

GANODERMATACEAE

Medium sized to very large; on wood (living or dead); primarily saprophytic

5 Genera; 81 Species

Basidioma perennial or annual; bracket-like or sometimes stipitate, frequently thickened. **Pileus** knob-, shelf-, or bracket-like; **upper surface** hard, crusty, wavy, sometimes varnished, sometimes dusted with spores, zoned, ridged, or grooved, coriaceous; **context** thick, punky, corky, unreactive with KOH. **Hymenium** tubulate; **pores** minute to small, sometimes barely visible; **tubes** often stratified. **Stipe** absent or present, rudimentary or well developed, often as an extension of the pileus; **veil** absent; **volva** absent. **Spore print** brown to reddish brown, frequently difficult to obtain; **spores** broadly elliptical, ornamented, thick or double-walled.

GANODERMATACEAE is a widespread family of wood decay organisms most abundant in the tropics. As a lignicolous organism, members of the family produce a “white rot” in the substrate upon which it is growing.

Only *Ganoderama* has a confirmed presence in northern Utah.

GANODERMA

Medium sized to very large; on wood

Basidioma perennial or annual, solitary or in small groups. **Pileus** knob-, shelf-, or bracket-like, sometimes thick, tough, hard, or woody when dry; **upper surface** hard, crusty, waxy sometimes appearing varnished or dusted with spores, color variable; **context** brown to cinnamon-, ochraceous-brown or dark brown. **Hymenium** tubulate; **tube layers** stratified when perennial, rarely with more than two layers if annual; **pores** minute to barely visible, whitish to yellowish-white, bruising brown when fresh. **Stipe** absent or rudimentary as an extension of the pileus; **veil** and **volva** absent. **Spore print** brown, when obtainable, often found as a deposit on the upper surface of the basidioma; **spores** elliptical, ornamented often minutely so, thick or double-walled.

Ganoderma is a widespread genus reaching its greatest diversity in the tropics. The host range is broad, species within the genus attacking both conifers and hardwoods, some of which being more generalist while others are host specific.

Several oriental species are used in traditional oriental medicine. Recent scientific analysis has shown that several of these species have medicinal use in the treatment of cancer, diabetes, heart disease and other modern diseases.

1. Surface crust somewhat thick; hyphae vertically arranged or irregularly interwoven; context red to maroon-brown, sometimes white flecked; perennial ...3. *G. applanatum*
1. Surface crust thin; hyphae palisade; context white to light brown; typically annual
2. On hardwoods; context 0.2-3 cm thick ... 1. *G. lucidum*
2. On conifers; context 1.5-8 cm thick ... 2. *G. oregonense*

1. *G. lucidum* (W. Curt. ex Fr.) P. Karst.

VARNISHED CONK, LING CHIH, REISHI

Basidioma typically annual; corky tough, emerging as a pallid knob, becoming shelf-like or developing a stipe and pileus. **Pileus** 2-20(35) cm wide, 4-8 cm thick, circular, fan-, or kidney-shaped in outline; **surface** uneven, typically concentrically zoned, thinly crusted, typically varnished, often grooved, color somewhat variable but typically reddish, sometimes covered with brownish spore powder; **margins** thick, rounded, sometimes acute, paler colored, sterile 2-5 mm; **context** spongiose-corky when fresh, tough when dry or old, indistinctly zonate, pallid below the surface, darkening to light ochraceous or sometimes dark brown directly above the tube layer. **Tubes** 2-18 (20) mm long,

typically in a single layer, occasionally in 2-3 layers, thin walled; **pores** 0.15-0.25 mm wide, 4-8 per mm, circular or sometimes somewhat angular, edges entire, surface whitish when fresh or young, discoloring with age or when bruised. **Stipe** (0.5)1-4(4) cm wide, 3-15 cm long, cylindrical, often gnarled or twisted, equal or enlarged basally, lateral or sometimes sub central, typically colored as the pileus surface, appearing varnished. **Spore print** brown, often rusty in appearance; **spores** 7-13 x 5-9 μ , elliptical, one end often appearing truncate, double walled, appearing minutely roughened, walls cyanophilous.

Substrate wood, sometimes on stumps or roots.

Habitat solitary or sometimes in small groups. Typically found at the base of living hardwoods or occasionally on the stumps or roots of a wide range of deciduous hosts. The Mushroom Society of Utah reported that it was collected in 2001 in Salt Lake City.

Edibility too hard and tough, but used medicinally in traditional Asian medicine.

Fruiting Season may be found throughout the year with fresh fruiting bodies frequently appearing in late summer or early fall.

Notes name means 'glossy' or 'polished.' *G. lucidum* when occurring on living hosts causes a white rot, which severely weakens the tree. A specimen from Salt Lake City appeared for identification at the 2001 Utah Mushroom Society Fall Foray. It seems to prefer as hosts species of *Acer*, *Quercus*, *Fraxinus*, *Celtis*, *Salix*. And *Ulmus*.

2. *G. oregonense* Murr.

OREGON VARNISHED CONK

Basidioma annual; usually sessile or slightly stipitate, corky, tough. **Pileus** 5-100 cm long, 5-40 cm wide, 3-20 cm thick, semicircular or fan-shaped; **surface** uneven, concentrically zoned, thinly crusted, cracking extensively with age, sometimes grooved, color variable but typically reddish, varnished in appearance, sometimes covered with a brownish spore deposit; **margins** somewhat thick, occasionally acute, glabrous, lighter colored; **context** to 15 cm thick, soft-fibrous, cream to buff colored. **Tubes** 0.6-2 (3) cm long, single layered, thick walled, pale purplish brown; **pores** to 0.5 mm wide, 2-4 per mm, sub circular, entire, surface cream colored, bruising brownish or purple-brown. **Stipe** typically absent, when present lateral, appearing as the pileus surface. **Spore print** rusty brown; **spores** 10-17 x 7.5-10 μ , ellipsoid, apex truncate, thickly double walled.

Substrate wood.

Habitat solitary, occasionally overlapping on dead conifers or conifer stumps. Not currently collected from Utah.

Edibility not edible.

Fruiting Season Frequently found throughout the year due to the persisting nature of the basidioma.

Notes name means 'from Oregon.' *G. oregonense* is closely related to *G. lucidum* for which it may be mistaken. It is found only on conifers preferring species of *Abies*, *Picea*, *Pinus*, and *Pseudotsuga*.

3. *G. applanatum* (Pers. ex Wallr.) Pat.

ARTIST'S CONK, ARTIST'S FUNGUS

Basidioma perennial; hard and woody, sessile, bracketlike, sometimes hoof-like, rarely effuso-reflexed, emerging whitish and knoblike. **Pileus** 5-75 cm broad, 2-20 cm wide, 1.5-10 cm thick, typically semicircular or fan-shaped in outline; **surface** cracked, furrowed, ridged, or lumpy, becoming more so in age, thickly crusted, hard though sometimes thin enough to crack with a fingernail, lacking a varnished appearance, gray to brown or gray-brown, occasionally aging grayish-black, often covered with brown to cocoa-brown spore powder; **margins** sometimes indistinctly zonate, somewhat acute at times; **context** 0.5-5 cm thick, punky or corky, brown or sometimes whitish or with whitish zones. **Tubes** 4-12 mm long, thick walled, distinctly stratified, strata separated by layers of context; **pores** to 0.25 mm wide, 4-6 per mm, circular, surface white or whitish when fresh, frequently darkening when bruised, often yellowing in age or with drying. **Stipe** typically absent. **Spore print** brown or reddish-brown; **spores** 6-9.5 x 4.5-7 μ , ovoid, sometimes slightly truncate at the apex, thick walled, appearing minutely spiny.

Substrate wood.

Habitat solitary or in groups on hardwoods, but occasionally conifers. Typically found as a parasite on living trees, but frequently persisting afterward as a saprophyte, particularly when found on hardwoods. In Utah it seems to prefer *Acer negundo* (Box Elder).

Edibility too woody to be of any use.

Fruiting Season year round.

Notes name means 'flattened.' *G. applanatum* produces a whitish, delignifying decay of the sapwood and heartwood of its host. Infected trees tend to fall over easily. A widespread species, it seems to be absent only from areas lacking trees. In our region it seems to prefer species of *Acer*.

For *G. applanatum* the following calculations have been made: Arora (1987) reported in *Mushrooms Demystified* that a large specimen can release 30 billion spores/day, for 6 months/year or over 5,000,000,000,000 (5 trillion) spores annually.