



Eel River Recovery
PROJECT

Cyanobacteria Factsheet

Eel River Recovery Project

www.eelriverrecovery.org

WHAT ARE CYANOBACTERIA?

- Cyanobacteria are photosynthetic bacteria that are found in aquatic environments.
- Although once known as blue-green algae, cyanobacteria are not true algae because they lack cell structures like a nucleus.
- Individual cyanobacteria can only be seen under a microscope, but cyanobacteria can form colonies that are visible to the naked eye.

WHAT CAUSES CYANOBACTERIA BLOOMS?

- Cyanobacteria are usually present in freshwater systems, but under certain environmental conditions cyanobacteria "bloom" (or rapidly reproduce) and become the dominant organism in an area. Cyanobacteria blooms can have negative ecological and public health effects.
- The following conditions are favorable for cyanobacteria blooms:
 - ⊙ The water is warm.
 - ⊙ The water is slow-flowing.
 - ⊙ There is adequate sunlight.
 - ⊙ There are additional nutrients (nitrogen and phosphorous) present in the water, e.g. agricultural or urban runoff from fertilizers or improper sewage disposal.
- Blooms can be many different colors, from blue-green to dark green, red, purple, or brown.



In situ: S. Murrell

Microscale (M. Graham and S. Murrell)

Figure 1. Images of the cyanobacteria *Anabaena*. (Huynh, M. and N. Serediak. 2006. *Algae Identification Field Guide Agriculture and Agri-Food Canada*. p. 16)

ARE CYANOBACTERIA BLOOMS TOXIC?

- Not all species or cells of cyanobacteria produce toxins, which makes it difficult to know if a cyanobacteria bloom is toxic or not. Therefore, it is safest to assume that a bloom is toxic and avoid coming into contact with it.
- Two common cyanotoxins produced by cyanobacteria are **microcystin** (a liver toxin) and **anatoxin** (a neurological toxin). They are most dangerous if ingested, but if exposed to the skin they can cause irritation or rashes.
- Children are at greater risk to cyanotoxins than adults because: 1) they are more likely to accidentally swallow water when swimming or wading; 2) their smaller size means less cyanotoxin can trigger negative effects.
- Do not let pets or livestock swim in or drink from water that appears to have cyanobacteria. Rinse any visible cyanobacteria off their coats before they lick it from their bodies.
- Signs that a dog has ingested toxic cyanobacteria include: stumbling and falling, inability to rise, tremors, seizures, vomiting, and diarrhea.



Figure 2. A cyanobacteria bloom in Pinto Lake near Santa Cruz, CA. (<http://seaotters.com/2012/03/24/harmful-algal-blooms-and-marine-mammals/>)

INTERESTING FACTS ABOUT CYANOBACTERIA

- Cyanobacteria are thought to be the first organisms to evolve and develop photosynthesis.
- Cyanobacteria are found all over the world, even in extreme environments like deserts and hot springs.
- Lichen, which grows on rocks and trees, is comprised of fungus and cyanobacteria.
- Spirulina tablets are a dietary supplement made from two species of cyanobacteria.

WHO TO CONTACT

If you suspect a cyanobacteria bloom has occurred or an animal is sick due to cyanotoxins, please contact:

Humboldt Co. Environmental Health: (707) 445-6215

Mendocino Co. Environmental Health: (707) 463-4466

Eel River Recovery Project: (707) 223-7200

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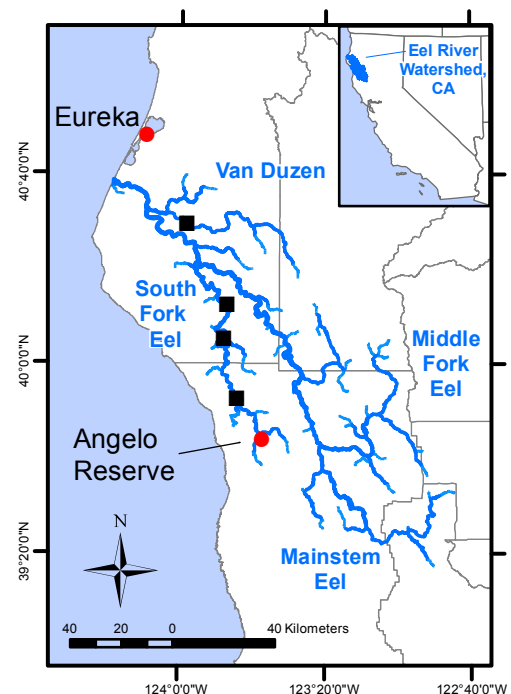


Figure 3. Squares show the location of cyanobacteria implicated dog deaths in the Eel River watershed from 2001-2009.