

Waxcap Information and Key

Introduction

Waxcaps are a colourful, enchanting component of British fungal diversity. Appearing for only brief periods each year, the fruiting bodies of these fungi are the only visible fraction of an often vast network of underground mycelium. These fungi play an essential role in nutrient cycling, breaking down decaying matter and releasing nutrients essential for plant growth.

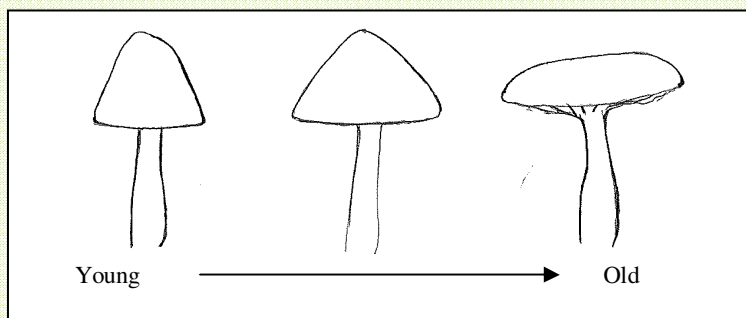
Waxcap fungi are found predominantly in tightly-cropped, nutrient poor grasslands, where there has been little or no fertiliser application. These unimproved grasslands constitute a valuable British habitat which has undergone extensive decline. The recording of waxcap species can therefore be used to identify grassland of high conservation value.

Waxcap Identification

Waxcaps are distinguished by well-spaced, thick waxy gills. They only grow in soil (never on woody material) and are almost always found on grasslands or grassy woodland glades.

Some useful notes:

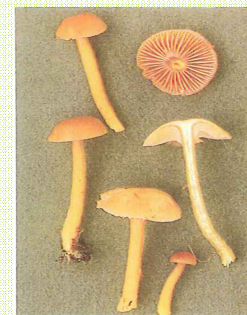
- The shape of the cap will change as the fruiting body ages, with the cap opening and, in some species, splitting with age. This means that the same species of waxcap can look quite different with age, as shown below:



- Colour also varies with age, so, whilst providing a very useful identification feature, it is important to proceed with caution.
- Some species have a distinctive smell, which can be subtle. It may be useful to put the specimen inside a closed container for a few minutes in order to concentrate the smell.

Taking Photos for Identification

If you would like to send in photos, we would very much appreciate this. It is best to photograph waxcaps from a variety of angles, including a cross-section, as shown below:



Hygrocybe laeta (© Phillips, R., 1981)

This information pack contains a simple waxcap key to aid in your identification. The key is in two parts, and there is also a photo glossary attached which can be used in conjunction with the key. There is also a page of further identification notes. **Please note:** this is a *learning key* and should only be viewed as a guide. This key is a work in progress. If you have any suggestions for improvements please let us know.

For more information see below:

- Boertmann, D. (1995) The genus *Hygrocybe* (Fungi of Northern Europe – vol. 1)
- Low Budget Publishing, Denmark.
- Jordan, M. (2004, revised edition) The Encyclopedia of Fungi of Britain and Europe. Frances Lincoln Ltd., London.
- www.aber.ac.uk/waxcap
- Russell, P. 'A quick learning key for the macroscopic identification of waxcaps' www.sxbrc.org.uk/news/waxcaps

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Photo Glossary

Dryness/stickiness


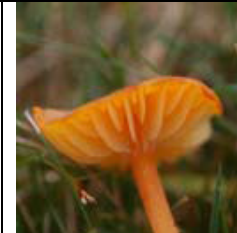


This can be difficult to determine. If unsure, it may be worth checking out several possibilities. The distinctions used in this key are explained below.

	Dry- no stickiness (may be very slightly greasy)	Sticky (viscid) – ranging from very sticky to greasy	
		Very sticky	Greasy
Cap			
Stem			

Texture

Description	Surface broken into little flakes	Surface covered in woolly hairs	Surface covered in small fibres
Technical term	Squamulose	Pruinose	Fibrillose
Cap			
Stem			

Gill shape






Description	Gills are not attached to stem	Gills attached to stem for only some of their depth	Gills attached to stem for most of their depth	Gills run down the stem
Technical term	Free	Adnexed	Adnate	Decurrent
				

Waxcap Key

How to use the Key:










- 1) Decide whether the fungal cap and stem feel sticky or dry to touch, choose the appropriate column of the table
- 2) Work down the 'Colour/description' column, referring to the corresponding diagram/photo, until you find the row which best describes the fungi you wish to identify.
- 3) Look at the box where the chosen row and column coincide. If there are several species listed refer to the specified section of the key where you will find a short key to the listed species.

All waxcap species are of the genus *Hygrocybe*

Colour/description	Example	Feel to touch		
		Cap & stem greasy/slimy*	Cap greasy/slimy and stem dry *	Cap & stem dry*
Conical cap light orange to orange-red gradually blackening with age.	 (<i>conica</i>)	<i>conica</i> (Blackening waxcap)	<i>conica</i> (Blackening waxcap)	<i>conica</i> (Blackening waxcap)
Cap dark grey to black, gills & flesh reddening			<i>ovina</i> (Sheep waxcap)	<i>ovina</i> (Sheep waxcap)
Cap white or pale buff			<i>virginia</i> <i>russocoriacea</i> Go to Section 1	<i>pratensis</i> var <i>pallida</i> <i>fornicata</i> Go to Section 2
Cap or stem with at least some green tinge Can be more lemon yellow in <i>citrinovirens</i>	 (<i>psittacina</i> var <i>psittacina</i>)	<i>psittacina</i> var <i>psittacina</i> (Parrot waxcap)		<i>citrinovirens</i> (Lemon-green waxcap)
Cap dusky pink and pointed on a white stipe	 (<i>calyptriformis</i>)		<i>calyptriformis</i> (Pink or Ballerina waxcap)	<i>calyptriformis</i> (Pink or Ballerina waxcap)
Cap grey or blue-grey.	 (<i>irrigata</i>)	<i>irrigata</i> (Slimy waxcap)	<i>fornicata</i> <i>lacmus</i> <i>flavipes</i> Go to Section 3	<i>fornicata</i> <i>nitrata</i> Go to Section 4
Cap brown or pale brown	 (<i>irrigata</i>)	<i>irrigata</i> (Slimy waxcap)	<i>ingrata</i> <i>colemanniana</i> Go to Section 5	<i>ingrata</i> (Spindle-shank waxcap)

Key adapted from a version by Patrick Leonard (1997), based on Boertmann, (1995), photographs taken from www.aber.ac.uk/waxcap

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Colour/description	Example	Feel to touch		
		Cap & stem greasy/slimy*	Cap greasy/slimy and stem dry*	Cap & stem dry*
Cap yellow & conical.	 (persistence)	<i>persistence</i> (Persistent waxcap)	<i>persistence</i> (Persistent waxcap)	<i>citrinovirens</i> (Lemon-green waxcap)
Cap yellow to orange & convex.	 (chlorophana)  (quieta)	<i>chlorophana</i> <i>vitellina</i> <i>glutinipes</i> var <i>glutinipes</i> <i>insipida</i> Go to Section 6	<i>chlorophana</i> <i>ceracea</i> <i>aurantiosplendens</i> Go to Section 7	<i>quieta</i> (Tranquil waxcap)
Cap orange to orange-red & gills corresponding to one of the diagrams opposite.	 free gills*  adnexed gills*  adnate gills*	<i>mucronella</i> <i>insipida</i> Go to Section 8	<i>aurantiosplendens</i> <i>persistence</i> var <i>konradii</i> <i>persistence</i> var <i>persistence</i> Go to Section 9	<i>quieta</i> <i>miniata</i> <i>intermedia</i> <i>helobia</i> <i>reidii</i> Go to Section 10
Cap orange or orange-brown & gills as shown in diagram.	 decurrent gills*	<i>insipida</i> <i>laeta</i> Go to Section 11	<i>laeta</i> (Heath waxcap)	<i>pratensis</i> <i>cantharellus</i> Go to Section 12
Cap red & gills pale to red.		<i>glutinipes</i> var <i>rubra</i> <i>psittacina</i> var <i>perplexa</i> Go to Section 13	<i>coccinea</i> <i>punicea</i> Go to Section 14	<i>mucronella</i> <i>splendidissima</i> <i>helobia</i> <i>miniata</i> <i>reidii</i> <i>coccinea</i> Go to Section 15
Cap red & gills as shown in diagram	 decurrent gills*		<i>mucronella</i> (Bitter waxcap)	<i>cantharellus</i> <i>mucronella</i> Go to Section 16

*see photo glossary

Section 1:

Initial Question:	Latin Name	Photo
Strong smell of Russian leather or Cedar pencils.	<i>russocoriacea</i>	(i)
Smell indistinct, mild coconut, white through to pale pinkish buff.	<i>virginea</i>	

Section 2:

Initial Question:	Latin Name	Photo
Gills adnate or adnexed. *	<i>fornicata</i> (Arched waxcap)	
Gills decurrent. *	<i>pratensis</i> var <i>pallida</i>	(iii)

Section 3:

Initial Question:	Latin Name	Photo
Gills adnate or adnexed.*	<i>fornicata</i> (Arched waxcap)	
Gills decurrent. *	Section 3A	
Section 3A:		
Stem base yellow.	<i>flavipes</i>	(iv)
Stem base matches cap.	<i>lacmus</i> (Lacquered waxcap)	

Section 4:

Initial Question:	Latin Name	Photo
Stem white or cream.	<i>fornicata</i> (Arched waxcap)	
Stem grey to fawn, smell nitrous.	<i>nitrata</i> (Nitrous waxcap)	

Section 5:

Initial Question:	Latin Name	Photo
Gills decurrent. *	<i>colemanniana</i> (Colmans waxcap)	
Gills free or adnexed. *	<i>ingrata</i>	(v)

Section 6:

Initial Question:	Latin Name	Photo
Gills adnexed or adnate. *	Section 6A	
Gills slightly decurrent. *	Section 6B	

Section 6A:		
Stem opaque, fungus robust.	<i>chlorophana</i>	(vi)
Stem with a glass-like appearance, fungus small.	<i>glutinipes</i> var <i>glutinipes</i>	(vii)
Section 6B:		
Gill edge slimy.	<i>vittelina</i>	(viii)
Gill edge dry.	<i>insipida</i>	(ix)



(i) *Hygrocybe russocoriacea*
(Cedarwood waxcap)

(ii) *Hygrocybe virginea*
(Snowy Waxcap)

(iii) *Hygrocybe pratensis* var
pallida
(Pale waxcap)

(iv) *Hygrocybe flavipe*
(Yellow foot waxcap)



(v) *Hygrocybe ingrata*
(Spindle-shank waxcap)

(vi) *Hygrocybe chlorophana*
(Golden waxcap)

(vii) *Hygrocybe glutinipes* var
glutinipes
(Glutinous waxcap)

(viii) *Hygrocybe vittelina*

(ix) *Hygrocybe insipida*
(Spangle waxcap)

* See photo glossary

Key adapted from a version by Patrick Leonard (1997), based on Boertmann, (1995), photographs taken from www.aber.ac.uk/waxcap

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Section 7:

Initial Question:	Latin Name	Photo
Stem covered in small fibres or a white powder at least at the top. *	<i>aurantiosplendens</i> (Orange waxcap)	
Stem smooth.	Section 7A	
Section 7A:		
Stem < 5 mm's diameter.	<i>ceracea</i>	(x)
Stem > 5 mm's diameter, often grooved.	<i>chlorophana</i>	(vi)

Section 8:

Initial Question:	Latin Name	Photo
Cap reddish-orange, taste bitter.	<i>mucronella</i>	(xi)
Cap yellowish-orange, no taste.	<i>insipida</i>	(ix)

Section 9:

Initial Question:	Latin Name	Photo
Stem smooth, gills adnate. *	<i>aurantiosplendens</i> (Orange waxcap)	
Stem covered in small fibres, gills free or adnexed. *	<i>persistens</i> var <i>konradii</i>	(xii)
	<i>persistens</i> var <i>persistens</i>	(xiii)

Section 10:

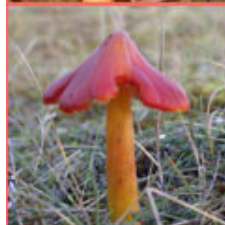
Initial Question:	Latin Name	Photo
Cap surface broken into little flakes or with a woolly coating of hairs. *	Section 10A	
Cap smooth.	Section 10C	
Section 10A:		
Gills free or adnexed, stem covered in small fibres. *	<i>intermedia</i>	(xiv)
Gills adnate or decurrent.	Section 10B	
Section 10B:		
Cap bright red, fragile, smell of garlic..	<i>helobia</i>	(xv)
Cap orange/dull red	<i>miniata</i>	(xvi)
Section 10C:		
Cap yellow, gills orange.	<i>quieta</i>	(xvii)
Cap orange/orange-red, honey smell at stem base.	<i>reidii</i>	(xviii)



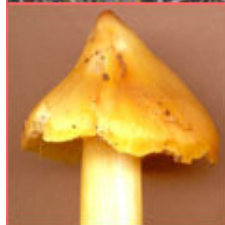
(x) *Hygrocybe ceracea*
(Butter Waxcap)



(xi) *Hygrocybe mucronella*
(Bitter waxcap)



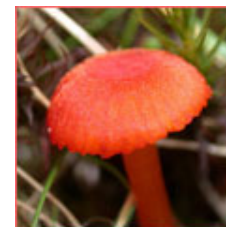
(xii) *Hygrocybe persistens* var
konradii
(Yellow waxcap)



(xiii) *Hygrocybe persistens* var
persistens
(Persistent waxcap)



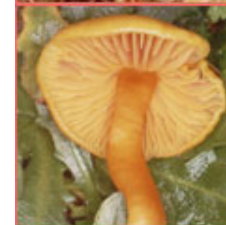
(xiv) *Hygrocybe intermedia*
(Fibrous waxcap)



(xv) *Hygrocybe helobia*
(Garlic waxcap)



(xvi) *Hygrocybe miniata*
(Vermillion waxcap)



(xvii) *Hygrocybe quieta*
(Tranquil waxcap)



(xviii) *Hygrocybe reidii*
(Honey waxcap)

* See photo glossary

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Section 11:

Initial Question:	Latin Name	Photo
Gill edge slimy, stem dull.	<i>laeta</i>	(xix)
Gill edge dry; stem red least at top.	<i>insipida</i>	(ix)

Section 12:

Initial Question:	Latin Name	Photo
Fungus robust, cap dull matt orange-brown. Decurrent* gills	<i>pratensis</i>	(xx)
Fungus small, cap edge scalloped, cap surface covered in tiny flakes.	<i>cantharellus</i>	(xxi)

Section 13:

Initial Question:	Latin Name	Photo
Fungus brick red, cap convex.	<i>psittacina</i> var <i>perplexa</i>	
Fungus orange red, cap flattened.	<i>glutinipes</i> var <i>rubra</i>	

Section 14:

Initial Question:	Latin Name	Photo
Fungus robust, stem covered in small fibres. * Gills adnexed	<i>punicea</i>	(xxii)
Fungus small, stem smooth, adnate gills pale to yellowish red.	<i>coccinea</i>	(xxiii)

Section 15:

Initial Question:	Latin Name	Photo
Cap surface broken into tiny flakes. *	Section 15A	
Cap smooth or covered in a fine white powder. *	Section 15B	
Section 15A:		
Fungus scarlet, scales pointed, faint smell of garlic.	<i>helobia</i>	(xv)
Fungus red, orange or yellow, scales obtuse.	<i>miniata</i>	(xvi)
Section 15B:		
Taste bitter.	<i>mucronella</i>	(xi)
Taste neutral or mild.	Section 15C	

Section 15C:		
Fungus medium to large, bright red.	<i>Splendidissima</i>	(xxiv)
Fungus small to medium, orange red.	Section 15D	
Section 15D:		
Gills yellow or orange, smell of honey on stem base.	<i>reidii</i>	(xviii)
Gills red with yellow edge, smell neutral.	<i>coccinea</i>	(xxiv)

Section 16:

Initial Question:	Latin Name	Photo
Cap smooth, taste bitter.	<i>mucronella</i>	(xi)
Cap surface covered in tiny flakes. *	<i>cantharellus</i>	(xxi)



(xix) *Hygrocybe laeta*
(Heath waxcap)

(xx) *Hygrocybe pratensis*
(Meadow waxcap)

(xxi) *Hygrocybe cantharellus*
(Goblet waxcap)

* See photo glossary



(xxii) *Hygrocybe punicea*
(Crimson waxcap)



(xxiii) *Hygrocybe coccinea*
(Scarlet waxcap)



(xxiv) *Hygrocybe splendidissima*
(Splendid waxcap)

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Extra Identification Notes

Species (Genus: <i>Hygrocybe</i>)	Occurrence in Somerset ¹	Habitat	Ease of identification	Notes/ similar species
<i>aurantiosplendens</i>	Rare	Grasslands	Difficult	<i>punicea</i> , <i>persistens</i> & <i>chlorophana</i> ; has orange cap and yellow stem
<i>calyptriformis</i>	Common	Pastures or heaths	Relatively easy	Pinkish cap and white stem
<i>cantharellus</i>	Rare	Damp moss/grassland	Relatively easy	Very decurrent gills
<i>ceracea</i>	Common	Pastures & lawns	Can be difficult	<i>insipida</i> , but <i>ceracea</i> has dry stem
<i>chlorophana</i>	Common	Cropped grassland	Can be difficult	Stem not fibrillose
<i>citrinovirens</i>	Rare		Relatively easy	Faded <i>persistens</i> can appear similar
<i>coccinea</i>	Common	Grassland/wood clearings	Relatively easy	Scarlett, broadly adnate gills
<i>colemanniana</i>	Rare	Grassland	Relatively easy	Paler specimens can resemble <i>virginea</i> var <i>ochraceopallida</i>
<i>conica</i>	Common	Widely occurring on grasslands	Relatively easy	Blackens with age/handling
<i>flavipes</i>	Infrequent	Grasslands & lawns	Relatively easy	Stem has creamy/yellow base
<i>fornicata</i>	Rare	Deciduous woods/grassland	Difficult	Crowded gills not typical of a waxcap
<i>glutinipes</i> var <i>glutinipes</i>	Infrequent	Mossy grassland, woods	Can be difficult	Gills not decurrent, sticky cap and stem
<i>glutinipes</i> var <i>rubra</i>	Rare	Mossy grasslands, woods	Can be difficult	Red version of <i>glutinipes</i> var <i>glutinipes</i>
<i>helobia</i>	Rare	Grasslands/lawns, moist areas	Difficult	<i>miniata</i> , <i>calciphila</i> , but <i>helobia</i> has faint garlic smell
<i>ingrata</i>	Rare	Mixed grass/moss	Can be difficult	<i>nitrata</i>
<i>insipida</i>	Common		Difficult	Variable. Stem often with darker band below gills
<i>intermedia</i>	Infrequent	Grasslands	Relatively easy	Faded specimens can appear similar to <i>citrinovirens</i>
<i>irrigata</i>	Common	Pastures & open woods	Relatively easy	Slimy cap and stem. Greyish to brownish colouration

Species (Genus: <i>Hygrocybe</i>)	Occurrence in Somerset ¹	Habitat	Ease of identification	Notes/ similar species
<i>lacmus</i>	Rare	Grassland	Relatively easy	Bitter taste and decurrent gills
<i>laeta</i>	Infrequent	Heaths, amongst bracken	Relatively easy	<i>psittacina</i> . Has distinctive smell of burning rubber
<i>miniata</i>	Infrequent	Grassy clearings	Very difficult	Requires microscope to distinguish from <i>calciphila</i>
<i>mucronella</i>	Infrequent	Grasslands & lawns	Difficult	Variable appearance, but base of stem bitter
<i>nitrata</i>	Rare	Grassland	Relatively easy	Nitrous smell
<i>ovina</i>	Infrequent		Relatively easy	Distinctive brown/black with red-tinged gills
<i>persistens</i> var <i>konradii</i>	Rare	Grassland and woods	Very difficult	Requires microscope to distinguish from <i>persistens</i> var <i>persistens</i>
<i>persistens</i> var <i>persistens</i>	Infrequent	Grassland	Difficult	Look for fibrillose stem and conical cap
<i>pratensis</i> var <i>pallida</i>	Infrequent		Difficult	<i>virginea</i>
<i>pratensis</i> var <i>pratensis</i>	Common	Grasslands and upland pastures	Relatively easy	Large/robust, deeply decurrent gills
<i>psittacina</i> var <i>perplexa</i>	Rare		Relatively easy	<i>psittacina</i> , but <i>psittacina</i> var <i>perplexa</i> brick red colour
<i>psittacina</i> var <i>psittacina</i>	Common	Lawns or heaths	Relatively easy	Colour can include yellows & reds
<i>punicea</i>	Common	Fields and heaths	Can be difficult	<i>splendidissima</i> , <i>coccinea</i>
<i>quieta</i>	Common	Acid grassland	Can be difficult	Soapy smell, broad, orange/yellow gills, cap can have grey sheen
<i>reidii</i>	Common		Relatively easy	Smells of honey when stem rubbed
<i>russocoriacea</i>	Infrequent	Lawns or heaths	Relatively easy	Distinctive cedarwood smell
<i>splendidissima</i>	Infrequent		Difficult	Very variable, smells of honey when drying
<i>virginea</i>	Common	Widespread, pasture & deciduous woods	Relatively easy	<i>pratensis</i> var <i>pallida</i>
<i>vitellina</i>	Rare	Damp moss	Difficult	Very small, gill edge sticky

1. Note that occurrence is relative, and only a guide based on the number of records within the count

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