A FIELD KEY TO THE HYGROPHORACEAE OF SOUTH-EASTERN AUSTRALIA

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Sixty-nine taxa within the Hygrophoraceae of south-eastern Australian have been published or are in the process of publication. This number is expected to rise because more undescribed species can be expected in the geographical regions already examined and the Tasmanian species have yet to be fully assessed. When the anticipated new species from the Australian tropics and the southern and western portions of the continent are added to the species already known, a total of about 150 taxa for the Australian Hygrophoraceae is confidently expected.

The published keys to the Hygrophoraceae (Young & Wood 1997) used systematic characters dependent upon microscopic features. Such features are not applicable in the field where the only characters that can normally be applied are those visible with at most a hand lens. Field keys are therefore easier to use, but may not operate satisfactorily under some conditions because many taxa can only be differentiated completely using micro-characters.

This field key uses pileus principal colour and viscidity in order to separate single taxa or small groups of taxa. Subkeys are then used to further reduce the groups. Note that field characters for the Hygrophoraceae frequently change as the basidiomes mature: choose both a young and a mature specimen when using the key. Viscidity is here defined as the state of the pileus when the basidiome is still less than half matured: viscidity is a character that can change abruptly with age or local weather conditions.

In the body of the keys, any taxon designated as *H. sp.* belongs to genus *Hygrocybe*. The single species belonging to each of the genera *Hygrophorus* and *Camarophyllopsis* both have their generic names given in full. Descriptions of most taxa can be found in Young & Wood (1997). The new names and descriptions of species A–J are currently in press but a reference list will be provided after their publication. The author is anxious to obtain feedback on use and accuracy of the key.

Key to Groups of Taxa Using Pileus Colour and Viscidity

A. Pileus white or cream; may have brown tints at centre
1. Surface viscid to glutinous ..... **Subkey 1**

2. Surface dry ..... **Subkey 2**

B. Pileus yellow to orange
1. Surface viscid to glutinous ..... **Subkey 3**

2. Surface dry ..... **Subkey 4**

C. Pileus pink without a trace of red
1. Surface viscid to glutinous ..... **H. iropus**

2. Surface dry ..... **No known taxa fit this grouping**

D. Pileus red
1. Surface viscid to glutinous ..... **Subkey 5**

*This work was funded by a grant from ABRS for research on Australian Hygrophoraceae.

2. Surface dry ..... **Subkey 6**

E. Pileus lilac, or with lilac margins

1. Surface viscid to glutinous ..... **No known taxa fit this grouping**

2. Surface dry ..... **Subkey 7**

F. Pileus green

1. Surface dry, viscid or glutinous ..... **Subkey 8**

G. Pileus brown

1. Surface dry, viscid or glutinous ..... **Subkey 9**

H. Pileus black

1. Surface viscid to glutinous ..... **No known taxa fit this grouping**

2. Surface dry ..... **See Subkey 4, couplet 2**

Subkey 1 - Pileus white or cream, may have brown tints at the centre; viscid to glutinous

1. Lamellae adnexed to almost free; stipe without surface droplets ..... **H. leucogloea**

Lamellae broadly adnate to arcuate; stipe usually with surface droplets .... **Hygrophorus involutus**

Subkey 2 - Pileus white or cream, may have brown tints at the centre; dry

1 Lamellae free and often splitting medially under a pileus radial split..... **H. mavis**

Lamellae adnate or arcuate to decurrent, never splitting as noted above 2

2(1) Stipe orange to red ..... **H. anomala**

Stipe white to cream 3

3(2) Pileus convex with involute margins, never striate ..... **Hygrophorus involutus**

Pileus convex but depressed or umbilicate, often striate, never with involute margins 4

4(3) Pileus strongly striate; pure white or grey-white, smooth under x10 lens..... **H. virginea**

Pileus not striate; cream or with brownish tints, felty under x10 lens ..... **H. rodwayi**

Subkey 3 - Pileus yellow to orange; viscid to glutinous

1. Pileus distinctly conical 2

Pileus convex, may be umbilicate 5

2(1) Lamellae cherry red becoming orange-yellow; stipe colours similar ..... **H. cerasinomutata**

Lamellae pale yellow, orange, or yellow becoming orange; stipe always yellow 3

3(2) Lamellae ascending 4

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Lamellae adnate ..... **H. chromoxantha**

4(3) Lamellae becoming either orange or becoming orange ..... **H. persistens**

Lamellae remaining yellow ..... **H. austrolutea**

5(1) Stipe bright orange, orange-red or red ..... **H. anomala**

Stipe yellow to pale apricot yellow, orange tints sometimes at the very apex 6

6(5) Stipe viscid (choose young specimens) 7

Stipe dry (choose young specimens) 8

7(6) Lamellae bright yellow, margins with gluten thread (use x10 lens) ..... **H. chromolimonea**

Lamellae with apricot pink tints, without gluten thread ..... **Hygrophorus involutus**

8(6) Lamellae adnexed to very narrowly adnate ..... **H. chlorophana**

Lamellae broadly adnate, often with decurrent tooth or arcuate ..... **H. dromedensis**

Subkey 4 - Pileus yellow to orange; dry

1 Some part of the basidiome becomes black when bruised 2

No part of the basidiome becomes black when bruised 3

2(1) Pileus coated with loose, black fibrils; latex exudes from cut tissues ..... **H. astatogala**

Pileus and stipe without loose, black fibrils; latex absent ..... **H. conica**

3(1) Associated with sphagnum moss; lamellae at first white with red margins; pileus finely velvety (at least at the centre) ..... **H. dorothyi**

Habitat various; lamellae not at first white with red margins; pileus smooth 4

4(3) Pileus distinctly conical 5

Pileus convex 7

5(4) Lamellae adnexed or ascending 6

Lamellae very broadly adnate and may have small, decurrent tooth ..... **H. aurantiocampanula**

6(5) Lamellae always yellow with age ..... **H. luteoconica**

Lamellae orange or yellow then becoming orange ..... **H. persistens**

7(4) Pileus and stipe at first covered by a white, delicate, powdery layer ..... **H. austropratensis**

Pileus and stipe without delicate white layer 8

8(7) Lamellae white to faintly cream; stem white to off-white ..... **H. unispora**

Lamellae and stipe tinted apricot to light orange ..... **H. aurantiopallens**

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Subkey 5 - Pileus red; viscid to glutinous

1 Some part of the basidiome blackening if bruised ..... **H. conica**

No part of the basidiome blackening if bruised 2

2(1) Lamellae adnexed to adnate with at most a decurrent tooth 3

Lamellae arcuate to decurrent 11

3(2) Stipe red 4

Stipe yellow to orange-yellow with pink tints at most 6

4(3) Pileus conical ..... **H. cerasinomutata**

Pileus convex 5

5(4) Lamellae narrowly adnate; stipe viscid ..... **H. subminutula**

Lamellae broadly adnate with decurrent tooth; stipe dry or very slightly sticky ..... **H. sylvaria**

6(3) Stipe very viscid to glutinous 7

Stipe dry to very slightly sticky 8

7(6) Lamellae orange-yellow ..... **H. minutula**

Lamellae very light cream-buff ..... **H. wilsonensis**

8(6) Pileus convex ..... **H. sp. Otw1**

Pileus conical 9

9(8) Stipe diameter 2–3 mm, lamellae and stipe with pink tints ..... **H. erythrocala**

Stipe diameter 4–11 mm, lamellae and stipe with or without pink tints 10

10(9) Pileus strongly striate and splitting radially ..... **H. rubrolutea**

Pileus not striate and not splitting radially ..... **H. xanthopoda**

11(2) Lamellae yellowish with pink tints ..... **H. hayi**

Lamellae white ..... **H. lanecovensis**

Subkey 6 - Pileus red; dry

1 Some part of the basidiome blackening when bruised 2

No part of the basidiome blackening when bruised 3

2(1) Pileus covered with loose, black fibrils; latex exuded from cut tissues ..... **H. astatogala**

Pileus and stipe without loose, black fibrils; no latex produced from cut tissues ..... **H. conica**

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3(1) Lamellae adnexed to adnate with at most a decurrent tooth 4

Lamellae arcuate to decurrent 10

4(3) Pileus conical, may be papillate 5

Pileus convex, may be depressed or umbilicate 6

5(4) Stipe yellow ..... **H. cystidiorubra**

Stipe red ..... **H. siccitatopapillata**

6(4) Stipe yellow with at most orange tints ..... **H. tidbillensis**

Stipe red or orange red, may be yellow at base 7

7(6) Stipe yellow at base; lamellae clear rosy pink with yellow margins ..... **H. kandora**

Stipe base red; lamellae white, orange or yellow with pink tints, margins concolorous 8

8(7) Lamellae white, old specimens may have cream tints ..... **H. kula**

Lamellae yellow, orange (with or without pink tints) or (rarely) lilac-tinted 9

9(8) Pileus finely velvety (at least at the centre); pileus margins even or only slightly crenulate; lamellae yellow to orange and usually with pink tints ..... **H. miniata**

Pileus smooth; margins deeply crenulate; lamellae drab cream, rarely lilac-tinted ..... **H. sanguineocrenulata**

10(3) Pileus with finely velvety surface at least at the centre 11

Pileus without finely velvety surface and completely smooth 12

11(10) Associated with sphagnum; lamellae white then yellow, lamellae margins red then orange ..... **H. dorothyi**

Not associated with sphagnum; lamellae yellow, margins concolorous ..... **H. cantharellus**

12(10) Lamellae red ..... **H. flammans**

Lamellae yellow, orange or pink 13

13(12) Lamellae bright yellow ..... **H. sp. LC1**

Lamellae pale orange or pink 14

14(13) Lamellae pink; stipe > 30 mm long ..... **H. firma**

Lamellae pale orange; stipe < 25 mm long ..... **H. bolensis**

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Subkey 7 - Pileus lilac or with lilac margins; dry

1 Lamellae green.....**H. lilacinovirida**

Lamellae lilac.....2

2(1) Pileus orange brown with lilac margins.....**H. anomala**

Pileus lilac.....3

3(2) Pileus conical to umbonate; lamellae adnexed to narrowly adnate.....**H. lewellinae**

Pileus convex to umbilicate.....4

4(3) Stipe base yellow; pileus bright artificial pinkish mauve or pinkish lilac; pileus surface finely velvety under a hand lens.....**H. cheelii**

Stipe base lilac; pileus delicate lilac without any pink tints; pileus surface smooth and not finely velvety under a hand lens.....**H. reesiae**

Subkey 8 - Pileus green; dry, viscid or glutinous

1 Pileus viscid or glutinous.....2

Pileus dry.....5

2(1) Lamellae bright lime green; dried material remains dull green.....**H. pseudograminicolor**

Lamellae white or at most with green tints; dried material generally brick pink.....3

3(2) Lamellae with a fine glutinous thread to the margins (use hand lens).....**H. graminicolor**

Lamellae without a fine glutinous thread to the margins (use hand lens).....4

4(3) Pileus deep grass green, strongly pellucid striate.....**H. stevensoniae**

Pileus pale, dull green, not striate.....**H. vallomarginata**

5(1) Lamellae orange.....**H. taekeri**

Lamellae green or yellow.....6

6(5) Stipe white.....**H. woodii**

Stipe yellow or green, sometimes with orange tints.....7

7(6) Stipe pallid green; pileus convex.....**H. helicoides**

Stipe yellow, may have orange tints; pileus conical.....**H. viridiconica**

Subkey 9 - Pileus brown; dry, viscid or glutinous

1 Pileus viscid or glutinous.....2

Pileus dry.....3

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2(1) Pileus conical ..... **H. bubalinoviscida**

Pileus convex to depressed or umbilicate..... **H. graminicolor**

3(1) Pileus scaly with fibrillose squamules or simply fibrillose..... 4

Pileus smooth..... 5

4(3) Stipe white; lamellae grey and unchanging when bruised ..... **H. fuligineosquamosa**

Stipe brown; lamellae yellow, margins becoming reddish when bruised..... **H. lawsonensis**

5(3) Lamellae adnexed to adnate 6

Lamellae arcuate to decurrent..... 9

6(5) Lamellae lilac to violet ..... **H. lilaceolamellata**

Lamellae not lilac to violet..... 7

7(6) Lamellae white; stipe light brown..... **H. badioclavata**

Lamellae yellow; stipe white or yellow-orange 8

8(7) Stipe white; pileus convex..... **H. woodii**

Stipe yellow-orange; pileus broad conical..... **H. aurantipes**

9(5) Lamellae lilac to violet ..... **H. lilaceolamellata**

Lamellae not lilac to violet..... 10

10(9) Lamellae grey-cream; stipe colours similar..... **H. watagensis**

Lamellae orange-grey; stipe orange..... **H. hypospoda**

Reference

Young, A.M. & Wood, A.E. (1997). Studies on the Hygrophoraceae (Fungi, Homobasidiomycetes, Agaricales) of Australia. *Australian Systematic Botany* **10(6),** 911–1030.

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A CHECKLIST OF THE EDINBURGH COLLECTION OF AUSTRALIAN HYGROPHORACEAE*

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In 1974 and in 1982, Dr Roy Watling of the Royal Botanic Gardens, Edinburgh, visited Australia and made a number of collections of agarics some of which were tentatively identified as species within the Hygrophoraceae. These 41 collections held in Edinburgh have now been re-examined.

A major problem when working with herbarium material suspected to be within the Hygrophoraceae is that definitive microscopic characters are few, so that the quality of the field notes which accompany a collection is extremely important. If the field notes are absent or extremely limited, the decision to assign a herbarium collection to the Hygrophoraceae may rest upon a 'raft of microscopic characters' that are absent from the dried material (as well as some that are present) and sometimes on its physical appearance. This in turn requires considerable experience with similar material known to be within the Hygrophoraceae.

Most of the Watling collections have extremely limited field notes. Frequently there are none relevant to the actual basidiomes and only a brief note describing the habitat. Despite these shortcomings, many have been confidently identified to species level while others have at least been determined as belonging to the Hygrophoraceae. Several collections listed below remain indeterminate.

The Watling collections have proven quite valuable in that they often extend the geographical distributions for well-known species and they indicate the probable seasonal occurrence of the taxon. The checklist contains the species name, collection location, date and Edinburgh herbarium number; author citations are omitted. The taxa are sorted by species and State or Territory.

Queensland

Hygrocybe cantharellus, Bribie Is., 3 April 1974, E00061287.
Hygrocybe cantharellus, Bribie Is., 3 April 1974, E00061306.
Hygrocybe cantharellus, Bribie Is., 3 April 1974, E00061314.
Hygrocybe graminicolor, Cooloola Sands, 31 May 1982, E00061297.
Hygrocybe sp., Cooloola Sands, 31 May 1982, E00061296.

New South Wales

Hygrocybe anomala var. *anomala*, Mt Wilson (Blue Mtns), 16 April 1974, E00061292.
Hygrocybe anomala (var. uncertain), Mt Wilson (Blue Mtns), 16 April 1974, E00061305.
Hygrocybe cantharellus, MtWilson (Blue Mtns), 16 April 1974, E00061303.
Hygrocybe aff. *cantharellus*, Mt Wilson (Blue Mtns), 16 April 1974, E00061301.
Hygrocybe chromolimonea, Mt Wilson (Blue Mtns), 16 April 1974, E00061282.
Hygrocybe aff. *erythrocala*, Mt Wilson (Blue Mtns), 16 April 1974, E00061288.
Hygrocybe lilaceolamellata, Mt Wilson (Blue Mtns), 16 April 1974, E00061291.
Hygrocybe sp., Mt Wilson (Blue Mtns), 16 April 1974, E00061294.

Australian Capital Territory

Hygrocybe astatogala, Tidbinbilla Nature Reserve, 27 April 1974, E00061259.
Hygrocybe astatogala, Tidbinbilla Nature Reserve, 26 April 1974, E00061273.
Hygrocybe cantharellus, Tidbinbilla Nature Reserve, 26 April 1974, E00061298.
Hygrocybe aff. *chromolimonea*, Tidbinbilla Nature Reserve, 27 April 1974, E00061310.
Hygrocybe conica var. *conica*, Molonglo River, 28 April 1974, E00061271.
Hygrocybe aff. *irrigata*, Cotter Dam, 25 April 1974, E00061327.
Hygrocybe rodwayi, Tidbinbilla Nature Reserve, 27 April 1974, E00061316.
Hygrocybe aff. *sylvaria*, Tidbinbilla Nature Reserve, 27 April 1974, E00061317.
Hygrocybe virginea var. *virginea*, Tidbinbilla Nature Reserve, 26 April 1974, E00061276.

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Tasmania

Hygrocybe anomala var. *anomala*, Mt Field Nat. Pk, 1 May 1974, E00061290.
Hygrocybe astatogala, Russel Falls, 18 May 1982, E00061261.
Hygrocybe astatogala, Fern Glade - Hobart, 17 May 1982, E00061262.
Hygrocybe chromolimonea, Mt Field Nat. Pk, 1 May 1974, E0001281.
Hygrocybe aff. *erythrocala*, Fern Glade - Hobart, 17 May 1982, E00061307.
Hygrocybe graminicolor, Harz Mtns, 20 May 1982, E00061321.
Hygrocybe graminicolor, Mt Field Nat. Pk, 18 May 1982, E00061322.
Hygrocybe graminicolor, Harz Mtns., 20 May 1982, E00061323.
Hygrocybe graminicolor, Huon River (Harz Mtns), 20 May 1982, E00061324.
Hygrocybe aff. *luteoconica*, Native Trail, 1 May 1974, E00061312.
Hygrocybe pseudograminicolor, Mt Field Nat. Pk, 1 May 1974, E00061320.
Hygrocybe rodwayi, Mt Field Nat. Pk, 18 May 1974, E00061289.
Hygrocybe sp., Mt Field Nat. Pk, 1 May 1974, E00061325.
Hygrocybe sp., Mt Field Nat. Pk, 18 May 1982, E00061302.
Hygrophorus involutus, Mt Field Nat. Pk, 18 May 1982, E00061304.
Hygrophorus involutus, MtField Nat.Pk, 18 May 1982, E00061309.

Indeterminate or not belonging to the Hygrophoraceae

E00061258, 26 April 1974, Tidbinbilla Nature Reserve, ACT.
E00061293, 1 June 1982, Cooloola Sand Dunes, Qld.
E00061318, 31 May 1982, Cooloola Sand Dunes, Qld., *Limacella* aff. *pitereka.*

AUSTRALASIAN MYCOLOGICAL SOCIETY
TREASURER'S REPORT FOR THE 1998–1999 FINANCIAL YEAR

Audited accounts

The audited accounts for the 1998–1999 year were enclosed with the July 1999 issue of the *Australasian Mycologist*.

Membership

Membership subscriptions were up about 30 per cent, due largely to Wieland Meyer's 'recruiting drive', which has brought in a significant number of medical mycologists. We now have around 160 members compared with around 110 a year ago.

I will be getting information about the costs and procedures associated with membership fees paid by credit card or direct deposit, since some members have asked about these. Moreover, this would be more convenient for a number of overseas members. Once I have the relevant information I will be reporting to Council so that any necessary decisions can be made.

Newsletter/Australasian Mycologist

Not surprisingly the then *Newsletter*, now *Australasian Mycologist* is the biggest expense for the Society. In the 1999 calendar year it will be a more expensive journal with colour illustrations, compared with its previous life as a black-and-white *Newsletter*. Previously the all-up cost (printing+postage) for an issue was about $400–$500 (with a unit cost of around $3) whereas the current cost is around $700 (and a unit cost of $4–$5).

You will note that in the audited accounts the costs appear to have gone up by a factor even greater than that indicated by the amounts I have just quoted. The $986 given in the accounts for 97/98 covers the costs for two issues whereas the $1787 for 98/99 covers the costs of four issues. This seeming imbalance has appeared in previous annual accounts as well. The reason is that expenses are recorded for the financial year in which they are paid (not in which they are incurred) and the bill for the final newsletter in a given financial year is sometimes not received until early in the following financial year.

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1999 Conference

This is an additional point, not presented in my verbal report at the AGM and is given here just for interest's sake. Total expenditure was $1950 and total income was $2270. Some of these amounts were reported in the 1998/99 accounts and the rest will appear in the 1999/2000 accounts.

Heino Lepp
8 December 1999

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