A NEW GREEN SPECIES OF *HUMIDICUTIS* FROM WESTERN AUSTRALIA

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Abstract

A new species of the Hygrophoraceae, *Humidicutis viridimagentea*, is described from Western Australia and is also the first record of the genus from that state.

Key words: new species, *Humidicutis viridimagentea*, Hygrophoraceae, systematics, Australia.

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Introduction

Although eight species of *Humidicutis* (Singer) Singer have been recorded for Australia, all of these are so far known only from the eastern section of the continent (Young 2005). *Humidicutis viridimagentea* is therefore the first representative of the genus recorded for Western Australia. Apart from the definitive criterion of the genus (the absence of clamp connections throughout the basidioma except for the basidial bases), the new taxon exhibits other common characteristics of the genus such as the radial splitting of the subumbonate pileus, the basidial clamps of medallion to toroidal form and the regular pileal and lamellar tramas with chains of fusiform, inflated elements. Its green colouration also occurs in other Australian and New Zealand taxa within the genus.

Investigation of the eastern Australian Hygrophoraceae remains unfinished, but the number of known species has increased (over an 11 year period of investigation) from approximately 25 to 92 taxa and there are firm indications that many more new species still remain to be described for Australia as a whole (Young 2005). Given the comparatively unknown status of the Western Australian component of the Hygrophoraceae, it is very likely that more species within this genus will be found.

Materials and Methods

Two herbarium collections from PERTH and MEL form the basis of this study. Specimen samples were examined under an Olympus CX40 research light microscope (with drawing tube) using ammoniated Congo red as the mountant. Colour codes cited in the description are referenced to Kornerup & Wanscher (1981).

Humidicutis viridimagentea A.M. Young & K. Syme, *sp. nov.* (Figs 1, 2 & 3 A,B)

Etymology: indicating the principal colours; *viridis* (Lat.) - green; *magentea* (Lat.) - magenta.

Pileus (12-)24-36(-58) mm, atroviridis, conicus tum subumbonatus diende latus, glaber, lubricus vel siccus, ad marginem concolorum fissum. Lamellae sinuatae vel adnatae, flavae, ad marginem concolores. Stipes (35-)43-85 × (2.5-)5-8(-18) mm, viridis, siccus, glaber, cylindricus, cavus. Basidiosporae 6.5-8.0 × 4.5-6.0 µm, lato-ellipsoideae, hyalinae, numquam constrictae. Basidia 37-45.5 × 7-8.5 µm, 4-spora, fibulata. Cystidia nulla. Trama hymenophoralis regularis, sine fibulata.

Figure 1. *Humidicutis viridimagentea* amongst moss and litter. The deep bottle green colour of the pileus is visible in the two specimens at the very centre of the image. © R. Robinson

Epicutis pilei ixocutem eformans. Gregaria vel caespitosa in musca.

Holotypus hic designatus: Western Australia. Denmark, 34°58'44"S 117°13'52"E, 8.vii.2001, *K. Syme 1148/01*, (*holotypus* PERTH 07477635; isotypes BRI AQ742004 and MEL 2300381).

Pileus (12-)24-36(-58) mm, at first deep green (27F5) drying to a lighter green (26E5) then developing areas of magenta colouration (12B6) which may be darker (11E6) at the centre, conical becoming broadly conical then near campanulate or subumbonate and finally plane, smooth becoming rimose, lightly lubricous but then rapidly dry, hygrophanous; margin concolorous, at first incurved, crenulate, often splitting. *Pileal trama* thin, concolourous with the pileal surface when moist but becoming white when dry. *Lamellae* sinuate or adnate with a small decurrent tooth, deep yellow (3A7-3B7), at times with greenish tints near pileal undersurface, subdistant, sometimes forking, occasionally with veins on the lamellar faces; margins concolourous and even. *Stipe* (35-)43-85 × (2.5-)5-8(-18) mm, green (27D5-26D4) near the lamellae and extending downwards to about two thirds of the stipe length then becoming white towards the base, magenta tints appear in the green area with age and the white base may also become pinkish, smooth or sometimes with slight horizontal ridges, dry, hollow, cylindrical and may be either tapered or inflated towards the base. *Spore print* white.

Basidiospores 6.5-8.0 × 4.5-6.0 µm, mean 7.2 × 4.9 µm, Q: 1.3-1.6, mean Q: 1.47, broadly ellipsoid, hyaline, smooth, often with large inclusion, constrictions absent. *Basidia* 37-45.5 × 7-8.5 µm, mean 40.3 × 7.8 µm, Q: 4.6-5.9, mean Q: 5.15, 4-spored, clamp connections present of medallion form and frequently toroidal. *Cystidia* absent. *Hymenophoral trama* regular, composed of thin-walled, hyaline, cylindrical to fusiform, inflated, septate hyphal elements 40-130 × 5-25 µm, clamp connections absent. *Pileipellis* a weak ixocutis composed of thin-walled, hyaline, cylindrical, septate hyphae 2-4 µm diam., clamp connections absent. *Stipitipellis* a cutis composed of thin-walled, hyaline, cylindrical,

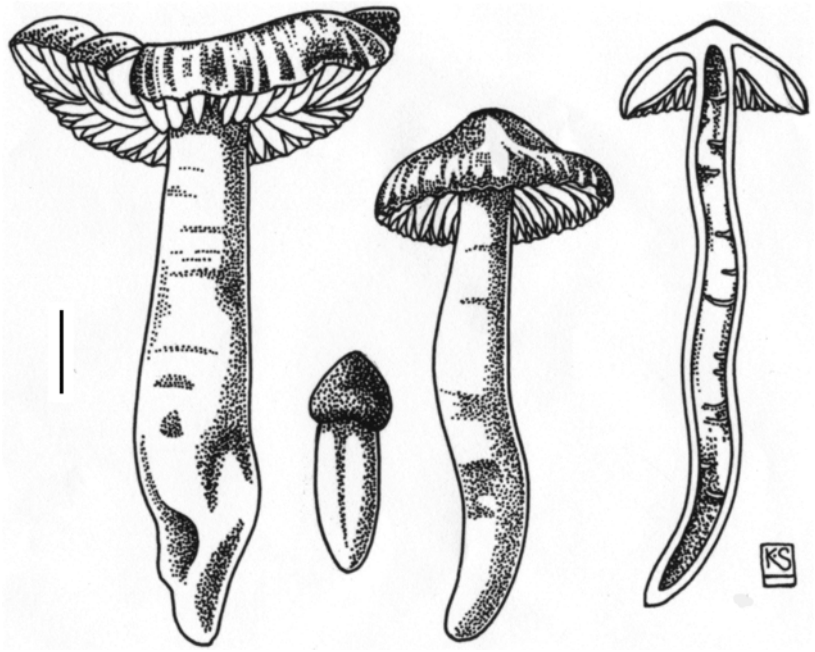

Figure 2. *Humidicutis viridimagentea* habit sketch. Scale bar = 1 cm. © K. Syme

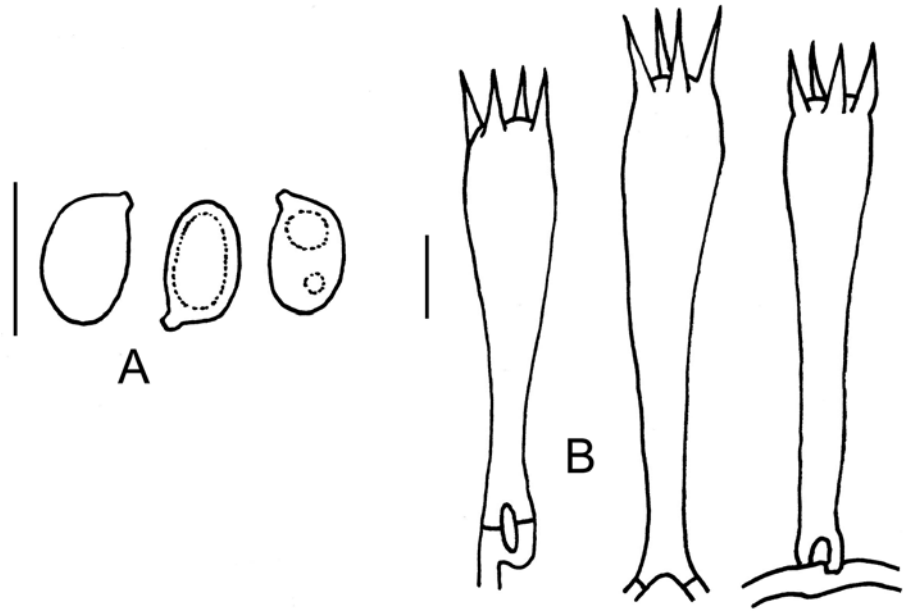

Figure 3. *Humidicutis viridimagentea*. A, basidiospores showing clear inclusions; B, basidia from left to right displaying: a medallion clamp that has almost become toroidal, a fractured base resulting from disintegration of a toroidal clamp, and a basidium emerging directly from a horizontal hypha. Scale bars = 10 µm.

septate hyphae 1-2 µm diam., clamp connections absent.

Habitat: Amongst moss underneath bracken (*Pteridium esculentum*) in eucalypt woodland (*Eucalyptus patens*, *Agonis flexuosa*); gregarious and occasionally caespitose.

Other material: Western Australia. Denmark, 34°58'44"S 117°13'52"E, 9.vi.2004, *K. Syme 1335/04*, (MEL 2279341).

Remarks: *Humidicutis viridimagentea* is similar to other green coloured Australasian taxa in the genus but differs in its very distinctive magenta coloration. There are two similar New Zealand taxa. *Humidicutis luteovirens* (E. Horak) E. Horak is at first green with yellow lamellae, however the entire basidioma slowly changes to yellow with age; and *H. multicolor* (Berk. & Broome) E. Horak has olive green lamellae which slowly change to lilac or blue and slightly smaller spores (5.5-7.0 × 4.5-5.0 µm) (Horak 1990). Three known Australian taxa also possess green pilei, however

Humidicutis arcohastata (A.M. Young) A.M. Young (Young 2005) slowly exhibits bright orange tints or may become wholly bright orange and has acute hyphal endings in the pileipellis; *H. helicoides* (A.M. Young) A.M. Young (Young 2005) has fusiform hyphae in the pileipellis which exhibit helical banding of the hyphal walls; and *H. taekeri* has orange lamellae and larger ellipsoidal to subglobose spores (5.0-9.5(-10.5) × 4.0-6.5(-7.5) µm). None of these Australian taxa exhibits the magenta colourations in either fresh or dried material (Young 2005).

The second collection of this species (MEL 2279341) differs from the holotype in that it contains basidiomata that have mostly 2-spored basidia. These 2-spored basidia have the same size and basal structure as the 4-spored basidia of the holotype but the sterigmata are much longer and can be up to 12 µm in length. The basidiospores are also larger: (6.5-)7.2-10.1(-11.5) × 4.7-7.2 µm, mean 8.6 × 6.0 µm, Q: 1.2-1.7(-1.9), mean Q: 1.45, but have the same shape and additionally the single large inclusion. Such 2-spored forms are well known from other species of the Hygrophoraceae such as *Hygrocybe virginea* (Wulfen:Fr.) P.D. Orton & Watling or *Hygrocybe acutoconica* (Clem.) Singer.

An interesting aspect of *H. viridimagentea* is that the cap and stipe surfaces of fresh, green material become dull magenta (near 8C6-8D6) during the drying process. Other green coloured members of the Hygrophoraceae also exhibit a colour change during drying but become dull brick pink (near 6A3): *Hygrocybe graminicolor* (E. Horak) T.W. May & A.E. Wood and *H. stevensoniae* T.W. May & A.E. Wood. This suggests some difference or differences in chemical composition of the pigments in the relevant groups.

The basidial clamp connections in *H. viridimagentea* are often so highly modified as almost to prevent their identification as such. During the rehydration and mounting of dried material, the toroidal clamps frequently disintegrate and only a "Y-shaped" base remains on the basidium (Young 2005). Other basidia emerge directly from more or less 'horizontal hyphae' and the only evidence of the modified clamp connection is the "Y-shaped" base with the space between the basidium and the parent hypha.

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