

## Tabular and Nontabular Keys to Rubescent Species of *Amanita* Section *Validae*

Rodham E. Tulloss, P. O. Box 57, Roosevelt, New Jersey 085555-0057, USA

Most recent revision March 10, 2003 10:58 am.

In the following, **L'** is the average length for all spores measured of a species, **W'** is the average width of all spores measured of a species; **Q'** is the average length/width ratio for all spores measured of a species. **Q** is the average length width ratio for all spores measured of an individual specimen of a species.

| species epithet   | pileus color<br>pre-staining | pre-staining<br>volva color        | L'  | W'  | Q'   | [m/n/p]                |
|---|------------------------------|------------------------------------|-----|-----|------|------------------------|
| <i>novinupta</i>  | white                        | white                              | 9.3 | 6.3 | 1.48 | [1477/73/42]           |
| <i>species AZ10</i>   | tan                          | pallid                             | 9.2 | 6.0 | 1.53 | [120/6/5]              |
| <i>rubescens</i> var. <i>rubescens</i>  | brown                        | pallid                             | 9.2 | 6.3 | 1.48 | [290/12/7]             |
| <i>flavorubens</i>  | yellow                       | yellow                             | 9.0 | 6.0 | 1.51 | [160/8/7]              |
| <i>brunneolocularis</i>   | ?                            | gray - black                       | 8.6 | 6.7 | 1.32 | [258/10/6]             |
| <i>rubescens</i> sensu eastern U.S. authors   | cream-tan                    | yellow at first                    | 8.5 | 6.5 | 1.31 | [40/2/2]               |
| <i>rubescens</i> var. <i>alba</i>   | white                        | yellow at first                    | 8.3 | 5.9 | 1.41 | [141/7/6]              |
| <i>orsonii</i>  | pallid                       | pallid                             | 8.2 | 6.2 | 1.31 | [153/7/5]              |
| <i>rubescens</i> var. <i>congolensis</i>  | white                        | pallid, then dark<br>brownish gray | 8.6 | 5.3 | 1.65 | [120/6/5]              |
| <i>rubescens</i> f. <i>annulosulfurea</i>   | brown                        | pallid                             |     |     |      |                        |
| <i>species M11</i>  | brown                        | pallid                             |     |     |      |                        |
| <i>pseudorubescens</i> [could be based on diseased specimen of <i>rubescens</i> s. str.—whole basidiospore having grayish and purplish tones] | ?                            | ?                                  | 10  | 6.5 | 1.55 | Moser's<br>field guide |

1. **L'** = 9.0 - 9.3 mm; **Q'** = 1.48 - 1.53; not associated with Fabaceae.
2. Pileus yellow with bronze, brown, or wine-colored stains, pigment washing out in rain; volva yellow; spores with **Q** = (1.34-) 1.37 - 1.61 and **Q'** = 1.51; known from eastern USA, southern Arizona, USA; and central volcanic zone of Mexico .....  

sp 1. *Amanita flavorubens* (Berk. & Mont.) Sacc.
2. Pileus not yellow at first.

3. Pileus white at first, with initial staining seeming to be below a translucent surface layer; spores with  $Q = (1.34-1.39 - 1.58 (-1.72))$  and  $Q' = 1.48$ ; known from western USA and western Canada and (probably imported material) from the Canary Islands .....  
 sp 2. *Amanita novinupta* Tulloss & J. Lindgren.
3. Pileus not white at first.
4. Pileus cream to pale tan at first; spores with  $Q = 1.43 - 1.61$  and  $Q' = 1.53$ ; known from southern Arizona and central volcanic zone of Mexico.....  
 sp 3. *Amanita species AZ10*.
4. Pileus brown at first.
5. Annulus white or cream before bruising; spores with  $Q = 1.37 - 1.56 (-1.58)$  and  $Q' = 1.48$ ; known from Europe and eastern Asia and sometimes appearing with imported plants in S. Africa .....  
 sp 4. *Amanita rubescens* (Pers.:Fr.) Pers. f. *rubescens s. str.*
5. Annulus yellow before bruising; spores purportedly as above; known from Europe .....  
 sp 5. *Amanita rubescens* f. *annulosulfurea* (Gillet) Lange.
1.  $L' = 8.2 - 8.6$  mm;  $Q' < 1.45$  or, in *A. rubescens* var. *congolensis* only,  $> 1.60$ .
6. Pileus white or pallid at first; universal veil pallid, white, or yellow at first.
7. Pileus known to be white at first; staining lacks distinct orange component; stipe proportionately slender with distinct basal bulb; universal veil sometimes yellow at first; partial veil sometimes yellow on under surface; spores with  $Q = 1.34 - 1.49 (-1.50)$  and  $Q' = 1.41$ ; known from eastern U.S.A. ....  
 sp 6. *Amanita rubescens* var. *alba* Coker.
7. Pileus white or pallid at first; staining with distinct orange component; universal veil never yellow; partial veil never yellow in any part; stipe proportionately stocky, in one species broadest well above base and lacking a distinct basal bulb.
8. Pileus white at first; stipe often widest well above base and lacking a distinct basal bulb; known from sub-Saharan Africa; spores with  $Q = 1.44 - 1.81$  and  $Q' = 1.67$ ; associated with Fabaceae .....  
 sp 7. *Amanita rubescens* var. *congolensis* Beeli.
8. Pileus white or pallid at first; known from India, Pakistan, and (possibly) Japan; spores with  $Q = 1.23 - 1.34 (-1.39)$  and  $Q' = 1.31$ ; associated with Fagaceae and Pinaceae .....  
 sp 8. *Amanita orsonii* A. Kumar & T. N. Lakh.  
 ?=*Amanita rubescens sensu Japanese authors.*
6. Pileus not white at first.
9. Universal veil gray to nearly black; stipe often with dark gray or blackish fibrils on surface (sometimes densely placed) below annulus; underside of annulus sometimes gray; spores with  $Q = 1.27 - 1.34 (-1.36)$  and  $Q' = 1.31$ ; known from Central America and Colombia; associated with *Quercus* .....  
 sp 9. *Amanita brunneolocularis* Tulloss, Ovrebo & Halling.
9. Universal veil pallid at first; stipe lacking dark gray or blackish fibrils on surface; pileus pale or pale yellowish tan at first, possibly turning bronze if dried *in situ*; underside of annulus sometimes yellow; spores with  $Q = 1.23 - 1.38$  and  $Q' = 1.31$ ; known from eastern Canada and eastern U.S.A. ....  
 sp 10. *Amanita rubescens sensu eastern U.S. authors.*