

= *Inocybe maculata* =

*Inocybe maculata* , commonly known as the frosty fibre-cap , is a species of mushroom in the *Inocybaceae* family . First described by Jean Louis Émile Boudier in 1885 , *I. maculata* can be found throughout Europe , Asia and North America . It is a medium @-@ sized brown mushroom with a fibrous , brown cap with white remnants of a universal veil in the middle . The stem is cream or brown . The species is ectomycorrhizal and grows at the base of various trees , including beech . *Inocybe maculata* is poisonous , containing muscarine . Possible symptoms after consumption of *I. maculata* mushrooms are salivation , lacrimation , urination , defecation , gastrointestinal problems and vomiting , with the possibility of death due to respiratory failure .

= = Taxonomy , phylogeny , and naming = =

The species was given its specific epithet , " *maculata* " ( from the Latin for " spotted " ) , by Jean Louis Émile Boudier in 1885 in an article in the *Bulletin de la Société Botanique de France* . Within the genus *Inocybe* , it has placed within the subgenus *Inosperma* and section *Rimosae* . However , Phylogenetic analysis , has shown that section *Rimosae* as formerly defined does not form a monophyletic group ( that is , descended from a single exclusive ancestor ) , and former *Rimosae* species are better grouped into two clades , *Maculata* and *Rimosae* . Other species joining *I. maculata* in the *Maculata* clade include *I. cookei* , *I. quietiodor* , *I. rhodiola* , *I. adaequata* , and *I. erubescens* .

*Inocybe maculata* has no generally recognised synonyms . However , there has been some debate about its status as a single species ; due to the wide geographic and morphological variation of the species , some authors have proposed multiple species and varieties . In response , mycologist Thom Kuyper has listed over thirty specific names and varieties as synonyms of *Inocybe lacera* , which is still generally recognised . It has also been suggested that *Inocybe lanatodisca* is a synonym , but where the species occur together , they can be distinguished from each other , and so it is still recognised as distinct . The form *I. maculata* f. *fulva* was named and described in 1991 by Marcel Bon in France . *Inocybe maculata* is commonly known as the frosty fibre-cap .

= = Description = =

*Inocybe maculata* has a conical or bell @-@ shaped cap which is up to 8 centimetres ( 3 @.@ 1 in ) in diameter . As the mushrooms age , the cap becomes flatter , and the broad umbo becomes prominent . The centre of the cap has white remains of the universal veil , especially on younger mushrooms . The cap is covered in fibres which extend from the centre of the cap to the margin ( which is usually split ) . The cap is typically a chestnut brown in colour , though it is paler towards the margin . As well as chestnut , the cap has been described as " Buckthorn brown " , " snuff brown " , " tawny olive " and " Saccardo 's umber " . Both cap colour and the presences of veil remnants are known to be very variable . In appearance , *Inocybe maculata* f. *fulva* has a lighter cap colour ( typically more yellow to reddish @-@ brown ) and less ( or even no ) remnants of the veil on the cap . The gill attachment is adnate , meaning that the gills are attached to the stem along their entire depth . The gills are crowded , with white edges that are finely toothed . Younger mushrooms have gills that are greyish @-@ white that eventually mature to an olive @-@ brown colour . The stem is up to 8 cm ( 3 @.@ 1 in ) in length , and generally cylindrical in shape , though it is often thicker towards the base . While the stem is initially solid , it later becomes hollow . There is often a small bulb at the base of the stem . The stem has cream colouration , becoming gradually browner with age . The base sometimes white and powdery . The flesh is white .

= = = Microscopic features = = =

*Inocybe maculata* has thin @-@ walled cheilocystidia , which are clavate ( club @-@ shaped ) , lack encrustation at the apex , and are colourless . The basidia are also clavate , and can be two- ,

three- or four @-@ spored , and measure from 15 to 30 micrometres ( ?m ) by 5 to 9 ?m . The sterigmata ( the narrow horns on the end of the basidia which hold the spores ) are 4 to 5 ?m long . It lacks pleurocystidia . The species leaves a snuff @-@ brown spore print . The spores themselves are smooth and bean shaped ; they have a yellow @-@ brown to rusty brown colouration , and measure from 9 to 11 ?m by 4 @.@ 5 to 5 @.@ 5 ?m . The hyphae can have clamp connections , but can also lack them .

= = = Similar species = = =

*Inocybe maculata* is similar to the variable *Inocybe lacera* , the split fibre-cap , but it can be differentiated by the darker colouration of the cap , and the white remains of the veil in the centre of the cap . The species is also similar in appearance to *Inocybe lanatodisca* , but can be readily distinguished by odour ( *I. lanatodisca* has a characteristic sweet , green @-@ corn smell ) and the colour of the cap ( *I. lanatodisca* has a fulvous cap ) . It is closely related to *Inocybe fastigiata* , but can again be distinguished by colour ; *I. fastigiata* has lighter coloured fibrils .

= = Distribution and habitat = =

*Inocybe maculata* is an ectomycorrhizal species , with a wide ecological range . It can be found in all biomes from low @-@ lying deciduous woodland to arctic @-@ alpine areas . It typically grows on the ground in deciduous ( or mixed ) woodland , favouring beech . It grows best on chalky soil , among leaf litter . In North America , it favours sandy soil , clay or moss . It is also encountered on pathsides . As well as beech , the species has been recorded growing in association with hornbeam , hazel , oak and lime . *Inocybe maculata* f. *fulva* favours birch , spruce , pine , *Populus* , willow , ( as well as *Dryas* and *Polygonum* in alpine regions ) . Mushrooms grow individually or in scattered groups . Though widespread in the areas it is found , it is not a common species . It can be found from western Europe to eastern Asia ; and in North America , from where it was first collected in the 1960s . *Inocybe maculata* f. *fulva* was first identified in France , and has since been found elsewhere in Europe .

= = Edibility = =

The flesh has a mild taste , and a strong , pungent , fruity smell . The mushroom is poisonous , containing muscarine compounds . Consumption of the mushroom could lead to a number of physiological effects , including : salivation , lacrimation , urination , defecation , gastrointestinal problems and emesis ( vomiting ) ; this array of symptoms is also known by the acronym SLUDGE . Other potential effects include a drop in blood pressure , sweating and death due to respiratory failure .