



1, Basidiocarps ($\times 1$); 2, cuticular hyphae; 3, basidia; 4, basidiospores. (2-4 $\times 1250$). All DAOM 145703.

Tricholoma fulvum (Bull. ex Fr.) Sacc., Fl. Ital. Crypt. 1(14): 117.1915.

= *Agaricus fulvus* Bull. ex Fr., Syst. Myc. 1: 37.1821.

= *A. flavobrunneus* Fr. ex Pers., Myc. Eur. III: 177.1825; *T. flavobrunneus* (Fr. ex Pers.) Kummer, Führer Pilzk. p. 130. 1871.

= *A. transmutans* Peck, Rept N.Y. State Mus. 29: 38. 1878; *T. transmutans* (Peck) Sacc., Syll. Fung. 5: 91. 1887.

PILEUS conic-turbinate to broadly convex or nearly plane, rarely umbonate, viscid when moist but often dry, appressed-squamulose and dark wine red to reddish brown in the centre 2/3, nearly glabrous and grading out to pinkish tan toward the margin, often ribbed at the margin, 27-175 mm diam. **STIPE** pale yellowish at first and remaining so at apex, staining red-brown below, finely reddish-brown-fibrillose, dry, tapering down, often with a root-like extension, hollow or solid, 55-140 \times 6-40 mm. **LAMELLAE** pale yellow at first, soon staining a deep wine colour and finally nearly black, sinuate to decurrent, close. **FLESH** white to pale yellowish in the pileus, yellow in the stipe, strongly farinaceous in odour and taste.

PILEUS CUTICLE gelatinous; composed of loosely tangled, radially encrusted hyphae 2-10 μ diam. **LAMELLAR TRAMA** parallel. **CYSTIDIA** lacking. **CLAMP CONNECTIONS** absent. **BASIDIOSPORES** elliptical to obovate in face view, unilaterally flattened-elliptical in side view, smooth, neither amyloid nor dextrinoid, uniguttulate, white, 5.2-8.2 \times 3.5-5.5 μ .

SUBSTRATE: Under both conifers and hardwoods, often associated with birch.

DISTRIBUTION: Newfoundland, Nova Scotia, Quebec, Ontario (also Manitoba, *vide* Bisby, Buller & Dearness, Fungi of Manitoba, 1929).

COLLECTIONS (selected): Nfld., St. Anthony, *Abies* woods, 16.VIII.1951, DAOM 28407 (Savile & Vaillancourt). N.S., Kings Co., Glenmont, 14.X.1953, 112162 (Harrison). Que., Montcalm Co., Rawdon, 12.X.1968, 127350 (Groves). Ont., Carleton Co., Ottawa, in woods, 15.IX.1942, 11974 (Groves); Thunder Bay Dist., Black Sturgeon Lake, under *Abies balsamea* and *Picea glauca*, 13.IX.1973, 145703 (Malloch & Ginns).

NOTES: A number of species might be confused with *T. fulvum*. Included in the following key are the more frequently cited *Tricholoma* species lacking a membranous annulus and having brown viscid pilei and farinaceous flesh. The references in brackets are those best characterizing the species concepts accepted here. Species marked with an asterisk (*) are represented by Canadian collections in DAOM.

1. Flesh of stipe yellow; gills yellow, staining red . . . **T. fulvum* (Bull. ex Fr.) Sacc. 2
1. Flesh and gills white (gills staining red in some) 3
2. Stipe remaining white above a more or less distinct annular zone 3
2. Stipe lacking a delimited white apical zone 7
3. Flesh distinctly bitter 4
3. Flesh mild or only faintly bitter 6
4. Pileus orange to orange-yellow, 5-10 cm diam., granular-scaly; stipe fulvous-orange below and belted-scaly, 50-80 × 10-20 mm; spores 4.0-5.0 × 3.0-3.5 μ; under conifers . . . **T. aurantium* (Schäff. ex Fr.) Ricken (Lange, Fl. Agar. Dan. I: 48. 1935). 5
4. Pileus brown 5
5. Pileus 6-8(-10) cm diam., umbonate, deep vinaceous maroon with yellowish tinges; flesh strongly farinaceous; stipe dull reddish brown and subscaly below, about 50-70 × 10-15 mm; spores 5.0-6.5 × 4.0-5.0 μ; under hardwoods . . . *T. ustaloides* Romagn. (Bon, Bull. Soc. Mycol. France 83: 328. 1967). 5
5. Pileus 8-15 cm in diam., convex, reddish brown; flesh weakly farinaceous; stipe reddish brown below, 50-70 × 10-20 mm; spores 5.0-6.5 × 4.0-5.0 μ; in mixed woods . . . *T. batschii* Gulden (Bon, l.c., p. 326, as "*T. subannulatum* Batsch ex Quél."). 5
6. Under conifers; pileus 5-8(-12) cm diam., convex, often subumbonate, chestnut- to rust-brown; stipe 50-100 × 10-20 mm, red-brown below; spores 5.0-6.0 × 4.0-5.0 μ . . . **T. albobrunneum* (Pers. ex Fr.) Kummer (Pilát, Mushrooms and Other Fungi, p. 54, 1961). 5
6. Under hardwoods; pileus 10-15 cm diam., convex, red-brown to cinnamon; stipe 40-150 × 15-55 mm, red-brown below; spores 5.0-7.0 × 3.5-4.5 μ . . . *T. californicum* Murrill (Mycologia 5: 216. 1913; Zeller, Mycologia 14: 186. 1922, as *T. subannulatum* (Pk.) Zeller, & Mycologia 25: 390, 1933). 5
7. Cap rust-coloured at maturity, 6-12 cm diam., convex; flesh faintly bitter or sour; stipe whitish, then rusty brown, fibrillose, 60-90 × 10-20 mm; spores 5.0-5.5 × 3.0-3.5 μ; under conifers . . . *T. pessundatum* var. *montanum* (Fr.) Gillet (Pilát, l.c., p. 56). 5
7. Cap dark brown at maturity 8
8. Pileus 8-15 cm diam., convex, pinkish- to yellow- or gray-brown; flesh slightly bitter; stipe whitish at first, then dirty brown, somewhat squamulose, 80-150 × 20-50 mm; spores 5.5-6.0 × 3.5-4.0 μ; under poplars . . . **T. populinum* Lange (Pilát, l.c., p. 57). 8
8. Cap smaller 9
9. Cap 5-12 cm diam., red-brown to chestnut, convex; flesh sometimes sour but not bitter; stipe often somewhat bulbous, 40-70 × 15-30 mm, whitish to brownish, often subfloccose at first; spores 4.5-5.0 × 2.8-3.5 μ; under conifers . . . **T. pessundatum* (Fr.) Quél. (Pilát, l.c., p. 55). 9
9. Cap smaller; stipe narrower; spores broader 10
10. Pileus 4-7 cm diam., chestnut brown, slightly umbonate to convex; flesh bitter; stipe 40-50 × 10-15 mm, whitish above and brown below (but lacking an annular zone), squamulose; spores 5.0-6.0 × 3.5-4.0 μ; under hardwoods and in meadows . . . *T. tridentinum* Singer (Bresadola, Icon. Mycol. II: 65, as *T. pessundatum*). 10
10. Pileus up to 6.5 cm diam., bay-brown to brick-red, umbonate; flesh not bitter; stipe 70-90 × 7-10 mm, pinkish tan, reddish-fibrillose; spores 6-7 μ long . . . *T. subpessundatum* Murrill (Mycologia 5: 222, 1913). 10

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