**Phaeolus schweinitzii** (Pine Dye Polypore)

**Hosts:**
- Various conifers esp. *Pinus spp.*

**Significance:**
- Root, butt and heartwood decay fungus
- Decay begins in the roots where a primary infection by *Armillaria spp.* appears to pave the way for colonisation
- A brown cubical rot develops in the heartwood
- The brown rot leads to brittle fracture of the stem or root plate due to severe loss of tensile strength

**Ident Features:**
- When young upper surface mainly dark brown with a felty covering and golden yellow margin
- Can be circular fruit body if growing on the ground near a decayed root
- When growing from the stem or base it can appear as a stalked or stalkless bracket
- Often seen throughout the year as blackened remains
- Brown rot decay smells of turps and cracks are lined with a chalky or fluffy coating of yellowish or creamy white mycelium
**Ustulina deusta**

**Hosts:**
- *Fagus, Tilia, Carpinus betulus, Acer platanoides* and *Aesculus hippocastanum*

**Significance:**
- Worldwide distribution esp. urban on living trees
- In top three for wind throw and snap
- Root, butt and heartwood decay fungus
- Decay begins after mechanical damage in basal area, roots or root contact
- Early decay in central part of roots and lower stem, asymptomatic
- White rot and soft rot - digesting cellulose and leaving lignified parts intact. Brittle, ceramic like fracture
- Difficult to detect by ultrasound and micro-drills

**Ident Features:**
- Black charcoal fruit bodies, larger crusty lobes distinguish from *Hypoxylon*
- Flat disc structure when sexual
- Recognition by grey zone lines bet. fungal genotypes, or compartmentalization
**Meripilus giganteus** (Black staining or Giant Polypore)

**Hosts:**
- Mainly *Fagus*, also *Quercus*, *Platanus* and *Araucaria*

**Significance:**
- In top three for wind throw and snap
- Root, butt and heartwood decay fungus
- Decay in central parts and underside of roots, tree may be asymptomatic in crown and above ground
- White rot and soft rot mode in cases, selective delignification of cellulose and degrading pectin (which holds cells together), causes brittle fracture
- Facture across grain caused by soft rot
- A serious decay because of loss of mechanical support, esp. *Fagus*

**Ident Features:**
- Overlapping fronds which brownish-yellow to chestnut-yellow when fresh turning to tough dark brown when old
- Surface rough and underside whitish turning lead colour on bruising (differentiating from similar fungi eg. *Grifola frondosa*)
- Recognition by grey zone lines bet. fungal genotypes, or compartmentalization
Ganoderma adspersum/applanatum

Hosts:
- Common on broadleaf esp Fagus, occ. conifers

Significance:
- In top three for wind throw and snap
- Selective delignification esp. rays leaving white spongy fibrous mass
- Can cause radial cracking
- Bottle butt

Ident Features:
- Hoof shaped persistent bracket
- Thick crust, thick flesh layer compared with spore tube layer
- Slightly thinner crust in G. applanatum
- Underside whitish marked when touched
- Occ. White band bet. growth zones

G. adspersum

G. applanatum
Grifola umbellata/frondosa (Hen of the Woods)

Hosts:
- Quercus spp.

Significance:
- White rot, with soft rot in early decay
- Loss of tensile strength
- Decay in central root plate and stem base

Ident Features:
- Lobed fan like frond, intricately recurved
- Broaden at tips
- Forms dense tufts
- Grey brown upper, white margin
- Under surface white
- Does not bruise dark
- Mousey odour
- G. umbulata – branches from origin; G. frondosa – branches on stalk, yellower
Phellinus igniarius (Grey Fire Bracket)

Hosts:

- *Salix, Betula* spp. some other broadleaves

Significance:

- Soft textured White rot
- Yellowish-green, dark discoloration zone
- Decay in main stem
- Fracture if extensive

Ident Features:

- Hard, woody, hoof shaped bracket
- Greyish upper surface
- Fawn growing edge
- Perennial
**Daedalea quercina (Maze Gill)**

**Hosts:**
- *Fagus sylvatica, Quercus robur, Castanea sativa*

**Significance:**
- Intense brown rot
- Brittle fracture
- Decay confined to dead branches, stumps
- Amenity planting - safety hazard in dead branches *Quercus*
- Ancient/old woodland indicator

**Ident Features:**
- Hard, leathery texture
- Pale greyish-brown upper surface, flat and smooth, concentric zones
- Irregularly elongated radial pores (gills)
- Pore maze-like effect
- Perennial, persistent
**Bjerkandera adusta** (Smoky Polypore)

**Hosts:**
- *Fagus sylvatica*, *Carpinus betulus*, other broadleaves

**Significance:**
- Spongy white rot
- Lignin and cellulose decay
- Brittle fracture
- Decay develops in sapwood, pruning wounds and broken branches
- Limited decay but can kill cambium leading to canker-rot
- Causes breakage of large limbs (300mm) in *F. sylvatica*, typically following beech bark disease
- Presence requires detailed inspection

**Ident Features:**
- Small, thin, leathery brackets
- Dense tiers
- Flexible wavy folds
- Pale brown-grey, off white upper, small hairs
- Lower surface - very small pores, white becoming ashen with age
- **Test** - tear bracket to reveal blackish jelly layer separating greyish-white flesh of spore tubes
Collybia fusipes (Spindle Shank)

**Hosts:**
- *Quercus robur, Q. petraea*

**Significance:**
- Extensive root decay, rarely extends above ground
- Unknown history of root failure, but impairs root to cause crown dieback

**Ident Features:**
- Toadstools in small clusters
- Reddish-brown cap, liver coloured when wet
- Pale tan and crack with age
- Grooved stems, thick at mid, taper to attachment
- Gills whitish when young, darken later
- Differs from *Armillaria* as no ring on stem
**Fomes fomentarius** (Tinder Fungus)

**Hosts:**
- *Fagus sylvatica, Betula spp.* (in North)

**Significance:**
- Simultaneous white rot
- Enters via injury/broken branches
- Invades sapwood, ripewood and non durable heartwood, occasionally cambium
- Lignin and cellulose decay
- Brittle fracture
- Rapid decay, large trees sustain this

**Ident Features:**
- Hoof shaped on *Betula* spp., resembles *G. adspersum* on *Fagus*
- Upper-white to dark grey, hard crust, concentric zones
- Lower-initially white turning rusty brown during year
- Flesh-buff, woolly texture
- Perennial
**Armillaria mellea** (Honey Fungus)

**Hosts:**
- Broadleaves and conifers

**Significance:**
- White rot
- Windthrow, symptomatic with crown dieback
- Windsnap if extensive
- Spreads underground tree to tree

**Ident Features:**
- Brown, honey yellow toadstools in small clusters
- Over infected roots, stumps, base of trees
- Button mushrooms expanding to large cap
- Upper-dark scales
- Lower-pale cream gills
- Ring on stem
- Thin, flat bootlace rhizomorphs
- Grey-brown to inky blue wood stain changing to orange-brown with pseudosclerotial plates
**Phellinus tuberculosus**

**Hosts:**
- *Rosaceae spp*, common on *Prunus spp*

**Significance:**
- Early soft rot
- Advanced crumbly white rot
- Purplish-brown zonation
- Enters large pruning wounds and branch breaks, also degrading heartwood

**Ident Features:**
- Hard woody bracket
- Resupinate
- Upper-ashen grey becoming brownish
- Lower-ashy becoming dark cinnamon-brown
Ganoderma resinaceum

Hosts:

- Quercus spp

Significance:

- Selective delignification
- Complete destruction of lignin and wood
- Intense rot worse than other Ganoderma spp. causing wind throw and snap

Ident Features:

- Soft brackets
- Upper-chestnut blackish w. varnish like resinous crust
- Surface cracks and melts
- Lower-tubes, white thin corky flesh becoming cinnamon
Ganoderma lucidum (Varnished Polypore)

Hosts:
- Broadleaf stumps

Significance:
- Selective delignification
- Complete destruction of lignin and wood

Ident Features:
- Rare on standing trees
- Brackets w. distinct lateral stalk
- Upper-red to purple-black, laquered
- Lower-tubes, white thin corky flesh becoming cinnamon
- Soft mat of white fungal material
**Ganoderma pfeifferi (Coppery Lacquer Bracket)**

**Hosts:**
- *Fagus spp*

**Significance:**
- Localised selective delignification
- Considerable dark brown discoloration w straw spots and streaks in decay pockets
- Windthrow and branch snap if aerial decay
- Can kill bark where present

**Ident Features:**
- Woody, hoof-shelf brackets
- Upper-chestnut brown, furrowed w. varnish like resinous crust
- Surface hard, waxy and melts
- Lower- white becoming yellow and resinous when maturing
Rigidoporus ulmarius

Hosts:
- *Ulmus*, occ. *Acer*, *Quercus* & *Populus* spp

Significance:
- Brown cubical rot
- Loss of tensile strength
- Central buttress
- Windthrow if extensive

Ident Features:
- Thick, woody brackets
- Upper-whitish/cream, discoloured green by algae growth
- Lower- cinnamon coloured tubes contrasting w pale flesh
- Rare due to DED.
**Heterobasidion annosum** (Conifer-base Polypore)

**Hosts:**
- *Pinus, Picea spp*

**Significance:**
- Decay in roots, parasitic on cambium
- Root to root transmission
- Selective delignification
- Early -grey/violet streaks then pocked red/brown patches
- Decay in bole varies, SP v. resistant although roots gone
- Early rot-ductile bending fracture
- Prob -kills trees rather than windthrow

**Ident Features:**
- Rubbery, leathery brackets
- Upper-brown, corrugated w. zonate pattern
- Lower- creamy white, fine close spores
- Base of stem or roots
Daedaleopsis confragosa (Thin Mazegill)

Hosts:
- Salix, Fagus, Prunus spp

Significance:
- White rot w brittle fracture
- Confined to dead or damaged wood
- No failure of large limbs
- Extensive - hazard so fell

Ident Features:
- Hard, thin, neat semi circular brackets
- Upper-off white - reddish zones
- Lower- white/grey bruising blood red when young
- Pore round maturing to radially elongated
**Inonotus dryadeus**

**Hosts:**
- *Quercus spp*

**Significance:**
- Localised selective delignification
- Yellow stripes expanding to pale within dark water soaked wood
- Decay from root system to stem base
- Never >2m up stem
- Windthrow if extensive
- Difficult to assess extent

**Ident Features:**
- Soft, thick, lumpy brackets
- Upper-thin, yellow maturing to rusty brown
- Lower-white pores, tube & flesh rusty brown
- Flesh soft-corky-brittle w. age
- Fresh-golden watery liquid on depression
Inonotus hispidus (Shaggy Polypore)

Hosts:
- *Fraxinus, Platanus* (failure rare) spp also *Malus, Juglans, Ulmus, Acer*

Significance:
- Simultaneous white rot
- Brittle fracture
- Occ. Soft rot or white rot mode
- Decay varies w. species
- Splitting of wood through delignification depends on lignin content of species
- Forms canker to breach barrier zone
- Strong poss. of fracture in *Fraxinus*

Ident Features:
- Brackets
- Upper-domed orange-rust, short dense hairs, darkening to black and bristly
- Lower-flat pore bearing flesh and tubes similar colour
- Located in depressed strips tissue
**Pleurotus ostreatus** *(Oyster Mushroom)*

**Hosts:**
- *Fagus, Aesculus, Populus spp*

**Significance:**
- Early delignification in springwood
- Cracking across grain in *Populus*
- Develops to intense white rot
- Severe decay little strength
- Decay localised

**Ident Features:**
- Soft, fleshy fan
- Upper-dark blue grey maturing to brown/fawn with cracking
- Lower- white gills running down stipe becoming yellowish when maturing
**Inonotus radiatus**

**Hosts:**
- *Alnus spp*

**Significance:**
- Simultaneous white rot
- Brittle fracture
- Occ. Soft rot or white rot mode

**Ident Features:**
- Woody brackets-in tiers
- Upper-glabrous, uneven radially wrinkled orange-rust darkening to black
- Lower-circular pores, silvery; flesh and tubes rusty colour
Diatrype disciformis

Hosts:
- *Fagus spp*, deciduous trees

Significance:
- White rot
- Saprophyte

Ident Features:
- Discs 1-3mm across
- Whitish darkening to black, white fleshed
**Bulgaria inquinans** (Black Bulgar, Pope’s Buttons)

**Hosts:**
- *Quercus spp*, deciduous trees, less common on *Fagus*

**Significance:**
- Saprophytic

**Ident Features:**
- Brownish rubbery, globose, inrolled margin expanding to black flat discs
- No pimples on disc (*Exidia glandulosa* has pimples)
Coriolus versicolor (Many-zoned Bracket)

Hosts:
- *Fagus, Rosaceous spp, deciduous trees*

Significance:
- Very common esp. after *Chondrostereum purpureum*
- White rot of sapwood, occ. kills cambium
- Rot not extensive
- Brittle fracture of small limbs
- Occ. other fungi colonise so detailed inspection
- *C. hirtusa* (hairy upper, round pores) similar on sun scorched trees, often seen w. *Schizophyllum commune*

Ident Features:
- Thin, leathery bracket in clusters
- Semi-circular, flattened
- Alternating light & dark zones
- Wavy lobed margin
Daldinia concertina (Kings Alfreds Cakes)

Hosts:
- *Fraxinus* spp, less common on deciduous trees

Significance:
- White rot
- Zonal degrade 'calico'
- Small trunks or branches, not safety hazard

Ident Features:
- Hard, black hemispherical
- Internally, concentric domes, charcoal quality
**Fistulina hepatica (Beefsteak Fungus)**

**Hosts:**
- *Quercus, Castanea, occ Fraxinus, Fagus, Salix, Juglans, Carpinus & Ulmus spp*

**Significance:**
- Soft rot developing to brown cubical rot, but not crumbly
- Deep discoluration on *Quercus* (valuable)
- Little loss of strength until extensive, not significant unless present for long time

**Ident Features:**
- Tongue shaped, semi-circular bracket
- Initially creamy becoming purplish red/brown, exuding **red juice** when broken
**Hypholoma fasciculare** *(Sulphur Tuft)*

**Hosts:**
- Common on deciduous trees, *H. capnoides* on some conifers

**Significance:**
- Occupies large volumes of dead root systems
- No serious decay in living trees
- Windsnap on dead trees

**Ident Features:**
- Pale yellow toadstools, gills maturing green
- No stem collar
Laetiporus sulphureus (*Chicken-of-the-Woods*)

**Hosts:**
- *Quercus, Castanea, Taxus, Robinia spp*, less common on others

**Significance:**
- Spores can reside in cells inactive
- Yellow/red discolouration on wood developing to red/brown
- Cubical cracking in advanced stages
- *Yellow/white mycelium sheath fill cracks*
- Slow heartwood decay
- Windsnap/windthrow
- Sapwood unaffected
- Dangerous if extensive inc. structural timber (spores survive seasoning)

**Ident Features:**
- Brackets or fronds, single or groups
- Bright yellow fading to dull cream
- Short tubes
Perenniporia fraxinea

Hosts:
- *Fraxinus, Robinia, Laburnum, Ulmus, Platanus x hispanica, populus*
  & *Fagus spp*, but rare

Significance:
- Advanced – intense white rot, forming cavities
- Brittle fracture of stem

Ident Features:
- Hard, woody bracket forming stem base
- Whitish dev. brown/black
- Fawn/yellow tubes differing from *Rigidoporus ulmarius*
Pholiota squarrosa (Shaggy Scale-Head))

Hosts:
- Ulmus, Sorbus aucaparia

Significance:
- Basal decay
- Examine for decay or root killing

Ident Features:
- Pale ochre/yellowish-rusty fleshy toadstools
- Brown recurved scales on stool
- Tattered stem ring
**Piptoporus betulinus (Razor Strop)**

**Hosts:**
- Betula S. England, also *Fagus spp.*

**Significance:**
- Brown rot – cubical to friable disintegration
- Broken branches, pruning wounds dev. after primary infection by *Chondrostereum purpureum*
- Safety hazard

**Ident Features:**
- Soft, smooth kidney shaped bracket
- Darkens to pale grey/brown
- Small round pores
Polyporus squamosus (Dryad’s Saddle)

Hosts:

- *Acer (esp. A. pseudoplatanus), Fagus, Ulmus, Fraxinus, Tilia spp.*

Significance:

- Advanced - intense white rot, cavity forming
- Brown ‘felt’ mycelium in cavities
- Pseudosclerotial plates
- Zoned decay
- Topped, extensive pruning or storm damaged trees are target
- Failure risk if extensive decay

Ident Features:

- Soft, fleshy fan shaped bracket
- Lateral stem
- Upper - dark brown scales on straw yellow base
- Lower - whitish pores
- Stem, black at base
(Pseudo)trametes gibbosa (Beech Bracket)

Hosts:
- *Fagus sylvatica*, less common other spp.

Significance:
- White rot
- Usu. Dead stumps, not documented as structural failure

Ident Features:
- Firm, corky bracket
- Whitish becoming pale grey/buff w. algae
- White upper and maze/labrynth pore tubes differ from *Rigidoporus ulmaris* & *Perenniporia fraxinea*
Sparassis crispa (Cauliflower Fungus)

Hosts:

Significance:
- Cubical brown rot, usu. confined to heartwood
- Extensive decay, brittle fracture, hazard

Ident Features:
- Cauliflower, sponge appearance
- White/ochre
- Base or felled stems
**Stereum gausapatum**

**Hosts:**
- *Quercus spp.*, living tissue but common on many spp. dead branches

**Significance:**
- White rot of sapwood, extending to ‘pipe-rot’ of central wood
- Initially a ‘ring-rot’ in early wood vessels
- Extensive total degradation
- Extensive decay - small branches may fail, larger trunks limbs may not, high target, fell and inspect wound further.

**Ident Features:**
- Resupinate thin, skin layer
- No pores or gills
- Upper - rich brown maturing darker and **turning red if cut**
- Lower - hairy grey/brown if white margin
Stereum hirsutum (Hairy Leather Bracket)

Hosts:
- Quercus spp., other broadleaves

Significance:
- Confined to dead/dying branches
- Not major hazard

Ident Features:
- Tiered bracket fronds
- Upper - hairy, dull yellow
- Lower - bright yellow/brown
Stereum rugosum (Common Leather Bracket)

Hosts:
- Corylus, Betula, Alnus, Quercus rubra spp.

Significance:
- Not major hazard EXCEPT Q. rubra
- Q. rubra, canker rot at stem base-inspect

Ident Features:
- Similar to *H. gausapatum* but yellow/buff upper and wrinkled brown lower
- Bleeds red
Stereum sanguinolentum

**Hosts:**
- *Picea spp.*, other conifers

**Significance:**
- Extensive discolouration then intensive white rot
- Fracture hazard uncertain

**Ident Features:**
- Grey/ochre skin like appearance
- Bleeds red
- Old wounds but commonly or end of felled timber
Chondostereum purpureum (Silver Leaf Disease Fungus)

Hosts:
- *Betula, Acer spp.*, Roseaceae, Eucalypts, other broadleaves

Significance:
- **Killer of trees**
- Enters wounds and kills sapwood, causing water-conducting malfunction
- **Toxin, in some spp., manifests in leaves**, turning them dull lead colour - silver leaf
- White rot decay of sapwood
- Secondary colonisation by *Coriolus versicolor* common - causing structural failure

Ident Features:
- Hard, tough, skin like fronds
- Upper - hairy, pale grey/brown
- Lower - lilac/purple maturing grey
- Can re-imbibe moisture after desiccation