

= *Boletus abruptibulbus* =

Boletus abruptibulbus is a species of bolete mushroom in the family Boletaceae . Described as new to science in 2009 , it is found only in the Gulf Coast of the Florida Panhandle , where it grows on the ground in coastal sand dunes , one of only three North American boletes known to favor this habitat . The fruit bodies have convex brownish caps up to 8 cm (3 @. @ 1 in) in diameter , supported by solid yellowish to reddish stems measuring 3 ? 5 cm (1 @. @ 2 ? 2 @. @ 0 in) long by 10 ? 15 mm (0 @. @ 4 ? 0 @. @ 6 in) thick . The pores on the underside of the cap measure about 1 ? 2 mm in diameter and are initially pale yellow before developing a greenish tinge in age . The mushroom 's spores , about 20 micrometers long , are unusually long for a member of the Boletaceae . The stem base is bulbous , a diagnostic feature for which the species is named .

= = Taxonomy = =

The species was described as new to science in 2009 by Beatriz Ortiz @-@ Santana , William Roody , and Ernst Both in the journal Mycotaxon . The holotype material was collected at St. Joseph Peninsula State Park in Florida in January 2005 . In 2007 , Roody and Both published a short description and color photograph of the species in their field guide Mushrooms of the Southeastern United States , but this was not a valid name as it lacked a Latin description . The specific epithet *abruptibulbus* refers to the abruptly (*abrupti-*) swollen (*-bulbus*) shape of the bulb at the base of the stem .

= = Description = =

The convex cap measures 30 ? 80 mm (1 @. @ 2 ? 3 @. @ 1 in) in diameter . Slightly sticky when wet , the cap surface is shiny and smooth . Sometimes , the surface has flattened filaments (formed from aggregated hyphae) , and may develop cracks . The thin and easily detached cap cuticle is initially reddish brown to dark brown , later becoming cinnamon brown . The cap margin is curved inward when young , but becomes bent downward when mature . The white to very pale yellow cap flesh does not change color when exposed to air , and has a pleasant odor and mild taste . The tubes comprising the hymenophore on the underside of the cap measure 3 ? 8 mm (0 @. @ 1 ? 0 @. @ 3 in) long and are pale yellow initially before developing a greenish tinge in age . The pore surface does not stain when it is bruised . The pores are roughly spherical or polyhedral at first , becoming angular to pentagonal in age , and almost gill @-@ like near the attachment to the stem . Pores are about 1 ? 2 mm in diameter . The stem is solid (i.e. , not hollow) 3 ? 5 cm (1 @. @ 2 ? 2 @. @ 0 in) long , 10 ? 15 mm (0 @. @ 4 ? 0 @. @ 6 in) thick in the upper part , expanding to 2 ? 2 @. @ 5 cm (0 @. @ 8 ? 1 @. @ 0 in) at the bulbous base . It has pseudorrhiza (cord @-@ like structures resembling a plant root) that are 0 @. @ 5 ? 1 @. @ 5 cm (0 @. @ 2 ? 0 @. @ 6 in) long . The stem surface is dry and smooth except for a powdery region near the apex . The top of the stem is yellow , but it gradually becomes reddish approaching the bulbous base . The stem tissue is pale yellow , although tunnels dug by insect larvae are reddish brown .

A drop of dilute ammonia (as a 12 % NH_4OH solution) placed on the cap surface immediately turns dark red . If placed on the bulbous part of the stem base of a dried specimen , it will turn dark for roughly 15 seconds before starting to fade .

The spores are smooth , spindle @-@ shaped , and measure 13 @. @ 5 ? 19 @. @ 8 by 5 @. @ 0 ? 7 @. @ 2 μm ? rather large for a member of the Boletaceae . Grayish @-@ yellow or greenish yellow when mounted in a dilute potassium hydroxide , they are dextrinoid (yellowish- or reddish @-@ brown) when stained with Melzer 's reagent . The basidia (spore @-@ bearing cells in the hymenium) are club @-@ shaped , hyaline (translucent) , four @-@ spored , and measure 28 @. @ 8 ? 42 @. @ 3 by 7 @. @ 2 ? 11 @. @ 7 μm . The hymenium contains basidioles (immature or aborted basidia) , which are club @-@ shaped and measure 20 @. @ 7 ? 35 @. @ 1 by 7 @. @ 2 ? 9 @. @ 0 μm . Pleurocystidia (cystidia on the surface of the tubes) range in shape from somewhat spindle @-@ shaped to cylindrical , and are hyaline , smooth , and thin @-@ walled , with

dimensions of $41 \times 4 - 61 \times 2$ by $7 \times 2 - 10 \times 8 \mu\text{m}$. Cystidia on the edges of the pores (cheilocystidia) are $31 \times 5 - 49 \times 5$ by $7 \times 2 - 13 \times 5 \mu\text{m}$, spindle shaped to centrally swollen , hyaline , smooth , and thin walled . Clamp connections are absent from the hyphae .

The bulbous base , large spores , and distinctive habitat are characteristic features that make this species readily distinguishable from other boletes . It has a coloration and cap texture similar to *Boletus flaviporus* and *B. auriporus* , but the spores of these species are shorter ($11 - 15 \mu\text{m}$ and $11 - 16 \mu\text{m}$, respectively) .

= = Habitat and distribution = =

The fruit bodies of *Boletus abruptibulbus* grow singly or in groups in sand . The species is known only from the Gulf Coast of the Florida Panhandle , where fruiting occurs on older sand dunes , particularly in areas where the habit changes from coastal scrub to oak - pine woods . This latter habitat is characterized by the presence of the tree species Sand Live Oak (*Quercus geminata*) , Myrtle Oak (*Q. myrtifolia*) , and Sand Pine (*Pinus clausa*) . Fruiting occurs from December to March . *Boletus abruptibulbus* is one of only three North American Boletaceae species that occur in coastal sand dunes ; the others are *Leccinum arenicola* , found in New Brunswick , Canada , and *Phylloporus arenicola* , described from Oregon .