= Coprinellus impatiens =

Coprinellus impatiens is a species of fungus in the Psathyrellaceae family . First described in 1821 , it has been classified variously in the genera Psathyrella , Pseudocoprinus , Coprinarius , and Coprinus , before molecular phylogenetics reaffirmed it as a Coprinellus species in 2001 . The fungus is found in North America and Europe , where the mushrooms grow on the ground in deciduous forests . The fruit bodies have buff caps that are up to 4 cm (1 @.@ 6 in) in diameter , held by slender whitish stems that can be up to 10 cm (3 @.@ 9 in) tall . Several other Coprinopsis species that resemble C. impatiens may be distinguished by differences in appearance , habit , or spore morphology .

= = Taxonomy and phylogeny = =

The species was first described in 1821 as Agaricus impatiens by Swedish mycologist Elias Magnus Fries in his Systema Mycologicum . In 1886 , Lucien Quélet transferred the species to Coprinarius (a defunct genus now synonymous with Panaeolus) and then to Coprinus a couple of years later in his Flore Mycologique de la France . In 1936 , Robert Kühner segregated the genus Pseudocoprinus from Coprinus , including species that did not have deliquescent gills (that is , gills that " melt " into liquid) , and he included Coprinus impatiens in this generic transfer . He later changed his mind about the taxonomic separation of Coprinus and Pseudocoprinus . Gillet transferred the species to Psathyrella in 1936 . In 1938 Jakob Emanuel Lange published the new combination Coprinellus impatiens . Despite the taxonomic shuffling , the species was popularly known as Coprinus impatiens until 2001 , when a large @-@ scale phylogenetic analysis resulted in the splitting of the genus Coprinus into several smaller genera , and the authors confirmed the validity of the generic placement in Coprinellus . The specific epithet impatiens is derived from the Latin word for " impatient " .

A 2005 phylogenetics study proposed that C. impatiens was sister (closely related on the phylogenetic tree) to a large Psathyrella clade , and that consequently , the genus Coprinellus was polyphyletic . A later (2008) study suggested , however , that these results were due to an artifact of taxon sampling ? not enough species were analyzed to adequately represent the genetic variation in the genera . The 2008 study demonstrated that Coprinellus , including C. impatiens , was monophyletic , descended from a common ancestor . In their analysis , C. impatiens was most closely related to C. congregatus , C. bisporus , C. callinus , and C. heterosetulosus .

= = Description = =

The cap of the fruit bodies is initially egg @-@ shaped , then conical to convex before flattening out , reaching diameters between 1 @.@ 8 to 4 cm (0 @.@ 71 to 1 @.@ 57 in) . It has deep narrow grooves reaching almost as far as the center of the cap . The surface color is a pale buff , tawny or cinnamon towards the center , but the color loses intensity when the mushroom is dry . The flesh is whitish , thin , fragile and barely deliquescent (auto @-@ digesting) . The gills are initially buff , then turn grayish @-@ brown . They are either free from attachment to the stem , or adnexed , meaning only a small portion of the gill is attached . The stem is whitish , very slender , and more or less equal in width throughout its length , or slightly thicker at the base ; its dimensions are 7 to 10 cm (2 @.@ 8 to 3 @.@ 9 in) by 0 @.@ 2 to 0 @.@ 4 cm (0 @.@ 08 to 0 @.@ 16 in) thick . The stem surface of young specimens are pruinose ? appearing to be coated with a minute layer of fine white particles ; this eventually is sloughed off , leaving a smooth or silky surface . The odor and taste of the fruit bodies are not distinctive . The gills of this species do not autodigest with age , or barely do so ; the fruit bodies tend to become more fragile with age .

The spore print is dark brown . The spores are smooth , ellipsoid or almond @-@ shaped , with a germ pore ; they measure 9 ? 12 by 5 ? 6 ?m . The spore @-@ bearing cells , the basidia , are four @-@ spored and tetramorphic (the spores lie on several different levels , and mature at different times) . The cheilocystidia (cystidia found on the gill edge) are roughly spherical , 20 ? 35 ?m

broad , or lageniform (flask @-@ shaped) , 36 ? 64 by 10 ? 15 ?m , with the apex often rather acute , about 3 ? 5 ?m wide . Pleurocystidia (cystidia found on the gill face) are absent in this species .

= = Similar species = =

Coprinellus disseminatus resembles C. impatiens , but may be distinguished by its slightly larger fruit body , somewhat deliquescent gills , and tendency to fruit in smaller groups on the ground , rather than on or around rotting wood . Also , C. disseminatus has smaller spores than C. impatiens , typically 6 @.@ 6 ? 9 @.@ 7 by 4 @.@ 1 ? 5 @.@ 8 ?m . C. eurysporus is similar to C. disseminatus but usually grows in groups on fallen branches , and has broader spores that measure 8 @.@ 3 ? 10 @.@ 3 by 6 @.@ 7 ? 8 @.@ 4 µm . C. hiascens usually grows in small dense clumps , has narrower spores (typically 9 ? 11 by 4 @.@ 5 ? 5 @.@ 5 ?m , and produces smaller fruit bodies .

= = Habitat and distribution = =

Coprinellus impatiens is found in North America and Europe (including Germany , Poland , and the Ukraine) including northern Turkey . In the Pacific Northwest region of the United States , it is found in Oregon and Idaho . Fruit bodies grow solitarily , or rarely in small bundles , on forest litter in deciduous forests , especially ones dominated by beech .