

STIPITATE HYDNOID FUNGI

Hydnellum, Phellodon, Sarcodon species

Hampshire Biodiversity Partnership

1 INTRODUCTION

The stipitate hydroid tooth fungi are rare species associated with ancient and mature forest systems. They are characterised by a short stalk and spore-bearing teeth on the underside of the cap³.

Of the 14 species included in the UK Biodiversity Action Plan *Hydnellum conrescens*, *Hydnellum scrobiculatum*, *Hydnellum spongiosipes*, *Phellodon confluens*, *Phellodon melaleucus*, *Sarcodon squamosus* and *Sarcodon scabrosus* have been identified in Hampshire^{6,7}.

Phellodon niger does not appear in the UK Grouped Action Plan². The reason for the omission is unclear as in a European context it is considered more threatened than some other species⁸. In the New Forest *Phellodon niger* is poorly distributed and there is some evidence that the species may be in decline, as a result it has been included in this Action Plan^{6,7}.

Hydnellum scrobiculatum and *Sarcodon squamosus* have been identified in the New Forest but are species that associate with pine and as such are outside of their normal distribution. Therefore, they remain on the list but are low priority⁶.

2 CURRENT STATUS

2.1 Ecology and Habitat Requirements

The exact ecological requirements of stipitate hydroid fungi vary according to species although several species are often found in close proximity and presumably require similar conditions. The stipitate hydroid fungi found in Hampshire form mycorrhizal associations with broadleaved trees such as Oak, Sweet chestnut and Beech³. In the New Forest, species associated with pine are considered to be outside their normal range⁶.

Stipitate hydroid fungi need soils which are poor in nutrients but are found on a variety of pH. Most species fruit preferentially on raised ground such as ancient boundary banks and stream sides, and in areas lacking dense vegetation which may inhibit spore dispersal.

Identification of individual species is beyond the scope of this Action Plan, readers are referred to Pegler *et al.* (1997)³. In the past a lack of accurate identification skills and confusion over nomenclature may have led to inaccurate records.

2.2 Population and Distribution

It is difficult to determine the exact distribution of stipitate hydroid fungi due to the difficulties in identification and their inconspicuous nature; fruit bodies may not appear for several years.

Most species are widespread but uncommon out of their stronghold areas in the Caledonian pine forests of Scotland, Windsor Forest, Berkshire and the New Forest, Hampshire².

In the New Forest populations have been found on the poor, acidic soils of the Barton Sands and the base-enriched soils of the Headdon Beds^{6,7}.

2.3 Important Sites

In the New Forest, sites with a continuity of broad-leaved pasture woodland are important for stipitate hydroid fungi.

Twenty-nine sites within the New Forest Candidate Special Area of Conservation (cSAC) have been identified as having records of stipitate hydroid fungi (Ewald, 2001). The most significant of these include, Brock Hill, East End Woods, Holmsley Inclosure, Knightwood Inclosure, Mark Ash Wood, Norleywood, Set Thorns Inclosure, Stubbs Wood, Wormstall Wood and Worts Gutter^{6,7}.

Outside of the New Forest scattered records exist from the Tertiary gravels and Greensand deposits in the north of the county^{6,7}.

2.4 Protection

All the species receive general protection under the Wildlife and Countryside Act 1981, although none are specially protected under schedule 8².

In the Provisional, British red data list of fungi¹ *Hydnellum conrescens*, *Phellodon melaleucus* and *Sarcodon squamosus* are considered Vulnerable.

Hydnellum scrobiculatum, *Phellodon confluens* and *Sarcodon scabrosus* are considered Endangered. *Hydnellum spongiosipes* and *Phellodon niger* are considered rare.

In the European context *Phellodon confluens* is classified Group A – high level concern. *Hydnellum scrobiculatum*, *Phellodon niger* and *Sarcodon scabrosus* are classified Group B – medium level concern. *Hydnellum conrescens*, *Hydnellum spongiosipes*, *Phellodon melaleucus* and *Sarcodon squamosus* are classified Group C – low level concern⁸.

Many of the stipitate hydroid sites are protected within designated areas such as SSSI's or nature reserves. In the New Forest the sites lie within the New Forest cSAC⁹. The UK Biodiversity Action Plan states that there should be appropriate management of these sites to ensure the survival of stipitate hydroid fungi.

3 CURRENT FACTORS AFFECTING STIPITATE HYDROID FUNGI

- Continuity of mature woodland is essential for the survival of stipitate hydroid fungi. The threat of inappropriate management of woodlands or the loss of broadleaved woodlands to commercial forestry are the main factors affecting these species⁵.
- Other threats include eutrophication of soils for the deposition of atmospheric nitrogen and from fertilizer run-off from farms. This is not perceived to be a major threat in the New Forest where the large area of semi-natural habitat acts as a natural buffer to polluting influences⁵.
- In order to fruit these species need the correct environmental conditions. As a result of environmental changes, such as global warming these conditions may not be met, which could have a negative affect on species status in the long term. Research is needed to determine the requirements of stipitate hydroid

fungi and their response to environmental change⁵.

4 CURRENT ACTION

4.1 National

- The UK Biodiversity Action Plan Fungi Working Group are co-ordinating on-going work on the conservation and research of stipitate hydroid fungi.
- Invasive species removal has been conducted by the Bucks, Berks and Oxon Wildlife Trust, the British Mycological Society and the Crown Estate at Windsor Forest, where rhododendron was threatening a stipitate hydroid site⁹. Should this pose a threat at any of the Hampshire sites in the future similar action would need to be taken.
- A three year survey in Scotland funded by Scottish National Heritage was completed in 2001 to provide a baseline against which future changes in the distribution and status of these species can be monitored⁵.

4.2 Local

- In 1999 the Hampshire Wildlife Trust, with volunteers from the Hampshire Fungus Group and others, undertook a survey of the New Forest for stipitate hydroid fungi⁶.

The report collated all available data to determine the distribution and status of these species within the New Forest and highlighted the need for future monitoring.

- In the autumn of 2000 the survey was repeated with funding from English Nature which provided a clearer picture of distribution and possible declines in some of the species including *Phellodon niger*⁷.

5 OBJECTIVES

The overall aim of this Plan is to protect and increase the distribution and population of stipitate hydroid fungi in Hampshire. This broad aim translates the specific objectives set out below. Where feasible, objectives have been allocated targets against which achievement can be measured. The 'Proposed Action' table in section 6 identifies the action to be taken to meet these objectives.

	OBJECTIVES	PROPOSED ACTIONS
A	Maintain existing populations of stipitate hydroid fungi by preventing loss and damage of sites significant for these species.	1-8, 10
B	Enhance the status of stipitate hydroid fungi in Hampshire by creation and suitable management of broad-leaved woodland.	3-4, 6-10
C	Establish and maintain a comprehensive understanding of stipitate hydroid distribution, status and ecological requirements in the New Forest and other sites in Hampshire through appropriate research, survey and monitoring.	11-16
D	Promote communication, education and awareness of the status and needs of stipitate hydroid fungi particularly amongst land owners and managers.	17-18

6 PROPOSED ACTION

The following table lists the actions required to achieve the objectives set out in this Plan. Each action has been assigned to one or more 'Key Partners'. Key Partners are those organisations that are expected to take responsibility for the delivery of the actions assigned to them, according to the targets set in this Plan. Other organisations may also be involved in the delivery of action, and they have been indicated in the 'Others' column.

Key to symbols in Action Table:

- ◆ To be completed by the indicated year. Work can commence at any time before the due date, at the discretion of the Key Partner.
- ◆⇨ Design or production of a plan/strategy to be completed by this year and then followed by its implementation.
- ➡ To start by the indicated year and usually followed by ongoing work. A start arrow in year 2003 can indicate a new action, or a new impetus to existing work.
- ⇨ Work that has already begun and is ongoing.

	ACTION	DELIVERY BY		YEAR						MEETS OBJ.
		Key Partner	Others	2003	2004	2005	2006	2010	2015	
<p style="text-align: center;">◆ = complete by ➡ = start by ⇨ = ongoing ◆⇨ = design by and implement</p>										
Site and Species Policy and Protection										
1	Where populations of stipitate hydroid fungi are identified outside of designated conservation areas, consider designation of SSSIs, SINCs, etc in line with current criteria.	EN	LAs, HCC	➡		◆				A
2	Review the effectiveness of existing site protection measures in preventing deterioration and loss of stipitate hydroid fungi habitats.	EN	FE, HWT	➡		◆				A
3	Ensure that the management plans for the New Forest Candidate Special Area of Conservation (NF cSAC) are adhered to, and that the management of the pasture woodlands within the New Forest is compatible with the habitat requirements of the species.	FE	EN	⇨	⇨	⇨	⇨	⇨	⇨	A, B
4	Ensure that the Forest Design Plan for the New Forest continues to take account of the needs of stipitate hydroid fungi to increase the area of suitable habitat.	FE		⇨	⇨	⇨	⇨	⇨	⇨	A, B

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Site and Species Management										
5	Ensure favourable management of sites with records of stipitate hydroid fungi to maintain the current distribution and status of the species.	FE		↔	↔	↔	↔	↔	↔	A
6	Ensure retention of woodbanks and ditches, along with their trees. Identify mycologically significant banks especially where they may come under threat from track widening or maintenance.	FE		↔	↔	↔	↔	↔	↔	A, B
7	Proposed management such as coppicing, should be carefully considered before any work is undertaken. Experimental plots could be used to judge the most appropriate management without damaging the whole site.	FE		↔	↔	↔	↔	↔	↔	A, B
8	Scrub clearance which may not pose a direct threat to these species, should be undertaken with care so as not to fell the wrong trees.	FE		↔	↔	↔	↔	↔	↔	A, B
9	Endeavour to increase the distribution of stipitate hydroid fungi by appropriate management of sites adjacent to existing populations.	FE		↔	↔	↔	↔	↔	↔	B
10	Ensure the control/eradication of invasive species such as Rhododendron, which may pose a threat to the continued survival of the species.	FE		↔	↔	↔	↔	↔	↔	A, B
Research, Survey and Monitoring										
11	Survey all known and potential sites in the New Forest for stipitate hydroid fungi to determine the exact distribution and status of these species.	HWT	FE, HFG	◆						C
12	Repeat full survey of the New Forest to monitor distribution and status of stipitate hydroid fungi	HWT	FE, HFG				◆↔			C
13	Survey all known and potential sites outside of the New Forest to determine the distribution and status of stipitate hydroid fungi outside of their core area.	HWT	HFG, LAs, HCC					◆↔		C
14	Collect material from Hampshire and other core areas to find DNA sequencing protocols to reinvestigate the classical taxonomy.	FCF	BMS, EN, PL	◆↔				◆		C
15	Investigate species ecology to determine genetic diversity in local populations, fruiting behaviour and relationship with host trees.	FCF	BMS, EN, PL	◆↔				◆		C
16	Aim to improve management protocol through research at sites rich in stipitate hydroid fungi in the New Forest. To determine what factors make them suitable including host species, ground temperature, air temperature, humidity and species competition.	FCF	BMS, EN, PL	◆↔				◆		C
Communication, Awareness and Promotion										
17	Create an easy to read document to ensure that land owners are aware of extant populations and the importance of stipitate hydroid fungi in management proposals.	HWT		◆↔	◆					D
18	Provide data to county and national databases to ensure up-to-date red	HWT,	PL, BMS	↔	↔	↔	↔	↔	↔	D

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	lists of stipitate hydroid fungi.	HBIC, JNCC								
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KEY TO ORGANISATIONS:

BMS British Mycological Society

EN English Nature

FE Forest Enterprise

HBIC Hampshire Biodiversity Information Centre

HCC Hampshire County Council

HFG Hampshire Fungus Group

HWT Hampshire Wildlife Trust

JNCC Joint Nature Conservancy Council

LAs Local Authorities

PL Plant Life

SNH Scottish National Heritage

FCF Fungus Conservation Forum

REFERENCES

1. A provisional Red Data List of British fungi, B Ing *Mycologist* 6: 124-128, 1992.
2. ***Biodiversity: The UK Steering Group Report, Volume 2 Action Plans***, Department of the Environment, HMSO, 1995.
3. ***British Chantarelles and Tooth Fungi***, D N Pegler, P J Roberts and B M Spooner, Royal Botanic Gardens, London, 1997.
4. British tooth-fungi and their conservation, P R Marren and G Dickson, *British Wildlife* 11 (6), 401-409, 2000.
5. ***Stipitate Hydroid Fungi in England. No. 420 – English Nature Research Reports***, P Marren, English Nature, 2000 (unpublished).
6. ***Survey of the New Forest for Stipitate Hydroid fungi***, N Ewald (Ed.) Hampshire Wildlife Trust, 2000 (unpublished).
7. ***Survey of the New Forest for Stipitate Hydroid fungi***, N Ewald (Ed.) Hampshire Wildlife Trust, 2001 (unpublished).
8. Towards a Red List of Endangered European Macrofungi, ***Fungi of Europe***, B Ing, D Pegler, D Boddy, Kirk, Royal Botanic Gardens, Kew, 1993.
9. Westerhoff, D. and Wright R. (2001) The New Forest (SAC) Management Plan. English Nature.

This is one of many Habitat, Species and Topic Action Plans being prepared by the Hampshire Biodiversity Partnership. It will be monitored by the Partnership and fully reviewed.

This species action plan has been prepared by Naomi Ewald on behalf of the Hampshire Biodiversity Partnership.

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