

## **HYGROCYBE BOOTHII SP. NOV., FROM NORTHERN QUEENSLAND**

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### **Abstract**

*Hygrocybe boothii*, subgenus *Pseudohygrocybe* Bon, section *Firmae* Heinem. is described as a new species from northern Queensland. Known sites in northern Queensland include areas near Koombooloomba Dam and the Mt Baldy (SF194) section of the Herberton Range. The species is the first record of a taxon within section *Firmae* from Queensland. The extended distribution of *Camarophyllopsis darwinensis* A.M. Young to tropical Queensland is noted.

A.M. Young (2002). *Hygrocybe boothii* sp. nov., from northern Queensland. *Australasian Mycologist* 21 (2): 73–75.

### **Introduction**

During the survey of macrofungi of the 'wet tropics' currently being undertaken by the Queensland Herbarium (Young, Forster & Booth 2002), two basidiomata of a very distinctive species of *Hygrocybe* (Fr.) P. Kumm. were collected by Mr Ron Booth from open woodlands based on granite in the Mt Baldy (SF194) area (Herberton Range) in mid-February 2001. No further collections of the species were made until early March 2002 when considerable quantities of what is believed to be the same taxon were obtained from similar open eucalypt forests and woodlands on granitic soils at various locations within the Koombooloomba area, east of Ravenshoe, in northern Queensland. The material has a regular hymenophoral trama with short elements and therefore belongs in subgenus *Pseudohygrocybe*. Its dimorphic basidiospores and basidia means that this taxon is the first record of any Queensland species from section *Firmae*. All collections have been deposited in the Queensland Herbarium (BRI).

As a result of the 2001 and 2002 collecting trips, 32 collections of species within the Hygrophoraceae have been deposited in BRI. Of these collections, 31 belong to genus *Hygrocybe* and the remaining collection belongs to *Camarophyllopsis darwinensis* A.M. Young (Young, Forster & Booth 2002). The genus *Hygrophorus* Fr. has not yet been recorded from this area. The Queensland collection of *C. darwinensis* is the first known material of the taxon apart from the holotype found at Darwin, N.T. (Young & Wood 1997) and this new collection suggests that the species may occur over much of tropical northern Australia under suitable habitat/climatic conditions. Sixteen of the collections of *Hygrocybe* have been confidently assigned to already known taxa. However, another 15 collections remain to be examined and several of these will either be new taxa or new records of non-endemic taxa.

Colour codes in brackets, e.g. (apricot-47), refer to the colour chip codings in the Flora of British Fungi Colour Identification Chart HMSO (Edinburgh). During the wet tropics field trips of 2001, Kornerup & Wanscher (1981) was used as the colour reference. However, this has proven very unsatisfactory as much of the book contains colour chips not directly applicable to fungi and the colour chip displays for reds, yellows and browns were found to be very insufficient. Subsequently, the very much shorter colour chip set included with the Flora of British Fungi was trialed. Although its colour range of chips is much less when compared with Kornerup & Wanscher, the chips contained within the Colour Identification Chart have been selected for their particular application to the colours of fungi. The Flora of British Fungi chip set has proven much easier to use both in the field and in the laboratory, and where exact matches cannot be made, text suggestions of paler, darker or tint shades are easy to add to the colour chip that is most applicable.

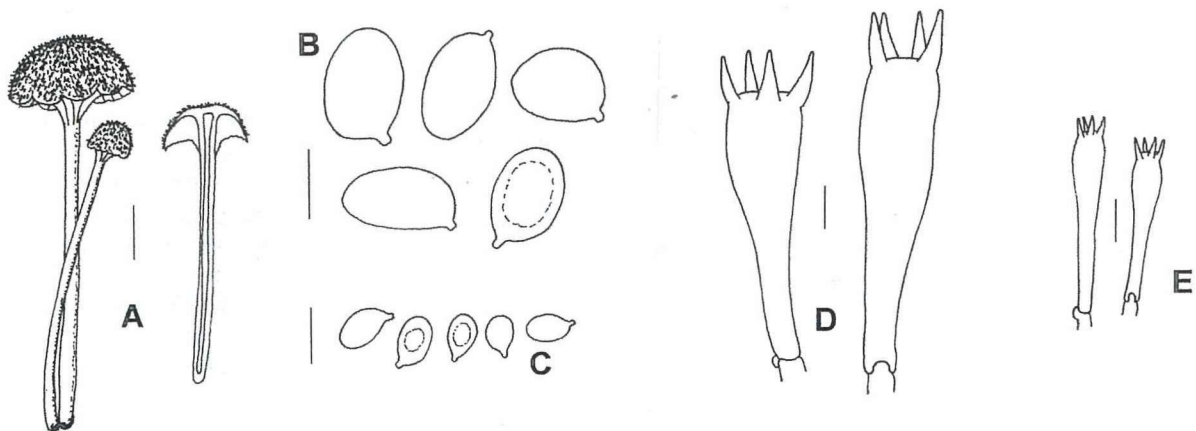
### Taxonomic information

#### *Hygrocybe boothii* A.M.Young, *sp. nov.*

Pileus 9–24 mm, scarlatinus, hemisphaericus, deinde convexus, squamosus, siccus, ad marginem concolorum plicatum. Lamellae decurrentes, sub-scarlatinae vel purpureae, ad marginem aurantiacae vel scarlatinae. Stipes 45–85 × 3–6 mm, scarlatinus, siccus, laevis, cylindricus, ad basim subflavidum. Basidiosporae dimorphae; macrosporae (12–) 13–16 (–16.5) × (8.5–) 10–11.4 (–13.5) μm, ellipsoideae, hyalinae; microsporae 6.5–8.5 (–9.5) × 4–6 μm, ellipsoideae, hyalinae. Basidia dimorpha; macrobasidia 59–78 × 12–17 μm, 4-spora, fibulata; microbasidia (35–) 38.5–50 × 9–9.5 μm, 4-spora, fibulata. Cystidia nulla. Trama hymenophoralis regularis vel subregularis, fibulata. Epicutis trichodermem formans. Gregaria vel caespitosa in humus sylvestria.

*Typus*: Queensland. Koombaloo, 1.iii.2002, A.M. Young & P.I. Forster (PIF28460); holotypus BRI hic designatus.

*Pileus* 9–24 mm, at first hemispheric but usually flattened at the apex then expanding to convex, densely squamose, dry, red (red-42) often becoming orange-red (apricot-47) with age; margin deeply crenulate and frequently deeply folded or plicate, concolorous. *Lamellae* decurrent, thick, distant, occasionally yellowish but usually flushed pink to red (red-42) upwards towards the pileal tissues or wholly purplish red; margins bright orange (orange-48) to red but fading slightly with age, even to a little eroded. *Stipe* 45–85 × 3–6 mm, cylindrical but often flattened and longitudinally sulcate, smooth, dry, red (red-42) with yellowish tints at the base. Fig. 2.



**Figure 1.** *Hygrocybe boothii* A. Habit sketch and longitudinal section; B. Macrobasidiospores; C. Microbasidiospores; D. Macrobasidia; E. Microbasidia. Habit sketch and longitudinal section, Bar = 10 mm; for all others Bar = 10 μm.



**Figure 2.** *Hygrocybe boothii* under natural conditions in eucalypt/casuarina woodland. Photo. A.M.Young.

*Macrobasidiospores* (12–) 13–16 (–16.5) × (8.5–) 10–11.4 (–13.5) µm, mean 14.3 × 10.6 µm, Q: 1.3–1.6, mean Q: 1.35, broadly ellipsoidal, hyaline; *microbasidiospores* 6.5–8.5 (–9.5) × 4–6 µm, mean 7.5 × 5.1 µm, Q: 1.3–1.7, mean Q: 1.46, ellipsoidal, hyaline. *Macrobasidia* 59–78 × 12–17 µm, mean 67.9 × 15.3 µm, Q: 3.6–5.2, mean Q: 4.44, 4-spored, clamp connections present; *microbasidia* (35–) 38.5–50 × 9–9.5 µm, mean 44.2 × 9.0 µm, Q: 4.1–5.5, mean Q: 4.91, 4-spored, clamp connections present. *Cystidia* absent but lamellae margins either sterile with abundant to fasciculate often sinuous basidioles 16–36 × 4–6 µm, thin-walled, hyaline, or a mixture of basidioles and sporulating basidia. *Hymenophoral trama* regular, consisting of ellipsoidal to elongated ellipsoidal or inflated cylindrical elements 50–250 × 20–50 µm, thin-walled, hyaline; clamp connections present. *Pileipellis* a trichoderm with abundant fascicular squamules up to 600 µm (0.6 mm) high, consisting of inflated cylindrical elements 36–65 × 5–25 µm (occasionally with cylindrical elements up to 190 µm in length interspersed), thin-walled, hyaline; clamp connections present. *Stipitipellis* a cutis, consisting of cylindrical elements 5–8 µm diam., thin-walled, hyaline; clamp connections present. Fig. 1.

*Habitat*: Known only from northern Queensland; caespitose in clumps of up to eight basidiomata on soil amongst litter, occasionally solitary or in small troops; open forest or woodland.

*Material examined*: Mt Baldy SF 194 Herberton Range, 14 Feb. 2001, R. Booth (TY2) BRI; Koombalooomba, 1 Mar. 2002, A.M. Young & P.I. Forster (PIF28460) BRI (holotype); same location, 1 Mar. 2002, A.M. Young & P.I. Forster (PIF28439) BRI; same location, 2 Mar. 2002, A.M. Young & P.I. Forster (PIF28469, PIF28478) BRI.

*Remarks*: Bright red taxa with dimorphic basidiospores and basidia invite synonymy with the widely distributed and extremely variable species *Hygrocybe firma* (Berk. & Broome) Singer. Corner (1936) recognised 17 varieties of this species on the basis of spore size and shape; however, *H. boothii* does not conform to any of these. *Hygrocybe firma* does exhibit a trichoderm but macroscopically the pileal description is always minutely tomentose to squamulose or velutinate, and the dense coating of large fasciculate squamules present on *H. boothii* never occurs. Of lesser importance (but still relevant) is the fact that the pileal and stipe colours of *Hygrocybe firma* tend to fade to orange or yellow. The pileus of *H. boothii* does fade a little with age, but it is never yellowish and the stipe remains brilliant red.

The basidiomata of *Hygrocybe boothii* are extremely distinctive and are similar to those of *Hygrocybe cantharellus* (Schwein.) Murrill with long, slender stipes and small diameter pilei. However, the dimorphic basidiospores and basidia together with the densely squamose pileus separate the species from *H. cantharellus* which has neither dimorphic basidia producing dimorphic basidiospores nor a completely squamose pileus. *Hygrocybe boothii* also is close to *H. trinitensis* (Dennis) Pegler which is very similar in overall form of the basidiomata, but *H. trinitensis* has almost smooth pilei (a simple cutis) and does not have the squamose trichoderm of *H. boothii*. Variation of lamellae colours are well known within the Hygrophoraceae; e.g. *Hygrocybe miniata* (Fr.: Fr.) P. Kumm. may have yellow to reddish lamellae (Boertmann 1995). The yellowish to purplish red lamellae exhibited in different basidiomata of *Hygrocybe boothii* are therefore not unusual variations for a species within the family.

*Etymology*: After its original collector Mr Ronald Booth (1958–) of the Queensland Herbarium.

## References

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