

CONTINENTAL ALGAE



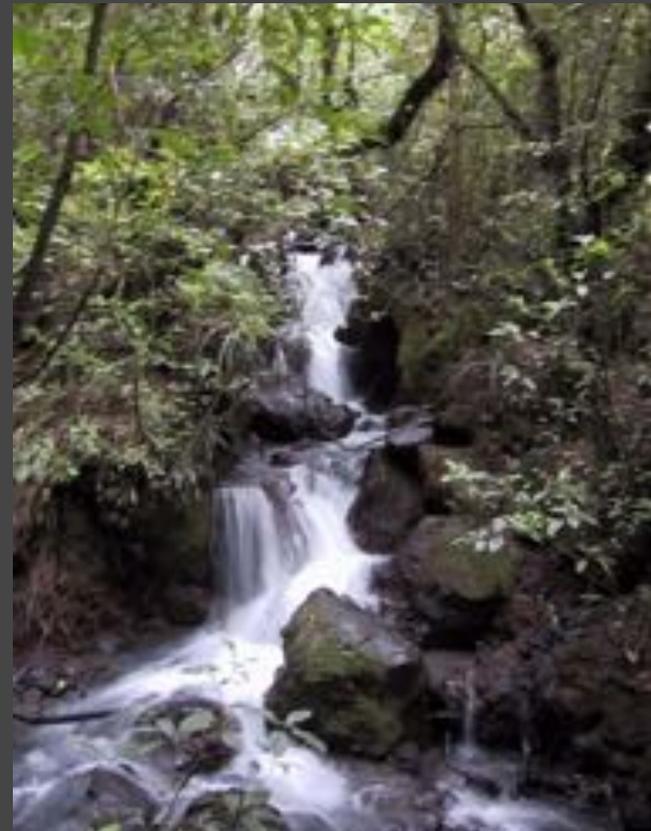
The marine and freshwater environments are populated with algae that live attached to the bottom, their depth determined mainly by the light factor

These algae are attached to inert substrates or to other organisms (animals, plants or other algae)

Algae with this living style are *benthic*, as opposed to plankton algae

Benthic algae can be found in marine or continental habitats.

Continental habitats can be Aquatic, Edaphic, or Subaerial



CONTINENTAL ENVIRONMENTS

AQUATIC HABITATS

This habitat is highly diverse: streams, lakes, bayous, ponds, springs, etc

They can be differentiated by their temperature, oxygenation, turbidity, mechanical effect of currents, etc

But these factors are not the only sole sources to diversify the continental aquatic algal flora

For example formations of the same type (lakes), even geographically close, can show waters with chemical composition very different depending on the substrates they are located

The algal flora reflects the unique properties of each formation

LOTIC WATERS: with running water

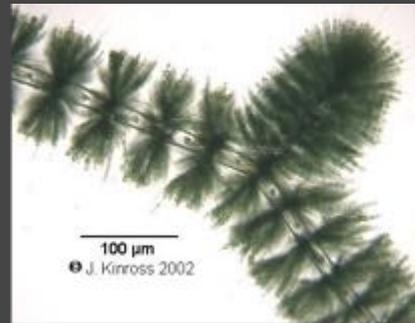
The speed of the current plays an important role: directly by the mechanical action on the benthic organisms; indirectly by increasing the oxygenation

Algal vegetation of rivers with slow water current is more similar to ponds than to mountain rapid waters



Mountain rapid waters have lower temperature and high oxygenation, they are characterized by *oxyphile* freshwater Rhodophytes such as *Batrachospermum* and *Lemanea*; and some Chrysophyceans (*Hydrurus*)

Cyanobacteria and Diatoms are found on rocks or gravel; some Chlorophyceans are encrusting forms (*Gongrosira*), others are more common in waterfalls (*Draparnaldia*, *Stigeoclonium* and *Cladophora*)



In thermal waters, a remarkable flora by its adaptation to this habitat is found close to the water emergence

The most abundant algae are *thermophile* Cyanobacteria, some tolerating up to 80°C; then Diatoms are present tolerating up to 50°C; certain Tribophyceae and Chlorophyceae can be found along with the Diatoms when the temperature is below 40°C



These thermophilic floras are further diversified by the mineral composition particular to different sources, for example some contain higher sulfate compounds and show a different and specific algal community



LENTIC WATERS: still or slow moving waters

Lakes and Ponds, usually shelter:

- a) A vegetation covering stones and gravels along the borders forming algal crusts, cushions or small tufts; Cyanobacteria, Diatoms and Chlorophyceans are constant groups in these *lithophiles* communities
- b) A vegetation covering the sandy (*psammophile*) or muddy substrates away from the shores; in here, *Chara* and *Nitella* are usually forming submerged prairies
- c) A floating vegetation (*neuston*), abundant in the surface of small ponds. Filamentous algae are common: Chlorophyceans *Spirogyra*, *Zygnema*, *Mougeotia*, and *Cladophora*; some Tribophyceans *Tribonema*; and Cyanobacteria *Oscillatoria*



CHARA ALGAE



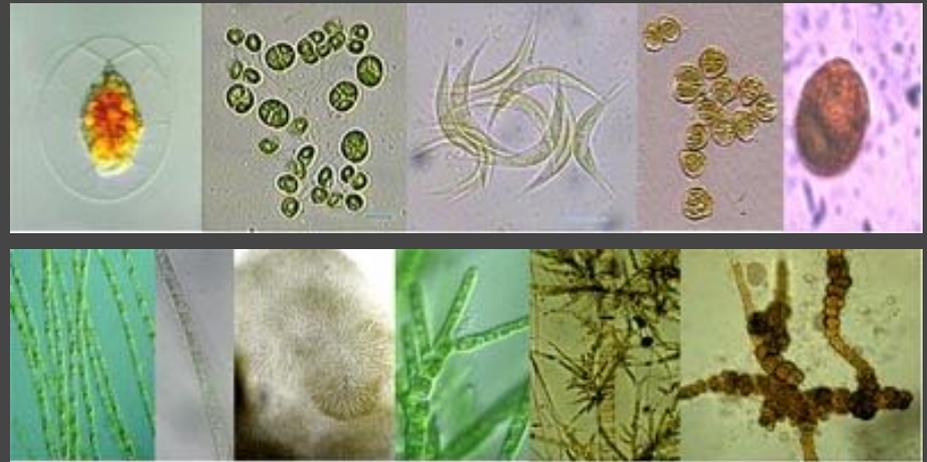
The floristic composition and abundance of these three vegetation types depend on several ecological factors, especially the temperature, oxygenation, pH and mineral composition



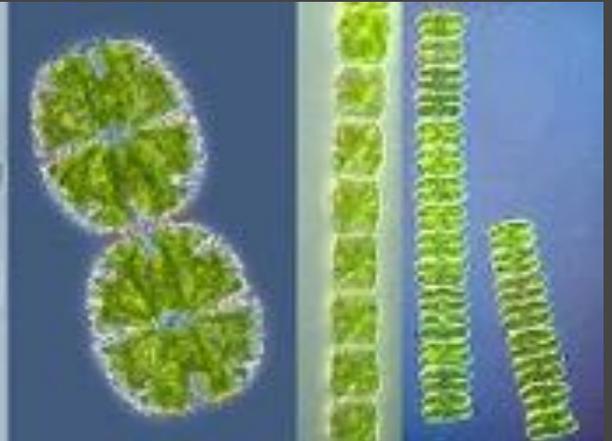
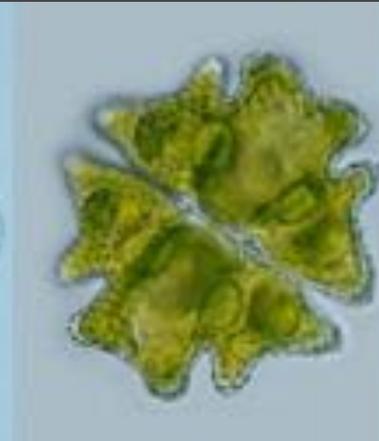
Swamps and Bayous

The humid or flooded soils contain abundant hydrophytes

At the base of these phanerogams an ubiquitous algal flora is found, usually composed by unicells and filaments



Peat-bogs with clear and low pH allow the development of an algal flora living in the water retained by *Sphagnum* (the peat moss), squeezing these mosses release a community of algae non-ubiquitous and *stenoionic* composed almost exclusively by Desmids (placoderms and saccoderms)



CONTINENTAL ENVIRONMENTS

EDAPHIC ALGAE: Soil habitats

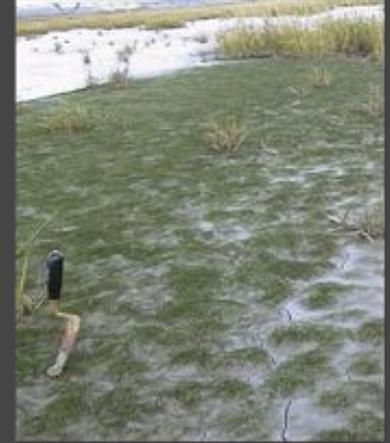
If humidity and light are sufficient, soils are hospitable to algae

The liquid water can be retained more efficiently in the soil and help to dissolve minerals and organic matter providing a nutritive medium for algal growth

Some algae with motility such as Cyanobacteria and Diatoms, can migrate from unfavorable conditions.



Algae common in this habitat are Cyanobacteria (*Nostoc* and *Microcoleus*), Tribophyceans (*Botrydium* and *Vaucheria*), Chlorophyceans (*Chlorococcus*, *Oedogonium*, and *Zygnema*) and many Diatoms



In drier areas (deserts) edaphic algae can be common forming *biotic crusts* or biological communities living in tight packets on soils



Certain algae can also reach some depth inside of soils and some are known to live inside of rocks (*cryptoendolithic algae*)

