= Morchella snyderi =

Morchella snyderi is a species of fungus in the family Morchellaceae . Described as new to science in 2012 , it occurs in the non @-@ burned montane forests of western North America , including California , Idaho , Montana , Oregon and Washington . It produces fruit bodies up to 14 cm ( 5 @.@ 5 in ) tall with ridged and pitted conical caps , and stipes that become pitted in maturity . The color of the morel is yellow to tan when young , but the cap ridges become brown to black in maturity or when dried .

= = Taxonomy = =

Morchella snyderi was described as new to science in 2012 , along with 13 other morels from the United States and Canada . The study , published in the journal Mycologia , resulted from the Morel Data Collection Project , which aimed to help clarify the taxonomy , biology , and distribution of morel species in North America . The specific epithet honors Leon C. Snyder , who described similar morels in Washington state in the 1930s . According to Michael Kuo , who coauthored the species description , the morel should have been named Morchella crassistipa , as it was previously described by Snyder in 1938 , from collections made in Washington . However , molecular analysis determined that Snyder 's type collection contained two distinct species , rendering the validity of the taxon dubious . M. snyderi was also previously identified as phylogenetic species Mel @-@ 12 ( i.e. , defined by DNA sequence ) in a 2011 study .

Despite the light coloration of young fruit bodies , Morchella snyderi groups in the elata clade ( named after the European black morel M. elata ) along with other " black " morels such as M. angusticeps and M. tomentosa . Morphological characteristics of morels in this clade include pits on the cap that are usually elongated vertically in mature fruit bodies , and often the presence of a sinus ( a space or indentation ) where the cap attaches to the stipe .

= = Description = =

The fruit bodies are 6 ? 14 cm ( 2 @.@ 4 ? 5 @.@ 5 in ) high . The conical cap is 3 @.@ 5 ? 8 cm ( 1 @.@ 4 ? 3 @.@ 1 in ) high and 3 ? 5 cm ( 1 @.@ 2 ? 2 @.@ 0 in ) wide at the widest point . The cap surface features pits and ridges , formed by the intersection of 16 ? 22 primary vertical ridges and frequent shorter , secondary vertical ridges , with occasional sunken , horizontal ridges . The cap is attached to the stipe with a sinus about 2 ? 4 mm deep and 2 ? 4 mm wide . The ridges are smooth or very finely tomentose ( covered with densely matted filaments ) . They are initially pale yellowish , becoming pale tan , then grayish brown in maturity , eventually darkening to nearly black when dried . They are flattened when young but sometimes become sharpened or eroded in maturity . The pits are somewhat elongated vertically ( particularly when mature ) . They are finely tomentose , yellowish when young , becoming pale tan to pale grayish brown . Fruit bodies are often found in a transitional stage where the upper part of the cap has turned dark while the lower part remains light .

The whitish to pale brownish stipe is 3 @.@ 5 ? 7 cm ( 1 @.@ 4 ? 2 @.@ 8 in ) long by 2 @.@ 5 ? 4 cm ( 1 @.@ 0 ? 1 @.@ 6 in ) wide and is roughly equal in width throughout its length , or sometimes slightly thicker near the base . Its surface , initially covered with whitish granules , becomes more granulated as the mushroom ages , and typically develops prominent ridges and pits ( i.e. , becomes lacunose ) with maturity . The flesh is whitish , measuring 1 ? 2 mm thick in the hollow cap ; it becomes layered and chambered , particularly in the base of the stipe . The sterile inner surface of the cap is whitish and pubescent ( covered with short , soft " hair " ) .

The ascospores of M. snyderi are elliptical and smooth , measuring 25 ? 37 by 15 ? 23 µm . Asci ( spore @-@ bearing cells ) are eight @-@ spored , cylindrical , and measure 225 ? 300 by 7 @.@ 5 ? 32 @.@ 5 µm . Paraphyses are cylindrical , septate , and measure 100 ? 200 by 7 @.@ 5 ? 20 µm . Their tips are variably shaped , from rounded to club @-@ shaped , to fuse @-@ shaped . The contents of the paraphyses are hyaline ( translucent ) to faintly brownish in dilute potassium

hydroxide ( KOH ) . Hyphae on the sterile cap ridges are septate and measure 75 ? 175 by 10 ? 20 µm . The terminal cells are variably shaped ( similar to the paraphyses ) , and have hyaline to brownish contents in KOH .

North American Morchella are generally considered choice edibles , but the edibility of M. snyderi was not mentioned in its original description .

= = = Similar species = = =

Morchella snyderi can be distinguished from similar North American morels by differences in ecological and morphological features . M. frustrata resembles young specimens of M. snyderi , but the ridges of the caps of the former species do not darken in maturity , and it has smaller ascospores , measuring 20 ? 29 by 14 ? 19 µm . Another potential lookalike , M. brunnea , has a browner fruit body color in young specimens , and a stipe that is not lacunose .

= = Habitat , distribution , and ecology = =

Morchella snyderi is suspected of being both saprobic and mycorrhizal at different stages in its life cycle . Fruit bodies grow singly , scattered , or in groups on the ground under conifers , particularly Douglas fir ( Pseudotsuga menziesii ) , ponderosa pine ( P. ponderosa ) and white fir ( Abies concolor ) . Fruiting occurs from April to June . The fungus has been collected in California , Idaho , Montana , Oregon and Washington . M. snyderi , identified as phylogenetic species Mel @-@ 12 , has been shown to colonize the non @-@ native species Bromus tectorum ( cheatgrass ) as an endophyte . This is hypothesized to be a contributing factor in the success of cheatgrass as an invasive species in western North America .