Kingdom Fungi

Fungi lack chlorophyll and thus cannot make their own food (heterotrophic) so they are not considered to be plants. However, they have some plant-like characteristics such as not moving and reproducing by spores.

Many are saprotrophs (decomposers) - they break down dead organic matter like wood and leaf litter.

Other are parasitic, obtaining nutrition from, and often damaging, living plant and animal hosts.

The rest form mycorrhizal symbiotic (mutually beneficial) partnerships with plant roots. The plant provides sugars to the fungi, and the fungi absorb water and inorganic nutrients such as phosphorus and nitrogen. They do this by producing hair-like threads called hyphae that grow into the soil.

Lichens are often classified as fungi but I will treat them as a separate group.

The reproductive organs of many terrestrial fungi, such as yeasts and moulds, are very small. There are also a very large number of marine fungi species found in sea grass beds, coral reefs and mangroves which are predominantly **ascomycetes** with microscopic fruiting bodies. None of these species are considered here.

Macrofungi are fungi that produce large, visible fruiting structures, such as mushrooms, puffballs, bracket fungi and crust fungi that can be readily seen with the naked eye.

The phylum ***Basidiomycota*** is the dominant group of macrofungi. They produce sexual spores called basidiospores on club-shaped cells known as basidia, typically located on gills, pores, or teeth. Common examples are gilled mushrooms, shelf/bracket fungi, puffballs, stinkhorns, and earthstars. The main class in this phylum is *Agaricomycetes* which contains the vast majority of visible gill mushroom species.

The phylum ***Ascomycota*** produce spores inside microscopic, elongated sac-like structures called asci. Many form cup-shaped macroscopic fruiting bodies.

Macrofungi have not been studied in detail in Saint Lucia. The main resource is Pegler, D.N. (1983) Agaric Flora of the Lesser ontilles. Additional Series 9, Kew Bulletin, London, 1-668. which describes many hundreds pf gilled mushroom species (the most numerous group of macrofungi) , Saint Lucia was not part of this study, but it is reasonable to assume many of the same species are here. It is likely that there are up to1000 species present in Saint Lucia.

In the tropics there are also large numbers of polypore species - 500 seems a reasonable number for Saint Lucia. Polypores can be very large and perennial so account for more biomass than agarics. The Ganoderma group has been studied in detail on the Franch islands (Stephane, Welti & Courtecuisse, Régis. (2010). The Ganodermataceae in the French West Indies (Guadeloupe and Martinique). Fungal Diversity. 43. 103-126. 10.1007/s13225-010-0036-2.)

There are a much smaller number of species in other *Basidiomycota* types and cup and flask *Ascomycota*.

Described below are the various types of macrofungi according to appearance. Some are natural groupings, others are formed of disparate lineages with common features (convergent evolution).

1. Gilled Mushrooms

A vast and very recognizable natural group in the phylum *Basidiomycota*.

The images below are of a green wax cap, most likely genus *Hygrocybe* or *Gliophorus*. Like most mushrooms it has a central stipe (stem).





Other species, usually those growing on wood rather than in the ground, have eccentric (off-centre) stems. An oyster shell mushroom is shown below, probably a *Pleurotus* species.





2. Polypores

Polypores are a major natural group of fungi in the tropics belonging to the phylum *Basidiomycota*. They are recognizable by the presence of pores on the undersurface rather than gills. Most are shelf (bracket) fungi) found on living or decaying wood. They can be perennially woody and large but may also be made of softer tissue.

The example below is a small common bracket fungus, probably *Pycnoporus sanguineus* The images show the upper surface and the pores on the lower surface.





3. Crust (Corticioid) Fungi

These fungi grow flat on wood with a smooth lower surface. The upper surface is varied in appearance for example warty or wrinkled and releases spores directly without gills or pores. They are not a natural grouping with members belonging to different *Basidiomycota* lineages. (Crust lichens can have a similar appearance but the surface is drier and often white or brightly coloured.)

4. Jelly Fungi

These fungi have a jelly like texture when hydrated but can dry up into a hard crust that later can swell up when rain comes, They release spores directly from the surface. They are not a natural grouping with members belonging to different *Basidiomycota* lineages.



5. Puffballs

The fruiting body of these fungi have a spherical shape. When fully mature, the interior flesh dries into a massive powdery spore cloud. When disturbedt, the pressure forces a puff of spores out through a top pore or crack to reproduce via wind. They are not a natural group with members belonging to different *Basidiomycota* lineages.



6. Earthstars

Many earthstars are hygroscopic.In dry weather, the rays curl inward to shield the spore sac. When it rains, they absorb moisture and pop back open—sometimes with enough force to push away surrounding leaves or lift themselves off the ground.

The central sac features a tiny opening at the top. When raindrops hit the flexible sac, it compresses like a bellows, puffing clouds of powdery spores into the air.

Earthstars belong to the genus *Geastrum*i b the phylum Basidiomycota.



7. Stinkhorns

They start as underground "eggs" before rapidly shooting up into strange shapes like stalks, lattices, or net-like skirts.

They produce a slimy, spore-bearing outer layer that smells like dung, vomit, or rotting flesh. The smell attracts flies and other insects, which eat the slime and carry the spores away to new locations. I have observed them on Gros Piton.

They belong to the family *Phallaceae* in the phylum Basidiomycota.

8. Cup Fungi

The fruiting body tends to grow in the shape of a "cup". Spores are formed on the inner surface of the fruit body. The cup shape typically serves to focus raindrops into splashing spores out of the cup.

They belong to the family *Pezizaceae* in the phylum Ascomycota.

9. Flask Fungi

These fungi have microscopic, flask-shaped reproductive structures that release spores. And which are aggregated into macroscopic structures. They belong mainly ti the class *Sordariomycetes*

A *Daldinia* species is illustrated below. Fruiting bodies are coallike and if cut show concentric growth rings. Spores are jet black.



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