Marline Wood - Its importance for Bryophytes (Mosses and liverworts) and lichens

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## 1. Qualifications of Simon Davey Ecological Consultancy to undertake a review of the lower plants of Marline Wood

Simon Davey has been working as an independent ecological consultant in Sussex since March 1987. During this period, he has undertaken lower plant surveys on behalf of Nature Conservancy Council, English Nature, Natural England, The Sussex Wildlife Trust as well as East Sussex County Council. These include several surveys of the lower plants of Marline Wood.

Simon Davey received a degree in Natural Sciences from Cambridge University in 1964. He is a member of the Institute of Ecology and Environmental Management as well as a member of the British Lichen and Bryological Societies. He is currently the Field Secretary of the British Lichen Society and a member of their Council, Conservation and Data Committees

## 2. A current assessment and potential threats

Marline Wood has been known as being important for its bryophytes and lichens for many years. In recent years however, it has been threatened by a number of factors that have caused the interest to be diminished. These include a pollution source caused mainly by road run off from the housing estate immediately north east of the Reserve. Concern is also raised resulting from development to the east of the most important part of the Reserve. Some years ago, the water in the stream was also enriched, probably by farm effluent from Lark Farm House to the west. Possibly as a result of these factors, the stream in Marline Wood has been colonised by blooms of iron bacteria causing the substrate to be coated with an orange film. It is uncertain just how damaging this has been.

Since 1980, the atmospheric problems in the whole of the United Kingdom resulting from industry and acid rain have largely disappeared. However, these problems have been replaced by high pH pollution resulting from the intensive use of agricultural fertilisers, and especially inorganic fertilisers that are nitrogen based. At the same time, road traffic has been found to add quantities of NOX gases and nitrogen to the atmosphere. These result in accumulations of ammonium compounds that may be either poisonous to lower plants, or cause an increased competition from higher plants resulting in their demise. It appears very probable that the use of catalytic converters on car exhausts, especially if faulty or badly adjusted exacerbate the problem.

Marline Wood is largely of importance for the lower plants associated with the stream itself, and with rocks and the mud walls associated with them in close proximity of the stream. The woodland further away from the stream does support some lower plants of interest typical of woodland with ecological continuity. The former interest could be considered of national importance while that of the woodland itself is of lesser concern. An increase of pollutant gases from increased road use in the vicinity would be more likely to affect the lower plants growing in the associated woodland than the stream itself. However, most research into the affects of atmospheric pollution has centred around woodland epiphytes, and especially lichens. It is not known how much bryophytes growing on damp rocks such as those at Marline would be affected. However, it would be safe to assume that there is a high chance that an increase in ammonium compounds in the films of water and in the stream itself resulting from increased traffic would be significant.

3. Lower Plants present in Marline Wood

The following lists result from the data held by the Sussex Wildlife Trust as well as from personal experience gained from a series of surveys undertaken personally.

The following is a comparison table of presence/absence of lower plants during all surveys

RS Recorded by Rod Stern or Francis Rose prior to 1993, but not in 1993

| | RS/FR | 1993 | 1996 | 2005 |
|---|---|---|---|---|

\+ Species found in Park Wood in 2005, but not in Marline Wood

x Species reckoned in an unpublished paper prepared by Rod Stern and the British Bryological Society to be have an association with ecological continuity in woodland. It is reckoned that in South Eastern England, a score of 15 species + is of conservation significance. The presence of nineteen is therefore excellent in Sussex.

X Species of bryophyte that are rare or generally scarce in Sussex

NS Neil Sanderson

Bryophytes

| | | | | | | |
|---|---|---|---|---|---|---|
| | *Amblystegium riparium* | | * | | | |
| | *Amblystegium serpens* | | * | | | |
| x | *Anomodon viticulosus* | * | | | | |
| | *Atrichum undulatum* | | * | | * | |
| | *Aulocomnium androgynum* | * | | | | |
| Xx | *Brachythecium plumulosum* | | * | | * | |
| X | *Brachythecium rivulare* | | * | * | * | |
| | *Brachythecium rutabulum* | | * | | * | |
| | *Bryum bicolor* | | | | * | |
| | *Calliergonella cuspidata* | * | | | + | |
| | *Calypogeia arguta* | | * | * | * | |
| | *Calypogeia fissa* | | * | | * | |
| | *Calypogeia muellerana* | | * | | * | |
| | *Cephalozia bicuspidata* | | * | | * | |
| | *Cephalozia connivens* | * | | | | |
| | *Ceratodon purpureus* | * | | | | |
| x | *Chiloscyphus polyanthos* | | * | * | * | |
| | *Cololejeunea minutissima* | | | | + | |
| | *Conocephalum conicum* | | * | | * | |
| | *Ctenidium molluscum* | | * | | * | |
| X | *Dichodontium pellucidum* | | * | * | * | |
| | *Dicranella heteromalla* | | * | | * | |
| | *Dicranoweisia cirrata* | | * | | * | |
| | *Dicranum scoparium* | * | | | | |
| | *Didymodon fallax* | | | | | 2007 NS |
| | *Diplophyllum albicans* | | * | | * | |
| | *Dydimodon insulanus* | * | | | | |
| X | *Eucladium verticillatum* | * | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | *Eurhynchium praelongum* | | * | | * |
| X | *Eurhynchium schleicheri* | * | | | |
| x | *Eurhynchium striatum* | | * | | * |
| | *Eurhynchium swartzii* | | * | | |
| | *Fissidens adiantoides* | | * | | * |
| | *Fissidens bryoides* | | * | | * |
| NS NT BAP | *Fissidens exiguus* | ?* | | | * N Sanderson 2008 |
| X | *Fissidens pusillus* | | * | * | |
| X NS | *Fissidens rivularis* | | * | * | * |
| | *Fissidens taxifolius* | | * | | * |
| | *Frullania dilatata* | * | | | * |
| X | *Heterocladium heteropterum* | * | | | + |
| x | *Homalia trichomanoides* | | * | * | * |
| x | *Hookeria lucens* | | * | * | * |
| | *Hypnum andoi* | * | | | * |
| | *Hypnum cupressiforme* | | * | | * |
| | *Hypnum resupinatum* | * | | | |
| x | *Isothecium alopecuroides* | | * | | * |
| x | *Isothecium myosuroides* | | * | | * |
| X | *Jungermannia pumila* | * | | * | * |
| | *Lejeunea cavifolia* | * | | | |
| | *Lejeunea ulicina* | | * | | * |
| | *Leptodyctium riparium* | | * | | |
| | *Leucobryum glaucum* | * | | | |
| | *Lophocolea bidentata* | | * | | * |
| | *Lophocolea heterophylla* | | * | | * |
| | *Marchantia polymorpha* | | | | + |
| X | *Metzgeria conjugata* | | * | | * |
| | *Metzgeria fruticulosa* | | | | + |
| | *Metzgeria furcata* | | * | | * |
| | *Mnium affine* | | | | * |
| | *Mnium hornum* | | * | | * |
| x | *Neckera complanata* | | * | | + |
| Xx | *Neckera pumila* | * | | | |
| | *Orthodontium lineare* | | | | * |
| | *Orthotrcihum affine* | | | | * |
| Xx | *Orthotrichum lyellii* | * | | | |
| | *Oxyrhynchium hians* | | | | NS 2008 |
| | *Pellia endiviifolia* | | * | | * |

| | | | | | |
|---|---|---|---|---|---|
| | *Pellia epiphylla* | | * | * | * |
| x | *Plagiochila asplenioides* | | * | | * |
| x | *Plagiochila porelloides* | | * | | |
| | *Plagiomnium undulatum* | | * | | * |
| X | *Plagiothecium curvifolium* | * | | | |
| X | *Plagiothecium latebricola* | * | | | |
| | *Plagiothecium nemorale* | * | | | * |
| | *Platyhypnidium riparioides* | | * | | * |
| | *Pohlia delicatula* | * | | | |
| | *Polytrichum formosum* | | * | | * |
| | *Pseudotaxiphyllum elegans* | | * | | * |
| x | *Radula complanata* | | | | * |
| x | *Rhizomnium punctatum* | | * | | * |
| | *Rhynchostegium confertum* | * | | | * |
| | *Rhynchostegium murale* | * | | | |
| Xx | *Rhytidiadelphus loreus* | * | | | |
| | *Rhytidiadelphus squarrosus* | * | | | |
| | *Rhytidiadelphus triquetrus* | * | | | |
| | *Riccardia chamedryfolia* | | | * | |
| x | *Scapania undulata* | * | | | |
| X | *Tetradontium brownianum* | | * | * | * |
| x | *Tetraphis pellucida* | * | | | |
| X | *Trichostomum brachydontium* | * | | * | * |
| x | *Thamnobryum alopecurum* | | * | | * |
| | *Thuidium tamariscinum* | | * | | * |
| | *Ulota bruchii* | * | | | |
| | *Ulota crispa* | * | | | |
| | *Zygodon conoideus* | | * | | |
| | *Zygodon viridissimus* | | | | * |

Lichens

Except for *Mniacea* species, the following were only recorded in 2005, as no listing of lichens was made personally prior to this.

* Lichen species on either the New or Revised Index of Ecological Continuity list produced by the British Lichen Society. Nationally, eight is a rather low score, however away from the mediaeval deer parks of Parham and Eridge etc., Sussex is not noted for its woodland of great ecological continuity.

X Lichens reckoned either rare or scarce in Sussex

*Arthonia didyma*
*Arthonia elegans*
*Arthonia radiata*
*Arthonia spadicea*
*Cladonia chlorophaea*
*Cladonia coniocraea*
*Cladonia pyxidata*
*Dimerella pineti*
* *Enterographa crassa*
*Evernia prunastri*
*Flavoparmelia caperata*
*Flavoparmelia soredians*
*Graphis elegans*
*Graphis scripta*
*Gyalideopsis anastomosans* – on lignum
*Hypotrachyna revoluta*
*Lecanora chlarotera*
*Lecidella elaeochroma*
*Lepraria incana*
*Lepraria lobificans*
X *Lepraria umbricola*
*Melanelia fuliginosa* ssp *glabratula*
*Mniacea jungermanniae*
NR DD X *Mniacea nivea* – confirmed present in 2007 and 2008
*Opegrapha atra*
X* *Opegrapha corticola*
*Opegrapha sorediifera*
*Opegrapha vulgata*
*Parmelia sulcata*

*Parmotrema perlatum*
*Pertusaria amara*
*Pertusaria coccodes*
*Pertusaria hymenea*
*Pertusaria leioplaca*
* *Pertusaria multipuncta*
*Pertusaria pertusa*
* *Phaeographis dendritica* - on chestnut
*Phlyctis argena*
*Physcia adscendens*
*Porina aenea*
* *Porina leptalea*
*Punctelia ulophylla*
* *Pyrenula chlorospila*
*Pyrrhospora quernea*
*Ramalina farinacea*
*Schismatomma cretaceum* - on one very large streamside oak
*Stenocybe pullatula*
X* *Thelotrema lepadinum*

## Notes on Individual Species of Importance

Notes are given here on the status of species nationally and locally. Finally, the extent of colonies of the species for Marline Wood itself is given. Species reckoned to be common in Sussex or in Marline Wood are not mentioned here.

### 1. Mosses

1.1 *Brachythecium plumosum.* A local species in Sussex associated with streams in sand rock areas. It is most frequently met with in Ashdown Forest. It is not frequent in Marline Wood.

*Ctenidium molluscum.* The identification status of this species is under review, however it is less frequent than its chalk downland counterpart. It is scattered on the damp rocks through Marline Wood.

*Dichodontium pellucidum.* This species is not uncommon on sandrocks, and in ghylls throughout the north of Sussex. It still occurs associated with the waterfall at Marline, but appears reduced elsewhere.

*Dydimodon insularis.* A locally common species of sandy and gravely soils.

Not seen since 1993, but possibly overlooked. It was formerly known as *Barbula hornschuchiana.*

*Eucladium verticillatum.* A rather scarce moss in Sussex on more basic damp rcoks. Not seen in Marline since Rod Stern found it prior to 1993.

*Eurhynchium schleicheri.* A species of basic sands and gravels most frequent in West Sussex. Possibly overlooked, but not seen at Marline since prior to 1993.

*Fissidens exiguus.* This is a nationally rare moss in the Near Threatened Caregory. It is a Biological Action Plan species and protected by Schedule 8 of the Wildlife and Countryside Act. Although not seen personally - it is very tiny, I found in 2007 by Neil Sanderson in a side stream entering the main stream at Marline from the east on a slab of rock at TQ 78124 12390. It was seen again in 2008. In Sussex, it is confined to the extreme SE of East Sussex. Its HQ in Britain is East Sussex and Kent. It did not appear on the list given to me by the Sussex Wildlife Trust of mosses recorded prior to 1993 by Rod Stern; I am certain this is an oversight.

*Fissidens rivularis.* A Nationally Scarce species. It was first found in Britain in Fairlight Glen. It is confined to streams associated with sandrocks in the Hastings area in Sussex. Previously, it was abundant on a vertical seepage on the east side of the stream just downstream of the waterfall. In 2008, this seepage was blackened, and all vegetation in it appeared dead. Although less healthy on previous years, the colonies associated with the main waterfall appeared luxuriant and healthy in 2008.

*Heterocladium heteropterum.* . A species confined to the sandstone outcrops of the greensand and Hastings Beds. It has been found in Marline Wood in the past and in the southern part of the SSSI known as Park Wood in 2005.

*Homalia trichomanoides.* An ancient woodland indicator species that is scattered through Sussex where it grows on the bases of usually basic bark trees close to the waterline in streams. It is present, but scarce in the SSSI currently.

*Hookeria lucens.* Ancient woodland indicator species that is strangely scarce in Marline Wood, though it is abundant in other ghyll woods in the vicinity. It occurs associated with minor streamlets and flushes, usually on soil. It is confined to the Greensand and Hastings Beds in Sussex.

*Neckera pumila.* This ancient woodland indicator species has not been seen since before 1993. It is locally frequent in Sussex and more often seen in the west.

*Tetradontium brownianum.* This tiny moss has just one site in Marline Wood at the eastern end of the main interest area more or less opposite the junction of footpaths descending into the wood. It is confined to East Sussex and is scarce on rocks on the greensand and Hastings Beds especially in Ashdown Forest.

*Trichostomum brachydontium.* A species scattered through Sussex, it is quite plentiful on the first rock outcrop on the west bank below the main waterfall.

2. Liverworts

*Cephalozia connivens* In Sussex it is not uncommon on wet rock, decaying wood, etc. It is locally frequent on the rock walls in Marline Wood.

*Chiloscyphus polyanthos.* A fairly common species in clean woodland streams and ghyll woods in Sussex. It has suffered in Marline Wood due to pollution and is far less frequent than preciously.

*Cololejeunea minutissima* A species that appears to be increasing. Most on elder and is scattered through marline Wood. It was formerly a Nationally Scarce species.

*Metzgeria conjugata.* There is controversy about the material occurring in Marline Wood. It is not utterly confirmed as this species. It occurs on tree roots on the east bank just downstream of the waterfall and on the first rock outcrop above the stream on the west bank below the waterfall. This is its only currently known Sussex site.

*Radula complanata.* A single colony of this ancient woodland liverwort was found on the east bank on a hazel in the east end of the Park Wood section of the SSSI.

3. Lichens

There are few particularly scarce lichens in Marline Wood, however there are several ancient woodland indicators. The following are the most important species within the wood.

*Mniacea nivea*. Though not actually a lichenised fungus, this rarity is studied by the British Lichen Society as if it were a lichen. It has just one English site at Marline Wood where it occurs on liverworts on rocks on the west bank just below the waterfall, and on the east bank where it also grows on liverworts on the rock that supports *Tetradontium brownianum.* Like the more common *Mniacea jungermanniae*, it is seasonal in the production of its apothecia (spore bearing fruits) which are seen in mid to late Spring.

*Opegrapha corticola*

This ancient woodland idicator, scarce in Sussex is present on a large mature in the wood close to the gate leading into the meadows on the east side opposite Watergates Wood.

*Thelotrema lepadinum.* Usually a common ancient woodland indicator, this species is scarce in Sussex. It occurs in Marline Wood on the east bank above the stream on several tree species close to the main waterfall.