

A COMPARATIVE SURVEY OF WAXCAP-GRASSLAND FUNGI OF IRELAND & BRITAIN

By

Maurice Rotheroe
Cambrian Institute of Mycology

Fern Cottage
Falcondale
Lampeter
Ceredigion SA48 7RX

Institute of Biological Sciences
University of Wales
Aberystwyth
Ceredigion SY23 3DA

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Introduction

Background

Ancient grassland is a threatened habitat throughout Europe, as traditional farming methods have given way to more intensive agricultural practices involving high input of fertiliser and pesticides, ploughing and re-seeding. Thus species-rich 'old meadows' have been replaced by 'improved' meadows of grass-dominated species-poor swards. In National Vegetation Classification community terms, this deterioration can be illustrated, for example, by the transition from MG5, *Cynosureo-Centauretum* grassland, through MG6, *Lolio-Cynosuretum* grassland to sown swards of intensively grazed, chemically fertilised MG7 *Lolium perenne* leys. A parallel pattern can be observed in the occurrence of macrofungi in these grasslands. A suite of fungal species characterises ancient unimproved grassland. This includes waxcaps, species of *Hygrocybe s.l.* (ie including *Camarophyllopsis*); fairy clubs (clavarioid fungi); earth tongues (Geoglossaceae); the pink-spored agarics of the genus *Entoloma*; and *mousseron*-type fungi, genera *Dermoloma* and *Porpoloma*. As the nutrient levels increase, these more specialised and evolved fungi are replaced by trivial (mainly coprophilous and nitrophilous) fungi in genera such as *Clitocybe*, *Conocybe*, *Panaeolus* and *Coprinus*.

The Present Study

The British Mycological Society commenced a nationwide survey of waxcap grassland in 1996 (see Rotheroe *et al.*, 1996) in order to identify mycologically-important grassland locations. The author is the senior co-ordinator of the survey and in order to launch the project in Ireland a visit was made to Eire in September, 1996. The visit afforded the opportunity to undertake fieldwork on a number of grassland sites in the Irish Republic and also to carry out an appraisal of fungal records from other sources. The aim was to make comparisons between the mycota of ancient grassland communities on the island of Ireland and that of similar habitats in mainland Britain.

Methods

Fieldwork

The author, accompanied by two other experienced field mycologists, resided from 14th to 21st September, 1996, at Mount Saint Joseph's Monastery at Roscrea, Co. Tipperary, where a mycological laboratory was set up with microscopes, dryers, literature, etc, for the examination of specimens gathered in the field for identification. An ecologist from the Department of Environmental Resource Management at University College, Dublin, provided an itinerary of potentially valuable sites and was present on most of the field excursions to provide background information. The group made excursions every day from Sunday, 15th September until Friday, 20th September, inclusive, when grassland sites were visited and fungi recorded. The group returned to the monastery each evening to work on critical species collected during the day and to collate records.

The sites visited included the great Heath of Maryborough; Stradbally Hills (Ballyprior); callows and esker grasslands between Shannonbridge and Clonmacnoise; St John's Wood in Co Roscommon; the Burren; Slieve Bloom grasslands; a second visit to Stradbally; and Birr Castle grounds. A number of other minor locations were also visited.

Data Compilation

Published and unpublished records of macrofungi from Irish grassland habitats were examined to produce additional data for comparison purposes. These sources included Muskett & Malone, 1978 (all-Ireland county records); BMS, 1990 (List of species from various Southern Ireland sites recorded on the annual autumn foray of the British Mycological Society in

1989; Anon, 1995a and Anon, 1995b (Lists from Clare Island and West Galway, compiled by visiting groups of Dutch mycologists); Feehan & McHugh, 1992 (records from the Curragh of Kildare); and Hedger, 1996, pers. comm. (a list of species recorded from grasslands around the Carron Field Centre on the Burren in Co Clare in August, 1996, by Dr John Hedger). Also incorporated into the present study were records from BMS members participating in the Waxcap-grassland Survey, from both mainland Britain and Southern and Northern Ireland. The term 'grassland' was broadly interpreted (as in Rotheroe, 1997) and taken to include not only mesotrophic, calcicolous and calcifugous 'meadows and pastures' – [MG], [CG] and [U] – but also heaths [H], mires [M], sand dunes [SD] and maritime cliffs [MC]. So far as sand dunes were concerned, only dune grassland and dune slack habitats were included, thus excluding, for example, mobile and semi-fixed dunes as not strictly grassland.

In contrast to the methods of Rotheroe, 1997, only macrofungi comprising the 'Waxcap-grassland suite of species', as outlined in 'Background' above, were included in this study. NVC community codes were assigned where possible, using Rotheroe, 1997, as a basis, but modifying this list in the light of records contributed by 18 members of the BMS Waxcap-grassland Survey in mainland Britain (including those of the author), together with data from four recorders on the island of Ireland (see acknowledgements).

Evaluation and Quantification of Conservation Value

Workers in Norway and Denmark have proposed that *Hygrocybe* species, together with the other characteristic Waxcap-grassland fungi, should be used as indicator organisms for judging the conservation value of a given locality. Several different formulae for grading the relative habitat quality of a site have been proposed and perhaps the simplest of these is that of Rald, 1985. (Other, more complicated methods tend to produce identical results!) Rald separated four classes by the number of species found:

<u>Conservation value</u>	<u>Total number of <i>Hygrocybe</i> species listed</u>
Of national importance (I)	17-32 (11-20 during a single visit)
Of regional importance (II)	9-16 (6-10 during a single visit)
Of local importance (III)	4-8 (3-5 during a single visit)
Of no importance (IV)	1-3 (1-2 during a single visit)

In the absence of any useful data on which to base such assessments in the British Isles, this scale is being used to evaluate grassland habitat quality during the Waxcap-grassland Survey. (The Rald prediction based on a single visit is useful but should be used with caution. The timing of the single visit is crucial. The phenology of fruiting of the sub-genus *Leptonia* – which makes up about half of all grassland species in the Entolomataceae – tends to be early, perhaps in July and August, if weather conditions are favourable. Their flush may be over by the time waxcap fruiting peaks. (Taken to the extreme, of course, a single visit in January would produce a completely nil return!)

In assessing results using the Rald formula, additional weight can be given to sites which contain species which feature on the British Red Data List of Endangered Fungi (Ing, 1993) and the Red List of Endangered European Macrofungi (Ing, 1994).

Rotheroe *et al*, 1996, suggested that the waxcap profile of a site, for comparison purposes, could be expressed in a shorthand using the following code letters:

- C (clavarioid fungi)
- H (*Hygrocybe* s.l.)
- E (grassland species of the Entolomataceae)
- G (Geoglossaceae)
- and D (*Dermoloma*).

Thus a site with survey records of eight waxcaps, two fairy clubs, two earth tongues and one species of *Leptonia*, would be described as: C2, H8, E1, G2. The shorthand system has been used in the present study, except that, in the interests of simplicity, *Dermoloma* and *Porpoloma* are merged with H. This is legitimate, since they have the same ecological affinities and *Porpoloma* was, until recent taxonomic revisions, traditionally included in the genus *Hygrophorus* (as was *Hygrocybe*), while the current classification places *Dermoloma* in the tribus Hygrocybeae. (The effect of this minor departure from the Rald criteria is insignificant.) The present author therefore interprets Rald in this way and also refers to the 'CHEG profile' as a means of making easy quantitative assessments for comparison of different sites and to suggest their relative conservation value. The novel combination of the use of Rald criteria and CHEG profiles as a means of quantifying the conservation value of ancient grassland from a mycological point of view has not previously been attempted for the British Isles. (NOTE: In using these numerical formulae a variety record is given equal weighting to that of a species. Thus the numbers refer to taxa, rather than species.)

Nomenclature

There is some disagreement currently over aspects of nomenclature for certain groups. For the Entolomataceae, this study uses the nomenclature of Noordeloos, 1992, which reduces some genera to sub-generic level, ie *Leptonia* and *Nolanea*, rather than the classification of the Dictionary of the Fungi (Hawksworth, et al, 1995) which retains these at generic level. For *Hygrocybe*, the nomenclature follows Boertmann, 1995, with a number of small modifications proposed by Henrici, 1996.

Results

Unfortunately a long drought experienced throughout the British Isles in the late summer and early autumn of 1997 had not broken at the time the direct fieldwork took place and some of the sites were visited were so dry that they produced no records at all. However, several potentially valuable sites were noted for the future, while a few data were obtained from Maryborough and small adjoining sites (as well as a number of important records made from some non-grassland locations). Particularly disappointing was the visit to the Burren since several of the sites visited were known to be waxcap-grassland types. [It is significant that the earlier visit to the Burren by Dr J N Hedger (JNH), shortly after some rainfall, produced some notable records from the Carron area.]

However, the Ballyprior site near Stradbally in Co Laoise (GR: S5893), visited on 15th September proved to be most rewarding, in spite of far-from-ideal moisture levels. For this reason the second visit was made to Ballyprior later in the week to parts of the site not previously covered.

A database print-out of the list of species recorded from all Irish sources is given in Appendix I. It should be noted that the data given in the various columns in this table is not directly comparable in several cases. For example, the column MM refers to the number of counties of Éire in which the species were recorded, in contrast to columns CoK, BallyP and Mary, which are single-site records. Columns BMS and RM represent data from several individual geographically widespread sites, while columns Clare, JNH and WGal refer to a number of sites within areas of moderate size.

Three members of the BMS Waxcap-grassland Survey contributed results from 26 sites visited in Northern Ireland. These are summarised in the table in Appendix II.

In order to make comparisons, the data from all Irish sources were set alongside data from two published sources, Dennis, 1986, and Dennis, 1995. These data were also compared with the records contributed by 18 members of the BMS Waxcap-grassland Survey from mainly English locations, but also including the author's sub-set of data from Wales. No survey records were available from Scotland. These comparative data are summarised in the table in Appendix III. Again, it should be noted that these columns are not directly comparable, for the reasons given above and also because the SE Eng column refers to the number of SE

English counties (maximum 4) in for which records exist over a very long timespan, while the Hebrides column refers to the islands and discrete geographical areas comprising the Hebrides, surveyed by Dr Dennis, over a period of more than 30 years.

Discussion

Ballyprior

For the purposes of using the quantitative formulae, the two visits to this hillside grassland on limestone may be regarded as a single visit, being only a few days apart and concentrating on different areas of the site. The CHEG profile for the site is: C0, H18, E1, G0. Using the Rald prediction the site easily qualifies as being of National Importance (I), particularly in view of the relatively dry conditions. The site is obviously a suitable habitat for Geoglossaceae and clavarioid species, and the low score for Entolomataceae is almost certainly due to the fact that the sg. *Leptonia* flush was over by September. Because of the quality of this grassland location, Dr John Feehan of the Department of Environmental Resource Management at University College, Dublin, is to approach the Irish Government to seek its designation on the National Heritage Inventory as an 'Area of Scientific Interest in Ireland' (ASII).

Table 1, which summarises CHEG scores from various sources, shows the potential of Ballyprior from the Waxcap count from one visit. (It is somewhat paradoxical that, from one visit, Ballyprior should score only one species fewer on the *Hygrocybe* count than the whole of East Sussex, which has been intensively surveyed by expert mycologists for the past 200 years!)

Two species recorded at Ballyprior, *Hygrocybe calyptriformis* and *Porpoloma metapodia*, are on the British Red Data List, while eight species feature on the European Red Data List. These are: *H. intermedia*, *H. ovina*, *H. fornicata*, *H. unguinosa*, *H. punicea*, *H. cantharellus*, *H. insipida*, *P. metapodia* and *Entoloma prunuloides*.

Table 1: Numbers of taxa in Waxcap-grassland indicator groups recorded from selected areas

<u>Location</u>	<u>Clavarioid</u>	<u>Hygrocybe s.l.</u>	<u>Entolomataceae</u>	<u>Geoglossaceae</u>
The Patches ¹	3	33	16	0
Smalley's Farm ²	16	29	21	4
Welsh sand dunes ³	6	27	23	5
Llanerchaeron lawn ⁴	4	22	5	1
East Sussex ⁵	13	19	16	5
Snowdon ⁶	?	17	14	?
Coedydd Aber ⁶	?	16	3	?
Great Orme ⁶	?	15	3	?
Rothamsted Manor lawns ⁷	3	13	3	2
Esher Common ⁸	12	10	6	1
Slapton Ley ⁹	10	9	6	2
Hebrides ¹⁰	12	40	60	10
Curragh of Kildare ¹¹	3	26	14	5
Co Clare ¹²	3	22	8	0
Northern Ireland ¹³	6	24	3	2
Ballyprior	1	18	1	0
West Galway ¹⁴	7	14	25	1

Key to Table I:

(Note: Some of the locations listed have been included for no other reason than that records are available and may not be relevant to present considerations.)

- 1 The Patches in the Forest of Dean represents perhaps the richest area of traditionally grazed grassland in Britain for which mycological records are available (CHEG profile: C3, H33, E16, G0). It is 500 years old and covers an area of 1.5 hectares. The records (Source: J V R Marriott, pers. comm.), were made over the years from 1984 to 1994, within which period a number of intensive surveys (fortnightly visits in spring and autumn in the years 1984 to 1990) were carried out there. The absence of Geoglossaceae records is puzzling.
- 2 More recently Smalley's Farm has emerged as a remarkable example of waxcap grassland, and could become a standard by which other locations are judged. The CHEG score at this site was enhanced only in 1996, as part of the BMS Waxcap-grassland Survey. The lowland Calcifugous Grassland farm is at Billington, near Clitheroe (VC West Lancs). It covers 4.9 hectares and comprises both improved and semi-improved pastures. Records are provided by the owner, Dr Irene Ridge (pers. comm.)
- 3 The data for All Welsh sand dunes was provided by the author and relates to records from surveys carried out between 1984 and 1995.
- 4 The Countryside Council for Wales is currently in the process of notifying the lawn at Llanerchaeron, a National Trust property in the Aeron Valley, Ceredigion (Cardiganshire), as a Site of Special Scientific Interest. It covers only 1.5 hectares and was surveyed by the author on occasional visits for three years (1992-1994).
- 5 East Sussex. Data from Dennis, 1995, refers to county records collected over 200 years.
- 6 Snowdon data relate to a very extensive area, but reflect only those species which have been notified to the British Mycological Society database. This also applies to Coedydd Aber and Great Orme. Being on limestone, Great Orme is perhaps comparable with Ballyprior.
- 7 The lawns at Rothamsted Research Station measure 120m x 35m and 50m x 30m respectively and the data represent records collated over a period of 24 years. (Source: M Holden, pers. comm.).
- 8 & 9 Two areas which have been more intensively surveyed by mycologists than almost any others in Britain over a long period are Esher Common and Slapton Ley Nature Reserve. (Sources: B M Spooner and D L Hawksworth, pers. comms.).
- 10 Hebrides data cover, of course, a vast area, which is mycologically very rich. (Source: Dennis, 1986).
- 11 Curragh of Kildare data from Feehan & McHugh, 1992, with additional data from R McHugh, 1997, pers. comm.
- 12 Anon, 1995a, Clare Island survey data from 1992 and 1994 by Dutch mycologists, who included all previous records, back to Rea in 1912.
- 13 Northern Ireland records from 1996 BMS Waxcap-grassland Survey (pers. comm.).
- 14 Anon, 1995b, Survey by Dutch mycologists in ?1993 and incorporated all previous records for West Galway.

Northern Ireland

The data from Ulster have added an important extra dimension to this study and it is clear that several locations deserve further attention since they have the potential of being shown to be of high conservation value. Seven locations already rate as regionally important (II).

They are (with CHEG values):

	C	H	E	G
Monawilkin ASSI (W)	4	14	7	0
Barnett's Park, Belfast (X)	3	12	2	0
Crawfords Burn House (O)	2	10	3	0
Seaforde Estate lawn (S)	3	10	2	0
Binevenag (C)	2	9	7	1
Ballycastle Coalfields (A)	0	9	3	0
Glen West (J)	2	9	0	1

National Vegetation Classification

This was perhaps the least satisfactory aspect of this project, since it was not possible to carry out NVC surveys on any of the sites visited in Ireland and there was little information regarding most of the sites included in the study so far as either NVC or phytosociological surveys of other types were concerned. This being so, in most cases estimates only were used to produce the data used in Appendix IV. It is understood that further work to be carried out in Eire will involve NVC surveying of Ballyprior and a number of other important Irish grassland locations.

General

The following tables indicate some of the differences between distribution of species in Ireland and mainland Britain.

Table 2: Species recorded only from Eire in sources used in the present study

Note: * Indicates British species never recorded outside Eire

Entoloma brassicolens
Entoloma carneogriseum
Entoloma chloropolium
Entoloma hispidulum
Entoloma huijsmanii
*Entoloma jennyae**
Entoloma mougeotii v *incarnatum*
Entoloma occultopigmentatum
Entoloma poliopus v *discolor*
*Entoloma pseudoturci**
Entoloma queletii
Entoloma triste
Entoloma turbidum
Entoloma vinaceum
Geoglossum glabrum
Hygrocybe conica v *conicopalustris**
*Hygrocybe constrictospora**
*Microglossum fuscorubens**

Table 3: British species of *Hygrocybe* not recorded from the island of Ireland
(Data not available for other groups.)

Hygrocybe aurantiosplendens
Hygrocybe coccineocrenata
Hygrocybe helobia
Hygrocybe ingrata
Hygrocybe insipida f. *subminutula*
Hygrocybe perplexa
Hygrocybe phaeococcinea
Hygrocybe spadicea

Comments on some individual species.

Entoloma bloxamii: This is an extremely rare fungus and apparently in decline throughout Europe. It is an indicator of very high quality ancient grassland. It features on the British and European red data lists, as Endangered and Group B concern levels respectively. It has a preference for calcicolous soils but also fruits on califugous grassland. It is encouraging to see records of this fungus from two separate Irish locations in 1996, From Carron, Co Clare, 7th September, 1996, and the Curragh of Kildare, 29th October, 1996. Records in general are sparse. There have been a total of only 12 notified to RBG Kew in the past 150 years, and there was only one record from mainland Britain in 1996. The Kew records are as follows: Kindrogan, Perthshire, September, 1996; Gait Barrows, Lancs., November 1991, and October, 1984; Kingley Vale, W. Sussex, October, 1983; White Down, Surrey, November 1983; Bigmore Park, W. Sussex, 1982; Kettlewell, Yorks., 1975; Aviemore, 1957; Co Mayo (Rea), 1911; Rea drawing, 1896; Somerset, 1861; Bath (Broome), June 1854; Type collection: Taycross Lodge, September, 1852. [*Entoloma prunuloides*, which is also on the European red list, was found at Ballyprior, and this is regarded as an indicator species for *E. bloxamii* (A. Henrici, pers. comm.)]

Hygrocybe spadicea: This species, which has never been recorded from Ireland, is probably the rarest of its genus in Britain. It is on the British red list and appears on the European red list as being in Group A, the highest level of concern, in rapid decline and with many national extinctions. It was recorded only once during the 1996 BMS survey of grasslands, at a site near Clevedon, North Somerset, in November.

Conclusions

The project throws light on the distribution of indicator grassland species in the British Isles and pinpoints some of the locations which have high conservation value or are potentially good quality ancient grassland.

It offers a methodology to enable mycological conservation status to be evaluated quantitatively so that comparisons can be made between sites, regions and countries and their relative importance can be judged in more global terms.

The Rald criteria may have to be amended in the light of further research and survey work since it appears (Jordal, pers. comm.) that the British Isles and Norway may retain more quality Waxcap-grassland than most other European countries. The implications of this 'refugia' element may be that a fundamental reconsideration of management policies in Britain is necessary, together with a revision of criteria for fungal Red Data Lists.

One important new Irish site (Ballyprior) has been identified as having a particularly high conservation value and it is hoped that efforts to ensure its protection and sensitive management will be successful and that the Irish Government will take steps to include it on the National Heritage Inventory as an Area of Scientific Interest in Ireland.

The few data available in the present study do not permit anything but superficial comparisons between the Irish and British grassland mycotas to be made. However this paper

provides a background which will be of use in further, more detailed and long-term investigations.

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APPENDIX I

Summary Table of Irish Records

Key to Heading Abbreviations:

MM	Muskett & Malone, 1978 (Eire county records)
BMS	British Mycological Society Foray to Ireland, Sept, 1989: List of species (Various sites)
Clare	Macrofungi on Clare Island, Anon, 1995a
WGal	Macrofungi in West Galway, Anon, 1995b
CoK	Feehan & McHugh, 1992 (Curragh of Kildare)
JNH	Hedger, 1996 (Burren records)
BallyP	Records from Bally Prior, 1996 (See Text)
Mary	Records from Great Heath of Maryborough, 1996 (See Text)
RM	Waxcap-grassland survey records by Roland McHugh, 1996 (Various sites)
Nireland	Waxcap-grassland survey records from 26 sites in Northern Ireland, 1996 (See text and Acknowledgements)

Species	MM	BMS	Clare	WGal	CoK	JNH	BallyP	Mary	RM	Nire
<i>Clavaria acuta</i>	3			1	1					
<i>Clavaria argillacea</i>	4	1								2
<i>Clavaria fumosa</i>	5								1	
<i>Clavaria incarnata</i>		1								
<i>Clavaria purpurea</i>	1									
<i>Clavaria straminea</i>					1					
<i>Clavaria vermicularis</i>	11			1				1	1	1
<i>Clavulinopsis cinereoides</i>				1						
<i>Clavulinopsis corniculata</i>	11	1	1	1	1				4	1
<i>Clavulinopsis fusiformis</i>	9		1		1		1			1
<i>Clavulinopsis helvola</i>	10	2	1	1	1					2
<i>Clavulinopsis laeticolor</i>	3	1		1						
<i>Clavulinopsis luteoalba</i>	4				1				2	1
<i>Clavulinopsis subtilis</i>		2			1					
<i>Clavulinopsis umbrinella</i>	2			1						
<i>Dermoloma cuneifolium</i>	5				1				1	1
<i>Dermoloma josserandii</i>									1	
<i>Entoloma aethiops</i>	3									
<i>Entoloma ameides</i>	3		1	1						
<i>Entoloma asprellum</i>	1									
<i>Entoloma atrocaeruleum</i>			1	1					1	
<i>Entoloma atromarginatum</i>						1				
<i>Entoloma bloxamii</i>	2				1	1				
<i>Entoloma brassicolens</i>	1									
<i>Entoloma caesiotinctum</i>					1					
<i>Entoloma carneogriseum</i>									1	
<i>Entoloma cetratum</i>	1		1	1						
<i>Entoloma chalybaeum</i>	6									
<i>Entoloma chalybaeum v lazulinum</i>					1				1	
<i>Entoloma chloropolium</i>	1									
<i>Entoloma clandestinum</i>	1									
<i>Entoloma conferendum</i>	10	1	1	1				1	4	1
<i>Entoloma corvinum</i>		1		1		1				
<i>Entoloma elodes</i>	4	3		1						
<i>Entoloma excentricum</i>	3	1								
<i>Entoloma exile</i>	1									
<i>Entoloma fernandae</i>					1					

[illegible]

Species	MM	BMS	Clare	WGal	CoK	JNH	BallyP	Mary	RM	Nire
Entoloma triste				1						
Entoloma turbidum									1	
Entoloma turci				1				1	1	
Entoloma undatum	2	1							1	
Entoloma versatile				1						
Entoloma vinaceum					1					
Geoglossum cookeianum	2				1				1	
Geoglossum elongatum									1	
Geoglossum fallax										1
Geoglossum glabrum	6									
Geoglossum glutinosum	3									1
Geoglossum umbratile					1					
Hygrocybe calciphila		1		1						
Hygrocybe calyptriformis	7				1		1			4
Hygrocybe cantharellus	1	1	1		1		1			4
Hygrocybe ceracea	8		1						1	5
Hygrocybe chlorophana	11		1		1		1		3	14
Hygrocybe chlorophana v aurantiaca		1	1		1		1			
Hygrocybe citrinovirens	6						1			
Hygrocybe coccinea	11	1	1		1				4	14
Hygrocybe colemanniana	1		1		1				1	
Hygrocybe conica	14	1	1		1	1	1		2	11
Hygrocybe conica v chloroides				1				1		
Hygrocybe conica v conicopalustris					1			1		
Hygrocybe conica v olivaceonigra					1			1		
Hygrocybe conicoides		1							1	
Hygrocybe constrictospora		1								
Hygrocybe flavipes	2								1	3
Hygrocybe fornicata	2		1		1					6
Hygrocybe glutinipes			1							2
Hygrocybe insipida	1				1		1		1	11
Hygrocybe intermedia	3		1		1		1			
Hygrocybe konradii				1						
Hygrocybe laeta	6	1	1		1					2
Hygrocybe miniata	5	1	1		1				2	5
Hygrocybe nitrata	4									
Hygrocybe ovina	6						1			

Species	MM	BMS	Clare	WGal	CoK	JNH	BallyP	Mary	RM	Nire
<i>Hygrocybe persistens</i>	1	1			1				1	8
<i>Hygrocybe pratensis</i>	9		1		1		1		3	18
<i>Hygrocybe pratensis v pallida</i>		1					1		1	
<i>Hygrocybe psittacina</i>	10	1	1		1		1		3	13
<i>Hygrocybe punicea</i>	9		1		1		1		2	9
<i>Hygrocybe quieta</i>			1		1					1
<i>Hygrocybe reai</i>	3	1			1					
<i>Hygrocybe reidii</i>			1		1		1			1
<i>Hygrocybe russocoriacea</i>	1		1		1				2	7
<i>Hygrocybe splendidissima</i>			1		1		1			1
<i>Hygrocybe substrangulata</i>					1					
<i>Hygrocybe turunda</i>	1									
<i>Hygrocybe unguinosa</i>	5						1			1
<i>Hygrocybe virginea</i>	10		1		1				6	24
<i>Hygrocybe virginea v fuscescens</i>	1		1						1	
<i>Hygrocybe virginea v ochraceopallida</i>		1								1
<i>Hygrocybe vitellina</i>			1				1			
<i>Microglossum fuscorubens</i>					1					
<i>Microglossum olivaceum</i>	2				1					
<i>Microglossum viride</i>	5									
<i>Porpoloma metapodia</i>	1				1		1			
<i>Trichoglossum hirsutum</i>	4			1	1				2	

APPENDIX II

Table of Records from Northern Ireland, 1996

Key to Code Letters used in Table:

(Spp No refers to number of Waxcap-grassland species recorded from site)

Code	Spp No	Name of Site	Vice county	Grid Ref	Size [Ha]
A	12	Ballycastle Coalfields	Antrim	D155420	67
B	15	Ballymaclary NNR	Londonderry	C697365	20?
C	19	Binevenag	Londonderry	C686311	50?
D	9	Stormont Estate	Down	J3987644	50
E	2	Dundonald High School	Down	J429744	0.5
F	6	Bangor Rectory	Down	J496823	0.25
G	4	Oxford Island	Armagh	J049613	1.0
H	3	Slieve Croob	Down	J307452	20
I	11	Silent Valley	Down	J306214	30
J	12	Glen West	Fermanagh	G977514	1 - 2
K	12	Murlough NNR	Down	J3933	40
L	8	Gkenaan	Antrim	D179270	3
M	9	Bin Mountain environs	Tyrone	H265766	500
N	10	Slievenacloy ASSI	Antrim	J251716	38
O	15	Crawfords Burn House	Down	J469823	3.5
P	13	159, Church Road, Holywood	Down	J408474	0.15
Q	5	11, Westburn Cross	Down	J489816	0.05
R	1	Montalto Estate, Ballynahinch	Down	J363516	2
S	15	Seaforde Estate lawn	Down	J401434	2
T	5	Killard NNR (ASSI & SAC)	Down	J610434	33
U	4	Castlewellan Forest Park	Down	J333369	2.5
V	14	Clandeboy Estate lawn	Down	J473796	1.5
W	23	Monawilkin ASSI	Fermanagh	H086530	175
X	22	Barnett's Park, Belfast	Antrim	J333236	?
Y	3	Twelfth Fields, Edenderry, Belfast	Down	J333216	?
Z	2	Colin Mountain	Antrim	J332607	?

Species	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Totals
<i>Clavaria argillacea</i>													1													1	2
<i>Clavaria vermicularis</i>			1																								1
<i>Clavarioid</i> sp		1	1	2						1	2	1			2	3	1		3			2	4				22
<i>Clavulinopsis corniculata</i>																								1			1
<i>Clavulinopsis fusiformis</i>										1																	1
<i>Clavulinopsis helvola</i>																						1		1			2
<i>Clavulinopsis luteoalba</i>																								1			1
<i>Dermoloma cuneifolium</i>																1											1
<i>Entoloma conferendum</i>																								1			1
<i>Entoloma jubatum</i>																1				1							2
<i>Entoloma porphyrophaeum</i>						1	1														1			1			4
<i>Entoloma</i> sp	3	5	7	2	1	1			2		3		1		3	2			2	1		2	7				42
<i>Geoglossum fallax</i>																								1			1
<i>Geoglossum glutinosum</i>																								1			1
<i>Geoglossum</i> sp		1	1						1	1	1																5
<i>Hygrocybe calyptriformis</i>						1									1	1								1			4
<i>Hygrocybe cantharellus</i>										1		1	1										1				4
<i>Hygrocybe ceracea</i>	1																		1					1	1		5
<i>Hygrocybe chlorophana</i>	1		1	1					1	1	1			1	1	1			1			1	1	1			14
<i>Hygrocybe coccinea</i>	1	1							1	1	1	1	1	1	1	1			1		1		1	1			14
<i>Hygrocybe conica</i>		1	1						1	1	1	1	1		1				1	1			1				11
<i>Hygrocybe flavipes</i>														1		1						1					3
<i>Hygrocybe fornicata</i>		1	1													1	1		1				1				6
<i>Hygrocybe glutinipes</i>		1																					1				2
<i>Hygrocybe insipida</i>		1	1	1							1				1		1		1		1	1	1	1			11
<i>Hygrocybe laeta</i>	1													1													2
<i>Hygrocybe miniata</i>									1	1			1											1		1	5
<i>Hygrocybe persistens</i>		1										1	1	1	1							1	1	1			8
<i>Hygrocybe pratensis</i>	1		1	1	1	1	1		1	1		1	1	1	1	1			1			1	1	1	1		18
<i>Hygrocybe psittacina</i>	1		1			1	1	1	1	1		1		1					1			1	1	1			13
<i>Hygrocybe puricea</i>	1		1							1				1	1				1			1	1	1			9
<i>Hygrocybe quieta</i>											1																1
<i>Hygrocybe reidii</i>			1																								1
<i>Hygrocybe russocoriacea</i>		1		1					1					1	1						1		1				7
<i>Hygrocybe</i> sp	1							1																			2
<i>Hygrocybe splendidissima</i>																							1				1
<i>Hygrocybe unguinosa</i>																1											1
<i>Hygrocybe virginea</i> v <i>ochraceopallida</i>																								1			1
<i>Hygrocybe virginea</i> v <i>virginea</i>	1	1	1	1		1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	24
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
Site Totals	12	15	19	9	2	6	4	3	11	12	12	8	9	10	15	13	5	1	15	5	4	14	23	22	3	2	254

APPENDIX III

Summary Table of All Records

Key to Headings used in Table:

Ireland	Totals of records in Appendix I
SE Eng	Dennis, 1995 (Waxcap-grassland records from four counties in SE England)
Hebrides	Dennis, 1986 (Waxcap-grassland records from the Hebrides)
Waxcap Survey	Records from British Mycological Society Waxcap-grassland pilot survey (1996) - excluding Irish records which are to be found in Appendices I & II

Species	Ireland	SE Eng	Hebrides	Waxcap	Survey
<i>Camarophyllopsis atropuncta</i>		1			
<i>Camarophyllopsis foetens</i>		1	3		
<i>Camarophyllopsis hymenoccephala</i>		1			
<i>Camarophyllopsis schulzeri</i>		1	1	1	
<i>Clavaria acuta</i>	5	4	2	8	
<i>Clavaria affinis</i>		1			
<i>Clavaria argillacea</i>	7	3		8	
<i>Clavaria asterospora</i>		1			
<i>Clavaria fumosa</i>	6	2	4	8	
<i>Clavaria greletii</i>				1	
<i>Clavaria incarnata</i>	1	3		1	
<i>Clavaria purpurea</i>	1	1			
<i>Clavaria rosea</i>				1	
<i>Clavaria rosea v subglobosa</i>		1			
<i>Clavaria straminea</i>	1	3		2	
<i>Clavaria tenuipes</i>		4		1	
<i>Clavaria vermicularis</i>	15	4	6	9	
<i>Clavaria zollingeri</i>		2	3	2	
<i>Clavulinopsis cinereoides</i>	1	2		1	
<i>Clavulinopsis corniculata</i>	20	4	7	17	
<i>Clavulinopsis fusiformis</i>	13	4	6	9	
<i>Clavulinopsis helvola</i>	17	4	6	21	
<i>Clavulinopsis laeticolor</i>	5	4	1	4	
<i>Clavulinopsis luteo-ochracea</i>		2			
<i>Clavulinopsis luteoalba</i>	8	4	1	11	
<i>Clavulinopsis luteoalba v latispora</i>		1		1	
<i>Clavulinopsis subtilis</i>	3			2	
<i>Clavulinopsis umbrinella</i>	3	4			
<i>Dermoloma cuneifolium</i>	8	4		9	
<i>Dermoloma josserandii</i>	1			1	
<i>Dermoloma pseudocuneifolium</i>		1		1	
<i>Entoloma aethiops</i>	3	1	1		
<i>Entoloma ameides</i>	5	3	3	9	
<i>Entoloma anatinum</i>		1	4	1	
<i>Entoloma asprellum</i>	1	1		2	
<i>Entoloma atrocaeruleum</i>	3			3	
<i>Entoloma atromarginatum</i>	1		3	3	
<i>Entoloma bloxamii</i>	4	3	2		
<i>Entoloma brassicolens</i>	1				
<i>Entoloma caeruleum</i>			2	1	

Species	Ireland	SE Eng	Hebrides	Waxcap Survey
<i>Entoloma caesiotinctum</i>	1		2	1
<i>Entoloma carneogriseum</i>	1			
<i>Entoloma cephalotrichum</i>		2		1
<i>Entoloma cetratum</i>	3	4	4	1
<i>Entoloma chalybaeum</i>	6	3	5	2
<i>Entoloma chalybaeum v lazulinum</i>	2	3	3	5
<i>Entoloma chloropolium</i>	1			
<i>Entoloma clandestinum</i>	1		3	
<i>Entoloma conferendum</i>	19	4	12	10
<i>Entoloma conferendum v pusillum</i>		1		
<i>Entoloma corvinum</i>	3	2	5	4
<i>Entoloma cruentatum</i>				2
<i>Entoloma cuspidiferum</i>		1	2	
<i>Entoloma cyaneoviridescens</i>			1	2
<i>Entoloma elodes</i>	8	2	5	
<i>Entoloma excentricum</i>	4	1		
<i>Entoloma exile</i>	1		4	2
<i>Entoloma favrei</i>			1	
<i>Entoloma fernandae</i>	1		3	
<i>Entoloma formosum</i>	4	1	4	1
<i>Entoloma fuscomarginatum</i>	3	1	1	
<i>Entoloma griseocyaneum</i>	1	4	5	3
<i>Entoloma griseorubidum</i>	3	4		
<i>Entoloma hebes</i>		1	2	7
<i>Entoloma hirtipes</i>	2	3	1	4
<i>Entoloma hispidulum</i>	2			
<i>Entoloma huijsmanii</i>	1			
<i>Entoloma icterinum</i>	2	3	2	1
<i>Entoloma incanum</i>	2	3	1	1
<i>Entoloma incarnatofuscescens</i>	1	1	1	1
<i>Entoloma indutum</i>		1		
<i>Entoloma infula</i>	7	3	3	4
<i>Entoloma inutile</i>			2	
<i>Entoloma jennyae</i>	1			
<i>Entoloma jubatum</i>	2	3	5	3
<i>Entoloma juncinum</i>	1	4	2	1
<i>Entoloma kervernii</i>				1
<i>Entoloma lampropus</i>	10	4	3	5
<i>Entoloma lividocyanulum</i>			3	
<i>Entoloma longistriatum</i>	1			1

Species	Ireland	SE Eng	Hebrides	Waxcap Survey
Entoloma longistriatum v microsporum	1			1
Entoloma longistriatum v sarcitulum	4	2	4	4
Entoloma lucidum	1	2	1	4
Entoloma mammosum	1	3	3	5
Entoloma minutum		2		
Entoloma mougeotii	5	3	1	2
Entoloma mougeotii v incarnatum	1			
Entoloma neglectum		1	1	1
Entoloma nigellum				2
Entoloma nigroviolaceum			3	
Entoloma occultopigmentatum	1			
Entoloma olorum				2
Entoloma ortonii	1	3	3	2
Entoloma pallens		1		
Entoloma papillatum	5	4	3	11
Entoloma parkensis		1		
Entoloma pernitrosum		2		
Entoloma poliopus				1
Entoloma poliopus v discolor	1			
Entoloma poliopus v parvisporigerum	1			2
Entoloma porphyrophaeum	8	4	7	12
Entoloma prunuloides	6	3	6	2
Entoloma pseudoturci	4			
Entoloma queletii	1			
Entoloma querquedula		2	1	
Entoloma rhombisporum		2	1	3
Entoloma romagnesii		2		
Entoloma roseum		1	2	2
Entoloma rufocarneum	4	1		1
Entoloma sericatum	1	2	2	1
Entoloma sericellum	9	4	10	12
Entoloma sericeum	10	4	5	10
Entoloma serrulatum	9	4	9	5
Entoloma solstitiale	2	2	1	1
Entoloma strigosissima		1		
Entoloma triste	1			
Entoloma turbidum	1			
Entoloma turci	3	1	4	1
Entoloma undatum	4	4	1	1
Entoloma vernum			4	

Species	Ireland	SE Eng	Hebrides	Waxcap Survey
<i>Entoloma versatile</i>	1	1	1	1
<i>Entoloma vinaceum</i>	1			
<i>Entoloma xanthochroum</i>			1	
<i>Geoglossum cookeianum</i>	4	4	3	2
<i>Geoglossum difforme</i>				2
<i>Geoglossum elongatum</i>	1		1	
<i>Geoglossum fallax</i>	1	4	4	3
<i>Geoglossum glabrum</i>	6			
<i>Geoglossum glutinosum</i>	4	4	6	4
<i>Geoglossum nigrum</i>		3	7	1
<i>Geoglossum simile</i>				1
<i>Geoglossum starbaeckii</i>		1	2	
<i>Geoglossum umbratile</i>	1			1
<i>Geoglossum vleugelianum</i>		1		1
<i>Hygrocybe aurantia</i>		1		1
<i>Hygrocybe aurantiosplendens</i>		2	5	1
<i>Hygrocybe calciphila</i>	2	1		
<i>Hygrocybe calyptriformis</i>	13	4	2	13
<i>Hygrocybe cantharellus</i>	9	1	7	1
<i>Hygrocybe ceracea</i>	15	4	8	16
<i>Hygrocybe chlorophana</i>	31	4	10	24
<i>Hygrocybe chlorophana v aurantiaca</i>	4			4
<i>Hygrocybe citrinovirens</i>	7	3	3	8
<i>Hygrocybe coccinea</i>	32	4	7	26
<i>Hygrocybe coccineocrenata</i>		1	3	
<i>Hygrocybe colemanniana</i>	4	1	1	7
<i>Hygrocybe conica</i>	32	4	11	35
<i>Hygrocybe conica v chloroides</i>	2			2
<i>Hygrocybe conica v conicopalustris</i>	2			
<i>Hygrocybe conica v olivaceonigra</i>	2			1
<i>Hygrocybe conicoides</i>	2	1	5	
<i>Hygrocybe constrictospora</i>	1			
<i>Hygrocybe flavescens</i>		4		7
<i>Hygrocybe flavipes</i>	6	1	4	3
<i>Hygrocybe fornicata</i>	10	3	4	7
<i>Hygrocybe glutinipes</i>	3	4	2	9
<i>Hygrocybe helobia</i>				2
<i>Hygrocybe insipida</i>	15	3	4	16
<i>Hygrocybe intermedia</i>	6	2	4	6
<i>Hygrocybe konradii</i>	1	2	1	1

Species	Ireland	SE Eng	Hebrides	Waxcap Survey
<i>Hygrocybe lacmus</i>			1	1
<i>Hygrocybe laeta</i>	11	4	8	11
<i>Hygrocybe lilacina</i>			1	
<i>Hygrocybe marchii</i>				4
<i>Hygrocybe miniata</i>	15	4	8	10
<i>Hygrocybe nitrata</i>	4	3	6	3
<i>Hygrocybe ovina</i>	7	1	2	
<i>Hygrocybe persistens</i>	12	3	12	7
<i>Hygrocybe persistens v cuspidata</i>			3	
<i>Hygrocybe pratensis</i>	33	4	10	28
<i>Hygrocybe pratensis v pallida</i>	3	1	6	8
<i>Hygrocybe psittacina</i>	30	4	8	43
<i>Hygrocybe psittacina v perplexa</i>		2	1	
<i>Hygrocybe punicea</i>	23	4	7	15
<i>Hygrocybe quieta</i>	3	3	8	10
<i>Hygrocybe reai</i>	5	2	3	5
<i>Hygrocybe reidii</i>	4	3	7	10
<i>Hygrocybe russocoriacea</i>	12	3	7	13
<i>Hygrocybe spadicea</i>			1	1
<i>Hygrocybe splendidissima</i>	4	2	4	3
<i>Hygrocybe substrangulata</i>	1	1	1	3
<i>Hygrocybe turunda</i>	1	3	1	1
<i>Hygrocybe unguinosa</i>	7	4	5	15
<i>Hygrocybe virginea</i>	42	4	8	45
<i>Hygrocybe virginea v fuscescens</i>	3		1	5
<i>Hygrocybe virginea v ochraceopallida</i>	2			4
<i>Hygrocybe vitellina</i>	2	3	2	5
<i>Hygrocybe xanthochroa</i>				1
<i>Microglossum fusciorubens</i>	1			
<i>Microglossum olivaceum</i>	3	1	2	
<i>Microglossum viride</i>	5	3	1	
<i>Porpoloma metapodium</i>	3	1	3	2
<i>Ramariopsis kunzei</i>		3	3	1
<i>Thuemenidium atropurpureum</i>			3	
<i>Trichoglossum hirsutum</i>	8	4	5	3
<i>Trichoglossum walteri</i>				2

APPENDIX IV

Occurrence of Species by NVC Community

Species	NVC Community
<i>Camarophylloopsis atropuncta</i>	CG, MG
<i>Camarophylloopsis foetens</i>	CG, MG
<i>Camarophylloopsis hymenoccephala</i>	?
<i>Camarophylloopsis schulzeri</i>	CG
<i>Clavaria acuta</i>	SD, U4
<i>Clavaria affinis</i>	?
<i>Clavaria argillacea</i>	H1,9,11,12,16,21, MC, SD, U4
<i>Clavaria asterospora</i>	SD
<i>Clavaria fumosa</i>	U4
<i>Clavaria greletii</i>	?
<i>Clavaria incarnata</i>	MG
<i>Clavaria purpurea</i>	?
<i>Clavaria rosea</i>	?
<i>Clavaria rosea v subglobosa</i>	?
<i>Clavaria straminea</i>	U4
<i>Clavaria tenuipes</i>	?
<i>Clavaria vermicularis</i>	MG5, SD14, U1, U4
<i>Clavaria zollingeri</i>	MG5
<i>Clavulinopsis cinereooides</i>	?
<i>Clavulinopsis corniculata</i>	H1, H9, MC, U1, U4
<i>Clavulinopsis fusiformis</i>	SD, U4
<i>Clavulinopsis helvola</i>	H1, H9, MC, MG5, U4
<i>Clavulinopsis laeticolor</i>	U1, U4
<i>Clavulinopsis luteo-ochracea</i>	?
<i>Clavulinopsis luteoalba</i>	MC, U1, U4
<i>Clavulinopsis luteoalba v latispora</i>	?
<i>Clavulinopsis subtilis</i>	?
<i>Clavulinopsis umbrinella</i>	?
<i>Dermoloma cuneifolium</i>	CG, MG, SD
<i>Dermoloma josserandii</i>	CG
<i>Dermoloma pseudocuneifolium</i>	CG
<i>Entoloma aethiops</i>	?
<i>Entoloma ameides</i>	CG, MG, MG5, MG5c, U
<i>Entoloma anatinum</i>	H, MG, SD
<i>Entoloma asprellum</i>	?
<i>Entoloma atrocaeruleum</i>	MG5c
<i>Entoloma atromarginatum</i>	CG, MG5
<i>Entoloma bloxamii</i>	CG, MG5
<i>Entoloma brassicolens</i>	?
<i>Entoloma caeruleum</i>	?

Species	NVC Community
Entoloma caesiointinctum	?
Entoloma carneogriseum	?
Entoloma cephalotrichum	?
Entoloma cetratum	H1,5,9, M14,15,16, SD
Entoloma chalybaeum	SD14, SD15
Entoloma chalybaeum v lazulinum	MC, U1, U4
Entoloma chloropolium	?
Entoloma clandestinum	?
Entoloma conferendum	M22, MG5,8,9,10, SD14,15,16, U4,6
Entoloma conferendum v pusillum	?
Entoloma corvinum	H, MG5c, SD15, U4
Entoloma cruentatum	H, MG5c, U4b
Entoloma cuspidiferum	?
Entoloma cyaneoviridescens	?
Entoloma elodes	H1, H5, H9, M14-20
Entoloma excentricum	SD
Entoloma exile	MG5c, U
Entoloma favrei	?
Entoloma fernandae	H1, H9, SD11, SD12
Entoloma formosum	U4b
Entoloma fuscomarginatum	?
Entoloma griseocyaneum	?
Entoloma griseorubidum	?
Entoloma hebes	MG5c, SD17, U
Entoloma hirtipes	MG4, MG5, MG5c
Entoloma hispidulum	?
Entoloma huijsmanii	?
Entoloma icterinum	?
Entoloma incanum	MC, SD15
Entoloma incarnatofuscescens	?
Entoloma indutum	?
Entoloma infula	M22, MG8, MG9, MG10, SD17
Entoloma inutile	?
Entoloma jennyae	M, M21?
Entoloma jubatum	U4
Entoloma juncinum	U4
Entoloma kervernii	MG5?
Entoloma lampropus	CG, SD16
Entoloma lividocyanulum	CG2
Entoloma longistriatum	CG

Species	NVC Community
<i>Entoloma longistriatum</i> v <i>microsporum</i>	CG, H, M
<i>Entoloma longistriatum</i> v <i>sarcitulum</i>	CG, MG, SD8, U
<i>Entoloma lucidum</i>	U4
<i>Entoloma mammosum</i>	?
<i>Entoloma minutum</i>	?
<i>Entoloma mougeotii</i>	SD16
<i>Entoloma mougeotii</i> v <i>incarnatum</i>	?
<i>Entoloma neglectum</i>	?
<i>Entoloma nigellum</i>	?
<i>Entoloma nigroviolaceum</i>	U
<i>Entoloma occultopigmentatum</i>	?
<i>Entoloma olorum</i>	U
<i>Entoloma ortonii</i>	M, SD17, U4
<i>Entoloma pallens</i>	?
<i>Entoloma papillatum</i>	MG5, SD14,15, U1, U4
<i>Entoloma parkensis</i>	CG
<i>Entoloma pernitrosum</i>	?
<i>Entoloma poliopus</i>	M, SD14,15, U4b
<i>Entoloma poliopus</i> v <i>discolor</i>	?
<i>Entoloma poliopus</i> v <i>parvisporigerum</i>	SD, U
<i>Entoloma porphyrophæum</i>	M24,25, MG5,5a,5c, SD15,16, U4
<i>Entoloma prunuloides</i>	U
<i>Entoloma pseudoturci</i>	M?
<i>Entoloma queletii</i>	?
<i>Entoloma querquedula</i>	CG
<i>Entoloma rhombisporum</i>	M, U4
<i>Entoloma romagnesii</i>	?
<i>Entoloma roseum</i>	?
<i>Entoloma rufocarneum</i>	?
<i>Entoloma sericatum</i>	?
<i>Entoloma sericellum</i>	M27, M28, SD17, U1, U4
<i>Entoloma sericeum</i>	M22, MC, MG4,5,8,9,10, SD14,15,16, U1,4
<i>Entoloma serrulatum</i>	MG3, MG5, MG5c, SD14, SD15, U1, U4b
<i>Entoloma solstitiale</i>	?
<i>Entoloma strigosissima</i>	?
<i>Entoloma triste</i>	?
<i>Entoloma turbidum</i>	?
<i>Entoloma turci</i>	H1, H2, MC, SD15
<i>Entoloma undatum</i>	SD14, SD15
<i>Entoloma verum</i>	?

Species	NVC Community
<i>Entoloma versatile</i>	?
<i>Entoloma vinaceum</i>	?
<i>Entoloma xanthochroum</i>	?
<i>Geoglossum cookeianum</i>	SD14,15, U4
<i>Geoglossum difforme</i>	?
<i>Geoglossum elongatum</i>	?
<i>Geoglossum fallax</i>	SD, U4
<i>Geoglossum glabrum</i>	?
<i>Geoglossum glutinosum</i>	MC, MG, U4
<i>Geoglossum nigrum</i>	?
<i>Geoglossum simile</i>	?
<i>Geoglossum starbaeckii</i>	U
<i>Geoglossum umbratile</i>	SD14,15
<i>Geoglossum vleugelianum</i>	U
<i>Hygrocybe aurantia</i>	SD
<i>Hygrocybe aurantiosplendens</i>	CG, U4
<i>Hygrocybe calcephila</i>	CG
<i>Hygrocybe calyptriformis</i>	H1, H9, MG5, MG5c, U4
<i>Hygrocybe cantharellus</i>	H, SD, U4
<i>Hygrocybe ceracea</i>	CG, MG3,5, SD14,15,16, U4
<i>Hygrocybe chlorophana</i>	CG, MG5, SD, U4
<i>Hygrocybe chlorophana v aurantiaca</i>	CG, MG5, U
<i>Hygrocybe citrinovirens</i>	CG2, CG8, MG1, MG3, MG5, U4
<i>Hygrocybe coccinea</i>	CG, MG5, MG5a, MG5c, U4, U5
<i>Hygrocybe coccineocrenata</i>	M, M24
<i>Hygrocybe colemanniana</i>	CG4, CG5
<i>Hygrocybe conica</i>	CG, M24,25, MC, MG5, MG5c, SD14,15, U1, U4
<i>Hygrocybe conica v chloroides</i>	?
<i>Hygrocybe conica v conicopalustris</i>	M
<i>Hygrocybe conica v olivaceonigra</i>	?
<i>Hygrocybe conicoides</i>	SD14, SD15
<i>Hygrocybe constrictospora</i>	SD14,15
<i>Hygrocybe flavescens</i>	MG5, U4
<i>Hygrocybe flavipes</i>	CG, MG5, SD16
<i>Hygrocybe fornicata</i>	CG, MG5a, MG5c, U4
<i>Hygrocybe glutinipes</i>	CG, M24, M25, MG5, MG5c, U4
<i>Hygrocybe helobia</i>	M, U4
<i>Hygrocybe insipida</i>	MG5, MG5c, SD17, U4, U4b
<i>Hygrocybe intermedia</i>	CG2, CG4, CG5, MG5, MG5c, U4
<i>Hygrocybe konradii</i>	CG2

Species	NVC Community
<i>Hygrocybe lacmus</i>	U2, U3, U4, U5
<i>Hygrocybe laeta</i>	H, U4, U4b, U6
<i>Hygrocybe lilacina</i>	?
<i>Hygrocybe marchii</i>	CG, MG, MG5c, U4
<i>Hygrocybe miniata</i>	H, MG5, SD14, SD15, U4
<i>Hygrocybe nitrata</i>	MG5, SD13, U4
<i>Hygrocybe ovina</i>	SD, U4
<i>Hygrocybe persistens</i>	CG, MC, MG5, SD14, SD15
<i>Hygrocybe persistens v cuspidata</i>	CG, SD14, SD15
<i>Hygrocybe pratensis</i>	CG2, M24, MC, MG1,2,4,5a,c, SD14, U4
<i>Hygrocybe pratensis v pallida</i>	CG2, M23a, MG5a,c, SD14, SD15
<i>Hygrocybe psittacina</i>	CG, MC, MG4,5a,c, SD14,15,17, U1,4
<i>Hygrocybe psittacina v perplexa</i>	MG5
<i>Hygrocybe punicea</i>	CG4, CG5, CG9, MG5a,c, SD14, SD17
<i>Hygrocybe quieta</i>	CG, MG5, U4
<i>Hygrocybe reai</i>	CG, MG5, SD14, SD15, U4
<i>Hygrocybe reidii</i>	MG5a,c, U4
<i>Hygrocybe russocoriacea</i>	CG9, MG1, MG2, MG4, MG5, SD14, SD15, U4, U5
<i>Hygrocybe spadicea</i>	CG, MG5, U
<i>Hygrocybe splendidissima</i>	H1, H9, MG5, MG5c, SD15, U4
<i>Hygrocybe substrangulata</i>	SD, U4
<i>Hygrocybe turunda</i>	H, U
<i>Hygrocybe unguinosa</i>	CG, MG5, MG5a, U4
<i>Hygrocybe virginea</i>	CG, M24, MC, MG1,2,4,5a,c, SD14,15, U1,4
<i>Hygrocybe virginea v fuscescens</i>	CG, MG5
<i>Hygrocybe virginea v ochraceopallida</i>	MG, SD
<i>Hygrocybe vitellina</i>	MG5, MG5a, SD14, SD15, U4
<i>Hygrocybe xanthochroa</i>	H, U4
<i>Microglossum fuscorubens</i>	?
<i>Microglossum olivaceum</i>	CG1, MG5
<i>Microglossum viride</i>	?
<i>Porpoloma metapodium</i>	CG, MG5, U4
<i>Ramariopsis kunzei</i>	?
<i>Thuemenidium atropurpureum</i>	H11, SD, U
<i>Trichoglossum hirsutum</i>	SD15, U4
<i>Trichoglossum walteri</i>	U4