Lichens of St Michael's Church Compton Martin

Report by David J Hill BSc DPhil MIEEM

Introduction

On 19 October 2013 11.00-13.00, a small informal group known as the Somerset Lichen Group visited St Michael's Church and the churchyard to record the presence of the various species of lichen which occur on the stone work. The purpose of the meeting was threefold a) to encourage in an awareness and interest in lichens so the people in the group learn more about lichen identification, b) to inform the Churchwardens and the PPC about the lichens present and c) to make records of the species present which will be added to the British Lichen Society's database of British lichens. I returned on the 22 October to check some places and habitats that I did not have time to look at on the Somerset Lichen Group's meeting adding a further 15 species.

About Lichens

Lichens are fungi which live by using sugars secreted by minute algae within the structure of the fungus occurring between the fungal cells. There are about 1800 species in Britain. There are also a number of other minute fungi which live in lichens as secondary inhabitants. Some of these are parasitic but many do no perceivable harm at all.

One of the fascinating features of lichens is that they are fungi apparently pretending to be plants. Fungi are more different from plants than animals are. They have no evolutionary history of photosynthesis and only can behave like plants because of the intricate symbiosis with their minute algal cells within them. They have special chemical mechanisms for surviving being desiccated and staving off being eaten by slugs, snails and other invertebrates which love them. They form an important source of food for invertebrates and hence the rest of the food chain.

Lichens grow on rock and stone but also on tree on the bark of the trunks, branches and twigs. There are species which grow on the ground e.g. on heathland. But they can occur on almost any substrate that has been exposed for long enough to be colonised. Bricks, tiles and concrete as well as timber e.g. garden seats may support many species. Lichens are quite substrate specific meaning that some species only colonise certain substrates. For example of the hundreds of rock loving species, there are hardly any which can grow on calcareous rock like limestone as well as granite or other acidic rocks.

Lichens are indicators of several different types of ecological conditions such as pollution, climate change and uniform ecological continuity. Analysis of the records of the presence of lichens has helped environmentalists notice changes in ecological conditions. To make this possible lichenologists are encouraged to record the presence of lichen species in all habitats and throughout Britain to keep the British Lichen Society's database of records (currently 1.8M records) up to date so that future analytical studies can detect environmental changes.

Churchyards are a very important habitat for lichens over much of lowland Britain. This habitat is relatively free from disturbance and has different types of rock used for making the gravestones and the church itself. It is also a habitat which is replicated across the Britain in a fairly uniform way. Data from the presence of lichens in churchyards is therefore of great potential value in the future for monitoring climate and pollution. But this is based on having good records made now.

The Survey of St Michael's Churchyard

We examined the gravestones which were made of three types of stone: limestone (mostly oolite), sand stone and granite. Then we looked at the church walls and the parapet around the top of the tower. The walls around the church were also a valuable habitat. We did not look at the trees which we did not think were of much lichenological importance although this would have boosted the number of species recorded! The species we did record are listed in the table below. We did not find any very rare species but the total number of 80 species found indicated that there is a rich and diverse lichen "flora". In larger churchyards it is possible to find over 100 species but for its size, with 86 species, St Michael's has an excellent lichen "flora" and well worth being proud of and conserving. No survey of this type is complete and there may well be a few more species present that we did not find.

There are some 8 species which are less frequently recorded and given the formal Conservation Status by the Joint Nature Conservation Council as being Nationally Scarce (Woods and Coppins 2012). These are marked as NS in the Table but they do not represent any concern for their conservation as they are not under any known threat at the moment. These include:

- *Bacidia fuscoviridis* – this is a small greenish crustose species which is probably overlooked as it has few features which help one to identify it.
- *Clausadea metzleri* – It is fairly common on the limestone outcrops in the Mendip Hills and so at home here but not common in churchyards across the rest of Britain. It is characterised by flat circular black dots about 1-2mm in diameter and almost set into the surface on what appears to be the stone (the rest of the lichen grows inside the stone) and these dots are in groups or lines. It sister species *Clauzadea immersa* has similar sized black dots each a in pit in the surface of the stone but they are arranged evenly so that the gap between them is more or less uniform at about 5mm.
- *Opegrapha rupestris* growing on *Verrucaria calciseda*. Tiny (<1mm) little oblong black structures with a tiny slit down the middle on the *Verrucaria* which is just itself tiny black dots in the stone.
- *Buelliella physciicola* growing on *Phaephyscia orbicularis*. Tiny black discs into the surface of the host.
- And some very small species which appear as little black dots and can only be identified with any reliability by using microscopes.

Species which inhabit other lichens are termed lichenicolous and are more usually found on substrates that have been colonised for a long time. This is because it may take some time (many years) for the host species to colonise and then further years for the secondary species to colonise the host. Hill (1994) published a paper using gravestone dates to make the time taken for colonisation by different species. For some species 50-100 years elapsed before they appeared.

The lichens in St Michael's Churchyard provide a charming decorative pattern on the stonework. They tell of its history and mark the centuries that the Church has seen. They also provide a very valuable source of support for wildlife being producers of food for invertebrates which are consumed by other animals. The lichens are an integral part of the churchyard and its environment.

Recommendations

There is no specific recommendation for the management of the church walls and the gravestones etc. to maintain lichen diversity. The greatest value is obtained by maintaining the Churchyard as it is in the manor it is currently being managed. Continuity and lack of change is the best thing for lichen diversity. There is no need to clean lichens off as there is little evidence that they do any damage to the stone surface and some evidence that they may protect the surface from physical weathering. It is good to hear from David Hart that the inscriptions on the graves have been documented with their locations. This is far better than trying to clean off the lichens which can damage the stone and lichens will inevitably grow back albeit probably different species.

For more information on churchyard lichens see http://www.britishlichensociety.org.uk/activities/churchyard-survey/churchyard-lichens.

Table: Lichens found on the St Michael's Church, Compton Martin and in the Churchyard

Name of lichen	Conservation status	Substrate and location
Acarospora fuscata	LC	Sandstone and or granite
Acarospora smaragdula	LC	On mineral crystal in granite gravestone
Acrocordia conoidea	LC	Limestone
Acrocordia salweyi	LC	Limestone
Agonimia tristicula	LC	On moss and plant debris
Aspicilia calcarea	LC	On most Limestone gravestones
Aspicilia contorta	LC	
Bacidia fuscoviridis	LC NS	Limestone at base of church wall
Botryolepraria lesdainii	LC	
Buellia aethalea	LC	On most Sandstone and or granite gravestones
Buellia ocellata	LC	Sandstone and or granite
Buelliella physciicola	LC NS	On top of tower on *Phaeophyscia orbicularis* as lichen inhabiting fungus (parasymbiont)
Caloplaca austrocitrina	LC	On vertical Limestone surfaces especially walls
Caloplaca citrina s. str.	LC	Limestone
Caloplaca crenularia	LC	Limestone of church south wall
Caloplaca crenulatella	LC	Limestone

Caloplaca dalmatica	LC	Limestone
Caloplaca decipiens	LC	Common on Limestone on top of tower
Caloplaca dichroa	LC	On most Limestone gravestones
Caloplaca flavescens	LC	On most Limestone gravestones
Caloplaca flavocitrina	LC	Limestone
Caloplaca lilacina	NE	Limestone
Caloplaca oasis	LC	Limestone
Caloplaca saxicola	LC	Common on Limestone on top of tower
Caloplaca teicholyta	LC	
Caloplaca xantholyta	LC	Limestone – church wall
Candelariella medians	LC	Common on Limestone on top of tower
Candelariella vitellina	LC	On most Sandstone and or granite gravestones
Catillaria chalybeia	LC	Sandstone and or granite
Catillaria lenticularis	LC	Limestone
Cladonia pyxidata	LC	On ground
Clauzadea immersa	LC	On most Limestone gravestones
Clauzadea metzleri	LC NS	Limestone on top opf tower and on buttress on South wall of church
Collema auriforme	LC	Limestone
Diploicia canescens	LC	Sandstone and/or granite or limestone
Diplotomma alboatrum	LC	Limestone
Dirina massiliensis f. sorediata	LC	On Limestone of church walls
Lecania rabenhorstii	LC	
Lecania turicensis	LC	
Lecanora albescens	LC	On most Limestone gravestones
Lecanora campestris	LC	Limestone
Lecanora crenulata	LC	Limestone, moss or plant debris

Lecanora orosthea	LC	On Sandstone gravestones
Lecanora polytropa	LC	Sandstone and or granite
Lecidea grisella	LC	On top of sandstone chest tombs
Lecidella scabra	LC	On most Sandstone and or granite gravestones
Lecidella stigmatea	LC	
Lepraria incana s. lat.		
Leptogium teretiusculum	LC	On flat concrete surface
Ochrolechia parella	LC	On most Sandstone and or granite gravestones
Opegrapha calcarea	LC	On Limestone of church walls
Opegrapha rupestris	LC NS	On *Verrucaria calciseda* as lichen inhabiting fungus
Opegrapha zonata	LC	Sandstone and or granite
Phaeophyscia orbicularis	LC	Abundant on Limestone on top of tower
Physcia adscendens	LC	Common on Limestone on top of tower
Physcia tenella	LC	Abundant on Limestone on top of tower
Placopyrenium fuscellum	LC	Common on Limestone on top of tower
Placynthium nigrum	LC	Minute amount
Polysporina simplex	LC	on granite gravestones
Porina chlorotica	LC	Sandstone and or granite
Porina linearis	LC	
Porpidia cinereoatra	LC	Sandstone and or granit e
Porpidia tuberculosa	LC	On Sandstone and or granite gravestones
Protoblastenia rupestris	LC	On most Limestone gravestones
Psilolechia lucida	LC	Sandstone and or granite
Rhizocarpon reductum	LC	On most Sandstone and or granite gravestones
Rinodina teichophila	LC	On flat Sandstone gravestone on level with ground
Sarcogyne regularis	LC	

Solenopsora candicans	LC	
Tephromela atra	LC	Sandstone and or granite
Thelidium decipiens	LC	Limestone
Thelidium pyrenophorum	LC NS	Little black dots
Toninia aromatic	LC	Common on Limestone on top of tower
Verrucaria baldensis	LC	On most Limestone gravestones
Verrucaria caerulea	LC	Limestone
Verrucaria calciseda	LC	On most Limestone gravestones
Verrucaria elaeina	LC	
Verrucaria hochstetteri	LC	Common on Limestone on top of tower
Verrucaria muralis	LC	Limestone
Verrucaria murina	LC NS	Little black dots
Verrucaria nigrescens	LC	On most Limestone gravestones
Verrucaria nigrescens forma tectorum	LC	Limestone
Verrucaria pinguicula	LC NS	Little black dots
Verrucaria polysticta	LC NS	Limestone
Verrucaria viridula	LC	Limestone
Xanthoria calcicola	LC	Abundant on Limestone on top of tower
Xanthoria parietina	LC	Abundant on Limestone on top of tower

LC= least concern

NS = nationally scarce (only 16-100 records made up to 2012)

NE = not evaluated yet

Appendix

Those of the Somerset Lichen Group who were present were David Hill (Organiser), Barbara Benfield, Sheila Quin (with her daughter Moira visiting from the Netherlands), Jo Corke, Juliet Bailey, Niccola Bacciu, Matt Viner, Sally Lister (with Monty) and Mararete Earl. Incidentally, Matt also collected records of spiders. David went back and did follow up surveys on 27 and 31 October to look at parts he did not have time to examine on the 19 October. He added 16 and then 6 more species.

Thanks to the churchwardens for allowing us to visit and survey the lichens. And thanks to Moira for taking the photos and allowing me to use them for this report.

References

Hill DJ (1994) The succession of lichens on gravestones: a preliminary investigation. *Cryptogamic Botany* **4** 179-186.
Woods R and Coppins BJ (2012) *A Conservation Evaluation of British Lichens and Lichenicolous Fungi*. JNCC, Peterborough.

Weather conditions on for the survey were good although because of recent rain some of the surfaces were wet making a little harder to see some of the features of the lichens.

David Hill is retired from Bristol University where he spent most of his career as a biologist. He has had a special interest in lichens since he was at school. He has been President of the British Lichen Society and is currently Chairman of the Membership Services Committee and past Chairman of the Data Committee which oversees the recording of lichens in Britain. He runs course on lichens and acts as a consultant.

If required, I would be very happy to come up to St Michael's and discuss the report and perhaps point out some of the features of the lichens of the churchyard to anyone in a non-technical general way.

Sally Lister(left) Jo Corke and David Hill on the top of the Tower

From left to right: Niccola Bacciu, David Hill, Sally Lister and Sheila Quin with Monty surveying one of the chest tombs.