

## BIODIVERSITY OF MACROFUNGI AND SLIME MOLDS FROM CHM CAMPUS

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### ABSTRACT

Biodiversity is the degree of variation of life forms within a given ecosystem or biome. Biodiversity is not constant across the earth. The Western Ghats in India are rich reserves of biodiversity. The present paper describes the biodiversity of macro fungi and members of Myxomycetes from the campus of Smt. C. H. M. College, Ulhasnagar, Maharashtra, a part of Western Ghats. The college is situated on a 16 acre wide, lush green campus with more than two hundred plants in four gardens and a nearly equal number of weeds in other parts of the campus. The heavy rainfall in monsoon creates the humid conditions. There is a very high amount of debris created by fallen leaves and branches of the plants. Both these conditions make suitable conditions for the growth of lower fungi and myxomycetes. Naturally, there are many different macro fungi and members of myxomycetes growing on the campus during rainy season. The studies carried out for the last few years revealed the presence of species of *Marasmius*, *Xylaria*, *Auricularia*, Coral fungi, Puffballs, *Entoloma* and *Physarumpolycephalum*, *Physarumcinerium* and *Diderma* species.

**KEYWORDS:** *Marasmius*, *Xylaria*, *Physarum*, Macrofungi, Slime Molds

### INTRODUCTION

The term biodiversity refers to all the organisms present in an area. The total biodiversity of an area covers all the organisms, including flora, fauna and the microorganisms present in that area. It is not possible to study all such organisms at any one time. Therefore, the aim of this research work is restricted to the studies of only macro fungi and members of myxomycetes occurring on the campus of Smt. C. H. M. College. Fungi play important role in the ecosystem (Lizon, 1995). Any shift in their population can affect the stability and composition of the ecosystem. They exhibit an enormous diversity and have various systems of obtaining nourishment. Because of this, they are of immense importance in agriculture, industry and environment. (Rossman, 1995). Biodiversity is affected by climatic as well as anthropogenic factors. There are more than 100 natural compounds listed from the myxomycetes. (Dembitsky *et al.*, 2005). *Physarumpolycephalum* plays an important role as a model in the research system. *Physarumcinerium* and *Stemonitis* also play a role in the biodegradation (Kellar and Everhart, 2010).

Smt. C. H. M. The college is situated on a lush green campus of 16 acres land very near to Ulhasnagar railway station. There are 6 colleges, 4 gardens and 2 big playgrounds in the campus. All these campuses contain about 200 cultivated plants and about an equal number of weeds. All this area is constantly under change, due to both climatic and anthropogenic factors. Last three years, there was a decreasing amount of rainfall with the least value noted in the year 2015. It also concentrated in few months such as early June, some part of July and August. This reduced the growth of fungi and affected the diversity. In the year 2016, rainfall amounted more than 100% and persisted up to September. This has resulted in alteration of humidity and atmospheric temperature.

Along with rainfall, the humidity was decreasing and the temperature kept on increasing. In the year 2016, the atmospheric humidity was very high till September and the temperature was low. This favored the abundant growth of macro fungi and slime molds.

The repairing and new construction work in the campus is a continuous process. This brings about changes in the soil and flora therein. The soil is replaced by sand, stones, cement and bricks in some parts. This results in the alteration of fungal flora. It is essential to record these changes.

## MATERIAL AND METHODS

- Frequent visits and observations in the campus for last 10 years.
- Macro and microscopic studies of the specimen.
- Photography of the specimens observed.
- Identification of asco and basidiomycetes members was done by using a Phillips (2006), Smith (1960). The identification of slime moulds was done by Stephenson and Stampen (2000) and M. Sc. Thesis by Kadam (2010).

## OBSERVATIONS AND DISCUSSION

Many fungal types were observed on the campus. But all of them were not found in the same year. Earth balls were noted in earlier years. *Marasmius* species are found every year. Wet rot, white wash, Beech wood warts was found in the last three years, especially after tree cutting was carried out by Ulhasnagar Municipal Corporation. Jelly ear, enveloping crust and Beechmast candle snuff were observed this year for the first time. Similarly the slime moulds were observed for the first time in CHM campus.

## MACROFUNGI

### COMMON EARTHBALL: *Scleroderma citrinum* Pers

Fruiting body: Oval to globose, about 10-12 cm in length, 5-7 cm in diameter, Attached to the mycelia. Outer wall pink of dirty yellow, tough, course, scaly; Gleba-powdery, found on sandy soil with rich organic matter.

### Jelly Ear: *Auricularia auricula-Judae* (Bull.) Wettst

Fruiting body: 3-8 cm across, ear shaped, chocolate brown, gelatinous, hyaline, smooth, becomes hard on drying. Found on the bark of *Pithecolobium saman*.

### Beechmastcandlesnuff: *Xylariacarpophila* (Pers.)

Fruiting body: 1-6 cm high, slender, black at base, white at a tip, found on dead old wood.

### Beechwood wart: *Hypoxyton fragiformi* (Scop.) J. Kickx

Fruiting body: bright brick red patches on dead as well as living wood.

### Wet rot: *Coniophora puteana* (Schumach.) P. Karst

Fruiting body: Forms irregular patches, 4-20 cm, and creamy white to pale yellow, margin broad, white, surface irregular, warty, found on decaying woods.

***Peniophoralysii* (Pers.) Hahn and Kitsch**

Fruiting body: Resupinate, forms thin patches on the underside of Sheathing leaf bases of coconut, blue gray to violet.

**Elder whitewash: *Hyphodontiasambuci* (Pers.) J. Erikss. Syn. *Hyphodermasambuci* (Pers.) Jülich**

Fruiting body: Thin, white, chalky, found on dead wood.

**Leaf parachute: *Marasmiusepiphyllus* (Pers.) Fr**

Fruiting body: with cap diameter 3-10 mm, flat, white to creamy, membranous, wrinkled, Stipe-15-30X 1 mm, slender, white, gills, white, few branched, found on the bark of *Peltophorumferrugianum* and *Ficusglomerata*.

**Horsechair Parachute: *Marasmiusandrosaceus* (L.) Fr**

Fruiting body: with cap 0.5-1 cm in diameter, convex with depressed center, Stipe-20-30X 1 mm, slender, stiff, Gills pink to brown, few, distant, found on the bark of *Peltophorumferrugianum* and *Ficusglomerata*.

**Pleated inkcap: *Coprinusplicatilis* (Curtis.) Fr**

Fruiting body: with cap 0.5-1.5 cm high, cylindrical-ovate, flat or convex with depression at the center when expanded. Stripe- 30-70 X 1-2 mm, buff to white, gills-free, pink to gray, or black. Found in grasses.

**Wood Pinkgill: *Entolomarhodopolium* (Fr.) P. Kumm**

Fruiting body: with cap 3-7 cm, convex with slight umbo, then expanded and depressed, gray brown, yellowish-brown, silky. Stripe- 40-80 X 5-10 mm, white to silky gray, flesh thin, smell- slight, found below *Ficusreligiosa*.

**SLIME MOULDS*****Physarumpolycephalum***

Stalked gregarious sporangia, irregular-lenticular, or convoluted, yellow to grey to white, 1-1.5 mm broad, 1-2 mm in height. Peridium is single, membranous, fragile, white to pale yellow, with scattered clusters of yellow to white lime granules. Stalk long, slender, twisted, expanded at base, Capillitium- physaroid, dense, forming a dense network with white to yellow, irregular lime nodes. Found on sheathing leaf bases of coconut.

***Physarumcinereum***

Sessile sporangia merging into short plasmodiocarps, subglobose to pulvinate, white to cinereous (dark brown when limitless), 0.3-0.5mm in diameter, peridium single, membranous, covered with lime, Capillitiumphysaroid- angular or branching with white lime nodes, Spores violet to purple. Found on sheathing leaf bases of coconut.

***Didermaeffusum***

Plasmodiocarps effused, gregarious, white, 0.5-1.5 mm broad, variable in length, Peridium-made up of two layers, outer- calcarius, smooth, inner- membranous, colorless, collumella- flat, pulvinate, pinkish brown, capillitium- delicate, colorless to purple, sparingly branched, network, spores-violet-purple. Found on dead branches.

Many researchers have carried out biodiversity studies of macro fungi in different parts of the Country. Dar *et al* (2010) have studied ascomycetes and basidiomycetes flora from conifer dominated forests of Kashmir. Beiget *al* (2011)

has enlisted macro fungi from Jammu and Kashmir. Bhatt *et al* (2014) has studied the macro fungal flora of Adwani forests of Garwal, Himalaya, Uttarakhand. Upadhyay *et al* (2005) has studied dark spores Agarics from North West Himalaya. Such studies provide valuable guidelines about the existing and changing fungal flora in the respective area. These floras can be useful as a marker of environmental and anthropogenic changes in an area. It may happen due to these changes that particular species will be lost forever from an area.

## CONCLUSIONS

The campus of Smt. C. H. M. College is rich in fungal flora. Such flora needs to be conserved by *in situ* and *ex situ* methods. The plant litter may be used for this. The Number of plants also should be protected for this.










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APPENDICES

			
<i>Xylariacarpophila</i>	<i>Auricularia auricular-judae</i>	<i>Hypoxytonfragiforme</i>	<i>Coniophoraputeana</i>
			
<i>Peniophoralysii</i>	<i>Marasmiusepiphyllus</i>	<i>Marasmiusandrosacius</i>	<i>Coprinusplicatilis</i>
			
<i>Entolomarhodopolium</i>	<i>Scerodermacitrinum</i>	<i>Hyphodontiasambuci</i>	<i>Physarumpolycephalum</i>
			
<i>Didermaeffusum</i>	<i>Physarumcinereum</i>		

