

= *Pholiota squarrosa* =

Pholiota squarrosa , commonly known as the shaggy scalycap , the shaggy *Pholiota* , or the scaly *Pholiota* , is a species of mushroom in the Strophariaceae family . Common in North America and Europe , it is often an opportunistic parasite , and has a wide range of hosts among deciduous trees , although it can also infect conifers . It can also live as a saprobe , deriving nutrients from decomposing wood . The mushroom is typically found growing in clusters at the base of trees and stumps . Both the cap and the stem are covered in small , pointed scales that are pointed downward and backward . The crowded gills are yellowish , then later rust @-@ brown . The mushroom has an odor that , depending on the author , has been described as resembling garlic , lemon , radish , onion , or skunk . It has a strong taste , resembling radishes . Once thought to be edible , it is now considered and known to be poisonous , especially if consumed in combination with alcohol . The mushroom contains unique chemicals thought to help it infect plants by neutralizing defensive responses employed by them . The very similar *P. squarrosoides* differs in having a paler cap that is sticky between the scales , and smaller spores .

= = Taxonomy = =

The species was first described scientifically as *Agaricus squarrosus* in 1790 by George Christian Edler von Oldenburg Oeder , and later sanctioned under this name by Elias Magnus Fries in his 1821 *Systema Mycologicum* . It was transferred to the genus *Pholiota* by the German Paul Kummer . It is the type species of the genus *Pholiota* .

The specific epithet *squarrosa* is derived from Latin , and means " scurfy " . The mushroom is commonly known as the " scaly *Pholiota* " , the " shaggy scalycap " , or the " shaggy *Pholiota* " .

= = Description = =

Like other *Pholiota* mushrooms , *P. squarrosa* has a scaly cap and stem . The cap ranges from 3 to 12 cm (1 @. @ 2 to 4 @. @ 7 in) in diameter , and depending on its age , can range in shape from bell @-@ shaped to rounded to somewhat flattened . The cap color is yellowish @-@ brown to tawny in older specimens . The scales on the cap are yellowish to tawny , and recurved .

The stem is 4 to 12 cm (1 @. @ 6 to 4 @. @ 7 in) long by 0 @. @ 5 to 1 @. @ 5 cm (0 @. @ 20 to 0 @. @ 59 in) thick , and roughly equal in width throughout . The partial veil that covers the young gills forms a thick , woolly ring on the upper part of the stem . Above the level of the ring , the stem is bare , while below it is scaly like the cap . The gills are covered by a partial veil when young and have a greenish @-@ brown color ; mature gills are rusty brown . They are crowded closely together , attached to the stem (adnate) , and usually notched (sinuate) .

The spore print is cinnamon or rusty brown . The spores are elliptic , smooth @-@ walled , nonamyloid (not absorbing iodine when stained with Melzer 's reagent) , and measure 6 @. @ 6 ? 8 by 3 @. @ 7 ? 4 @. @ 4 ?m . The basidia (spore @-@ bearing cells) are club @-@ shaped , and four @-@ spored , with dimensions of 16 ? 25 by 5 ? 7 ?m .

= = = Edibility = = =

Fruit bodies have an odor described variously as resembling garlic , radish , lemon , onion , or skunk , and taste like radish . Although some older sources report *P. squarrosa* as edible , the mushroom has caused several cases of poisoning . The afflicted individuals had consumed alcohol with the mushroom , then experienced vomiting and diarrhea about ten hours later . The toxic effect may be due to the combination of eating the mushrooms and taking alcohol , although the extended time delay between consumption and symptoms suggests the mechanism of toxicity is different than the antabuse @-@ effect experienced from *Coprinopsis atramentaria* with alcohol . After correct identification , soaking for 2 hours in baking soda , blanching in boiling water for 3 min and subsequent frying of the mushrooms seems to render them a bland but palatable dish with no ill

effects (minus any alcohol of course) .

= = = Similar species = = =

Pholiota squarrosa is similar in appearance to species in the genus *Armillaria* , but the latter produces white spore prints . Another similar mushroom is *Pholiota squarrosoides* , which can be distinguished microscopically by its smaller spores , and macroscopically by the stickiness of the cap between the scales . *P. squarrosoides* also lacks the odor of *P. squarrosa* , and has flesh that is white , not yellow . *Leucopholiota decorosa* can also be misidentified with *P. squarrosa* ; it has white , adnexed gills with finely scalloped edges , but it can be distinguished most reliably by its white , nonamyloid spores .

= = Ecology , habitat and distribution = =

Pholiota squarrosa is thought to be a white rot fungus , which use cellulose as a carbon source , and have the ability to degrade the lignin (present in wood) to carbon dioxide to access the cellulose molecule . The fungus can attack a wide variety of deciduous host trees , including sugar maple , red maple , yellow birch , paper birch , American beech , and white ash . It can also attack conifers , like spruce . The fungus is a secondary parasite , in that it attacks trees that have already been weakened from prior injury or infection by bacteria or other fungi . It also functions as a saprobe , and can obtain nutrients by breaking down organic matter in dead wood .

P. squarrosa is found in North America and Europe . The North American distribution extends north to Canada , and south to Mexico , where its appearance is restricted to coniferous forests . In the Netherlands , *P. squarrosa* is one of many mushrooms that can regularly be found fruiting on ancient timber wharves .

The fruit bodies are used as a primary food source by the red squirrel *Sciurus vulgaris* , and have a higher protein content than the other mushrooms typically consumed by this species . Decaying fruit bodies are also used as a food source by fruit flies belonging to the genus *Drosophila* .

= = Chemistry = =

The fruit bodies contain unique chemical compounds that are derived from phenylpropanoids . The compounds , named squarrosidine and pinillidine , inhibit the enzyme xanthine oxidase . Xanthine oxidase catalyzes the crystallization of uric acid in the joints , a main cause of gouty arthritis , and inhibitors of this enzyme are being used clinically to reduce this side effect . The natural function of these compounds may be to quench reactive oxygen species produced by plants as a defensive response to fungal infection .