



DIVERSITY OF WILD MACROFUNGI AND THEIR ETHNOMYCOLOGY IN SOME AREAS OF DISTRICT SRINAGAR, JAMMU & KASHMIR, INDIA

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ABSTRACT

The present study documents the diversity of wild macrofungi and evaluates their ethnomycological significance in selected areas of district Srinagar, Jammu and Kashmir. Field surveys were conducted from April to July 2026 at various sites like campus of G.C.W, M.A. Road Srinagar , the Rajbagh-Jhelum embankment area, Harwan and Shankaracharya Hills, covering habitats such as leaf litter, decaying wood, soil, grasslands and landscaped green spaces. A total of ten macrofungal species belonging to nine genera and seven families were recorded and identified using standard morphological and taxonomic methods. An accompanying ethnomycological survey of 30 respondents documented traditional knowledge of identification, utilization and medicinal and cultural significance of wild mushrooms and it was assessed using Use Value (UV) and Fidelity Level (FL) indices.

1. INTRODUCTION

Macrofungi are fungi that produce conspicuous fruiting bodies visible to the naked eye, including mushrooms, puffballs, bracket fungi, cup fungi and morels. These fungi belong predominantly to the phyla basidiomycota and ascomycota (Alexopoulos *et al.*, 1996; Kirk *et al.*, 2008). They occur widely across forests, grasslands, wetlands and urban ecosystems and besides functioning as primary decomposers of organic matter, many species form mycorrhizal associations with plant roots that enhance nutrient uptake (Mueller *et al.*, 2007; Smith and Read, 2008).

Global fungal diversity is estimated at 2.2 - 3.8 million species, of which fewer than 160,000 species have been formally described (Hawksworth and Lucking, 2017). India, as a mega-diverse country with varied climatic and vegetational zones, has reported more than 27,000 fungal species, with macrofungi holding particular ecological, nutritional and medicinal importance (Manoharachary *et al.*, 2005). Jammu and Kashmir, owing to its temperate climate and extensive coniferous forests, supports a rich diversity of mushroom genera including *Morchella*, *Agaricus*, *Boletus*, *Lactarius* and *Russula* (Wani *et al.*, 2010; Pala *et al.*, 2012).

Beyond their ecological role, macrofungi carry considerable ethnomycological value. Species of *Morchella*, locally known as "Gucchi," are among the most economically important wild mushrooms of Kashmir and contribute substantially to rural livelihoods (Kaul, 1997; Boa, 2004). Traditional knowledge of mushroom identification, edibility and medicinal use has long formed part of local cultural heritage, though it is declining with modernization (Negi, 2006); several bioactive compounds from medicinal mushrooms have also demonstrated antimicrobial and immunomodulatory activity (Wasser, 2010). District Srinagar contains a range of habitats, from urban parks and orchards to

forest fringes, yet its macrofungal diversity remains comparatively under documented relative to sites such as Gulmarg and Pahalgam (Lakhanpal, 2010). The present study was therefore undertaken to document macrofungal diversity and associated traditional knowledge in selected areas of Srinagar district.

2. MATERIALS AND METHODS

2.1 Study Area

The study was carried out in Srinagar, the summer capital of Jammu and Kashmir, at five sites representing a gradient from urban to semi-natural habitats: campus of Government College for Women ,M.A. Road , the Rajbagh-Jhelum river embankment area, Harwan and Shankaracharya hills. Field surveys were conducted from April to July 2026, coinciding with peak macrofungal emergence following spring precipitation.

2.2 Collection of Specimens

Fruiting bodies were collected from diverse substrates including leaf litter, decaying wood, soil and grassland. At each collection point, habitat type, substrate, associated vegetation, growth pattern, colour and odour were recorded in a field notebook and specimens were photographed in situ before collection and assigned unique collection numbers.

2.3 Morphological Characterization and Preservation

Macroscopic features like size, shape, texture, colour and diagnostic structures such as pileus, stipe, lamellae, annulus and volva were examined and recorded immediately after collection. Specimens were cleaned to remove adhering debris and air-dried under clean conditions to prevent decay during storage.



2.4 Identification

Species were identified through comparison of fresh and preserved specimens, along with field photographs, against standard mycological literature, field guides and regional fungal floras, with attention to pileus morphology, gill attachment, stipe characters and substrate preference.

2.5 Ethnomycological Survey

Traditional knowledge was documented through semi-structured interviews and informal discussions with 30 respondents, conducted in Kashmiri, Urdu or English as preferred. Information gathered included local names, recognized edible and non-edible species, collection periods, recipe preparation methods, medicinal applications and traditional criteria for distinguishing edible from poisonous mushrooms. Quantitative indices like Use Value (UV) and Fidelity Level (FL) were calculated to assess the reported traditional knowledge.

3. RESULTS

A total of ten wild macrofungal species belonging to nine genera, seven families and two phyla were recorded during the survey. These include *Morchella esculenta*, *Hypholoma lateritium*, *Lentinus tigrinus*, *Coprinellus micaceus*, *Agrocybe praecox*, *Agrocybe pediades*, *Panus conchatus*, *Phallus impudicus*, *Agaricus campestris* and *Boletus* sp. Of these, nine species belonged to phylum basidiomycota and one *Morchella esculenta* to ascomycota, indicating a clear dominance of basidiomycetes at the surveyed sites. Species occupied varied ecological niches, occurring on organic-rich soil, grassland, forest litter and decaying wood.

3.1 Species Description

1. *Panus conchatus*

Family: Polyporaceae

Specimen examined: District Srinagar; Danihama, Harwan; on decaying hardwood logs, Danihama, Harwan. Collection No. TJ-01.

Description: Fruiting body fan- to shell-shaped, 3-9 cm across; cap violet-brown to purplish, fading with age; gills decurrent, closely arranged, cream to pale brown; stipe short or absent; flesh tough and leathery.

Edibility: Generally inedible due to tough texture.

Remarks: Recognized by its fan-shaped fruiting body and purplish coloration.

2. *Agaricus campestris*

Family: Agaricaceae

Specimen examined: District Srinagar; botanical garden of G.C.W, M.A. Road. Collection No. TJ-02.

Description: Cap white to cream, smooth, fleshy, 4-10 cm; gills free, pink when young, dark brown at maturity; stipe cylindrical, white, with a distinct ring.

Edibility: Highly edible and commonly consumed.

Remarks: One of the most familiar edible mushrooms, frequent in open grassy areas.

3. *Coprinellus micaceus*

Family: Psathyrellaceae

Specimen examined: District Srinagar; Harwan and Rajbagh; on decaying wood and stumps. Collection No. TJ-03.

Description: Cap bell-shaped to convex, amber-brown, covered with small shining granules; gills crowded, turning black at maturity; stipe slender, hollow, fragile.

Edibility: Edible when young.

Remarks: Identified by glittering cap granules and clustered growth.

4. *Phallus impudicus*

Family: Phallaceae

Specimen examined: District Srinagar; Danihama, Harwan ; on humus-rich soil,. Collection No. TJ-04.

Description: Fruiting body a white spongy stalk topped with a slimy olive-green spore-bearing head; strong unpleasant odour at maturity.

Habitat and Ecology: Areas rich in decaying plant material; contributes to organic matter decomposition.

Edibility: Generally inedible.

Remarks: Foul smell attracts insects that aid spore dispersal.

5. *Boletus* sp.

Family: Boletaceae

Specimen examined: District Srinagar; G.C.W M.A. Road; on potted soil. Collection No. TJ-05.

Description: Fruiting body small, cream-coloured cap; underside with yellow pores instead of gills; stipe thick, stout, cylindrical.

Edibility: Edibility varies by species; not to be consumed without species-level identification.

Remarks: Forms ectomycorrhizal associations that enhance nutrient uptake.

6. *Agrocybe praecox*

Family: Strophariaceae

Specimen examined: District Srinagar; G.C.W M.A. Road; on grassy fields and garden soil, Collection No. TJ-06.

Description: Cap pale brown to yellowish-brown; gills cream when young, browning with age; stipe cylindrical and fibrous.

Edibility: Edible but not commonly collected.

Remarks: Common in spring and early summer following rainfall.

7. *Hypholoma lateritium*

Family: Strophariaceae

Specimen examined: District Srinagar; Kursoo, Rajbagh; on decaying wood. Collection No. TJ-07.

Description: Cap creamish white, convex, 3-8 cm; gills pale yellow, darkening with age; stipe slender and fibrous.

Edibility: Considered edible in some regions after proper identification.

Remarks: Contributes significantly to decomposition of woody material.

8. *Morchella esculenta*

Family: Morchellaceae

Specimen examined: District Srinagar; Shankaracharya Hill; moist humus-rich soil,. Collection No. TJ-08.

Description: Fruiting body with a honeycomb-like cap of deep pits and ridges, yellowish-brown to dark brown, hollow throughout; stipe cream-coloured, cylindrical, hollow.

Edibility: Highly edible and economically important.

Remarks: Locally known as "Gucchi"; among the most valuable wild mushrooms of Kashmir.

9. *Agrocybe pediades*

Family: Strophariaceae

Specimen examined: District Srinagar; Shankaracharya Hill. Collection No. TJ-09.

Description: Cap small, smooth, light brown; gills dark brown at maturity; stipe slender and fragile.

Edibility: Generally regarded as inedible.

Remarks: Common in open meadows and grass-covered areas.

10. *Lentinus tigrinus*

Family: Polyporaceae

Specimen examined: District Srinagar; decaying wood and fallen logs, Rajbagh Extension.

Description: Cap 2–7 cm, cream to whitish with dark brown scales; gills decurrent, closely spaced; stipe central to eccentric, firm, fibrous.

Edibility: Edible when young, becoming tough with age.

Remarks: Identified by its scaly cap and growth on decaying wood



Plate 1: *Panus conchatus*



Plate 2: *Agaricus campestris*



Plate 3: *Coprinellus micaceus*



Plate 4: *Phallus impudicus*



Plate 5: *Boletus* sp.



Plate 6: *Agrocybe praeco*



Plate 7: *Hypholoma latritium*



Plate 8: *Morchella esculenta*



Plate 9: *Agrocybe pediades*



Plate 10: *Lentinus tigrinus*



4. DISCUSSION

The recorded macrofungal diversity reflects the ecological richness of Srinagar district and the suitability of its habitats for fungal growth. Consistent with patterns reported elsewhere, species belonging to basidiomycota outnumbered those of ascomycota, likely reflecting the broader ecological adaptability and substrate range of basidiomycetes (Kirk *et al.*, 2008). Among the recorded taxa, *Morchella esculenta* (Gucchi) emerged as the most culturally, economically and medicinally significant species, valued regionally for its taste, aroma and nutritional qualities, consistent with its established status as one of the most highly prized wild edible mushrooms of the Himalaya (Kaul, 1997). The ethnomycological survey further indicated that elderly respondents retained substantially more traditional knowledge of mushroom identification, edibility and medicinal use than younger respondents, underscoring the risk of erosion of this knowledge with modernization (Negi, 2006). Looking ahead, there is a pressing need to document and preserve this traditional knowledge through systematic ethnomycological studies and community based conservation initiatives. Integrating local knowledge with modern scientific approaches could enhance sustainable harvesting practices, promote value addition and support the development of mushroom-based enterprises

Table 1: Use Value (UV) and Fidelity Level (FL) of recorded species

Species	UV	FL (%)
<i>Morchella esculenta</i>	1.00	100.00
<i>Agaricus campestris</i>	0.70	76.19
<i>Agrocybe praecox</i>	0.40	58.33
<i>Lentinus tigrinus</i>	0.23	71.43
<i>Coprinellus micaceus</i>	0.17	60.00
<i>Boletus sp.</i>	0.17	60.00
<i>Hypholoma lateritium</i>	0.07	100.00
<i>Panus conchatus</i>	0.07	100.00
<i>Agrocybe pediades</i>	0.07	100.00
<i>Phallus impudicus</i>	0.00	0.00

5. CONCLUSION

The present study documents ten species of wild macrofungi from diverse habitats across district Srinagar, dominated by basidiomycota, and highlights *Morchella esculenta* (Gucchi) as the most economically and culturally important species, valued both as a seasonal income source and for its traditional medicinal use. The accompanying ethnomycological survey confirms that local communities, particularly older residents, retain valuable traditional knowledge of mushroom identification, collection and use, knowledge that is at risk of being lost across generations. These findings provide a baseline for further systematic mycological and ethnomycological study of the Kashmir valley and underscore the importance of documenting such knowledge for biodiversity conservation and sustainable resource use.

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