Class: *Phaeophyceae*

Phaeophyceae, known as the brown algae, is a large class of marine macrophytes with over 250 genera and approximately 1500 species. The class is a large group of multicellular algae, including many seaweeds located in colder waters within the Northern Hemisphere. Most brown algae live in marine environments, where they play an important role both as food and as habitat. Colour of the *Phaeophyceae* members is due to the presence of large amounts of the xanthophyll fucoxanthin in their chloroplasts, which conceals the rest of the pigments as well as from the phaeophycean tannins that might be present. Thalli of the class range from filaments to psuedoparenchymatous to parenchymatous. Its cell walls are composed of cellulose fibrils in a mucopolysaccharide. Phaeophyceae chlrophyllsa, c1, c2, β-carotene, fukoxanthin, violaxanthin, dinoxanthin and diadinoxanthin.

Systematics of class *Phaeophyceae*

Subclass: *Discosporangiophycidae*

Order: *Discosporangiales*

Family: *Choristocarpaceae*

Family: *Discosporangiaceae*

Subclass: *Ishigeophycidae*

Order: *Ishigeales*

Family: *Petrodermataceae*

Family: *Ishigeaceae*

Subclass *Dictypophycidae*

Order: *Syringodermatales*

Family: *Syringodermataceae*

Order *Onslowiales*

Family: *Onslowiaceae*

Order: *Dictyotales*

Family: *Dictyotaceae*

Order: *Sphacelariales*

Family: *Lithodermataceae*

Family: *Phaeostrophiaceae*

Family: *Sphacelodermaceae*

Family: *Stypocaulaceae*

Family: *Cladostephaceae*

Family: *Sphacelariaceae*

Subclass: *Fucophycidae*

Order: *Desmarestiales*

Family: *Arthrocladiaceae*

Family: *Desmarestiaceae*

Order: *Sporochnales*

Family: *Sporochnaceae*

Order: *Ascoseirales*

Family: *Ascoseiraceae*

Order: *Scytothamnales*

Family: *Asteronemataceae*

Family: *Bachelotiaceae*

Family: *Splachnidiaceae*

Order: *Laminariales*

Family: *Phaeosiphoniellaceae*

Family: *Akkesiphycaceae*

Family: *Pseudochordaceae*

Family: *Chordaceae*

Family: ***Agaraceae***

Family: *Laminariaceae*

Family: *Aureophycaceae*

Family: *Alariaceae*

Order: *Asterocladales*

Family: *Asterocladaceae*

Order: *Ectocarpales*

Family: *Sorocarpaceae*

Family: *Adenocystaceae*

Family: *Scytosiphonaceae*

Family: *Petrospongiaceae*

Family: *Ectocarpaceae*

Family: *Acinetosporaceae*

Family: *Chordariaceae*

Order: *Stschapoviales*

Family: *Stschapoviaceae*

Family: *Halosiphonaceae*

Family: *Platysiphonaceae*

Order: *Tilopteridales*

Family: *Tilopteridaceae*

Family: *Phyllariaceae*

Family: *Cutleriaceae*

Order: *Ralfsiales*

Family: *Mesosporaceae*

Family: *Neoralfsiaceae*

Family: *Ralfsiaceae*

Order: *Nemodermatales*

Family: *Nemodermataceae*

Order: *Fucales*

Family: *Bifurcariopsidaceae*

Family: *Hormosiraceae*

Family: *Notheiaceae*

Family: *Seirococcaceae*

Family: *Xiphophoraceae*

Family: *Sargassaceae*

Family: *Durvillaeaceae*

Family: *Himanthaliaceae*

Family: *Fucaceae*

Division: *Rhodophyta*

Rhodophyta, known as red algae, comprises one of the largest division of algae, containing over 7,000 currently recognized species. Members of the class are red due to the presence of the pigment phycoerythrin which reflects red light and absorbs blue light. Because blue light penetrates water to a greater depth than light of longer wavelengths, these pigments allow red algae to photosynthesize and live at somewhat greater depths than most other algae.

Most members are multicellular, marine algae, including many notable seaweeds. About 5% of the red algae occur in freshwater environments with greater concentrations found in the warmer area. There are no terrestrial species, which is assumed to be traced back to an evolutionary bottleneck where the last common ancestor lost about 25% of its core genes and

much of its evolutionary plasticity. Rhodophyta members have double cell walls. The outer layers contain the polysaccharides agarose and agaropectin that can be extracted from the cell walls by boiling as agar. The internal walls are mostly cellulose. Red algae reproduce both sexually and asexually, but they tend to reproduce sexually. Life cycles tend to be diplohaplontic, with alternation between haploid and diploid stages. However, this is not the case with all species. Porphyra nereocystis, for example, has a heteromorphic alternation of generations.

Systematics of division Rhodophyta

Classis: *Rhodophyceae*

Subclassis: *Bangioideae*

Ordo: *Bangiales*

Genus: *Bangia*

Genus: *Porphyra*

Subclassis: *Florideae*

Ordo: *Nemalionales*

Genus: *Audoinella*

Genus: *Batrachospermum*

Ordo: *Gelidiales*

Genus: *Gelidium*

Ordo: *Cryptonemiales*

Genus: *Corallina*

Ordo: *Gigartinales*

Genus: *Gigartina*

Genus: *Gracilaria*

Genus: *Chondrus*

Ordo: *Rhodymeniales*

Genus: *Rhodymenia*

Ordo: *Ceramiales*

Genus: *Ceramium*

Genus: *Polysiphonia*