

CLASSIFICATION OF ALGAE

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Classification of Algae

For diverse reasons, the taxonomy of algae is not settled yet. There is still an ongoing battle about the composition of eukaryotic supergroups and until that is resolved, it can be hard to define taxonomic levels included within supergroups.

Classification of Algae

Basis for the Classification of Algae

Algae are generally classified on the basis of the following characteristics:

- Chemical and physical feature of the cell walls
- Nature and properties of pigments that contribute to photosynthesis
- Morphological characteristics of cells and thalli.
- Habitat
- Flagella number and the location of their insertion in motile cells.
- Reproductive behaviour

Classification of Algae

- 1. F.E. Fritsch's Classification (1935)**
- 2. G.M. Smith's Classification (1950)**
- 3. Round's Classification (1973)**
- 4. Bold and Wynne's Classification (1985)**
- 5. Robert Edward Lee's Classification (1989)**

CLASSIFICATION OF ALGAE PROPOSED BY F.E. FRITSCH (1935)

❖ The most comprehensive and authoritative classification of algae was given by F.E. Fritsch (1935) in his book 'The Structure and Reproduction of the Algae'.

❖ His classification was based on such criteria as pigmentation, types of flagella, assimilatory products, thallus structure and methods of reproduction.

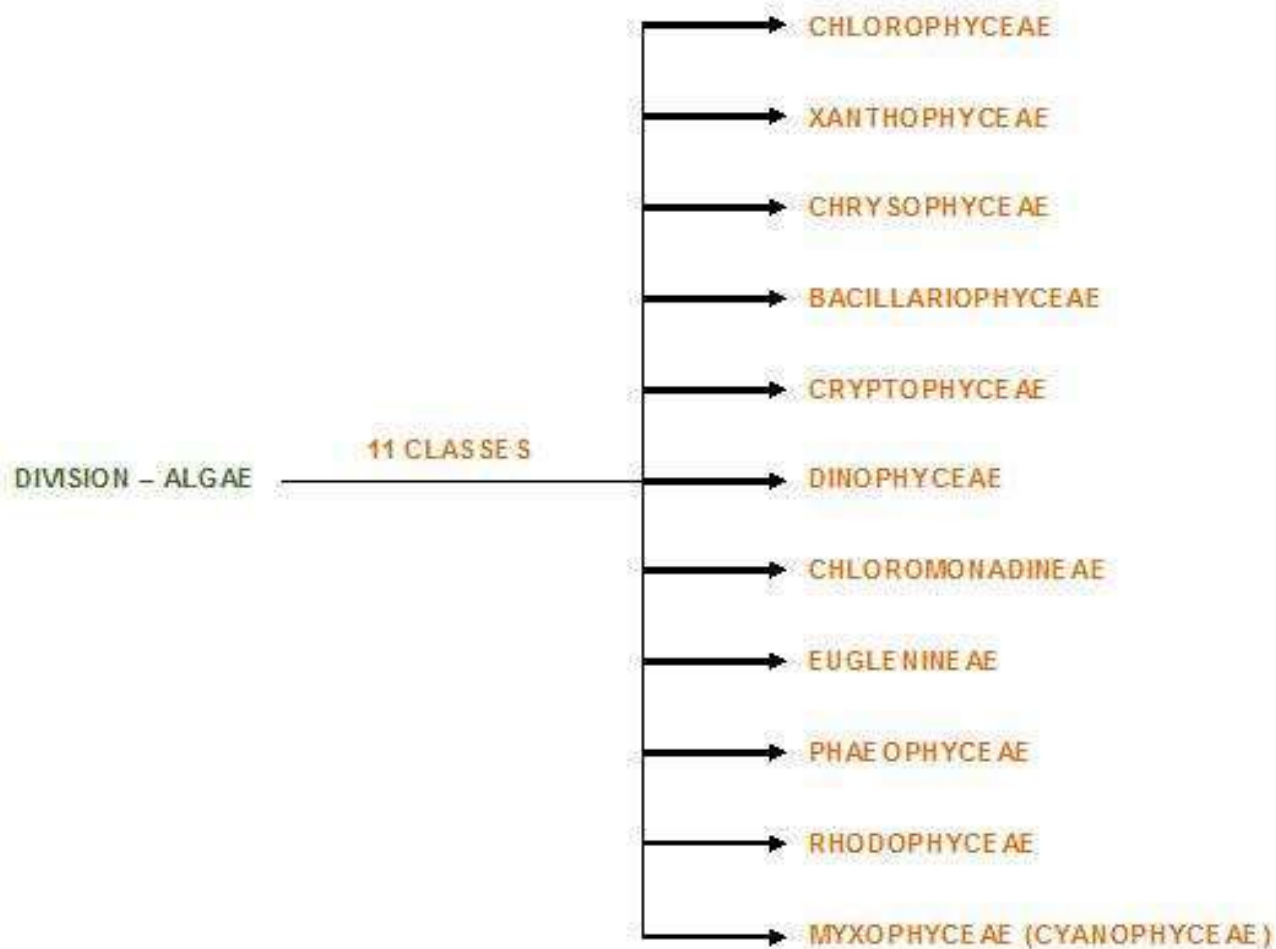
CLASSIFICATION OF ALGAE PROPOSED BY F.E. FRITSCH (1935)

F.E. Fritsch (1935, 1948) divided algae into 11 classes on following basis:

- **Number and mode of attachment of flagella in the motile cells**
- **Thallus structure**
- **Chemical nature of pigments**
- **Reserve food materials**
- **Method of reproduction**
- **Variation in the life cycles**

CLASSIFICATION OF ALGAE PROPOSED BY F.E. FRITSCH (1935)

FRITSCH'S SYSTEM OF CLASSIFICATION OF ALGAE



11 Classes

1. Chlorophyceae
2. Xanthophyceae
3. Chrysophyceae
4. Bacillariophyceae
5. Cryptophyceae
6. Dinophyceae
7. Chloromonadineae
8. Euglenineae
9. Phaeophyceae
10. Rhodophyceae
11. Myxophyceae.

Smith's Classification

Smith(1950)classified algae into seven divisions. These divisions include one or more classes. He included certain algae of uncertain position into Chloromonadales & Cryptophyceae.

1.Chlorophyta:Chlorophyceae&Charophyceae

2.Chrysophyta:Chrysophyceae,Xanthophyceae&Bacillariophyceae

3.Pyrophyta:Dinophyceae &Desmophyceae

4.Euglenophyta

5.Phaeophyta

6.Rhodophyta

7. Cyanophyta

Bold and Wynne's Classification

Bold and Wynne(1978,1985) recognized ten divisions of algae retaining the nomenclature given by Papenfuss(1946),exceptforblue-greenalgae. They considered Cyanophyceae as a division and called it Cyanochloronta where as Papenfuss had included it in phylum Schizophyta as a class

1. Cyanophyta (Blue Green Algae)
2. Prochlorophyta (Single genus: Prochloron)
3. Chlorophyta (Green algae)
4. Charophyta (Stone worts)
5. Euglenophyta
6. Phaeophyta (Brown algae)
7. Chrysophyta (Golden and yellow green algae)
8. Pyrrhophyta (Dinoflagellates)
9. Cryptophyta
10. Rhodophyta (Red algae)

Classification proposed by Prescott (1969)

Phyla	Classes
1. Chlorophyta (green algae; chlorophyll predominant pigment, food reserve starch).	i. Chlorophyceae ii. Charophyceae
2. Euglenophyta (euglenoid algae; chlorophyll predominant pigment, food reserve paramylum).	
3. Chrysophyta (yellow-green algae; carotenoids and xanthophylls predominant pigments, food reserve leucosin and oil).	i. Chrysophyceae ii. Bacillariophyceae iii. Heterokontae (Xanthophyceae)
4. Pyrrhophyta (dinoflagellates; carotenes, xanthophylls and peridinin predominant pigments, food reserve starch and oil).	i. Desmokyontae (Desmophyceae) ii. Dinokyontae (Dinophyceae)
5. Phaeophyta (brown algae or brown seaweeds; fucoxanthin predominant pigment, food reserve soluble carbohydrate).	i. Isogeneratae ii. Heterogeneratae iii. Cyclosporeae
6. Rhodophyta (red algae; phycoerythrin dominant pigment; reserve food floridean starch).	i. Sub-phylum Bangioideae ii. Sub-phylum Florideae
7. Cyanophyta (blue-green algae; phycocyanin predominant pigment).	i. Sub-phylum Coccogoneae
8. Cryptophyta (blue and green flagellates; compressed slipper shaped flagellated cells; xanthophyll or chlorophyll predominant pigment; food reserve starch-like carbohydrate).	ii. Sub-phylum Hormogoneae
9. Chloromonadophyta (chloromonads; chlorophyll predominant pigment, food reserve oil)	

Robert Edward Lee's Classification

Lee(1989) divided the algae based on evolution and formed 4 evolutionary groups of algae which are further divided into 15 phyta(=divisions).

1.Prokaryotic algae (Cyanophyta)

2.Eukaryotic algae with chloroplast surrounded only by the two membranes of the chloroplast envelope (Glaucophyta, Rhodophyta and Chlorophyta)

3.Eukaryotic algae with chloroplast surrounded only by one membrane of chloroplast endoplasmic reticulum (Euglenophyta and Dinophyta)

4. Algae which have two membranes of chloroplast endoplasmic reticulum (Cryptophyta & Heterokontophyta)

THANKS