

## A Taxonomic Study of Wild Mushrooms Found in Pale Township

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### Abstract

The study area of Pale Township is located in Yinmabin District. The wild mushrooms from the study area were collected, preserved, identified during June to August, 2019. Totally 8 species belonging to 8 genera in 7 families were collected. Among them, 5 species are edible and 3 species are inedible. All the collected species are presented with figures. Moreover, an artificial key to the species were constructed and comparable characteristics have also been performed.

**Keyword:** Wild mushrooms, edible and inedible

### Introduction

Fungi are distributed all over the world. They are found in the soil, in water, on decaying and living plants, on animals and in homes. It is speculated that there are at least 100,000 to 250,000 species of fungi. Most fungi grow and multiply rapidly under warm and moist conditions. Fungi grow well under a warm (generally between 20\_30°C) and moist conditions, and in the presence of a suitable nutrient. Under such a condition, the hyphae grow rapidly and branch repeatedly to form a cottony mass of hyphae called mycelium. The mycelia of some fungi are differentiated into complex fungal tissues (Koon 1990).

The fungal kingdom currently consists of eight major groups (phyla): Microsporidia, Blastocladiomycota, Neocallimastigomycota, Chytridiomycota, Glomeromycota, Zygomycota, Ascomycota and Basidiomycota. Only the Ascomycota and Basidiomycota are also by far the largest groups of fungi (Petersen 2012).

Fungi are important organisms that serve many vital functions in forest ecosystems including decomposition, nutrient cycling, symbiotic relationships with trees and other plants, biological control of other fungi, and as the causal agents of diseases in plants and animals. Mushrooms are sources of food for wildlife and fungi that cause decay in living trees are beneficial to many species of birds and mammals (Michael *et al.* 2010).

The place of growths of mushrooms varies within well defined limits. Certain species grow upon wood, some grow on the ground, and a few species are found on or under particular kinds of trees or in such special places as railroad ties, manure heaps and growing mass. Time or season of growth is distinguishing feature of some kinds of mushrooms. In the temperature zones there are particular fungi that may be found growing during each month of the year (Thomas 1948).

The aim of this present research is to study the nature of mushrooms from Pale Township. The objectives are to collect, identify and classify the species from study area, to describe the morphological characters of the collected specimens and to achieve valuable information of mushrooms distributed in Pale Township.

### Materials and Methods

The naturally growing wild mushrooms were collected from Pale Township during the month from June to August, 2019. The wild mushrooms were observed on decomposing organic matter, hollow tree stumps and rotten tree trunks. The specimens were collected from different localities and habitats.

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All the specimens were recorded with digital camera to get their actual habit and noted the fruiting characteristics. The collection, preservation and the spores print technique were followed to Krieger (1967) and Pacioni (1981). To prepare the spore print, the fleshy mature specimens were selected. The stipe was removed by cutting it off as close as possible to the point of attachment of the cap. It is obtained by placing a cap with the hymenium facing down on a sheet of white and black paper or a piece of glass-slide. A blow can serve as a cover. After a few hours, a layer of the spores was deposited. The real colour of the spores was determined by this way.

The classification and identification of collected specimens were done by referring the literature such as Keizer (1998), Krieger (1967), Pacioni (1981) and Thomas (1948).

### Results

Table 1. The list of collected species from Pale Township

Order	Family	No.	Scientific name
Agaricales	Agaricaceae	1.	<i>Agaricus phaeolepidotus</i> F. H. Moller.,
		2.	<i>Podaxis pistillaris</i> (L.) Fr.
	Pluteaceae	3.	<i>Volvariella gloiocephalus</i> (Dc.) Vizzini,
	Tricholomataceae	4.	<i>Tricholomopsis rutilans</i> (Schaeff.) Singer.
Cantharellales	Cantharellaceae	5.	<i>Cantharellus infundibuliformis</i> (Scop.) Fr.
Phallales	Phallaceae	6.	<i>Laternea columnata</i> Nees.
Polyporales	Polyporaceae	7.	<i>Lentinus squarrosulus</i> Mont.
Russulales	Russulaceae	8.	<i>Russula fragilis</i> Fr.

### Description of Wild Mushrooms from Pale Township

#### 1. *Agaricus phaeolepidotus* F. H. Moller., Friesia 4 (3). 204 (1952)

Local name : Unknown

Family : Agariaceae

#### Description

Cap 3.0-4.0 cm broad, convex, fibrillose scales, thick, pinkish brown with brownish scale at the center. Gills free, close, pinkish brown. Stipe 3.0-4.0 cm long, 0.6-0.8 cm thick, cylindrical, central, white, hollow, ring present. Spores dark brown, oval-shaped, smooth,  $3.75-5.0 \times 2.5-3.75 \mu\text{m}$ . (Figure 1)

Edibility : Inedible

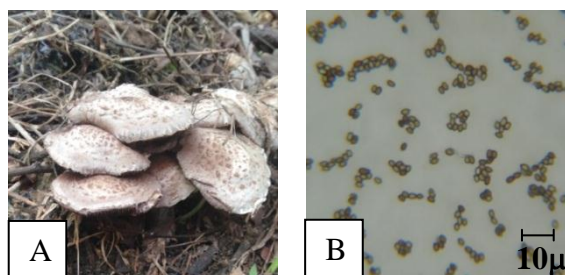


Figure 1. *Agaricus phaeolepidotus* F. H. Moller.

A. Growing habitat

B. Spores

## 2. *Podaxis pistillaris* (L.) Fr. Syst. mycol. 3 (1) : 63 (1829)

*Lycoperdon pistillare* L, Mantissa Altera: 313 (1771)

Local name : Hmo kyat taung

Family : Agariaceae

### Description

Cap 1.5-3.0 cm broad, conical-shaped, scaly, thick, white. Gills absent. Spore case contain dark brown spore powder. Stipe 3.0-7.5 cm long, 0.5-1.0 cm thick, cylindrical, central, white, hollow, woody, fibrillose, ring absent. Spores dark brown, oval-shaped, smooth,  $5.0-7.5 \times 3.75-5.0 \mu\text{m}$ . (Figure 2)

Edibility : Edible

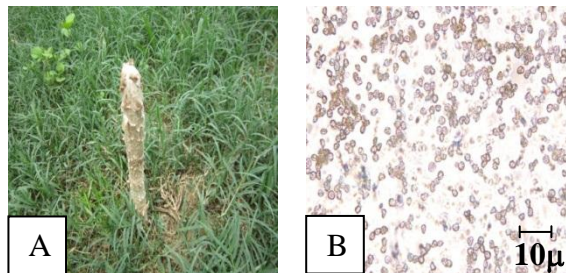


Figure 2. *Podaxis pistillaris* (L.) Fr.

A. Growing habitat B. Spores

## 3. *Volvariella gloiocephalus* (DC.) Vizzini, Contu & Justo, Fungal, Brology 115 (1): 15 (2011)

Local name : Hgnet pyaw hmo

Family : Pluteaceae

### Description

Cap 6.0-13.0 cm broad, umbonate, egg shaped when young, then expanded, margin split, thick, gray with pale brown at the centre. Gills free, close, pink. Stipe 7.5-9.5 cm long, 0.5-1.0 cm thick, cylindrical, central, white, solid, volva present, ring absent. Spores pink, oval-shaped, smooth,  $5.0-6.25 \times 2.5-3.75 \mu\text{m}$ . (Figure 3)

Edibility : Edible

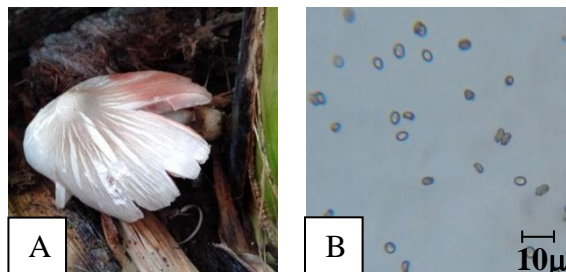


Figure 3. *Volvariella gloiocephalus* (DC.) Vizzini.

A. Growing habitat B. Spores

## 4. *Tricholomopsis rutilans* (Schaeff.) Singer., Schweiz.Z. Pilzk. 17: 56 (1939)

Local name : Unknown

Family : Tricholomataceae

### Description

Cap 3.0-3.5 cm broad, convex, thick, yellowish-brown with brownish scale at the center. Gills adnate, close, yellow. Stipe 2.5-3.0 cm long, 0.6-0.8 cm thick, cylindrical, central, yellow, hollow, ring absent. Spores pale yellow, oval-shaped, smooth,  $5.0-7.5 \times 3.75-6.25 \mu\text{m}$ . (Figure 4)

Edibility : Inedible

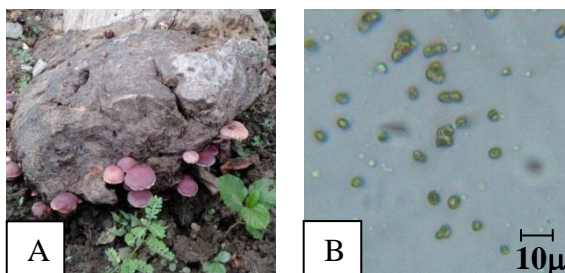


Figure 4. *Tricholomopsis rutilans* (Schaeff.) Singer.

A. Growing habitat      B. Spores

### 5. *Cantharellus infundibuliformis* (Scop.) Fr. 1838,

Local name : Wayonhmo

Family : Cantharellaceae

### Description

Cap 6.0 - 17.0 cm broad, thick, soft, funnel-shaped, frequently lobed, wavy or irregular on the margin, white or cream-white. Gills thick, narrow, close, decurrent, white. Stipe 2.0 - 4.0 cm long, 0.5 - 1.0 cm thick, equal, solid, white. Ring absent. Spores white, smooth, elliptic,  $6.0 - 7.6 \times 4.0 - 5.0 \mu\text{m}$ . (Figure 5)

Edibility : Edible

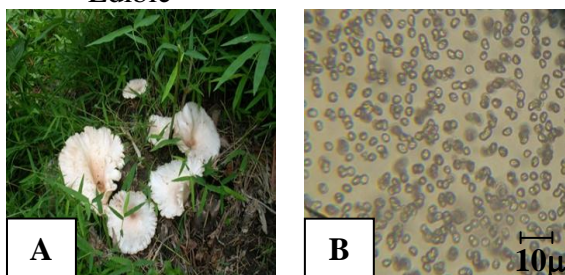


Figure 5. *Cantharellus infundibuliformis* (Scop.) Fr.

A. Growing habitat      B. Spores

### 6. *Laterneacolumnata* Nees., in Nees von Esenbeck, Henry & Bail, Das System der Pilze, Bonnae 2: 96 (1858)

Local name : Unknown

Family : Phallaceae

### Description

Egg up to 5.0 cm, white, with rhizophs at the base, at center the embryonic with the greenish immature gleba. Cap up to 5.5 cm high, when mature has a white base emerging from volva, with 4 to 6 arms, fragile, 11.5 cm long, white. Spores grayish-white, oblong-shaped, smooth,  $5.0-7.5 \times 2.5-3.75 \mu\text{m}$ . (Figure 6)

Edibility : Inedible

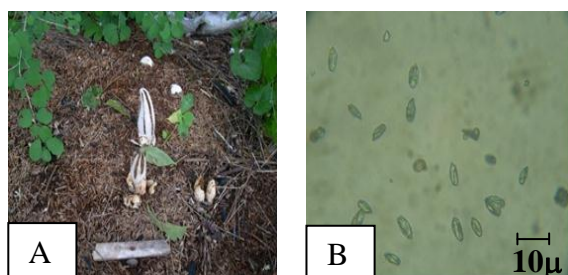


Figure 6. *Laternea columnata* Nees.

A. Growing habitat      B. Spores

**7. *Lentinussquarrosulus* Mont., Annl. Sci. Nat., Bot., ser. 2 18:21 (1842)**

Local name : Unknown

Family : Polyporaceae

**Description**

Cap 2.5-4.0 cm broad, convex, funnel-shaped, leathery, tough when dry, cracking into white large scale, thick, white. Gills decurrent, close, white. Stipe 4.0-6.0 cm long, 1.0-1.5 cm thick, cylindrical, central, white, solid, ring absent. Spores white, oblong-shaped, smooth,  $6.25-7.5 \times 2.5-5.0 \mu\text{m}$ . (Figure 7)

Edibility : Inedible

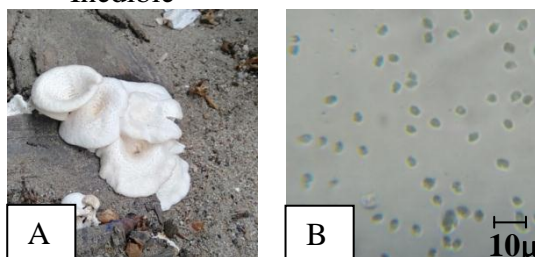


Figure 7. *Lentinus squarrosulus* Mont.

A. Growing habitat      B. Spores

**8. *Russula fragilis* Fr., Epicr. Syst. Mycol. (Upsaliae) : 359 (1838)**

Local name : Unknown

Family : Russulaceae

**Description**

Cap 3.0-9.0 cm broad, convex, becoming plane to centrally depressed, thick, pink. Gills adnate, close, pale yellow. Stipe 2.0-5.0 cm long, 1.3-1.5 cm thick, cylindrical, central, white, solid, ring absent. Spores white, globose-shaped, echinulate,  $7.5-10.0 \times 7.5-8.75 \mu\text{m}$ . (Figure 8)

Edibility : Edible

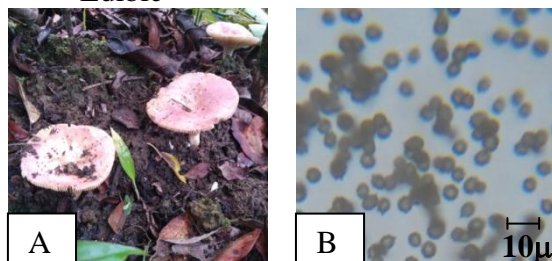


Figure 8. *Russula fragilis* Fr.

A. Growing habitat B. Spores

**Table 2. Comparable Morphological Characteristics of Mushrooms from Pale Township**

No.	Scientific name	Growing habitat	Edible/ Inedible	Cap			Gills or pores	
				Colour	Shape	Umbrate	Colour	Attachment
1.	<i>Agaricus phaeolepidotus</i> F.H. Moller.	soil	Inedible	pinkish brown	convex	absent	pinkish brown	free
2.	<i>Podaxis pistillaris</i> (L.) Fr.	sandy soil	Edible	white	conical-shaped	absent	dark brown	-
3.	<i>Volvariella gloiocephalus</i> (DC.) Vizzini.	soil	Edible	gray	expanded	present	pink	free
4.	<i>Tricholomopsis rutilans</i> (Schaeff.) Singer.	soil	Inedible	yellowish brown	convex	absent	yellow	adnate
5.	<i>Cantharellus infundibuliformis</i> (Scop) Fr.	decayed wood	Edible	white	funnel-shaped	absent	white	decurrent
6.	<i>Laternea columnata</i> Nees.	soil	Edible	white	globose	absent	-	-
7.	<i>Lentinus squarrosulus</i> Mont.	soil	Inedible	white	funnel shaped	absent	white	decurrent
8.	<i>Russula fragilis</i> Fr.	soil	Edible	pink	depressed	absent	pale yellow	adnate

**Table 2. Continued**

No.	Scientific name	Stipe				Spore			
		Shape	colour	hollow/ solid	annulus or ring	Colour	Shape	texture	size (µm)
1.	<i>Agaricus phaeolepidotus</i> F. H. Moller.	cylindrical	white	hollow	present	dark brown	oval	smooth	3.75-5.0 × 2.5-3.75
2.	<i>Podaxis pistillaris</i> (L.) Fr.	cylindrical	white	hollow	absent	dark brown	oval	smooth	5.0-7.5 × 3.75-5.0
3.	<i>Volvariella gloiocephalus</i> (DC.) Vizzini.	cylindrical	white	solid	absent	pink	oval	smooth	5.0-6.25 × 2.5-3.75
4.	<i>Tricholomopsis rutilans</i> (Schaeff.) Singer.	cylindrical	yellow	hollow	absent	pale yellow	oval	smooth	5.0-7.5 × 3.75-6.25
5.	<i>Cantharellus infundibuliformis</i> (Scop) Fr.	equal	white	solid	absent	white	sub-elliptic	smooth	6.5-7.5 × 4.0-4.6
6.	<i>Laternea columnata</i> Nees.	-	-	-	-	grayish white	oblong	smooth	5.0-7.5 × 2.5-3.75
7.	<i>Lentinus squarrosulus</i> Mont.	cylindrical	white	solid	absent	white	oblong	smooth	6.25-7.5 × 2.5-5.0
8.	<i>Russula fragilis</i> Fr.	cylindrical	white	solid	absent	white	globose	echinulate	7.5-10.0 × 7.5-8.75

### An Artificial Key to the Species Studied

1. Gills absent..... 2
1. Gills present ..... 3
  2. Volva and arms present; spores grayish-white .....  
*6. Laternea columnata*
  2. Volva and arms absent; spores dark brown .....  
*2. Podaxis pistillaris*
3. Stipe hollow ..... 4
3. Stipe solid..... 5
  4. Gills free, pinkish brown; spores dark brown; ring present.....  
*1. Agaricus phaeolopicletus*
  4. Gills adnate, yellow; spores pale yellow; ring absent.....  
*4. Tricholomopsis rutilans*
5. Gills decurrent..... 6
5. Gills free or adnate..... 7
  6. Cap smaller than 4.5 cm, with scales; stipe larger than 4.0 cm ....  
*7. Lentinus squarrosulus*
  6. Cap larger than 5.0 cm, without scals; stipe shorter than 3.5 cm .  
*5. Cantharellus infundi*
7. Cap with umbo; gills pink; valva present .....  
.....*3. Volvariellagloiocephalus*
7. Cap without umbo; gills pale yellow; volva absent .....  
.....*8. Russula fragilis*

### Discussion and Conclusion

The study of wild mushrooms from Pale Township was undertaken. In the present study, 8 species of the 7 genera of wild mushrooms were identified based on the morphological characters and spore types.

Of these 5 species are edible and 3 species are inedible. The edible species are *Podaxis pistillaris* (L.) Fr., *Volvariella gloiocephalus* (Dc.) Vizzini., *Cantharellus infundibuliformis* (Scop.) Fr. and *Russula fragilis* Fr. These species are commonly eaten by local people. According to the literature, *Laternea columnata* Nees is eaten.

Mushrooms grow normally after rains because of the higher humidity and temperature in a short period. Therefore, it can be collected within 2 or 3 days after rains. The fruits of terrestrial mushrooms can only be seen within a day started from initial growth. The epiphytic mushroom can survive at least 3 days and some species can be seen decayed wood even for many months.

Therefore the present study is one of the systematic records of wild mushrooms to be used by various researchers in various field of study. The study will partially fulfill the requirement of information on wild mushroom of Pale Township.

### **Acknowledgements**

I would like to express my deep gratitude to Acting Rector Dr Thura Oo and Pro-rector Dr The Naing Oo and Dr Khin San San Win, Monywa University, their interest in my research work. I would like to thank Professor Dr Tin Tin Nyunt, Head of Botany Department, University of Monywa, for her valuable advice and providing me necessary facilities in carrying out this research.

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