

= *Leccinum manzanitae* =

Leccinum manzanitae is an edible species of bolete fungus in the family Boletaceae . Described as new to science in 1971 , it is commonly known as the manzanita bolete for its usual mycorrhizal association with manzanita trees . Its fruit bodies (mushrooms) have sticky reddish to brown caps up to 20 cm (7 @. @ 9 in) , and its stipes are up to 16 cm (6 @. @ 3 in) long and 3 @. @ 5 cm (1 @. @ 4 in) thick . They have a whitish background color punctuated with small black scales known as scabers . Found only in the Pacific Northwest region of the United States and Canada , it is the most common *Leccinum* species in California . The mushroom is edible , although opinions vary as to its quality . *L. manzanitae* can be usually distinguished from other similar bolete mushrooms by its large size , reddish cap , dark scabers on a whitish stipe , and association with manzanita and madrone .

= = Taxonomy = =

Leccinum manzanitae was first described by the American mycologist Harry Delbert Thiers in 1971 , from collections made in San Mateo County , California , the previous year . In that state , it is known as the manzanita bolete because of its close association with manzanita trees . It is classified in subsection *Versicolores* of the section *Leccinum* in the genus *Leccinum* . Closely related species in this section include *L. piceinum* , *L. monticola* , *L. albobipitatum* , and *L. versipelle* .

= = Description = =

The fruit bodies of *Leccinum manzanitae* are sometimes massive , occasionally reaching weights of several pounds . The cap is 7 ? 20 cm (2 @. @ 8 ? 7 @. @ 9 in) in diameter , spherical to convex when young , and broadly convex to flattened or cushion @-@ shaped (pulvinate) . The surface of the cap is often shallowly to deeply pitted or reticulate , sticky , and covered with pressed @-@ down hairs that are more conspicuous toward the edge of the cap . Its color is dark red during all stages of development . The cap 's flesh is 2 ? 4 cm (0 @. @ 8 ? 1 @. @ 6 in) thick , white when first exposed , but slowly and irregularly changing to dark brownish @-@ gray with no reddish intermediate state . The change in color upon bruising or injury is often more pronounced in young specimens .

The tubes comprising the hymenophore are 1 ? 2 @. @ 5 cm (0 @. @ 4 ? 1 @. @ 0 in) long , with an adnate attachment to the stipe ; their color is pale olive when young and darkens when bruised . Pores are up to 1 mm in diameter , angular , and the same color as the tubes . The stipe is 10 ? 16 cm (3 @. @ 9 ? 6 @. @ 3 in) long , and 1 @. @ 5 ? 3 @. @ 5 cm (0 @. @ 6 ? 1 @. @ 4 in) thick at the apex , and either club @-@ shaped or swollen in the middle . It is solid (i.e. , not hollow) , with a dry surface , and covered with small , stiff , granular projections called scabers . The scabers are usually whitish when young , but eventually turn dark brownish @-@ grey with age . The stipe flesh stains a bluish color when bruised , although this reaction is variable and sometimes slow to occur . It has no distinctive taste or odor .

Leccinum manzanitae mushroom produce a cinnamon @-@ brown spore print . Spores are 13 ? 17 by 4 ? 5 @. @ 5 µm , somewhat elliptical to cylindrical , and tapered on each end (fusoid) ; their walls are smooth and moderately thick . The spore @-@ bearing cells , the basidia , are 27 ? 32 by 6 ? 9 µm , club @-@ shaped to pear @-@ shaped (pyriform) and four @-@ spored . The cystidia are 23 ? 32 by 4 ? 6 µm , fusoid to club @-@ shaped with narrow , elongated apices . Caulocystidia (found on the stipe surface) are thin @-@ walled , club @-@ shaped to somewhat fusoid , and sometimes end in a sharp point ; they measure 35 ? 45 by 9 ? 14 µm . Clamp connections are absent in the hyphae of *Leccinum manzanitae* . The hyphae of the cap cuticle are arranged in the form of a trichoderm (wherein the outermost hyphae emerge roughly parallel , perpendicular to the cap surface) .

Several chemical tests can be used to help confirm the identify of the mushroom : a drop of dilute (3 ? 10 %) potassium hydroxide (KOH) solution will turn the tubes pale red whereas nitric acid (

HNO₃) on the tubes produces orange @-@ yellow ; a solution of Iron (II) sulfate (FeSO₄) applied to the flesh results in a pale grey color .

Thiers also described the variety *L. manzanitae* var. *angustisporae* from Mendocino County . Similar to the main form in appearance and habitat , it has smaller , narrowly elongated spores , typically 3 ? 4 µm wide and 1 ? 2 µm longer .

= = = Edibility = = =

Leccinum manzanitae is edible , and its taste is sometimes rated highly , although others have described the flavor as bland . Drying the mushroom may improve the flavor . One field guide advises caution when selecting this species for the table , as there have been poisonings reported with similar @-@ looking mushrooms found in the Rocky Mountains and Pacific Northwest region of the United States .

= = = Similar species = = =

In the field , *Leccinum manzanitae* fruit bodies can be usually distinguished from those of other similar bolete species by its large size , reddish cap , dark scabers on a whitish stipe , and association with manzanita and madrone . *L. ponderosum* also has a dark red sticky cap , but its flesh does not darken upon exposure , and its cap is smooth when young . *L. armeniacum* also grows with manzanita and madrone , but its cap is more orange . *L. aeneum* , known only from California , is another species that associates with manzanitae and madrone . It has an orangish cap and whitish scabers on the stipe that do not darken significantly as the mushroom matures . *L. insigne* , found in coniferous forests with aspens , has a coloration similar to *L. manzanitae* . The brown @-@ capped *L. scabrum* is associated with ornamental birch , usually in cultivated landscapes . *L. constans* , also found exclusively in California , is paler , and does not undergo color changes when the cut flesh is exposed to air ; it is found near madrone in coastal regions . The species *L. largentii* , found in northern regions of the West Coast , has a dry cap with a fibrillose to scaly edge , dark olive pores , and densely arranged scabers on the stipe . It associates with toyon (*Heteromeles arbutifolia*) .

= = Habitat and distribution = =

Leccinum manzanitae is a mycorrhizal species . Its fruit bodies grow singly to scattered in soil under madrone and manzanita . Known to occur only in North America , it is commonly found from central California to southern Oregon , but has also been reported further north in Washington and British Columbia (Canada) . Thiers considered it the most abundant *Leccinum* in California .