



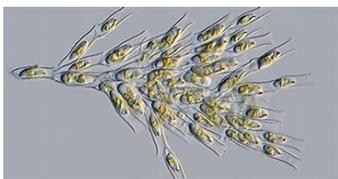
BEAR CREEK WATERSHED

Fact Sheet 73 Phytoplankton Types July 30, 2020

The Bear Creek Watershed Association protects and restores water and environmental quality within the Bear Creek Watershed from the effects of land use.

Clear Creek County
Jefferson County
City of Lakewood
Town of Morrison
Aspen Park Metropolitan District
Conifer Sanitation Association
Denver Water Department
City and County Denver
Evergreen Metropolitan District
Forrest Hills Metropolitan District
Genesee Sanitation & Water District
Geneva Glen
Jefferson County School District
Kittredge Water & Sanitation District
Tiny Town Foundation, Inc.
West Jefferson County Metropolitan District
U.S. Army Corps of Engineers
Jefferson Conservation District

The chrysophytes or chryso-monads are a large group of freshwater golden-brown algae. Most members are unicellular flagellates, with either two visible flagella. Chrysophytes are important for studies of food web dynamics in freshwater ecosystems, and for assessment of environmental degradation resulting from eutrophication.



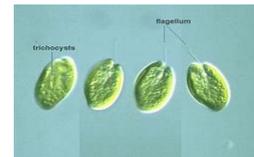
Phytoplankton are photosynthesizing microscopic biotic organisms that inhabit the upper sunlit layer of freshwater bodies. They are primary producers and create organic compounds from carbon dioxide dissolved in the water, a process that sustains the aquatic food web. Phytoplankton are extremely diverse, varying from photosynthesizing bacteria (cyanobacteria), to plant-like diatoms. There are 7 groups or major types of phytoplankton found in the watershed.

Groups	Class	Common Name
Cyanobacteria	Cyanophyceae	Bluegreen
Chrysophyte	Chrysophyceae	Golden Brown
Cryptophyte	cryptophyceae	Cryptomonads
Diatom	Bacillariophyceae	microalgae
Dinoflagellate	Dinoflagellata	Dinoflagellate
Euglenoid	Euglenophyceae	Euglenoid
Chlorophyte	Chlorophyta	Green



Cyanobacteria are prokaryotes called blue-green algae, though some modern botanists restrict the term algae to eukaryotes. Cyanobacteria produce a range of toxins known as cyanotoxins that can pose a danger to humans and animals. (See Fact Sheet 57 Cyanotoxins, Fact Sheet 58 Cyanobacteria Guide BCR, Fact Sheet 61 HABS Exposure and Risks).

The cryptophytes are a class of phytoplankton with plastids. About 220 species are known in freshwater. Each cell is around 10–50 μm in size and flattened in shape, with an anterior groove or pocket. At the edge of the pocket there are typically two slightly unequal flagella.



The dinoflagellates are very small single-celled mesokarotes. Dinoflagellates sometimes bloom in concentrations of more than a million cells per milliliter. Under such circumstances, they can produce toxins (dinotoxins) in quantities capable of killing fish and accumulating in filter feeders such as shellfish, which in turn may be passed on to people who eat them.

Euglenids or euglenoids are a large group of flagellates, called excavate eukaryotes. Euglenoids are distinguished mainly by the presence of a type of cell covering called a pellicle. They bear two flagella on the anterior end of the body. Euglenoid blooms may color the water green, reddish brown, or red.



The green algae are an informal grouping of algae consisting of the Chlorophyta and Charophyta/Streptophyta. Green algae have chloroplasts that contain chlorophyll a and b, giving them a bright green color, as well as the accessory pigments beta carotene (red-orange) and xanthophylls (yellow) in stacked thylakoids. The cell walls of green algae usually contain cellulose, and they store carbohydrate in the form of starch.

Diatoms are a type of phytoplankton with porous silica cell walls. The bigger diatoms are about the width of a human hair. Diatoms have been around since the Jurassic Period and are found worldwide. The current total number of species is over 20,000. Diatoms produce 50% of the air we breathe. Diatoms remove carbon dioxide from the atmosphere, which is converted to organic carbon in the form of sugar, and oxygen is released. Fact Sheet 67 Diatoms As Water Quality Indicators.

