

Checklist of Wood Inhabiting Macrofungi in Telangana and Andhra Pradesh, IndiaP.R. Sushama^{1*}, Mehtab Yasmeen¹ and C. Manoharachary²¹*Department of Botany, Veeranari Chakali Iamma Womens' University, Koti, Hyderabad, India.*²*Department of Botany, Osmania University, Hyderabad, India.***Corresponding Author Email: palaparthysushama@gmail.com*

(Submitted on April 01, 2025; Accepted on May 22, 2025)

ABSTRACT

Wood-inhabiting fungi form an important group that maintains the forest ecosystem and are highly valued for their high nutrient status and richness of natural bioactive compounds. So far, there is no report on wood-inhabiting higher fungi from Telangana and Andhra Pradesh states. Hence, a survey was conducted during 2020 - 2021 from the forests of Telangana and Andhra Pradesh. A checklist of 45 wood-inhabiting higher fungi in relation to habitat, forest area, along with accession number are given. A survey of literature indicates that all 45 fungi form new additions to the fungi of Telangana and Andhra Pradesh, India.

Keywords: Andhra Pradesh, Diversity, Fungi, Polypores, Telangana, Wood

INTRODUCTION

Polypores or wood inhabiting macrofungi form well recognized group under Phylum Basidiomycota and these fungi play a vital role in forest ecosystem as decomposers of organic matter; nutrient cycling and carbon cycle. These fungi are also important as wood rotting while a few of them are valued for their high nutrient status and also for the presence of bioactive compounds. These fungi mostly fall under Polyporaceae and Stereaceae which accounts for 60% of higher fungi. These fungi possess annual to perennial, resupinate to effuse reflexed, sessile to pilate, stipitate to spatulate coralloid to flattened basidiomes. Hymenophores are smooth, poroid, lamellate to deadoloid. The hyphal system form monomitic, dimitic, trimitic with simple, clamped hyphae and cystidia may be present or absent. Basidiospores are smooth or ornamented having thin to thick wall besides being hyaline to brown and club shaped to cylindrical.

The documentation of Polyporales and Steriales in India can be attributed to Koltzsch (1832), Berkley (1839), Massee (1901, 1910), Butler (1905, 1918), Theissen (1913), Bose (1919, 1923, 1924, 1925, 1927), Butler and Bisby (1931) and others. A notable contribution of Polyporales and Steriales was made by Thind et al., (1925), Rattan (1977), Natarajan and Raman (1980), Dai et al., (2014), Kaur et al., (2020), Bala (2022), Kumar and Kumar (2024) and Manoharachary et al., (2025). A survey of literature clearly indicates that there are no reports of members

of Polyporaceae and Stereaceae so far from Telangana and Andhra Pradesh states, respectively.

TOPOGRAPHY AND STUDY SITE

Andhra Pradesh has a diverse topography with three major regions: the Coastal Andhra region, the Rayalaseema region and the Eastern Ghats. Andhra Pradesh experiences varying annual precipitation patterns primarily influenced by the southwest monsoon. The state observes three distinct seasons: a scorching summer from March to June with temperatures often exceeding 95 °F (35 °C) and even reaching 104 °F (40 °C) in the central region, while night temperature fall below 70 °F (20 °C) mainly in the far southwest; a tropical rainy season from July to September; and a relatively cooler winter from October to February, where January temperatures range from 86 to 95 °F (30 to 35 °C) across most areas except the northeastern portion. Winter lows drop below about 60 °F (15 °C) only in the extreme North east.

Telangana State is situated on the Deccan Plateau, in the central stretch of the eastern seaboard of the Indian Peninsula. Dry deciduous, scrub Jungle forests and mixed forest types are distributed in districts of Rangareddy, Khammam, Medak, Mahabubnagar, Warangal, Nizamabad and Adilabad. The annual rainfall is between 900 to 1500 mm in Northern Telangana and 700 to 900 mm in Southern Telangana, from the southwest monsoons. Telangana is a semi-arid area and has a predominantly hot and dry climate. Summer start in March, and reach peak

in May with an average high temperature to the 42 °C (108 °F) range. The monsoon arrives in June and lasts until September with about 755 mm (29.7 inches) of precipitation. A dry, mild winter starts in late November and lasts until early February with little humidity and an average temperature of 22–23 °C (72– 73 °F) range.

MATERIAL AND METHODS

Fungal collection trips were conducted to the forests of Nirmal, Dimmadurthy and Mavala (Adilabad Dist.), Telangana and Damuku (Vishakapatnam Dist.) Mannanur (Mahboobnagar Dist.) and Narsapur (Medak Dist.), Andhra Pradesh from 2020 to 2021 after rains (North east monsoon). Samplings were also done by picking up of wood pieces, petioles, leaves and others. Preliminary observations such as locality, host, date of collection and substrate for each species were also collected. Specimens are brought to lab and accession no. given as OUFH (Osmania University Fungal Herbarium). Some

efforts were made to culture some fungi and raise pure cultures.

The collected specimens were subjected to macroscopic and microscopic analyses. Fruiting body morphology, attachment of basidium, color, hymenium, basidia, basidiospores etc., have been critically examined by using different manuals (Bakshi, 1971; Rattan, 1977; Thind and Dhanda, 1979, Natarajan and Kolandavelu, 1985; Kezo et al., 2025).

RESULTS

Fungi belonging to the families Polyporales and Steriales have been collected from different forest regions of Telangana and Andhra Pradesh states, and have been studied and identified based on morphological and microscopic characters. Around 45 fungal specimens have been identified upto species level and are presented in **Table 1**. Photographs of some of the specimens are presented in **Figure 1**.

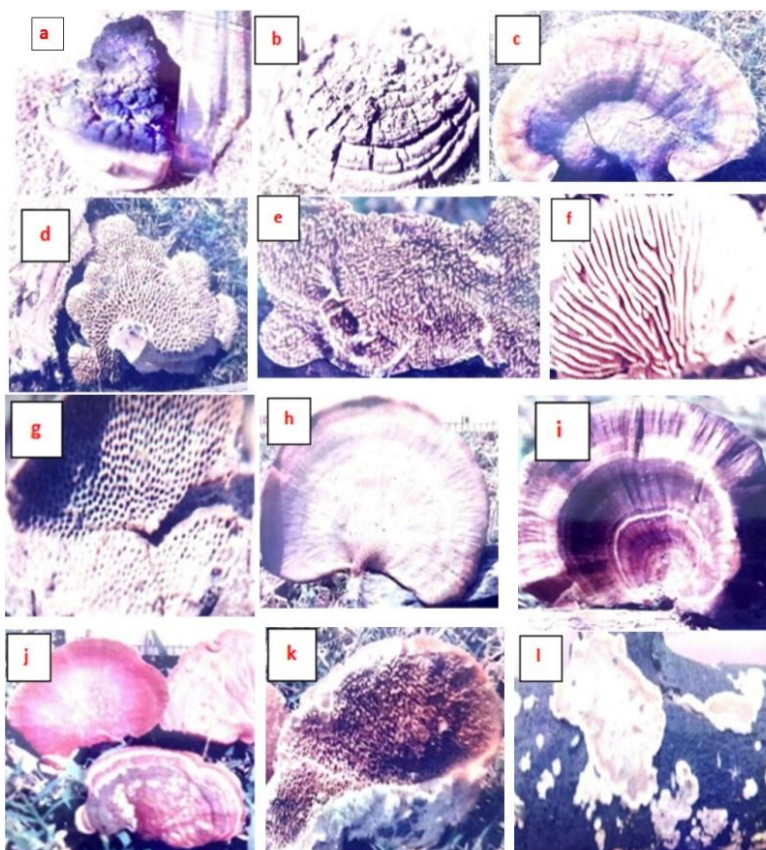


Figure 1: Photographs of some collected samples. a, *Cerioporus squamosus*; b, *Cerrena unicolor*; c, *Ganoderma applanatum*; d, *Cubamyces flavidus*; e, *Flavodon flavus*; f, *Lenzites betulinus*; g, *Pseudofavolus tenuis*; h) *Favolus grammacephalus*; i) *Microporus affinis*; j) *Trametes cinnabarina*; k) *Funalia leonina*; l) *Fuscoporia ferruginosa*

Table 1: List of Polyporales and Steriales fungi collected from the forest regions of Telangana and Andhra Pradesh

Sl. No.	Name of the fungus	Habitat	Geographic location	Forest type	OUFH Accession NO.
Family: Polyporaceae					
1.	<i>Cerioporus leptcephalus</i> (Jacq.) Zmitr.	On dead wood	Damaku, Vishakapatnam Dist. AP	Tropical semi evergreen forest	172
2.	<i>Cerioporus squamosus</i> (Huds.) Quéf.	On dead fallen branches	Damaku, Vishakapatnam Dist. AP	Tropical semi evergreen forest	173
3.	<i>Cerrena unicolor</i> (Bull.) Murrill	On dead wood	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	174
4.	<i>Cubamyces flavidus</i> (Lév.) Lücking	On tree trunk (<i>Tamarindus indica</i>)	Narsapur, Medak Dist., AP	Tropical dry deciduous forest	175
5.	<i>Cubamyces lactineus</i> (Berk.) Lücking	On dead wood	Mavala, Adilabad Dist. TS	Tropical dry deciduous forest	176
6.	<i>Daedalea ambigua</i> Berk.	On dead wood	Mavala, Adilabad Dist. TS	Tropical dry deciduous forest	177
7.	<i>Daedalea sulcata</i> (Berk.)	On dead wood	Narsapur, Medak Dist., AP	Tropical dry deciduous forest	178
8.	<i>Earliella scabrosa</i> (Pers.)	On tree trunk (<i>Mangifera indica</i>)	Dimmadurthy, Adilabad Dist., TS	Tropical dry deciduous forest	179
9.	<i>Favolus grammocephalus</i> (Berk.) Imazeki	On dead wood	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	180
10.	<i>Favolus tenuiculus</i> P. Beauv., Fl. Oware	On dead wood	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	181
11.	<i>Flavodon flavus</i> (Klotzsch) Ryvardeen	On tree trunk (<i>Azadirachta indica</i>)	Mannanur, Mahaboobnagar Dist. AP	Tropical dry deciduous forest	182
12.	<i>Fulvifomes robiniae</i> (Murrill) Murrill	On dead fallen branches	Dimmadurthy, Adilabad Dist., TS	Tropical dry deciduous forest	183
13.	<i>Funalia leonina</i> (Klotzsch) Pat.	On dead wood	Mavala, Adilabad Dist. TS	Tropical dry deciduous forest	184
14.	<i>Fuscoporia ferruginosa</i> (Schröd. ex J.F. Gmel.) Murrill	On dead fallen branches	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	185
15.	<i>Ganoderma orbiforme</i> (Fr.)	On tree trunk (<i>Lagerstroemia parviflora</i>)	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	186
16.	<i>Ganoderma applanatum</i> (Pers.) Pat.	On tree trunk (<i>Delonix regia</i>)	Narsapur, Medak Dist., AP	Tropical dry deciduous forest	187
17.	<i>Gloeophyllum sepiarium</i> (Wulfen) P. Karst.	On tree trunk (<i>Tamarindus indica</i>)	Damaku, Vishakapatnam Dist. AP	Tropical semi evergreen forest	188
18.	<i>Hypsizygus ulmarius</i> (Bull.) Redhead	On dead wood	Damaku, Vishakapatnam Dist. AP	Tropical semi evergreen forest	189

Sl. No.	Name of the fungus	Habitat	Geographic location	Forest type	OUFH Accession NO.
19.	<i>Irpex vellereus</i> Berk. & Broome	On dead wood	Mavala, Adilabad Dist. TS	Tropical dry deciduous forest	190
20.	<i>Lentinellus cochleatus</i> (Pers.) P. Karst.	On tree trunk	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	191
21.	<i>Lentinus arcularius</i> (Batsch) Zmitr.	On dead fallen branches	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	192
22.	<i>Lentinus squarrosulus</i> Mont.	On tree trunk (<i>Bambusa</i> sp.)	Mannanur, Mahaboobnagar Dist., AP	Tropical dry deciduous forest	193
23.	<i>Lentinus tricholoma</i> (Mont.) Zmitr.	On tree trunk	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	194
24.	<i>Lenzites adustus</i> Massee	On tree trunk (<i>Tectona grandis</i>)	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	195
25.	<i>Lenzites betulinus</i> (L.) Fr.	On tree trunk (<i>Maduka indica</i>)	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	196
26.	<i>Lenzites flaccidus</i> (Bull.) Fr.	On dead wood	Mavala, Adilabad Dist., TS	Tropical dry deciduous forest	197
27.	<i>Microporus affinis</i> (Blume & T. Nees) Kuntze	On dead fallen twigs	Damaku, Vishakapatnam Dist. AP	Tropical semi evergreen forest	198
28.	<i>Microporus xanthopus</i> (Fr.) Kuntze	On dead fallen twigs	Damaku, Vishakapatnam Dist. AP	Tropical semi evergreen forest	199
29.	<i>Ochrosporellus pachyphloeus</i> (Pat.) Y.C. Dai & F. Wu	On tree trunk (<i>Acacia arabica</i>)	Mannanur, Mahaboobnagar Dist. AP	Tropical dry deciduous forest	200
30.	<i>Oxyporus corticola</i> (Fr.) Ryvarden	On dead wood	Mannanur, Mahaboobnagar Dist. AP	Tropical dry deciduous forest	201
31.	<i>Oxyporus populinus</i> (Schumach.) Donk	On dead fallen branches	Nirmal, Adilabad Dist., TS	Tropical dry deciduous forest	202
32.	<i>Phaeolus schweinitzii</i> (Fr.) Pat.	On ground	Narsapur Medak Dist., AP	Tropical dry deciduous forest	203
33.	<i>Pleurotus cornucopiae</i> (Paulet) Qué.	On ground	Damaku, Vishakapatnam Dist. AP	Tropical semi evergreen forest	204
34.	<i>Pseudofavolus tenuis</i> (Fr.) G. Cunn.	On dead fallen branches	Dimmadurthy, Adilabad Dist. TS	Tropical dry deciduous forest	205
35.	<i>Rigidoporus lineatus</i> (Pers.) Ryvarden	On dead wood	Mavala, Adilabad Dist. TS	Tropical dry deciduous forest	206
36.	<i>Tomophagus colossus</i> (Fr.) Murrill	On tree trunk (<i>Phoenix sylvestris</i>)	Mannanur, Mahaboobnagar Dist. AP	Tropical dry deciduous forest	207
37.	<i>Trametes apiaria</i> (Pers.) Zmitr., Wasser & Ezhov	On dead fallen branches	Narsapur, Medak Dist., AP	Tropical dry deciduous forest	208
38.	<i>Trametes azurea</i> (Fr.) G. Cunn.	On dead wood	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	209

Sl. No.	Name of the fungus	Habitat	Geographic location	Forest type	OUFH Accession NO.
39.	<i>Trametes cinnabarina</i> (Jacq.) Fr.	On dead wood	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	210
40.	<i>Trametes versicolor</i> (L.) Lloyd	On dead wood	Damaku, Vishakapatnam Dist. AP	Tropical semi evergreen forest	211
41.	<i>Trametes roseola</i> Pat. & Har.	On dead wood	Nirmal, Adilabad Dist. TS	Tropical dry deciduous forest	212
42.	<i>Trichaptum trichomallum</i> (Berk. & Mont.)	On dead wood	Mavala, Adilabad Dist. TS	Tropical dry deciduous forest	213
43.	<i>Xanthoperenniporia tenuis</i> (Schwein.) B.K. Cui & Xing Ji	On dead wood	Damaku, Vishakapatnam Dist. AP	Tropical semi evergreen forest	214
Family: Stereaceae					
44.	<i>Phlebiopsis papyrina</i> (Mont.) Miettinen & Spirin	On dead fallen branches	Narsapur Medak Dist., AP	Tropical dry deciduous forest	215
45.	<i>Stereum petalodes</i> Berk.	On tree trunk (<i>Terminalia</i> sp.)	Damaku, Vishakapatnam Dist., AP	Tropical semi evergreen forest	216

Note: OUFH: Osmania University Fungal Herbarium

DISCUSSION

Polypore fungi (shelf fungi) and members of Steriales are reported worldwide, especially in Asia, Europe, and North America and 2,670 polypores have been reported in the world (Zhao et al., 2024). It was reported that China has the greatest diversity of Polypore fungi in the world (Wu et al. 2022). Bakshi (1971), Rattan (1977), Thind and Dhanda (1971, 1979, 1980a & 1980b), Natarajan and Kolandavelu (1985) have reported many polypores from India. Recently, Koze et al., (2025) have reported 138 polypores from South India. In the present study, around 45 fungal species of polypores are reported from Telangana and Andhra Pradesh states.

Interestingly *Ochrosporellus pachyphloeus*, *Ganoderma applanatum*, *G. orbiforme*, *Lenzites betulinus* and *Favolus gramocephalus*, were of common occurrence and are the constantly associated fungal species in all the forest regions. *Microporus xanthopus* was dominant in occurrence both in Adilabad forest and Araku valley forest, though they are distantly related geographically. Similarly *Stereum petalodes* was found both in Narsapur forest of Medak district and Araku valley forest of Vishakapatnam district. Same is true with *Flavodon*

flavus which was widely collected from the forests of Adilabad and Narsapur.

The diversity and composition of the Polypores and Steriales fungi community are closely related to its substrate. Many fungi have host substrate specificity or preference, their distribution patterns are related to the types of host species in the region (Hattori et al., 2012). It is clear that fungi reported have seem to cause damage to the forest wealth. Most of the species of fungi also cause rot in standing trees but also on fallen logs. Their activity as wood decomposers is vital to the health of forest ecosystems. Some species are saprotrophs on standing dead wood logs, and woody debris.

Ganoderma lucidum (reishi) and other Polyporales have been used as natural medicines in traditional Chinese medicine (Watkinson et al., 2015). Polypores are well known to have diverse biomolecules, hence are considered to be important as bioresources. Some of the pigmented polypores possess dying properties, hence used in textile industry (Quintero-Cabello et al., 2021).

REFERENCES

Bakshi, B.K. 1971. Indian Polyporaceae (on trees and timber). ICAR, New Delhi. 116 pp.

- Bala, B. 2023. Diversity of bracket fungi (Basidiomycota: Agaricomycetes: Polyporaceae) in Jammu Division, Jammu & Kashmir, India. *Journal of Threatened Taxa* **15**: 22968 -22989.
- Berkeley, M.J. 1839. XLII. Descriptions of Exotic Fungi in the collection of Sir WJ Hooker, from Memoirs and Notes of JF Klotzsch, with Additions and Corrections. *Journal of Natural History*, **3**: 375 - 401.
- Bose, S.R. 1919. Description of fungi in Bengal I. *Proceedings of the Science Convention. Indian Association for Cultivation of Science* **4**: 109 - 114.
- Bose, S.R. 1934. Polyporaceae of Bengal XI. *Journal of the Department of Science, Calcutta University* **1**: 1-18.
- Bose, S.R. 1946. Polyporaceae of Bengal XI. *Journal of the Department of Science, Calcutta University* **2**: 53-87.
- Bose, S.R. 1923. Polyporaceae of Bengal - Part IX. *Proceedings of the Science Convention. Indian Association for Cultivation of Science for the year 1920 -1921*, 1-33.
- Bose, S.R. 1925. A new species of polyporaceae from Bengal. *Annals of Mycology* **23**: 179-181.
- Bose, S.R. 1927. Polyporaceae of Bengal IX. *Journal of the Department of Science, Calcutta University* **9**: 35-44.
- Butler, E.J. 1905. Some Indian forest fungi. *Indian Forester* **31**: 487-494.
- Butler, E.J. 1918. Fungi and disease in plants: an introduction to the diseases of field and plantation crops, especially those of India and the east. Thacker, Spink.
- Butler, E.J. and Bisby, G.R. 1931. The fungi of India. Scientific Monograph Number 1. The Imperial Council of Agricultural Research, Calcutta.
- Dai, Y.C., Xue, H.J., Vlasák, J., Rajchenberg, M., Wang, B. and Zhou, L.W. 2014. Phylogeny and global diversity of Polyporus group Melanopus (Polyporales, Basidiomycota). *Fungal Diversity*, **64**: 133-144.
- Hattori, T., Yamashita, S., Lee, S.S. 2012. Diversity and conservation of wood-inhabiting polypores and other aphyllporaceous fungi in Malaysia. *Biodivers Conserv.* **21**: 2375-2396.
- Kezo, K., Gunaseelan, S. and Kaliyaperumal, M., 2025. Unraveling the hidden diversity of wood-inhabiting fungi from Tamil Nadu. In *Biodiversity, Bioengineering, and Biotechnology of Fungi* (Eds.: Manoharachary, C., Singh, H.B., Singh, S. and Sharma, Y. P.) Academic Press, 1-26.
- Kaur, Ramandeep, Singh, Avneet and Dhingra, G.S. 2020. Four polypore species new to Himachal Pradesh. *Kavaka*. **54**: 103-106.
- Koltzsch, J.F. 1832. *Mycologische Berichtigungen*, *Linnaea* **7**: 193-204.
- Manoharachary, C., Singh, H.B., Singh, S. and Sharma, Y.P. (Eds.). 2025. *Biodiversity, Bioengineering, and Biotechnology of Fungi*. Academic Press. 423 pp.
- Massee, G. 1901. Fungi exotici III. *Kew Bulletin* **1901**: 150-164.
- Massee, G. 1910. Fungi exotici X. *Kew Bulletin* **1910**: 249-253.
- Natarajan, K. and Kolandavelu, K. 1985. Resupinate Aphyllporales from South India-I. *Kavaka* **12**: 71-76.
- Natarajan, K. and Raman, N. 1980. South Indian Agaricales-IX. *Sydowia* **33**: 225-235.
- Quintero-Cabello, K.P., Lugo-Flores, M.A., Rivera-Palafox, P., Silva-Espinoza, B.A., González-Aguilar, G.A., Esqueda, M., Gaitán-Hernández, R. and Ayala-Zavala, J.F. 2021. Antioxidant Properties and Industrial Uses of Edible Polyporales. *Journal of fungi* (Basel, Switzerland), **7**: 196. <https://doi.org/10.3390/jof7030196>
- Rattan, S.S. 1977. Resupinate Aphyllporales of North Western Himalaya. *Bibliotheca Mycologica* **60**: 1- 427.
- Sundaramani, S. and Madurajan, D. 1925. Some Polyporaceae of Madras Presidency, Madras Agricultural Department Year Book 1924. 69-75.

- Theissen, F. 1913. The fungi of India I. Journal of Bombay Natural History Society **21**: 1273-1303.
- Thind, K.S. and Dhanda, R.S. 1971. Polyporaceae of India -VII. Indian Phytopathology **24**: 290-294
- Thind, K.S. and Dhanda, R.S. 1979. Polyporaceae of India-IX. Eight species of *Poria* Kavaka **7**: 51-58.
- Thind, K.S. and Dhanda, R.S. 1980a. Polyporaceae of India-X. Indian Phytopathology **8**: 59-67.
- Thind, K.S. and Dhanda, R.S. 1980b. Polyporaceae of India-XIII. Indian Phytopathology **33**: 380-387.
- Watkinson, S.C., Boddy, L. and Money, N. 2015. The Fungi. Academic Press. 466 pp.
- Wu, F., Man, X.W., Tohtirjap, A. and Dai, Y.C. 2022. A comparison of polypore fungi and species composition in forest ecosystems of China, North America, and Europe. For Ecosyst. **9**:100051; doi: 10.1016/j.fecs.2022.100051.
- Zhao, H., Wu, Y.D., Yang, Z.R., Liu, H.G., Wu, F., Dai, Y.C. and Yuan, Y. 2024. Polypore fungi and species diversity in tropical forest ecosystems of Africa, America and Asia, and a comparison with temperate and boreal regions of the Northern Hemisphere. For Ecosyst. **11**:100200; doi: 10.1016/j.fecs.2024.100200.