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Mushrooms of Gujarat

Springer

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Foreword

I am very glad to write an introductory message to *Mushrooms of Gujarat*, a book with compilation of most of the mushroom family with their representative members found in the region of Gujarat, India.

India is one of the 17 mega diverse countries. Gujarat has 4 out of 10 biogeographic zones in India and covers 6 major ecosystems. The state is very rich in biodiversity, owing to varied biogeographic zones. Floral and faunal diversity of Gujarat is well documented. However, diversity among mushrooms remains neglected. Mushroom is a macro fungus with a distinct fruiting body. Mushrooms have a wide range of importance. Wild mushrooms have a significant biological and economic impact. However, their importance in bioremediation of toxic compounds such as dyes has also been demonstrated. Some mushrooms are edible with high nutritional values while some are poisonous. Mushrooms have also been shown to have medicinal and anticancer properties. Huge diversity exists among mushrooms not only in terms of their morphology but also in terms of their importance. Mushrooms have very high medicinal value and there are several reports of anticancer properties of mushroom extracts. Despite being so important, they have been neglected for years.

Looking into the importance of mushrooms and lack of systematic documentation of mushrooms of Gujarat, we have come up with this unique collection *Mushrooms of Gujarat*. This book is an attempt to collect and represent the wide diversity of mushrooms in the region of Gujarat. This book has 20 different chapters covering 20 different families of mushrooms. Each chapter includes their classification of common names, microscopic features as well as their biological importance.

I am delighted to recognize valuable and precious efforts of Dr. Madhvi Joshi, Dr. Poonam Bhargava, Meghna Bhatt, Dr. Manju Shri, Shaad Kadri, Dr. Apurva Singh Puwar, and Dr. C. G Joshi who collaboratively brought out an excellent and documented this book *Mushrooms of Gujarat* through the support from springer

nature. I strongly believe that this book will be very useful for the students, researchers, farmers as well as stakeholders.

Gandhinagar, Gujarat, India Snehal Bagatharia

Preface

Mushrooms are of great importance in the field medicine, nutrition, or food. Farming of mushrooms is an exciting livelihood opportunity. Mushroom farming has wide application from enhanced nutrition to medicine to health.

Several wild and cultivated mushrooms are eaten in many countries including India. However, it is important to recognize the mushroom before consuming. This is because several mushrooms produce deadly toxins.

Several mushrooms are also sources of bioactive substances like antibacterial, antifungal, antiviral, anticancer, and so on. Ethnomedicine has exemplified the use of such mushrooms from ancient times. The tribal belt has been using the mushrooms with their traditional knowledge since long.

The State of Gujarat in India is filled with an immense diversity of fungal flora which have been studied and explored time and again. We found that the taxonomic studies of mushrooms have not been supplemented with molecular identifications. In that case, it becomes difficult at times to correctly identify.

In this book, an attempt has been made to identify mushrooms at the morphological level and supplement the identification with the molecular barcoding technique.

We hope that this book will not only provide a better understanding of the fungal diversity in Gujarat but also trigger new interest in fungal identification. We have tried our level best to make this book lucid, to the point, and easy to understand. This book will be an excellent field manual and serve the purpose of molecular level identification of the mushrooms.

Gandhinagar, Gujarat, India — Madhvi Joshi
Gandhinagar, Gujarat, India — Poonam Bhargava
Ahmedabad, Gujarat, India — Meghna Bhatt
Gandhinagar, Gujarat, India — Manju Shri
Gandhinagar, Gujarat, India — Shaad Kadri
Gandhinagar, Gujarat, India — C. G. Joshi

Acknowledgments

Madhvi Joshi

I am thankful to my Director, Prof. C. G. Joshi for the support and encouragement. I am thankful to the co-editors and GBRC staff for putting in their efforts to bring shapes to the book.

Poonam Bhargava

I express my sincere thanks to my Director, Prof. C. G. Joshi and Joint Director, Dr. Madhvi Joshi for rendering support to write this book. I am thankful to Dr. Snehal Bagatharia for his encouragement during the process of book formulation. I am thankful to the editors Meghna Bhatt and Dr. Manjushree whose meticulous work has resulted in the form of this book.

I thank my family for the continuous support in my work and also thank the Almighty for giving me the strength to contribute to the book.

Meghna Bhatt

Firstly, I am thankful to the Almighty and my parents for extending their moral support and standing by my side during the odds, my husband whose love and encouragement enabled me to complete this work efficiently.

I deem it a privilege to express my sincere thanks to Dr. Madhvi Joshi, for giving me an opportunity to work on this project and providing inspiration and enrichment in my growth. I express my gratitude and sincere thanks to Dr. Snehal Bagatharia for his unconditional support and valuable time. I also express sincere thanks to Dr. Poonam Bhargava for her incompatible patience in guiding me through the project.

Shaad Kadri

First and foremost, I would like to thank my parents for providing me all the education and a medium to achieve the skills that I used in my small contribution to this book. Secondly, I would like to thank Prof. C. G. Joshi, Dr. Madhvi Joshi for being calm and supportive throughout. Dr. Snehal Bagatharia has always boosted my confidence by appreciating my small achievements and I cannot express in words as to what change this has brought about in me. I would like to thank Dr. Poonam Bhargava, a mentor in my early career, a very friendly and supportive mentor for me.

I would like to thank the Almighty for giving us the strength and skills to fulfill this task.

Hope this book spreads knowledge as the role of a scientist is to spread knowledge by whatever means.

Manju Shri

I would like to express my sincere thanks and gratitude to my Director, Prof. C. G. Joshi, Joint Director, Dr. Madhvi Joshi and Dr. Poonam Bhargava who gave me the opportunity to work on this wonderful book.

I am very thankful to my family for their continuous support. I would also like to thank the Almighty for providing me the strength.

C. G. Joshi

I am thankful to the Editors who have worked relentlessly for the completion of the book. I am thankful to all the co-editors for their support.

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About the Editors

Madhvi Joshi is currently working as Scientist D and Joint Director at Gujarat Biotechnology Research Centre, Department of Science and Technology, Government of Gujarat. She received her Ph.D. in Bioscience in 2011 at Saurashtra University, Rajkot, Gujarat. Her research primarily focuses on translational biotechnological research leading to product/ process/ prototype development. Her major research interest areas include microbial genomics, clinical genomics for rare and inherited diseases, and the development of DNA-based diagnostics for one health. She has more than 12 years of research experience and guided 9 M.Phil. students. She has published 17+ articles in peer-reviewed journals and filed patents. She is in charge of the third largest microbial repository in the country.

Poonam Bhargava is currently working as Principal Scientific Officer at Gujarat Council on Science and Technology (GUJCOST), Gandhinagar, Gujarat.

She is looking into the outreach activities and promotion of science and technology in the state.

Earlier she worked as a scientist in Gujarat Biotechnology Research Centre, Gandhinagar, Gujarat, India. During her tenure as a Scientist, she was into research on next-generation sequencing, microbiology, and upscaling of microbial cultures.

She is also the recipient of Young Scientist Award of DST, Government of India, where she worked on the "X-Ray Crystallographic studies of alr0803."

She completed her Ph.D. from Banaras Hindu University, Varanasi, India, in 2007 under the able guidance of Prof. L.C. Rai. Her Ph.D. work included proteomic analysis of cyanobacterial stress response.

She has 30 international publications and two books to her credit.

Meghna Bhatt has worked with Gujarat State Biotechnology Mission, Gujarat, India, as Research fellow. During this time, she acquired hands-on experience on DNA extraction, DNA banking, molecular identification, cryopreservation, and maintenance of microbial cultures in live form. She has completed her M.Phil. in Biotechnology under the guidance of Dr. Madhvi Joshi. Her M. Phil. work was focused on DNA barcoding of wild mushrooms of Gujarat. She has extensive teaching experience in high school and college level.

She has three international publications and two books to her credit.

Shaad Kadri worked as Senior Research Fellow at Gujarat Biotechnology Research Centre (GBRC). He has worked as a research fellow in the first ever biotechnology service providing unit where he used to deal with industries and academic people and provided biotechnology services to them. He also worked in a project that dealt with finding biomarkers for Indian Hereditary Breast and Ovarian Cancer patients. He completed his Masters from Charotar University of Science and Technology (CHARUSAT).

Manju Shri received her Ph.D. in Sciences, from Academy of Scientific and Innovative Research, (National Botanical Research Institute, Lucknow) in 2014. Her research primarily focuses on heavy metal stress in rice plants. Her major research interest areas include plant biotechnology, tissue culture, and heavy metal stress in rice. She has more than 10 years of research experience.

She has published 15+ articles in peer-reviewed journals. Earlier she worked as a Research Associate in Gujarat Biotechnology Research Centre, Gandhinagar, Gujarat, India. She had also worked as DST Young Scientist (SERB-funded project) at Central University of Gujarat, Gandhinagar.

C. G. Joshi presently serves as Director, Gujarat Biotechnology Research Centre, Department of Science and Technology, Government of Gujarat. Earlier, he worked as Professor of Animal Biotechnology at the Anand Agricultural University, Anand, Gujarat. He has completed his Ph.D. in 1995 from Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu. He has more than 30 years of research experience in microbiology and molecular biology. His research interests lie in animal genomics, metagenomics, and transcriptomics. He has published 150+ articles in peer-reviewed journals, 12 complete genomes, 5 patents, and 1 book. He serves as a member of editorial board and reviewer of a number of peer-reviewed journals.

Introduction

India is one of the 17 Megadiverse Countries in the World having 12% of the global plant wealth. In India there are over 30,000 species of higher plants belonging to 174 natural orders. There are over 600 species of Pteridophytes including ferns. Of the higher plants, there are 11,124 species of dicots with 1831 genera. The family Orchidaceae is the largest family of lowering plants, contributing nearly 1700 plant species. Over 23,000 species of fungi are reported in India.

Gujarat has four out of ten biogeographic zones in India and covers six major ecosystems, namely forests, deserts, wetlands, coastal and marine, grasslands and agricultural lands. Floral and faunal diversity of Gujarat is well documented. However, mushrooms remain neglected. Mushrooom is a macro fungus with a distinct fruiting body. Wild mushrooms have a significant biological and economical impact. The texture and pleasant flavor of certain mushrooms make them a delicacy for mankind. Mushrooms have a very high medicinal value as well with several reports of anticancer properties of mushroom extracts.

Our data on mushrooms spans collections of three consecutive years. The collected mushrooms were identified morphologically as well as at the molecular level using ITS as a marker. 942 specimens covering 316 species were submitted to BOLD. Of these the macrofungal diversity covered around 200 species. Some of the collected mushrooms were not only edible but were found to have nutraceutical as well as industrial value.

While the joy of collecting the mushrooms was tremendous and identifying them was all the more interesting. The morphology study was followed by the molecular barcoding.

Looking into the importance of mushrooms and lack of systematic documentation of mushrooms of Gujarat we have come up with this unique collection “Mushrooms of Gujarat, India”.

In this book 200 mushrooms with detailed profiles of all the species. Each profile includes information on macro-morphology, molecular characterization, application and a color photograph of the same. This is an attempt to catalogue the biodiversity

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
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of the mushrooms found in Gujarat. It covers species of mushrooms from 20 different families of mushrooms.

Hymenochaetaceae

Hymenochaetaceae is one of the largest families of basidiomycetes. The major habitat of these fungi is wood. The members are generally parasitic and are known to cause white rot. In the present survey we could locate five species in the Gujarat state of India i.e. *Fulvifomes fastuosus, Inonotus porrectus, Phellinus bicuspidatus, Phellinus merrillii, Phellinus robiniae*of the family which are reported in the below text. Overall there are reports of 27 genera and over 500 species (Kirk et al. 2008). In general these fungi are yellowish to reddish brown and are generally lignicolous bracket type. One prominent example of this fungus is **Chaga Mushroom** (*Inonotus obliquus*)**. This is one of the non-toxic fungus and has a lot of medicinal property.**

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https://doi.org/10.1007/978-981-16-4999-8_2

Fulvifomes Fastuosus

Identification
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Hymenochaetales
Family: Hymenochaetaceae
Genus: Fulvifomes
Species: fastuosus

Collection Details
Collection date: 24-Aug-2014
Location: Waghai Botanical Gardern
GPS: N 20.822 E 73.319
Collected by: Meghna Bhatt, Ishita Joshi, Hemal Ram, Rinni Raval

Unique IDs
BAB ID: BAB 4916
Accession No: KJ670298
Process ID: MGEN514-15

Common name: No common name has yet been provided
Ecology: woodlands

Cap: The Pilei are applanate, size of the pileus 4.5 cm × 2 cm.
Stem: Absent
Flesh: Hard Woody or brown
Odor and taste: No odour or taste when dry
Microscopic features: Basidiospores are sub-globose, thick walled, yellowish brown and smooth with the dimensions of 4.49 µm as mean spore width.
Edibility: Inedible
Season: leaf and litters of the rainy season
Importance: Ergone a cytotoxic biochemical isolated from *Fulvifomes fastuosus* has anticancerous activity and it can be used for the treatment of rhabdomyosarcoma a rare type of cancer which originate in soft tissues.
Reference: https://www.researchgate.net/publication/270163133_A_new_record_of_Fulvifomes_fastuosus_from_Sri_Lanka, https://www.nature.com/articles/s41598-018-29046-w, https://bmccomplementmedtherapies.biomedcentral.com/articles/10.1186/s12906-016-1471-8

Inonotus Porrectus

Identification
Phylum: Basidiomycota

Class: Agaricomycetes
Order: Hymenochaetales
Family: Hymenochaetaceae
Genus: Inonotus
Species: Porrectus

Collection Details
Collection date: 24-Aug-2014
Location: Near infocity
GPS: N 23.221 E 72.637
Collected by: Sruthi Thoota, Meghna Bhatt, Ishita Joshi

Unique IDs
BAB ID: BAB 4942
Accession No: KR155032
Process ID: MGEN606-15

Common name: No common name has yet been provided
Ecology: dead hardwoods
Cap: Pilei circular to dimidiate, single or imbricate, 20–35 mm wide, up tp 40 mm broad and 10–30 mm thick; pilear surface bright yellowish brown, zonate, finely tomentose, margin acute to rounded, concolorous.
Stem: Absent
Flesh: Multizonate pilear surface, absence of any setigerous elements and smaller spores, bright golden yellow, lustrous context and darker purplish brown tube layer are the distinguishing characters of this species
Odor and taste:
Microscopic features: Basidiocarps annual, flbelliform or substipitate with a narrowed base, pilei circular to dimidiate, single or imbricate, 20–35 mm wide, up tp 40 mm broad and 10–30 mm thick; pilear surface bright yellowish brown, zonate, finely tomentose, margin acute to rounded, concolorous, staining dark brown on bruising and on drying; pore surface dull purplish brown, pores circular to 815 angular 5–6 per mm, dissepiments thin, entire tube layer purplish brown, decurrent on the narrowed base, 2–5 mm deep; context golden brown, lustrous, zonate, firm, fibrous brown to dark purplish brown, up to 20 mm thick.
Edibility: Edible
Season: Rainy season
Importance: High antioxidant value
Comments: Closely related I. tenuicarnis has azonate pilear surface, cinnamon-brown context, larger spores and pores
Reference: https://www.researchgate.net/publication/269953415_The_genus_Inonotus_and_its_related_species_in_India, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5124230/

Phellinus Bicuspidatus

Identification
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Hymenochaetales
Family: Hymenochaetaceae
Genus: Phellinus
Species: bicuspidatus

Collection Details
Collection date: 24-Aug-2014
Location: Indroda
GPS: N 23.19 E 72.654
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt

Unique IDs
BAB ID: BAB 4960
Accession No: KR155050
Process ID: MGEN624-15

Common name: No common name has yet been provided
Ecology: Grows on wood

Stem: Sessile
Flesh: Tough, Woody Brown in colour
Odor and taste:
Microscopic features: Basidiocarp effuse and conforming to the surface of the substratum, perennial, 10–15 mm thick; margin narrow, fuscus brown (near 5.0YR3/4), darker than pore surface, matted tomentose; pore surface dull ferruginous brown (near 7.5Y4/4); context 1–5 mm thick, ferruginous brown, infrequently with black layers; pores round to somewhat angular, sometimes elongate, 5–7 per mm, dissepiments entire; tubes 1–3 mm long, tube layers not distinclty stratified, older tubes appearing stuffed with white mycelium. Hyphal system monomitic. Clamps absent throughtout. Hyphae of context 2.5–4 um diam, thick-walled, occasionally branched, dark ferruginous brown; tramal hyphae continuous and concolorous with the context, 1.5–2.5 um diam, septate; subhymenial hyphae 2 um diam, septate, brancehd, hyaline; basidia 8–11 × 4.5–6 um, clavate, 4-sterigmate; basidiospores 4–6 × 3–4 um, broadly ellipsoid and walls slightly depressed adaxially near the apiculum, thinwalled, hyaline, inamyloid, acyanophilous; setae 16–24(−27) × 8–14 um, projecting 8–10 um above the hymenial surface, short ventricose, often bicuspidate; plectenchymatous tissue comprising black layers in context and zone lines in wood substarte, hypal elements swollen and contorted, tightly interwoven, branched, dark ferruginous brown, individual components difficult to separate.
Edibility: Inedible
Season: annual
Importance: It is associated with white rot in oak trees in the United States
Comments: The basidiocarp of this sp., is similar to those of P. johnsonianus (Murr.) Ryv. & P. spiculousus (Campbell et Davidson) Niemela in color, pore size, and hypal dimenssions.
Reference: Lombard F, Larsen M (1985) Phellinus bicuspidatus (Hymenochaetales, Hymenochaetaceae), a new species associated with a white sap rot of oak in Louisiana. Mycologia 77(1): 55–61. doi:10.2307/3793248

Phellinus Merrillii

Identification
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Hymenochaetales
Family: Hymenochaetaceae
Genus: Phellinus
Species: merrillii

Collection Details
Collection date: 24-Aug-2014
Location: Ch road, Gandhinagar
GPS: N 23.202 E 72.641
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt

Unique IDs
BAB ID: BAB 4968
Accession No: KR155058
Process ID: MGEN631-15

Common name:
Ecology: Found on the bark of the trees

Cap: up to 5 cm wide, 5 cm thick, and 10 cm long
Flesh: yellowish to brown, hard
Microscopic features: globose, yellow to brown basidiospores,
Season: annual
Importance: Phellinus merrillii (EPM) has chemopreventive potential against liver carcinogenesis.
Comments: These are sold under the name Phansomba, This includes other species as well such as fastuosus
Reference: Chang HY, Peng WH, Sheu MJ, et al. (2007) Hepatoprotective and Antioxidant Effects of Ethanol Extract from Phellinus merrillii on carbon tetrachloride-induced liver damage. Am J Chin Med 35(5):793–804. doi:10.1142/S0192415X07005272

Phellinus Robiniae

Identification
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Hymenochaetales
Family: Hymenochaetaceae

Genus: Phellinus
Species: robiniae

Collection Details
Collection date: 24-Aug-2014
Location: Ch road, Gandhinagar
GPS: N 23.23 E 72.658
Collected by: Sruthi Thoota, Meghna Bhatt, Ishita Joshi

Unique IDs
BAB ID: BAB 5118
Accession No: KR349652
Process ID: MGEN700-15

Common name: Cracked cap polypore
Ecology: Parasitic on the heartwood of living trees in the genus Robinia (primarily black locust and New Mexican locust)--and saprobic on the dead wood of these trees; occasionally reported on other hardwoods
Cap: Up to 40 cm across and 20 cm deep; more or less semicircular, irregularly bracket-shaped, or kidney-shaped; flattened-convex, becoming convex, then more and more hoof-shaped with age; sometimes finely velvety, especially when young or along the margin; wi
Stem: Absent.
Flesh: Reddish brown to orange-brown or yellow-brown; woody.
Odor and taste: Fragrant when fresh
Microscopic features: Spores are smooth in texture, 5–6 × 4.5–5 μ in size; generally oval to subglobose in shape; reddish brown when dipped in KOH; inamyloid. Setae is normally absent. Hyphal systems are dimitic.
Edibility: Inedible
Season: rainy season
Reference: (Murrill, 1903) A. Ames, 1913. (Saccardo, 1905; Overholts, 1953; Smith, Smith & Weber, 1981; Gilbertson & Ryvarden, 1987.) Herb. Kuo 10220404, 04190702, 02121001.

Schizoporaceae

Schizoporaceae are saprobic. It cause white rots of standing and fallen wood of coniferous and broadleaved trees. It is estimated that the family comprises of 14 genera and 109 species. In this one species of Oxyspora corticola could be located. Hyhodontia and Schizospora are two large genera of the family. For Oxyspora Oxyporaceae has also been propsosed.

Oxyspora Corticola

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https://doi.org/10.1007/978-981-16-4999-8_3

Identification
Phylum: Basidiomycota.
Class: Basidiomycetes.
Order: Hymenochaetales.
Family: Schizoporaceae.
Genus: Oxyporus.
Species: corticola.

Collection Details
Collection date: 24-Aug-2014.
Location: Waghai B.G.
GPS: N 20.46 E 73.29.
Collected by: Ankur Patel.

Unique IDs
BAB ID: BAB 4561.
Accession No: KR154931.
Process ID: MGEN382-14.

Ecology: It is a plant pathogen and causes white rot.
Flesh: The crust is attached to the surface and has a fibrous to woody structure. The flesh is cream and the hyphal system is monomitic.
Odor and taste:
Microscopic features: Basidiospores are spherical, thick-walled, smooth, hyaline, and are negative to Melzer's reagent. The pore surface is light yellowish. The pores are isodiametric, large and angular.
Edibility: Non-edible and pathogenic.
Importance: etiologic agent of fungal osteomyelitis.
Reference: https://doi.org/10.3109/13693780902962267

Auriculariaceae

Auriculariaceae were earlier known as "heterobasidiomycetes" or "jelly fungi". They have jelly like basidiocarps (fruit bodies). Around 100 species are known worldwide. However, in the region under study we could find only one species i.e. *Auriculariapolytricha*. They mostly grew in dead wood. Several species are commercially cultivated mainly in China.

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https://doi.org/10.1007/978-981-16-4999-8_4

Auricularia Polytricha

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Auriculariales.
Family: Auriculaceae.
Genus: Auriculara.
Species: polytricha.

Collection Details
Collection date: 25-Aug-2014.
Location: Wood depo, Gandhinagar.
GPS: N 23.245 E 72.671.
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 5206.
Accession No.: KT186177.1.
Process ID: MGEN764-15.

Common name: wood ear mushroom.

Ecology: Usually it grows as a weak parasite to saprophyte. It occurs in clusters growing on tree trunk and dead branches. The general habitat for A. polytricha is moist-deciduous to wet evergreen forests of the Western Ghats.

Cap: Diameter of Pileus is normally 7–40 mm, shape is convex, color ranges from dark brown to dark lilac and compactly pilose. Texture of hymenium is smooth and color is dark lilac. Stipe 5–20 × 4–10 mm, shape is cylindrical. However, becomes compressed and is of same color as pileus.

Gills: It has no gills.

Stem: The stem is absent or rudimentary.

Flesh: Translucent flesh with a gelatinous texture.

Odor and taste: unpleasant odour, mild flavour.

Microscopic features: The spores are long and sausage shaped, ranging in size from 16 to 18 micrometres (μm) long by 6–8 μm thick. The spores themselves are white, cream or yellowish, and are hyaline. The spores can sometimes be seen in a whitish mass on the underside of the fruit body. The species has elongated cylindrical basidia with three transverse septa (internal cross-walls dividing the hyphae). Basidia 60–72 × 4–7.5 μm; sterigmata lateral, well developed, 3–4.5 μm long. Spores smooth, hyaline, reniform to allantoid, 14–18 × 6–8 μm, guttulate. Hairs on the fruit body are from 85 to 100 μm in length, and 5 to 6 μm in diameter. They are hyaline, lack a central strand and have rounded tips. They do not grow in dense tufts.

Edibility: Choice, Edible particulary in chinese cooking.

Season: April–September (available throughout the year in dried form).

Reference: https://www.google.com/search?ei=p5GxXN3AJ-fbz7sPgKSrsAE&q=auricularia+polytricha+microscopic+features&oq=auricularia+polytricha+micro&gs_l=psy-ab.1.0.35i39.51851.52817..54770...0.0..0.173.797.0j5.....0....1..gws-wiz....0i71j0j0i22i30.-Eldr_MpMlc#

Dacrymycetaceae

Dacrymycetaceae contains members which are saprophytic fungi. They are characterized by gelatinous fruiting bodies. The fruiting bodies have different shapes and sizes. They have abifurcate basidium which lacks septa. One species i.e. Dacryopinax spathularia could be spotted in Gujarat, India. They have 9 genera and 101 species.

Dacryopinax Spathularia

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https://doi.org/10.1007/978-981-16-4999-8_5

Identification
Phylum: Basidiomycota.
Class: Dacrymycetes.
Order: Dacrymycetales.
Family: Dacrymycetaceae.
Genus: Dacryopinax.
Species: spathularia.

Collection Details
Collection date: 24-Aug-2014.
Location: Wood Depo.
GPS: N 23.246 E 72.671.
Collected by: Sruthi Thoota, Meghna Bhatt, Ishita Joshi.

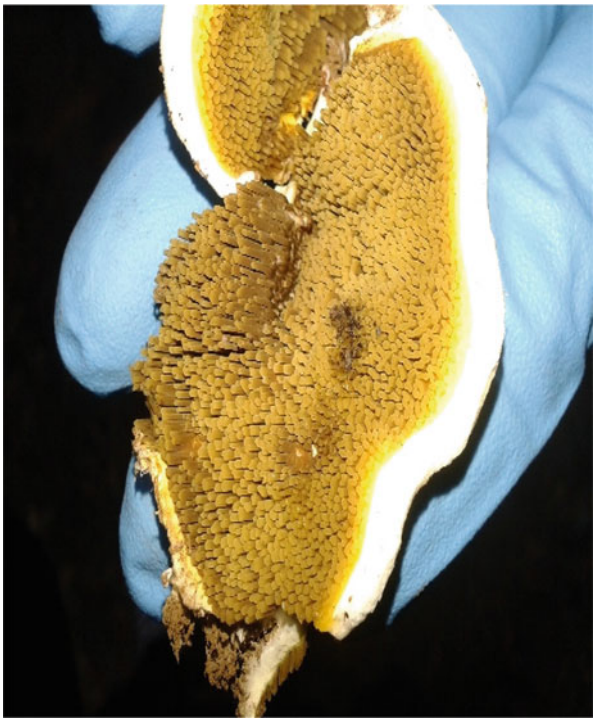
Unique IDs
BAB ID: BAB 5064.
Accession No.: KR155109.
Process ID: MGEN671-15.

Common name: Jelly Fungus.
Ecology: Saprobic in nature; in groups on putrefying, mostly decorticated, wood.
Cap: Pileus 1–5 mm diam., fabellate to petaloid, cartlaginous, brownish orange.
Gills: It lacks gills.
Stem: 2–20 mm high; 1–3 mm wide; more or less equal; confluent with outer surface of head; minutely granular-fuzzy; pinkish brown to reddish brown.
Flesh: Brown, tough but elastic.
Odor and taste: Not distinctive.
Microscopic features: They produce microscopic spores known as basidiospores.
Edibility: Edible jelly fungus.
Season: July Through October.
Reference: https://www.messiah.edu/Oakes/fungi_on_wood//club%20and%20coral/species%20pages/Dacryopinax%20spathularia.htm

Coniophoraceae

This family is characterized by coloured spores which are smooth and have double layered walls. The family has several wood rotting fungus. It containes 6 genera and 28 species of which one of them could be observed *Gyrodontium sacchari.*

Gyrodontium Sacchari



M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_6

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Boletales.
Family: Coniophoraceae.
Genus: Gyrodontium.
Species: sacchari.

Collection Details
Collection date: 22-Sep-2014.
Location: Near Circuit house, Gandhinagar.
GPS: N 23.245 E 72.671.
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 5180.
Accession No.: KR349658.1.
Process ID: MGEN718–15.

Common name:
Ecology: The species is mostly found inside the hollowed out heartwood of decaying dead tree trunks.
Cap: Cap applanate, with many small caps arising and laterally fused to form effused structures.
Flesh: Slimy and spongy to puffy.
Odor and taste: odor is almond-like.
Microscopic features: hyphae of 2–8 μm wide, thick-walled basidiospores (3.0–5.0 × 1.9–2.8 μm).
Edibility: Edible (based on tribal knowledge).
Season: July to October.
Reference: http://www.studiesinfungi.org/pdf/SIF_1_1_14.pdf

Bolbitiaceae

Bolbitiaceae was defined by Rolf Singer in 1948. It is a big family with over 17 genera and 287 species. The family is characterized by hmenium and pileipellis. COnocybe the genera reported herein is found in grass and is characterized by a dry cap surface.

Conocybe Apala

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_7

Identification

Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Bolbitiaceae.
Genus: Conocybe.
Species: apala.

Collection Details

Collection date: 22-Sep-2014
Location: Road No. 7, Gandhinagar.
GPS: N 23.26 E 72.643.
Collected by: Sruthi Thoota, Meghna Bhatt, Ishita Joshi.

Unique IDs

BAB ID: BAB 5236.
Accession No.: KT186180.
Process ID: MGEN767–15.

Common name: none.

Ecology: Saprobic in nature; growth is gregarious in grassy areas such as lawns and meadows, pastures etc.

Cap: 1.5–3 cm in size; conical in shape when young, becoming generally conical and droopy, occasionally with a bell-shaped center or an uplifted external border; dry; bald; becoming finely lined; whitish or creamy buff, occasionally with a somewhat darker center.

Gills: short-gills present; crowde; Narrowly attached to the stem; pale at first but soon turns to cinnamon brown in color; dissolving in hot and humid weather.

Stem: Length is 7–10 cm; thickness is 1–2 mm; extremely fragile in nature; hollow; more or less equal above a slight basal bulge; whitish to faintly yellow in color, especially near the base; bald or, on the upper portion, with scattered tiny hairs.

Flesh: flimsy.

Odor and taste: Not distinctive.

Microscopic features: Sporesare of 10–13 x 6–8 μmin size; ellipsoid in shape, with a large pore; smooth in texture; walls thickness is 0.5–1 μm; orangish brown color in KOH; orangish in Melzer's solution. Basidia 4-sterigmate. Brachybasidioles are present. Pleurocystidia is absent. Cheilocystidia is of 20–28 x 7–14 μm in size; lecythiform with a subglobose head which is 3–4 μm in width, a narrow neck of 2 μm, and an obclavate bottom portion; smooth; thin-walled; hyaline in KOH. Pileipellis is cellular; terminal elements is of 5–15 μm in width, subglobose, smooth, hyaline in KOH. Caulocystidia 10–20 x 5–10 μm (in size); subglobose to subcylindric; catenuated in shape; thin-walled; hyaline in KOH.

Edibility: Unknown.

Season: Spring to autumn.

Reference: https://www.mushroomexpert.com/conocybe_apala.html, http://www.mykoweb.com/CAF/species/Conocybe_apala.html

Conocybe Papillata

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Bolbitiaceae.
Genus: Conocybe.
Species: papillata.

Collection Details
Collection date: 22-Sep-2014.
Location: Ayurvedic garden.
GPS: N 23.2208 E 72.6793.
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt, Ankur Patel, Dhrupa Raval, Pankti Mistry.

Unique IDs
BAB ID: BAB 4752.
Accession No.: KR154981.
Process ID: MGEN419–14.

Common name: none.
Ecology: on bare soil and between leaf litter, growing in grasslands on dead moss, dead grass, sand dunes, decayed wood, and dung.
Cap: Width of the Pileus is 3–15 mm, hight is up to 9 mm, when young it is bell-shaped with broad, slow growing umbo, later expanding, flat convex to flat hemispherical in shape with distinct, approximately acute papilla; young and fresh ochraceous-stramineous, papilla ochrebrownish in color.
Gills: adnate, yellowish, 2.5 mm broad.
Stem: 15–30 mm long, 0.7–1.2 mm thick, cylindrical and has a small bulb at base.
Flesh: pale brown.
Odor and taste:
Microscopic features: 9.5–12 μm in size, elongate, amygdaliform, slightly double wall and distinct germ-pore, pale brownish in KOH. Basidia 4 spored.
Season: rainy season.
Comments: Papillate pillus is a very rare character of this genus. It has small fruit bodies which are generally very pale in colour.
Reference: https://www.zobodat.at/pdf/OestZPilz_16_0147-0156.pdf

Conocybe Lactea

Identification

Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Bolbitiaceae.
Genus: Conocybe.
Species: lactea.

Collection Details

Collection date: 22-Sep-2014.
Location: Ayurvedic garden.
GPS: N 23.2208 E 72.6793.
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt, Ankur Patel, Dhrupa Raval, Pankti Mistry.

Unique IDs

BAB ID: BAB 4753.
Accession No.: KR154982.
Process ID: MGEN420–14.

Common name: none.

Ecology: Saprobic in nature; growth is gregarious in grassy areas such as lawns and meadows, pastures etc.

Cap: 1.5–3 cm in size; conical in shape when young, becoming generally conical and droopy, occasionally with a bell-shaped center or an uplifted external border; dry; bald; becoming finely lined; whitish or creamy buff, occasionally with a somewhat darker center.

Gills: short-gills present; crowde; Narrowly attached to the stem; pale at first but soon turns to cinnamon brown in color; dissolving in hot and humid weather.

Stem: Length is 7–10 cm; thickness is 1–2 mm; extremely fragile in nature; hollow; more or less equal above a slight basal bulge; whitish to faintly yellow in color, especially near the base; bald or, on the upper portion, with scattered tiny hairs.

Flesh: flimsy.

Odor and taste: Not distinctive.

Microscopic features: Sporesare of 10–13 × 6–8 μmin size; ellipsoid in shape, with a large pore; smooth in texture; walls thickness is 0.5–1 μm; orangish brown color in KOH; orangish in Melzer's solution. Basidia 4-sterigmate. Brachybasidioles are present. Pleurocystidia is absent. Cheilocystidia is of 20–28 × 7–14 μm in size; lecythiform with a subglobose head which is 3–4 μm in width, a narrow neck of 2 μm, and an obclavate bottom portion; smooth; thin-walled; hyaline in KOH. Pileipellis is cellular; terminal elements is of 5–15 μm in width, subglobose, smooth, hyaline in KOH. Caulocystidia 10–20 × 5–10 μm (in size); subglobose to subcylindric; catenuated in shape; thin-walled; hyaline in KOH.

Edibility: Unknown.
Season: Spring to autumn.
Reference: https://www.mushroomexpert.com/conocybe_apala.html, http://www.mykoweb.com/CAF/species/Conocybe_apala.html

Phallaceae

This is a family of mushrooms which is also known as stinkhorn because of the bad smell. The smell is used as a mode of spore dispersal by attracting flies and beetles. One of the three reported species of the genus, *Itajahya* genus of this family could be identified in Gujarat. The gleba is geletaninous. They are generally gasteroid.

Itajahya Rosea = Phallus Roseus

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_8

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Phallales.
Family: Phallaceae.
Genus: Itajahya.
Species: rosea.

Collection Details
Collection date: 22-Sep-2014.
Location: Thol lake.
GPS: N 23.144 E 72.392.
Collected by: Ankur Patel, Meghna Bhatt, Ishita Joshi.

Unique IDs
BAB ID: BAB 4917.
Accession No.: KR155014.
Process ID: MGEN515-15.

Common name:
Ecology:
Cap: 2–2.5 cm wide white to yellowish- brown.
Gills:
Stem: 3–4.5 cm tall and 1–2 cm wide. The cells are pseudoparenchymatous.
Flesh: Gleba is full of mucilage with inner layer having hyphae.
Microscopic features: Elliptical spores 3.0 × 2.0 μm, they are smooth and hyaline.
Season: rainy season.
Importance: Most important feature is the calyptra which is present at the top of receptacle.
Comments: No information available for this fungus species.
Reference: Phallus roseus, first record from the neotropics. Available from: https://www.researchgate.net/publication/233600611_Phallus_roseus_first_record_from_the_neotropics

Lyophyllaceae

This family is estimated to have eight genera and more than 150 species. It was defined by Walter Julich in 1981. It consist of a small group of pale spored fungi. One of the dominant genera in the region under study was Calocybe. One of the characteristic features is that the nuclei of the basidia binds to iron salts.

Calocybe Indica

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_9

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Lyophyllaceae.
Genus: Calocybe.
Species: indica.

Collection Details
Collection date: 22-Sep-2014
Location: Saroli, Surat.
GPS: N 21.251 E 72.781.
Collected by: Ankur Patel, Meghna Bhatt, Ishita Joshi.

Unique IDs
BAB ID: BAB 5176.
Accession No.: KR349637.
Process ID: MGEN714-15.

Common name: Milky white mushroom.
Ecology: Saprobic, this species majorly grows in fields, grasslands, fields and on roadsides.
Cap: Cap is 10–14 cm in diameter, at the early stage it appears convex then flatten outs with age. It is fragile and the skin can be easily peeled off from the cap.
Gills: Gills are crowded and white.
Stem: Stem is 10–12 cm in length with a subbulbous base increasing the diameter from 1.8–3.5 cm at the base.
Flesh: Flesh is white all over with firm consistency. The colour remains same even on cutting or bruising, though the dried specimens can have a light creamish to brown colour.
Odor and taste: It has a mild flavour and smell similar to raddish.
Microscopic features: Spores are oval in shape, measuring 5.9–6.8 μm × 4.2–5.1 μm.
Edibility: It is an edible mushroom, being grown commercially in several states in India and other tropical countries. It is traditionally eaten in West Bengal region in India.
Season: June to September in Gujarat.
Comments: *Calocybe indica* was first identified in the eastern region of India in West Bengal. It was formally described in 1974. This mushroom variety was to be quiet popular in the markets of West Bengal. Botanists R.P. Purkayastha and Aindrila Chandra placed it i.
Reference: Purkayastha RP, Chandra A (1974) New species of edible mushroom from India. Trans British Mycological Soc 62(2): 415–418. Krishnamoorthy AS,

Bala V (2015) A Comprehensive Review of Tropical Milky White Mushroom (Calocybe indica P&C). Mycobiology 43(3): 184–94.

Lyophyllum Fumosum

Identification
Phylum: Basidiomycota
Class: Agaricomycetes
Order: Agaricales
Family: Lyophyllaceae
Genus: Lyophyllum.
Species: fumosum.

Collection Details
Collection date: 22-Sep-2014.
Location: CH-3 Gandhinager.
GPS: N 23.2184 E 72.6521.

Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt, Ankur Patel, Dhrupa Raval, Pankti Mistry, Shalini Mishra, Shivani Dhebar, Shivangi Dhebar.

Unique IDs
BAB ID: BAB 4755.
Accession No.: KR154984.
Process ID: MGEN422-14.

Common name: None.
Ecology: Usually grows on the ground but also seen on woody remnants or on roots of various trees in huge bunches.
Cap: Cap is usually between 5–8 cm but can reach upto 10 cm in diameter. Initially it has hemispherical shape that becomes convex very soon and finally flattens with age, as it grows in huge groups sometimes has an irregular shape too. Margin is curved internal.
Gills: Gills are tightly arranged, separate a little in the older specimens. Light grayish in colour when young that develops into clear gray colour with age.
Stem: provided whitish color, generally curved due to its form of growth, full and solid, fibrilous appearance, usually attached by its base to other specimens.
Flesh: elatively thick white, elastic consistency in the hat that breaks with a snap, more fibrous in the foot, immutable to the cut although in the very old copies usually has a certain tendency to blacken.
Odor and taste: Its smell is fungal pleasant with a slight floury, its raw taste may have a slight bitterness that does not manifest once cooked.
Microscopic features: Spores 4–6 μ; round or nearly so; smooth.
Edibility: It is a species that we have tasted with pleasure despite its elastic flesh and that very slight bitterness in the raw that disappears when cooked.
Season: August to October in Gujarat.

Termitomyces Eurrhizus

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Lyophyllaceae.
Genus: Termitomyces.
Species: eurrhizus.

Collection Details
Collection date: 22-Sep-2014
Location: Ayurvedic garden.
GPS: N 23.221 E 72.678.
Collected by: Sruthi Thoota, Meghna Bhatt, Ishita Joshi.

Unique IDs
BAB ID: BAB 5049.
Accession No.: KR155094.
Process ID: MGEN664-15.

Common name: Not known.
Ecology: Grow out of termite mounds.

Cap: The size of cap is 6–15 cm, with diamrtere up to 24 cm. Grey-brown in color and fading to whitish at the borders. The cap is firstly convex before growing out with a central boss.

Gills: The white crowded gills are free to subadnate.

Stem: The white ringless strong and fat stem is of up to 20 cm hight and 1.5 to 2.5 cm in width.

Flesh: White.

Odor and taste: Not distinctive.

Microscopic features: The oval spores are 6.8–9.3 μm long by 5.1–6.8 μm wide.

Edibility: Edible; In the northern Malaysian state of Kedah, it is eaten by locals and known as cendawan kaki lembu "cattle leg mushroom".

Season: July to September in Gujarat.

Importance:

Comments: The fungus and the termites have a complex symbiotic relationship. The termites cultivate the fungus on plant material within the mound, which they eat. The nutrients in their food are made more digestible by the fungus.

Reference: Berkeley MJ (1847) Decades of fungi, xv–xix. Ceylon Fungi. Hooker's London J Botany 6: 482. Frøslev TG, Aanen DK, Laessøe T, Rosendahl S (2003) Phylogenetic relationships of Termitomyces and related taxa. Mycological Res. 107(11):1277–86.

Termitomyces Heimii

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Lyophyllaceae.
Genus: Termitomyces.
Species: heimii.

Collection Details
Collection date: 22-Sep-2014.
Location: Road J, Gandhinagar.
GPS: N 23.2299 E 72.6752.
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt, Ankur Patel, Dhrupa Raval, Pankti Mistry.

Unique IDs
BAB ID: BAB 4742.
Accession No.: KR154971.
Process ID: MGEN409-14.

Common name:

Ecology: Gregarious.

or in small to large troops on termite mounds or on soil.

Cap: Pileus (9.9)11.7–14.5(16.2) cm diam., at first subglobose to subumbonate with incurved margin, becoming convex to plano-convex with broad, elevated umbo and fissile or split margin; at first white with greyish umbo becoming whitish with greyish brown umbo.

Gills: Lamellae at first white, becoming pale-pink with age, free, broad, crowded, regular; short gills of 3–4 lengths.

Stem: Stipe (9.7)11.8–19.9(21.8) × (2.6)2.7–3.7(3.8) cm (epigeal), central, cylindrical, long and fairly thick base near the soil surface with long, hollow pseudorhiza tapering downwards; whitish, stuffed and smooth. Annulus white, thick and persistent.

Flesh: Thick and white.

Odor and taste: Pleasant odour and excellent taste.

Microscopic features: (5.3)5.5–6.8(7.2) × (4.0)4.2–4.6(4.7) μm, broadly ellipsoidal, smooth.

Edibility: Edible.

Season: July to September in Gujarat.

Comments: *Termitomyces heimii* is a species of agaric fungus in the family Lyophyllaceae. Described as new to science in 1979, it is found in India. The specific epithet heimii honors French mycologist Roger Heim.

Reference: Natarajan K (1979) South Indian Agaricales V: Termitomyces heimii. Mycologia 71(4): 853–5. doi:https://doi.org/10.2307/3759201. Boa E. (2004). Wild edible fungi: a global overview of their use and importance to people (non-wood forest products). Food & Agriculture.

Termitomyces Microcarpus

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Lyophyllaceae.
Genus: Termitomyces.
Species: microcarpus.

Collection Details
Collection date: 22-Sep-2014.
Location: Road J, Gandhinagar.
GPS: N 23.2299 E 72.6752.
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt, Ankur Patel, Dhrupa Raval, Pankti Mistry.

Unique IDs
BAB ID: BAB 4750.
Accession No.: KR154979.
Process ID: MGEN417-14.

Common name:

Ecology: Gregarious or in small to large troops on faecal pellets of termites in soil.

Cap: Pileus (0.9)1.1–1.2(1.3) cm diam., at first campanulate becoming plano-convex to upturned with a small papillate umbo and irregularly lobed margin; at first whitish turning to pinkish-white or cream-white, smooth, silky to fibrillose, shiny and dry.

Gills: Lamellae pale pinkish, free to adnexed, sparsely crowded, regular; short gills of 2–3 lengths.

Stem: Stipe (1.3)1.7–2.1(2.3) × (0.15)0.2–0.25 cm, central, cylindrical, slender; bulbous base attached to faecal pellets of termites; whitish, solid and fibrous.

Flesh: Thin and fleshy.

Odor and taste: Pleasant odour and excellent taste.

Microscopic features: (4.6)5.0–5.5(5.8) × (2.6)2.9–3.7(4.0) μm, broadly ellipsoidal, hyaline and smooth.

Edibility: Edible.

Season: July to September in Gujarat.

Comments: *Termitomyces microcarpus* is a species of agaric fungus in the family Lyophyllaceae. An edible species, it is found in Africa and Asia, where it grows in groups or clusters in deciduous forests near the roots of bamboo stumps associated with termite nests.

Reference: Occurrence and distribution of Termitomyces (Basidiomycota, Agaricales) in the Western Ghats and on the west coast of India.

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Agaricaceae

French botanist François FulgisChevallier published Agaricaceae family of the order Agaricales in the class Agaricomycetes in 1826. Most species are saprobic and prefer grassland and woodland habitats. Umbrella-shaped sporophores are found chiefly in this family having thin, bladelike gills on the under surface of the cap from which the spores are shed. The gilled mushrooms in this family lack a universal veil, so no volva or warts are present. Most have a partial veil that often leaves a ring on the stem. Recently DNA evidence has moved a number of other families such as Lepiotaceae, Lycoperdaceae also into the Agaricaceae.

Family Agaricaceae includes the genera *Agaricus, Lepiota, Leucocoprinus, Chlorophyllum, Lycoperdon, Leucoagaricus, Melanophyllum, Coprinus, Macrolepiota, Langermannia, Vascellum,* etc.

Agaricus: The mushrooms in *Agaricus genera* are terrestrial saprobes having caps which are not brightly colored. The gills are either free, or almost free, from the stem, and initially are covered by a partial veil which breaks to leave a well-defined annulus, or ring, around the stem. The spores in the intial stage are black or dark brown or pink.

Lepiota: The genus used to consist of saprobic gilled mushrooms with white spore prints, gills that are free from the stem, partial veils that typically leave a ring on the stem and consists smooth, dextrinoid spores under the microscope.

Leucocoprinus: The basidiocarp of *Leucocoprinus* is small to medium, lepiotoid to coprinoid, often fragile. The genera *Leucoagaricus* and *Leucocoprinus* are thought to be highly diverse and common in the tropics. Pileus convex expanding to plane, membranous, floccososquamulose, radially sulcate, striate, often plicate, and readily decaying. Lamellae is free, crowded and whitish. Stem central, equal, rarely with a bulbose base. Membranous annulus is present. Spore print is white. Partial veil present, often leaving ring. Cap surface is powdery or minutely scaly.

Chlorophyllum: Chlorophyllum species form big fleshy mushrooms. Cap bears brown or pale scales and it is flat and wide, made up of erect tightly packed cells,

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stem without small bands or other material, with an annulus, spores not coloured or green. Spore print is greenish or white.

Lycoperdon: Fruit body is 2.5–6 cm broad, 2–9 cm high, subglobose with a distinct stem, white at first becoming yellowish brown, outer layer of short pyramidal warts especially dense on the head, the inner wall opens by a pore with an indistinct mesh-like pattern. Spores are olivaceous-brown, globose and minutely warted and 3.5–4.5 m in size.

Leucoagaricus: Fruit body with pileus and central stipe, universal veil absent or rarely present. Pileus is 5–160 mm wide, convex, smooth, with radial fibres or scaly and dry. It can be white, red, pinkish, vinaceous, blue, vivid brown, dull brown, grey or blackish. Spore deposit white to cream or clay pink to salmon. Partial veil membranous with annulus present being fixed or loose often cuff-like, rarely double; context soft and fragile, not changing or turning pink, orange, reddish, grey or black.

Agaricus Augustus

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *augustus.*

Collection Details
Collection date: 11-Aug-2014.
Location: Ayurvedic garden, Gandhinagar.
GPS: N 23.2208 E 72.6796.
Collected by:

Unique IDs
BAB ID: DRSBAB 4729.
Accession No.: KR154958.
Process ID: MGEN396-14.

Common name: The Prince mushroom.
Ecology: Saprobic, found usually along roadsides or paths, or in lawns and gardens.
Cap: Cap is 10–35 cm in diameter; usually blocky and nearly cylindric at first, becoming convex to broadly convex or nearly flat; dry; brown to dark brown surface but whitish underneath, fibrillose scales.
Gills: Gills are free from the stem; close or nearly crowded; white when young, becoming grayish brown and eventually dark chocolate brown to blackish (without a pink stage); in the initial stage covered with a whitish, cog-wheeled partial veil that features brownish scales in the maturity.
Stem: Stem is 10–20 cm long; up to 4 cm thick; more or less equal; often rooting; adorned with a large, skirt-like, whitish ring; whitish and fairly bald above the ring, but below the ring covered with whitish to faintly brownish scales.
Flesh: White unchanging when sliced.
Odor and taste: Odor strong, reminiscent of almonds; taste similar.
Microscopic features: The spores are 8–10 x 4.5–6 μm; ellipsoid, with a prominent apiculus; smooth; thick-walled; brown in KOH and Melzer's reagent. Cheilocystidia is up to 30 x 10 μm; mostly subglobose to more or less cylindrical.
Season: August to October in Gujarat.
Importance: A. augustus has been implicated in specifically bio accumulating cadmium. Specimens collected near metal smelters and urban areas have a higher cadmium content. The highest concentration of metal is found in the hymenium, then in the cap and the lower part of the stem contains the least.

Agaricus Californicus

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *californicus.*

Collection Details
Collection date: 22-Sep-2014.
Location: Gandhinagar.
GPS: N 23.21808 E 72.65178.
Collected by:

Unique IDs
BAB ID: DRSBAB 5169.
Accession No: KR349648.
Process ID: MGEN707-15.

Common name: California Agaricus.
Ecology: Scattered, clustered or in broad arcs in a variety of habitats, e.g. lawns, gardens, under both hardwoods and conifers, occasionally well-decayed wood chips.
Cap: Cap is 5–10 cm wide; convex to flat; dry, smooth to somewhat scaly, shiny; white or brownish over centre; surface sometimes bruising pale yellow, conspicuously yellow in KOH.
Gills: Gills are free, close, pallid at first, then bright pink, pinkish-brown and finally blackish-brown.

Stem: Stem is 3–7 cm long, 0.4–1.0 cm thick, smooth, equal, to slightly bulbous at base; partial veil membranous, upper surface smooth to finely striate, lower surface minutely fibrillose, forming a well-developed median to superior ring, the latter with a distinctive thickened margin.

Flesh: Whitish to slightly brownish, displays yellowish reaction when damaged.

Odor and taste: Pungent odor.

Microscopic features: The spores are 5–7.5 x 4–5.5 μm, elliptical, smooth; spore print blackish-brown.

Season: August to October in Gujarat.

Importance: *Agaricus californicus*, commonly known as the California Agaricus, is a poisonous mushroom in the section Xanthodermati of the genus *Agaricus.* This species appears similar to many other species of the genus *Agaricus*like *A. campestris, A.xanthodermus, and A.bisporus*. As *A. californicus* is toxic, differentiating it from other similar mushrooms is important. *A.campestris* does not react with KOH or develop pungent odour. Unlike *A. xanthodermus, A. californicus*'s yellowing reaction is not always readily apparent. Also it can be separated from *A. bisporus* having similar brownish disc, by its annulus with a thickened "double-lipped" margin.

Agaricus Diminutivus

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *diminutivus.*

Collection Details
Collection date: 16-Sep-2014.
Location: GFRI campus, Gandhinagar.
GPS: N 23.236 E 72.679.
Collected by:

Unique IDs
BAB ID: DRSBAB 5057.
Accession No.: KR155102.
Process ID: MGEN682-15.

Common name: None.
Ecology: Solitary or in small groups on fallen leaves or on mossy ground in woods.
Cap: Cap is 1.5–2.5 cm broad, egg-shaped in button-stage, becoming convex, eventually plano-convex; surface dry, the disc with lilac-brown to pinkish-brown fibrils, appressed fibrillose-squamous towards the margin, the ornamentation over a pallid ground color.
Gills: Gills free, close, cream-buff, blackish-brown at maturity; lamellulae up to three-seried.
Stem: Stem is 3.0–6.0 cm long, 2.5–3.5 mm thick, more or less equal, occasionally with a small basal bulb, hollow to stuffed at maturity; surface of apex, white, appressed fibrillose-striate, the lower stem is fairly covered with white squamulose, yellowing slowly where handled; veil membranous, thin, white, leaving an inconspicuous, narrow, evanescent band high on the stipe or fragments on the expanding cap.
Flesh: White; cuticle yellowing slightly where bruised or injured.
Odor and taste: Smell like anise and mild taste.
Microscopic features: The spores are 4.0–5.0 x 3.0–4.0 μm, elliptical in shape with smooth and thick wall, profile is inequilateral, apparent hilar appendage and germ pore not distinct; spore print chocolate-brown.
Season: Early monsoon.
Importance: This petite, woodland *Agaricus* has a stature and cap suggestive of a *Lepiota*. It is differentiated when the free, dark-brown and not white gills are seen. Structurally is also similar to *A. semotus* that also grows under trees, but the later has a cap with darker disc and have a clavate stem.

Agaricus Dulcidulus

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *dulcidulus.*

Collection Details
Collection date: 12-Sep-2014.
Location: Gandhinagar.
GPS: N 23.238 E 72.675.
Collected by:

Unique IDs
BAB ID: DRSBAB 5241.
Accession No.: KT186166.
Process ID: MGEN727-15.

Common name: The rosy wood mushroom.
Ecology: Saprobic, prefers humid soil and uses decomposed leaves as a substrate for growth.
Cap: Cap is 2 to 7 cm in diameter, convex-rounded often with inflexed margins at first, then flattens when aging, covered in purple-brown to pinkish dense fibrils that fade in colours towards light greyish-pink from the centre towards margins.
Gills: The gills are free from attachment to the stipe. They are dense, starting pale grey-brownish when young, then turning dark purple-brown with age, with a lighter crenulated edge.

Stem: The stem is cylindrical, 2–5 cm long and 0.4–0.8 cm broad, bulbous or clavated at the base, whitish, slightly darkening toward the base in yellow-brownish tints. The ring, remnant of the veil present in young fructifications, is whitish, descendent, thin and fragile.
Flesh: White, when cut or bruised turns slightly yellow, or orange tints in stem.
Odor and taste: The odor and taste resemble almonds.
Microscopic features: The spores are 4.5–6.0 x 3.5–4.0 μm on average, non-amyloid, and elliptical.
Season: July to October in Gujarat.
Importance: *Agaricus dulcidulus* is a small sized mushroom belonging to the Agaricales order. This is a recognizable taxon but some sources synonymize it with *Agaricussemotus*.

Agaricus Hondensis

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *hondensis.*

Collection Details
Collection date: 18-Sep-2014.
Location: Gandhinagar.
GPS: N 23.237 E 72.6785.
Collected by:

Unique IDs
BAB ID: DRSBAB 4971.
Accession No.: KR155061.
Process ID: MGEN591-15.

Common name: Felt-ringed agaricus.
Ecology: Saprobic, mostly growing alone, scattered, precariously, or in-group.
Cap: Cap is 6–15 cm in diameter; convex, becoming broadly convex or flat; dry; fairly smooth or, more commonly, with appressed fibres that are initially pale but darken to brown or reddish brown as the mushroom matures; whitish to pale pinkish brown beneath the fibres.
Gills: pale in color at first then pinkish-brown and finally blackish-brown, free, close.
Stem: Length of the Stem is 8–14 cm, thickness is 1.5–2.5 cm, swollen at base, smooth above and below the ring; veil thick, felt-like, yielding a well developed superior ring.
Flesh: Whitish and thick, often yellowing on exposure, especially towards the stem base. The cap and the upper stem are initially pink that may be followed by yellow color in later stage.
Odor and taste: The odor of the crushed flesh is mild or faintly phenolic, but is usually distinctly phenolic in the base of the stipe. Taste not distinctive.
Microscopic features: The spores are 4.5–6 x 3–4 μm, elliptical, smooth. Pleurocystidia absent; cheilocystidia not easily distinguished from basidioles.
Season: September to October in Gujarat.
Importance: *Agaricu shondensis* is a handsome, robust species that unfortunately is toxic. Its large size, flattened pale lilac-brown cap scales, thick felt-like ring and bulbous stipe base recognize it. The phenolic odor is often faint but KOH will cause a yellowing reaction. The species was officially described in 1912 by mycologist William Alphonso Murrill, along with three other *Agaricus*species that have since been placed in synonymy with *A. hondensis.*

Agaricus Moelleri

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *moelleri.*

Collection Details
Collection date: 23-Sep-2014.
Location: Gandhinagar.
GPS: N 23.1971 E 72.64.
Collected by:

Unique IDs
BAB ID: DRSBAB 4741.
Accession No.: KR154970.
Process ID: MGEN408-14.

Common name: Inky mushroom.
Ecology: Saprobic, grows in woodlands and under hedgerows; they occur either singly or in small groups.
Cap: Cap is 3-10 cm in diameter at maturity. The cap flesh is creamy white and the upper surface has a whitish background covered in grey-brown scales, densest

and darkest towards the centre. The surface of cap may turn to yellow when bruised and particularly towards the margin.

Gills: Gills are pale pink when young, the crowded free gills soon turn deeper pink and later become brown as the fruiting body reaches maturity.

Stem: Stem diameter is 1-2 cm with a smooth, silky surface and a bulbous base. A large white pendulous stem ring persists through to maturity; it turns rapidly bright yellow when bruised, most markedly at the stem base, but then gradually the yellow areas turn brown.

Flesh: Creamy white flesh turns yellow when bruised or cut.

Odor and taste: It give off an unpleasant smell, indeed ink-like. Most noticeably when the flesh is bruised or cut. The taste of this mushroom is not distinctive.

Microscopic features: The spores are 4.5–6.5 x 3.5-4 μm, ellipsoidal and smooth. Spore print brown.

Season: September to October in Gujarat.

Importance: *Agaricus moelleri* is one of Britain and Ireland's most common and widespread 'true mushrooms' (a term that many mycologists apply to *Agaricus* species). This species was published in 1976 by the Ukrainian mycologist Solomon P. Wasser. It is seen more common than yellow stainer on the edges of roadsides.

Agaricus Placomyces

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *placomyces.*

Collection Details
Collection date: 23-Sep-2014.
Location: Gandhinagar.
GPS: N 23.1971 E 72.64.
Collected by:

Unique IDs
BAB ID: DRSBAB 4740.
Accession No.: KR154969.
Process ID: MGEN407-14.

Common name: Flat-topped mushroom.
Ecology: Saprobic, growing scattered or precariously under forests.
Cap: Cap is 5–12 cm in diameter, growing from convex to broadly convex or flat at maturity, surface is dry often covered with brownish fibres and scales, especially over the centre otherwise whitish beneath, or pinkish in wet weather.
Gills: Gills are free from the stem; crowded; pale greyish pink, eventually brown.
Stem: Stem is 8–15 cm long, 2–3.5 cm thick, equal to slightly enlarged at base; surface white, smooth above and below the ring; veil membranous, thick, white, upper and lower surface smooth, forming a medially positioned, persistent ring; stipe base typically yellowing when bruised and smelling of phenol.
Flesh: White throughout, staining bright yellow in the base.
Odor and taste: Taste and odor are non-distinctive or somewhat unpleasant.
Microscopic features: The spores are 4–6.0 x 3.5–4.5 μm, smooth and elliptical in shape. Spore print blackish-brown.
Season: September to October in Gujarat.
Importance: *Agaricusplacomyces* is a large, strikingly beautiful mushroom which unfortunately for the mycophagist, is toxic. The centre of the cap is mostly brown with fibres and scales.

Agaricus Romagnesii

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *romagnesii.*

Collection Details
Collection date: 16-Sep-2014.
Location: Gandhinagar.
GPS: N 23.236 E 72.679.
Collected by:

Unique IDs
BAB ID: DRSBAB 5059.
Accession No.: KR155104.
Process ID: MGEN684-15.

Common name: Agaric black locust trees.
Ecology: Grows in gardens, parks and thick woods.

Cap: Cap is 5 to 10 cm in diameter, hemispherical convex to flat, sometimes wrapped in finely appendicle margin, whitish to cream covered with scales brownish from the disk and becoming clearer and more rare to the margin.
Gills: Gills are free, fine and fairly wide, bright pink purple brown becoming older.
Stem: Stem is smooth cylindrical, clavé to bulbous, extended many rhizomorphs, white to slightly yellowing tendency, becoming yellowish base to grow older.
Flesh: Whitish, bruising faintly brown beneath the cap cuticle.
Odor and taste: Complex phenolic humic or slightly earthy. Taste is slight and pleasant.
Microscopic features: The spores are 6–7 x 4–4.5 µm, elliptical to ovate.
Season: September to October in Gujarat.
Importance: This is a rare mushroom showing reminiscent to some toxic *Agarics*. *Agaricus bresadolanus* is the synonym to *A. romagnesii*.

Agaricus Rotalis

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *rotalis.*

Collection Details
Collection date: **1**2-Sep-2014.
Location: Gandhinagar.
GPS: N 23.2397 E 72.6759.
Collected by:

Unique IDs
BAB ID: DRSBAB 4978.
Accession No.: KR155068.
Process ID: MGEN598-15.

Common name: Not known.
Ecology: Grows in dark, shaded places, usually found solitarily and less in groups.
Cap: Cap is 0.5–9.5 cm in diameter, convex to plano-convex, dry, appressed-fibrillose, radially cracked and split in age, at first black to dark greyish brown overall, in age black in the centre and radially streaked black over a white background.
Gills: Gills are free, close, broad, and white to reddish brown then dark brown.
Stem: Stem is 3.5–8.0 x 0.5–1.5 cm long, cylindrical or enlarged downwards to a sub bulbous or abruptly bulbous base; glabrous, white above, and brown below, with a large, skirt-like annulus near the apex. Stem base stains bright yellow where bruised.
Flesh: White flesh under the black coloured cuticle. When bruised or sliced open at the base the stem turns yellow.
Odor and taste: Odor of phenol.
Microscopic features: T he spore deposits as dark brown.
Season: August to October in Gujarat.
Importance: It is best to avoid eating all yellow-staining species of *Agaricu*s that have a phenol odor. Most of them cause gastrointestinal upset when ingested.

Agaricus Subrutilescens

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *subrutilescens.*

Collection Details
Collection date: 14-Sep-2014.
Location: Baroda, Gujarat.
GPS: N 22.3213 E 73.1793.
Collected by:

Unique IDs
BAB ID: DRSBAB 4992.
Accession No.: KR155080.
Process ID: MGEN530-15.

Common name: Wine-colored Agaricus.
Ecology: Saprobic, growing solitarily, scattered, or precariously in forest ecosystems.
Cap: Cap is 5–20 cm in diameter; initially convex changing into broadly convex or broadly flat on reaching maturity, dry surface with brown to reddish brown or purple-brown, pressed-down fibres that sometimes become accumulate into small scales with maturity.

Gills: Gills are free from the stem, close, whitish turning to pink, and then dark chocolate brown to blackish in maturity. In the button stage it is covered with a whitish partial veil.

Stem: Stem is 5–20 cm long, up to 4 cm thick, white in color with a thin, skirt-like, whitish ring, covered with soft ragged edges below the ring, at least when young.

Flesh: White and do not change color when sliced.

Odor and taste: Odor sweet and fruity with taste similar.

Microscopic features: The spores are 4–6.5 × 3–4 μm, elliptical. Cheilocystidia up to 40 × 17 μm, and clavate to nearly globose and scattered.

Season: September to November in Gujarat.

Importance: *Agaricussubrutilescens*is recognized by a dark-brown to purple-brown, dense fibrillose-scaly cap, stem with apparent cottony scales below the ring, and forest habit. In 1925 it was first described as *Psalliotasubrutilescens*, and then in 1938 was transferred to genus *Agaricus*. Among various *Agaricus* species only two described species including *Agaricussubrutilescens* has the tendency to turn green with application of KOH. This can be used as an identifying characteristic to differentiate it from *Agaricushondensis*, a toxic mushroom with which it sometimes fruit and often confused with. Though the latter, has a cap with cream tobuff-brown scales, a thicker ring, and a bulbous base and it will give yellowing reaction with KOH.

Agaricus Xanthodermus

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Agaricus.*
Species: *xanthodermus.*

Collection Details
Collection date: 12-Sep-2014.
Location: Gandhinagar.
GPS: N 23.2362 E 72.6748.
Collected by:

Unique IDs
BAB ID: DRSBAB 4730.
Accession No.: KR154959.
Process ID: MGEN397-14.

Common name: Yellow-stainer.
Ecology: Saprobic; growing scattered or in large groups, sometimes clustered together. It occurs in woods, lawns and gardens.
Cap: Cap is 6–20 cm in diameter though can reach 15 cm; Initially convex, with some young specimens having a squarish shape, flattening with age; whitish, or with light brown colorations, especially towards the centre; dry and smooth, but can be scaly when old; usually bruising yellow when rubbed, especially near the margin--the bruised areas then changing to brownish after some time has elapsed; the margin in rolled when young.
Gills: Gills are free, white at initial stage then turning to pinkish, and finally to dark chocolate brown. In the button stage it is close covered with a membranous white or yellowed partial veil that has patches of tissue on its underside.
Stem: Length of the Stem is 5–18 cm; thickness is 1–3 cm; more or less equal; frequently with a small basal bulb; smooth in texture; whitish, bruising yellow (then brownish) in color especially at the base; sometimes brownish in age; hollow to stuffed; with a large, flaring, thick, yellow-staining ring on the upper portion.
Flesh: White and thick, yellowing when crushed.
Odor and taste: Odor unpleasant and phenolic, reminiscent of ink or carbolic soap, but sometimes faint.
Microscopic features: The spores are 4.5–6 × 3–4.5 μm, ellipsoid and smooth. Microscopically, the cheilocystidia are club-shaped.
Season: July to October in Gujarat.
Importance: Léon Gaston Genevier in 1876 officially defined this species as *Agaricus xanthodermus* in a letter published in the bulletin of the French Botanical Society. This is the only toxic species in genus *Agaricus* that immediately produces bright yellow color on cuttingthrough the base of the stem or scraping

the flesh. Later the affected area fades to a dull brown and strong phenolic odor. Though other edible *Agaricus* species, such as *A. augustus, A. arvensis* and *A. silvicola* also turn yellow to a greater or lesser extent, but they do not display such an intense reaction. On reaching maturity unfortunately, both the staining reaction and odor may disappear leading to confusionwith other *Agaricus* species, notably *A. arvensis*. But it can be distinguished with *A. arvensis* having following characteristics, as it is a good edible and not nearly so common.

Agaricus Blazei

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: Agaricus.
Species: blazei.

Collection Details
Collection date: 23-Aug-2013.
Location: Thol lake, Ahmedabad.
GPS: N 23.1468 E 72.3944.

Collected by: Ishita Joshi, Hemal Ram, Rinni Rawal, Meghna Bhatt, Poonam Bhargava.

Unique IDs
BAB ID: BAB 3672.
Accession No.:
Process ID: MGEN018-14.

Common name: God Mushroom, almond mushroom.
Ecology: Often found in domestic areas where the soil is with abundance of compost or where debris has been decaying.
Cap: **color of cap** varies from white, to grey, to reddish-brown. The shape of the capalso varies it hemisphere to a convex.
Gills: The gills, are squeezed closely together. They are whitewhen young, and as the mushroom grows they turn to pink. At the matura stage of spores their colo changes black-brown colour.
Flesh: tastes like green nuts and smells like almonds.
Odor and taste: Tastes like green nuts and smells like almonds.
Microscopic features: the spores look purplish-brown.
Edibility: Edible.
Season: rainy season.
Importance: It is an important medicinal mushroom with steroid blazein isolated from it. Antitumor activity and immunomodulatory potential has also been reported**.**
Reference: http://www.medicalmushrooms.net/agaricus-blazei/

Agaricus Campestris

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: Agaricus.
Species: campestris.

Collection Details
Collection date: 22-Sep-2014.
Location: GFRI campus, Gandhinagar.
GPS: N 23.2367 E 72.6794.
Collected by: Rinni Rawal, Meghna Bhatt, Ishita Joshi, Hemal Ram.

Unique IDs
BAB ID: BAB 3695.
Accession No.:
Process ID: MGEN075-14.

Common name: Meadow mushroom.
Ecology: Saprobic, on soil among grass in pastures, playing fields and parks.
Cap: The cap is white, may have fine scales, and is 5 to 10 centimetres (2.0 to 3.9 in) in diameter; it is first hemispherical in shape before flattening out with maturity.
Gills: The gills are initially pink, then red-brown and finally a dark brown, as is the spore print.

Stem: 3–10 cm tall and 1–2 cm in diameter, the white stem of Agaricus campestris is smooth above the single, delicate ring and somewhat scaly below. It is more or less parallel and does not turn yellow when cut.
Flesh: The white flesh bruises a dingy reddish brown, as opposed to yellow in the inedible (and somewhat toxic) *Agaricus xanthodermus* and similar species.
Odor and taste: Mild.
Microscopic features: The thick-walled, elliptical spores measure 5.5–8.0 μm by 4–5 μm. Cheilocystidia are absent.
Edibility: It is widely collected and eaten, even by those who would not normally eat wild mushrooms.
Season: June to October.
Reference: https://www.first-nature.com/fungi/agaricus-campestris.php,wikipedia.

Agaricus Langei

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: Agaricus.
Species: langei.

Collection Details
Collection date: 22-Sep-2014.
Location: CH-3 Gandhinager.
GPS: N 23.2177 E 72.6514.
Collected by: Pankti Mistry, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 4974.
Accession No.:
Process ID: MGEN594-15.

Common name: Great wood mushroom.
Ecology: On the ground in mixed or coniferous woods.
Cap: 5–12 cm in size, Convex in shape, White in color with rust-brown scales.
Gills: **Gills are** Free. Color changes from pinkish-grey to deep pink to finally chocolate brown.
Stem: White in color and Stout with a big ring.
Flesh: Major portion is White in color with Blushing red/pink especially along the sides of the stem and just above the gills.
Odor and taste:
Microscopic features:
Edibility: Edible.
Season: August to October, mostly September.
Reference: http://www.foragingguide.com/mushrooms/sp/great_wood_mushroom

Agaricus Pocillator

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: Agaricus.
Species: pocillator.

Collection Details
Collection date: 16-Sep-2014.
Location: GFRI campus, Gandhinagar.
GPS: N 23.2369 E 72.6788.
Collected by: Pankti Mistry, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 4976.
Accession No.:
Process ID: MGEN596-15.

Common name: Unknown.
Ecology: saprobic. Generally grow alone or in groups beneath the hardwoods and / or in mixed woods.
Cap: Size of cap is 3–10 cm, Shape varies with age from convex to broadly convex to nearly flat in age, occasionally with an unclear, darker bulge, and dry. The top of the cap is mainly whitish to dreary in color, developing roughly coaxial brownish to grayish scales towards the axis.
Gills: free from the stem, close. Color changes from white to pinkish to brown.
Stem: Length of the stem is 4–8 cm and the thickniess is 0.5–1 cm, carry a tiny bulgings base that is bruises yellow in color. It has a ring that characteristically continues to maturity, as well as a partial veil when covering the gills not developing dark droplets.
Flesh: white throughout and staining clear yellow at the base.
Odor and taste: Odor is frequently unpleasant (phenolic), but sometimes not distinctive. The taste is somewhat unpleasant.
Microscopic features: The spores are 4.5–6 x 3–3.8 μm and elliptical.
Season: rainy season.
Reference: https://en.wikipedia.org/wiki/Agaricus_pocillator

Coprinus Silvaticus

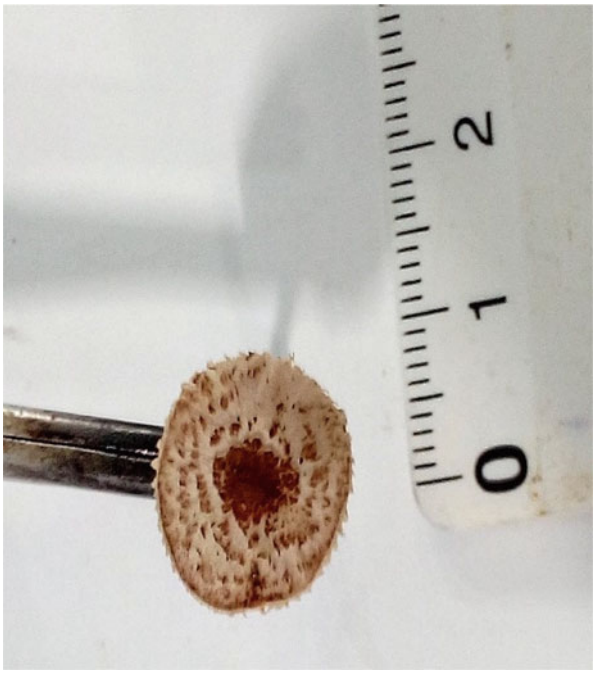
Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: Coprinus.
Species: silvaticus.

Collection Details
Collection date: 23-Sep-2014.
Location: Infocity, Gandhinagar.
GPS: N 23.221 E 72.662.
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 4963.
Accession No.:
Process ID: MGEN626-15.

Common name: Inky Caps.
Ecology: Saprophytic.
Cap: Smooth surface with very fine hairs. Presence of pileocystidia and spores which are warty.
Gills: adnexed almost balck.
Stem: 5–6 cm, white, hollow and very fragile.
Flesh: almost none.
Odor and taste:
Microscopic features: black, oval, apical pore, 11 to 13 and 7 to 9 microns.
Edibility: Inedible.
Season: rainy season.
Comments: No information.

Lepiota Flammeotincta



Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: Lepiota.
Species: flammeotincta.

Collection Details
Collection date: 23-Sep-2014.
Location: Indroda Village, Gandhinagar.
GPS: N 23.19 E 72.654.
Collected by: Pankti Mistry, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 5053.
Accession No.:
Process ID: MGEN681-15.

Common name:
Ecology: Saprophyte.
Cap: scaly, white.
Gills: spores white, covered when young.
Stem: 5–6 cm with a ring, white.
Flesh: white thin.
Odor and taste: rubbery smell.
Microscopic features: spores 6 × 5 micron, ellipsoid, detrinoid.
Edibility: non-edible.
Season: rainy season.
Importance: most species of this genus are lethal.

Lepiota Phaeosticta

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: Lepiota.
Species: phaeosticta.

Collection Details
Collection date: 14-Sep-2014.
Location: MSU Botanical garden.
GPS: N 22.3213 E 73.1793.
Collected by: Mitesh Patel, Dr. K.S. Rajput.

Unique IDs
BAB ID: BAB 4997.
Accession No.:
Process ID: MGEN535-15.

Cap: Mainly white in color with tiny dark gray or blackish scales which is darkest on disc; dry; Shape varies from convex to almost flat with prominent umbo.
Gills: White in color, close.
Stem: 3–6 cm, thick, tapered upward and has a double ring having a fringed margin.
Flesh:flesh white.
Odor and taste:
Microscopic features: ellipsoid, smooth, hyaline 5 × 3 micron.
Edibility: non edible.
Season: rainy season.
Reference: https://www.marylandbiodiversity.com/viewSpecies.php?species = 5015.

Leucocoprinus Brebissonii.

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: Leucocoprinus.
Species: brebissonii.

Collection Details
Collection date: 22-Sep-2014.
Location: Circuit House, Gandhinagar.
GPS: N 23.226 E 72.6643.
Collected by: Pankti Mistry, Meghna Bhatt, Ishita Joshi, Sruthi Thoota, Dhrupa Raval, Ankur Patel.

Unique IDs
BAB ID: BAB 4731.
Accession No.:
Process ID: MGEN398-14.

Common name: skullcap dapperling.
Ecology: Grows in the soil, and in the woods with deciduous trees.
Cap: Size is (2–3 cm (0.8–1.2 inch)).Shape varies from conical to a plane with age, a dark brown/gray center is also present that disperse and diffuses outwards on a white and deeply striated background.
Gills: crowded, white in color and barely connected to the stem, but once a while detach with age.
Flesh: white and brittle flesh.
Odor and taste: Non description.
Microscopic features: Size of the spores is 9–12 μm × 5.5–7 μm. White in color and have a conspicuous germ pore. Shape is elliptical or almond type.
Edibility: suspected to be poisonous.
Season: rainy season.
Reference: https://en.wikipedia.org/wiki/Leucocoprinus_brebissonii

Podaxis Pistillaris

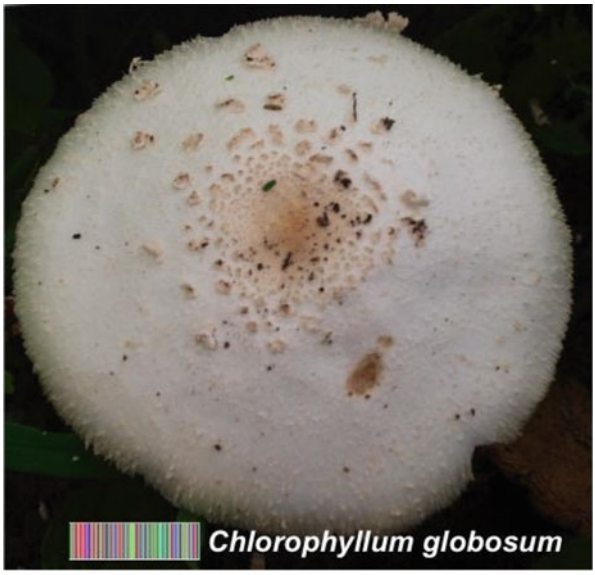
Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: Lepiota.
Species: flammeotincta.

Collection Details
Collection date: 27-Aug-2014.
Location: J road, gandhinagar.
GPS: N 23.198 E 72.648.
Collected by: Pankti Mistry, Meghna Bhatt, Ishita Joshi, Sruthi Thoota, Dhrupa Raval, Ankur Patel.

Unique IDs
BAB ID: BAB 5058.
Accession No.:
Process ID: MGEN683-15.

Common name: stalked puffball.
Ecology: **S**aprobic; growing alone or scattered in arid, desert settings (wasteland fields, and urban locations).
Cap: Hight is 4–8 cm and 2–4 cm in diameter at maturity. Shape varies with age elliptical when young, turns to somewhat cylindric at maturity, with a rounded crest; bushy to scaly; dry; white to whitish or pale brownish in color; the periphery folded under and attached to the stem; the external layer shredding in old.
Stem: solid and woody. It extends upto 4–10 cm long beneath the cap. Thickness is 1 cm. It is somewhat equal above a base. Base of stem is typically concealed and embeded in the sand. It is enormously tough and woody; grossly fibrillose to scaly; whitish to brownish in color.
Flesh: Tough in texture and whitish in color.
Odor and taste: Odor is not distinctive.
Microscopic features: Spores are of 13–19 × 10–13 μm in size (However, mostly described as somewhat smaller, approximately 10–15 × 9–12 μm in size).
Season: rainy season.
Reference: https://en.wikipedia.org/wiki/Podaxis_pistillaris, https://www.mushroomexpert.com/podaxis_pistillaris.html

Chlorophyllum Globosum



Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Chlorophyllym.*
Species: *globosum.*

Collection Details
Collection date: 12-Aug-2014.
Location: Ahmedabad.
GPS: N 23.144 E 72.393.
Collected by:

Unique IDs
BAB ID: DRSBAB 5234.
Accession No.: KT186198.
Process ID: MGEN749-15.

Common name: None.
Ecology: Saprobic, growing alone, scattered, or precariously in lawns and grasslands.
Cap: Cap is 10–22 cm in diameter; convex to spherical when young, becoming broadly convex or nearly flat in age; dry; bald in the button stage, but soon

becoming scaly with brown to pinkish brown or cream scales that are uplifted or flat, and concentrated near the centre; surface underneath scales finely fibrillose, whitish to pale cream.

Gills: Gills are free from the stem or slightly attached to it; crowded, all white with white spores.

Stem: Stem is 8–20 cm long; 1.5–3 cm thick; tapered slightly to apex, and slightly enlarged toward base; dry; bald or very finely fibrillose; firm; white.

Flesh: White throughout; not staining when sliced, or staining reddish brown to pale pinkish red in the base; thick.

Odor and taste: Not distinctive.

Microscopic features: Not known.

Season: July to October in Gujarat.

Importance: *Chlorophyllumglobosum*was first described by Mossebo**.**

Chlorophyllum Hortense

Identification

Phylum: Basidiomycota.

Class: Agaricomycetes.

Order: Agaricales.

Family: Agaricaceae.

Genus: *Chlorophyllym.*

Species: *hortense.*

Collection Details

Collection date: 28-Aug-2014.

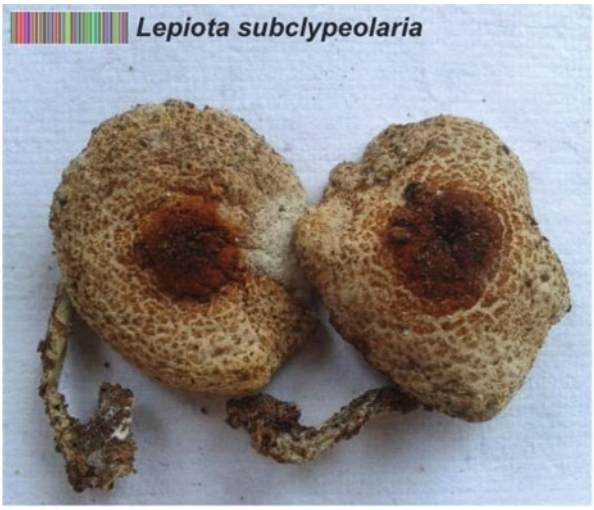
Location: Gandhinagar.

GPS: N 23.2598 E 72.6426.
Collected by:

Unique IDs
BAB ID: DRSBAB 4734.
Accession No.: KR154963.
Process ID: MGEN401-14.

Common name: None.
Ecology: Saprobic; growing alone, scattered, or precariously, often in bunch or in group in lawns and disturbed-ground areas like roadsides, gardens, the edges of fields, and so on.
Cap: Cap is 9–16 cm in diameter, convex to nearly round in the initial stage, becoming broadly convex, flat, or very broadly bell-shaped in age, and dry surface. In the button stage it is bald and greyish brown, but soon breaking up so that the centre remains smooth (or cracked) and brown but the rest of the surface consists of shaggy scales with brownish tips over a whitish, fibrillose background.
Gills: Gills are free from the stem; close or nearly packed; short-gills frequent; white or, in maturity, pale brownish often with brownish edges.
Stem: Stem is 10–21 cm long; 2–3.5 cm thick; club-shaped, with a basal bulb that is gradually swollen; bald; whitish.
Flesh: White flesh but slowly turns to brownish when sliced (especially near the apex of the stem).
Odor and taste: Not distinctive.
Microscopic features: Not known.
Season: July to October in Gujarat.
Importance: *Chlorophyllumhortense* is a species of *Agaric* fungus. Originally named as a species of *Lepiota* by American mycologist William Alphonso Murrill in 1917, it was transferred to *Chlorophyllum* by Else Vellinga in 2002. The fungus is found in Australia and North America. In 2006, it was reported from China.

Lepiota Subclypeolaria



Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Lepiota.*
Species: *subclypeolaria.*

Collection Details
Collection date: 22-Sep-2014.
Location: Gandhinagar.
GPS: N 23.1989 E 72.6903.
Collected by:

Unique IDs
BAB ID: DRSBAB 4972.
Accession No.: KR155062.
Process ID: MGEN592-15.

Common name: Shield dapperling or shaggy-stalked Lepiota.
Ecology: Saprobic, growing scattered or precariously, often in disturbed ground areas like paths, ditches, lawns, and so on, but also on the forest floor.
Cap: Cap is 2–4 cm in diameter initially convex or dully conic, becoming to broadly bell-shaped or nearly flat in age, and dry surface. At first smooth but soon becoming scaly with pinkish brown to reddish brown or brown scales that are usually in parallel arrangement.

Gills: free from the stem; close; short-gills are frequent; color is white to light brown.
Stem: Length is 3–7 cm; thickness is 2–3 mm; somewhat equal; bald; fragile; whitish but often becoming pinkish to brownish towards the base; with a fragile, white ring (which may easily disappear) on the upper portion; basal mycelium white.
Flesh: Whitish; not changing when sliced; thin.
Odor and taste: Not distinctive.
Microscopic features: The spores are fuse-shaped (fusiform), meaning that they are tapered at both ends. They have dimensions of 12–16 × 5–6 µm. Cystidia on the gill edge (cheilocystidia) are club-shaped to cylindrical, and measure 20–40 × 5–15 µm.
Season: June to October in Gujarat.
Importance: French mycologist Jean Baptiste Francois Bulliard was first to describe this species as *Agaricusclypeolarius*in 1789. Then in 1871 Paul Kummer transferred it to genus *Lepiota*. *Lepiotasubclypeolaria* is a common, toxic mushroom in the genus *Lepiota*. Fruit bodies have a brownish cap, a shaggy stem with a collapsed, sheathing ring or ring zone, and spindle-shaped spores.

Leucoagaricus Leucothites

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Leucoagaricus.*
Species: *leucothites.*

Collection Details
Collection date: 12-Sep-2014.
Location: Gandhinager.
GPS: N 23.238 E 72.675.
Collected by:

Unique IDs
BAB ID: DRSBAB 5050.
Accession No.: KR155095.
Process ID: MGEN680-15.

Common name: White dapperling Mushroom.
Ecology: Saprobic; growing alone or precariously in grassy areas or on disturbed ground (roadsides, cultivated areas, and so on); occasionally appearing in woods.
Cap: Cap is 5–9 cm in diameter; broad, hemispherical, becoming convex, plano-convex in age; margin incurved, then decurved, sometimes appendiculate from veil fragments; dry; minutely to finely or moderately scaly, especially when young, but often becoming bald with age; soft; white, gradually becoming flushed pale cream-ochre; sometimes staining and bruising yellowish to brownish, especially along the margin; the margin not lined.
Gills: Gills are free from the stem; close; short-gills frequent; white, unchanging when bruised, aging pinkish to pinkish-tan.
Stem: Stem is 6–10 cm long; 1–1.5 cm thick; usually club-shaped; enlarged to sub-bulbous at the base; surface smooth to silky, pallid, bruising yellowish to brownish; veil membranous forming a persistent, thick, double-edged, moveable, superior annulus.
Flesh: White; no change even after slicing, or staining yellowish in the stem base.
Odor and taste: Not distinctive.
Microscopic features: The spores are 6.5–8 × 4.5–5.5 μm, broadly elliptical in shape, smooth, thin-walled, dextrinoid, with an apical pore.
Season: June to October in Gujarat.
Importance: In 1835 Carlo Vittadini originally described this species as *Agaricusleucothites*. Solomon Wasser transferred it to *Leucoagaricus* in 1977. Traditionally known as *Leucoagaricusnaucinus*, most mycologists now regard this name as a synonym of *Leucoagaricusleucothites*, which has nomenclatural priority. Its white gills, white cap, and white ring recognize it. It lacks a universal veil, so it does not feature warts or patches on the cap, nor a volva at the base of

the stem, but it could be easily mistaken for an *Amanita* on casual inspection. *Volvariellaspeciosa*and *Agaricus campestris*are often confused with *Leucoagaricuslecothites*.

Leucoagaricus Rubrotinctus

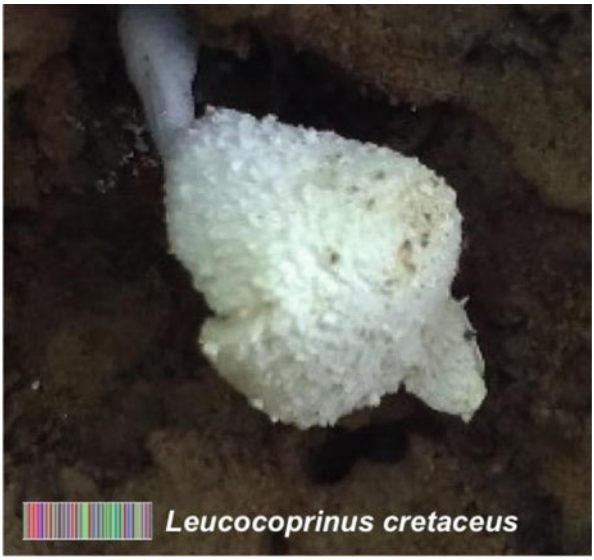
Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Leucoagaricus.*
Species: *rubrotinctus.*

Collection Details
Collection date: 12-Sep-2014.
Location: Gandhinagar.
GPS: N 23.2398 E 72.6759.
Collected by:

Unique IDs
BAB ID: DRSBAB 4737.
Accession No.: KR154966.
Process ID: MGEN404-14.

Common name: None.
Ecology: Generally found solitary to scattered in duff in hardwood woods.
Cap: Cap is 2–6 cm in diameter, rounded to ovoid, becoming convex, in age nearly plane with an umbonate disc; smooth; the disc shows various shades of brown shading to a lighter margin, cuticle soon splitting, becoming radially fibril.
Gills: Gills are free, close, white and moderately broad.
Stem: Stem is 4–10 cm long, 0.4–0.7 cm thick, hollow, fragile, equal to slightly enlarged at the base; surface white, smooth or with a scattering of fibrils; veil membranous forming a persistent, superior ring.
Flesh: White and thin flesh.
Odor and taste: Mild odor and taste.
Microscopic features: The spores are 7.5–9 × 5–6 μm, elliptical, smooth.
Season: July to October in Gujarat.
Importance: *Leucoagaricusrubrotinctus* is a widespread species of fungus in the family Agaricaceae. It was described as new to science in 1884 by American mycologist Charles Horton Peck as*Agaricusrubrotinctus.* In 1948 Rolf Singer transferred it to the genus *Leucoagaricus*. The fungus may be a complex of several closely related species. It is one of the first mushrooms to appear in soon after the start of rains.

Leucocoprinus Cretaceous



Identification

Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Leucocoprinus.*
Species: *cretaceous.*

Collection Details

Collection date: 22-Sep-2014.
Location: Gandhinagar.
GPS: N 23.1971 E 72.64.
Collected by:

Unique IDs

BAB ID: DRSBAB 4735.
Accession No.: KR154964.
Process ID: MGEN402-14.

Common name: None.

Ecology: Saprobic; Grow in bundles or in groups on woodchips, sawdust, and compost heaps.

Cap: Cap is 1.5–4.5 cm in diameter, Shape varies at first narrowly oval, truncate at the crest, the periphery obviously drained to the stipe, in age the cap increasing to hemispheric and the surface is dry and smooth disc. In the initial stage have appressed fibrillose that soon develop small white to cream-colored scales that turn to brown in age.

Gills: free, close to crowded, relatively broad, white in color which is changed from yellowish to light brown with age.

Stem: Stem length is 2–6 cm whike thickness is 0.4–0.8 cm. willowy, lenear to curved, void, attenuating to enlarged, more or less bulging base; surface is dry, white in color, unpolished, discolouring yellowish-brown to brown where handled or weathering so; sparsely pruinose at the apex, otherwise smooth to minutely hairy.

Flesh: soft, thin and unchanging, white in color.

Odor and taste: Mild odor and taste.

Microscopic features: The spores are 8.5–10.5 × 5–6.5 μm, elliptical in shape, with smooth and an apical pore, weakly to strongly dextrinoid.

Season: July to October in Gujarat.

Importance: This modest-sized, white *Leucocoprinus* fruits primarily found in parks, gardens, etc., rarely in native forests. Its important field characters of this mushroom are a typically complete, finely-scaled cap with a vein margin, a partial veil which may form a superior annulus or leave fragments on the cap, also having the tendency to change color from yellow-brown to brown when handled.

Leucocoprinus Fragilissimus

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Leucocoprinus.*
Species: *fragilissimus.*

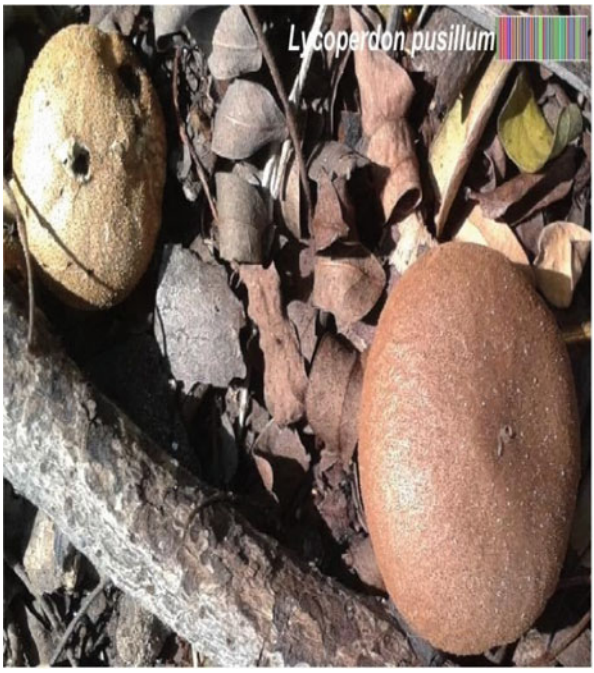
Collection Details
Collection date: 16-Sep-2014.
Location: Gandhinagar.
GPS: N 23.236 E 72.678.
Collected by:

Unique IDs
BAB ID: DRSBAB 5104.
Accession No.: KR155122.
Process ID: MGEN686-15.

Common name: Fragile dapperling.
Ecology: Saprobic; Survive on very decayed plant matter (humus or compost). It grows singly or rarely in wooded areas.
Cap: Cap is up to 4.5 cm in diameter, bell-shaped when young and becoming convex on reaching maturity. It has a pale yellow colour that decolorizes with age.
Gills: Gills are free and white in color.
Stem: Stem is narrow 0.1–0.3 cm thick and very fragile.

Flesh: White and thin flesh.
Odor and taste: Not distinctive.
Microscopic features: Not known.
Season: July to October in Gujarat.
Importance: This species was documented for the first time by French mycologist Narcisse ThéophilePatouillard in 1900. This species also shows similarity with*Leucocoprinusmagnicystidiosus*, although the later have a darker disc and larger cheilocystidia.

Lycoperdon Pusillum



Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Agaricaceae.
Genus: *Lycoperdon.*
Species: *pusillum.*

Collection Details
Collection date: 22-Sep-2014.
Location: Gandhinagar.
GPS: N 23.23 E 72.658.
Collected by:

Unique IDs
BAB ID: DRSBAB 5048.
Accession No.: KR155093.
Process ID: MGEN679-15.

Common name: None.
Ecology: Either grows singly, scattered, or in small groups on edges of grassy areas, disturbed ground, e.g. vacant lots, along paths.
Cap: This puffball is 1.5–4.0 cm in diameter, spherical to cushion-shaped. Cap is connected to the substrate with the help of one or more root-like rhizomorphs. Exoperidium persistent, white, at first tomentose-subflocculose, soon breaking up into light-brown to creamish-brown areolae or fine warts, with age exposing an ochre-brown to medium-brown, glabrous, papery-thin endoperidium. It releases spores via a ragged apical pore, with soft and white gleba soon turning to yellowish-olive to olive-brown, medium-brown at maturity.
Gills: Absent.
Stem: Absent.
Flesh: White turning to medium-brown at maturity.
Odor and taste: Not distinctive.
Microscopic features: The size of the spores are 3.5–4.5 μm, spherical in shape, rather thick-walled, and smooth to barely warted, with a middle oil droplet and stub-like pedicel.
Season: July to November in Gujarat.
Importance: *Lycoperdon* is a genus of puffball mushrooms. It is most likely to be confused with *Bovista dermoxantha* that has a similar peridium and is also rooted.

Ganodermataceae

A large family of order Polyporales consisting of more than 300 species. Six species are reported here. Most of the species are imprtant with pharmoacologically active compounds. iT is also the medicinal mushrooms. It has a double spore wall.

Ganoderma Applanatum

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_11

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Ganodermataceae.
Genus: Ganoderma.
Species: applanatum.

Collection Details
Collection date: 29-Aug-2014.
Location: Patan.
GPS: N 23.8071 E 72.1163.
Collected by: Anamika Prajapati, Likhita Savalia, Dr. Himanshu Bariya.

Unique IDs BAB ID: BAB 5249.
Accession No.:
Process ID: MGEN806-15.

Common name: Artist's conk.
Ecology: Saprobic and sometimes parasitic. It may grow alone or in groups.It can grow on decaying hardwood logs and stumps, or from the wounds of injured, living trees. It can produce a white to straw-colored rot of sapwood and heartwood.
Cap: 10–30 cm across; 8–14 cm deep. Cap is somewhat crescentic in outline, or may be irregular. Surface with a monotonous, bare external crust, frequently crinkled in "zones, ". Brownish to grayish brown in color and bald.
Gills: None.
Stem: generally missing; if present, then it is lateral and very stumpy.
Flesh: Thin; brown to cinnamon brown in color; woody in appearance.
Odor and taste: Not distinctive.
Microscopic features: 6–9 × 4–5 μm in dimensions after the crumple of hyaline vesicular appendix; somewhat oval, with a shortened end; appearing double-walled, with a series of "pillars" between the walls; finely stippled.
Edibility: unedible.
Season: rainy season.
Importance:
Comments: This is the well-known Artist's conk, used byartists to etch drawings.
Reference: https://www.mushroomexpert.com/ganoderma_applanatum.html, https://www.messiah.edu/Oakes/fungi_on_wood/poroid%20fungi/species%20pages/Ganoderma%20applanatum.htm

Ganoderma Australe

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Ganodermataceae.
Genus: Ganoderma.
Species: australe.

Collection Details
Collection date: 24-Aug-2014.
Location: Waghai.
GPS: N 20.46 E 73.29.
Collected by: Ankur Patel.

Unique IDs
BAB ID: BAB 4560.
Accession No.:
Process ID: MGEN381-14.

Common name: Southern bracket.
Ecology: In Italy,it has been found growing on pine trees and therefore it can grow on other kinds of conifers also. It fabricates brackets on the bottom parts of hardwood tree trunks.
Cap: browsnish to greyish brown.
Stem: None.
Odor and taste: Very little odour but a bitter taste.
Microscopic features: Ovoid, twin-walled, truncate at the apex, 8–13 × 5.5–9 μm.
Season: Perennial and releases spores in autumn and late summer.
Reference: https://www.first-nature.com/fungi/ganoderma-australe.php

Ganoderma Multipileum

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Ganodermataceae.
Genus: Ganoderma.
Species: multipileum.

Collection Details
Collection date: 22-Sep-2014.
Location: Indroda village, Gandhinagar.
GPS: N 23.19 E 72.654.
Collected by: Dhrupa Raval, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 5246.
Accession No.:
Process ID: MGEN737-15.

Common name: lingzhi or chizhi.
Ecology: woody.
Cap: 5–10 cm in size and 2 cm thick, flabellate and reniform, upper surface is orange/brown.
Stem: very short base.
Flesh: thick, yellow and corky.
Odor and taste:
Microscopic features: basidiospores ovoid, truncate, brown, slightly conspicuous, 6 × 5 micron.
Edibility: edible.
Season: rainy season.
Importance: This has been used as a medicinal mushroom from the past 2000 years.
Reference: https://en.wikipedia.org/wiki/Ganoderma_multipileum

Ganoderma Steyaertanum

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Ganodermataceae.
Genus: Ganoderma.
Species: steyaertanum.

Collection Details
Collection date: 26-Aug-2014.
Location: J road, gandhinagar.
GPS: N 23.214 E 72.669.
Collected by: Dhrupa Raval, Ishita Joshi, Meghna Bhatt

Unique IDs
BAB ID: BAB 5191.
Accession No.:
Process ID: MGEN732-15.

Ecology: woody trees, specially in monsoon.
Cap: fruiting body is rough with concentric zones of dark and light brown, 5–50 cm, usually near the ground.
Stem: sessile.
Flesh: brown, hard, woody.
Odor and taste:
Microscopic features: spores are brown and ovoid, 8 × 9 micron.
Edibility: inedible.
Season: rainy.
Importance: root rot pathogen of forest trees.

Ganoderma Tropicum

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Ganodermataceae.
Genus: Ganoderma.

Species: tropicum.

Collection Details
Collection date: 22-Sep-2014.
Location: Kh Road, Gandhinagar.
GPS: N 23.245 E 72.641.
Collected by: Dhrupa Raval, Ishita joshi, Meghna bhatt.

Unique IDs
BAB ID: BAB 4988.
Accession No.:
Process ID: MGEN499–15.

Cap: semicircular 7 cm length, 1.5 cm thick, yellow to brown.
Stem: sessile, dimidiate.
Odor and taste: distinctive odor.
Microscopic features: basidiosores ellipsoid with double walled, brownish with a tapering end, usually overlaid with myxosporium, 7–10 micron.
Season: rainy season.

Ganoderma Carnosum

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Ganodermataceae.
Genus: Ganoderma.
Species: carnosum.

Collection Details
Collection date: 12-Sep-2014.
Location: Near Vanchetna.
GPS: N 23.238 E 72.675.
Collected by: Dhrupa Raval, Meghna Bhatt, Ishita Joshi.

Unique IDs
BAB ID: BAB 4510.
Accession No.
Process ID: MGEN696-15.

Common name: bracket fungus.
Ecology: Parasitic and saprophytic. It grows on living trees and also found on the rotten woods also. It is found growing on trunks or emerging from just below the ground where it is attached to tree roots.
Cap: upto 20 cm long and 7 cm thick, irregular ad bumpy surface, shiny surface.
Stem: sessile.
Flesh: hard.
Odor and taste: Not distinctive.
Microscopic features: Spores are Ellipsoidal to ovoid in shape, 10–13 × 7-8 μm in size; decorated with many warts. Inamyloid.
Season: summer and autumn. However new fruitbodies can come into view on the same host for many years.
Reference: https://www.first-nature.com/fungi/ganoderma-carnosum.php

Ganoderma Lucidum

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Ganodermataceae.
Genus: Ganoderma.
Species: lucidum.

Collection Details
Collection date: 11-Aug-2014.
Location: Ayurvedic garden.
GPS: N 23.221 E 72.68.
Collected by: Dhrupa Raval, Ishita Joshi, Meghna Bhatt

Unique IDs
BAB ID: BAB 5105.
Accession No.:
Process ID: MGEN694-15.

Common name: "herb of spiritual potency".
Ecology: tropical and temperate geographical regions, growing as a parasite or saprotroph on a wide variety of trees.
Cap: Cap is red-varnished, kidney-shaped.
Gills: lacks gills and releases spores via pores.
Flesh: woody.
Odor and taste:
Microscopic features: spores 5–6 micron with myxospores.
Edibility: edible.
Season: rainy season.
Importance: has medicinal value.
Reference: https://www.ncbi.nlm.nih.gov/books/NBK92757/; https://en.wikipedia.org/wiki/Lingzhi_mushroom

Ganoderma Neojaponicum

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.

Order: Polyporales.
Family: Ganodermataceae.
Genus: Ganoderma.
Species: neojaponicum.

Collection Details
Collection date: 22-Jul-2014.
Location: GFRI.
GPS: N 23.2369 E 72.6788.
Collected by: Dhrupa Raval, Ishita Joshi, Meghna Bhatt, Pankti Mistry, Ankur Patel, Sruthi Thoota.

Unique IDs
BAB ID: BAB 4722.
Accession No.:
Process ID: MGEN389-14.

Common name:
Ecology: It is a Rare mushroom which mostly exist on bamboo.
Cap: brown in color, woody texture, 14 cm, upper surface is woody textured.
Stem: length is about 5–10 cm and thickness is about 2 cm.
Flesh: dark brown in color and the texture is woody.
Microscopic features: ellipsoid in shape, apex is truncated and double wall is present.
Edibility: edible.
Season: rainy season.
Importance: medicinal importance.
Comments: No information.

Phanerochaetaceae

Most important feature of this family is crust like appearance. Hphae lacks clamp connections and they arre monomitic. More than 30 genera have been reported in this study. Phanaerochaeteis the type genus. The cytidia is mostly attached with hyenium. They are responsible for white rot. **Phanerochaetaceae family** is **cosmopolitan in occurence and distributed** throughout. One species of type genus Ceripria lacerata is reported in this study.

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_12

Ceriporia Lacerata

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Phanerochaetaceae.
Genus: Ceriporia.
Species: lacerata.

Collection Details
Collection date: 23-Jul-2014.
Location: Ayurvedic Garden, Gandhinagar.
GPS: N 23.2209 E 72.6794.
Collected by: Sruthi Thoota, Meghna Bhatt, Ishita Joshi.

Unique IDs
BAB ID: BAB 5250.
Accession No.:
Process ID: MGEN772-15.

Cap: Cap is found to be attached firmly at their substrate. It is effused and basidiocarpresupinate.
Stem: none.
Flesh: It is found to be soft at fresh stage but becomes fragile as the time passes.
Odor and taste:
Microscopic features: hyphal system monomitic with simple septa. Basidia clavate, has four sterigmata with a simple septum, 9–15 × 4–5 μm. Basidiospores oblong-ellipsoid, hyaline, thin-walled, smooth, slightly curved, 3.5–5 × 2.0–4.0 μm.
Edibility: inedible.
Season: rainy season.

Phanerochaete Chrysosporium

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Phanerochaetaceae.
Genus: Phanerochaete.
Species: chrysosporium.

Collection Details
Collection date: 20-Aug-2014.
Location: Polo forest camp site.
GPS: N 23.9902 E 73.2909.
Collected by: Mitesh Patel, Dr. K.S. Rajput.

Unique IDs
BAB ID: BAB 4409.
Accession No.:
Process ID: MGEN642-15.

Common name: white rot fungus.
Ecology: Saprophytic fungus.
Cap: effused and flat fruiting body, white and appear like crust.
Stem: none.
Flesh: soft.
Odor and taste:
Microscopic features: Hyphae thin walled 4–8 micron in diameter, hyphae branched and lack clamps.
Edibility: not edible.
Season: rainy season.
Importance: Model white rot fungus. It has the ability to degrade lignin and when cellulose and lignin are together, lignin is degraded and cellulose is left behind. It is the first member of basidipmycetes to have its genome sequenced.

Polyporaceae

They are a family of poroid fungi. The flesh is soft to very tough. Once grown they do not decay easily. They often grown on wood with very minute spores. The fruiting body is flat like a shelf. When they grow actively they are soft, but then they tend to be very hard, and woody.

Dichomitus Squalens

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_13

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Polyporaceae.
Genus: Dichomitus.
Species: squalens.

Collection Details
Collection date: 03-Jan-2014.
Location: Motibaug, Junagadh.
GPS: N 21.504 E 70.4507.
Collected by: Hemal Ram, Meghna Bhatt, Ishita Joshi, Rinni Raval.

Unique IDs
BAB ID: BAB 4366.
Accession No.:
Process ID: MGEN366-14.

Common name:
Ecology: Dichomitus squalens is an efficient wood-degrading white-rot fungus that predominantly degrades softwood, but can also grow on hardwoods in nature. D. squalens is found in boreal forest ecosystem.
Cap: crust like, typically white in color.
Stem: sessile.
Flesh: white and later creamy.
Odor and taste:
Microscopic features: Spores cylindrical, hyaline, inamyloid, hyphal system dimitic.
Edibility: Non-edible.
Season: Rainy Season
Importance: Decolorization of Orange G and Remazol Brilliant Blue R
Reference: The Macrofungus Flora of China's Guangdong Province, By Zhishu Bi, Guoyang Zheng, Li Taihui

Lenzites Betulinus

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Polyporaceae.
Genus: Lenzites.
Species: betulinus.

Collection Details
Collection date: 24-Aug-2014.
Location: Bhinar, Navsari.
GPS: N 20.8217 E 73.3188.
Collected by: Ankur Patel, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 4718.
Accession No.:
Process ID: MGEN385-14.

Common name: Birch Mazegill.
Ecology: On living or dead hardwood trees, particularly birch.
Cap: Many-zoned when mature, often pinkish fan-like brackets, up to 10 cm across and 1–2 cm thick at the point of attachment; usually in tiers.
Gills: The gills are white at first, turning brown with age; well-spaced; sharp-margins; hard; with deepness of 1 cm deep.
Stem: Not present.
Flesh: very tough and corky.
Odor and taste: Not distinctive.
Microscopic features: Cylindrical, smooth, 5–6 × 2-3 μm; inamyloid.
Season: All through the year, but shedding spores in autumn.
Reference: https: //www.first-nature.com/fungi/lenzites-betulinus. php; https://www.mushroomexpert.com/lenzites_betulina.html

Lenzites Elegans

Identification
Phylum: Basidiomycota
Class: Agaricomycetes.
Order: Polyporales..
Family: Polyporaceae.

Genus: Lenzites.
Species: elegans.

Collection Details
Collection date: 23-Jul-2014.
Location: Ayurvedic Garden.
GPS: N 23.221 E 72.68.
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 5168.
Accession No.
Process ID: MGEN706-15.

Common name: None.
Ecology: Saprobic; scattered, mostly grows on rotting deciduous wood.
Cap: 2–14 cm wide.
Stem: Most of the time stem is not present. However, if present it is stubby and lateral.
Flesh: tough, corky and Whitish.
Odor and taste:
Microscopic features: Spores 5–7 × 2–3 μ in size; smooth in texture; cylindric to long-elliptic in shape.
Edibility: Inedible.
Season: July through December.
Reference: https://www.messiah.edu/Oakes/fungi_on_wood//poroid%20fungi/species%20pages/Lenzites%20elegans.htm; https://www.mushroomexpert.com/trametes_elegans.html

Microporus Vernicipes

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Polyporaceae.
Genus: Microporus.
Species: vernicipes.

Collection Details
Collection date: 24-Aug-2014.
Location: Bhinar, Navsari.
GPS: N 20.822 E 73.319.
Collected by: Ankur Patel, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 5195.
Accession No.:
Process ID: MGEN743-15.

Common name:
Ecology: solitary and parasitic.

Cap: semi-circular, approximately 45 × 35 mm in diameter, thin, and flexible. Upper surface is reddish brown and is glabrous and smooth.
Gills: White pore surface, with pores 6–8 mm.
Stem: White, round, and bloated at base. Bare, length is 15–20 mm and the width is 1–3 mm. White pad of mycelium covers the upper side of stipe while the lower side is covered with caudad pores.
Flesh: thin.
Microscopic features: 1.79–3.94 μm wide hyphae is hyaline, intertwined, thin walled, fastened at septa, branched. Basidiospores (4.29–5.33 μm) are cylindrical in shape, smooth in texture, hyaline and skinny walled.
Season: rainy season.
Importance: used as food and medicine.
Reference: Molecular Phylogeny of Polyporales from Bafut Forest, Cameroon and Their Importance to Rural Communities. Doi https://doi.org/10.5296/jbls.v10i2.14339

Polyporus Grammocephalus

Identification
Phylum: Basidiomycota.

Class: Agaricomycetes.
Order: Polyporales.
Family: Polyporaceae.
Genus: Polyporus.
Species: grammocephalus.

Collection Details
Collection date: 20-Sep-2014.
Location: Polo forest camp site.
GPS: N 24.0102 E 73.2943.
Collected by: Anamika Prajapati, Likhita Savalia, Dr. Himanshu Bariya.

Unique IDs
BAB ID: BAB 5006.
Accession No.:
Process ID: MGEN549-15.

Common name:
Ecology: annual, dimidiate, shortly stipitate.
Microscopic features: It is cottony white, spreading like cotton threads initially but later becomes leathery, pelliculose and when completely grown on plates having uneven, wrinkled or wavy surface. The hyphae on the plates are hyaline, thin walled, septate with narrow lumen with sparse branching. When the mycelial branches were observed under microscope, the mycelial hairs were found to be loosely arranged and not intact, can be easily separable.
Edibility: Edible.
Season: Annual.
Importance: extracts may be important for cancer prevention.
Comments: It is cosmopolitan and the main characteristics are its laterally arranged stipe, pale yellow coloured pileus having radial striae, a pale brown coloured hymenophore, pores are of 4–5 per mm in size, barrel shaped basidiospores (4.4–8.5 × 2.3–3.5 μm diam). The hyphal system is dimitic type while binding hyphae are bovista type.
Reference: https://rjptonline.org/HTML_Papers/Research%20Journal%20of%20Pharmacy%20and%20Technology__PID__2018-11-11-67.html

Polyporus Leprieurii

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Polyporaceae.
Genus: Polyporus.
Species: leprieurii.

Collection Details
Collection date: 24-Aug-2014.
Location: Bhinar, Navsari.
GPS: N 20.8216 E 73.3187.
Collected by: Ankur Patel, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 4716.
Accession No.:
Process ID: MGEN383-14.

Common name:

Ecology: It is found mostly in tropical to subtropical areas of America and Eastern Asia. It grows on dead hardwood that is lying on the ground, or on hanging branches annual to biannual.

Cap: basidiomata, arrangement of stipes varies from central to lateral;

Gills:

Stem: pileus flabelliform to spathulate, mostly slightly covered, width is 2–5 cm, thickness is up to 2 mm.

Flesh: When fresh it is coriaceous, and then turns hard when it is dry. When fresh its upper surface is of light yellowish brown which turns to tobacco brown when dry.

Microscopic features: pore surface color is tan to typically greyish brown, pores may be round to angular in shape, small sized (5–8 per mm), strongly delimited towards the stipe; context ochraceous to beige, thickness is less than or around 1 mm; stipe up to 2 cm long and 2–3 mm wide, round, black and smooth, usually elongating to form rhizomorphs which can grow up to 12 cm long.

Season: annual to biannual.

Reference: http://iucn.ekoo.se/iucn/species_view/161105/, Núñez et al. 1995.

Trametes Elegans

Identification

Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Polyporaceae.
Genus: Trametes.
Species: elegans.

Collection Details

Collection date: 26-Aug-2014.
Location: Jessore, Banaskantha.
GPS: N 24.4065 E 72.5242.
Collected by: Anamika Prajapati, Likhita Savaliya, Dr. Himanshu Bariya.

Unique IDs

BAB ID: BAB 4771.
Accession No.:
Process ID: MGEN438-14.

Common name:

Ecology: saprobic, grows on the rotten hardwoods. It can grow alone or in groups on logs and stumps.
Cap: Size of the cap is Up to 35 cm across and 3 cm thick, crescentic, irregularly bracket-shaped, or kidney-shaped; flattened-convex; bumpy near the point of connection, smoother toward the thin edges; most of the time with concentric zones of texture; whitish to buff in color.
Gills:
Stem: Mostly not present, However, if present it is stubby and lateral.
Flesh: corky and tough, whitish in color.
Microscopic features: Spores 5–7 × 2–3 μ; smooth; cylindric to long-elliptic.
Edibility: Inedible.
Season: It is annual or rarely perennial,spring through fall.
Importance: It causes causing a white rot of the sapwood.
Reference: https://www.mushroomexpert.com/trametes_elegans.html; https://www.messiah.edu/Oakes/fungi_on_wood/poroid%20fungi/species%20pages/Trametes%20elegans.htm

Trametes Trogii

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Polyporaceae.
Genus: Trametes.
Species: trogii.

Collection Details
Collection date: 29-Aug-2014.
Location: Khambhat.
GPS: N 22.324 E 72.622.
Collected by: Ankur Patel, Meghna Bhatt, Ishita Joshi.

Unique IDs
BAB ID: BAB 5261.
Accession No.:
Process ID: MGEN754-15.

Common name:
Ecology:
Cap:
Gills:

Stem:
Flesh:
Odor and taste: None.
Microscopic features:
Edibility: Non edible.
Season: rainy season.
Importance: In bioremediation, It can degrade nitrobenzene and anthracene, anthraquinone dyes and polychlorinated biphenyls. Extracellular polysaccharides (EPSs) produced by submerged culture of *Trametes trogii* exhibit antioxidant and antitumor activities. Decolorization of various leather dyes and leather industry effluent
Comments: No information
Reference: Levin Et al.,2003 http://www.dl.begellhouse.com/journals/708ae68d64b17c52,72e9ed69099c0eef,6d9470ca476bbbff.html

Psathyrellaceae

The Psathyrellaceae are a family of dark-spored agarics that generally have rather soft, fragile fruiting bodies, and are characterized by black, dark brown, rarely reddish, or even pastel-colored spore prints. About 50% of species produce fruiting bodies that dissolve into ink-like ooze when the spores are mature via autodigestion.

Psathyrella Sulcatotuberculosa

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_14

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Psathyrellaceae.
Genus: Psathyrella.
Species: sulcatotuberculosa.

Collection Details
Collection date: 27-Aug-2014.
Location: J road, Gandhinagar.
GPS: N 23.214 E 72.669.
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt.

Unique IDs
BAB ID: BAB 5172.
Accession No.:
Process ID: MGEN710-15.

Common name:
Ecology: Grows on wet places and greenhouses.
Cap: Pileus young hemispherical in shape, up to 20 mm wide spreading, when it gets old the margins mostly rolled up, gray-brown to medium brown with lighter margin, strongly reticular-wrinkled, veil young distict, very pale yellowish in color, volatile.
Microscopic features: **Spores** (6,5-) 7,5–9,5 × 4–5 µm, av. 8,4 x 4,9 µm, av. Q = 1,71, ellipsoid, ovoid, germ pore absent or very indistinct. In water pale yellowish.
Basidia 13,5 × 22 × 7–10 µm, mostly 4-spored.
Cheilozystidia 12,3–45 (−85) × 8–15 (−25) µm, sometimes with slightly thickened yellowish walls, numerous and crowded.
Pleurozystidia absent.
Velumzellen 15–33 × 4–10 µm, often with slightly thickened yellowish walls and somewhat encrusted.
Clamps present.
Season: rainy season.
Reference: http://www.vielepilze.de/selten/psat/bekannt/sulcato/esumsulcato.html

Coprinellus Micaceus

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Psathyrellaceae.
Genus: *Coprinellus.*
Species: *micaceus.*

Collection Details
Collection date: 12-Aug-2014.
Location: Thol.
GPS: N 23.144 E 72.393.
Collected by:

Unique IDs
BAB ID: DRS BAB 5203.
Accession No.: KT188612.
Process ID: MGEN747-15.

Common name: Mica cap, Shiny cap and glistening inky cap.
Ecology: Saprobes; Always grows in clusters, rarely found singly near hardwood tree stumps or underground tree roots.

Cap: Cap is 1–2.5 cm in diameter when young and reaches to 0.8–3 cm at maturity, oval, egg-shaped to bell-shaped that is covered with white salt-like granules which are washed away from the older species converting into flat slightly convex cap. On expansion the margin turns upward slightly and split into rays. It is ochre-brown in color with darker centre that turns grey-brown as it ages.

Gills: Gills are narrow and closely arranged, on expansion of cap gills tend to separate from each other tearing the cap margins and form rays. The gills are white initially then change to brown colour and eventually black as spores mature.

Stem: Stem is 4–10 cm long and 0.2–0.5 cm thick, white overall and may discolour to pale cream at the base.

Flesh: White, small and thin flesh.

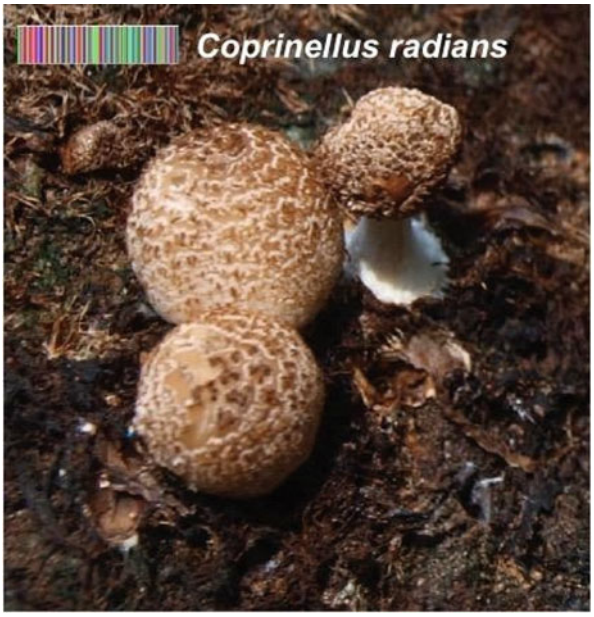
Odor and taste: Odor are barely distinguishable and mild or negligible taste.

Microscopic features: The spores are 7–10 × 4.5-6 μm, shield-shaped and smooth.

Season: July to September in Gujarat.

Importance: *C. micaceus* contains the high concerntration of potassium according to a study. It has been advised not to consume the specimens that are collected from the roadsides or other sites that may be exposed to or contain pollutants. This genus appears to be similar to the genus *Coprinus*. The difference between the two genus is *Coprinellus* have smaller fruitbodies than those of *Coprinus* species. The species *micaceus*means similar to grains of salt and refers to tiny granules. In wet weather these granules are sometimes washed away so that the surfaces of mature caps become entirely smooth rather than granular.

Coprinellus Radians



Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Psathyrellaceae.
Genus: *Coprinellus.*
Species: *radians.*

Collection Details
Collection date: 25-Aug-2014.
Location: Gandhinagar.
GPS: N 23.2454 E 72.6706.
Collected by:

Unique IDs
BAB ID: DRS BAB 4744.
Accession No.: KR154973.
Process ID: MGEN411-14.

Common name: Unknown.
Ecology: Saprobic, usually grows in small cluster and rarely found singly.

Cap: Cap is 5–6 cm in diameter, shape changes from oval to conical or convex. It has honey yellow colour and whitish at the margin when young and grows to grey with a brownish centre. The surface is covered with white to brownish fragments in the form of small scales or granules.

Gills: Gills are usually attached to the stem, initially white then grey to black in colour.

Stem: Stem is 4–10 cm in length and up to 1 cm thick, slightly bulbous at the base, hallow, smooth and white.

Flesh: Fragile and very thin.

Odor and taste: Not distinctive.

Microscopic features: The spores are larger in size ranging from 8.5–11.5 × 5.5–7 μm.

Season: August to October in Gujarat.

Importance: *Coprinellus radians* one of the mushroom in the *Psathyrellaceae* family. In 1828, mycologist John Baptiste Henri Joseph Desmazières described this species as *Agaricus radians*, but in 2001 it was transferred to the genus*Coprinellus.*

Psathyrella Candolleana

Identification

Phylum: Basidiomycota.

Class: Agaricomycetes.

Order: Agaricales.

Family: Psathyrellaceae.

Genus: *Psathyrella.*

Species: *candolleana.*

Collection Details
Collection date: 12-Aug-2014.
Location: Thol.
GPS: N 23.144 E 72.393.
Collected by:

Unique IDs
BAB ID: DRS BAB 5202.
Accession No.: KT188611.
Process ID: MGEN746-15.

Common name: White Satirela.

Ecology: Saprobic, commonly grows on lawn, in woodlands or meadows. This is very common and widespread mushroom. If the conditions are favourable then this species can grow at any time during the year.

Cap: Cap is 3–11 cm in diameter, having rounded-conical shape when young, which with age beomes broadly convex, bell-shaped or nearly flat. It changes colour from honey yellow to pale brown or nearly white when it dries out. The margin has very minute veils initially that on maturity often splits radially.

Gills: Gills are closely arranged and crowded that may be attached to the stem or free, initially white then greyish and finally dark brown in colour**.**

Stem: Stem is 4–9 cm long and 0.3–0.5 cm in diameter, very fragile and light creamish to brown in colour.

Flesh: White turning to medium-brown at maturity.

Odor and taste: Not distinctive.

Microscopic features: size of spores is 3.5–4.5 μm, globose, moderately thick-walled, and smooth to faintly warted, with a central oil droplet and stub-like pedicel.

Season: July to November in Gujarat.

Importance: *Psathyrellacandolleana* is a very delicate member of the inkcap-related group of fungi. This mushroom occurs in all kinds of woodlands and woodland clearings as well as on timber buried in damp grassland. Psathyrella, the genus name, is the diminutive form of Psathyra, which comes from the Greek word psathuros meaning friable; it is a reference to the crumbly nature of the caps, gills and stems of mushrooms in this genus. The specific epithet candolleanahonours Swiss botanist Augustin Pyramus de Candolle.

Tricholomataceae

It is a large family of mushrooms within the Agaricales. Originally a classic "wastebasket taxon", the family included any white-, yellow-, or pink-spored genera in the Agaricales not already classified as belonging to e.g. the Amanitaceae, Lepiotaceae, Hygrophoraceae, Pluteaceae, or Entolomataceae.

Lepista Sordida

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_15

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Tricholomataceae.
Genus: Lepista.
Species: sordida.

Collection Details
Collection date: 16-Sep-2014.
Location: GFRI campus, Gandhinagar.
GPS: N 23.2363 E 72.6786.
Collected by: Sruthi Thoota, Ishita Joshi, Meghna Bhatt, Ankur Patel, Dhrupa Raval, Pankti Mistry.

Unique IDs
BAB ID: BAB 4764.
Accession No.:
Process ID: MGEN431-14.

Ecology: **It is** Saprobic, grows in mixed woodland frequently found in the areas where leaf litter collects and rots. However, it is also found in flower or vegetable gardens as well as sometimes on compost loads.
Cap: **Size of the cap is** 3–8 cm across. Shape varies from initially protuberant, flattening out or expanding a medial depression when it matures. Cap mostly has imperceptible umbo and a wavy circumference; deep lilac in color, which turns to brown from the middle in dry season.
Gills: Emarginate or sinuate and crowded, the gills are initially greyish lilac in color fading to buff with age.
Stem: Length of the stem is 4–6 cm long and diameter is 5–8 mm.; fibrillose; lilac; downy and white at base; ring is absent.
Odor and taste: Somewhat scented; gentle taste is somewhat floury but not idiosyncratic.
Microscopic features: Spores Ellipsoidal, 6–9 by 4-5 μm; ornamented with tiny spines.
Season: June to October.
Reference: https://www.first-nature.com/fungi/lepista-sordida.php.

Fomitopsidaceae

It belongs to the order Polyporales. Most of the species are parasitic on woody plants, and tend to cause brown rots. The name formitopsidaceae originates comes from fomitopsis meaning "looking like Fomes" + − aceae a suffix used to form taxonomic family names.

Fomitopsis Africana

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_16

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Fomitopsidaceae.
Genus: Fomitopsis.
Species: africana.

Collection Details
Collection date: 22-Sep-2014.
Location: Gh-0, Gandhinagar.
GPS: N 23.118 E 72.38.
Collected by: Sruthi Thoota, Meghna Bhatt, Ishita Joshi.

Unique IDs
BAB ID: BAB 5073.
Accession No.:
Process ID: MGEN677-15.

Common name:
Ecology:
Cap: Length is up to 10 cm long, the width is upto 10 mm and the thickness is 10 mm. Basidiocarp is pileate, dimidiate, flabelliform to semicircular, applanate or slightly convex and sometimes slightly imbricate.
Microscopic features: pores are round to slightly angular in shape,size is 3–4 per mm, tubes are light pink in color, thickness is upto 3 mm, context fibrous cottony. Hyphal system dimitic; generative hyphae with clamps, hyaline, 1–3 mm wide, skeletal hyphae dominating in the basidiocarp, hyaline to pale yellow when dipped in KOH.
Reference: https://www.zobodat.at/pdf/Sydowia_49_0147-0149.pdf

Meripilaceae

The Meripilaceae family of fungi belongs to Polyporales order and was restrined by Swiss mycologist Walter Jülich in 1982. Meripilus is the type genus of this family. 7genera and 57 species were placed in Meripilaceae family in a 2008 estimate.

Meripilus Giganteus

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_17

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Meripilaceae.
Genus: Meripilus.
Species: giganteus.

Collection Details
Collection date: 24-Aug-2014.
Location: Bhinar, Navsari.
GPS: N 20.822 E 73.319.
Collected by: Ankur Patel, Meghna Bhatt, Ishita Joshi.

Unique IDs
BAB ID: BAB 5175.
Accession No.:
Process ID: MGEN713–15.

Common name: giant polypore or black-staining polypore.
Ecology: it is a parasite,grows on the living oaks and other hardwoods as well as saprobic when grows on the deadwood of hardwoods. It causes white rot disesase in plants on which it grows. It normally grows in large clusters of rosettes near the bases of trees; often reappearing in the same place in subsequent year.
Cap: 5–20 cm across; fan-shaped; finely velvety or bald; whitish becoming brownish with age; often radially streaked and concentrically zoned; the margin thin, bruising and aging black.
Stem: Whitish in color, with age turns brown to blackish; tough; short; often off-center.
Flesh: It is firm; white; rathergristly.
Odor and taste: soft; pleasing.
Microscopic features: Spores 5–5.5 × 4.5–5 μ; smooth; subglobose; inamyloid; with a distinct apiculus. Fusoid cystidioles present but not projecting. Hyphal system monomitic. Clamp connections absent throughout.
Edibility: inedible, due to its very crude flesh and mildly acidic taste.
Season: June – October.
Reference: https://en.wikipedia.org/wiki/Meripilus_giganteus; http://www.tree-guide.com/giant-polypore

Meruliaceae

Members of this family all grow on rotting wood and tend to form very simple fruiting bodies (simple sheets). A microscope is generally needed to identify many of them.

Flavodon Flavus

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_18

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Polyporales.
Family: Meruliaceae.
Genus: Flavodon.
Species: flavus.

Collection Details
Collection date: 27-Aug-2014.
Location: Khambhat.
GPS: N 22.341 E 72.615.
Collected by: Anamika Prajapati, Likhita Savaliya, Dr. Himanshu Bariya.

Unique IDs
BAB ID: BAB 4774.
Accession No.:
Process ID: MGEN441-14.

Microscopic features: Fruit body is effused and reflexed, leathery in texture, thickness up to 2 mm, facet of the edges light brown to yellow in color. Hymenophores are initially poroid, becoming with irregular teeth, yellow to pale yellow in color. Tissue turning reddish brown in KOH. Stipe is absent.

Importance: It has very high potential to be used in bioremediation of aromatic pollutants under marine condition as the enzymes produced by them has capability of degradation of dye pollutants. It is also used in decolorization of brown colored melanoidin pigments which is present in the effluent waste matter of molasses-based alcohol distilleries. Presence of yellow colored pigments make it useful in coloring industries.

Reference: http://wildedibles.teriin.org/index.php?album=Mushrooms/Flavodon-flavus.

Tricholomataceae

The Tricholomataceae are a large family of mushrooms within the Agaricales. Originally a classic "wastebasket taxon", the family included any white-, yellow:-, or pink-spored genera in the Agaricales not already classified as belonging to e.g. the Amanitaceae, Lepiotaceae, Hygrophoraceae, Pluteaceae, or Entolomataceae.

Clitocybe Metachroa

M. Joshi et al., *Mushrooms of Gujarat*, Fungal Diversity Research Series,
https://doi.org/10.1007/978-981-16-4999-8_19

Identification
Phylum: Basidiomycota.
Class: Agaricomycetes.
Order: Agaricales.
Family: Tricholomataceae.
Genus: Clitocybe.
Species: metachroa.

Collection Details
Collection date: 12-Sep-2014.
Location: Near Vanchetna.
GPS: N 23.24 E 72.676.
Collected by: Sruthi Thoota, Meghna Bhatt, Ishita Joshi

Unique IDs
BAB ID: BAB 4941.
Accession No.:
Process ID: MGEN605-15.

Common name:
Ecology: Originate in forest, Sometimes found Singlybut most often it is found in groups in mixed and deciduous woodland, grow on leaf litter; but may also grow on roadside verges beside hedges or in churchyards and parkland.
Cap: Shape is convex, then changed to depressed, margin lined. Color: greyish to pale brown almost white when dry with darker centre, to about 5 cm across.
Gills: greyish white in color, decurrent. The fairly packed gill are adnate to faintly decurrent and closely concolorous with the cap but mostly with a pinkish tinge.
Stem: white in color, The smooth or slightly fibrous stem in texuture. It is cylindricalin shape and creamy white or pale buff in color and it lacks a ring.
Odor and taste: Smells distinctly of aniseed; taste not distinctive.
Microscopic features: Spore print white. Spores 5.5-8.5 × 3.5-5 μm.
Season: Autumn and Late summer.
Reference: https://www.naturespot.org.uk/species/clitocybe-metachroa, https://www.first-nature.com/fungi/clitocybe-fragrans.php

Collybia Hariolorum

Identification
Phylum: Basidiomycota
Class: Agaricomycetes.
Order: Agaricales.
Family: Tricholomataceae.
Genus: Collybia.
Species: hariolorum.

Collection Details
Collection date: 23-Sep-2014.
Location: Indroda, Gandhinagar.
GPS: N 23.19 E 72.654.
Collected by: Sruthi Thoota, Meghna Bhatt, Ishita Joshi

Unique IDs
BAB ID: BAB 4944.
Accession No.:
Process ID: MGEN608-15.

Ecology: It grows on the leaves wasteparticularly of alder, beech and birch but it can alsogrow in mixed coniferous and deciduous woods.

Cap: 20–50 mm in Diameter, shape may be hemispherical or convex, opens when ripe on an irregular plane with a hint of umbone, a convoluted to straight margin, sometimes just streaked, slightly hygrophanous. From brownish-pink to pale brown, darker in the center, in a much lighter.

Gills: Cream, adnate, dense, free gills.

Odor and taste: Odor: distasteful of rotten water or putrid cabbage; Taste: rafanoide allahante.

Microscopic features:

Edibility: The very unpleasant smell is enough to depress food eating. Inedible.

Season: spring to summer.

Reference: https://it.wikipedia.org/wiki/Gymnopus_hariolorum; http://www.gljive.look2all.com/en/collybia-hariolorum