Inventory of woody and fleshy poroid macrofungi from Koderma wildlife sanctuary, Jharkhand

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Abstract: Present communication deals with the taxonomic studies on woody and fleshy poroid macrofungi of the Koderma wildlife sanctuary, Jharkhand, which were carried out during 2010–2017. This was the first and systematic approach to survey and collection of macrofungi from this protected area. In this period more than 400 samples of macrofungi from Koderma wildlife sanctuary were collected and studied. Thorough macro- and micro-morphological examination of these collections revealed 88 species belonging to 44 genera and 12 families. The result of present study is discussed in the present communication. A provisional key to genera for all the collected genera is also provided to ease the identification.

Keywords: Jharkhand - Koderma - Macrofungi - Taxonomy.

INTRODUCTION

Jharkhand is one of the states of India with rich forest and mineral resources. 29.61% of its total area comes under forest cover (Mishra 2013). There are one National Park and 11 Wildlife Sanctuaries in this state. The Koderma Wildlife Sanctuary (KWS) is one of those protected areas (Fig. 1). Rich vegetation of different tree species in this area makes a dense forest cover. Some notable tree species from KWS are Shorea robusta Gaertn., Diospyros melanoxylon Roxb., Tectona grandis L.f., Butea monosperma (Lam.) Taub., Boswellia serrata Roxb. ex Colebr., Acacia nilotica (L.) Delile, Sida acuta Burn.f., Syzygium cumini (L.) Skeels etc. These trees are the hosts for the saprophytic (growing on dead and decaying tree-trunks) and parasitic (growing on living trees) macrofungi. A few of them are ectomycorrhizal (establishing symbiotic relationship with root-lets of trees) however, the study of macrofungi is being neglected so far and any detailed account about the diversity of woody and fleshy poroid macrofungi of this important area is unavailable till the present work is undertaken in recent past. Sporadic reports of macrofungi from the Jharkhand are only being available (Berkeley 1854a, b, c, d, Bodding 1925–1940, Panigrahi 1966, Hembrom et al. 2016, 2017, Parihar et al. 2013, 2014, 2018a, b, Wang et al. 2019) till date. To fill this lacuna the taxonomic study on these important groups of macrofungi was undertaken on KWS. This study will substantially enhance our current knowledge about the existing wealth of wood roting macrofungi in Jharkhand state and macrofungal diversity of KWS in particular. In this communication, we are presenting a detailed account of wood roting and fleshy poroid fungal species collected from KWS, Jharkhand with their voucher details, collection sites, altitudinal variations and herbarium where the vouchers are housed.

MATERIALS AND METHODS

Study site

Koderma district of Jharkhand is situated on National Highway 31 with 41% of forest cover. The reserved forest area of Koderma district is declared as Koderma wildlife sanctuary and is located between 24° 25’ N to 29° 06’ N and 84° 22’ E to 85° 15’ E. The district is declared as Koderma wildlife sanctuary and is located between 24° 25’ N to 29° 06’ N and 84° 22’ E to 85° 15’ E. The vegetation of this sanctuary is dominated by Deodar (Cedrus deodara), Banyan (Ficus benghalensis), Shorea robusta, Butea monosperma. The landscape of the sanctuary is highly dissected and characterized by numerous ridges and gorges, which makes the topography rugged. The elevation varies from 200 m above mean sea level to 2000 m above mean sea level. The vegetation is dominated by Deodar (Cedrus deodara), Banyan (Ficus benghalensis), Shorea robusta, Butea monosperma.

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24° 38' N and 85° 25' E to 85° 40' E. Koderma enclosure, Lokai, Kharhariya forest, Meghatari NRF, Taraghati, Khalakhtambhi, Mughalamaran, Basraun, Koderma NRF, Jamsoti, Dhodhakhola, Chatarbar, Suggi point, Durwasha rishi pahar, Phulwaria, Dhavajadhari pahar, Sambhu bhura mines and Meghatari are some of the important areas of these sanctuary and they are characterized by the different types of tree species which serves as host to the different species of wood rotting fungi. The rich vegetation of different tree species in this area make a dense forest cover and broken tree logs, broken branches, dead/decaying tree trunks and association of ectomycorrhizal tree species act as suitable host for the growth of different types of woody and fleshy poroid fungi.

Figure 1. Location map of Koderma Wildlife Sanctuary, Jharkhand, India.

Survey and collection

Four long and three short duration macrofungal survey tours were undertaken between 2010–2017 in order to collect the macrofungi samples from different locations of the Koderma wildlife sanctuary, Jharkhand. Field photographs of collected samples were captured with the aid of Olympus C 5060 and Canon Powershot A 450 camera. Photographs were captured to show different macro-morphological characters like colour of pileus, surface, hymenophore, colour and colour changes (on bruising), which are the key features determining of systemic position of a species. Samples were collected in brown paper bags. GPS data were recorded with the
help of a Garmin 12 XL machine for almost all the sites. A specific field number was provided for each collection. In the base camp a detailed macro-morphological characterization was undertaken and a number of characters i.e. shape, size colour and colour change of pileus, stipe (if present), hymenophore and context etc. were recorded for each sample and their photographs with scale (showing range of morphological features) were captured. Colour codes mostly follow Kornerup & Wanscher (1978). After recording all important details all the samples were dried in the sun. In the laboratory micromorphological characterization were undertaken from the freehand sections of the dry basidiomata either mounted in lactophenol cotton blue and Melzer’s reagent separately or treated in a mixture of 5% KOH, 1% phloxine and 1% Congo red and then mounted in 30%
glycerol and observed with the help of Olympus CX 41 microscope, in order to observe key micromorphological features for identification of the collected specimens. All the specimens were deposited at herbarium CAL. Herbarium codes follow Thiers (2019). In the present communication a list of species recorded from the study area with their collection site and collection number is given. A provisional key of recorded genera, based on their macro and micro-morphological features is also provided.

RESULTS AND DISCUSSION

Thorough morphological examination of these collections followed by literature survey revealed 88 species belonging to 44 genera and 12 families (Fig. 2). Among the collected species 66 are annual while 22 are perennial. The basidiomata of 15 species are resupinate, nine species are effused reflexed, 19 species are effused reflexed to pileate, and 31 species are pileate while 14 species are found to be stipitate to sub-stipitate or with a tapered base. These fungi grow on a wide range of hosts. Among the collected species 57 were found on dead tree trunks, 17 on living as well as on dead trees, 12 on living trees and 2 near root base or ground.

The members of Polyporaceae, Hymenochaetaeae, Phanerochaetaeae and Ganodarmataeae were found to be most dominant. Polyporaceae (21 genera) appeared to be the most diversified family followed by Hymenochaetaeae (six genera), whereas, the families like Bondarzewiaceae, Ganodermataeae, Gloeophylaceae, Lachnocladiaceae, Schizoporaceae and Serpulaceae are represented by single genera. Similarly, Phellinus Quél and Trametes Fr. are most diverse genera representing ten and nine species respectively. Phyllopora pectinata (Klotzsch) Ryvarden, Ganoderma lucidum (Curtis) P. Karst, Microporus xanthopus (Fr.) Kuntze, Flavodon flavus (Klotzsch) Ryvarden, Hymenochaete rubiginosa (Dicks.) Lév. and Polyporus grammocephalus Berk. are the most common species and widely distributed in the sanctuary area, whereas, Amylosporus campbelli Berk. Ryvarden, Coltricia pyrophila (Wakef.) Ryvarden, Borofutus dhakanus Hosen & Zhu L. Yang are restricted to specific localities.

A provisional key to the genera

Genera with their key morphological characters and species reported from the study area for the particular genera have been provided below.

A synoptic key to the genera

Fresh fruiting bodies fleshy with fertile poroid surface; mycorrhizic with plants ........................................... Group A
Fresh fruiting not as above; saprophytic or parasitic with plants ................................................................. Group B

Morphology based key to the Genera studied in KWS

Group A

1. Fertile surface with large hexagonal pores ................................................................. Borofutus
2. Fertile surface with relatively small pores ................................................................. Indoporus
3. Cap of fruiting bodies smooth ......................................................................................... Boletellus
4. Basidiospores with ridged outer surface ......................................................................... Aureoboletus sp.
5. Basidiospores with smooth outer surface ........................................................................

Group B

1. Basidiomata blacking with KOH ....................................................................................... 2
2. Basidiomata not as above .................................................................................................. 7
3. Basidiomata stalked .......................................................................................................... Coltricia
4. Basidiomata bracketed or crust like ................................................................................... 3
5. Context duplex separated by a thin black line ................................................................... Phyllopora
6. Not as above ....................................................................................................................... 4
7. Hyphal system dimitic ..................................................................................................... Inonotus
8. Incrusted hyphae present near tube mouth ...................................................................... Fascoporia
9. Incrusted hyphae never present near tube mouth ............................................................. 6
10. Young abhymenial surface glabrous; dissepiments relatively thick ............................ Phellinus
11. Young abhymenial surface velutinate; dissepiments relatively thin .............................. Fulvifomes
12. Fresh Basidiomata soft, spongy, pulpy .......................................................................... Serpula
13. Fresh Basidiomata not as above ...................................................................................... 8
14. Fertile surface maize like .................................................................................................. 9
|   | Description                                                                 |
|---|-----------------------------------------------------------------------------|
| 8. | Fertile surface distinctly poroid                                           |
| 9. | Cystidia present                                                            | *Gloeophyllum* |
| 9. | Cystidia absent                                                             |
| 10. | Basidiomata ochraceous when dry, usually larger and highly variable in shaped including fertile surface | *Cellariella* |
| 10. | Basidiomata chalky white when dry, medium size with applanate shaped and lenzitoid fertile surface | *Lenzites* |
| 11. | Basidiospores truncate                                                      |
| 11. | Basidiospores not as above                                                  |
| 12. | Basidiomata resupinate or crust like                                        | *Loweporus* |
| 12. | Basidiomata bracket shaped                                                  |
| 13. | Basidiomata cherry red with KOH                                            | *Pyrophomes* |
| 13. | Basidiomata not as above                                                   |
| 14. | Basidiomata with laccate pilear surface                                    | *Ganoderma* |
| 14. | Basidiomata without laccate pilear surface                                 | *Perenniporia* |
| 15. | Basidiospores spinose                                                       |
| 15. | Basidiospores smooth                                                        |
| 16. | Hyphal system monomitic                                                    |
| 16. | Hyphal system di-trimitic                                                  |
| 17. | Basidiomata without cystidia                                               |
| 17. | Basidiomata with cystidia                                                  | *Ceriporia* |
| 18. | Cystidia smooth                                                             | *Cabalodontia* |
| 18. | Cystidia Incrusted                                                          |
| 19. | Hymenophore with rounded minute pores                                       | *Junghuhnia* |
| 19. | Hymenophore with Hexagonal large pores                                      |
| 20. | Basidiomata resupinate                                                      | *Oxyporus* |
| 20. | Basidiomata effused reflexed                                                | *Leucophellinus* |
| 21. | Hyphal system dimitic                                                       |
| 21. | Hyphal system trimitic                                                     |
| 22. | Generative hyphae simple septate                                            |
| 22. | Generative hyphae clamped                                                  |
| 23. | Fertile surface citrus yellow                                               | *Flavodon* |
| 23. | Fertile surface not as above                                                |
| 23. | Fertile surface yellowish brown on maturity                                 | *Rigidoporus* |
| 23. | Fertile surface violet on maturity                                          | *Nigrofomes* |
| 24. | Skeletal hyphae dextrinoid, spores navicular                                | *Navisperus* |
| 24. | Not as above                                                               |
| 25. | Skeletal hyphae not dark coloured in KOH                                    | *Antrodia* |
| 25. | Skeletal hyphae dark coloured in KOH                                        |
| 26. | Spore >5µ in size                                                           | *Datronia* |
| 26. | Spore <5µ in size                                                           | *Tinctoporellus* |
| 27. | Basidiomata with distinct stalk; conical to fan shaped                      |
| 27. | Basidiomata without any stalk; crust to bracket shaped                       |
| 28. | Stalk base with distinct mycelial pad and pores minute                      | *Microporus* |
| 28. | Stalk base lacking mycelial pad and pores relatively larger in size         |
| 29. | Pores hexagonal                                                            |
| 29. | Pores round to angular                                                     | *Polyporus* |
| 30. | Stalk lateral                                                              | *Favolus* |
| 30. | Stalk central                                                              | *Neofavolus* |
| 31. | Basidiomata resupinate; inseparable from the host; hymenophore lying only on the wall of tubes | *Grammothelae* |
| 31. | Basidiomata and hymenophore not as above                                    |
| 32. | Basidiomata partially or completely red in colour when mature              |
| 32. | Basidiomata brownish to pale yellowish when mature                          |

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33. Entire Basidiomata red in colour ................................................................. Pycnoporus
34. Upper sterile surface of Basidiomata/pileus with red cuticle near base ....................... Earliella
35. Skeletal hyphae pale yellowish to brownish in water or KOH ........................................ 35
36. Skeletal hyphae hyaline in water or KOH .............................................................. 36
37. Fertile surface with hexagonal pores ...................................................................... Hexagonia
38. Fertile surface with round to angular pores ............................................................... Coriolopsis
39. Upper sterile surface of Basidiomata/pileus with erect hairs ........................................... Funalia
40. Upper sterile surface of Basidiomata/pileus with velvety hairs or smooth ....................... Trametes
41. Basidiomata leathery when fresh tough and corky when dried ........................................ Fomitopsis
42. Basidiomata not as above .......................................................................................... Antrodiopsis

Table 1. Inventory of woody and fleshy poroid macrofungi.

| S.N. | Species                                   | Collection Sites                        | Collection Number(s)               |
|------|-------------------------------------------|-----------------------------------------|-----------------------------------|
| 1    | Aureoboletus sp.                          | Chatarbar, Lokai                       | AP 44944, AP 6671, AP 6683, AP 6695 |
| 2    | Boletellus shoreae A. Parihar             | Chatarbar, Lokai                       | AP 6679, AP 6692, AP 6696, AP 6699, AP 6700 |
| 3    | Borofutus dhakanus Hosen & Zhu L. Yang    | Chatarbar, Dhodakhola                  | AP 6675, AP 6694                  |
| 4    | Indoporus shoreae A. Parihar, K. Das, Hembrom & Vizzini | Chatarbar, Lokai | AP 6647, AP 6670, AP 6673, AP 6693, AP 6694, AP 6697, AP 6698 |
| 5    | Amylosporus campbellii (Berk.) Ryvarden   | Meghatari, Taraghati, Khalakhtambhi    | AP 44970, AP 45095, AP 6601      |
| 6    | Antrodia serialis (Fr.) Donk              | Lokai.                                 | AP 6582                           |
| 7    | Fomitopsis feei (Fr.) Kreisel             | Mughalamaran.                          | AP 6659                           |
| 8    | Ganoderma applanatum (Pers.) Pat.         | Basraun.                              | AP 6615                           |
| 9    | Ganoderma colossus (Fr.) C.F. Baker       | Taraghati.                            | AP 6608                           |
| 10   | Ganoderma curtisi (Berk.) Murrill         | Koderma enclosure.                     | AP 45022                          |
| 11   | Ganoderma lucidum (Curtis) P. Karst.      | Mughalamaran, Diplaswa nala, R.F.O. office, Lokai, Meghatari, Koderma enclosure. AP 45060, AP 6574 |
| 12   | Ganoderma stipitatum (Murrill) Murrill    | Meghatari NFR.                        | AP 44966                          |
| 13   | Gloeophyllum striatum (Fr.) Murrill       | Dhodakhola, Meghatari, Phulwaria, Tara ghati. | AP 45085, AP 6530, AP 6559, AP 6639 |
| 14   | Gloeophyllum subferrugineum (Berk.)       | Meghatari.                            | AP 45057                          |
| 15   | Coltricia pyrophila (Wakef.) Ryvarden     | Dhavjadhari Pahar, Khalakhtambhi, Meghatari. | AP 44948, AP 45024, AP 45037      |
| 16   | Fulvifomes darissimus (Lloyd) Bondartsev & S. Herrera | Meghatari, Philulwariya. | AP 6551, AP 6567                  |
| 17   | Fulvifomes glaucescens (Petch) Y.C. Dai   | Meghatari.                            | AP 44965, AP 45026               |
| 18   | Fulvifomes inermis (Ellis & Everh.) Y. C. Dai | Meghatari. | AP 45052, AP 45071              |
| 19   | Fuscoporia callimorpha (Lév.) Groppo, Log-Leite & Góes-Neto | Sugi point point. | AP 6555                          |
| 20   | Fuscoporia rhabarbarina (Berk.) Groppo, Log-Leite & Góes-Neto | Chatarbar. | AP 6656                          |
| 21   | Fuscoporia senex (Nees & Mont.) Ghob.-Nejh. | Chatarbar. | AP 6655                          |
| 22   | Inonotus luteombrinus (Romell) Ryvarden   | Dhodakhola.                           | AP 45081                          |
| 23   | Inonotus shorae (Wakef.) Ryvarden         | Near NH-31.                           | AP 44980                          |
|   | Species                                      | Localities                                      | Accession Nos.                  |
|---|---------------------------------------------|-------------------------------------------------|--------------------------------|
| 24. | Phellinus adamantinus (Berk.) Ryvarden       | Koderma enclosure, Near taraghati.              | AP 44961, AP 6690              |
| 25. | Phellinus allardii (Bres.) S. Ahmad         | Koderma enclosure, Meghatari, Basraun.          | AP 44955, AP 6545, AP 6610     |
| 26. | Phellinus badius (Cooke) G. Cunn.           | Meghatari, Khalakhtambhi, Tara ghati.           | AP 45058, AP 6511, AP 6543, AP 6607, AP 6686 |
| 27. | Phellinus crocatus (Fr.) Ryvarden           | Meghatari.                                      | AP 6508                        |
| 28. | Phellinus fastuosus (Lév.) S. Ahmad         | Chatarbar.                                      | AP 44901, AP 44924, AP 44937, AP 44982, AP 45018, AP 45029, AP 45031, AP 6588 |
| 29. | Phellinus gilvus (Schwein.) Pat.            | Mughlamaran, Phulwariya, Basraun, Koderma enclosure, Chatarbar, Koderma NRF. | AP 44901, AP 44924, AP 44937, AP 44982, AP 45018, AP 45029, AP 45031, AP 6588 |
| 30. | Phellinus meshrolii (Murrill) Ryvarden      | Meghatari.                                      | AP 6620, AP 45061              |
| 31. | Phellinus merrillii (Murrill) Ryvarden      | Meghatari, Chatarbar.                           | AP 45050, AP 6619              |
| 32. | Phellinus rhytiphloeus (Mont.) Ryvarden     | Basraun.                                        | AP 6612                        |
| 33. | Phellinus rimosus (Berk.) Pilát              | Jamsoti, Dhodhakhola.                          | AP 6645, AP 6691               |
| 34. | Phellinus sp.                              | Mughlamaran.                                    | AP 6664                        |
| 37. | Phylloporia pectinata (Klotzsch.) Ryvarden | Mughlamaran, Chatarbar, Koderma enclosure, Koderma NRF, Phutlaiya nala, Chatarbar, Lokai. | AP 44908, AP 44913, AP 44923, AP 44943, AP 44945, AP 45019, AP 45045, AP 45056, AP 6514, AP 6552, AP 6554, AP 6571, AP 6580 AP 6604, AP 6616, AP 6625, AP 6650 |
| 38. | Phylloporia ribis (Schumach.) Ryvenden      | Meghatari, Jamsoti nala, Khalakhtambhi.         | AP 45038, AP 6538, AP 6539, AP 6557, AP 6590, AP 6666 |
| 39. | Rigidoporus linearis (Pers.) Ryvarden       | Meghatari.                                      | AP 6516                        |
| 40. | Rigidoporus vincit (Berk.) Ryvarden         | Phulwaria, Chatarbar.                           | AP 6558, AP 6630               |
| 41. | Cabalodontia subcretacea (Litsch.) Piątek   | Tara ghati.                                     | AP 6688                        |
| 42. | Flavodon flavus (Klotzsch.) Ryverden        | Meghatari, Khalakhtambhi, Chatarbar, Taraghati. | AP 44976, AP 45053, AP 45077, AP 6529, AP 6534, AP 6602, AP 6624, AP 6635 |
| 43. | Junghuhnia carneola (Bres) Rajchenb.        | Meghatari.                                      | AP 6523, AP 6660, AP 6681     |
| 44. | Junghuhnia nitida (Pers.) Ryvarden          | Mughlamaran.                                    | AP 6631                        |
| 45. | Junghuhnia rhizomorpha H. S. Yuan & Y.C. Dai | Meghatari, Chatarbar.                           | AP 6513, AP 6669               |
| 46. | Antrodiella fissiliformis (Pilát) Gilb. & Ryvarden | Meghatari, Taraghati.                          | AP 45040, AP 6597              |
| 47. | Ceriporia xylostomatoides (Berk.) Ryvarden  | Near Koderma rest house.                        | AP 6501                        |
| 48. | Cellaricella acuta (Berk.) Zmitr. & V. Malysheva | Mughlamaran, Dhodhakhola, Koderma enclosure.   | AP 44903, AP 45092, AP 6576    |
| 49. | Coriolopsis brunneoleuca (Berk.) Ryvarden   | Meghatari.                                      | AP 45054, AP 45062, AP 45072, AP 45074, AP 45075, AP 6528, AP 6684 |
| 50. | Coriolopsis telfairii (Klotzsch) Ryvarden   | Phulwaria.                                      | AP 6566                        |
| 51. | Datronia mollis (Sommerf.) Donk              | Meghatari.                                      | AP 6525                        |
| 52. | Datronia scutellata (Schwein.) Gilb. & Ryvarden | Koderma enclosure, Khalakhtambhi.               | AP 44957, AP 6663              |
| No. | Species Name | Collector(s) | Location(s) |
|-----|--------------|--------------|-------------|
| 53. | *Earliella scabrosa* (Pers.) Gilbertson and Ryvarden | Phutlaiya nala, Meghatari, Near Koderma rest house, Baghitaan Road, Dhodhakhola, Phulwaria, Lokai. | AP 44934, AP 44969, AP 44972, AP 44981, AP 44985, AP 45003, AP 45059, AP 45063, AP 45086, AP 6505, AP 6519, AP 6536, AP 6547, AP 6549, AP 6553, AP 6565, AP 6581 |
| 54. | *Favolus tenuiculus* P. Beauv. | Dhodhakhola. | AP 45080 |
| 55. | *Funalia caperata* (Berk.) Zmitr. & V. Malyshева | Chitarpur. | AP 6617 |
| 56. | *Funalia polyzona* (Pers.) Niemelä, in Härkönen, Niemelä & Mwasumbi | Lokai, Meghatari. | AP 6585, AP 6685 |
| 57. | *Funalia sanguinaria* (Klotzsch) Zmitr. & V. Malysheva | | |
| 58. | *Grammothele delicatula* (Henn.) Ryvarden, in Ryvarden & Johansen | Dhodhakhola. | AP 45091 |
| 59. | *Hexagonia tenuis* (Hook.) Fr. | Mughalamaran, Meghatari, Dhodhakhola, Taraghati. | AP 44979, AP 45041, AP 45049, AP 45068, AP 45069, AP 45070, AP 45089, AP 6596, AP 6638 |
| 60. | *Lenzites elegans* (Fr.) Pat. | Meghatari, Chatarbar (Near NIC). | AP 6521, AP 6587 |
| 61. | *Lenzites stereoides* (Fr.) Ryvarden | Deoghar. | AP 44941 |
| 62. | *Lenzites sp.1* | Meghatari. | AP 6524 |
| 63. | *Loweporus tephroporus* (Mont.) Ryvarden | Mughalamaran, Koderma NRF, Near Forest rest house, Lokai, Koderma enclosure, Meghatari, Phulwaria. | AP 44909, AP 44920, AP 44984, AP 45011, AP 45017, AP 45023, AP 45030, AP 45039, AP 6550, AP 6560 |
| 64. | *Microporus xanthopus* (Fr.) Kuntze. | Koderma enclosure, Meghatari, Mughalamaran. | AP 44962, AP 44963, AP 44964, AP 45061, AP 6665, AP 6666 |
| 65. | *Navisporus floccosus* (Bres.) Ryvarden | Near NH-31. | AP 6503 |
| 66. | *Neofavolus alveolaris* (DC.) Sotome & T. Hatt. | Meghatari. | AP 44967 |
| 67. | *Nigrofomes melanoporus* (Mont.) Murrill | Tara Ghati. | AP 44967, AP 6632 |
| 68. | *Oxyporus latemarginatus* (Durieu & Mont.) Donk | Koderma NRF. | AP 44921 |
| 69. | *Oxyporus vellereus* (Berk. & Broome) Roy & De | Khalakhtambhi. | AP 6662 |
| 70. | *Perenniporia medulla-panis* (Jacq.) Donk | Meghatari. | AP 6677, AP 6678. |
| 71. | *Perenniporia ochroleuca* (Berk.) Ryvarden | Basraun, Meghatari. | AP 44929, AP 45048. |
| 72. | *Polyporus grammacephalus* Berk. | Basron, Dhodhakhola, Meghatari, Koderma enclosure, Koderma NRF, Phutlaiya nala, Chatarbar. | AP 44928, AP 44933, AP 44971 , AP 44987, AP 45033, AP 45049, AP 45065, AP 45076, AP 45087, AP 45090, AP 6512, AP 6614, AP 6618, AP 6621 |
| 73. | *Polyporus tricholoma* Mont. | Meghatari. | AP 6677, AP 6678. |
| 74. | *Pycnoporus sanguineus* (L.) Murrill | Chatarbar. | AP 6672 |
| 75. | *Pyrophomes albomarginatus* (Zipp. ex Lév.) Ryvarden | Koderma enclosure, Nh-31 Jamsoti, Chatarbar. | AP 44991, AP 6591, AP 6622 |
| 76. | *Tinctoporellus epimillitus* (Berk. & Broome) | Meghatari. | AP 6682 |
| 77. | *Trametes cingulata* Berk. | Koderma enclosure, Meghatari, Baghitan road, Khalakhtambhi, Dhodhakhola. | AP 44952, AP 44975, AP 45008, AP 45025, AP 45044, AP 45088 |
| 78. | *Trametes cotonea* (Pat. & Har.) Ryvarden | Chatarbar. | AP 6628 |
| 79. | *Trametes lactinea* (Berk.) Sacc. | Meghatari. | AP 45066 |
80. Trametes leonina (Klotzsch) Imazeki
   Meghatari, Mughalamaran.
   AP 6540, AP 6657

81. Trametes menziesii (Berk.) Ryverden
   Jamsoi, Mughalamaran, Khalakhtambhi, Taraghati.
   AP 6594, AP 6561, AP 6599, AP 6687

82. Trametes pubescens (Schumach.) Pilát
   Dhodhakhola, Meghatari.
   AP 44932, AP 44973

83. Trametes trogii Berk.
   Meghalamaran, Jamsoti, Mughalamaran, Khalakhtambhi, Taraghati.
   AP 45094

84. Trametes variegatea (Berk.) Zmitr., Wasser & Ezhov
   Meghalamaran, Jamsoti.
   AP 44906, AP 6526, AP 6589

85. Trametes vespacea (Pers.) Zmitr., Wasser & Ezhov
   Lokai.
   AP 45009

86. Trametes villosa (Sw.) Kreisel
   Meghatari.
   AP 6537, AP 6572

Schizoporaceae Jülich
87. Leucophellinus hobsonii (Berk. ex Cooke) Ryvarden
   Baghitaan road, Lokai.
   AP 45007, AP 6586

Serpulaceae Jarosch & Bresinsky
88. Serpula similis (Berk. & Broome.) Ginns.
   Dhawajadhari pahar, Koderma NRF, Mughalamaran.
   AP 44925, AP 45032, AP 6658

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