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**RESEARCH ARTICLE**

# Occurrence of Some Economically Important Macrofungi in Ultapani Reserve Forest under Manas Biosphere Reserve, Assam.

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## *Abstract*

Macrofungi are a major component of biodiversity. The present investigation was carried out in Ultapani Reserve Forest under Manas Biosphere Reserve in the month of April 2014 with a view to exploring some economically important macrofungi. During the survey altogether 13 species of macrofungi were collected and identified which were edible and some were ethnomycologically important.



## INTRODUCTION

Macrofungi occupy an important position in the flora of any forest ecosystem. Macrofungi are defined as fungi that form macroscopic fruiting bodies, such as gilled fungi, jelly fungi, coral fungi, stinkhorns, bracket fungi, puff balls and bird's nest fungi (Hawksworth *et al.* 1995; Richards and Murray 2002; Bates 2006). Macrofungi have always been objects of interest to both scientists as well as lay man particularly because of their peculiar appearance and their great potential as food and as source of medicine. They are cosmopolitan in nature and are of diverse forms. Macrofungi are of immense importance, both in terms of their ecological and economic value. Since ancient times macrofungi or mushrooms have been prized as an important source of food as well as drugs. Defining the number of fungi on earth has always been a point of discussion and several studies have focused on enumerating the world's fungal biodiversity (Crous 2006).According to Manoharachary *et al.* (2005) one third of the fungal diversity of the world exists in India but only 50% of them are characterized so far. According to current studies out of 1.5 million species of fungi existing in the biosphere , 1,40,000 species may be considered as macrofungi , but only 14,000 species are known to man , which accounts for 10% of the estimated macrofungal species ( Chang and Miles 2004). The studies of Macrofungi have long been of interest to scientists as well as the public due to their important role in human welfare, food industry , in medicinally effective products and in bio degradation (Ozturk *et al.* 2003).A few Basidiomycetous fungi of Sibsagar district of Assam were reported by Baruah *et al.* (1971) . Some wild edible mushrooms have been reported from Manipur and Arunachal Pradesh of North-East India ( Sing and Sing 1993; Sing *et al.* 2002). Sarma *et al.* 2010 reported that some wild edible mushrooms are used as source of food by some Ethnic Tribes of Western Assam . The present study was carried out with the objective to collect , identify and document the diversity of macrofungi in the study area.

## STUDY AREA:

Ultapani Reserve Forest is situated in Holtugaon forest division under Manas Biosphere Reserve, Assam. It is located in between 26°68′18″N to 26°81′18″N and 90°24′44″E to 90°41′90″E. Vegetation of the forest consists of evergreen and semi-evergreen trees. A river named Samukha passes through Ultapani Reserve Forest. The river, unlike the other rivers on the north bank of the Brahmaputra flows from west to east which is responsible for the

name of the place as Ultapani which literally means " Reverse water" .The forest has a huge diversity of macrofungi as well as angiosperms. It is situated in Kokrajhar district in BTAD, Assam along the Assam-Bhutan border. The average annual rainfall in this area is around 330cm and the temperature ranges between 6°C and 36°C.

## MATERIALS AND METHODS:

Exploration and collection of macrofungi were carried out in Ultapani Reserve Forest under Haltugaon Forest Division in the month of April 2014. The macrofungi were collected in cellophane bags and brought to the laboratory. The soft specimens were immediately preserved in 70% alcohol and brought to the laboratory for identification. Samples with soft texture were preserved in 2% formaldehyde solution while those with leathery texture were preserved in 4% formaldehyde solution. Dried samples were also kept. The fungi were both sundried and oven dried at 30°C. Identification of the specimens were carried out by standard microscopic methods ( Roy and De, 1996). The macromorphological characters of the collected specimens viz. size, shape, colour, texture, structure of the gills and odour were observed thoroughly. No distortion of sporocarps were allowed. Frequency of occurrence of macrofungi was observed and was calculated by standard formula given below.

**Frequency study:**

$$\text{Frequency of fungal species}(\%) = \frac{\text{Number of site in which the species is present}}{\text{Total number of sites}} \times 100$$

## RESULTS:

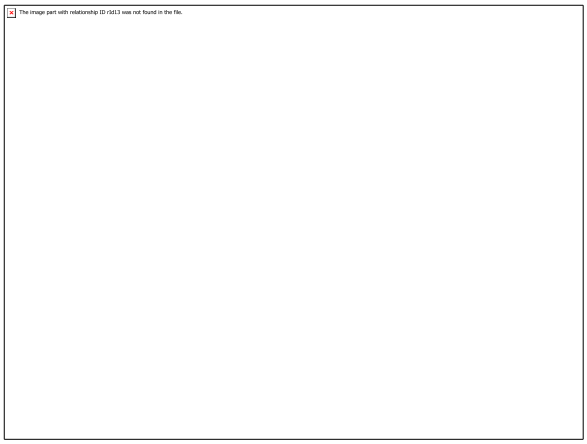
Diversity of macrofungi greatly depends on the climatic and environmental factors. Temperature, humidity, light and soil conditions play vital role in the growth and development of macrofungi. 13 species of macrofungi belonging to 12 genera , 9 families and 5 orders were found. Except *Xylaria* all the macrofungi belong to class Agaricomycetes and division Basidiomycota, while *Xylaria* belongs to class Soradariomycetes and division Ascomycota. Out of the 13 species identified 1 belongs to family Auriculariaceae, 1 belongs to Pleurotaceae, 4 belong to Polyporaceae, 2 belong to Hymenochaetaceae, 2 belong to Ganodermataceae, 1 belongs to Schizophyllaceae, 1 belongs to Clavariaceae and 1 belongs to Xylariaceae.

**Table 1: Frequency of occurrence of Macrofungi studied in Ultapani Reserve Forest**

| Name of the species | Class | Family | Host/Substratum | Economic Importance | Frequency of Occurence |
|---|---|---|---|---|---|

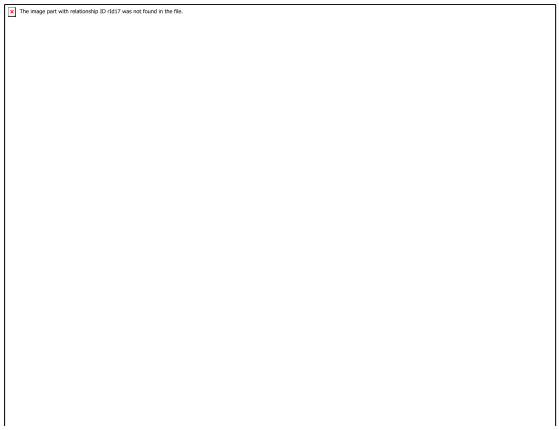
| | | | | | |
|---|---|---|---|---|---|
| *Auricularia auricula* (Hook) | Basidiomycetes | Auriculariaceae | Dead bamboo culm, Under wood. Live *Psidium guava.* | Edible, medicinal | 50 |
| *Clavaria cristata* (Homlsk.)Pers. | Basidiomycetes | Clavariaceae | Leaf litter,decompos-ing plant material. | Edible | 33 |
| *Fomes fomentarius* (L.)Fr. | Basidiomycetes | Polyporaceae | Living trees. | | 26 |
| *Ganoderma lucidum* (Leys ex Fr.) Karsten | Basidiomycetes | Ganoderma taceae | Living tree, dead wood logs. | Medicinal | 37 |
| *G. resinaceum* Boud. | Basidiomycetes | Ganoderma taceae | Living tree,dead wood logs. | Medicinal | 42 |
| *Phellinus igniarius*(L.) Quél. | Basidiomycetes | Hymenochaetaceae | Living trees. | Medicinal | 22 |
| *Polystictus* sp. | Basidiomycetes | Hymenochaetaceae | Living trees ,dead wood. | Medicinal | 65 |
| *Pleurotus tuber-regium* (Fr.)P. Kumm. | Basidiomycetes | Pleurotaceae | Living trees. | Edible | 81 |
| *Pycnoporous sanguineus*(L.) Murrill | Basidiomycetes | Polyporaceae | Dead hard woods. | Medicinal | 38 |

| | | | | | |
|---|---|---|---|---|---|
| *Polyporous squamosus* (Huds.) Fr. | Basidiomycetes | Polyporaceae | Dead logs. | Edible | 40 |
| *Schizophyllum commune* Fries | Basidiomycetes | Schizophyllaceae | Dead wood. | Edible | 66.66 |
| *Trametes versicolor* (L.) Lloyd | Basidiomycetes | Polyporaceae | Dead wood. | Edible | 15 |
| *Xylaria polymorpha* (Pers.) Grev. | Ascomycetes | Xylariaceae | Bases of rotting or injured trees stumps and decaying wood. | Wood decaying. | 33.33 |



**1.** ***Auricularia auricula*** **(Hook)** **2.*Ganoderma lucidum*(Leys ex Fr.) Karsten**

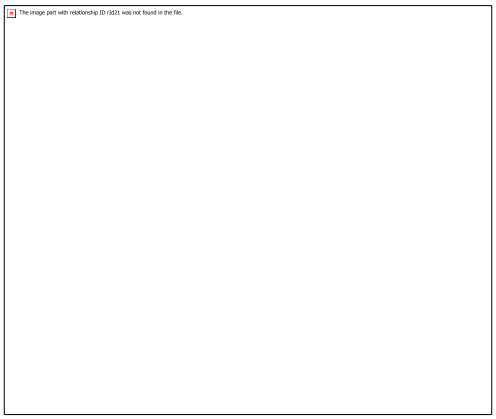
**3.** ***Ganoderma resinaceum*** **Boud.** **4.** ***Clavaria cristata*** **(Homlsk.)Pers.**



**4.** ***Pycnoporous sanguineus*** **(L.) Murrill** **5.** ***Schizophyllum commune*** **Fries**

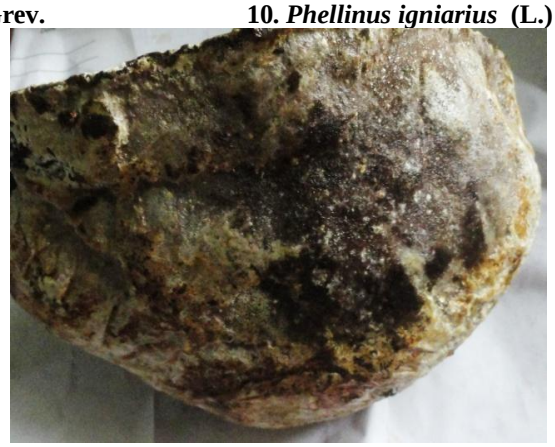
**6. *Pleurotus tuber-regium*(Fr.)P. Kumm.**

**7. *Polysictus* sp.**

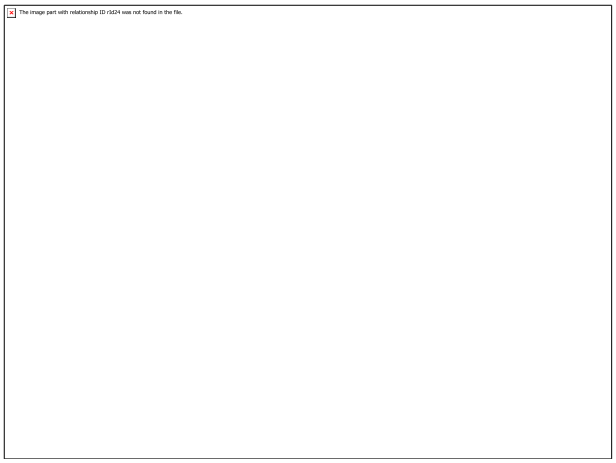


**8. *Xylaria polymorpha* (Pers.) Grev.**

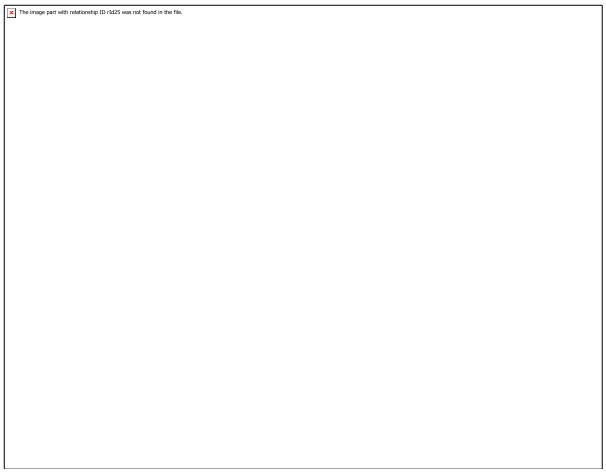
**10. *Phellinus igniarius* (L.) Quél.**



**11. *Fomes fomentarius*(L.)Fr**



**12. *Polyporous squamosus* (Huds. )**



**13. *Polystictus* sp.**

## CONCLUSION:

Studies on diversity of macrofungi play an important role in identification of economically important and edible species . Macrofungi are rich sources of nutrients which are yet to be explored fully.

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