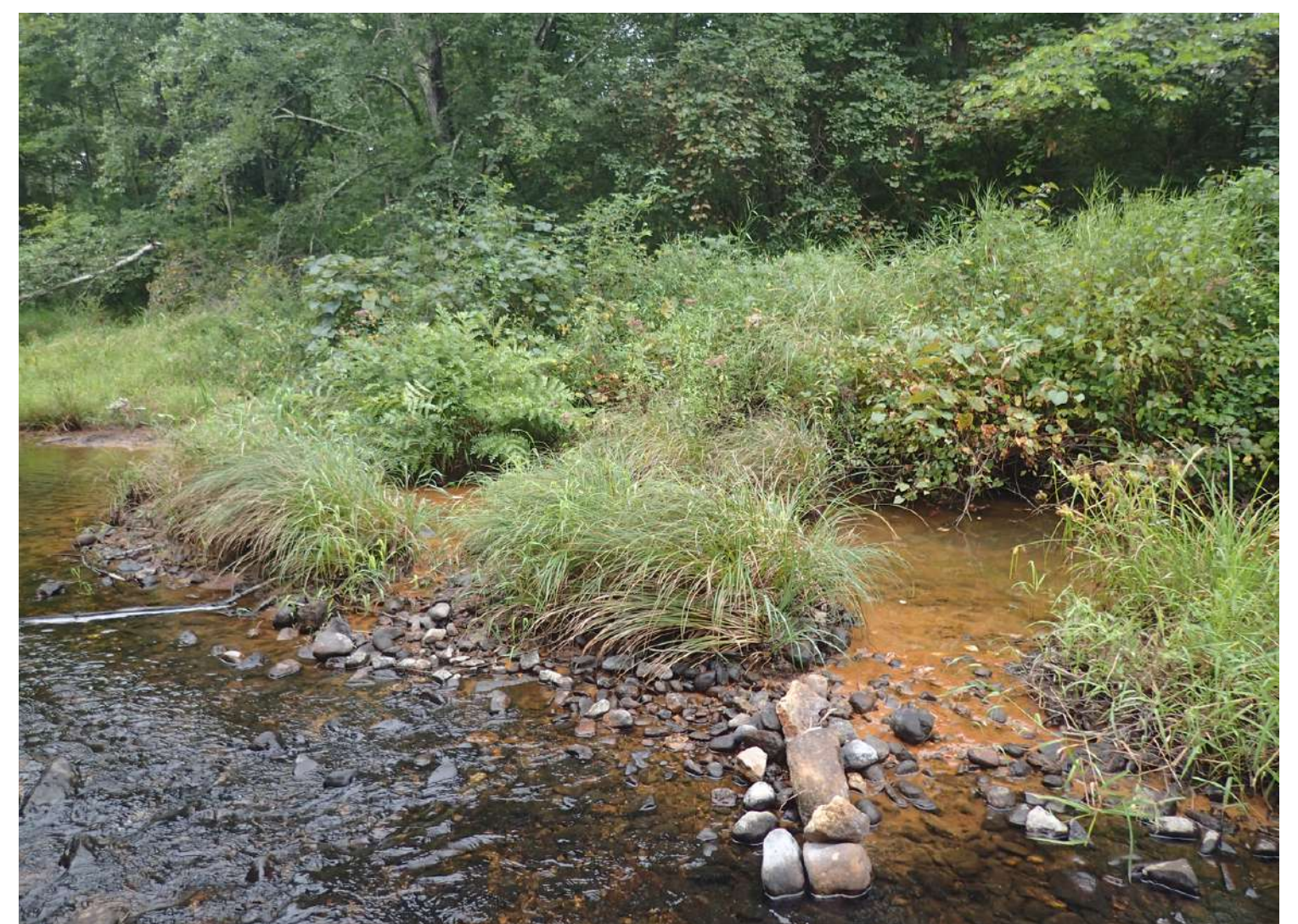
DUCKWEED & WATERMEAL

Another common look-alike to cyanobacteria blooms are duckweed patches. Duckweed is an aquatic plant that floats on the surface of lakes, ponds, and slow-moving fresh or brackish waters. Duckweed is composed of four genera ranging in size from 2 mm (Wolffia species) up to 15 cm in diameter. Accumulation of the small plants can create an expansive floating mat, covering the surface in a similar manner to a cyanobacterial mat. However, upon closer inspection, duckweed and watermeal can be easily distinguished by their individual leaves and roots.



IRON FIXING BACTERIA

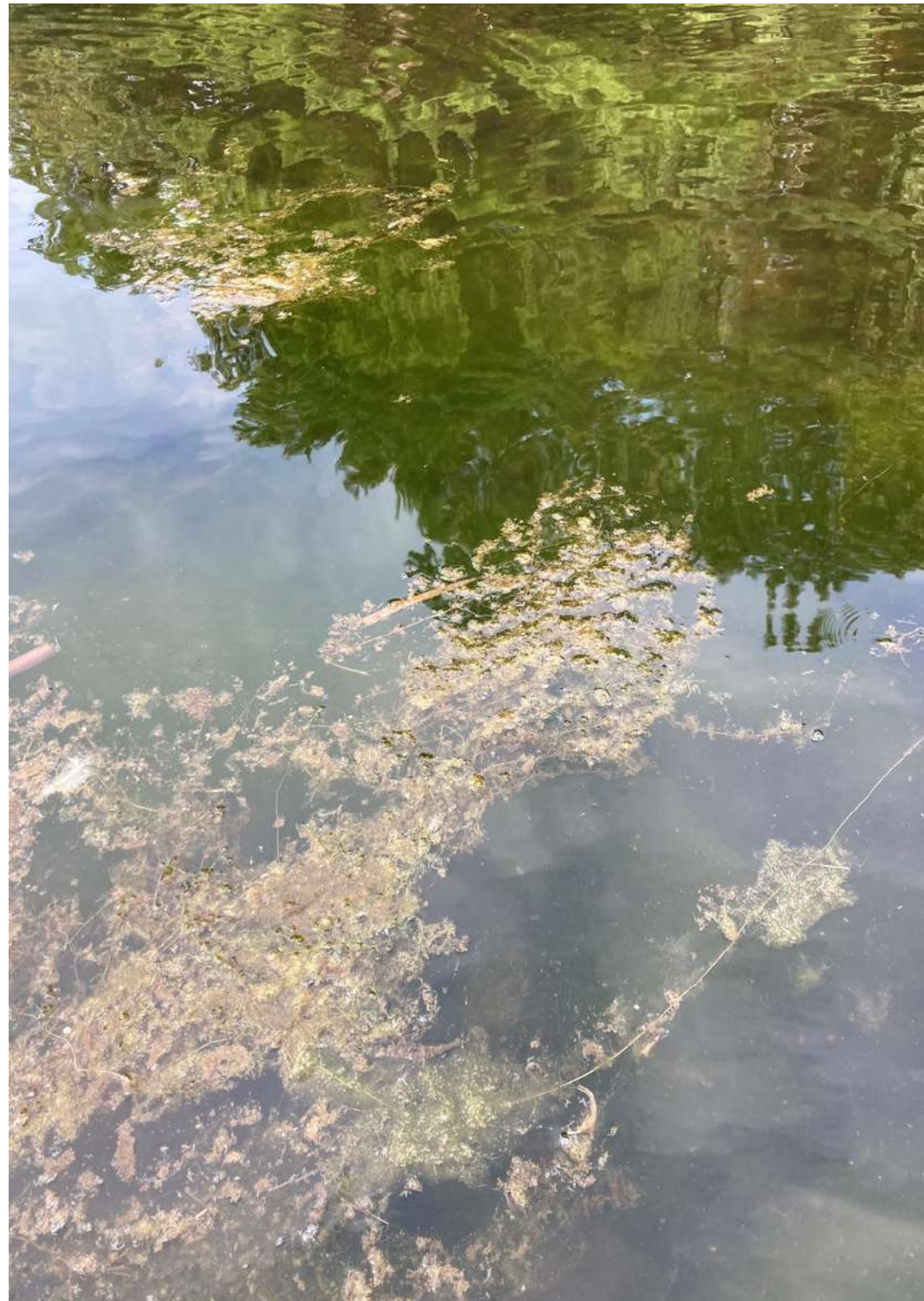
Iron bacteria are bacteria that “feed” on iron and secrete brown or orange slime. They are found naturally in soils and water in low numbers and will thrive as more iron becomes available. Iron is a common element in Connecticut soils which creates a favorable environment for iron-fixing bacteria. In general, wherever there is oxygen, water, and iron there is the potential for iron bacteria to form. The oily sheens created by the decomposing bacteria cells are often mistaken for petroleum sheens. Unlike petroleum sheens, the iron bacteria sheens break apart when they are disturbed. Iron bacteria are of no threat to human health.



Cyanobacteria

OTHER AQUATIC PLANTS & GREEN ALGAE

Aquatic plants and green algae can often be confused with cyanobacteria blooms. All grow in both fresh and marine water systems and can vary in shape, color, and size. They can grow above, below, or float on the water's surface. Aquatic plants and algae can include seaweeds, phytoplankton, and pond scums such as filamentous algae (Cladophora and Spirogyra). As a general rule, algae are structurally simple, organisms that contain chlorophyll, a green pigment which facilitates light absorption and helps them produce their own nutrients (autotrophic). In most cases, if the algae is filamentous or stringy it is not cyanobacteria. The characteristic that most easily delineates aquatic plants from cyanobacteria is size. Cyanobacteria blooms are made up of many microscopic individual cells.



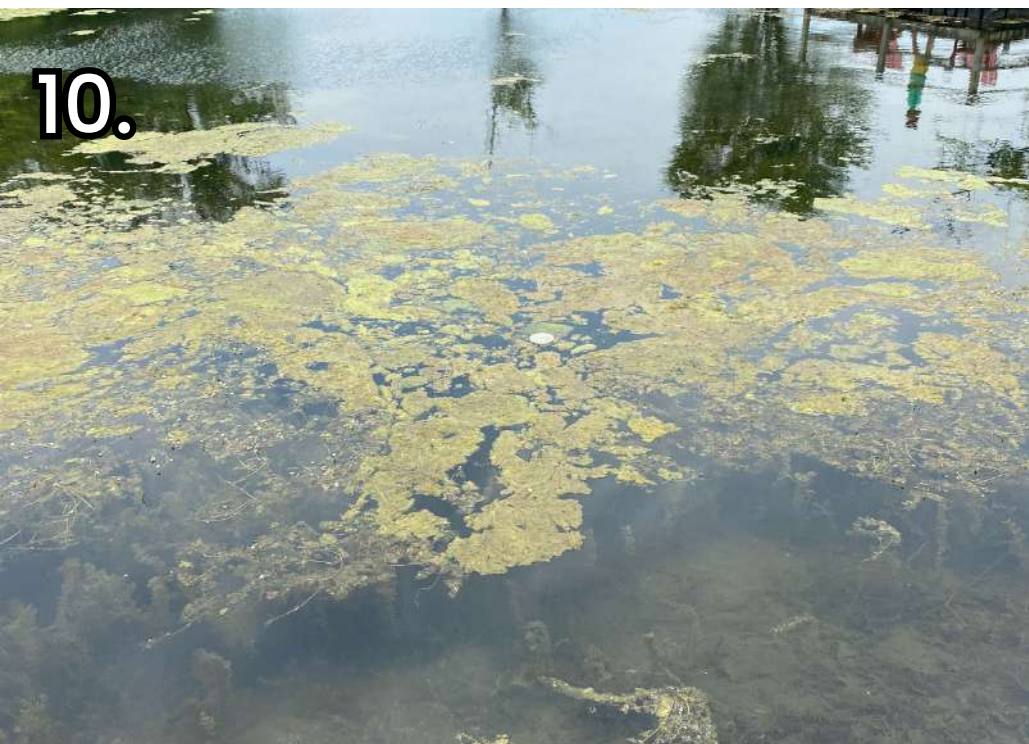
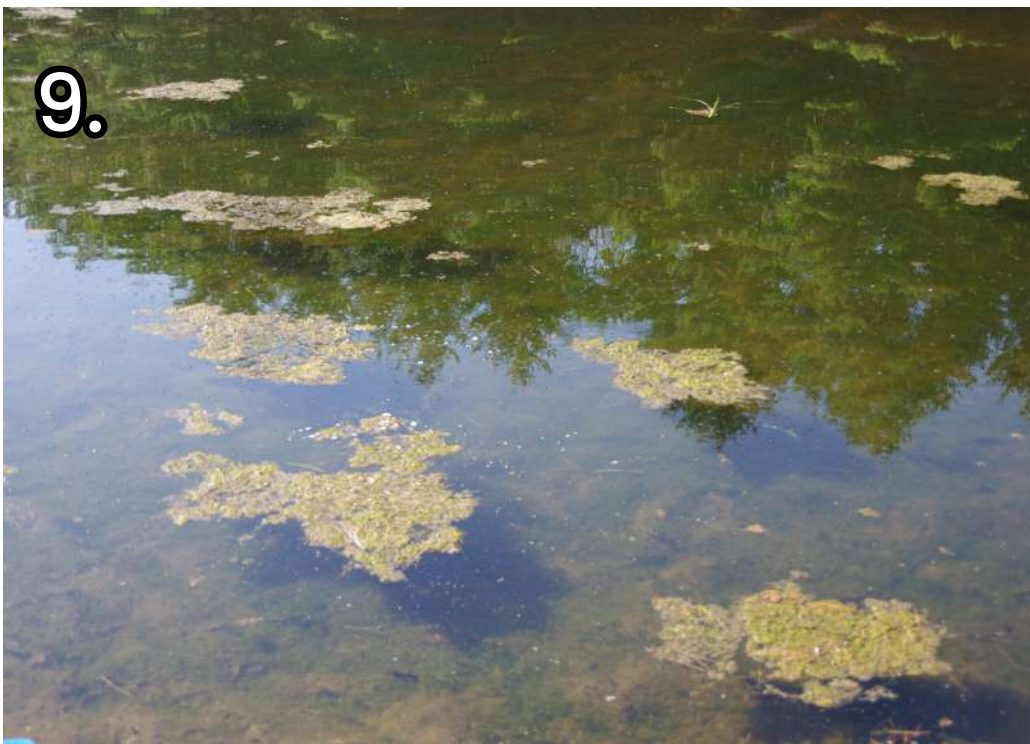
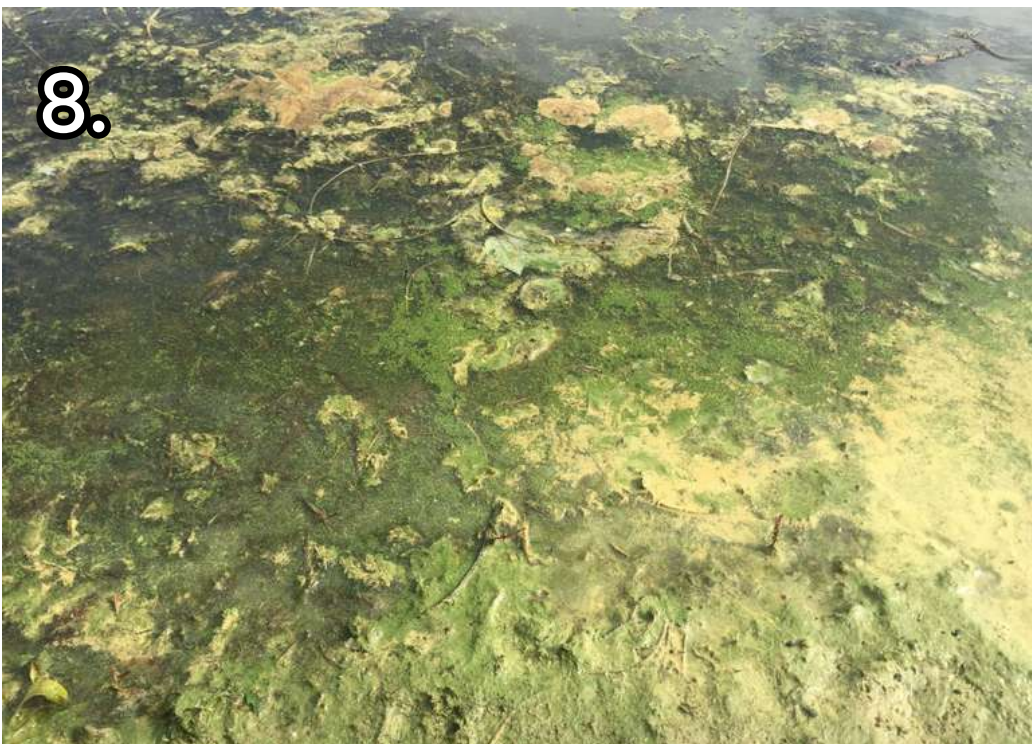
Identification and Look-Alikes

Cyanobacteria

TIME FOR A QUIZ!

In the following images, can you identify the common cyanobacteria bloom “look-alikes” as either aquatic plants, pollen, duckweed, or a combination?

- A=Aquatic Plants
- P=Pollen
- D=Duckweed
- C=Cyanobacteria



Identification and Look-Alikes

Cyanobacteria

STILL UNSURE?

Try using a simple jar or stick to “test” for cyanobacteria as described by the [Kansas Department of Health and Environment](#).



Please report a suspected bloom:
Send the location, extent of the bloom, date observed, and images via the [US EPA bloomWatch App](#).

**Note: When reporting a suspected bloom include as much information about the phenomenon and location as possible. Pictures are an invaluable tool for staff working to monitoring and assess incidents.*



Jar test. (DEEP Staff photos)



You may also view reported cyanobacteria blooms in Connecticut via the [Connecticut Cyanobacteria Dashboard](#).

**Note: Not all blooms have been verified.*

If you’d like to reach out with follow up questions or additional images, you can contact us at deep.algalblooms@ct.gov.

****Keep in mind the phenomenon in this document are not the exclusive cyanobacteria “look-alikes”. Some algal species can be nearly indistinguishable from cyanobacteria unless assessed by an expert under a microscope.****



Cyanobacteria under a microscope at 100x magnification. (DEEP Staff photos)

Thank you for doing your part to keep Connecticut’s Waters Safe and Clean!

REFERENCES

[Interpreting the Function of Saccate Pollen in Ancient Conifers and Other Seed Plants](#)
[Seasonal allergies Q & A with Dr. Tao Zheng](#)
[Allergenic pollen season variations in the past two decades under changing climate in the United States](#)
[EPA- What are macrophytes](#)
[Algae](#)
[Filamentous Algae](#)
[Iron Bacteria in Surface Water](#)
[ITRC Visual Guide to Cyanobacteria](#)
[Maine Jar Test](#)
[Kansas Jar and Stick Tests](#)