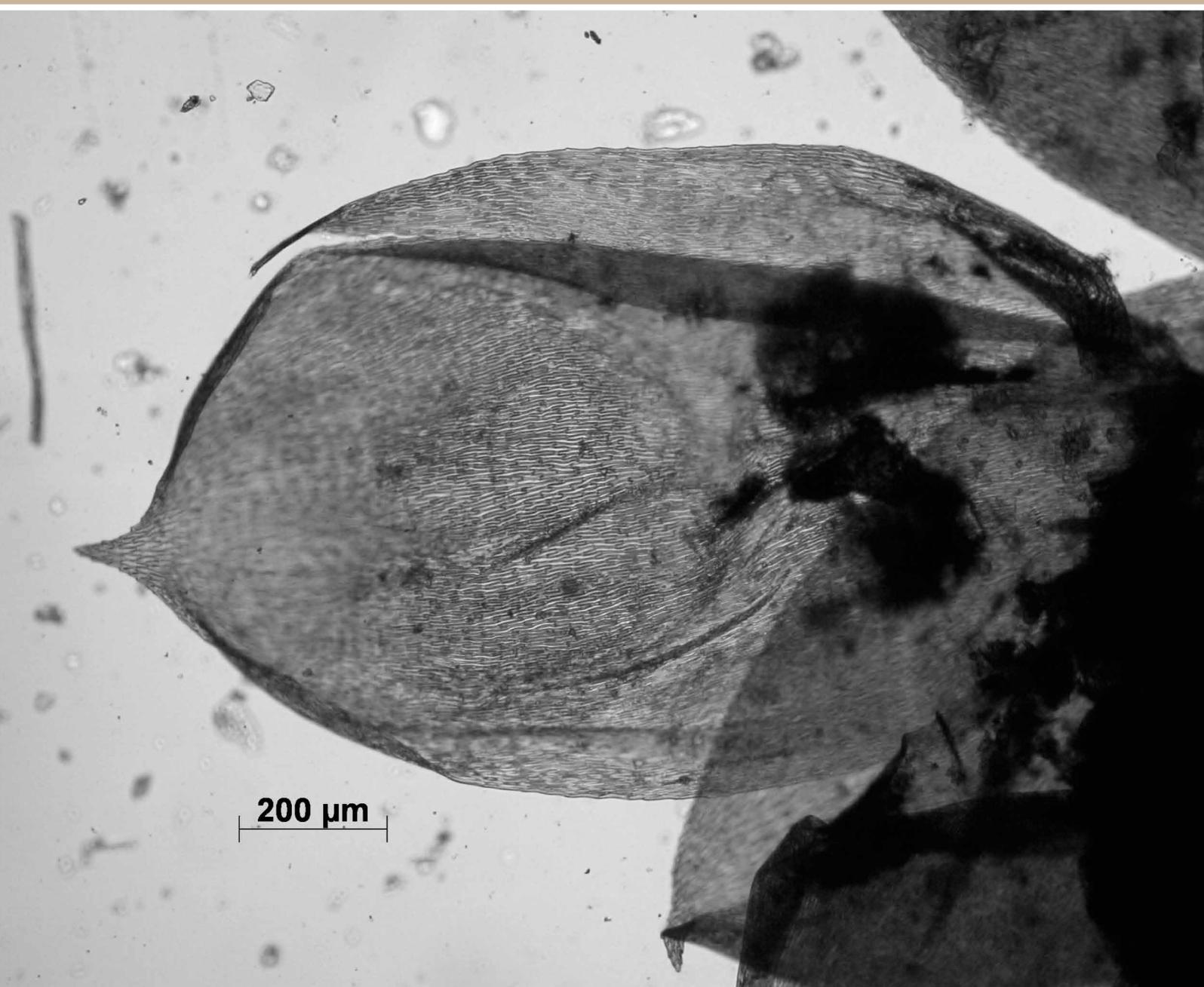


RESEARCH REPORT SERIES no. 49-2012

SILBURY HILL, WILTSHIRE MOSSES FROM THE 2007/8 EXCAVATIONS

ENVIRONMENTAL STUDIES REPORT

Allan Hall



This report has been prepared for use on the internet and the images within it have been down-sampled to optimise downloading and printing speeds.

Please note that as a result of this down-sampling the images are not of the highest quality and some of the fine detail may be lost. Any person wishing to obtain a high resolution copy of this report should refer to the ordering information on the following page.

Research Report Series 49-2012

SILBURY HILL, WILTSHIRE

Mosses from the 2007/8 Excavations

Allan Hall

NGR: SU 1001 6853

© English Heritage

ISSN 2046-9799 (Print)

ISSN 2046-9802 (Online)

The Research Report Series incorporates reports by the expert teams within the Investigation & Analysis Division of the Heritage Protection Department of English Heritage, alongside contributions from other parts of the organisation. It replaces the former Centre for Archaeology Reports Series, the Archaeological Investigation Report Series, the Architectural Investigation Report Series, and the Research Department Report Series.

Many of the Research Reports are of an interim nature and serve to make available the results of specialist investigations in advance of full publication. They are not usually subject to external refereeing, and their conclusions may sometimes have to be modified in the light of information not available at the time of the investigation. Where no final project report is available, readers must consult the author before citing these reports in any publication. Opinions expressed in Research Reports are those of the author(s) and are not necessarily those of English Heritage.

Requests for further hard copies, after the initial print run, can be made by emailing:

Res.reports@english-heritage.org.uk

or by writing to:

English Heritage, Fort Cumberland, Fort Cumberland Road, Eastney, Portsmouth PO4 9LD

Please note that a charge will be made to cover printing and postage.

SUMMARY

This report presents the detailed results of the analysis of the mosses recovered from samples taken as part of 2007/8 excavations undertaken as part of the Silbury Hill Conservation Project. It provides the supporting data for the discussion of the environmental evidence discussed in the excavation monograph (Campbell *et al* 2013).

Mosses were present in deposits close to the centre of the Hill and within the earliest phases of construction, though samples from the Old Land Surface contained very few and these were poorly preserved and therefore not analysed in detail. The mosses were identified from contexts containing different mixtures of turves and top soil that formed the material from which a series of organic mounds were constructed, as well as material used to back fill two pits and from an organic layer within layers dumped on top of the organic mounds. The taxa identified are broadly similar to those recovered from the 1968-9 intervention and are generally typical of chalk grassland.

ARCHIVE LOCATION

The archive is currently at Fort Cumberland, Portsmouth. It will be deposited at the Alexander Keiller Museum, Avebury, Wiltshire.

DATE OF RESEARCH:

March 2009

CONTACT DETAILS

Allan Hall, formerly of Department of Archaeology, University of York, King's Manor, York YO1 7EP

CONTENTS

Background.....	1
Results	1
Discussion.....	5
References.....	7

BACKGROUND

Small quantities of moss stems and leaves preserved within deposits at Silbury Hill, Wiltshire, excavated in 2007/8 by English Heritage as part of the Silbury Conservation Project were submitted by Gill Campbell for identification. Further details regarding these samples are given in Campbell (2011).

While some moss remains were recovered from the Old Land Surface surviving beneath the monument these were few and poorly preserved. Larger assemblages were recovered from anoxic deposits within the earlier phases of mound construction where a mixture of turves and topsoil was used. These phases comprised a series of organic mounds two pits and an organic layer recorded within further dumping layers that sealed these contexts.

RESULTS

The results are presented in Tables 1 and 2. The material was generally quite well preserved, many stems bearing whole leaves in which cell characteristics were easily observed. In other cases, only fragments of leaves or more-or-less leafless stems were present. Although identification was possible in many cases, some material was not determined, where characters such as habit and colour in life were critical. No attempt was made to quantify the material in detail—for the most part taxa were present as one or a few shoots or leaves only—though where a taxon made up a large part of an assemblage this is indicated in Table 1.

Table 1: Complete list of moss taxa from Silbury Hill, Project 661. Nomenclature and taxonomic order follow Smith (1978). The number of contexts in which each taxon was recorded are also given. 2+?2 indicates that there were both tentative and secure identifications. * indicates that material of this taxon was present in more than just trace amounts in one or more assemblages.

1	<i>Fissidens</i> sp.
1	<i>Bryum</i> sp.
1	<i>Rhizomnium</i> sp.
1	cf. <i>Plagiomnium</i> sp.
1	<i>Antitrichia curtispindula</i> (Hedw.) Brid.
1	<i>Neckera crispa</i> Hedw.
7	<i>N. complanata</i> (Hedw.) Hüb.*
1	<i>Thamnobryum alopecurum</i> (Hedw.) Nieuwl.
1	cf. <i>Campylium</i> sp.
1	cf. <i>Amblystegium</i> sp.
	<i>Isoetecium myurum</i> Brid.
2+?2	<i>Brachythecium</i> sp(p).
5	<i>Pseudoscleropodium purum</i> (Hedw.) Fleisch.*
1	cf. <i>Eurhynchium striatum</i> (Hedw.) Schimp.
1	<i>Eurhynchium praelongum</i> (Hedw.) Br. Eur.
3	<i>Eurhynchium</i> sp(p).
3	<i>Hypnum</i> cf. <i>cupressiforme</i> Hedw.
8	<i>Rhytidiadelphus</i> cf. <i>triquetrus</i> (Hedw.) Warnst.
3	<i>R. squarrosus</i> (Hedw.) Warnst.

Table 2: Identifications of moss remains from Silbury Hill, Project 661; taxa appear in taxonomic order for each sample. A complete list of taxa, with authorities is given in Table 1. Nearly all samples contained at least some material which could not be identified beyond 'moss' (though in most cases it is likely to have been from one or more pleurocarpous genera rather than acrocarpous ones).

Phase	Context	Context type	Sample	Taxon
3	4166	Dark silty layer on top Gravel Mound	9820	cf. <i>Neckera complanata</i> cf. <i>Brachythecium</i> sp.
4	3046	Lower Organic Mound	9824	<i>Brachythecium</i> sp. <i>Rhytidiadelphus</i> cf. <i>triquetrus</i> <i>Rhytidiadelphus squarrosus</i>
			9828	<i>Neckera complanata</i> <i>Brachythecium</i> sp. <i>Eurhynchium</i> sp. <i>Eurhynchium praelongum</i> <i>Rhytidiadelphus</i> cf. <i>triquetrus</i> <i>Rhytidiadelphus squarrosus</i>
	4156	Lower Organic Mound	9200	<i>Rhizomnium</i> sp. <i>Neckera complanata</i> cf. <i>Brachythecium</i> sp. <i>Pseudoscleropodium purum</i> <i>Hypnum</i> cf. <i>cupressiforme</i>
	4170	1° fill of gully 4171	9811	<i>Fissidens</i> sp. <i>Neckera crista</i> <i>Neckera complanata</i> <i>Hypnum</i> cf. <i>cupressiforme</i>
	4173	2° fill of gully 4171	9813	<i>Neckera complanata</i>
	4181	organic Mini Mound	9827	<i>Bryum</i> sp. cf. <i>Plagiomnium</i> sp. <i>Antitrichia curtipendula</i> <i>Neckera complanata</i> <i>Thamnobryum alopecurum</i> cf. <i>Campylium</i> sp. <i>Eurhynchium</i> sp. cf. <i>Eurhynchium striatum</i> <i>Hypnum</i> cf. <i>cupressiforme</i>
5	3066	2° fill in pit 3067	9817	<i>Pseudoscleropodium purum</i> <i>Eurhynchium</i> sp. <i>Rhytidiadelphus</i> cf. <i>triquetrus</i>
	3070	1° fill in pit 3067	9823	leafless moss stems
	3073	fill of pit 3074	9810	<i>Pseudoscleropodium purum</i> <i>Rhytidiadelphus</i> cf. <i>triquetrus</i>

Phase	Context	Context type	Sample	Taxon
6.1	3061	Upper Organic Mound	9375	<i>Neckera complanata</i> <i>Pseudoscleropodium purum</i> <i>Rhytidiadelphus cf. triquetrus</i>
	3078	Upper Organic Mound	9335	cf. <i>Amblystegium</i> sp. <i>Pseudoscleropodium purum</i> <i>Rhytidiadelphus cf. triquetrus</i> <i>Rhytidiadelphus squarrosus</i>
	3083	Upper Organic Mound	9825	<i>Neckera complanata</i> <i>Isothecium myurum</i> <i>Rhytidiadelphus cf. triquetrus</i>
6.2	3084	Further dump layer	9822	<i>Rhytidiadelphus cf. triquetrus</i>

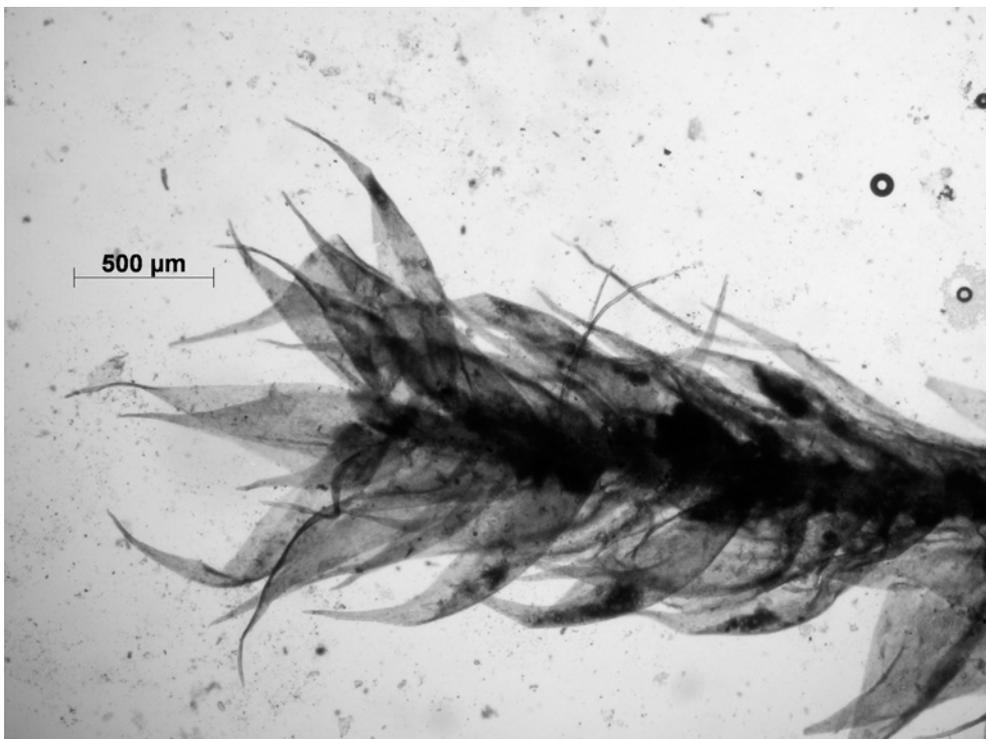


Figure 1: Shoot of *Hypnum cf. cupressiforme* (from context 4181, organic Mini-Mound, Phase 4); shoots of this genus have their leaves curved like a sickle in one direction and the leaves lack a midrib. In the absence of life characters, identification to species is uncertain (photo: author)

DISCUSSION

Nearly 20 different taxa were recognised, though many were only tentatively identified and some others identified only to genus. The taxa recorded were generally consistent with an origin in chalk grassland, and the species most frequently occurring (both in terms of numbers of samples and quantity within assemblage)—*Neckera complanata* (Figure 2), *Pseudoscleropodium purum* (Figure 3) and the tentatively identified *Rhytidiadelphus triquetrus*, are all highly characteristic of such habitats. To judge from Watson's (1960) survey of mosses on the chalklands of S. England (though with the caveat that his results relate to grassland of the mid-20th century on the S. Downs and Chilterns), the two species of *Rhytidiadelphus* may be indicators of N-facing slopes, whilst the *Neckera* species may be more typical of S-facing ones, *P. purum* being indifferent with respect to aspect. The presence of the mosses in the turves can perhaps be used as an indication of short (cropped) vegetation, the growth of longer grasses and forbs leading to shading out of the mosses, and restricted growth of the sward leading to over-exposure to drought.

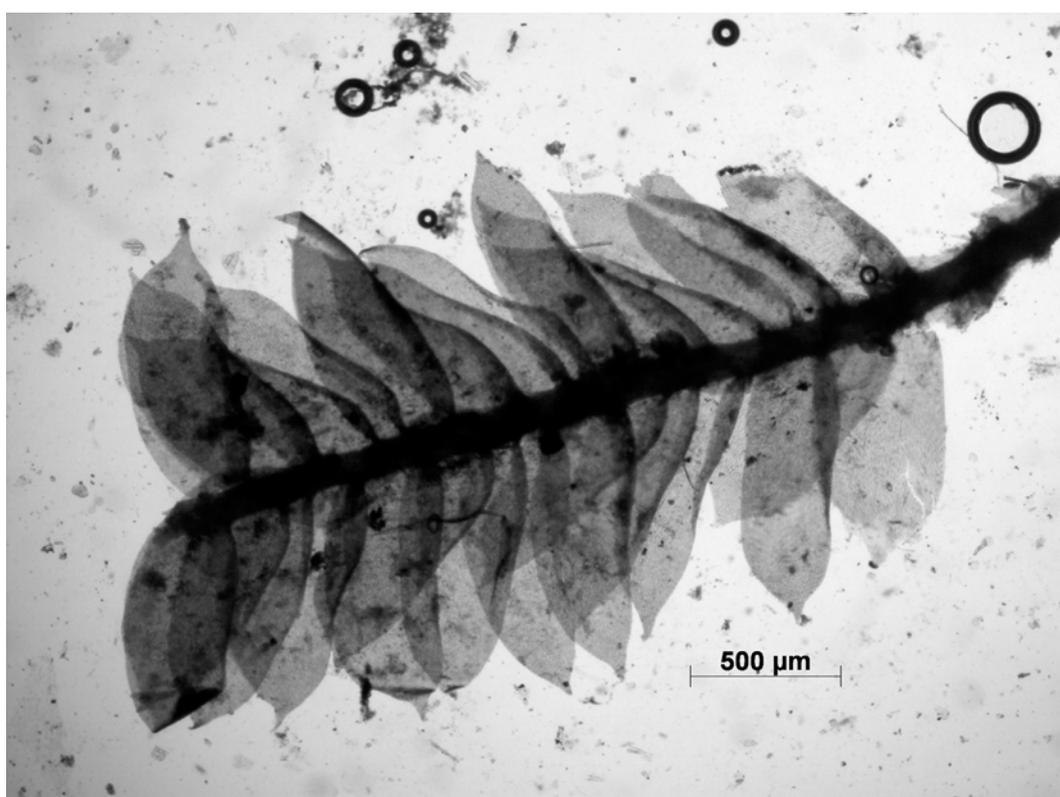


Figure 2: Shoot of *Neckera complanata* (from context 4181, organic Mini-Mound, Phase 4), with the typical 'complanate' (flattened) two-rowed arrangement of 'nerveless' leaves (photo: author)

The only identification which is not, at first sight, consistent with an origin in chalk grassland is *Antitrichia curtispindula* (Figure 4; the identification is wholly secure), a species primarily of rocks and trees of northern and western distribution in Britain (and not recorded in Watson's survey). There are very few records from S. England (the species is likely to have fallen victim to loss of woodland and aerial pollution), but it did occur in chalk grassland at one site, at least (Heyshott Down near Chichester, W. Sussex) in the latter half of the 20th century (Hill *et al* 1994).

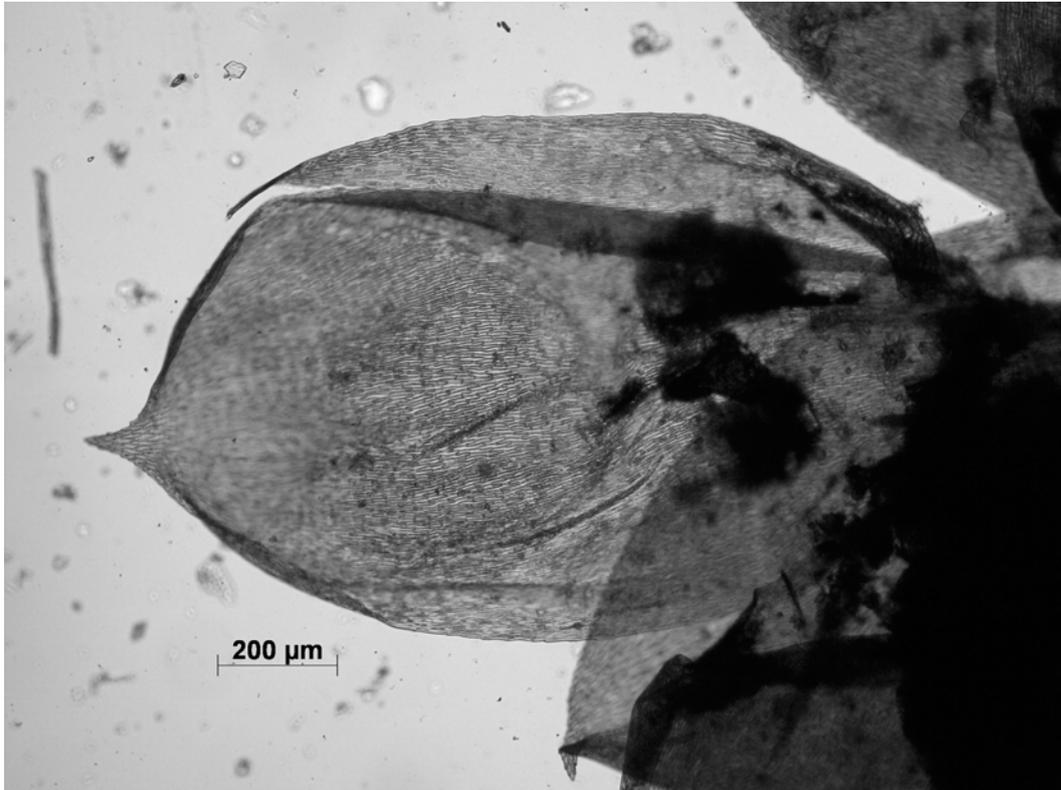


Figure 3: Leaf of *Pseudoscleropodium purum* (from context 4156 Lower Organic Mound, Phase 4); note the characteristically rounded concave leaf with a small 'apiculus' at the tip (photo: author)

An earlier study of archaeological mosses from Silbury Hill was undertaken by Williams (1976), in which the following taxa were recorded:

Mnium sp., *Rhizomnium punctatum*, *Plagiomnium rostratum*, *Neckera complanata*, *Thuidium* sp., *Calliergon cuspidatum*, *Brachythecium rutabulum*, *Pseudoscleropodium purum*, *Rhytidiadelphus squarrosus*, cf. *Hylocomium splendens*

showing a moderate degree of overlap with the material recorded here. Moreover, the more abundant taxa in Williams's assemblages—also from turves from the mound, recovered during the Atkinson excavations of 1968-9—were *N. complanata*, *C. cuspidatum*, *P. purum* and *R. squarrosus*. Although *C. cuspidatum* was not found during the current work it was among the taxa identified by the present author from material

submitted for dating by AMS from one of the Evans sample blocks collected in 1968 (Canti *et al* 2004, Bayliss *et al* 2007, table 2) where the assemblage comprised *Calliergon cuspidatum*, cf. *Plagiomnium* sp(p), *Eurhynchium* sp(p), *Neckera complanata*, *Pseudoscleropodium purum* and *Rhytidiadelphus squarrosus*. Any differences between these assemblages are probably not of much significance.

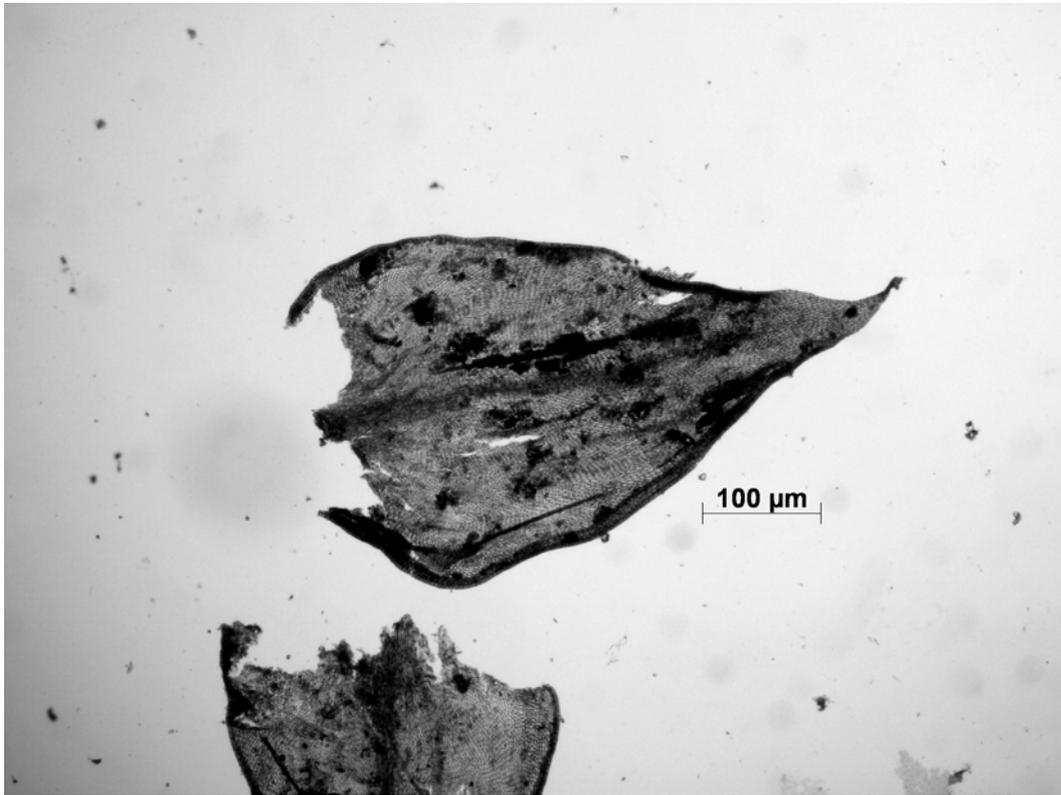


Figure 4: Leaves of *Antitrichia curtispindula* (from context 4181, organic Mini-Mound, Phase 4). they have characteristic inrolled margins and somewhat vermiform (worm-like) cell structure (the latter not visible at this magnification), though the highly diagnostic; recurved marginal teeth which are normally seen towards and at the tip of the leaf are eroded away here.

REFERENCES

Bayliss, A, McAvoy, F, and Whittle, A 2007 'The world recreated: re-dating Silbury Hill in its monumental landscape'. *Antiquity* **81**, 26-53

Campbell, G 2011 Analysis of macroscopic plant remains from Silbury Hill excavations 2007/8. Research Department Report **67/2011**. Portsmouth: English Heritage

Campbell, G, with Davies, P, Edmunds, M, Hall, A, Marshall, P, Robinson, M, Whitehead, P and Worley, F 2013 Silbury Hill: understanding the environment, in Leary, J, Field, D, and Campbell, G *Silbury Hill: the largest prehistoric mound in Europe*. Swindon: English Heritage, 157-202

Canti, M, Campbell, G, Robinson, D and Robinson, M 2004 *Site formation, preservation and remedial measures at Silbury Hill*. Centre for Archaeology Report **61/2004** . Portsmouth: English Heritage

Hill, M O, Preston, C D and Smith, A J E 1994 *Atlas of Bryophytes of Britain and Ireland. 3. Mosses (Diplolepideae)*. Colchester: Harley Books.

Smith, A J E 1978 *The Moss Flora of Britain and Ireland*, Cambridge: University Pres.

Watson, E V 1960. A quantitative study of the bryophytes of chalk grassland. *J. Ecol.* **48**, 397-414

Williams. D, 1976 A Neolithic moss flora from Silbury Hill, Wiltshire *J. Arch. Sci.* **3**, 267-70



ENGLISH HERITAGE RESEARCH AND THE HISTORIC ENVIRONMENT

English Heritage undertakes and commissions research into the historic environment, and the issues that affect its condition and survival, in order to provide the understanding necessary for informed policy and decision making, for the protection and sustainable management of the resource, and to promote the widest access, appreciation and enjoyment of our heritage. Much of this work is conceived and implemented in the context of the National Heritage Protection Plan. For more information on the NHPP please go to <http://www.english-heritage.org.uk/professional/protection/national-heritage-protection-plan/>.

The Heritage Protection Department provides English Heritage with this capacity in the fields of building history, archaeology, archaeological science, imaging and visualisation, landscape history, and remote sensing. It brings together four teams with complementary investigative, analytical and technical skills to provide integrated applied research expertise across the range of the historic environment. These are:

- * Intervention and Analysis (including Archaeology Projects, Archives, Environmental Studies, Archaeological Conservation and Technology, and Scientific Dating)
- * Assessment (including Archaeological and Architectural Investigation, the Blue Plaques Team and the Survey of London)
- * Imaging and Visualisation (including Technical Survey, Graphics and Photography)
- * Remote Sensing (including Mapping, Photogrammetry and Geophysics)

The Heritage Protection Department undertakes a wide range of investigative and analytical projects, and provides quality assurance and management support for externally-commissioned research. We aim for innovative work of the highest quality which will set agendas and standards for the historic environment sector. In support of this, and to build capacity and promote best practice in the sector, we also publish guidance and provide advice and training. We support community engagement and build this in to our projects and programmes wherever possible.

We make the results of our work available through the Research Report Series, and through journal publications and monographs. Our newsletter *Research News*, which appears twice a year, aims to keep our partners within and outside English Heritage up-to-date with our projects and activities.

A full list of Research Reports, with abstracts and information on how to obtain copies, may be found on www.english-heritage.org.uk/researchreports

For further information visit www.english-heritage.org.uk

