

# MUSHROOMS

IN FOREST PLANTATIONS OF  
KANGRA VALLEY







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FROM THE AMERICAN PEOPLE

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**Many forest Mushrooms are poisonous. Never eat a wild mushroom unless an expert has verified that it is edible. Some species cause fatality even if eaten in small quantities.**





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# ACKNOWLEDGEMENT

Fungi are unique organisms - neither plants, nor animals but classified as a distinct kingdom. They share some traits with plants - they are largely immobile and grow much like plants, often in soil or anchored to some substrate. In the case of mushrooms, they form conspicuous plant like fruiting bodies. However, fungi lack chloroplasts, and much like animals cannot manufacture their own food through photosynthesis and must therefore depend on outside sources for nourishment.

In forests, fungi can be found abundantly. They exist mainly as a network of threadlike fibres called hyphae which spread through the soil, fallen leaf litter or even living tissues of plants. This network of hyphae is called the mycelium. Under certain conditions the mycelium of some kinds of fungi produces solid fruiting bodies which rise above the soil or substrate. These we know as mushrooms.

While mushrooms are by no means the most numerous or economically significant fungi, they are the most easily recognised.

# INTRODUC



In this booklet we focus on two types of fungi that form mushrooms and also play a very important and positive role in the forest ecosystem:

### **Mycorrhizal**

these are mutually beneficial associations between fungi and forest trees. The filamentous hyphae link up with the roots of the tree. These increase the reach of the tree roots, allowing the tree to access critical nutrients from a much larger volume of soil. In return, the tree roots provide food to the fungus. This kind of mutually beneficial relationship is critical for many forest trees. Many of the mushrooms seen in the forest, are the fruiting bodies of such mycorrhizal fungi.

### **Saprophytic**

the fungal hyphae draw nutrients from dead plant or animal parts and help in the rotting of organic matter such as fallen leaves, dead trees or cow dung patties. These fungi play a very important role in the recycling and return of nutrients into the ecosystem.

# T I O N

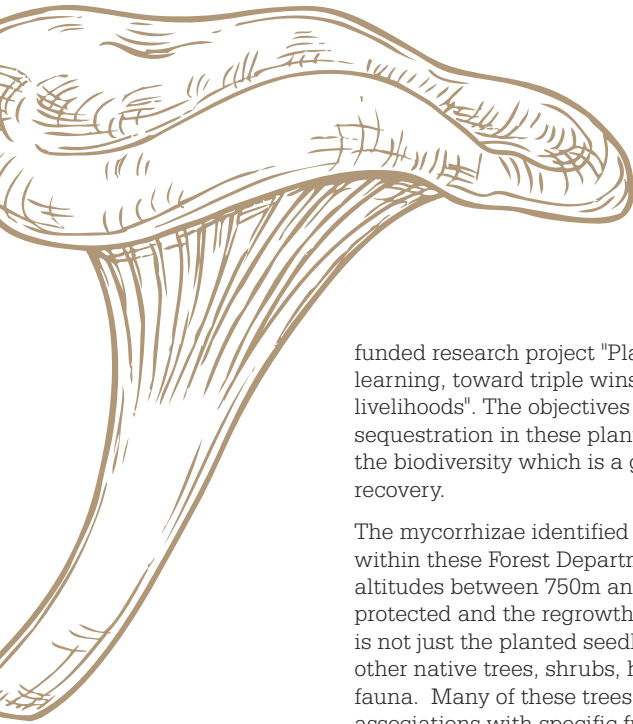
Mycorrhizal, species which associate with particular tree species can be used as indicators of forest health and a higher proportion of ectomycorrhizal mushrooms may be indicative of healthier forest ecosystems. Removal of forest cover by operations such as clearcutting leads to a reduction of such mushrooms

The Centre for Ecology Development and Research (CEDAR) studied a set of forest plantations established by the Himachal Pradesh Forest Department between 1985 and 2015 in Kangara district. Field work was conducted in 2021 under a USAID

Egli, S. Mycorrhizal mushroom diversity and productivity-an indicator of forest health?. *Annals of Forest Science* 68, 81-88 (2011).  
<https://doi.org/10.1007/s13595-010-0009-3>  
Arnolds E (1988) The changing macromycete flora in the Netherlands. *Trans Brit Mycol Soc* 90:391-406  
Ohenoja E (1988) Effect of forest management procedures on fungal fruit body production in Finland. *Acta Bot Fenn* 136:81-84







funded research project "Planning plantations: Past learning, toward triple wins in carbon, biodiversity and livelihoods". The objectives were to determine carbon sequestration in these plantations, and get an indication of the biodiversity which is a good proxy for ecosystem recovery.

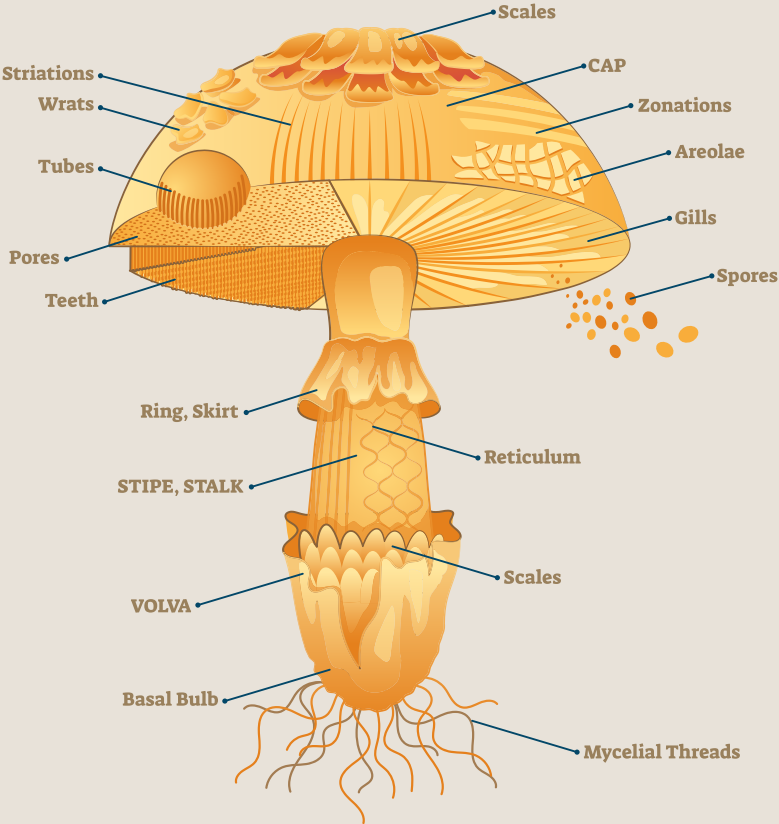
The mycorrhizae identified in this booklet were all found within these Forest Department plantations located at altitudes between 750m and 1900m. When forests are protected and the regrowth of native species encouraged, it is not just the planted seedlings that grow, but a variety of other native trees, shrubs, herbs and associated flora and fauna. Many of these trees require mycorrhizal associations with specific fungi and it is only through the growth and proliferation of these fungi that the trees also grow and prosper.

In the 25 forest plots we found 42 ectomycorrhizal species, 31 saprophytic species and 1 parasitic species of fungus. This booklet compiles information about these 74 fungi including their families, common names, ecological role, key identification features, occurrence, and edibility.

**This booklet is to help amateurs interested in knowing about fungi (mushrooms). While many mushrooms are delicious and prized by collectors and gourmets for their taste and flavour, a word of caution is needed. Not all mushrooms are edible. Some are poisonous and even fatal. Some of the deadliest species of mushrooms, including the death cap (*Amanita phalloides*) are found in our Himalayan oak forests. A single mushroom is enough to cause death, and lives have been lost when collectors make mistakes. While we hope to increase the interest of amateur naturalists in the diversity and importance of mushrooms, we have intentionally not focussed on the edible qualities. For those interested in edible mushrooms, a deeper study is required, not just of species that are edible, but even more importantly of species that must never be consumed.**

We hope this booklet helps increase an understanding and appreciation of fungi in general and mushrooms in particular.

# ANATOMY OF MUSHROOM





In nature,  
Gills and ring on stipe

## **Agaricus campestris L.**

### Family

Agaricaceae

### Common name

Button mushroom or field mushroom

### Role

Saprophytic

### Key identification features

The cap is creamy white and bears small scales towards maturity. Gills are pinkish initially and turn dark brown on maturity. Stipe is white, smooth with tapering base, and bear annulus (ring) near cap.

### Occurrence

Grows as saprophyte in fields, lawns and grasslands.

### Forest type

Mixed Forest dominated by *Acacia catechu* trees.

### Edibility

This is an edible mushroom, collected by local people and consumed.



# 01

MUSHROOMS  
IN FOREST  
PLANTATIONS  
OF KANGRA  
VALLEY





▲ Upper surface,  
Gills and stipe  
▼



## ***Agrocybe pediades* (Fr.) Fayod**

### Family

Strophariaceae

### Common name

Common field cap

### Role

Saprophytic

### Key identification features

The caps are small, hemispherical, or slightly conical becoming broadly convex, yellow to ochre-yellow to pale when young become lighter in color on drying. Surface smooth and slightly greasy. Margins in young caps hung with small white cottony fragments. Gills decurrent initially creamy beige, with age grey-brown to rust-brown.

Stipe is cylindrical broadening towards the base, white to pale-ochre yellow without a ring. Spores dark brown.

### Occurrence

Occurs in groups in pastureland among the grass under pine trees as saprophyte.

### Forest type

*Pinus roxburghii*.

### Edibility

Non-edible.



*Amanita caesarea*,  
young and mature sporocarps

## ***Amanita caesarea* (Scop.) Pers.**

### **Family**

Amanitaceae

### **Common name**

Caesar's mushroom, Peela chiun (yellow mushroom)

### **Role**

Ectomycorrhizal

### **Key identification features**

The cap is yellow to orange to a brilliant red-orange, convex and becomes flat with age. Gills are light yellow and free. Stipe is long and cylindrical, pale to orange, wears ring near top and volva at the base.

### **Occurrence**

Occurs solitary or in groups in symbiotic association with pine and oak forming ectomycorrhizae.

### **Forest type**

Pine trees.

### **Edibility**

This is an edible mushroom and collected by local people and consumed.





▲ *Amanita nehuta*  
in habitat and gills  
▼



## *Amanita nehuta* Ridley

Family  
Amanitaceae

Common name  
Maori dust Amanita

Role  
Ectomycorrhizal

### Key identification features

The cap plane-convex to depressed, buff, non-viscid with a striate margin. Remains of the volva are present on the surface as warts on the centre or radial ridges. Gills are crowded and white in colour. Stipe is white to pale with a ring and smooth basal part terminating into volva which has powdery bands like the cap. The spore print is white.

**Occurrence**  
Solitary to few individuals associated with oak trees.

**Forest type**  
*Quercus leucotrichophora*.

**Edibility**  
Edibility not known.





*Amanita pantherina*  
in habitat and gills

## ***Amanita pantherina* (DC.) P. Kumm.**

### **Family**

Amanitaceae

### **Common name**

Panther cap

### **Role**

Ectomycorrhizal

### **Key identification features**

Cap shiny brown or grey brown with a very fine striate margin. Pure white patches of tufts remain on the cap as remains of the universal veil over the cap surface. Gills are white, free and crowded. Stipe has white fragile ring and volva.

### **Occurrence**

Solitary to few individuals associated with oak trees.

### **Forest type**

*Quercus leucotrichophora*.

### **Edibility**

Poisonous.





▲ *Amanita phalloides*  
in habitat and upper surface  
▼



## *Amanita phalloides* (Veill.: Fr.) Link

### Family

Amanitaceae

### Common name

Death cap

### Role

Ectomycorrhizal

### Key identification features

The cap is large; pale-green, yellowish-green, olive-green, bronze; initially rounded and hemispherical, but flattening with age. The cap surface is sticky when wet and easily peeled. The remains of the skirt like veil are seen below the cap. The crowded white gills are free. The stipe is white with a scattering of greyish-olive scales with a swollen, ragged, sac-like white volva at the base, hidden by leaf litter.

### Occurrence

Solitary to few individuals associated with oak trees.

### Forest type

*Quercus leucotrichophora*.

### Edibility

Deadly poisonous.





*Amanita strobiliformis*  
in habitat and lower surface

## ***Amanita strobiliformis*** **(Paul.: Vitt.) Bertill.**

### Family

Amanitaceae

### Common name

Warted amanita

### Role

Ectomycorrhizal

### Key identification features

Cap globose at first, convex with expanding, soon plano-convex to flat with a slightly depressed center, dry to subviscid, with slightly appendiculate margin. The cap is dingy white to pale brownish grey especially near the center, with age sometimes becoming pale brownish straw yellow. The cap is usually decorated with small, whitish to slightly darker gray, conical, subfibrillose warts sometimes having what appears to be bits of spiderweb at the base. The gills are rather crowded, narrowly adnate to just free, broad, greenish cream-yellow. The stipe is rarely subcylindrical, pointed to rounded, solid, whitish to pale straw yellow, and with a membranous ring.

### Occurrence

Solitary to few individuals.

### Forest type

*Acacia catechu*.

### Edibility

Edibility doubtful.



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MUSHROOMS  
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▲ *Amanita vaginata*  
Upper and lower surface



## *Amanita vaginata* (Bull.) Lam.

**Family**

Amanitaceae

**Common name**

Grisette amanita

**Role**

Ectomycorrhizal

**Key identification features**

The cap is convex or near flat, bears small central raised area (umbo), gray to grayish brown, margins are striated. The stipe is long with slight tapering apex, wearing few grayish scales, stuffed to hollow, lacking ring but having volva at base.

**Occurrence**

Occurs solitary or in groups in symbiotic association with pine and oak.

**Forest type**

*Pinus roxburghii* and *Quercus leucotrichophora*.

**Edibility**

Not poisonous but not advisable to consume.



▲  
*Amauroderma rude*  
upper and lower surface  
▼

## ***Amauroderma rude* (Berk.) Torr.**

### **Family**

Ganodermataceae

### **Common name**

Red-staining stalked polypore

### **Role**

Saprophytic

### **Key identification features**

The cap of this hard woody polypore is velvety with concentric brown zones. The pale pores extend part way down the central brown stipe. The most distinctive feature is the bright red stain caused by rubbing the pale pores.

### **Occurrence**

On very rotten logs, stumps, or buried wood in oak forests.

### **Forest type**

*Quercus leucotrichophora*.

### **Edibility**

Not edible.





*Boletus bicolor* in habitat



## ***Boletus bicolor*** **Peck.**

**Family**

Boletaceae

**Common name**

Two-coloured bolete

**Role**

Ectomycorrhizal

**Key identification features**

Deep pinkish red to dark brick red, fading to reddish or pinkish--but sometimes evenly bright yellow when young, then slowly developing red colour but retaining a yellow margin. Pores usually running slightly down the stem, at least when young; bright yellow when young, becoming orangish, then dull olive yellow or, rarely, reddish; bruising blue, usually promptly but sometimes slowly. Stipe a little club-shaped when young, becoming more or less equal, above a tapered base. Tissue pale yellow in cap; deep yellow in the stem; turning faintly and erratically pale blue when sliced or not bluing.

**Occurrence**

Found under oak trees.

**Forest type**

*Quercus leucotrichophora*.

**Edibility**

Edible.





*Boletus reticulatus* in habitat

## ***Boletus reticulatus* Schaeff.**

### Family

Boletaceae

### Common name

Sumer cep

### Role

Ectomycorrhizal

### Key identification features

This mushroom has a swollen bulbous stipe, and large convex cap. The cap is more or less round. It bears a velvety brown, rust to chocolate cuticle which when dry cracks to reveal the white flesh underneath, giving the appearance of a net. The tubes and pores are initially white, darkening with age to pale yellow and finally brown. The stipe is central and has a strongly marked reticulated pattern with a variable white to brown colour. It has a pleasant odour.

### Forest type

*Quercus leucotrichophora*.

### Edibility

Edible.







*Bovista colorata*



## ***Bovista colorata* (Peck) Kreisel**

### Family

Lycoperdaceae

### Common name

Puff ball

### Role

Ectomycorrhizal

### Key identification features

Golden to yellow puffballs with small spines on the surface. Inner tissue white when young with maturity filled with brown powdery spores which are released from the pores in the outer wall.

### Occurrence

Growing in pasture land and grasses under khair and pine trees.

### Forest type

*Acacia catechu* and *Pinus roxburghii*.

### Edibility

Edible when young.



▲  
*Bovista pila*  
▼

## ***Bovista pila* Berk. & Curt.**

### Family

Lycoperdaceae

### Common name

Tumbling puffball

### Role

Ectomycorrhizal

### Key identification features

The egg-shaped to roughly spherical sporocarps white to slightly pink with surface texture, initially covered with minute flakes (furfuraceous), which becomes marked with irregular, crooked lines. The exoperidium flakes off in maturity to reveal a thin, inner peridium (endoperidium), which is shiny inner skin, splotched with darker areas, with of bronze or copper colour. They are attached to the ground by a small cord (a rhizomorph) that typically breaks off when the puffball is mature. The interior flesh initially white and firm, later becomes greenish and then brown and powdery as the spores mature, the upper surface of the puffball cracks and tears open.

### Occurrence

Among the grass in open area in the forests.

### Forest type

*Pinus roxburghii*.

### Edibility

Edible when young.



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*Bovista plumbea*



## ***Bovista plumbea*** **Pers.**

### Family

Lycoperdaceae

### Common name

Paltry puffball

### Role

Ectomycorrhizal

### Key identification features

The sporocarp is spherical to slightly compressed, attached to the substrate by a tuft of mycelium. The outer wall is white, becoming buff to pale-tan and minutely hairy. It eventually peels off in sheets on maturation in hot, dry conditions. The inner wall is lead-grey.

### Occurrence

They grow in scattered to clustered in disturbed areas, especially in sparse grass.

### Forest type

*Pinus roxburghii* and *Quercus leucotrichophora*.

### Edibility

Edible when young.



▲  
*Bovista pusilla*  
▼

## ***Bovista pusilla* (Batsch) Pers.**

### **Family**

Lycoperdaceae

### **Common name**

Dwarf puffball

### **Role**

Ectomycorrhizal

### **Key identification features**

Sporocarp globose or nearly so attached with a mycelium cord. Outer wall white covered with closely spaced granules or spines, which fall off. Inner wall pale brown to dark brown opening with an apical pore. Inner tissue white to pale initially, then turning yellow to olive brown.

### **Occurrence**

Densely gregarious to clustered on pasture land, grass under forest.

### **Forest type**

*Cedrus deodara*.

### **Edibility**

Edible when young.







*Cantharellus cibarius*



## **Cantharellus cibarius Fr.**

### **Family**

Cantharellaceae

### **Common name**

Chanterelles

### **Role**

Ectomycorrhizal

### **Key Features**

The cap is funnel shaped, light yellow to deep egg yellow or orange, margins are wavy and irregular and lower surface with false gills. Stipe show wide variation in shape and size, often fused together when growing in clusters.

### **Occurrence**

Occurs singly, scattered in groups, or sometimes clustered on the ground.

### **Forest type**

*Cedrus deodara* and *Quercus leucotrichophora*.

### **Edibility**

Edible, delicious.



▲  
*Clitocybe dealbata*  
▼

## ***Clitocybe dealbata* (Sowerby) Gilet**

### **Family**

Tricholomataceae

### **Common name**

Ivory funnel

### **Role**

Saprophytic

### **Key identification features**

A small white or white dusted with buff coloured mushroom, the cap is flattened to depressed with adnate to decurrent crowded white gills, white stipe. The spore print is white. There is no distinctive taste or smell.

### **Occurrence**

In the leaf litter among the grasses.

### **Forest type**

*Quercus leucotrichophora*.

### **Edibility**

Poisonous.





*Clitocybe infundibuliformis*



## ***Clitocybe infundibuliformis* (Schaeff.) Quel.**

**Family**

Tricholomataceae

**Common name**

Common funnel mushroom

**Role**

Saprophytic

**Key identification features**

Cap at first convex and slightly umbonate, becoming funnel shaped, solitary or scattered, rarely tufted, surface dry, pale to pale-tan in colour, fading with age, margin thin, minutely silky, tissue white, gills thin, rather crowded, decurrent, white or whitish.

**Occurrence**

Among leaf litter in the forest.

**Forest type**

*Quercus leucotrichophora*.

**Edibility**

Edible.





▲  
*Clitocybe nuda*  
▼

## ***Clitocybe nuda* (Bull.) Big. & Sm.**

### **Family**

Tricholomataceae

### **Common name**

Wood blewit

### **Role**

Saprophytic

### **Key identification features**

This mushroom can range from lilac to purple-pink. Younger specimens are lighter with more convex caps, while mature specimens have a darker color and flatter cap. The gills are attached to the short, stout stem, which is sometimes larger at the base. Wood blewits have a very distinctive odour.

### **Occurrence**

Found among leaf litter under trees.

### **Forest type**

*Cedrus deodara*.

### **Edibility**

Edible.







▲ *Clitocybe phaeophthalma*  
habitat and lower surface  
▼



## *Clitocybe phaeophthalma* (Pers.) Kuyp

### Family

Tricholomataceae

### Local name

Chicken run funnel

### Role

Saprophytic

### Key identification features

Cap convex, flattening and developing a shallow central depression like a funnel; smooth, usually with a finely striate margin; slightly viscid when wet; pale pinkish buff to greyish buff but darker in the centre; hygrophanous, drying pale cream. Gills decurrent, moderately crowded, white, turning cream with age. Stipe usually tapering towards the base, smooth at the apex, often more silky or even finely downy towards the base, initially creamy white, becoming ochre with age without ring.

### Occurrence

Found in clusters among leaf litter, predominantly with pine.

### Forest type

*Acacia catechu*, *Cedrus deodara*, *Pinus roxburghii*.

### Edibility

Dibilty unknown.



▲  
*Clitocybe vibecina*  
upper and lower surface  
▼

## ***Clitocybe vibecina* (Fr.) Quel.**

### **Family**

Tricholomataceae

### **Common name**

Mealy funnel

### **Role**

Saprophytic

### **Key identification features**

The cap is convex with a slight depression in the centre and down turned margin, rarely funnel shaped. When moist, it is dark grey with a brownish grey centre, striped and whitish grey when dry. The gills are grey, rather thick and a little decurrent. The stipe is grey to white. The flesh is watery, grey and has a rancid smell.

### **Occurrence**

Among fallen needles.

### **Forest type**

*Pinus roxburghii*.

### **Edibility**

Edibility unknown.





*Collybia marasmoides*



## *Collybia marasmoides* (Britzelm.) Bresinsky & Stangl

Family

Agaricaceae

Common name

Redleg Toughshank

Role

Ectomycorrhizal

### Key identification features

The caps are rounded, brown to reddish brown and striate when fresh, then become flattened and fade to lighter brown, brownish orange, or buff. The gills are attached, sometimes forked, rather broad, close, and whitish. The stipes are fibrous and somewhat elastic, hollow, equal, pallid to pale orangeish above and dark reddish to orange-brown or brown below, and usually with reddish to orange-brown hairs at the base.

Occurrence

Among fallen needles.

Forest type

*Pinus roxburghii*.

Edibility

Edibility unknown.





▲  
*Conocybe apala*  
upper and lower surface  
▼

## ***Conocybe apala* (Fr.) Arnolds**

### **Family**

Bolbitiaceae

### **Common name**

White dunce cap

### **Role**

Saprophytic

### **Key identification features**

The cap has a pale cream to silvery-white colour and may sometimes have a darker yellow to brown coloration towards the central umbo. Its trademark hood-shaped conical cap expands with age and may flatten out, the surface being marked by minute radiating ridges. The gills may be visible through the thin cap and these are coloured rust or cinnamon brown and quite dense which are adnexed or free. The stem is cap-coloured, elongated, thin, hollow and more or less equal along its length with minuscule striations or hairs. The flesh has no discernible taste or smell and is extremely fragile to the touch.

### **Occurrence**

Grows among decaying needles.

### **Forest type**

*Cedrus deodara*.

### **Edibility**

Toxic.





▲  
*Conocybe pubescens*



## **Conocybe pubescens** (Gillet) Kuhner

### Family

Bolbitiaceae

### Common name

Downy conecap

### Role

Saprophytic

### Key identification features

The caps are conical, sometimes becoming bell-shaped, and with marginal striations. The surface is finely downy (hairy) when young, becoming smooth; not greasy; rusty-brown to orange-brown; hygrophanous, becoming sienna-brown to yellow-brown in dry weather. Gills initially very pale ochre, the crowded adnexed gills become cinnamon or rust coloured as the spores mature. Slender stipes are level, creamy white to honey-yellow; the base of the stem is often browner and slightly swollen without ring but the surface is distinctly downy.

### Occurrence

Grows among grass.

### Forest type

*Quercus leucotrichophora*.

### Edibility

Not recommended to eat.



▲  
*Cotyldia undulata*  
▼

## ***Cotyldia undulata* (Fr.) Karst.**

### **Family**

Hygrophoraceae

### **Common name**

Not known

### **Role**

Saprophytic

### **Key identification features**

Cap pileate, infundibuliform, rarely somewhat laterally incised, semi-translucent, solitary, few caps confluent, often strongly undulating, very thin, buff to brownish, darker in the centre, sometimes slightly zonate, surface smooth, margin fimbriate, stipe up to 1 cm tall, central to eccentric, greyish to almost black at the base, lower surface smooth to slightly wrinkled, translucent; flesh very thin, membranous.

### **Occurrence**

Grows under the trees in open areas.

### **Forest type**

*Acacia catechu*.

### **Edibility**

Not known.







▲ *Enoloma violaceum*  
upper and lower surface



## *Enoloma violaceum* Murrill

Family  
Entolomaceae

Common name  
Violet pink gill

Role  
Saprophytic

### Key identification features

Cap convex with a slightly conic center, becoming broadly convex, dry, finely silky, becoming finely scaly; brownish purple at first, but often maturing to lilac brown, brown, or greyish beige. The margin a little inrolled at first, not becoming lined.

The young gills are faintly lilac, and the mature gills often develop whitish to beige edges that are paler than the faces, narrowly attached to the stipe, close, faintly lilac at first, becoming pink, edges often somewhat serrated and whitish with short-gills frequent. Stipe thick, equal, dry, bald or, near the apex finely silky or dotted with tiny scales, purple near the apex when fresh and young, elsewhere whitish to brownish, with white basal mycelium.

Occurrence  
Grows under the trees among decaying needles.

Forest type  
*Cedrus deodara*.

Edibility  
Edible.



▲  
*Entoloma violaceus*  
upper and lower surface  
▼

## **Gymnopus dryophilus**

### **Family**

Omphalotaceae

### **Common name**

Russet Tough Shank

### **Role**

Saprophytic

### **Key identification features**

Cap is convex with an incurved margin when young, becoming broadly convex to flat, moist, bald, dark reddish brown to brown when young, becoming tan to orangish brown to very pale buff. Gills are: Attached to the stem or free from it, whitish to pinkish, becoming buff, crowded. Stipe equal (occasionally slightly flared to base), dry, pliant and fibrous, bald, whitish above, light buff below, becoming darker, soon hollow, usually with thin, whitish rhizomorphs attached to the base.

### **Occurrence**

Growing under oaks and pine among decaying needles.

### **Forest type**

*Pinus roxburghii*.

### **Edibility**

Edible.





▲ *Hebeloma crustuliniforme*  
upper and lower surface  
▼



## *Hebeloma crustuliniforme* (Bull.) Fr.

### Family

Bolbitiaceae

### Common name

Poison pie mushroom

### Role

Ectomycorrhizal

### Key identification features

Cap convex, becoming broadly convex, broadly bell-shaped, or flat, slimy when fresh, smooth, whitish, dirty buff, or pale tan, often with a somewhat darker central area, the margin inrolled when young.

Gills attached to the stem, often by a notch; crowded; pale when young, becoming brownish, sometimes with beads of liquid when young and fresh and later with brownish spots where the beads occurred and with whitish edges.

Stipe more or less equal above a slightly swollen base, finely hairy or smooth with little flakes of tissue near the apex, without a ring and the base is sometimes with white rhizomorphs.

### Occurrence

With oaks, cedar and other hardwoods.

### Forest type

*Cedrus deodara*, *Quercus leucotrichophora*.

### Edibility

Poisonous.





*Hebeloma sinapizans*

## ***Hebeloma sinapizans* (Paulet) Gillet**

### **Family**

Bolbitiaceae

### **Common name**

Bitter poison pie mushroom

### **Role**

Ectomycorrhizal

### **Key identification features**

Cap pale buff to yellowish-ochre, darker in centre, becoming light brown with sometimes a cinnamon tinge at maturity; bell-shaped with an incurved or slightly inrolled margin, remaining incurved until the cap is almost fully expanded; becoming broadly concave or slightly umbonate and eventually almost flat, sticky when wet, smooth and silky when dry. Margin often slightly wavy and occasionally lobed. Gills clay-buff, becoming reddish-brown with age, emarginate, notched and crowded. Stipe white or very pale yellow, mealy towards the apex and often finely scaly below, cylindrical with a swollen base, no ring.

### **Occurrence**

Under cedar trees.

### **Forest type**

*Cedrus deodara*.

### **Edibility**

Poisonous.





▲ *Hydnellum aurantiacum*  
upper and lower surface  
▼



## *Hydnellum aurantiacum* (Fr.) Karsten

### Family

Bankeraceae

### Common name

Orange spine

### Role

Ectomycorrhizal

### Key identification features

Cap usually single but occasionally fused with other caps, flat, becoming shallowly depressed, sometimes with aborted mini-caps developing on top of the main cap, pitted, ridged, or elaborately sculpted, orange to rusty red overall, with a whitish to dingy pinkish margin that often bruises brownish to blackish. Under surface running down the stipe or not, covered with crowded spines, whitish at first, becoming dingy. Stipe cylindrical, club-shaped, or somewhat irregular, sometimes spongy near the base, orange to rusty red.

### Occurrence

Grows under conifers.

### Forest type

*Cedrus deodara*.

### Edibility

Inedible.





▲  
*Hydnum repandum*  
▼

## ***Hydnum repandum* L.**

---

### **Family**

Hydnaceae

### **Common name**

Sweet tooth or Wood hedgehog

### **Role**

Ectomycorrhizal

### **Key identification features**

The cap is creamy white, with irregular undulations and pits on its upper surface, which has a fine velvety feel and tends to redden slightly when touched. Spines hanging down like stalactites, soft spines cover the fertile surface and decurrent to the stipe. Stipe soft, cylindrical, whitish-pale to pink.

### **Occurrence**

Under oaks and conifers.

### **Forest type**

*Cedrus deodara*.

### **Edibility**

Edible.







▲ *Hygrophorus dichrous*  
upper and lower surface



## *Hygrophorus dichrous* Kuhn. & Romag.

Family

Hygrophoraceae

Common name

Role

Ectomycorrhizal

### Key identification features

Cap olive-brown, gray-brown to reddish-brown, center darker, edge whitish (lighter) old also bent up, smooth, moist slimy-smeary. Flesh white to yellowish green. Stipe tip whitish, somewhat rough, otherwise olive-brown serpentine on a light background, slimy. Gills white, greenish-yellow when old, adnate to slightly decurrent, with transverse connections and short intermediate gills.

### Occurrence

With hardwoods.

### Forest type

*Acacia catechu*.

### Edibility

Edible.



▲  
*Hygrophorus hedrychii*  
upper and lower surface  
▼

## ***Hygrophorus hedrychii* (Velen.) Kult.**

### **Family**

Hygrophoraceae

### **Common name**

Sweet woodwax mushroom

### **Role**

Ectomycorrhizal

### **Key identification features**

Caps are smooth, viscid to glutinous when damp. The gills beneath the cap are usually distant, thick, waxy, and broadly attached to decurrent. The stipe and cap often have traces of a glutinous veil, sometimes forming a ring-zone. The spores are white.

### **Occurrence**

With hardwoods.

### **Forest type**

*Acacia catechu*.

### **Edibility**

Edible.





▲  
*Imleria badia*



## ***Imleria badia* (Fr.) Vizzini**

Family  
Boletaceae

Common name  
Bay bolete

Role  
Ectomycorrhizal

### **Key identification features**

Caps are a chestnut to dark brown, almost spherical in young specimens before broadening and flattening out. The cap margin is acute, and cap surface velvety when young and slightly sticky when wet or old. Under the cap, the pores are initially cream to pale yellow, but become greenish yellow or olive with age, staining dull blue to bluish-grey when bruised or cut, and are easily removed from the flesh. The pores are initially circular, becoming more angular with age. The stipe is cylindrical and similar in colour to the cap but paler, and sometimes with a rose-coloured tinge with faint longitudinal ridges, a fine powdering, and fine reticulations (a net-like pattern of ridges) at the apex and a white mycelium at the base. Its smell has been described as fruity.

Occurrence  
Grows under oaks.

Forest type  
*Quercus leucotrichophora*.

Edibility  
Edible.





▲  
*Infundibulicybe gibba*  
upper and lower surface  
▼

## ***Infundibulicybe gibba* (Pers.) Harmaja**

### **Family**

Tricholomataceae

### **Common name**

Common funnel

### **Role**

Saprophytic

### **Key identification features**

The matt slightly felted cap is beige to tan, also sometimes with a pink tinge. It soon becomes funnel-shaped but often has a small bulge (umbo) in the centre, without a ring or other veil remnant. The stipe is white or whitish. The white gills are crowded and very decurrent. It has a faint "cyanic" smell, like new-mown hay, and the taste is mild.

### **Occurrence**

Grows among decaying needles.

### **Forest type**

*Cedrus deodara*.

### **Edibility**

Avoid eating.





▲ *Inocybe geophylla*  
upper and lower surface  
▼



## *Inocybe geophylla* (Fr.) P. Kumm.

### Family

Inocybaceae

### Common name

White fibrecap

### Role

Ectomycorrhizal

### Key identification features

The smooth, silky cap is initially conical and flattens as it matures, usually retaining a pointed umbo and streaky radial fibres that in dry weather tend to tear into strips towards the edge of the cap. They fade to ochre-brown from the centre with age. The crowded gills, which are notched or adnexed, start off creamy-grey and later turn clay-brown as the spores mature. Stipe is smooth and silky, sometimes slightly fibrillose towards the base, and the same colour as the cap. The stipe also gradually turns clay-brown with age.

### Occurrence

Grows under oak trees.

### Forest type

*Quercus leucotrichophora*.

### Edibility

Poisonous.



*Inocybe rimosa*  
upper and lower surface

## ***Inocybe rimosa*** **(Bull.) P. Kumm.**

### Family

Inocybaceae

### Common name

Torn fibre-cap

### Role

Ectomycorrhizal

### Key identification features

The tan (or rarely whitish) cap is cone-shaped then expands, generally retaining an umbo a darker centre with fibrous surface. The streaky radial fibres in dry weather tend to split radially towards the edge of the cap. The gills are light greyish and brown with age. The stipe is whitish, semi-fibrillose, and slightly clavate.

### Occurrence

Grows under oak and conifer trees.

### Forest type

*Cedrus deodara*, *Pinus roxburghii*, *Quercus leucotrichophora*.

### Edibility

Poisonous.







▲ *Laccaria amethystina*  
upper and lower surface  
▼



## *Laccaria amethystina* (Huds.) Cooke

### Family

Hydnangiaceae

### Common name

Amethyst deceiver

### Role

Ectomycorrhizal

### Key identification features

Caps are initially convex and become almost flat-topped at maturity. During wet weather young caps are deep purple. During dry spells the caps and stipes become much paler and eventually almost white eventually becoming pale buff. The broad, deep gills are widely spaced and interspersed with shorter gills. Long before the cap fades to buff, the gills begin losing their colour. The tough, fibrous stipes are increasingly more 'hairy' towards the base. Deep purple at first, but becoming paler as the caps fade, the stipes are usually bent and often radially twisted. They are very tough and fibrous.

### Occurrence

Grows under oak and cedar trees.

### Forest type

*Cedrus deodara*, *Quercus leucotrichophora*.

### Edibility

Edible.



*Laccarius laccata*  
young, mature upper and lower surface

## **Laccaria laccata** **(Scop.) Cooke**

### Family

Hydnangiaceae

### Common name

Deceiver mushroom

### Role

Ectomycorrhizal

### Key identification features

The caps are initially convex and become almost flat-topped at maturity. During wet weather young caps are deep tan or reddish-brown. During dry spells the caps and stipe become much paler buff and eventually almost white. Very old mushrooms sometimes become funnel-shaped and distorted. The broad, deep gills are widely spaced and interspersed with shorter gills. Long before the cap fades to buff, the tan gills begin losing their colour. The tough, fibrous stipes are increasingly more 'hairy' towards the base.

### Occurrence

Grows under hardwoods and pine trees.

### Forest type

*Acacia catechu*, *Quercus leucotrichophora* and *pinus roxburghii*.

### Edibility

Edible.



# 39

MUSHROOMS  
IN FOREST  
PLANTATIONS  
OF KANGRA  
VALLEY





▲  
*Lactarius resimus*  
 upper and lower surface  
 ▼



## ***Lactarius resimus*** **(Fr.) Fr.**

Family  
 Russulaceae

Common name  
 Deceiver mushroom

Role  
 Ectomycorrhizal

### Key identification features

Cap is convex with an inrolled and finely hairy margin when young, becoming shallowly depressed, flat, or shallowly vase-shaped, sticky when young and fresh, but soon dry, bald or finely hairy near the margin, roughened; whitish, with yellowish discolorations, not featuring concentric zones of color. Gills are running down the stem (decurrent) close or crowded, short-gills frequent, whitish becoming slightly pinkish. Stipe more or less equal, dry, bald, colored like the cap, later becoming hollow. Flesh white, slowly yellowed by latex when sliced. Milk scant, white as exuded but turning yellow within a few minutes of exposure to air, staining tissues yellow.

Occurrence  
 Grows under oak trees.

Forest type  
*Quercus leucotrichophora*.

Edibility  
 Edible.





▲  
*Lactarius volemus*  
upper and lower surface  
▼

## ***Lactarius volemus*** **(Fr.) Fr.**

### Family

Russulaceae

### Common name

Tawny milkcap

### Role

Ectomycorrhizal

### Key identification features

Cap at first convex with an inrolled margin, becoming flat with a central depression, shallowly vase-shaped, or (rarely) with a slight bump over the disc, margin even, smooth or slightly wrinkled. Gills are attached to the stipe or running slightly down it, close, creamy white, discoloring brown where injured, often forking near the margin. Stipe is coloured like the cap or paler, equal or tapering to base, smooth, sometimes ribbed longitudinally, solid or becoming hollow. Flesh white staining slowly brown when sliced. Milk white, copious, sometimes becoming brownish on exposure to air, staining tissues brown, staining white paper brown.

### Occurrence

Grows under oak trees.

### Forest type

*Quercus leucotrichophora*.

### Edibility

Edible.



# 41

MUSHROOMS  
IN FOREST  
PLANTATIONS  
OF KANGRA  
VALLEY



▲ *Leccinum griseum*  
upper and lower surface



## ***Leccinum griseum* (Quel.) Singer**

Family  
Boletaceae

Common name

Role  
Ectomycorrhizal

### **Key identification features**

The cap is convex, smooth becoming rough with age, usually dingy yellow-brown becoming olive brown to olive.

Pores underneath the cap are pallid avellaneous staining greenish when bruised. The stipe is pale grey, rather long and slender with rough longitudinal furrows. The flesh is white, slowly turning grey-violet when cut, particularly in the stipe.

Occurrence  
Grows under oak trees.

Forest type  
*Quercus leucotrichophora*.

Edibility  
Edible.



*Lepiota clypeolaria*  
upper and lower surface

## ***Lepiota clypeolaria* (Bull.) P. Kumm.**

### Family

Agaricaceae

### Common name

Shield dapperling

### Role

Saprophytic

### Key identification features

Cap is nearly round in the button stage, expanding to broadly bell-shaped or nearly flat in age, soft, dry, fibrillose and appressed-fibrillose overall, with small, soft scales near the margin, occasionally with a bald center, dull orangish brown to brownish or beige, the margin hung with whitish veil tatters. Gills are free from the stipe, close with short-gills frequent, white. Stipe more or less equal, bald above the ring, fibrillose like the cap below the ring, brownish, with a sheathing pale yellow to whitish ring or ring zone that often disappears, with white basal mycelium.

### Occurrence

Grows under khair and pine trees.

### Forest type

*Acacia catechu*, *Pinus roxburghii*.

### Edibility

Poisonous.



# 43

MUSHROOMS  
IN FOREST  
PLANTATIONS  
OF KANGRA  
VALLEY





▲ *Lepiota subincarnata*  
upper and lower surface  
▼



## *Lepiota subincarnata* Lange

Family  
Agaricaceae

Common name  
Dapperling

Role  
Saprophytic

### Key identification features

Initially hemispherical, becoming broadly convex and sometimes almost flat with a slight umbo, covered in pinkish-brown fine woolly scales often forming irregularly concentric rings, paler and more widely spaced towards the margin, flesh white. The free crowded gills are creamy white. Stipe creamy white with a slight pinkish tinge and bulbous base, flesh white with a brownish tinge. The upper half is smooth while the lower stipe below an indistinct ring zone, is decorated with fibrous scales.

Occurrence  
Grows under khair trees.

Forest type  
*Acacia catechu*.

Edibility  
Poisonous.



▲  
*Lepista sordida*  
upper and lower surface  
▼

## ***Lepista sordida* (Sowerby) Pat.**

### **Family**

Tricholomataceae

### **Common name**

Sordid blewit

### **Role**

Saprophytic

### **Key identification features**

Cap initially convex, flattening out or developing a central depression at maturity, usually with a slight umbo and a wavy margin, deep lilac, turning brown from the centre in dry weather., the gills are initially greyish lilac fading to buff with age, sinuate or emarginate and crowded. Stipe fibrillose, lilac, downy and white at base, without ring.

### **Occurrence**

Grows under oak trees.

### **Forest type**

*Quercus leucotrichophora*.

### **Edibility**

Edible.



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# 45

MUSHROOMS  
IN FOREST  
PLANTATIONS  
OF KANGRA  
VALLEY



▲  
*Leucoagaricus rufosquamulosus*  
 upper and lower surface  
 ▼



## ***Leucoagaricus rufosquamulosus*** **Kumar & Manim.**

**Family**

Agaricaceae

**Common name**

Not known

**Role**

Saprophytic

### **Key identification features**

Cap initially convex, becoming broadly convex and finally applanate, with a broad umbo at the disc, surface whitish to light orange, with minute, purple brownish red, scattered, appressed-fibrillose squamules that are sparser towards the margin, pruinose to more or less smooth at the disc, finely striate at the margin, margin initially incurved, becoming straight, eroded. Gills are free, whitish, crowded, edge fimbriate under a lens, concolorous with the sides. Stipe central, terete, equal, slightly bulbous at the base, initially solid, becoming fistulose with age, surface whitish to pale yellow, turning greyish orange on bruising or with age, fibrillose, base arising from a white mycelium. Ring superior, membranous, simple, ascending, fixed, with a rim covered with brownish red fibrils.

**Occurrence**

Grows under pine trees.

**Forest type**

*Pinus roxburghii*.

**Edibility**

Not known.





▲  
*Leucocoprinus crystalifer*  
upper and lower surface  
▼

## ***Leucocoprinus crystalifer* Vellinga**

### **Family**

Agaricaceae

### **Common name**

Field mushroom

### **Role**

Saprophytic

### **Key identification features**

Cap initially ovoid and then convex, expanding to become almost flat with a small umbo, often smooth and silky but occasionally with tiny flakes or scales, white, gradually becoming flushed pale cream-ochre or flesh-coloured. The free, crowded gills are pure white at first, eventually becoming pale flesh-pink. Stipe white; smooth with a thin persistent ring; cylindrical with a clavate base.

### **Occurrence**

Grows under hardwoods and conifer trees.

### **Forest type**

*Acacia catechu*, *Cedrus deodara*, *Pinus roxburghii*.

### **Edibility**

Not known.





▲ *Lichenomphalina umbellifera*  
upper and lower surface



## ***Lichenomphalia umbellifera* (L. : Fr.) Redhead, Lutzoni, Moncalvo & Vilgalys**

### Family

Hygrophoraceae

### Common name

Green pea mushroom lichen

### Role

Saprophytic

### Key identification features

Cap planoconvex, lubricous, bald, dull yellowish to dull brownish, margin lined, becoming wavy. Gills running down the stipe, distant, thick and waxy, whitish to yellowish, short gills present near cap margin. Stipe equal, moist, bald or nearly so, but with a fuzzy base, pale brownish to pale yellowish. Flesh thin, whitish, unchanging when sliced.

### Occurrence

Grows under oak trees.

### Forest type

*Quercus leucotricchophora*.

### Edibility

Poisonous.



*Lycoperdon echinatum*  
young and mature sporocarps

## ***Lycoperdon echinatum*** **Pers.**

### **Family**

Agaricaceae

### **Common name**

Spiny puffball

### **Role**

Saprophytic

### **Key identification features**

Sporocarps vertically-flattened globe-shaped on a short, infertile stipe, white to orange, soon becoming reddish brown. The soft spines are in sets of three-four that converge at the tips. At maturity the spines fall off leaving a net-like pattern on the browning skin, which eventually ruptures at the apex to release the spores.

### **Occurrence**

Grows under conifer trees among decaying needles.

### **Forest type**

*Cedrus deodara*.

### **Edibility**

Edible before spores.







▲  
*Lycoperdon nigrescens*



## *Lycoperdon nigrescens* Pers.

### Family

Agaricaceae

### Common name

Dusky puffball

### Role

Saprophytic

### Key identification features

Sporocarps pear-shaped, the surface background initially pale brown turning mid to dark brown, covered with dark-brown spines which fall off at maturity leaving a mottled, smooth blackish surface with an apical pore through which spores are released when either raindrops hit the mature puffball or a breeze blows across the pore hole. Stipe short and stout colour as the fertile head but with shorter spines.

### Occurrence

Grows under conifer trees among decaying needles.

### Forest type

*Cedrus deodara*.

### Edibility

Edible before spores.



*Lycopodon perlatum*

## ***Lycopodon perlatum*** **Pers.**

### **Family**

Agaricaceae

### **Common name**

Common puffball

### **Role**

Saprophytic

### **Key identification features**

Sporocarps typically pear-shaped, surface covered in tiny pearl-like attachments or pyramidal warts of different sizes, initially cream and then turning ochre before falling off to leave an olive-brown surface marked with faint scars of the warts. At the dark area of the apex a pore hole develops, through which the spores are released. The outer-peridium spines fall away to leave an exquisitely intricate ochre-and-white net pattern on the surface of the inner peridium. The stipe is more or less an inverted cone, often somewhat distorted, and contains a small amount of spongy, infertile material.

### **Occurrence**

Grows under conifer and oak trees among decaying needles and leaves.

### **Forest type**

*Cedrus deodara* and *Quercus leucotrichophora*.

### **Edibility**

Edible before spores are formed.



# 51

MUSHROOMS  
IN FOREST  
PLANTATIONS  
OF KANGRA  
VALLEY





▲  
*Marasmiellus subpruinus*  
 ▼



## ***Marasmiellus subpruinus* (Murrill) Oliveira**

Family  
 Omphalotaceae

Role  
 Saprophytic

### **Key identification features**

Cap convex, expanding to nearly plane, sometimes with a low umbo, margin at first decurved, plane to slightly upturned in age, surface striate-rugulose, innately fibrillose, and when viewed with a hand lens, minutely pruinose, cap colour in young material, chestnut-brown to dingy reddish-brown, elsewhere medium brown, occasionally tinged purplish-brown. Gills adnate to adnexed, subdistant, relatively narrow, dingy-buff, edges pruinose. Stipe straight, pliant, hollow to stuffed at maturity, equal to enlarged at the apex, surface longitudinally striate, cream-buff at the apex, dark-brown at base, overlain with a buff-coloured pubescence, partial veil absent.

**Occurrence**  
 Grows under conifer and hardwood trees among decaying needles and leaves.

**Forest type**  
*Acacia catechu*, *Cedrus deodara*, *Pinus roxburghii* and *Quercus leucotrichophora*.

**Edibility**  
 Not known.





▲  
*Marasmius elegans*  
upper and lower surface  
▼

## ***Marasmius elegans* (Cleland) Grgur.**

### **Family**

Marasmiaceae

### **Common name**

Velvet parachute

### **Role**

Saprophytic

### **Key identification features**

Caps are dome-shaped at first then expand to be flat, orange to red-brown or dark chestnut in colour with a dry velvet-textured surface. Gills are white, close together, have various lengths with the longer ones narrowly attached to the top of the stem. Stipes are slim, smooth, pure white at the apex then dark chestnut below. They have a tough texture and can have a mass of khaki or mottled bluish-green fungal material (mycelium) attached to the base.

### **Occurrence**

Grows under oak trees among decaying leaves.

### **Forest type**

*Quercus leucotrichophora*.

### **Edibility**

Poisonous.



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# 53

MUSHROOMS  
IN FOREST  
PLANTATIONS  
OF KANGRA  
VALLEY



*Marasmius oreades*



## ***Marasmius oreades* (Bolton) Fr.**

### **Family**

Marasmiaceae

### **Common name**

Fairy ring Champignon mushroom

### **Role**

Saprophytic

### **Key identification features**

Cap initially convex, flattening with a broad umbo, hygrophanous, orange-ochre or tan, drying buff or pallid cream, smooth, sometimes with very faint marginal grooves or striations. Gills adnexed or free, distant, white at first, becoming cream. Stipe tough and pliant, white or buff, darkening towards a white and downy base, cylindrical, base sometimes slightly swollen, smooth and dry, stem flesh is whitish buff.

### **Occurrence**

Grows under cedar trees.

### **Forest type**

*Cedrus deodara*.

### **Edibility**

Edible.



▲  
*Marasmius siccus*  
▼

## ***Marasmius siccus* (Schwein.) Fr.**

### **Family**

Marasmiaceae

### **Common name**

Orange pinwheel mushroom

### **Role**

Saprophytic

### **Key identification features**

Cap cushion-shaped or bell-shaped, with a knob or a central depression, conspicuously pleated, smooth or minutely roughened, dry, bald, orange when fresh, fading to pale orange. Gills attached to the stipe or free from it, very distant, white to pale yellowish. Stipe equal, dry, wiry, whitish or yellowish above, brown toward the base, bald with white basal mycelium.

### **Occurrence**

Grows under hardwoods.

### **Forest type**

*Acacia catechu*.

### **Edibility**

Non poisonous.







▲ *Melanoleuca melaleuca*  
in habitat and lower surface



## *Melanoleuca melaleuca* (Pers.) Murrill

### Family

Tricholomataceae

### Common name

Bald Knight

### Role

Saprophytic

### Key identification features

The very variable caps are initially convex with a incurved margin, eventually flattening or becoming shallowly depressed with an umbo, the surface is smooth, slightly greasy, mid grey-brown to dark grey-brown when moist, turning paler in dry weather. Gills sinuate, white, turning creamy-grey with age. Stipe is generally much longer than the cap diameter - often by as much as a factor of two, base slightly swollen, white, covered in pale brownish vertical fibrils, there is no stem ring.

### Occurrence

Grows under hardwoods.

### Forest type

*Acacia catechu*.

### Edibility

Edible.



▲  
*Pholiota squarrosa*  
upper and lower surface  
▼

## ***Pholiota squarrosa* (Vahl) P. Kumm.**

### **Family**

Strophariaceae

### **Common name**

Shaggy scalycap

### **Role**

Parasitic

### **Key identification features**

Caps yellow-ochre or straw-yellow, covered in upturned triangular brown scales in more or less concentric rings, convex at first, the caps flatten with age but retain an in-rolled margin. The cap flesh is very pale yellow, and it is quite firm. The crowded adnate gills are pale greyish yellow at first, becoming cinnamon as they mature. A cortina-like veil covers the young gills. Stipe has a distinctly scaly ring below which it is covered in scales very similar to those on the cap. The upper section of the stem above the ring is paler and smooth.

### **Occurrence**

Grows at the base of conifer trees causing root rot disease.

### **Forest type**

*Pinus roxburghii*.

### **Edibility**

Not edible.





*Pisolithus tinctorius*



## ***Pisolithus tinctorius* (Pers.) Coker & Couch**

### **Family**

Sclerodermataceae

### **Common name**

Dog poop mushroom

### **Role**

Ectomycorrhizal

### **Key identification features**

Sporocarps globose to top-shaped with a thick rooting base, outer wall very thin and tearing off to expose inner chambers. Inner tissue whitish to yellowish to brownish, powdery at maturity. Out wall ruptures to expose the spores on maturity.

### **Occurrence**

Grows at the base of conifer trees.

### **Forest type**

*Pinus roxburghii*.

### **Edibility**

Not edible.





▲  
*Polyporus arcularius*  
upper and lower surface  
▼

## ***Polyporus arcularius* (Batsch) Fr.**

### **Family**

Polyporaceae

### **Common name**

Polypore

### **Role**

Saprophytic

### **Key identification features**

Cap convex to flat or shallowly depressed; dry, finely, concentrically scaly with brown to golden brown scales and fibrils over a dull tan ground, the margin is with tiny projecting hairs (ciliate). Pore Surface running down the stipe whitish at first, becoming brownish; pores hexagonal or angular, radially arranged. Stipe central or slightly off-center, equal, dry, brown to yellowish brown, scaly to hairy, tough, basal mycelium whitish.

### **Occurrence**

Grows on dead hardwood.

### **Forest type**

*Acacia catechu*.

### **Edibility**

Not edible.





*Ramaria stricta*



## **Ramaria stricta (Pers.) Quel.**

### **Family**

Gomphaceae

### **Common name**

Upright coral or strict-branch coral mushroom

### **Role**

Saprophytic

### **Key identification features**

Sporocarps white or pale cream turning buff with age, tough and rubbery coral-like structure with a short base, the repeatedly forking, slender upright branches end in sharp tips. Surface is smooth, often flattened and turns wine-red when bruised.

### **Occurrence**

Grows on dead hardwood.

### **Forest type**

*Acacia catechu*.

### **Edibility**

Not edible.



▲  
*Rhodocollybia butyracea*  
upper and lower surface  
▼

## ***Rhodocollybia butyracea* (Bull.) Lennox**

### **Family**

Marasmiaceae

### **Common name**

Butter cap

### **Role**

Saprophytic

### **Key identification features**

Tremendously variable in cap colour, between reddish-brown and pale grey, the caps of this species are initially convex, flattening but with a slight umbo and often turning up at the edge when fully developed. The crowded adnexed or sometimes free gills are white or very pale cream. Towards the end of the season, the cap cuticles of mature specimens appear to contract slightly so that the gills flare upwards at the edge. Stipe is of the same general colour range as the cap, but paler at the top and often covered in fine white hairs near the base but tapering towards the apex. At the base of the stipe, which is often bent where it enters the soil, there is a spongy bulb. The stem is very tough and not easily separable from the cap.

### **Occurrence**

Grows under oak trees.

### **Forest type**

*Quercus leucotrichopora*.

### **Edibility**

Edible.



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# 61

MUSHROOMS  
IN FOREST  
PLANTATIONS  
OF KANGRA  
VALLEY





▲ *Russula aurora*  
upper and lower surface  
▼



## *Russula aurora* Krombh.

Family  
Russulaceae

Common name  
Dawn brittle gill mushroom

Role  
Ectomycorrhizal

**Key identification features**  
Cap usually flesh pink (but sometimes a brighter red), often creamy pink towards the centre, usually matt or slightly pruinose, peeling about half-way to centre, developing slight striations at the margin, convex, eventually becoming centrally depressed, flesh white and very brittle. Gills white, turning pale cream with age, adnate or adnexed, fairly crowded, with some forked gills. Stipe white, slightly pruinose, flesh white and brittle, without stem ring.

**Occurrence**  
Grows under pine and oak trees.

**Forest type**  
*Pinus roxburghii*, *Quercus leucotrichopora*.

**Edibility**  
Edible.



*Rusulla delica*  
upper and lower surface

## **Rusulla delica Fr.**

### **Family**

Russulaceae

### **Common name**

Milk white brittlegill

### **Role**

Ectomycorrhizal

### **Key identification features**

This fairly common mushroom resembles a milkcap in its development and general form. The cap is quite substantially expanded by the time that it emerges from the earth, and it pushes up soil and leaf litter that often marks the cap. Convex, with an inrolled margin until fully mature, the cap soon becomes funnel-shaped. The dirty-white cap becomes pale yellowish-brown with age, its surface is matt and dry. Beneath the surface the flesh is white and does not change colour when cut. Gills narrow and moderately spaced or only slightly crowded, the brittle white or pale cream gills are decurrent. When damaged they release no milk. Stipe is white, cylindrical, short and smooth, without a ring.

### **Occurrence**

Grows under pine and oak trees.

### **Forest type**

*Pinus roxburghii*, *Quercus leucotrichopora*.

### **Edibility**

Considered not edible.





▲  
*Rusulla emetica* -  
 upper and lower surface  
 ▼



## ***Rusulla emetica* (Schaeff.) Pers.**

**Family**  
 Russulaceae

**Common name**  
 The sickener mushroom

**Role**  
 Ectomycorrhizal

**Key identification features**  
 Cap scarlet, fading in wet weather (the pigment in the cap cuticle is somewhat water soluble), peeling almost to centre; the flesh is pink beneath the cuticle, cap surface smooth, convex, sometimes becoming slightly depressed when fully mature, margin knobbly with small, rounded bumps irregularly spaced and slightly striate. Gills white, turning pale cream, adnexed or free, crowded. Stipe white, sometimes yellowing slightly with age, cylindrical, the base slightly clavate.

**Occurrence**  
 Grows under conifers and oak trees.

**Forest type**  
*Cedrus deodara*, *Pinus roxburghii*, *Quercus leucotrichopora*.

**Edibility**  
 Considered not edible, toxic.





*Russula cyanoxantha*  
upper and lower surface

## ***Russula cyanoxantha* (Schaeff.) Fr.**

### **Family**

Russulaceae

### **Common name**

Charcoal burner

### **Role**

Ectomycorrhizal

### **Key identification features**

The caps are almost spherical at first, becoming convex and later flattening with a slight central depression, peeling to 1/2 way to centre. Beneath the cuticle, which varies in colour from purple and brown to grey and olive green and is darker towards the centre, the flesh of this mushroom is white and firm. The greasy white, crowded, adnexed to very slightly decurrent gills are sometimes forked, they are unusually pliable. Stipe cylindrical, white, occasionally tinged with purple. The stem flesh is also white, and there is no stem ring.

### **Occurrence**

Grows under oak trees.

### **Forest type**

*Quercus leucotrichopora*.

### **Edibility**

Edible.



# 65

MUSHROOMS  
IN FOREST  
PLANTATIONS  
OF KANGRA  
VALLEY



*Scleroderma bovista*



## ***Scleroderma bovista***

**Fr.**

**Family**

Sclerodermataceae

**Common name**

Not found

**Role**

Ectomycorrhizal

**Key identification features**

Sporocarps round or nearly round, occasionally with a small, pinched-looking pseudo-base, surface smooth or very finely scaly, developing small pinkish cracks with age, dirty whitish to pale tan, bruising purplish red or pinkish when rubbed. Flesh whitish but turning pinkish or purplish when sliced, odour not distinctive.

**Occurrence**

Grows under conifer trees.

**Forest type**

*Cedrus deodara*, *Pinus roxburghii*.

**Edibility**

Edible till spores are formed.



▲  
*Scleroderma bovistoides*  
▼

## ***Scleroderma bovistoides*** **Cooke & Masee**

### **Family**

Sclerodermataceae

### **Common name**

Golden puffball

### **Role**

Ectomycorrhizal

### **Key identification features**

Sporocarps round or nearly round, surface rough finely scaly, dirty pale to brownish. Flesh whitish.

### **Occurrence**

Grows under conifer and oak trees.

### **Forest type**

*Pinus roxburghii*, *Quercus leucotrichophora*.

### **Edibility**

Edible till spores are formed.







*Scleroderma verrucosum*



## *Scleroderma verrucosum* (Bull.) Pers.

### Family

Sclerodermataceae

### Common name

Scaly earthball

### Role

Ectomycorrhizal

### Key identification features

The rounded sporocarp is attached to a longitudinally grooved pseudostipe (a stem-like structure of infertile material).

From the base white mycelial cords emanate. The peridium (outer skin) is reddish brown becoming more ochraceous as it ages and covered by small isolated angular scales. The peridium tends to shed its scales it matures. At maturity the apex of peridium ruptures leaving an irregular opening via which the wind and rain disperse the spores. Inside the spore mass is cream at first but soon turns purplish brown with fine white marbling before becoming brown and powdery throughout.

### Occurrence

Grows under conifer and hardwood trees.

### Forest type

*Acacia catechu*, *Pinus roxburghii*.

### Edibility

Edible till spores are formed.



*Suillus granulatus*  
upper and lower surface

## ***Suillus granulatus*** **(L.) Roussel**

### Family

Suillaceae

### Common name

Weeping bolete

### Role

Ectomycorrhizal

### Key identification features

Cap cinnamon brown to orange brown the sticky remain convex. The cap flesh is pale yellow and soft, it does not change colour when the cap is cut. A characteristic feature of this species is the presence of milky droplets that are exuded by the tiny circular pores. These droplets eventually darken as they dry. The tubes are shallow and lemon yellow, and they terminate in pores of the same colour. The stipe is very pale straw yellow and has no ring or ring zone. Towards the apex of the stem, the surface is granular, the granules are formed as milky droplets exuded from the stem flesh, harden on drying. Like the cap, when cut the pale yellow stem flesh does no change colour.

### Occurrence

Grows under conifer and oak trees.

### Forest type

*Quercus leucotrichophora*.

### Edibility

Edible.



# 69

MUSHROOMS  
IN FOREST  
PLANTATIONS  
OF KANGRA  
VALLEY





▲  
*Imleria badia*



## ***Suillus luteus* (L.) Roussel**

Family  
Suillaceae

Common name  
Slippery Jack mushroom

Role  
Ectomycorrhizal

### **Key identification features**

When wet the caps of this species are slimy, in hot sunny weather they dry to a smooth semi-matt finish. Usually dark chestnut brown, but occasionally quite a lot lighter, beneath the cap, a white veil covers the lemon yellow pores. The veil tears to leave an irregular ring on the stem and often pieces of veil hanging from the cap margin. At first lemon yellow, the medium-sized round pores darken to a sienna-yellow with age. The stipe is pale straw-yellow at first, darkening with a dot pattern above the ring and with an irregular covering of brown longitudinal fibres near the base. The large, floppy stem ring is white initially but usually develops a purplish tinge to its lower surface as with maturity.

Occurrence  
Grows under conifer and oak trees.

Forest type  
*Quercus leucotrichophora*.

Edibility  
Edible.





▲  
*Suillus placidus*  
upper and lower surface  
▼

## ***Suillus placidus* (Bonord.) Singer**

### Family

Suillaceae

### Common name

Slippery white bolete

### Role

Ectomycorrhizal

### Key identification features

The young cap is pure ivory white and very slimy. Older caps remain viscid and darken only slightly as they expand from convex to almost flat. Beneath the viscid cuticle, the cap flesh is very pale grey at first, yellowing somewhat as it matures. The flesh is initially white and becomes yellowish with age, sometimes staining slightly pink. Pores initially ivory, the pore openings darken slightly. The largish tubes are pale grey at first, yellowing slightly with age. The slender stem is ivory-white with vinaceous blotches near the apex. There is no stem ring.

### Occurrence

Grows under conifer and oak trees.

### Forest type

*Quercus leucotrichophora*.

### Edibility

Edible.





▲ *Tricholoma album*  
upper and lower surface  
▼



## ***Tricholoma album* (Schaeff.) P. Kumm.**

### Family

Tricholomataceae

### Common name

White Knight mushroom

### Role

Ectomycorrhizal

### Key identification features

Cap initially conical with an inrolled margin, later convex or flattened with small umbo and usually a wavy margin, usually dry and smooth, white or with a pale yellow tinge, ochre-yellow towards the centre when mature, smooth. Gills white or pale yellow, with coarsely toothed edges, of uneven lengths and moderately distant, sinuate (notched very close to the stem). Stipe white to pale yellowish-brown, pruinose towards the apex and often with fine longitudinal fibrils near the base, cylindrical, no stem ring.

### Occurrence

Grows under oak trees.

### Forest type

*Quercus leucotrichophora*.

### Edibility

Poisonous.



▲  
*Tylopilus violatinctus*  
upper and lower surface  
▼

## ***Tylopilus violatinctus*** **Baroni & Both.**

### **Family**

Boletaceae

### **Common name**

Violet bitter bolete

### **Role**

Ectomycorrhizal

### **Key identification features**

Cap convex, becoming broadly convex or nearly flat in age, dry, bald, or finely suede-like when young, violet when young, becoming dark violet or purple. Pores whitish becoming yellowish, bruising yellow brown, pores circular. Stipe more or less equal, or enlarging towards base, violet when young, fading to purplish, bald, white basal mycelium, becoming hollow. Flesh white, unchanging when sliced.

### **Occurrence**

Grows under oak trees.

### **Forest type**

*Quercus leucotrichophora*.

### **Edibility**

Bitter.







▲  
*Xerocomus illudens* –  
 upper and lower surface  
 ▼



## *Xerocomus illudens* (Peck) Singer

Family  
 Boletaceae

Common name  
 Not known

Role  
 Ectomycorrhizal

### Key identification features

Cap convex, becoming broadly convex or nearly flat, dry, bald or, when young, very finely velvety, brownish red to reddish brown. Pores yellow, becoming olive yellow to brownish yellow with maturity, bruising bluish, pores primarily angular. Stipe tapered downward, dry, solid and tough, widely and coarsely reticulate with a brownish to reddish reticulum near the apex, yellow to pale yellow, basal mycelium whitish to yellowish. Flesh pale yellow, not staining on exposure, or turning slightly pinkish in the stem.

Occurrence  
 Grows under pine and oak trees.

Forest type  
*Pinus roxburghii*, *Quercus leucotrichophora*.

Edibility  
 Edible.

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