

Alaska Plant Profiles

CONKS / SHELF FUNGI

Conks are also known as shelf fungi or bracket fungi. They are members of the fungus kingdom which includes mushrooms, molds, and yeast. Conks are the spore producing fruiting structures of a fungus. They are found growing on tree trunks and limbs, stumps, fallen logs, and even on structural lumber. The main body of the fungus is called the mycelium, long thin filaments that penetrate and inhabit the wood of a tree. As the mycelia feed on the wood, they exude enzymes that break down cellulose or lignin and cause wood rot, although some wood-inhabiting fungi protect the tree against other more lethal fungi. Shelf fungi are important recyclers in forest ecosystems. In the process of decomposing woody material, they recycle nutrients, build soil, and create suitable habitats for birds, arboreal mammals, and insects.

Most conks are inedible because they are tough and corky or woody, but some conks are collected for their medicinal value or for smoking mixtures. Others are collected for decorative and artistic uses. There are many species of conks in Alaska. Some of them are quite abundant; others are rare.

The following species are known to be collected in Alaska:

<i>Fomes fomentarius</i>	Tinder Conk or Amadou
<i>Fomitopsis officinalis</i>	Quinine Conk or Agarikon
<i>Ganoderma applanatum</i>	Artist's Conk
<i>Inonotus obliquus</i>	Chaga or Cinder Conk
<i>Phellinus igniarius</i>	False Tinder Conk
<i>Piptoporus betulinus</i>	Birch Polypore or Birch Conk
<i>Trametes versicolor</i>	Turkey Tail or Yun Zhi

Tinder Conk

Fomes fomentarius (L.:Fr.) J. Kickx

Synonym: *Polyporus fomentarius*



Tinder Conk is also known as Hoof Fungus, Amadou, and Ice Man Polypore. It is common throughout the northern boreal forest. It is found mainly on birch, but may also occur on cottonwood, aspen, willow, and alder.

Description: This gray to gray-brown to black conk is shaped like a hoof and has a smooth surface with concentric horizontal bands around its perimeter. The underside has fine pores and is cream colored when young, growing darker with age. Spore color is white. A perennial, it reaches maturity in 5-6 years with a diameter up to 6 inches.

Uses: As the name implies, Tinder Conk was used to start or transport fire. By placing an ember in a hole in the conk, it would smolder through the day (or longer) allowing the quick building of cooking and warming fires in a new location. Ötzi, the well-preserved 5,000 year old "ice man" found in the Alps near the Austrian-Italian border in 1991, was carrying a pouch with Tinder Conk along with pieces of flint and iron pyrite. Another use of Tinder Conk is in making hats or clothing. When soaked for several days and then pounded, the conk yields a felt-like mass of fibers which can be shaped and sewn. Tinder Conk has also been used in smoking mixtures and is the amadou sold in fly fishing shops for quickly drying waterlogged artificial flies. Like most shelf fungi, Tinder Conk has a long history of medicinal use. It has been used to cauterize wounds, as a styptic to stop bleeding, as a diuretic and laxative, and as a primitive antibiotic. Recent studies have shown that compounds isolated from Tinder Conk exhibit antibacterial, antiviral, and antitumor properties.

Quinine Conk

Fomitopsis officinalis (Villars:FR.) Bondartsev & Singer

Synonyms: *Fomes officinalis*
Fomes laricis



Tom Laurent, USDA Forest Service, Bugwood.org

Quinine Conk is also called Agarikon and Larch Polypore. Foresters refer to it as Brown Trunk Rot. Conifers in old growth forests are the host trees for the increasingly rare Quinine Conk. In Alaska, it is found mainly in the southeast panhandle on old growth Sitka spruce, western hemlock, and shore pine. It may also occur on other conifers. The name comes from its bitter taste; however, it does not contain quinine. Because of its rarity, there is a limit on collecting Quinine Conk in Alaska. In Europe and Asia, it is nearly extinct.

Description: Hoof-shaped when young, Quinine Conk becomes cylindrical and elongated with age. Some specimens begin to resemble an elephant's trunk and have been estimated to be more than 50 years old. The upper surface is concentrically banded and color ranges from chalky white when young to gray or brown in older specimens. The lower surface is white with many tiny compact pores. Diameter ranges from 1" to 2" when young to over 15" in older conks.

Uses: Native Alaskans in southeast Alaska such as the Tlingit and Haida hold the Quinine Conk in high regard, having spiritual and ceremonial significance. Medicinally, It may have been used to lessen the impact of viral diseases such as smallpox introduced by Europeans as they moved into the Pacific Northwest. Other traditional uses include its use as a poultice for infections, swelling, and bleeding. Early Europeans used it to treat cough and asthma.

Special Note: Commercial harvest of Quinine Conk in Alaska is limited to 75 conks per season. Refer to the "Alaska Non-Timber Forest Products Harvest Manual" available at Division of Mining, Land, and Water offices or at <http://dnr.alaska.gov/mlw/ntfp/index.cfm> for further information.

Artist's Conk

Ganoderma applanatum (Pers.) Pat.

Synonym: *Fomes applanatus*



Tom Laurent, USDA Forest Service, Bugwood.org

Most often found on old or decaying cottonwood, poplar, birch, and aspen, the shelf-like Artist's Conk can inhabit conifers as well. Artist's Conk gets its name from the change in color which occurs when the white underside of the conk is scratched. The scratched trace immediately turns brown, allowing artists to create intricate drawings on this natural "canvas."

Description: Shelf-like, more or less flattened, and woody, Artist's Conk has a gray top with concentric bands and a white undersurface. The prolific release (up to 30 billion/day) of its brown spores can give the upper portion a tan appearance. Older specimens can grow very large. Size can range from 2" to 35" in circumference and 1" to 8" thick.

Uses: Besides being used as an artist's canvas, large specimens have been made into tables and shelves. When burned, it is said to repel insects. Artist's Conk's medicinal properties have been investigated and shown to display antimicrobial and antitumor properties. Decoctions of Artist's Conk have been used to treat lung and respiratory complaints, as an immune system enhancer, and as a diuretic. Native Americans have used it in healing, protection, and ceremonial rites.

Chaga / Clinker Conk

Inonotus obliquus (Pers. : Fr.) Pilát

Synonyms: *Polyporus obliquus*
Poria obliqua



Joseph O'Brien, USDA Forest Service, Bugwood.org

Chaga (pronounced chaw'-guh) is unusual among the wood-inhabiting conks. Instead of a shelf-like fruiting body, it appears as a swollen or burl-like mass (sclerotia) on the trunks of old birch trees, black and furrowed with deep cracks. It is circumpolar in range, and in Alaska it is almost always found on birches, rarely on cottonwoods.

Description: If you spot a shapeless black mass 10' to 30' up the trunk of an old birch tree, chances are you've found a chaga. Inside the "charred" irregular outer surface is a hard corky orange-brown interior. This mass is often referred to as a sterile conk. The actual spore-producing fruiting body is an inconspicuous flat hyphal structure that forms under the bark after the tree has died and fallen. Spores are released as the dead bark strips away. A 10-15 year old chaga mass can be 19" to 60" long and weigh up to 10 pounds.

Uses: Chaga has been used for its curative properties by indigenous peoples of northern countries since ancient times. Recent studies have documented its antimicrobial, antitumor, and immunomodulatory properties. In Russia and Japan, anti-cancer drugs derived from chaga have been developed and marketed. Because of its medicinal properties, harvesting pressure has increased, especially in Russian Siberia. Harvesting by using hatchets has given way to the modern chainsaw. Chaga has never been a commonly seen fungus, and is likely to become rarer as collecting pressure intensifies.

False Tinder Conk

Phellinus igniarius (L. : Fr.) Quéf.

Synonym: *Fomes igniarius*



False Tinder Conk is the primary cause of white trunk rot among hardwood trees in North America. In Alaska it is found mainly on birch and cottonwood, although it can also occur on other hardwoods. A similar species, *Phellinus tremulae*, infects quaking aspen.

Description: False Tinder Conk resembles Tinder Conk in its appearance as a hoof shaped or shelf-like fungus growing on the trunk of a hardwood tree. Similar in size to the Tinder Conk, there are a few differences to help separate the two species: False Tinder Conk has a brown underside while Tinder Conk is lighter colored underneath. The upper surface is usually darker and rougher with cracks in False Tinder Conk. A cross-sectional cut will reveal white streaks (mycelial threads) in the dark brown interior of False Tinder Conk.

Uses: Many of the same medicinal properties of other conks also apply to False Tinder Conk. However, its primary use among Native Alaskans has been in the preparation of *iqmik*. Dried False Tinder Conk is heated and reduced to ash. The ash is then mixed with tobacco and chewed or smoked. The alkaline ash enhances the effects (and addictiveness) of the tobacco. While other conks can also be used to make *iqmik*, False Tinder Conk is preferred over others.

Birch Polypore / Birch Conk

Piptoporus betulinus (Bull. : Fr.) P. Karst.

Synonym: *Polyporus betulinus*



This annual round hoof-like conk is widespread on birches in Alaska. It is softer than the conks mentioned above, and is considered by some to be marginally edible when young.

Description: Round or kidney-shaped, with the margin inrolled around the underside, Birch Polypore often resembles an “organic” outdoor walkway light fixture. Circumference can range from 4” to 10” and thickness vary from ¾” to 2½”. It may be attached directly to the tree or may exhibit a vestigial stalk, more of a thickened extension of the conk. The upper surface is tan, brown, or gray-brown, smooth when young, becoming cracked with age. The underside is whitish and partially hidden by the curb-like margin, while the interior is white and spongy.

Although it is annual, the conks often persist for several seasons.

Uses: Along with the Tinder Conk, Öetzi, the ice man, carried Birch Polypore in his pouch. It is believed he may have used it to treat intestinal parasites. Birch Polypore is one of several conks used in medicinal formulations. It exhibits antimicrobial and anti-inflammatory properties. Sliced thin, it can be used on wounds to stop bleeding and prevent infection.

Turkey Tail

Trametes versicolor (L. : Fr.) Pilát

Synonyms: *Coriolus versicolor*
Polyporus versicolor



Sometimes called Rainbow Conk, Turkey Tail is known as Yun Zhi in Chinese and Kawaratake in Japanese. It is one of the most widespread of conks, occurring from the boreal north to subtropical and tropical hardwood forests. Its name comes from its colorful banded fan-shaped appearance.

Description: This small to medium sized annual conk is shelf-like and most often grows in overlapping clusters on dead hardwood stumps and logs. Occasionally it may be found on conifers or on the wounds of living trees. The top is velvety and has parallel concentric bands of contrasting colors ranging from

brown, tan, gray, white, black, red, yellow, and purple. Habitat may be a factor in its range of colors, and no two seem to be alike. The underside is whitish turning buff with age. Older specimens often persist, but their colors fade with time. Size can range from less than an inch to 4” across. Less than ¼” thick, Turkey Tail is thin but tough. Few people find them edible, and then, only after considerable boiling.

Uses: Besides being collected for earrings, necklaces, and decorations, Turkey Tail is one of the best documented conks for medicinal purposes. It has strong antitumor/anticancer properties as well as antimicrobial and immunoregulatory activity. The Asian anticancer drug PSK (Krestin) is derived from Turkey Tail. In the field of bioremediation, Turkey Tail mycelia are used to filter toxic metals, pesticides, and harmful microbes from effluents.

Selected References:

- Arora, David. 1991. *All that the Rain Promises and More...A Hip Pocket Guide to Western Mushrooms*. Ten Speed Press.
----- 1986. *Mushrooms Demystified*. Ten Speed Press, Berkeley, CA.
BC Ministry of Forests. 2001. *Field Guide to Forest Damage in British Columbia*.
----- 1997. *Tree Wounding and Decay Guidebook*.
Pleninger, Diane. 2009. *Iqmik: Troubled Child of Phellinus and Nicotiana*. In *Fungi* Vol. 2:2 Special Issue-Ethnomycology.
Polese, Jean-Marie. 1999. *The Pocket Guide to Mushrooms*. Könemann, Cologne.
Sept, J. Duane. 2006. *Common Mushrooms of the Northwest*. Calypso Publishing, Sechelt, BC.
Stamets, Paul. 2005. *Mycelium Running*. Ten Speed Press, Berkeley.
----- 2002. *Mycomedicinals*. Mycomedia Productions, Olympia, WA.
USDA ARS. 2009. *Fungal Databases - Systematic Mycology*, at: <http://nt.ars-grin.gov/fungaldatabases/index.cfm>
USDA Forest Service. 2001. *Insects and Diseases of Alaskan Forests*. Publication R10-TP-87.
Volk, Tom. 2009. *Tom Volk's Fungi*, at: http://botit.botany.wisc.edu/toms_fungi/