

# Preliminary study on forest macro-fungi at Purnapani forest of Jhargram in West Bengal

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**Abstract:** The study was conducted in a training and workshop which was held at Lalgarh Govt. College on and from 26<sup>th</sup> August, 2018 to 28<sup>th</sup> August, 2018 on resource study and methodology applied for biological field. On that ground we have taken a field trail on mycological foray at Purnapani forest under Lalgarh of Jhargram District in West Bengal, India. The prime aim of the study was to know the condition of edible wild macro-fungi growing in and around the forest during monsoon in Binpur-CDB of Jhargram district. Local people were familiar to identify the local macro fungi which were frequently available inside the forest. Local economy depends on the growth of those fungi in forest since June to October each year. Due to lack of other source for income generation except agriculture they collect forest macro-fungi which give them direction for income. In the market all are not available as some are edible while other are poisonous so, need identification and field trial for the said study. Here we study many fungi species in which some were not suitable for body intact as these were poisonous. Seventeen species of macro-fungi we observed and photographed from Purnapani forest of Lalgarh, Jhargram during extensive field study. Of them 9 species were non poisonous may be used as edible species. Accurate determination and proper identification of a species is the only safe way to ensure edibility, and the only safe guard against possible accident is traditional as well as scientific knowledge. Among them, *Termitomyces microcarpus*, *Coprinus comatus*, *Russula kanadaii*, *Craterellus shoreae*, *Asterius hygrometricus* are very popular for their taste and nutritive value which have a great demand in market.

**Keywords:** Purnapani forest, macro-fungi, sustainable development.

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## 1. INTRODUCTION

Macro-fungi are those fungi which produce large fruiting structures enough to be seen with naked eye. Edible mushrooms are the fleshy and edible fruit bodies of several species of macro-fungi. They can appear either below ground (hypogeous) or above ground (epigeous) as per literature (Mohanan, 2011). Edibility may be defined by criteria that include absence of poisonous effects on humans and desirable colour and aroma (Pramanik and Bhakat, 2017). With over a thousand types of mushrooms, only a few of them have gained much more popularity due to the exotic flavour and taste besides their medicinal properties. Edible mushrooms include many fungal species that are either harvested in wild or cultivated. Easily cultivatable and common wild mushrooms are often available in markets, and those that are more difficult to obtain (such as truffle and morel) may be collected on a smaller scale by private gatherers. Before assuming that any wild mushroom is edible, it should be identified by local as well by experts (Sharma et al. 2010). Moreover, even normally edible species of mushrooms may be dangerous, as mushrooms growing in polluted locations can accumulate pollutants such as heavy metals. Therefore, we the authors were moved to sal dominated forest of Purnapani in Lalgarh, Jhargram, West Bengal to access the availability of large macro fungi to know the status i.e. edible or not. If edible, the local knowledge and scientific manipulation to know better about the forest macro fungi in a scientific basis as well as to study the biodiversity as a whole in monsoon at Purnapani forest.

## 2. STUDY AREA

The study area is taken for study was Purnapani forest, Lalgarh, Jhargram District, West Bengal, India. It is situated around 5km north from the Lalgarh market. The altitude is about 77 MSL. This place is near khas-jangal village of Lalgarh which is situated in between latitude 20°33'58"N and longitude 87°5'4"E respectively. The temperature ranged between 31 to 33 degree centigrade during study outside the forest and inside the forest. The average annual rain fall is 2000mm. The forest community is mainly tropical dry deciduous *sal* (*Shorea robusta*) dominated coppice lateritic type.

## 3. MATERIALS AND METHODS

Survey was done on and from 26<sup>th</sup> July, 2018 to 28<sup>th</sup> July, 2018 in the Purnapani forest. It was very humid and wet atmosphere at this monsoon time in the core of the forests. The season was very suitable for the growth of those wild macro-fungi as because no rains on that time. Location of study site was demarcated using GPS with the help of apps available in Android mobile phone. In field, 10X magnification lens, field note book (with serial number), pencil, cutter, scoops, camera, scale, label, big carry bag with zipper were carried. Customized drier, knife, forceps, scalpel, collecting box were used. Many fresh fruit bodies have been collected for characterization and identification at Laboratory of Ecology Division, Botany Department, Lalgarh Govt. College, lalgarh, Jhargram. During collection and survey, field photographs have been captured by camera, characters noted down in field note book giving field number and field information along with GPS data, habitat, host of the fruit body etc. if any. We have placed them in brown paper bag labelled with field number. Then those materials were washed with 5% KOH solution and leave for air dry. Some samples have been dried by using drying box fixed with 100 Watt electric lamp for further preservation in museum as voucher specimen. After returning from field, we characterized and identified fresh macro-fungi by using different catalogue, handbooks and also by using colour coding and terms from Methuen Handbook of Colour (Kornerup and Wanscher, 1978). Literature used in this article is 1-10.

## 4. RESULT AND DISCUSSION

Total 17 species of macro-fungi were collected from the Purnapani forest area. The data are listed here in Table 1 along with their scientific name, English name, local name, division along with their usable form i.e. edible or poisonous.

**Table 1: Macro-fungi of Purnapani in Lalgarh of Jhargram District, West Bengal, India**

Serial No	Scientific Name (English Name in parenthesis)	Local name in Bengali	Division/Family	Use
1	<i>Craterellus shoreae</i> (Yellowfoot)	Sal chhatu (Fig. 1)	Basidiomycota Cantharellaceae	Edible but local people do not eat.
2	<i>Russula emetica</i> (Sickener, emetic russula)	Lal chhatu (Fig. 12)	Basidiomycota Russulaceae	Non-edible and toxic.
3	<i>Russula kanadii</i> (Edible Russula)	Sada chhatu (Fig. 2)	Basidiomycota Russulaceae	Edible.
4	<i>Coprinus comatus</i> (Lawyer's wig)	Kalo chhatu (Fig. 3)	Basidiomycota Agaricaceae	Choice based edible.
5	<i>Ramaria Formosa</i> (Handsome clavaria)	Cauliflower chhatu (Fig. 16)	Basidiomycota Gomphaceae	Non-edible and toxic.
6	<i>Lactarius argillaceifolius</i> (Fire-milk lactarius)	Karahh chhatu (Fig. 4)	Basidiomycota Russulaceae	Edible.
7	<i>Thelephora vialis</i> (Stinking Earthfan)	Ful chhatu (Fig 9)	Basidiomycota Thelephoraceae	Edible and medicinal also.
8	<i>Borofrutinus dhakanas</i> (Pore fungi)	Futo chhatu (Fig. 6)	Basidiomycota Polyporaceae	Non- edible.
9	<i>Ramariopsis crocea</i> (Coral fungi)	Kathi chhatu (Fig. 15)	Basidiomycota Clavariaceae	Non- edible.
10	<i>Boletus edulis</i> (King bolete)	Morahl chhatu (Fig. 7)	Basidiomycota Boletaceae	Edible, delicious flavour.
11	<i>Clavaria amoena</i> (Yellow Coral Fungus)	Kathi chhatu (Fig. 17)	Basidiomycota Clavariaceae	Non- edible, toxic.
12	<i>Trichoglossum hirsutum</i> (Velvety earth tongue)	Kali chhatu (Fig. 11)	Basidiomycota Geoglossaceae	Non- edible, toxic.
13	<i>Astroboletus gracilis</i> (Bolete Fungi)	Lal chhatu (Fig. 10)	Basidiomycota Boletaceae	Non- edible, toxic.
14	<i>Fulvifomes robinae</i> (Northern polypores)	Kath chhatu (Fig. 13)	Basidiomycota Hymenochaetaceae	Non-edible, very hard.
15	<i>Asterius hygrometricus</i> (Hygroscopic earthstar)	Kurkuri chhatu (Fig. 14)	Basidiomycota Diplocystaceae	Popular edible mushroom.
16	<i>Termitomyces microcarpus</i> (Termit Mushroom)	Termit chhatu (Fig. 8)	Basidiomycota Lyophyllaceae	Edible, Very popular, nutritious.
17	<i>Auricularia polytricha</i> (Cloud ear fungi)	Jelly chhatu (Fig. 5)	Basidiomycota	Edible, Not used by local people.

In the present study, we recorded seventeen (17) species of macro-fungi during monsoon at Purnapani forest of Lalgarh area in West Bengal. Local people use *Termitomyces microcarpus*, *Asterius hygrometricus*, *Boletus edulis*, *Rusulla kanadii*, *Coprinus comatus* in their dishes. But we can suggest them to use *Craterellus shoreae*, *Lactarius argillaceifolius*, *Thelophora vialis*, *Auricularia polytricha* also as they have poisonous properties. So, this is the recommendation made by us. Purnapani forest in Lalgarh is found very rich plant community along with diverse types of wild edible mushrooms which need critical study at the end of the October.

## 5. CONCLUSION

Protein deficiency is a major problem in India; nay Lalgarh also as it harbours many tribal people. Mushrooms provide a rich addition of nutrients to the diet in the form of protein, carbohydrate, valuable salts and vitamins. Wild mushroom cannot fulfil our needs. From this study we got idea on Purnapani forest that the site has mushrooms of wild kind but some are edible and a few are poisonous. We can try to cultivate this wild mushroom in huge amount commercially. The cultivation of mushroom is a way to overcome the problem like protein deficiency and also clanging of critical pollution caused by the different crop residues, because the fungi have the ability to recycle these wastes and convert them into edible protein. So, the cultivation of mushroom can also be helpful to overcome the shortage of food residues in near future and commemorate income generations. To make mushroom cultivation sustainable and highly productive, novel improved strains with improved characteristics of mushrooms are needed. In order to improve the strain molecular techniques like RAPD may be used to discriminate the mushroom species and strains, because mushroom now-a-days is a leading food component.

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## PHOTO PLATE 1



**Fig. 1** *Craterellus shoreae*



**Fig. 2** *Russula kanadii*





**Fig. 3** *Coprinus comatus*



**Fig. 4** *Lactarius argillaceifolius*



**Fig. 5** *Auricularia polytricha*



**Fig. 6** *Borofrutinus dhakanas*

**PHOTO PLATE 2**



**Fig. 7** *Boletus edulis*



**Fig.8** *Termitomyces microcarpus*





Fig.9 *Thelephora vialis*



Fig. 10 *Astroboletus gracilis*



Fig. 11 *Trichoglossum hirsutum*



Fig.12 *Russula emetica*

PHOTO PLATE 3



Fig. 13 *Fulvifomes robiniae*

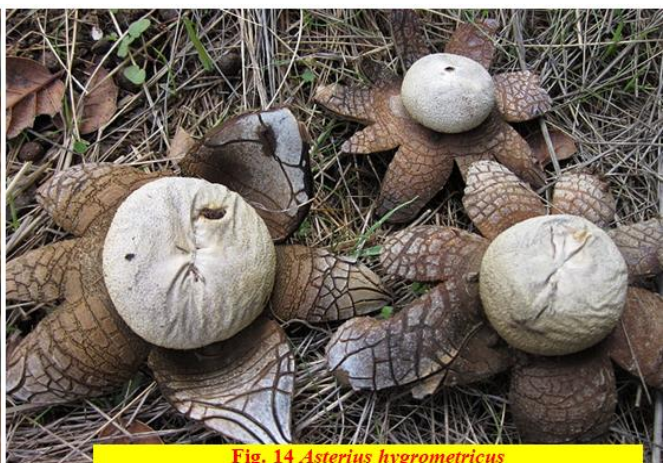


Fig. 14 *Asterius hygrometricus*



Fig.15 *Ramariopsis crocea*



Fig. 16 *Ramaria formosa*





Fig. 17 *Ramaria formosa*



Fig. N. Team during field survey

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