

Wild Edible Mushrooms of Maharashtra: Diversity, Nutritional Potential and Conservation Status

Pro. Dipashri V. Chaudhari

Ph.D. Scholar, K.T.H.M. College, Nashik (Affiliated to Savitribai Phule University, Pune)

ABSTRACT

Wild edible mushrooms constitute an important but comparatively under documented component of fungal biodiversity and traditional food systems. Maharashtra, owing to its contrasting ecological regions including the Western Ghats, Konkan, Deccan Plateau, Satpura ranges, forested tribal landscapes and seasonal grassland ecosystems supports considerable macrofungal diversity. Several wild mushrooms are traditionally collected and consumed by rural and indigenous communities, particularly during the monsoon season. The present review synthesizes available information on the diversity, ethnomycological significance, nutritional potential and conservation concerns associated with wild edible mushrooms of Maharashtra, with particular emphasis on taxa reported from the Western Ghats and adjoining ecosystems. Published work from the Western Ghats has documented 51 edible wild mushroom taxa belonging to 23 genera, highlighting the importance of genera such as *Termitomyces*, *Pleurotus*, *Astraeus*, *Lentinus*, *Fistulina* and others. A survey specifically conducted in the Western Ghats of Maharashtra recorded seven *Pleurotus* species, demonstrating the diversity of edible and potentially edible macro fungi in the region. Wild mushrooms can contribute proteins, dietary fibre, minerals, vitamins and bioactive compounds, although their nutritional composition varies considerably among species and environmental conditions. Their importance extends beyond nutrition to traditional knowledge, seasonal food security, livelihood opportunities and potential nutraceutical applications. However, habitat degradation, deforestation, changing land use, overharvesting, loss of traditional knowledge, climate variability and inadequate species documentation may threaten these resources. Conservation should therefore combine habitat protection, taxonomic documentation, community participation, sustainable harvesting, cultivation of promising species, ex-situ conservation and nutritional characterization. The paper identifies important research gaps and proposes a framework for systematic documentation and conservation of Maharashtra's wild edible mushroom resources.

Keywords: Wild edible mushrooms, Maharashtra, macrofungi, mushroom diversity, ethnomycology, nutritional potential, Western Ghats, traditional knowledge, conservation, sustainable harvesting.

1. INTRODUCTION

Mushrooms represent a highly diverse group of macrofungi that perform essential ecological functions as decomposers, mutualists and, in some cases, parasites. In addition to their ecological importance, several mushroom species have considerable nutritional, medicinal, cultural and economic value. Edible mushrooms are increasingly recognized as foods containing proteins, dietary fibre, minerals, vitamins and biologically active compounds.

Wild edible mushrooms are particularly important in regions where communities have developed traditional knowledge regarding their identification, collection, processing and consumption. Research from the Western Ghats documented 51 wild edible mushrooms belonging to 23 genera and emphasized their relationship with local food security, traditional knowledge and forest resources.

Maharashtra is especially interesting for mycological research because of its geographical and ecological heterogeneity. The state contains portions of the Western Ghats, Konkan forests, northern Maharashtra, Satpura-associated landscapes, Vidarbha forests and extensive Deccan Plateau ecosystems. Seasonal rainfall, soil diversity, forest vegetation and availability of decaying organic substrates create suitable conditions for diverse macrofungal communities.

The Western Ghats region of Maharashtra has already demonstrated considerable mushroom diversity. A survey conducted in western Maharashtra, covering areas around Kolhapur, Satara, Sindhudurg and Pune, reported seven species of *Pleurotus*, including *P. ostreatus*, *P. pulmonarius*, *P. flabellatus*, *P. porrigens*, *P. lignatilis* and *P. djamor*. The study emphasized the need for conservation of macrofungal resources, particularly those having edible and medicinal importance. Despite this potential, wild edible mushrooms of Maharashtra remain less systematically studied than cultivated mushrooms and many plant-based wild foods. Species inventories are fragmented, local names may vary between communities, and nutritional data are unavailable for many taxa. Traditional knowledge is also vulnerable to erosion as younger generations become less connected with forest-based food systems.

Therefore, systematic research on wild edible mushrooms should integrate taxonomy, ecology, ethnomycology, nutritional chemistry and conservation biology.

2. OBJECTIVES

The major objectives of the present review are:

- To review the diversity of wild edible mushrooms reported from Maharashtra and associated Western Ghats ecosystems.
- To document important edible mushroom genera and representative species.
- To examine their nutritional and nutraceutical potential.
- To discuss traditional knowledge associated with collection and consumption.
- To assess major threats to wild edible mushroom resources.
- To discuss their conservation status and identify important conservation gaps.

3. MATERIALS AND METHODS

The present article is structured as a literature-based review rather than a claim of original field observations. Published scientific literature concerning wild edible mushrooms, macrofungal diversity, ethnomycology, nutritional properties and conservation was consulted.

Literature concerning the Western Ghats was particularly relevant because the mountain chain forms an important ecological region extending through Maharashtra and adjoining states. Karun and Sridhar documented 51 edible wild mushroom taxa from the Western Ghats through field visits, interviews with ethnic communities, macromorphological observations, micromorphological studies and photographic documentation.

For Maharashtra-specific information, published research on mushroom flora of the Western Ghats of Maharashtra was examined. The study conducted surveys during the monsoon season and identified *Pleurotus* species using macroscopic and microscopic characteristics.

For future field studies, specimens should be identified using integrated morphological and microscopic characteristics and, where facilities are available, molecular methods such as DNA barcoding should be used to improve taxonomic accuracy.

4. MUSHROOM DIVERSITY IN MAHARASHTRA

4.1 Ecological basis of mushroom diversity

Mushroom diversity is strongly influenced by environmental factors such as rainfall, temperature, soil characteristics, vegetation, availability of dead wood, leaf litter and other organic substrates. In Maharashtra, the monsoon season plays a particularly important role in macrofungal diversity and fruiting. Increased humidity and soil moisture during the rainy season provide favourable conditions for the development of mushroom fruiting bodies, resulting in a marked seasonal increase in fungal diversity and visibility. Different ecological groups of mushrooms are associated with different substrates and habitats, including dead wood, decaying tree trunks, fallen branches, bamboo, leaf litter, soil, termite-associated substrates, grasslands, forest margins and agricultural landscapes. The availability and quality of these substrates influence the occurrence, distribution and abundance of individual mushroom species. Studies from the Western Ghats have also demonstrated the importance of substrate type and host-tree associations in understanding the distribution and ecological diversity of wild mushrooms.

4.2 Important edible mushroom groups

A number of genera are particularly significant in discussions of wild edible mushrooms of peninsular India.

Table 1. Representative wild edible mushroom groups relevant to Maharashtra and the Western Ghats

Genus/species	General ecological association	Potential significance
Termitomyces spp.	Termite-associated soil/substrate	Food, traditional knowledge
Pleurotus spp.	Dead wood/plant residues	Edible, nutritional, cultivation potential
Astraeus hygrometricus	Soil-associated	Traditional edible mushroom
Lentinus spp.	Wood-decaying	Edible and nutritionally important
Fistulina hepatica	Tree trunks/wood	Traditional food value
Clitocybe infundibuliformis	Soil/organic substrates	Traditionally consumed in some communities
Auricularia spp.	Decaying wood	Food and nutraceutical interest
Scleroderma spp.	Soil-associated	Traditional use reported in some regions

5. DIVERSITY OF PLEUROTUS IN WESTERN MAHARASHTRA

The genus *Pleurotus* includes several edible and economically important mushrooms. Surveys in the Western Ghats of Maharashtra, particularly around Kolhapur, Satara, Sindhudurg and Pune,

have reported several *Pleurotus* species, including *P. ostreatus*, *P. pulmonarius*, *P. flabellatus*, *P. porrigens*, *P. lignatilis* and *P. djamor*. These species differ in pileus shape, colour, growth habit and microscopic characteristics. However, not every recorded species is traditionally consumed by local communities. This highlights the importance of combining scientific identification with traditional knowledge while studying wild edible mushrooms.

6. ETHNOMYCOLOGICAL IMPORTANCE

Ethnomycology deals with the traditional relationship between people and fungi. Local communities possess valuable knowledge about mushroom identification, habitat, season, collection and preparation. Mushrooms may be recognized based on colour, shape, texture, odour, substrate and association with trees or termites. Traditional preparation methods include cooking, frying, roasting, drying, salting and pickling. Documentation of this knowledge is important for preserving cultural heritage, although scientific identification should always be used to confirm the safety and identity of edible species.

7. NUTRITIONAL POTENTIAL OF WILD EDIBLE MUSHROOMS

Wild edible mushrooms are valuable sources of proteins, dietary fibre, minerals, vitamins and other nutrients. Their nutritional composition varies according to species, maturity, substrate and environmental conditions. They generally contain useful minerals such as potassium, phosphorus, magnesium, calcium, iron and zinc. However, mushrooms can also accumulate contaminants from polluted soils; therefore, mushrooms collected near industrial or contaminated areas should be carefully evaluated before consumption.

8. BIOACTIVE AND NUTRACEUTICAL POTENTIAL

Mushrooms contain several biologically active compounds, including polysaccharides, phenolics, terpenoids, sterols and pigments. Studies of selected Western Ghats mushrooms have demonstrated antioxidant and other biological activities. These findings suggest potential for developing functional foods and nutraceutical products. However, laboratory antioxidant activity alone does not establish a health benefit in humans. Further biochemical, toxicological and clinical studies are required.

9. NUTRITIONAL RESEARCH FRAMEWORK

Nutritional studies of Maharashtra's wild mushrooms should include analysis of moisture, ash, protein, fat, fibre, carbohydrates, energy, minerals, phenolic compounds and antioxidant activity. Techniques such as Kjeldahl analysis, Soxhlet extraction, AAS/ICP and DPPH or ABTS assays may be used. Such analyses can provide species-specific nutritional profiles and help identify mushrooms with greater food and nutraceutical potential.

10. CONSERVATION STATUS

The conservation status of many wild edible mushrooms in Maharashtra remains poorly documented because information on population size, distribution, habitat requirements and long-term trends is limited. Therefore, formal conservation categories should not be assigned without adequate population data. Systematic surveys and long-term monitoring are needed to identify species requiring conservation attention.

11. MAJOR THREATS

Wild edible mushrooms may be affected by habitat destruction, deforestation, land-use change, overharvesting, pollution, climate variability and loss of traditional knowledge. Destruction of

forests and removal of dead wood can particularly affect wood-decaying fungi. Changes in rainfall and temperature may also alter seasonal mushroom fruiting.

12. CONSERVATION STRATEGIES

Conservation should include in-situ habitat protection, ex-situ preservation and sustainable harvesting. Protection of forests, dead wood, leaf litter and mushroom-rich habitats is essential. Promising edible species can be maintained through culture collections and controlled cultivation. Sustainable harvesting should involve collecting only correctly identified species, avoiding unnecessary substrate damage, leaving some mature fruiting bodies in the habitat and maintaining records of collection and abundance. Community participation and documentation of traditional knowledge can further strengthen long-term conservation of Maharashtra's wild edible mushroom diversity.

13. CONCLUSION

Wild edible mushrooms represent an important biological and cultural resource of Maharashtra. The ecological diversity of the state, particularly its Western Ghats and forest ecosystems, provides suitable habitats for a wide range of macrofungi. Existing research from the Western Ghats has documented substantial edible mushroom diversity, including 51 taxa belonging to 23 genera, while Maharashtra-specific research has demonstrated notable diversity within *Pleurotus*.

The importance of these mushrooms extends beyond their role as seasonal food. They may provide proteins, dietary fibre, minerals and bioactive compounds and can contribute to food diversity and livelihood opportunities. Studies of selected Western Ghats mushrooms have also demonstrated measurable antioxidant and other bioactive properties, supporting further investigation of their nutraceutical potential.

Nevertheless, the conservation status of many wild edible mushrooms in Maharashtra remains inadequately documented. Habitat degradation, changing land use, unsustainable collection, environmental pollution, climate variability and erosion of traditional knowledge represent important concerns.

Future research should therefore move beyond simple species inventories toward integrated biodiversity assessment, nutritional characterization, molecular identification, ethnomycological documentation and long-term conservation monitoring. Community participation should form an essential component of this approach. Sustainable harvesting and ex-situ cultivation of suitable species could simultaneously support biodiversity conservation and local food security.

The development of a comprehensive state-level inventory and conservation strategy for wild edible mushrooms would provide a valuable foundation for future research, sustainable utilization and preservation of Maharashtra's fungal heritage.

REFERENCES

1. Araujo, P. L., Araújo, E. S., Barreto, E. M. A., Alves, J. L. B., Souza, K. M., Freire, M. O. L., Pessoa de Souza, R. M., & Pereira, F. O. (2025). *Pleurotus* mushrooms in nutrition and health: Clinical and preclinical insights for nutraceutical development. *Comprehensive Reviews in Food Science and Food Safety*, 24(5), e70279. <https://doi.org/10.1111/1541-4337.70279>
2. Carrasco-Gonzalez, J. A., Serna-Saldívar, S. O., & Gutierrez-Urbe, J. A. (2017). Nutritional composition and nutraceutical properties of the *Pleurotus* fruiting bodies: Potential use as food

- ingredient. *Journal of Food Composition and Analysis*, 58, 69–81. <https://doi.org/10.1016/j.jfca.2017.01.016>
3. Corrêa, R. C. G., Brugnari, T., Bracht, A., Peralta, R. M., & Ferreira, I. C. F. R. (2016). Biotechnological, nutritional and therapeutic uses of *Pleurotus* spp. (oyster mushroom) related with its chemical composition: A review on the past decade findings. *Trends in Food Science & Technology*, 50, 103–117. <https://doi.org/10.1016/j.tifs.2016.01.012>
 4. Karun, N. C., & Sridhar, K. R. (2017). Edible wild mushrooms of the Western Ghats: Data on the ethnic knowledge. *Data in Brief*, 14, 320–328. <https://doi.org/10.1016/j.dib.2017.07.067>
 5. Mane, K. S., Khot, G. G., & Tirmali, A. M. (2017). Mushroom flora of Western Ghat region of Maharashtra with special reference to *Pleurotus* spp. *Journal of Plant Disease Sciences*, 12(2), 144–151.
 6. Patel, J., Patel, D., & Patel, D. (2025). Evaluation of wild edible mushrooms in Vansda National Park, Gujarat, India. *Current Botany*, 16. <https://doi.org/10.25081/cb.2025.v16.9548>
 7. Singh, M. P., & Gautam, S. (2021). Cultivation and nutritional value of prominent *Pleurotus* spp.: An overview. *Journal of Food Science and Technology*, 58, 1–12. <https://doi.org/10.1007/s13197-020-04942-4>
 8. Nag, R., Baghel, Y., Sharma, D., Bargah, A. S., Swarnkar, U., & Raza, A. (2025). Wild edible mushrooms of Chhattisgarh, India: A review on diversity, nutrition and ecosystem services as NTFPs. *Journal of Advances in Biology & Biotechnology*, 28(11), 1512–1524. <https://doi.org/10.9734/jabb/2025/v28i113338>
 9. Dhadse, S., & Kardbhajne, A. (2026). Wild edible vegetables of India: Nutritional and ethnobotanical insights. *Indian Journal of Traditional Knowledge*, 25(5). <https://doi.org/10.56042/ijtk.v25i5.23697>
 10. Waghchure, R. S., Sakhale, B. K., & Raut, B. N. (2026). Nutritional composition, micronutrients and antioxidant potential of wild edible vegetables. *Asian Journal of Dairy and Food Research*. <https://doi.org/10.18805/ajdfr.DR-2465>