

= *Amanita aestivalis* =

Amanita aestivalis , commonly known as the white American star @-@ footed *Amanita* , is a species of fungus in the Amanitaceae family of mushrooms . The fungus is distributed in the eastern United States , south to Florida , and reaches north into the southeastern provinces of Canada . The cap of the fruit body is medium @-@ sized , 5 to 8 @. @ 5 cm (2 @. @ 0 to 3 @. @ 3 in) in diameter and white . It sits atop a stem that is 8 @. @ 5 to 16 cm (3 @. @ 3 to 6 @. @ 3 in) long and has a rounded bulb at its base . The entire fruit body will slowly stain a reddish @-@ brown color in response to bruising or aging . It remains unknown whether *Amanita aestivalis* is a distinct species from *A. brunnescens* , another similar *Amanita* with a comparable distribution . There are several other white @-@ bodied amanitas with which *A. aestivalis* may be confused , including *A. virosa* , *A. phalloides* , and *A. bisporigera* .

= = Taxonomy , classification , and naming = =

American mycologist Rolf Singer first described the species in 1949 based on specimens he had collected in Massachusetts , Michigan , New York and Virginia . Because this original report was published without a Latin description (contrary to the naming conventions of the International Code of Botanical Nomenclature) , he later amended his description in 1959 . There is some doubt as to whether *A. aestivalis* is a distinct species from *A. brunnescens* (the " brown American star @-@ footed *Amanita* ") , as described by George F. Atkinson in 1918 . Singer claimed that the latter species could be distinguished from the former by the consistent absence of dusky brownish @-@ gray radial stripes on the cap . However , in 1927 , mycologist Louis Charles Christopher Krieger described the variant *A. brunnescens* var. *pallida* , which he said was identical to *A. brunnescens* except for the white or very pale cap . In his 1986 monograph on North American species of *Amanita* , David T. Jenkins preferred to reserve judgment on the matter .

Amanita aestivalis is classified in the section *Vallidae* of the genus *Amanita* , a grouping of amanitas characterized by having spherical spores , well @-@ developed rings , weakly reddening flesh , and " limbate " volvas (with narrow " limbs " protruding from a soft , margined bulb) .

The specific epithet is derived from the Latin adjective *aestivalis* , meaning " pertaining to the summer " . Its vernacular name is the " white American star @-@ footed *Amanita* " .

= = Description = =

The cap of the fruit body is 5 to 8 @. @ 5 cm (2 @. @ 0 to 3 @. @ 3 in) in diameter , and depending on its age , may range from egg @-@ shaped to convex to somewhat flattened . Older specimens may have edges that are curved upwards . The color is white or pale tan in the center of the cap ; older specimens may have areas of discolored tissue colored brownish @-@ red shades . Sometimes , the edge of the cap has radial grooves ? up to 4 mm (0 @. @ 16 in) long ? that mirror the position of the underlying gills . When moist , the cap is sticky to the touch ; when dry , it is shiny , usually without any remnants of the thin volva . The white gills are crowded close together , and are free from attachment to the stem . They are subventricose : slightly swollen in the middle , and tapering near the ends .

The stem is 8 @. @ 5 to 16 cm (3 @. @ 3 to 6 @. @ 3 in) long by 0 @. @ 9 to 1 @. @ 6 cm (0 @. @ 4 to 0 @. @ 6 in) thick , and slightly thicker at the base than at the top . It is stuffed with whitish hyphae that resemble cotton . The surface of the stem is smooth or has delicate tufts of soft , white , woolly hairs . There is a rimmed bulb at the base of the stem , which can reach a diameter of over 3 cm (1 @. @ 2 in) . The ring ? located on the upper portion of the stem , 1 @. @ 2 ? 1 @. @ 7 cm (0 @. @ 47 ? 0 @. @ 67 in) from the top ? is white , membranous , and long @-@ lasting . The volva remains closely attached to the bulb , although a portion may stretch out like a thin membrane and adhere to the base of the stem before collapsing . The flesh will slowly turn pinkish @-@ brown to chocolate @-@ brown when it has been injured or bruised . Young specimens do not have any distinct odor , but fruit bodies may smell slightly of onions or garlic in age .

Although the edibility has not been documented for this species , some sources have noted that toxicity is suspected .

= = = Microscopic characteristics = = =

Viewed in deposit , like with a spore print , the basidiospores of *A. aestivalis* are white . Examination with a microscope reveals further details : they are roughly spherical , hyaline (translucent) and thin @-@ walled , with dimensions of $7\text{--}8\text{--}8\text{--}8\text{ }\mu\text{m}$. The spores are amyloid , meaning that they will absorb iodine when stained with Melzer 's reagent and appear blue to blackish @-@ blue . The spore @-@ bearing cells , the basidia , are four @-@ spored , thin @-@ walled , and measure $32\text{--}60$ long by $4\text{--}13\text{ }\mu\text{m}$ thick . There are no clamps present at the bases of the basidia .

= = = Similar species = = =

According to Singer , the species is often mistaken for *A. verna* in the eastern United States . *A. verna* , however , has ellipsoid spores . Other white amanitas within the range of *A. aestivalis* include the deadly toxic species *A. virosa* (has a more loose cottony stem) , *A. phalloides* (the cap usually has an olive @-@ green tint) and *A. bisporigera* (typically has two @-@ spored basidia) . *A. aestivalis* is sometimes considered a white form of *A. brunnescens* , but this latter species has dusky brownish gray radial stripes and usually has many fibrils (short section of hyphae) projecting from the surface , to produce a fine , hairy appearance . Further , it stains more rapidly than *A. aestivalis* . *A. asteropus* (the " European star @-@ footed Amanita ") is cream to yellow color , and differs from *A. aestivalis* in its reaction to chemical tests . It is only known from Europe .

= = Habitat , distribution , and ecology = =

Amanita aestivalis is a mycorrhizal species , meaning it forms a mutualistic relationship in which the vegetative hyphae of the fungus grow around and enclose the tiny roots of trees and shrubs . In this way , the plant is better able to absorb phosphorus and other soil nutrients , while the fungus receives moisture , protection , and nutritive byproducts of the plant 's metabolism . Fruit bodies of the fungus grow on the ground in deciduous , coniferous , and mixed forests . A preference has been noted for oak woods containing *Tsuga* or *Pinus* species , as well as beech wood with *Picea* , *Abies* , and *Betula* . Fruit bodies typically appear from late June until autumn . In North America , it has been found in the states of New England , as well as Alabama , New York , and Virginia . The distribution extends north to the southeastern provinces of Canada and south to Florida .