

LICHENS

This list of lichens may not be fully correct. It is based on a list originating from Jonathan P Guest with further details provided by Alan and Norman Bamforth. Alan & Norman only had three years to cover the whole of VC59 and lived ten minutes' walk from VC58 in the far SE corner of the vice county. At that time, they had to visit their mother in a nursing home at least four times a week including one evening during the weekend. Norman was also working at that time. When the brothers started, they probably knew about a dozen lichens but gained much knowledge in the NWNU flora group.

After a few months Jonathan went living in Germany leaving some records from the west which was a great help as Alan and Norman never travelled further west than Skelmersdale. The only other records received were from Bolton Museum supplied by Patricia Francis and a few from Edna Stephenson, Owen McCann Dave Earl and Diana Downing as well as small parcels to identify supplied by John Lowell from his visits.

At that time Alan and Norman did not have chemicals which would have helped when splitting similar species which are obviously a problem such as *Amandinea punctata* and *Lecidella elaeochroma*. The latter species was later found to be the most common but most records were originally classed as *Amandinea punctata*. *Stereocaulons* were also a problem and so the records are not reliable.

Thankfully Jonathan wrote the text using Alan and Normans data and comparing it with a flora written in 1914.

It is intended that the set of associated data collated by Alan and Norman will be used to add 5km x 5km distribution maps to this account in due course.

* Indicates dubious records

Acarospora fuscata (Schrader) Th. Fr.

Distribution: Widespread in the north and east, disappearing as the Mersey lowlands are approached.

Habitat: Upper surfaces of sandstone and gritstone boulders and masonry.

Comments: Presumably obliterated from heavily polluted lowland areas and as of yet showing no sign of returning. An analogous distribution is evident in Cheshire to the south.

**Acarospora macrospora* (Hepp.) A. Massal. ex Bagl.

Former distribution: Reeds Moss, Rainford, 1914 (Wheldon & Travis).

Habitat: On old bricks and stones on a colliery spoil-heap.

Comments: *A. macrospora* is a very local upland species, which grows on calcareous rocks and rarely on old mortar. Its occurrence on the described substrates is perhaps unlikely.

Acarospora smaragdula (Wahlenb.) A. Massal.

Distribution: Roddlesworth (SD62SE, JPG, 2003); Billington (SD73NW, JPG, 2003); Downham (SD74SE, JPG, 2003).

Former distribution: Recorded by Wheldon & Travis from Hale Point (SJ48SE, 1912) and from sandstone copings at Freshfield. (SD20NE, 1914).

Habitat: On sandstone, generally indicating heavy metal content.

Acrocordia conoidea (Fr.) Körber

Former distribution: Worsaw Hill, Chatburn, 1913 (Wheldon & Travis).

Habitat: On limestone rocks.

Comments: May still occur on the Ribble limestone.

Acrocordia gemmata (Ach.) A. Massal.

Former distribution: Near Clitheroe (Wheldon & Travis).

Habitat: Rough bark of trees.

Comments: Probably a victim of 20th century air pollution; may survive however in sheltered parts of the Ribble Valley.

Amandinea punctata (Hoffm.) Coppins & Scheid.

Distribution: Frequent on suitable substrates throughout the vice-county.

Habitat: Nutrient-enriched bark, especially that of *Sambucus*; also, the crotches of hedgerow twigs.

Comments: Wheldon & Travis (1915) list just five localities under *Buellia myriocarpa* Mudd. The species has evidently increased since then.

Arctoparmelia incurva (Pers.) Hale

Former distribution: White Coppice (SD61NW, NWNU, 1993).

Habitat: Gritstone rocks and walls.

Arthonia radiata (Pers.) Ach.

Distribution: Probably now widespread throughout the region.

Habitat: Smooth bark on the trunk of young trees, e.g. *Alnus*, *Fraxinus*, especially near the base.

Comments: A recent colonist from the south-west, young thalli becoming identifiable from the mid-1990s.

Arthopyrenia punctiformis A. Massal.

Distribution: Douglas Valley at Appley Bridge (SD50NW, JPG, 2003); east side of Anglezarke Resr. (SD61NW, JPG, 2003) and Hurstwood SD83SE, A&NB, 2004)

Habitat: On smooth bark of trees, including *Sorbus aucuparia*.

Aspicilia caesiocinerea (Nyl. Ex Malbr.) Arnold

Distribution: Catlow Clough (SD93NW, A&NB, 2005)

Habitat: Nutrient rich acid rocks,

Aspicilia calcarea (L.) Körber

Distribution: Largely restricted to the limestone (SD74NE/SE/SW, JPG, 2003) in the north-east of the vice-county. Salmesbury (SD62NW, A&NB, 2005) and Cant Clough Reservoir (SD83SE, JPG, 2003).

Habitat: Limestone rocks and exposures. On a limestone block at Cant Clough.

Comments: There seems to be little change in the status of the species since Wheldon & Travis (1915) described it as not uncommon in the Ribble Valley.

Aspicilia contorta (Hoffm.) Kremp.

Distribution: Chiefly on the limestone in the Ribble Valley area, rare elsewhere.

Former distribution: Recorded by Wheldon & Travis from Horrocksford Quarries, Clitheroe in 1913.

Habitat: On limestone rocks; also, on weathered concrete.

**Aspicilia caesiocinerea* (Nyl. ex Malbr.) Arnold

Former distribution: Worsaw Hill, Chatburn in 1910 (Wheldon & Travis).

Habitat: Recorded from exposed, bare limestone rocks.

Comments: The species usually grows on nutrient rich, acidic siliceous rocks.

Aspicilia radiosa (Hoffm.) Poelt & Leuckert

Former distribution: Wheldon & Travis recorded this from masonry of Brungerly Bridge, near Clitheroe in 1912.

Habitat: Calcareous rocks and memorials.

Comments: The bridge has not been resurveyed.

Bacidia arnoldiana Körber

Former distribution: Witton Country Park (SD62NE, NWNU, 1989).

Habitat: No detail available. The species grows on damp rocks and bark.

Comments: A lichen found at Formby dunes in 1913 was described as a new species, *Bacidia latebricola*, by Wheldon & Travis.

They again found it at Freshfield in 1914. It was found creeping over decayed mosses and thin dry humus on broken sandy banks covered by herbage. Their lichen may have been a form of *B. arnoldiana* (BLS).

Bacidia bagliettoana (A. Massal. & De Not.) Jatta

Former distribution: Between Chatburn and Worston, 1907; Formby, 1912; Worsaw Hill, 1913 (Wheldon & Travis).

Habitat: Given respectively as encrusting mosses on a limestone scar; on dunes; in crevices of limestone rock. Generally over mosses or plant debris on limestone rocks or on calcareous soil.

**Bacidia beckhausii* (Koerb.)

Former distribution: Freshfield dunes (Wheldon & Travis).

Habitat: On old bark lying in the dunes, 1908; on bark of *Pinus maritima*, 1914.

Comments: *B. beckhausii* is largely restricted to broad-leaved trees in old woodlands. Its British stronghold is in northern Scotland. It is almost unknown in England.

**Bacidia effusa* Arnold

Former distribution: Found at Freshfield in 1914 by Wheldon & Travis.

Habitat: On old leather.

Comments: Many of the apothecia were infected by fungal mycelium. The identity of this lichen is not known. The name *B. effusa* has been variously applied to several *Bacidia* species with pale apothecia.

Bacidia egenula (Nyl.) Arnold

Former distribution: Ainsdale dunes, 1913 (Wheldon & Travis).

Comments: Reported as a new species, *Bacidia epiphylla* Wheldon & Travis, from a specimen growing on fallen leaves of *Salix repens*. The description may be of *B. egenula*, which is recorded from various habitats including rabbit droppings in sand-dunes.

However, the description differs in several respects from that of *B. egenula* but is shown in the 1980 checklist and the BLS synonym website as a synonym for *B. epiphylla* (Nyl.) Arnold

**Bacidia phacodes* Körber

Former distribution: Wheldon & Travis reported this species in the dunes near Freshfield in 1913 and again in 1914.

Habitat: On pieces of old leather lying in the dunes.

Comments: This lichen usually grows on nutrient-rich, rough bark, especially of *Ulmus*. The identity of the lichen on leather can only be guessed at, but *B. chlorotricula* (Nyl.) A.L. Sm. has crowded apothecia and spores which match those described.

Baeomyces rufus (Huds.) Rebert.

Distribution: Common in the upland areas of the region.

Former distribution: Wheldon & Travis regarded this species as rare and listed only four localities. An increase is evident from the present survey.

Habitat: Damp weathered sandstone and sandy or peaty soils.

Comments: Found after the end of the recording period beside the Rochdale Canal, Deansgate Tunnel (SJ89NW, A&NB, 2006). Its presence in central Manchester is a further indication of improved atmospheric conditions here.

Bryoria fuscescens (Gyelnik) Brodo & D. Hawksw.

Former distribution: White Coppice (SD61NW, NWNU, 1993).

Habitat: On trees, not specified.

Comments: Not re-found during recording period, the trees were it is believed to have been since died.

Buellia aethalea (Ach.) Th. Fr.

Distribution: Rather local in the northern half of the region.

Habitat: Smooth-grained siliceous rocks, especially the upper surface of headstones in churchyards.

Comments: Apparent absence from the Mersey lowlands is presumably a consequence of past air pollution.

Buellia griseovirens (Turner & Borrer ex Sm.) Almb.

Distribution: Recorded mainly from the south-west of the county but present as far north as Downham.

Habitat: On smooth bark of young trees.

Comments: A recent arrival, spreading from the south-west.

Caloplaca aurantia (Pers.) Hellb.

Distribution: Restricted to limestone in the Ribble Valley; Clitheroe, Chatburn and Worsaw Hill (SD74SE & SW, JPG, 2003).

Habitat: Limestone outcrops and walls in sunny locations.

Caloplaca citrina (Hoffm.) Th. Fr.

Distribution: Throughout the vice-county.

Habitat: On calcareous substrates including concrete, mortar and asbestos-sheeting. Also, on limestone outcrops.

Comments: During the last quarter of the 20th century this species spread back into urban areas and is now one of the commonest lichen species in the region. Wheldon & Travis regarded it as not common and rarely found it fruiting. Apothecia are no longer unusual.

Caloplaca crenularia (With.) J. R. Laundon

Former distribution: Wheldon & Travis recorded this lichen as *Calloposma ferrugineum* var. *festivum* Nyl. from Smithies Bridge, Chatburn and from Hale Point, both in 1910.

Habitat: On sunlit sandstone, in similar settings to *Tephromela atra*.

Caloplaca decipiens (Arnold) Blomb. & Forss.

Distribution: By the Leeds & Liverpool Canal, Downholland (SD30NE, JPG, 2003).

Habitat: On horizontal surface of concrete coping above the water.

Comments: In the wider region, this species shows a close association with waterways.

Caloplaca flavescens (Huds.) J. R. Laundon

Distribution: Largely restricted to the Ribble valley

Habitat: Limestone outcrops and masonry.

Caloplaca holocarpa (Hoffm.) A.E. Wade

Distribution: Throughout the vice-county, appearing in town-centres within the past twenty years. Very common.

Habitat: On concrete, mortar, asbestos-sheeting and other calcareous habitats including stone in the Ribble Valley. Occasionally on dust-impregnated timber.

Comments: A member of the urban "weed" community along with *Lecanora dispersa*, *Candelariella aurella* and *Caloplaca citrina*.

Caloplaca marina (Wedd.) Zahlbr. ex Du Rietz

Distribution: By Seaforth Docks (SJ39NW, JPG, 2003).

Habitat: On concrete sea defences.

Caloplaca saxicola (Hoffm.) Nordin

Distribution: Probably throughout the vice-county but still scarce in urban centres. Perhaps under-recorded in the east. Moderately common.

Habitat: On concrete posts and other artificial, calcareous substrates.

Comments: Wheldon & Travis reported various placoid *Caloplaca* species, whose identity is unclear in the light of subsequent taxonomic changes. *Placodium murorum* DC and *P. tegularis* Ehrh. were both recorded only from the Ribble limestone and may have referred to one or other of the species still restricted to that area rather than to what is currently understood by *C. saxicola*.

Candelariella aurella (Hoffm.) Zahlbr.

Distribution: Common throughout the vice-county, including in urban areas.

Habitat: Mostly on artificial calcareous substrates including concrete, mortar and asbestos sheeting.

Comments: Given the current status of the species it is surprising that Wheldon & Travis had only a single record, from Birkdale in 1912.

Candelariella medians (Nyl.) A.L. Sm.

Distribution: Recorded only from beside the Ribble Way at Longton (SD42NE, JPG, 2003).

Habitat: On concrete posts and flagstones.

Candelariella reflexa (Nyl.) Lettau

Distribution: Scattered across much of the vice-county. Apparent absence from the south-west may be a quirk of recording.

Habitat: Sloping branches of *Salix*, *Malus*, *Prunus domestica* and other trees.

Comments: A recent arrival in the area, with no records surviving from the pre-industrial era.

Candelariella vitellina (Hoffm.) Müll. Arg.

Distribution: Common throughout much of the vice-county, scarce or absent in the mossland areas where suitable substrates are lacking.

Former distribution: Not uncommon in Wheldon & Travis' time in all but the most smoke-affected districts.

Habitat: Perhaps originally birds' perching rocks in the uplands and at the coast but present in nutrient-enriched habitats on sandstone, brickwork, sawn timbers and other non-calcareous substrates.

**Catapyrenium lachneum* (Ach.) R. Sant.

Former distribution: Near Clitheroe, 1906; near Chatburn, 1907; top of Worsaw Hill, Chatburn, 1913 (Wheldon & Travis).

Habitat: On earth among limestone rocks.

Comments: Within Britain, this species is known primarily from the uplands of Scotland and Wales. The early records may perhaps refer to *C. squamulosum*.

Catillaria chalybeia (Borrer) A. Massal.

Distribution: In the south around Newton-le-Willows (SJ59SE, JPG, 2003) and Pennington Flash (SJ69NW, JPG, 2003) and in the north-east at Hurstwood (SD83SE, JPG, 2003) and Cant Clough Reservoirs (SD93SW, JPG, 2003).

Former distribution: There is an old record from Pendle Hill in 1911 (Wheldon & Travis).

Habitat: On siliceous pebbles in industrial waste-heaps; and on weathered sandstone in old, mortared walls. The Pendle site was on calcareous shaly rocks in a gully above Hook Cliffe.

Catillaria lenticularis (Ach.) Th. Fr.

Former distribution: Worsaw Hill, 1910 and Hacking Boat, 1913 (Wheldon & Travis).

Habitat: On shady limestone rocks and mortar in an old wall respectively.

Comments: Would be expected still to be present in the vice-county.

Cetraria aculeata (Schreber) Fr.

Distribution: Present on the sand-dunes in the west and in the hills east of Burnley. Ainsdale dunes (SD21SE/SD31SW, JPG, 2003); Troy Quarry, (SD72SE, A&NB, 2005); above Hurstwood Reservoir (SD83SE, JPG, 2003); Worsthorpe Moor (SD93SW, JPG, 2003).

Habitat: This shrubby lichen grows in small cushions over thin, freely draining soils. In the coastal strip it indicates leached conditions high up on fixed dunes. In the Pennines it grows on rankers developing over screes and outcrops.

Comments: This dichotomy of stations was already noted by Wheldon & Travis.

Chaenotheca ferruginea (Turner ex Ach.) Mig.

Distribution: A survivor of the pre-industrial era in topographically sheltered woodlands in the Ribbles Valley at Downham (SD74NE, JPG, 2003); Twiston (SD84SW, A & NB, 2005); Laneshaw Bridge (SD94SW, A & NB, 2005). Also at Banks (SD42SW, DPE, 1998)

Habitat: In dry bark fissures of old *Quercus* and *Fraxinus*.

Comments: The species has recently begun to spread out from relict localities in the neighbouring vice-county 58 (Cheshire) so may be expected to appear more widely in South Lancashire in future.

Cladonia arbuscula (Wallr.) Flotow

Distribution: Recorded only from Worsthorne Moor (SD93SW, JPG, 2003); rare there.

Habitat: On moorland amongst *Calluna* and *Nardus*.

Comments: Old records of the various "reindeer lichens" are confusing. Wheldon & Travis listed *C. arbuscula* as *Cladonia sylvatica* Nyl. but had no record of *C. portentosa*, which in recent times has been the commoner species in the vice-county. They considered that 19th century records of *C. rangiferina* from Rooley Moor, Rush Hill near Rochdale and from the Forest of Rossendale belonged under *C. arbuscula* (= *sylvatica*), which was by then very rare if not extinct in the uplands. They had records however from the dunes at Formby, Ainsdale and Freshfield. From the modern perspective, it appears more likely that the dune plants were *C. portentosa*.

Cladonia caespiticia (Pers.) Flörke

Former distribution: Recorded by Wheldon & Travis from Freshfield, Little Crosby, Kirkby, Formby and between Aintree and Maghull in the south-west, also from Boulsworth Moor and Chatburn.

Habitat: Given as on heathy ground, in crevices of mossy walls, and on dry banks in the sand-dunes.

Cladonia cervicornis (Ach.) Flotow

Distribution: Recorded only from Worsthorne Moor (SD93SW, JPG, 2003).

Habitat: A narrow ledge on a gritstone boulder.

Former distribution: White Coppice (SD61NW, M. Gosling, 1992)

Comments: Older records may refer to *C. subcervicornis*.

Cladonia chlorophaea (Flörke ex Sommerf.) Sprengel

Distribution: Throughout the vice-county except for the agricultural lowlands in the west where suitable substrates are absent.

Habitat: Moorland and heathland habitats; soil pockets on siliceous boulders and walls; colliery spoil; decomposing wood; acidic parts of dune-systems.

Comments: A variable species with several chemotypes, which however have not been investigated in the study area. Wheldon & Travis treated this as a variety of *C. pyxidata*. Although they gave only two records of var. *chlorophaea*, from sandhills at Birkdale and Freshfields, their concept may have differed from the modern understanding of the species.

Cladonia coccifera (L.) Willd.

Distribution: Common in the uplands, scarce or absent in lowland areas.

Habitat: Walls, outcrops and boulders or scree of gritstone or other acidic rocks, also on peaty and acidic soils.

Comments: A century ago the species was generally found in a poorly developed state and fruited only occasionally. The bright red fruits are now a familiar sight although specimens in some exposed sites remain stunted. Local forms should perhaps more properly be referred to as *C. diversa* Asperges.

Cladonia coniocraea (Flörke) Sprengel

Distribution: Common across most of the vice-county, thinning out in urban areas. In the agricultural mosslands of the west suitable substrates are scarce.

Habitat: Boles and horizontal branches of trees with acidic bark, especially in humid settings. Also, on fence rails and *Quercus* stumps. Sometimes on peat and on acidic soils on industrial waste-heaps.

Comments: The lack of early records for this species is puzzling. A quarter of a century ago, when many lichen species first began to enter the vice-county following improvements in air quality, *C. coniocraea* was already widespread in the region, being then present in many wet woodlands. As in neighbouring Cheshire (VC58) where older records are similarly absent, it appears that this species may have extended its

range during the period of severe pollution. It is also possible however that the cupless podetia of *C. coniocraea* were passed off as poorly formed specimens of other species.

Cladonia crispata var. *ceptrariiformis* (Delise ex Duby) Vainio

Distribution: Troy Quarry, Grane (SD72SE, A & NB, 2005).

Former distribution: Recorded from Ainsdale dunes (SD21SE, P.M. Earland-Bennett, 1979).

Habitat: Usually an upland species but known from heathland on the Wirral peninsula (VC58). Disturbed ground at Troy Quarry.

Comments: The dunes have not been surveyed in detail. This species may still occur here.

Cladonia digitata (L.) Hoffm.

Distribution: Very local, recorded from High Brows Covert (SD31SE, DPE, 1998); Coppull (SD51SE, JPG, 2003); Roddlesworth (SD62SE, JPG, 2003) and Swanside (SD74NE, JPG, 2003). Under-recorded.

Habitat: On the boles of trees in damp woodland settings.

Former distribution: Regarded by Wheldon & Travis as very rare or possibly overlooked. They had records from Whitworth and from Easden Clough near Burnley.

Cladonia fimbriata (L.) Fr.

Distribution: Common and widespread, especially in the eastern uplands. Rather local in the south-west.

Habitat: On old bark on the boles and lower branches of trees in humid sites, especially willow carrs. Also in soil pockets in walls and on spoil heaps.

Cladonia floerkeana (Fr.) Flörke

Distribution: Essentially an upland species, widespread in the east but scarce in the lowlands.

Former distribution: Wheldon & Travis had only a single record from Withnell Fold, Chorley in 1911.

Habitat: Moorland and heathland soils; decorticate wood such as old fence rails and tree-stumps; also on colliery spoil-heaps.

Cladonia foliacea (Huds.) Willd.

Distribution: Known only from the coastal sand-hills but common between Ainsdale and Formby (SD20NE, SD21SE, SD31SW, JPG, 2003) and (SD31NW, DPE, 1998)

Former distribution: Recorded by Wheldon & Travis from the very same localities.

Habitat: Calcareous parts of the dune-systems in moss-lichen swards.

Cladonia furcata (Huds.) Schrader subsp. *furcata*

Distribution: Thinly distributed in the lowlands, commoner in the eastern hill districts.

Habitat: Acidic soils, including coastal sand, industrial spoil heaps, heathland and soil pockets on walls and boulders.

Comments: Apothecia are now sometimes seen. Wheldon & Travis recorded only sterile plants.

Cladonia furcata subsp. *subrangiformis* (Sandst.) Abbayes

Distribution: Recorded only from Worsaw Hill (SD74SE, JPG, 2003).

Habitat: On thin soil developing at the base of limestone outcrops.

Cladonia gracilis (L.) Willd.

Former distribution: Another species recorded at Ainsdale dunes in 1979 (SD21SE, P.M. Earland-Bennett).

Habitat: Generally, in mixed *Cladonia* stands on heathland or dunes. Details of the Ainsdale record are not available.

Comments: Searching in the dunes might reinstate this species in the vice-county flora.

Cladonia humilis (With.) J. R. Laundon

Distribution: Recorded only from Formby (SD20NE, JPG, 2003); Boarshaw (SD80NE, A & NB, 2005) and Irlam (SJ79SW, E.P. McCann, 2000)

Former distribution: Records of *Cladonia fimbriata* var. *conista* at Freshfield and Ainsdale in 1914 (Wheldon & Travis 1915) and of *C. conista* at Ainsdale (SD31SW) in 1979 (P. Earland-Bennett) presumably refer to *C. humilis*. *C. conista* A.W. Evans is a closely similar species not known in Britain.

Habitat: In bryophyte swards on the dunes at the coast and on freely draining, cindery soils in the Mersey Valley and canal copings at Boarshaw.

Cladonia macilenta Hoffm.

Distribution: Common in the centre and east of the vice-county.

Habitat: On heathlands and other acid soils, weathered bark and lignum.

Comments: Wheldon & Travis listed both *C. macilenta* and *C. bacillaris* Nyl. ex Cromb., which is now regarded as a chemotype of *C. macilenta*. Older books (e.g. Duncan 1970) distinguish *C. bacillaris* by its white farinosity.

Cladonia ochrochlora Flörke

Distribution: Worsthorne Moor (SD93SW, JPG, 2003)

Former distribution: Ainsdale dunes (SD31SW, PME-B, 1979).

Habitat: In peat pockets on gritstone boulders. Rare.

Comments: The distinctiveness of this species from *C. coniocraea* is uncertain. The Worsthorne plants were large, with small apical cups on some of the podetia.

Cladonia pocillum (Ach.) Grognot

Distribution: Recently recorded from Worsaw Hill (SD74SE, JPG, 2003); Twiston (SD84SW, A&NB, 2005) and adjacent parts of the Ribble Valley.

Former distribution: Wheldon & Travis recorded this from Worsaw Hill and also from dunes at Formby, Freshfield, Ainsdale and Hightown. Their record from Rainford Moss in 1898 is improbable on grounds of habitat. *C. pocillum* was still at Ainsdale in 1979 (SD21SE, P. Earland-Bennett) and may well still grow there.

Habitat: Soil pockets on limestone rocks or calcareous parts of dune-systems.

Comments: Regarded by some as an ecotype of *C. pyxidata* – intermediate forms occur.

Cladonia polydactyla (Flörke) Sprengel

Distribution: Scattered across the northern half of the vice-county.

Habitat: Acid bark, especially the rugged bases of old *Betula*.

Occasionally on weathered stone or thin soil.

Comments: Not listed by Wheldon & Travis. If the species was present a century ago it may have been poorly developed and not readily identifiable.

Cladonia portentosa (Dufour) Coem.

Distribution: Widely but thinly distributed in the Pennine hills. An outlying population is present on the coastal dunes. There are also isolated stations on colliery spoil heaps.

Habitat: On heathland slopes in the east, extending locally onto level moorland. Sandy and acidic soils in the lowlands.

Comments: Older records of *C. arbuscula* probably belong here. On the analogy of *C. subulata*, the spoil-heap populations may have moved in from the coast with the prevailing winds, rather than down from the moors.

Cladonia pyxidata (L.) Hoffm.

Distribution: Local in the centre of the vice-county, rather more widespread in eastern moorland areas.

Habitat: On peaty and acid soils, including soil pockets on boulders and walls.

Comments: The coarsely granular surface of the cups in this species is distinctive. Wheldon & Travis' comment that it was common and recorded throughout the vice-county is perhaps misleading since their concept of the species included *C. chlorophaea* and *C. pocillum*.

Cladonia ramulosa (With.) J. R. Laundon

Former distribution: Recorded from Ainsdale (SD21SE, P.M. Earland-Bennett, 1979).

Habitat: In the dunes at the National Nature Reserve.

Comments: This species may still occur and should be looked for in the coastal sandhills.

Cladonia rangiformis Hoffm.

Distribution: Widespread and in many places abundant along the coastal dunes, where Wheldon & Travis described it as not uncommon. Very local inland on industrial waste-heaps.

Habitat: On freely draining neutral to calcareous or basic soils.

Comments: Like *C. portentosa* and *C. subulata* this is a dune species that has colonised spoil-heaps inland.

Cladonia scabriuscula (Delise) Nyl.

Former distribution: Near Walton, Liverpool (Wheldon & Travis).

Habitat: On large blocks of sandstone sunk in the railway banks,

Comments: This record was reported as "Cladonia flabelliformis (Floerke) Wainio f. scabriuscula (Del.) Wainio".

C. flabelliformis was a synonym for *C. polydactyla*, now a common species in the region but not recorded by Wheldon & Travis. The varietal epithet *scabriuscula* appears to identify the lichen as *C. scabriuscula*, a more local species, which has not been found during recent fieldwork.

Cladonia squamosa Hoffm.

Distribution: Sparsely in the southern part of the county.

Former distribution: Ainsdale dunes (SD21SE, P.M. Earland-Bennett, 1979); White Coppice (SD61NW, M. Gosling, 1992) and Moses Gate (SD70NW, B.E. Bescoby, 1986)

Habitat: On rotting wood in the dunes and in soil pockets in colliery spoil and waste ground.

Cladonia subcervicornis (Vainion) Kernst.

Distribution: Sabden (SD73NE, JPG, 2003); Fern Isle Clough, Whitworth (SD81NW, NWNU, 1994).

Habitat: On gritstone rocks and walls on the higher hills in the east.

Comments: Wheldon & Travis' (1915) records of *C. cervicornis* Schaer. from Blacko-Foot, Blackstone Edge and Noyna may belong here. In neighbouring Cheshire, older reports of *C. cervicornis* coincide with recent localities for *C. subcervicornis*.

Cladonia subulata (L.) F.H. Wigg.

Distribution: Common on the dunes at Ainsdale (SD21SE, SJ31SW, both JPG, 2003). Also on a colliery spoil-heap, Newton-le-Willows (SJ59SE, JPG, 2003).

Habitat: On acid sand in the coastal dunes and on shaley waste inland. In adjacent vice-counties it grows on lowland heaths.

Comments: This is a member of the assemblage of dune plants (including *Salix repens* and *Dactylorhiza* spp.) that has colonised industrial waste sites inland by means of propagules carried on the wind. The lichen recorded by Wheldon & Travis as *Cladonia fibula* var. *radiata*

from sand-dunes at Hightown in 1906 was perhaps *C. subulata*. *C. subulata* was certainly recorded from Ainsdale dunes by P.M. Earland-Bennett in 1979.

Cladonia uncialis (L.) F.H. Wigg. subsp. *biuncialis* (Hoffm.) M. Choisy

Distribution: One recent record from Troy Quarry (SD72SE, A&NB, 2005)

Former distribution: Wheldon & Travis had an old record from Rush Hill, near Rochdale and a more recent record from Pendle Hill.

Habitat: The Pendle record was from peaty ground at 1300 feet. At Troy quarry it was growing on quarry spoil. Further south along the Pennines the lichen grows on moorland and adjacent rough pastures. White Coppice (SD61NW, NWNU, 1993).

Comments: The rarity of this species is surprising. However in VC58 it first appears to south-east of Stockport. It may therefore be genuinely absent on the hills to east of the industrial centres of South Lancashire.

Clauzadea immersa (Hoffm.) Hafellner & Bellem.

Former distribution: Recorded near Chatburn Station in 1907 (Wheldon & Travis).

Habitat: Limestone rocks.

Comments: This is another calcicolous species that may survive unrecorded in the Ribble Valley area.

Clauzadea monticola (Ach.) Hafellner & Bellem.

Former distribution: A recorded by Wheldon & Travis of *Lecidea ochracea* Wedd. from above Hook Cliffe, Pendle Hill in 1913 is provisionally placed here.

Habitat: Given as argillaceous limestone rock in a gully at 750 feet.

Catapyrenium squamulosum (Ach.) Breuss

Distribution: Recorded only from Worsaw Hill (SD74SE, JPG, 2003).

Habitat: On limestone rocks.

****Cliostomum corrugatum*** (Ach.) Fr.

Former distribution: By the Ribble near Clitheroe, 1912 and at the mouth of Chatburn Brook, Chatburn, 1914 (Wheldon & Travis 1915).

Habitat: On hawthorn and elm respectively.

Comments: *C. corrugatum* is a very rare species found on wood in East Anglia, e.g. on posts in saltmarshes. The S. Lancashire records are more likely to refer to *C. griffithii* (Sm.) Coppins.

Collema auriforme (With.) Coppins & J. R. Laundon

Distribution: Widespread on the Ribble Valley limestone (SD74SE/SW, JPG, 2003). Other records from Read (SD73SE, A&NB, 2005); Twiston (SD84SW, A&NB, 2004) and Blacko (SD84SE, A&NB 1999)

Habitat: On limestone including mortared limestone walls, generally amongst mosses.

Comments: Wheldon & Travis did not mention this species but recorded the similar *C. fuscovirens* (With.) J. R. Laundon (as.) from three localities on the Ribble Valley limestone, both on native rock and on masonry. The coincidence of stations gives rise to the strong suspicion that the same lichen has been recorded under different names.

Collema crispum (Huds.) F.H. Wigg.

Distribution: Recorded only from Twiston (SD84SW, A&NB, 2004)

Former distribution: Recorded by Wheldon & Travis from the Clitheroe and Worston areas and from sandstone walls at Little Crosby.

Habitat: On dam wall.

Collema cristatum (L.) F.H. Wigg.

Former distribution: Formerly known (Wheldon & Travis) from Pendle Hill and perhaps from Worsaw Hill, Chatburn.

Habitat: Described as growing on a small limestone "scar" below Pendle Hill and on earth amongst limestone rocks at Worsaw.

Comments: Wheldon & Travis reported the Pendle lichen as *Collema granuliferum*. Their record of *C. melaenum* Ach. from Worsaw Hill may also refer to this species.

**Collema fuscovirens* (With.) J. R. Laundon

Former distribution: Wheldon & Travis recorded this from three localities in the Ribble Valley

Habitat: Limestone, both on native rock and on masonry.

Comments: See note under *C. auriforme*.

Collema limosum (Ach.) Ach.

Former distribution: Wheldon & Travis recorded the species between Garston and Speke.

Habitat: Banks of clay along the shores of the Mersey estuary.

Comments: Travis (1922) subsequently noted the species in "bare, moist places among herbage on banks of boulder clay" on the Wirral shore at Bromborough in VC 58.

Collema tenax (Swartz) Ach.

Distribution: Recorded recently only from Downham (SD74SE, JPG, 2003).

Former distribution: Wheldon & Travis regarded the species as rare. They had records of var. *vulgare* from Freshfield and from a limestone wall by Horrocksford Bridge near Clitheroe. They also recorded var. *ceranoides* from dunes at Hall Road. *C. tenax* was listed from Ainsdale Dunes (SD21SE) in 1979 (P.M.Earland-Bennett).

Habitat: Amongst mosses on sand-dunes and in a damp recess on top of a limestone wall.

**Dibaeis baeomyces* (L.f.) Rambold & Hertel

Former distribution: There is a mid-19th century record from Woolton (Rev. H. H. Higgins & F. P. Marrat).

Habitat: Described as being on stones and adjacent ground in a wood.

Comment: The lowland setting is more appropriate to the common *Baeomyces rufus*.

Dimerella lutea (Dickson) Trevisan

Distribution: Moses Gate (SD70NW, A&NB, 2004); Pennington Flash (SJ69NW, A&NB, JPG, NWNU, 2003).

Habitat: On bark of willow with various *Parmelia* species and bryophytes.

Comments: This was regarded as an indicator species of old woodlands and was largely restricted to *Lobarion* communities along the western and southern fringes of the British Isles. It is very sensitive to sulphur dioxide pollution. Its appearance amongst the invading epiphyte assemblages is even more surprising than that of *Parmotrema chinense*.

Dimerella pineti (Ach.) Vězda

Distribution: Pennington Flash (SD69NW, A&NB, 2003); Moses Gate (SD70NW, A&NB, 2005); Reddish Wood (SD71NE, A&NB, 2005) and Daisy Nook (SD90SW, A&NB, 2005)

Habitat: Damp woodland on rough-barked trees, especially in fissures.

Comments: Although rather slow to appear amongst the invading epiphytes, which responded to cleaner air, *D. pineti* is now spreading rapidly.

Diploicia canescens (Dickson) A. Massal.

Former distribution: Wheldon & Travis regarded this as not infrequent and cited records from Netherpton, Crosby, Chatburn and Downham.

Habitat: Walls of limestone and sandstone; gate-posts; roadside trees.

Comments: The species was obliterated by air pollution from most of the vice-county. It may survive in the Ribble Valley area.

**Diploschistes scruposus* (Schreber) Norman

Former distribution: Recorded by Wheldon & Travis from Rainford, Clitheroe and Worsaw Hill.

Habitat: The Worsaw Hill record was from shady limestone rocks.

Comments: *D. scruposus* is more typical of sandstone. The Clitheroe and Worsaw records may perhaps have referred to *D. muscorum* (Scop.) R. Sant., which initially parasitises *Cladonia pocillum*, which grows commonly on the limestone.

Evernia prunastri (L.) Ach.

Distribution: Common throughout the vice-county, less so in upland areas.

Habitat: Usually found epiphytic on many species of trees, especially *Acer pseudoplatanus*, *Fraxinus*, *Quercus*, *Salix*, *Sambucus*. Now also appearing in the twig flora of hedgerows. Occasionally on sandstone or on the ground, especially in the dune areas.

Comments: In 1915 the species was described as very rare and so poorly developed as to be barely recognisable. *Evernia* is sensitive to smoke and sulphur pollution. By the end of the 1980s it was reappearing across South Lancashire and has now even reached town centres. Only found sterile.

Flavoparmelia caperata (L.) Hale.

Distribution: Thinly distributed across the vice-county.

Former distribution: Regarded as extinct by Wheldon & Travis, who knew only of its presence in the mid-19th century on old trees in Sheddon Clough (Flora of Todmorden).

Habitat: On the trunks and main branches of broad-leaved trees.

Comments: In 1988 a well grown thallus was seen on *Salix* at Martin Mere Wildfowl Trust (SD41SW, JPG). Since then it has appeared in many localities and is actively spreading.

Fuscidea cyathoides (Ach.) V. Wirth & Vězda

Distribution: Recorded recently only from Worsthorne Moor and Black Hameldon (SD83SE, SD93SW, JPG, 2003).

Habitat: On gritstone boulders and outcrops above 300m.

Graphis scripta (L.) Ach.

Former distribution: Forest of Rossendale, 19th century (Stansfield); described as extinct by Wheldon & Travis.

Habitat: Smooth bark of trees.

Comments: This species has recently started spreading back across formerly polluted parts of north-western England. It may be expected to reappear in S. Lancashire in the near future.

Gyalecta jenensis (Batsch) Zahlbr.

Former distribution: Wheldon & Travis recorded this from Downham and Worsaw Hill, adding that it was probably not uncommon in that neighbourhood.

Habitat: On damp, shady limestone rocks and on decayed moss on the mortar of an old limestone wall.

Comments: This species may well survive on the Ribble Valley limestone; this area having been only fleetingly visited during recent survey work.

Gyalideopsis anostomosans P. James & Vězda

Distribution: Mere Sands Wood (SD41NW, JPG, 2003); Rufford (SD41SE, JPG, 2003); Rivington (SD61SW, JPG, 2003); Risley Moss (SJ69SE, JPG, 2000).

Habitat: On the bark of horizontal *Salix* branches in wet woodland.

Comments: The species is a recent arrival in lowland willow carrs in the wider region.

Haematomma ochroleucum (Necker) J. R. Laundon var. *porphyrium*

(Pers.) J. R. Laundon

Distribution: Restricted to the far north-east of the county. Whalley & Sabden (SD73NW & NE, JPG, 2003); Worsthorne Moor (SD93SW, JPG, 2003).

Habitat: On sandstone or gritstone walls and outcrops; on vertical surfaces.

Comments: Only seen in a sterile form. This is one of many saxicolous species that would appear to have been obliterated from much of the southern Pennines by air pollution.

Hypocenomyce scalaris (Ach. ex Lilj.) M. Choisy

Distribution: Recorded recently only from Roddlesworth (SD62SE, Owen McCann, A&NB, 1996).

Habitat: Acidic bark towards the base of *Quercus* and other trees.

Comments: The Roddlesworth site has since been lost by flooding. This species would be expected to occur much more widely.

Hypogymnia physodes (L.) Nyl.

Distribution: Common across much of the vice-county, especially in the higher rainfall areas in the east. May be declining in the west.

Habitat: Acidic and leached bark of many tree and shrub species, especially *Quercus*, *Larix*, *Betula*, *Calluna* etc. This was one of the members of the assemblage of mostly sorediate lichen species that appeared in humid *Salix* carrs from the late 1970s. It then appeared commonly on fruit trees in suburban gardens. The species also occurs on acid soils in dunes and on industrial waste heaps.

Comments: Wheldon & Travis found this chiefly in the dune areas along the coast, but they also reported it commonly in the north-east of

the vice-county. This species spread quickly across the region as atmospheric pollution declined in the latter half of the 20th century. Tree bark across lowland parts of the region appears to have changed in character during the past twenty years or so and now supports fewer acidophilous lichen species. Other species to show a parallel decline include *Platismatia glauca* and *Usnea subfloridana*. Factors involved include a reduction in sulphurous pollutants in the atmosphere and in some areas an increase in dust generated by vehicle traffic.

Hypogymnia tubulosa (Schaerer) Havaas

Distribution: More local than the previous species and seemingly absent from much of the west of the vice-county.

Habitat: Usually found in mixed communities of acidophilous species on horizontal branches of *Quercus*, *Larix* and other tree species in high rainfall areas. It also occurs on *Salix* in wet lowland woods.

Comments: Not recorded by Wheldon & Travis, the species has been recorded widely since the general invasion of lichen species in the last quarter of the 20th century.

Hypotrachyna revoluta (Flörke) Hale

Distribution: Throughout the vice-county in woodland settings.

Habitat: *Salix* carrs and other sheltered woodlands, growing amongst other *Parmelia* species especially on *Salix fragilis* but also noted from *Acer pseudoplatanus*, *Fraxinus*, *Sambucus* etc.

Comments: Very unlikely to have survived 20th century pollution within the vice-county. Probably all records stem from an invasion occurring since the 1980s.

Ionaspis lacustris (With.) M. Lutzoni

Former Distribution: Fern Isle Clough, Whitworth (SD81NW, NWNU, 1994).

Habitat: Rocks in stream.

Lecania cyrtella (Ach.) Th. Fr.

Distribution: Probably now throughout much of the vice-county but still scarce or not yet recognisable in the south-east.

Habitat: On twigs of *Sambucus*, also on bark of *Fraxinus*.

Comments: This species has increased rapidly in recent years and was found in most stands of elder bushes inspected during recent survey.

Lecania erysibe (Ach.) Mudd

Distribution: Thinly scattered but probably much overlooked in urban sites.

Habitat: On brick and damp masonry; rubble on waste-heaps.

Lecanora albella (Pers.) Ach.

Distribution: Recorded only from Longton, beside the Ribble Way (SD42NE, JPG, 2003).

Former distribution: Wheldon & Travis had a record from the sandhills at Formby in 1913.

Habitat: On twigs of *Acer pseudoplatanus*. The 1913 record was from dead twigs of *Salix repens*.

Comments: This species is spreading back into the region encouraged by cleaner air.

Lecanora albescens (Hoffm.) Branth & Rostrup

Distribution: Scattered across the north-western half of the vice-county, seemingly absent from urban areas.

Former distribution: Recorded only rarely by Wheldon & Travis from limestone around Chatburn and from mortar elsewhere in the vice-county. However, they also recorded the synonymous *L. urbana* from the mortar of old walls at Walton (Liverpool), Fazackerley and Waterloo.

Habitat: Hard concrete including fenceposts; also tombstones of white 'marble'.

Lecanora campestris (Schaerer) Hue

Distribution: A thin scatter of records from lowland parts of the vice-county.

Former distribution: Wheldon & Travis recorded it (from coastal sites between Hale Point and Woodvale but their only inland record was from limestone at Chatburn).

Habitat: Calcareous stonework including mortared walls and tombstones, concrete fenceposts.

Comments: The apparent absence from upland areas may reflect the acidification of otherwise suitable substrates by 20th century air pollution.

Lecanora cenisia Ach.

Former distribution: Found by Wheldon & Travis at Hale Point and Dingle Point.

Habitat: On sandstone and masonry.

Comments: Also recorded by Travis (1910) at Eastham on the Cheshire side of the Mersey and at Hoylake and Hilbre Island at the mouth of the Dee (Travis 1922). All these records were as *L. atrynea*, a synonym for *L. cenisia* var. *atrynea* (Ach.) Clauz & Roux, which has black apothecial discs and whose habitat is said to be coarse, siliceous supra-littoral rocks. The superficially similar and nationally much commoner *L. gangaleoides* might be expected to occur in similar localities.

Lecanora chlarotera Nyl.

Distribution: Throughout the vice-county.

Former distribution: A century ago the species was very rare.

Wheldon & Travis recorded it from tree-stumps on the shore at Banks in 1909 and near Downham in 1914. They also had records of lichens in the 'subfusca-group' (*L. rugosa* Nyl.; *L. chlarona* Cromb.), from Chatburn, Hale and Ainsdale, which may have been of *L. chlarotera*. A 19th century record of *Lecanora allophana* from Kirkby, which they also reported, may also belong here.

Habitat: Smooth bark of young trees of many species. More rarely on rough bark in *Salix* carrs.

Comments: The species may have lingered in the Ribble Valley during the 20th century but otherwise became extinct across most of the vice-county. It showed a strong resurgence starting in the last decade before the millennium.

Lecanora conizaeoides Nyl. ex Crombie

Distribution: A strongly declining species, still present throughout the county but much less abundant than twenty-five years ago. It can still be found in most areas but in many cases only by determined searching.

Former distribution: First noted in Britain in 1861 and in Manchester in 1870. It then spread throughout lowland Britain to occupy the niches left by more sensitive species that had succumbed to air pollution.

Wheldon & Travis had only a single record, from a wooden post at Formby in 1914. By the 1980s, with sulphur dioxide pollution past its worse, *L. conizaeoides* was the dominant lichen in many woodland settings, and abundant throughout the vice-county, being the only epiphytic lichen in many areas.

Habitat: Acidic, leached bark of many species of trees but retreating from these onto palings and decorticate wood. Still common in some areas on sandstone and gritstone. The original habitat is believed to be beside sulphur springs in Iceland.

Comments: A lichen very tolerant of, or perhaps requiring, sulphur pollution. The absence of documentation between 1915 and the present study means that the timing of the ascendancy of *L. conizaeoides* to near ubiquity by 1980 at the latest went unrecorded. However, Wheldon & Travis' records of *L. varia*, which they described as tolerant of smoke and common throughout the vice-county, might perhaps have been more correctly referred to *L. conizaeoides*. Their *L. varia* was described as often fruiting well. *L. conizaeoides* is most easily distinguished by its sorediate thallus, which character becomes less evident when the species is fruiting. That fertile examples were taken for *L. varia* in the past is not unlikely.

Lecanora crenulata Hook.

Distribution: Recent records only from limestone rocks in the Ribble Valley (SD74SE & SW, JPG, 2003).

Habitat: On limestone. Should also be looked for on concrete fenceposts and similar artificial substrates elsewhere in the vice-county.

Comments: Wheldon & Travis recorded this species more widely but gave the habitat as sandstone rocks and walls, which conflicts with present understanding of the species.

Lecanora dispersa (L.) Sommerf.

Distribution: One of the commonest and most ubiquitous lichen species throughout the region.

Habitat: On mortar, concrete, asbestos-cement; also on dust-splashed substrates such as fence-posts, discarded tyres etc.

Comments: Given the present abundance of this species, it is surprising to note that Wheldon & Travis quoted very few records. They reported *L. dispersa* from mossy mortared walls by the Ribble near Clitheroe in 1912. The form then known as *L. umbrina* Nyl. they reported from concrete and mortar at Walton and Dingle Point, Liverpool and from a gritstone wall near Colne. They recorded *L. hageni* Ach. from cement at the base of the Freshfield landmark in 1914. *L. hageni* and *L. umbrina* (Ehrh.) Massal are now believed to be non-British, usually corticolous species but the species complex is poorly understood.

Lecanora epanora (Ach.) Ach.

Distribution: Only recorded from Worsthorne Moor (SD93SW, JPG, 2003).

Habitat: With *L. handelii* on stones on the line of a demolished drystone wall. Said to indicate iron-sulphide content.

Lecanora expallens Ach.

Distribution: Common across much of the vice-county.

Former distribution: Wheldon & Travis had only two records: from Maghull and Ford.

Habitat: The trunk and boles of broad-leaved trees, especially *Acer pseudoplatanus*, *Fraxinus*, *Quercus*.

Comments: Wheldon & Travis regarded this as adventive and not native to South Lancashire, having found it only on imported palings which retained their bark. The species has also been recorded recently on imported palings and this is one possible route by which the species entered the vice-county, although in most cases it has presumably arrived as wind-borne propagules.

Lecanora handelii J. Steiner

Distribution: Recorded only from Worsthorne Moor (SD93SW, JPG, 2003).

Habitat: On rubble on site of demolished drystone wall, with *L. epanora*. Indicates metal-rich rocks.

Lecanora intricata (Ach.) Ach.

Distribution: Thinly scattered across the northern part of the county.

Habitat: On the upper surface of smooth sandstone slabs including tombstones and other masonry.

Comments: Wheldon & Travis regarded this as an upland species. Their only record was from the summit of Boulsworth Hill.

Lecanora muralis (Schreber) Rabenh.

Distribution: Throughout the vice-county – the map illustrates the extent of coverage achieved rather than the full distribution of the lichen.

Former distribution: Wheldon & Travis had a 19th century record from Smithdown Lane, Liverpool (F.P. Marrat) and knew it, as sterile thalli, from limestone rocks near Chatburn. Its spread occurred after that time and accelerated with declining air pollution during the last quarter of the 20th century.

Habitat: On roof-tiles, concrete kerbstones and many other artificial calcareous substrates; also on slate, wood and other materials influenced by dust or bird-droppings. The original habitat was probably birds' perching stones in the uplands. The species has spread into urban areas from which other species had been ousted by air pollution, thereby taking advantage of the many artificial substrates provided.

Lecanora polytropa (Hoffm.) Rabenh.

Distribution: Common in the east and centre of the vice-county; local in the western lowlands.

Former distribution: Wheldon & Travis regarded this as a rare species, but quoted a W. Watson who said it was common on gritstone in the Oldham area.

Habitat: One of the most frequent lichen species on gritstone boulders, outcrops and walls in the hill districts and on hard sandstones elsewhere. In the west it occurs chiefly on tombstones and other stonework. Occasional on wooden fence posts and rails.

Lecanora saligna (Schrader) Zahlbr.

Distribution: A recent colonist scattered throughout the vice-county.

Former distribution: Wheldon & Travis had only a single record in the Formby sand-dunes.

Habitat: On sawn timber, such as planks of footbridges, squared fence rails; occasionally on wooden fence posts. Wheldon & Travis' record was of "*L. sarcopsis* Ach." from dead twigs of *Salix repens*. *L. saligna* var. *sarcopsis* (Ach.) Hillm. is recognised by some continental authors. It grows on the trunks of free-standing trees rather than on sawn wood. The normally encountered var. *saligna* occasionally grows on dead bark.

Comments: This species is spreading rapidly.

Lecanora soralifera (Suza) Räsänen

Distribution: Very common in the north and east.

Habitat: One of the most characteristic lichens of drystone walls of millstone grit. Also occurring on sandstone, including masonry such as tombstones and wall copings.

Comments: The species appears not to have been recorded by Wheldon & Travis. It was formerly regarded as a variety of *L. intricata* and may have fallen within their concept of that species.

Lecanora sulphurea (Hoffm.) Ach

Distribution: Baxenden (SD72NW, A&NB, 2004), Sabden (SD73NE, A&NB, 2004) and Worsthorne Moor (SD93SW, JPG, 2003).

Former distribution: Recorded more widely by Wheldon & Travis including at Little Crosby, Heapey and Brinscall, Pendle Hill, Padiham and Clitheroe. Gosling recorded Parbold (SD41SE) and White Coppice (SD61NW) in 1992.

Habitat: On gritstone rocks.

Lecanora symmicta (Ach.) Ach.

Distribution: Local. Scattered records in the north-west of the vice-county.

Former distribution: Wheldon & Travis had records from Maghull, Banks and Formby.

Habitat: Recent records are from twigs of various tree and shrub species. The older records were from palings, stumps and dead twigs.

Lecanora varia (Hoffm.) Ach.

Former distribution: Wheldon & Travis described it as common and fruiting well practically throughout the vice-county from sea-level to about 1750 feet on the summit of Boulsworth Hill.

Habitat: Given as tree-trunks, old wooden palings, and dead sticks and twigs including stems of crowberry. It appeared to be one of the few corticolous lichens that could tolerate smoke.

Comments: Modern workers find this species difficult to separate from sparsely sorediate forms of *L. conizaeoides*. In Cheshire (Fox and Guest 2003) where Travis (1922) had called it "very common on bark and palings", it was assumed that *L. varia* had been replaced by *L. conizaeoides* during the 20th century. The alternative possibility exists however that the smoke-tolerant lichen of the early 20th century was indeed *L. conizaeoides*.

**Lecidea confluens* (Web.) Ach.

Former distribution: Stansfield recorded this from the Forest of Rossendale in the mid-19th century.

Habitat: No detail is known. The species normally grows on siliceous rocks.

Comments: The name has been misapplied to various large-fruited *Lecidea*-like species in the past. Wheldon & Travis had not seen the species and regarded its occurrence as "problematical".

**Lecidea gagei* (Sm.) A.L. Sm.

Former distribution: Recorded by H. Robinson in 1913 near the golf links at Colne (Wheldon & Travis).

Habitat: On gritstone walls.

Comments: This is now understood to be a local, oceanic species that grows chiefly in S.W. England, W. Ireland and N.W. Scotland. It is found on damp rocks in woodland or under overhangs.

Lecidea hypnorum Lib.

Former distribution: Recorded by H. Robinson and W.G. Travis in 1913 from mortar of an old wall at Watermeetings, near Colne.

Habitat: The lichen grows over mosses on calcareous rocks and soils.

Comments: This was recorded as *L. atrofusca*. This may not be a secure synonym of *L. hypnorum* and the identity of the lichen may be open to question.

Lecidea lithophila (Ach.) Ach.

Distribution: Appears to be restricted to the uplands in the north-east of the vice-county. Sabden (SD73NE, A&NB, 2005);

Downham (SD74SE, JPG, 2003); Weir (SD82NE, A&NB, 2004);

Coldwell (SD93NW, A&NB, 2004).

Former distribution: The only available early record is from Sheddin Clough, Burnley in 1912 (Wheldon & Travis), within the present range of the species.

Habitat: On siliceous boulders, slabs and drystone walls; said to indicate iron content.

Comments: This lichen would be expected to occur throughout the southern Pennines but for the recent history of severe air pollution.

Lecidea plana (J. Lahm) Nyl.

Former distribution: Recorded from a bridge at Twiston in 1914 (Wheldon & Travis).

Habitat: On sandstone copingstones.

Comments: Although not recorded during recent survey work, this species may still be present in the north-east of the vice-county where pollution was less severe.

Lecidella elaeochroma (Ach.) M. Choisy

Distribution: Currently spreading across the vice-county from the west. Probably now present throughout the area but with immature thalli not yet recognisable in the east.

Former distribution: Wheldon & Travis recorded what were probably the last remnants of a pre-industrial population of this species. They had records from the coastal strip at Banks, Woodvale and Formby; and from the north near Downham. At this last locality the species was associated with *Pertusaria leioplaca*.

Habitat: Smooth bark of young trees, e.g. *Quercus*, *Fraxinus* etc. Occasional on rough bark in *Salix* carrs.

Comments: It has reappeared during the last twenty years and is increasing very rapidly. The formation of mosaics with *Lecanora chlorotera*, *Arthonia radiata* and other species can now be anticipated.

Lecidella scabra (Taylor) Hertel & Leuckert

Distribution: Scattered throughout the vice-county.

Habitat: Often on sandstone flags washed by run-off from mortar or in similar, mildly calcareous places on stone and brick walls.

Lecidella stigmataea (Ach.) Hertel & Leuckert

Distribution: Throughout the vice-county.

Habitat: On limestone, concrete, mortar, asbestos sheeting, kerbstones etc.

Comments: A lichen growing on a half-buried piece of limestone in a footpath at Cock Bridge, Whalley in 1913 was listed by Wheldon & Travis as *Lecidea goniophila* Schaer.. *L. goniophila* appears in this case to be a synonym of *Lecidella stigmataea*. It is surprising that this now common species otherwise appears not to have been recorded by Wheldon & Travis.

Lepraria incana (L.) Ach.

Distribution: Throughout the vice-county in damp and shaded habitats, extending into urban areas.

Habitat: On acid substrates: the boles of trees and shaded sides of walls and boulders.

Lepraria lobificans Nyl.

Distribution: Thinly scattered probably throughout the vice-county.

Habitat: On vertical, shaded sandstone walls.

Comments: Recognised by its pale green coloration as opposed to the blue-grey of *L. incana*. In the recent Cheshire flora, records were erroneously listed under *L. caesiocalva* (B. de Lesd.) J. R. Laundon.

Leproloma diffusum J. R. Laundon

Former distribution: White Coppice (SD61NW, NWNU, 1993).

Habitat: No detail available. Usually on mosses over stone.

Comments: A species first described in 1989. The above record was of the greenish-white var. *diffusum*.

Leproloma membranaceum (Dickson) Vainio

Former distribution: Wheldon & Travis reported this from the north side of Pendle Hill at 850 feet and Worsaw Hill.

Habitat: Shady calcareous rocks in a gully.

Comments: *L. membranacea* is now understood to be an acidophilous species. The above record may refer to *Lepraria nivalis* J. R. Laundon (= *L. crassissima* auct. p.p., non (Hue) Lettau), a calcicolous species that has similarly "lobed" margins.

Leptogium gelatinosum (With.) J. R. Laundon

Distribution: Ashton Canal, Gt. Ancoats St., Manchester (SJ89NE, A&NB, 2005).

Former distribution: Wheldon & Travis described this as frequent in the coastal dunes, where it was conspicuous in autumn and winter but difficult to find during the summer.

Habitat: Particularly on the outer dunes with a scanty carpet of mosses.

Comments: Wheldon & Travis also had a record of *L. tenuissimum* from dunes at Formby. This species is regarded as much over-recorded because of confusion with morphs of *L. gelatinosum*. The identity of Wheldon & Travis' plant is not known. The scarcity of recent records reflects the sparseness of recording. Since the end of the survey period it has been found several times in the interstices of pavements and stone setts.

Leptogium schraderi (Ach.) Nyl. & *Leptogium turgidum* (Ach.) Crombie

Distribution: A few plants of one or the other species were found at Hall Road shore (SD20SE, JPG, 2003).

Former distribution: Recorded as *L. schraderi* from Ainsdale dunes in 1979 (PME-B). Older records as *L. turgidum* (syn.) come from the Ribble Valley as well as from the dunes.

Habitat: The Hall Road plants were on thin soil developing over building rubble tipped for shore defence. The Ainsdale record recalls Wheldon & Travis' description of the plant as frequent on bare or scantily moss-covered ground in the sandhills. At Worsaw Hill it was found on earth amongst limestone rocks.

Comments: Intermediate forms are known between *L. schraderi* and *L. turgidum*. It appears probable that the recent records refer to the same taxon as was known to Wheldon & Travis.

**Leptorhapis epidermis* (Ach.) Th. Fr.

Former distribution: Netherton but described as extinct by Wheldon & Travis.

Habitat: Not stated but usually on birch bark in north and west Britain.

Lobaria pulmonaria (L.) Hoffm.

Former distribution: Recorded by A. Stansfield in the middle of the 19th century from Sheddon Clough, near Burnley (Flora of Todmorden).

Habitat: Bark of old broad-leaved trees.

Comments: The plant also used to occur across the Yorkshire border in the Hebden Valley (Wheldon & Travis) and in Cheshire around Stalybridge (Fox & Guest 2003). The lichen was evidently a characteristic species of upland oakwoods in north-western England prior to the intensification of industrial air pollution.

Melanelia exasperata (De Not.) Essl.

Distribution: Only known from Pennington Flash (SJ69NW, NWNU, JPG, 2003).

Habitat: On branch and twigs of *Salix* in a well-lit and rather breezy setting beside the flash.

Comments: Perhaps overlooked amongst other green-brown *Parmelia* species.

Melanelia fuliginosa

Many of the records available for *Melanelia fuliginosa* do not indicate the subspecies. A map has therefore been created showing all record and of the subspecies where known.

Melanelia fuliginosa (Fr. ex Duby) Essl.

Distribution: Recorded only from the northern edge of the vice-county.

Former distribution: Wheldon & Travis regarded it as not uncommon in some areas and listed records from Aintree and Hale.

Habitat: Sandstone walls and tombstones.

Comments: The apparent absence from much of the vice-county is surprising. However, sandstone is readily acidified by sulphurous pollution and acid rain so saxicolous lichens restricted to this habitat were particularly vulnerable to industrial air pollution.

Melanelia glabrata (Lamy) Sandler & Arup

Distribution: Throughout the vice-county including sheltered localities in urban areas.

Former distribution: Wheldon & Travis had records from the peripheries of the vice-county at Worsaw Hill, Ings Beck near Chatburn, Woodvale and the Formby dunes.

Habitat: *Salix* and other broad-leaved trees, avoiding those with more acidic bark.

Melanelia subaurifera (Nyl.) Essl.

Distribution: Throughout the vice-county.

Habitat: On twigs and branches of hedgerow shrubs and trees, also on horizontal branches and boles of woodland trees. On *Salix*, *Sambucus*, *Acer*, etc.

Comments: One of the principal species invading *Salix* carrs in the late 20th century. Now much more widespread.

Micarea bauschiana (Körber) V. Wirth & Vězda

Distribution: (SD61NW, M. Gosling, 1992)

Habitat: Not recorded.

Micarea botryoides (Nyl.) Coppins

Distribution: (SD61NW, M. Gosling, 1992)

Habitat: Not recorded.

Micarea denigrata (Fr.) Hedl.

Distribution: Throughout much of the vice-county, perhaps absent only from urban centres but much overlooked.

Habitat: On worked timbers such as weathered fence rails.

Micarea erratica (Körber) Hertel, Rambold & Pietschm.

Distribution: (SD61NW, M. Gosling, 1992)

Habitat: Not recorded.

Micarea lignaria (Ach.) Hedl.

Distribution: Roddlesworth (SD62SE, JPG, 2003); Sabden (SD73NE, JPG, 2003); Wycoller (SD93NW, A&NB, 2003); Otterspool (SJ38NE, JPG, 2003).

Habitat: Soil pockets usually on or near the top of gritstone and sandstone walls.

Comments: Wheldon & Travis reported this from limestone rocks and a limestone wall around Chatburn. These records appear improbable on grounds of habitat. Their record from the sandstone coping of a wall at Freshfield fits with the acidic substrates favoured by the species.

Wheldon & Travis also recorded a lichen encrusting mosses on the Freshfield dunes (1914) which they described as a new variety "brevispora", of *Bacidia arceutina* (Ach.) Arnold. According to the BLS synonym website, *B. arceutina* var. *brevispora* (Wheldon & Travis) may be *Micarea lignaria* var. *lignaria*, this being the usual variety in the region.

Micarea prasina Fr.

Distribution: (SD61SW, P. Smith, 1995); Turton (SD&!NW, A&NB, 2003); Read (SD73SE, A&NB, 2004); Healey Dell (SD81NE, A&NB, 2004)

Former distribution: In a gully above Hook Cliffe, Pendle Hill, 1911. SD51NE, M. Gosling, 1992.

Habitat: At Pendle Hill it was found on the ground and on decaying mosses. Nationally the species is common and widespread in shady habitats.

Comments: Probably much overlooked.

Mniacea jungermanniae (Nees ex Fr.) Boud.

Distribution: Brookdale Golf Course (SD90SW, A&NB, 2005) and Watergrove (SD91NW, A&NB, 2002)

Former distribution: Fern Isle Clough, Whitworth (SD81NW, NWNU, 1994),

Habitat: Growing amongst foliose liverworts.

Comments: Probably much overlooked.

Mycoblastus fucatus (Shrt.) Zahlbr.

Distribution: Calf Hey Reservoir (SD72SE, JPG, 2003); Brockhall (SD73NW, JPG, 2003).

Habitat: On *Sorbus aucuparia*.

Mycoblastus sanguinarius (L.) Norman

Former distribution: Recorded by Wheldon & Travis only from Clark Hill at Whalley in 1908. White Coppice (SD61NW, NWNU, 1993).

Habitat: On sandstone rock at Clark Hill.

Comments: In Cheshire to the south, it occurs on gritstone walls and outcrops, especially on the higher hills. Further searching is likely to detect the continued presence of this species in South Lancashire.

Myxobilimbia lobulata (Sommerf.) Hafellner

Former distribution: Freshfield 1908 and 1910 (Wheldon & Travis 1915).

Habitat: On damp mossy ground amongst the sandhills.

Comments: A local species nationally.

Myxobilimbia sabuletorum (Schreber) Hafellner

Distribution: Hic Bibi claypits, Coppull (SD51SE, JPG, 2003); Rixton Clay Pits (SJ69SE, JPG, 2000).

Former distribution: Recorded (as *Bilimbia sabuletorum* Branth & Rostr.) by Wheldon & Travis from Padiham, Colne and Worsaw Hill. They also recorded it (as *Bilimbia sphaeroides* Branth & Rostr.) from the dunes at Birkdale, Formby and Freshfield, and by the confluence of Chatburn Brook to the Ribble, 1913.

Habitat: On pleurocarpous mosses over mortar and concrete; also, in the crevices of a limestone wall (Wheldon & Travis). The lichen was not infrequent on decaying mosses and scanty humus on the bare, firm surface of fixed dunes (Wheldon & Travis). The Chatburn record was from the base of a tree.

Ochrolechia androgyna (Hoffm.) Arnold

Distribution: Local in the north-east of the vice-county, probably eliminated elsewhere by air pollution.

Habitat: On boulders and walls of gritstone.

Ochrolechia parella (L.) A. Massal.

Distribution: Only recent record from Downham (SD74NE, JPG, 2003).

Former distribution: Occurred a century ago at Hale Point and at more localities in the north and east: Sheddon Clough, Netherton, Pendle and Chatburn (Wheldon & Travis).

Habitat: At Downham on sandstone in the churchyard; presumably on masonry at other former localities in the north; estuarine outcrop of red sandstone at Hale.

Comments: 20th century air pollution probably obliterated the species except in the Ribble Valley area, where it may survive more widely.

Ochrolechia turneri (Sm.) Hasselrot

Distribution: Near Ogden Reservoir (SD72SE, JPG, 2003).

Habitat: Base of *Fraxinus*.

Opegrapha atra Pers.

Distribution: Dinkley (SD63NE, A&NB, 1996); Wrightington (SD51SE, A&NB, 2005)

Habitat: On Smooth barked trees.

**Opegrapha saxicola* Ach.

Former distribution: Wheldon & Travis had records from Worsaw Hill, 1910 and near Worston, 1913.

Habitat: Damp, shady limestone rocks at Worsaw and a limestone wall at Worston.

Comments: The nomenclature of this species and *O. saxatilis* DC. Has been much confused. It is not known to which species the old records refer. The lichen may still occur on the limestone, however.

Ophioparma ventosum (L.) Norman

Distribution: Recorded from Worsthorne Moor and Black Hameldon (SD83SE, SD93SW, both JPG, 2003). Only found sterile.

Former distribution: Wheldon & Travis knew of only one 19th century record from walls at Aigburth and near Roby (F.P. Marratt). They commented however on its montane range in West Lancashire (VC60). White Coppice (SD61NW, NWNU, 1993).

Habitat: On gritstone boulders and outcrops in the higher moors.

Comments: The recent records match its known distribution on the higher hills further north and south along the Pennines. Its absence from most of the South Lancashire hills can be attributed to atmospheric pollution.

Parmelia omphalodes (L.) Ach.

Distribution: Recorded recently from Pudsey Clough (SD92NW, A&NB, 2003); Hameldon (SD93SW, JPG, 2003); White Coppice (SD61NW, A&NB, 2003); Wycoller (SD93NW, A&NB, 2003)

Former distribution: Stansfield (1868) found this species in the Forest of Rossendale. Wheldon & Travis also listed it from near Colne.

Habitat: Gritstone rocks in upland, moorland settings.

Comments: It should be looked for on upland outcrops along the eastern edge of the vice-county.

Parmelia saxatilis (L.) Ach.

Distribution: Throughout much of the vice-county, largely obliterated from urban areas, especially along the Mersey Valley. Commonest in upland areas.

Habitat: Acidic or leached bark of trees, especially in high rainfall areas along the Pennine fringe; sandstone or gritstone walls and outcrops; occasionally on old, worked timbers.

Comments: This is a member of the acidophilous community that increased temporarily on trees, especially *Salix fragilis*, in lowland areas late in the 20th century (see under *Hypogymnia physodes*). It may now be retreating to saxicolous habitats in these areas.

Parmelia sulcata Taylor

Distribution: Throughout the vice-county, giving way to *P. saxatilis* on leached bark in the uplands but gradually replacing it in many lowland localities.

Former distribution: Wheldon & Travis described this species as "not rare" but "rarely well developed" and listed only eight records.

Habitat: Very common on circumneutral bark of many tree and shrub species. Occasionally found on sandstone and on sawn timbers.

Comments: The species has increased very greatly during the last two decades and is now present and in good condition in many town parks and most rural areas. Not yet found fruiting.

Parmeliopsis ambigua (Wulfen) Nyl.

Distribution: Calf Hey Reservoir (SD72SW, JPG, 2003).

Habitat: Acidic or leached bark.

Comments: In the 19th century this species was largely restricted within Britain to Scottish conifer woods. It extended its range across England in the wake of acidifying atmospheric pollution.

Parmotrema chinense (Osbeck) Hale & Ahti

Distribution: Widely but thinly distributed, especially across lowland areas, rarely penetrating suburban areas.

Habitat: Initially appeared on *Salix* in humid settings during the 1990s. Now on various broad-leaved trees in sheltered settings but avoids strongly acid bark.

Comments: Noted at Martin Mere Wildfowl Trust in 1992 ((SD41SW, JPG). This large-lobed *Parmelia* is very sensitive to sulphur pollution. Its arrival in formerly polluted industrial areas towards the end of the 20th century was a major surprise.

Peltigera canina (L.) Willd.

Distribution: Restricted to the dunes along the coast (SJ21SE, SJ31SW, both JPG, 2003).

Former distribution: Wheldon & Travis reported it from the dunes. It was recorded at Ainsdale NNR in 1979 (P.M. Earland Bennett).

Habitat: Calcareous parts of the dune systems.

Comments: This is a rare plant nationally, *P. membranacea* often being mistaken for it. In this context, Wheldon & Travis' reports of its rare occurrence in the eastern uplands appear improbable.

Peltigera didactyla (With.) J. R. Laundon

Former distribution: Wheldon & Travis had records from Simmonswood Moss and Ainsdale. Recorded from Ainsdale NNR (SD21SE, 1979, P.M. Earland-Bennett).

Habitat: A wide variety of recently disturbed sites.

Comments: This species has not been encountered during recent survey work but must surely be present in the vice-county.

**Peltigera horizontalis* (Huds.) Baumg.

Former distribution: Wheldon & Travis recorded this from sandhills at Hall Road, Formby, Freshfield and Birkdale; also from behind the sea-wall at Crossens.

Habitat: Given as mossy banks and sandy ground.

Comments: This is an old woodland indicator species, found in sites of long ecological stability. It would not be expected to occur in dunes.

Peltigera hymenina (Ach.) Delise ex Duby

Distribution: Widespread in the east, more scattered in the centre of the vice-county.

Habitat: lawns and damp, grassland.

Comments: The commonest of the *Peltigeras*.

Peltigera membranacea (Ach.) Nyl.

Distribution: Formby dunes (SD20NE, JPG, 2003); Duxbury Woods (SD51SE, A&NB, 2003); Troy Quarry (SD72SE, A&NB, 2005); and the Downham area (SD74SE, JPG, 2003).

Habitat: Amongst mosses on the dunes and on mossy rocks and walls of limestone or sandstone.

Comments: Probably more widespread in the northern limestone area.

Peltigera polydactyla (Necker) Hoffm.

Former distribution: Wheldon & Travis recorded the species as frequent on the sandhills but only occasional inland, as at Simonswood Moss and Aughton. Ainsdale dunes (SD31SW, P.M. Earland-Bennett, 1979). Moses Gate (SD70NW, B.E. Bescoby, 1986)

Habitat: Usually amongst mosses on the bases of trees or rocks.

Comments: A local, northern species.

Peltigera rufescens (Weiss) Humb.

Distribution: Very local in the west and south. Ainsdale dunes (SD21SE, SD31SW, JPG, 2003); Crosby Marina (SJ39NW, JPG, 2003); colliery spoil-heap, Newton-le-Willows (SJ59SE, JPG, 2003).

Former distribution: Wheldon & Travis recorded this sparingly from the dunes at Formby and Ainsdale but frequently from the Ribble Valley limestone.

Habitat: On the ground on coastal dunes and on fly-ash on waste-heaps inland.

Pertusaria amara (Ach.) Nyl.

Distribution: Swanside Beck near Downham (SD74NE, JPG, 2003); Hurstwood Resr. (SD83SE, A&NB, 2005).

Former distribution: Wheldon & Travis knew the species only from a few localities in the Ribble Valley around Clitheroe and Chatburn.

Habitat: Bole of an ash tree at the edge of woodland (Swanside Beck); on hawthorn (Hurstwood).

Comments: The Ribble Valley area has been worked only fleetingly and in no detail in recent years.

Pertusaria corallina (L.) Arnold

Distribution: Read (SD73NE, A&NB, 2005); Downham (SD74SE, JPG, 2003); Barley (SD83NW, A&NB, 2004) and Wycoller (SD93NW, A&NB, 2004)

Former distribution: This is probably the taxon listed by Wheldon & Travis as *P. dealbata* Nyl. ex Cromb. They recorded it in a discoloured and degenerate state at Green's Clough, Todmorden in 1912; on gritstone walls about Whalley in 1913; and at Rivington Pike in 1914. White Coppice (SD61NW, NWNU, 1993).

Habitat: On gritstone rocks on the highest hills. Rarely on walls at lower altitudes.

Comments: *P. corallina* is presumed to have occurred along the full length of the Pennine fringe of the vice-county until it was obliterated in the south by atmospheric pollution.

Pertusaria leioplaca DC.

Former distribution: Recorded by C.B. Travis and W.G. Travis in 1914 from near Downham.

Habitat: On a holly-tree in a hedge.

Pertusaria pertusa (Weigel) Tuck.

Distribution: Twiston (SD84SW, A&NB, 2004)

Former distribution: Wheldon & Travis recorded it from ash and elm by the Ribble near Clitheroe in 1912.

Comments: The Ribble Valley has not been worked in detail during the recent survey. This and other epiphytic species may survive here in sheltered woodlands and on free-standing trees. Renewed invasion of this species from the south-west may be expected in coming decades.

Phaeophyscia orbicularis (Necker) Moberg

Distribution: Throughout the vice-county.

Habitat: Nutrient-enriched, chiefly artificial calcareous substrates such as concrete, mortar, asbestos sheeting. Very common at the top of concrete fence posts. Also on spongy bark, especially *Sambucus*. Occasional on sandstone or gritstone, especially where birds perch.

Comments: Evidently not recorded by Wheldon & Travis (1915).

Physcia adscendens (Fr.) H. Olivier

Distribution: Throughout the vice-county. Common except in upland districts where suitable substrates are scarce. The species has entered urban areas during the past quarter of a century.

Habitat: Very typical of the sides of concrete posts such as are used in railway fences; also abundant on street trees influenced by traffic dust in the Mersey Valley; occurs in many nutrient-enriched and especially calcareous habitats.

Comments: This species was not recorded by Wheldon & Travis unless their records of *P. stellaris* var. *leptalea* Nyl. belong here. Their specimens were described as sterile and depauperate, but rather common on limestone walls in the Ribble Valley area.

Physcia aipolia (Ehrh. ex Humb.) Fűrnrrohr

Distribution: Thinly distributed throughout the county and now appearing in urban areas.

Habitat: Nutrient-rich bark, especially *Salix fragilis* but also on twigs of *Crataegus* and *Prunus spinosa*.

Comments: The first available record is from willow at Martin Mere Wildfowl Trust in 1992 (SD41SW, JPG). The species had not been recorded from South Lancashire before the onset of industrial air pollution.

Physcia caesia (Hoffm.) Fűrnrrohr

Distribution: Throughout the vice-county. Rather local in lowland areas where suitable substrates are scarce.

Former distribution: Wheldon & Travis had records only from Chatburn and between Aintree and Maghull.

Habitat: Nutrient-rich, generally artificial habitats such as concrete kerbstones and fence-posts or limestone walls. Occasionally on siliceous tombstones or capstones of dry-stone walls. Infrequently on bark, especially of *Sambucus*.

Comments: In neighbouring Cheshire, it was suggested that *P. caesia* may have re-entered that county from the east. The great increase in South Lancashire since a century ago probably consists chiefly of plants that began to grow within the last forty years or so. Their greater frequency in the east may indicate immigration from that quarter, but scarcity of substrates in the lowland west and recorder effort may be distorting the true distribution.

Physcia tenella (Scop.) DC.

Distribution: Probably throughout the vice-county.

Former distribution: A century ago the species was found rarely on rocks and walls and only once on bark (Wheldon & Travis). All listed localities then were in the Ribble Valley area but in the mid-19th century Marrat had found it in Moseley Vale, Liverpool and Stansfield had found it at Cliviger.

Habitat: Bark of many species of trees. Less often on stone. This was a member of the assemblage of *Parmelia* and other sorediate species that appeared on *Salix fragilis* during the last quarter of the 20th century. It has since spread widely away from the humid woodlands that were initially occupied.

Comments: Wheldon & Travis knew this only in a sterile form but thalli with apothecia are not now unusual.

Physconia distorta (With.) J. R. Laundon

Former distribution: Collected at Littleborough by Molineux in the 19th century and recorded by Wheldon & Travis by Chatburn Station in 1907.

Habitat: The Chatburn record was from ash bark. Recent records from adjacent counties are from nutrient-rich bark of tree trunks, especially *Fraxinus*.

Comments: The species doubtless became extinct in the vice-county during the early part of the 20th century. It has appeared in Cheshire since 2001 and may already have returned unnoticed to South Lancashire.

Physconia grisea (Lam.) Poelt

Distribution: Moderately frequent in the Ribble Valley (SD74SW, SE, NE, JPG, 2003). Rare elsewhere: Ogden Reservoir (SD72SE, JPG, 2003); Pennington Flash (SJ69NW, JPG, NWNU, 2003).

Habitat: All available records are from the dust-impregnated bark of trees such as *Fraxinus* and *Populus*.

Comments: Recent records from SJ69NW and SD72SE indicate that the species is spreading into formerly polluted areas away from the Ribble limestone.

Placynthiella icmalea (Ach.) Coppins & P. James

Distribution: Mainly on higher ground in the east.

Former distribution: Wheldon & Travis' record of *Lecidea fuliginosa* Ach. from the Formby sandhills probably belongs here.

Habitat: The Formby record was from a decaying log. The species grows on decaying wood and bark, also on burnt heathland. Modern records are generally from the top of rotting fence posts and tree stumps.

Placynthiella uliginosa (Schrader) Coppins & P. James

Distribution: Moorland districts in the east. Musbury Heights (SD72SE); Sabden (SD73NE); Worsthorpe Moor (SD83SE); Hameldon (SD93SW); (all JPG, 2003).

Habitat: On exposed peat. Wheldon & Travis recorded this frequently on bare peat on the moors and also from decaying litter of marram-grass on the coastal dunes. Ainsdale dunes (SD21SE, P.M. Earland-Bennett, 1979).

Comments: Some of Wheldon & Travis' moorland records may perhaps have included *P. icmalea*.

Placynthium nigrum (Huds.) Gray

Distribution: Recently recorded only from Worsaw Hill (SD74SE, JPG, 2003) and Twiston (SD84SW, A&NB, 2004) but probably more widespread on the limestone.

Former distribution: Wheldon & Travis recorded *P. nigrum* from Worsaw Hill and various other places in the Ribble Valley

Habitat: Sunny limestone outcrops and walls.

Platismatia glauca (L.) W.L.Culb. & C.F. Culb.

Distribution: Widespread across the vice-county, particularly common in the uplands.

Habitat: Locally very common on the tops of dry-stone walls and boulders in the gritstone areas, also on *Quercus* bark in high rainfall areas and on *Salix fragilis* in the lowlands. Occasionally on old, sawn timbers.

Comments: An acidophilous species that benefited greatly but perhaps only briefly from the acidification of tree bark during the 20th century. Wheldon & Travis described it as very rare in lowland districts. Towards the end of the 20th century, with improved air quality, it appeared in many lowland settings. It has since shown a decline here however and may be retreating to what may be assumed to be its former upland strongholds.

Polysporina simplex (Davies) Vězda

Former distribution: Very common a century ago around Birkdale and Southport.

Habitat: Formerly common on copings of sandstone walls in the coastal strip, also on gritstone masonry in the same area. Probably a member of the same community as *Tephromela atra*.

Comments: A thorough survey of sandstone outcrops and old walls around the south-western estuarine and coastal margins of the vice-county might restore this species to the present flora.

Porpidia cinereoatra (Ach.) Hertel & Knoph

Distribution: Roddlesworth (SD62SE, A&NB, 2005); Seddon Clough (SD82NE, A&NB, 2003); Twiston (SD84SW, A&NB, 2004)

Habitat: Acid rocks and walls.

Porpidia crustulata (Ach.) Hertel & Knoph

Distribution: Scattered across the north-western half of the county.

Habitat: Sandstone and other siliceous pebbles, walls and masonry; often on tombstones.

Porpidia macrocarpa (DC.) Hertel & A.J. Schwab

Distribution: Common in upland areas across the north and east of the vice-county.

Habitat: On gritstone and sandstone boulders and pebbles; often at ground-level at the sides of paths and on flat stones beside streams.

Comments: Wheldon & Travis commented on the species' tolerance of atmospheric pollution. The distribution map shows that the species still has a wider distribution than many other saxicolous species.

Porpidia soredizodes (Lamy ex Nyl.) J. R. Laundon

Distribution: Noted only from Rivington (SD61SW, JPG, 2003) and Worsthorpe Moor (SD93SW, JPG, 2003).

Habitat: On sandstone pebbles and stonework.

Porpidia tuberculosa (Sm.) Hertel & Knoph

Distribution: Throughout the upland parts of the centre and east of the vice-county. Scarce in the lowland west and largely absent from the Mersey Valley.

Habitat: One of the most characteristic species on drystone walls in the gritstone and sandstone areas, as well as on outcrops. Elsewhere it occurs on tombstones and the sandstone capstones of walls.

Comments: Wheldon & Travis had only a single record from chert on Pendle Hill. It is difficult to explain this apparent rarity a century ago.

Protoblastenia rupestris (Scop.) Steiner

Distribution: Common on the northern limestone; scattered elsewhere.

Former distribution: Wheldon & Travis had records only from the Ribble Valley area, where it was frequent.

Habitat: On hard limestone rocks; also on damp and rather soft concrete, mortar and asbestos-sheeting.

Comments: The species is no longer restricted to limestone and may be found on artificial substrates such as mortar and concrete.

Protoparmelia badia (Hoffm.) Hafellner

Distribution: Worsthorpe Moor (SD93SW, JPG, 2003).

Former distribution: Wheldon & Travis had records from Pendle Hill, Boulsworth Hill and Rivington but regarded it as rare. White Coppice (SD61NW, M. Gosling, 1992)

Habitat: On gritstone boulders and outcrops in upland settings. May also occur on drystone walls.

Comments: This species ought to occur more widely on the higher hills.

Pseudevernia furfuracea (L.) Zopf

Distribution: Thinly distributed in the north-east.

Former distribution: Wheldon & Travis knew *P. furfuracea* only from rocks and walls of Millstone Grit in the Forest of Pendle area.

Habitat: Tops of gritstone walls and boulders in sheltered settings. The species also occurs on acidic bark and twigs but has not been recorded from such substrates during the present survey.

Psilolechia lucida (Ach.) M. Choisy

Distribution: Common in upland areas in the east.

Former distribution: First recorded from sandstone rocks around Liverpool in 1804 (Sir J.E. Smith). Wheldon & Travis had only one further record, from sandstone at Billinge Hill in 1912.

Habitat: In dry, shady settings on sandstone and gritstone, including tombstones and masonry. Occasional on brickwork and sometimes spreads onto dry soil between the roots of trees.

Psora lurida (Ach.) DC.

Former distribution: A century ago this was not uncommon in quarries and on outcrops around Clitheroe and Chatburn.

Habitat: On soil pockets in fissures of limestone.

Comments: Another calcicolous species that may still survive in the far north of the vice-county.

Psoroma hypnorum (Vahl) Gray

Former distribution: Thieveley Scouts, Todmorden, 19th century (Stansfield & Nowell 1907-8). Wheldon & Travis considered it probably extinct.

Habitat: Given as shaly banks.

Comments: This is a local and decreasing species now largely confined in its British range to Wales and Scotland.

Punctelia subrudecta (Nyl.) Krog

Distribution: Occurs thinly across the vice-county. Seemingly absent from urban and moorland areas where suitable substrates are scarce.

Habitat: Broad-leaved trees, generally on the trunk or main branches, often amongst other *Parmelia* species. On *Salix*, *Acer*, *Fraxinus* etc.

Pyrenocollema arenisedum (A.L.Sm.) Coppins

Former distribution: Formby to Birkdale; also on the Wirral coast (VC58) near Hoylake (Wheldon & Travis).

Habitat: On the ground in bare, moist slacks amongst the dunes. A note on the species at Braunton Burrows, Devon (Benfield, 1987), described the habitat as "bare damp areas, consolidating the sand to a hard grey, white crust", in dune slacks 300-400m from the sea.

Comments: This was described as a new species, *Arthopyrenia areniseda*, by Miss Smith in *Journ. Bot.* 1911. It is an endemic British species known from Devon and Cheshire as well as Lancashire. A search of dune-slacks is needed to establish whether the species survives here.

Ramalina calicaris (L.) Fr.

Former distribution: Recorded at Banks in 1909 (Wheldon & Travis).

Habitat: The Banks record was from a stump on the shore. The species grows typically on nutrient-enriched twigs of hedges in coastal settings.

Comments: The plants seen in 1909 were described as stunted and sterile. *Ramalina* species may subsequently have disappeared entirely from the vice-county for some decades because of the effects of air pollution.

Ramalina farinacea (L.) Ach.

Distribution: Widespread and not uncommon throughout the region. Small thalli have appeared in recent years in urban settings.

Former distribution: Not recorded by Wheldon & Travis.

Habitat: A member of the twig community in hedges of hawthorn and blackthorn, especially near the coast. Larger plants may be found amongst the *Parmelia* assemblage in willow carrs. It also occurs now on more exposed trees including sycamore and ash in the hill districts.

Comments: As in Cheshire (Fox & Guest 2003) the species reappeared during the last twenty years of the 20th century. Following initial appearance in damp willow carrs, it has spread to roadside trees and hedgerow twigs.

Ramalina fastigiata (Pers.) Ach.

Distribution: Known only from Bickerstaffe (SD40SW, JPG, 2002).

Habitat: Found growing within a trimmed hawthorn hedge.

Comments: This species is very intolerant of sulphur pollution. Its discovery at Bickerstaffe was a major surprise since it has disappeared from industrialised parts of England. It is not known to have featured in the resurgence of epiphytic lichens in adjacent counties.

Ramalina fraxinea (L.) Ach.

Distribution: Eccleston churchyard (SD51NW, JPG, 2003).

Habitat: On bark of sycamore.

Comments: Another species that is very sensitive to sulphur pollution, this has however appeared in adjacent counties following recent improvements in air quality. It must be assumed that the species occurred unrecorded in South Lancashire in pre-industrial times.

Ramalina lactea (With.) J. R. Laundon

Distribution: Bescar (SD41NW DPE Conf, BWF, 1998)

Habitat: No details given.

Rhizocarpon geographicum (L.) DC.

Distribution: An upland species in the centre and north-east of the vice-county. On imported substrates in the lowlands.

Habitat: Sunny rocks and walls of gritstone and sandstone; occasionally on roofing flags; tombstones and masonry in lowland areas.

Comments: Presumably obliterated by air pollution from the hills east of Manchester but very slowly reappearing behind Rochdale.

Rhizocarpon oederi (Weber) Körber

Distribution: Musbury Heights (SD72SE, JPG, 2003); Piethorne (SD91SE, A&NB, 2005)

Former distribution: Lead Mines Clough (SD61NW, NWNU, 1993).

Habitat: Iron-rich sandstone.

**Rhizocarpon petraeum* (Wolfen) Massal

Former distribution: Between Broad Green and Roby (F. P. Marratt, 19th century); Pendle Hill, Billinge Hill and Rainford (Wheldon & Travis).

Habitat: Given as rocks and walls, both calcareous and siliceous: coal measure sandstone, gritstone, clay ironstone nodules on a colliery refuse-heap.

Comments: *R. petraeum* grows mostly on slightly basic siliceous rocks. The species has not been found recently in the area.

Rhizocarpon reductum Th. Fr.

Distribution: Common across the east and north-east, thinning out westwards.

Habitat: Sandstone and gritstone rocks and walls; masonry including copingstones and tombstones.

Comments: Most of Wheldon & Travis' records of *Rhizocarpon confervoides* probably belong here,

Rinodina gennarii Bagl.

Distribution: Probably throughout the vice-county. Under-recorded especially in the south.

Former distribution: A record of *R. exigua* Gray from stones in a wall at Aintree in 1906 (Wheldon & Travis) probably belongs here.

Habitat: On mortar and concrete; occasionally on dust-splashed wood.

Sarcogyne privigna (Ach.) A. Massal.

Former distribution: Maghull (Wheldon & Travis).

Habitat: On masonry of a railway bridge.

Comments: This species is now rare in Britain but was recorded more widely in the 19th century.

Sarcogyne regularis Körber

Distribution: Very local; certainly under-recorded. Hightown (SD20SE, JPG, 2003); Hic Bibi Claypits (SD51SE, JPG, 2003); Clifton Moss (SD70SE, D. Downing, 1996); Rixton Claypits (SJ69SE, JPG, 2000).

Former distribution: Recorded by Wheldon & Travis from Parbold, Colne and Ainsdale and also from limestone around Chatburn. Around 1990 the species was found at several urban sites in Tameside, just across the boundary in VC58.

Habitat: Concrete, mortar and asbestos sheeting. Often on horizontal surfaces. Probably still occurs on the Ribble limestone, where not recently noted.

Comments: The bluish pruina to the discs is often not present; the discs appear reddish when wetted.

Sarcosagium campestre (Fr.) Poetsch & Schied.

Former distribution: Dunes between Freshfield and Ainsdale, 1912 (Wheldon & Travis).

Habitat: "On bare, damp, sandy ground, encrusting decaying mosses and hepatics."

Comments: Nationally a very local species. A thorough survey of the dunes is needed to search for this and other seemingly lost species.

Scoliciosporum chlorococcum (Graewe ex Stenhammar) Vězda

Distribution: Appley Bridge (SD50NW, JPG, 2003).

Former distribution: Ainsdale NNR (SD21SE, P.M. Earland-Bennett, 1979);

Habitat: On elder twigs at Appley Bridge. Occurs alongside or within algal swards on nutrient-enriched bark. Very tolerant of air-pollution but often occurring in a sterile form and easily overlooked.

Comments: Recorded as a new species "*Bacidia salicicola*" by Wheldon & Travis (1915) who found it growing on dead twigs and stems of *Salix repens* at Formby, Ainsdale and Freshfield.

Scoliciosporum umbrinum (Ach.) Arnold

Distribution: Scattered, mainly across the north-western edge of the vice-county

Habitat: Typically, on smooth, sandstone masonry, especially the copings of churchyard walls.

Staurothele hymenogonia (Nyl.) Th. Fr.

Former distribution: Maghull, Brinscall and near Clitheroe (Wheldon & Travis).

Habitat: On the mortar of walls, sometimes with *Verrucaria muralis*. It might also occur on dry limestone.

Stereocaulon dactylophyllum Flörke

Distribution: Local in the centre and north-east.

Habitat: On metal-rich sandstone and gritstone rocks.

Stereocaulon pileatum Ach.

Distribution: Widespread in the eastern uplands.

Habitat: On metal-rich gritstone and sandstone rocks, sometimes at roadsides, very often near reservoirs.

Comments: This species is said to have expanded its range in response to lead emissions from vehicle exhausts.

Stereocaulon vesuvianum Pers.

Distribution: Rivington (SD61SW, JPG, 2003); Waterfoot (SD82SW, A&NB, 2005), Piethorne (SD91SE, A&NB, 2004); Coldwell (SD93NW, A&NB, 2004)

Former distribution: Fern Isle Clough (SD81NE, M. Gosling, 1994)

Habitat: On tops or ledges of walls of sandstone or gritstone.

Strangospora moriformis (Ach.) B. Stein

Former distribution: Dunes between Freshfield and Ainsdale, 1914 (Wheldon & Travis).

Habitat: On an old stump.

Tephromela atra (Huds.) Hafellner ex Kalb

Distribution: Recorded recently only from Billington (SD73NW, JPG 2003).

Former distribution: Wheldon & Travis recorded this from coastal sites in the south-west, as at Aintree, Maghull, Dingle Point, Oglet and Hale. They also had a record from Twiston in the north. In many localities it was thought to be close to extinction. The species had probably been much commoner formerly.

Habitat: On sandstone in a sunny, mortared wall. Should be sought on red sandstone in the south-west.

Comments: *T. atra* is flourishing in adjacent areas of Wirral (VC58) so would be expected to survive to north of the Mersey also. Sandstone outcrops and walls in the south-west have scarcely been visited during the recent survey.

**Tephromela grumosa* (Pers.) Hafellner & Roux

Former distribution: Wheldon & Travis had a record from the park walls of Crosby Hall, Little Crosby in 1912, fruiting.

Habitat: Presumably red sandstone.

Comments: *T. grumosa* is a strongly soresiate species of local occurrence chiefly in upland Britain. It is rarely found fruiting. The sandstone walls at Little Crosby would be a likely locality for *T. atra*.

Thelidium incavatum Mudd

Former distribution: Chatburn, 1913 (Wheldon & Travis).

Habitat: Mortar of a wall.

Comments: A common species nationally but usually found on hard limestone or on pebbles of chalk.

Thelidium minutulum Körber

Former distribution: By the Ribble at Chatburn, 1913 (Wheldon & Travis).

Habitat: On half-buried stones in banks of glacial drift beside the river.

Thelidium zwackhii (Hepp.) A. Massal.

Former distribution: Recorded by Wheldon & Travis from Fazakerley and Ford.

Habitat: Mortar of old walls.

Comments: A local species usually found on limestone, chalk or pebbles.

Toninia aromatica (Sm.) A. Massal.

Former distribution: Worsaw Hill, Chatburn; Downham; Woodvale (Wheldon & Travis).

Habitat: Soil pockets on limestone rocks and walls; mortar of a railway bridge.

Toninia sedifolia (Scop.) Timdal

Distribution: At Worsaw Hill (SD74SE, JPG, 2003) where recorded by Wheldon & Travis.

Former distribution: Wheldon & Travis had an old record from Formby dunes, 1892.

Habitat: Common on soil pockets in limestone rocks. Formerly on shelly sand at the coast.

Trapelia coarctata (Sm.) M. Choisy

Distribution: Thinly scattered throughout the vice-county.

Habitat: On sandstone blocks, generally near ground-level.

Comments: Very much scarcer than in VC58 to the south. The lack of suitable substrates in lowland areas and the effects of air pollution on the gristone in the east may explain the apparent absence from much of the vice-county.

Trapelia involuta (Taylor) Hertel

Distribution: In churchyards, Freshfield (SD20NE, JPG, 2003); Balderstone (SD40SW, JPG, 2002); Sabden (SD73NE, JPG, 2003).

Habitat: On upper surfaces of fine-grained sandstone.

Comments: The thallus of this form is paler and more squamulose than that of *T. coarctata*, and the apothecia are often more pink rather than reddish-brown.

Trapeliopsis flexuosa (Fr.) Coppins & P. James

Distribution: Probably throughout the county.

Former distribution: Noted at Ainsdale dunes in 1979 (P.M. Earland-Bennett).

Habitat: On old, worked timber such as fence rails and gateposts.

Trapeliopsis granulosa (Hoffm.) Lumbsch

Distribution: Most records are from the east and north-east of the vice-county but the species probably occurs throughout the region.

Habitat: Many records are from decaying bark on the horizontal branches of *Salix* in wet carrs. It also grows on peaty soils.

Trapeliopsis pseudogranulosa Coppins & P. James

Distribution: Mainly on the moors in the northeast of the county.

Habitat: On peaty banks in the moors.

Tuckermannopsis chlorophylla (Willd.) Hale

Distribution: Mainly in the north east of the county.

Habitat: On acid rocks.

Umbilicaria polyphylla (L.) Baumg.

Former distribution: Wheldon & Travis recorded this in 1913 from Noyna, near Colne.

Habitat: Millstone grit rock faces at about 950 feet a.s.l. In adjacent parts of the Pennines the species occurs on the upper surface of boulders near hill-tops but generally in sheltered localities.

Comments: The lichens were described as extremely stunted and probably the last survivors in the vice-county. The species now grows well in VC58 to south-east of Manchester but probably as a survivor in relict stations from the pre-industrial age. Whether it will reappear in South Lancashire remains to be seen.

Usnea articulata (L) Hoffm.

Former distribution: Recorded in the Burnley area in the 17th century by Ray and in the 18th century by Dillenius.

Habitat: The old records were from *Corylus* and *Fagus*.

Comments: Wheldon & Travis commented that the genus *Usnea* had been extinct in South Lancashire for a generation. *U. articulata* is particularly sensitive to air pollution and has vanished from most of England except for the south-western peninsula.

Usnea florida (L.) F.H. Wigg.

Former distribution: Recorded in the 19th century from Thieveley Scouts (*Flora of Todmorden*).

Habitat: The lichen grew on stones and trees.

Comments: Wheldon & Travis suggested that the record might refer to *U. ceratina*, which then still grew in West Lancashire. From the modern perspective however, it seems that *U. subfloridana* may well have been involved.

Usnea subfloridana Stirton

Distribution: Thinly throughout the vice-county.

Habitat: Usually on the acid bark of trees, notably on *Salix fragilis* in humid settings. Also, on decorticate wood including fence posts and rails. Occasionally on sandstone.

Comments: During the 1980s young thalli of *Usnea* appeared widely across the region, even in towns, in response to much reduced concentrations of sulphur dioxide in the air. Subsequently the species has declined again. It is suspected that the acidification of bark during the 20th century modified substrates in favour of the lichen, but that it was only able to colonise these substrates once the atmosphere became cleaner. The removal of acidifying pollution has been followed however by a reversion of tree bark to a more normal status. Acidophilous lichens including *Usnea*, *Parmelia saxatilis* and *Hypogymnia physodes* have become less prominent as epiphytes in recent years.

Verrucaria aethiobola Wahlenb.

Former distribution: R. Ribble at Chatburn, 1911 (Wheldon & Travis).

Habitat: On submerged stones (black calcareous shales) on the riverbed. The usual habitat is on stones that are regularly submerged.

Verrucaria aquatilis Mudd

Former distribution: R. Ribble near Clitheroe, 1912 (Wheldon & Travis).

Habitat: On stones in the bed of the Ribble.

Verrucaria baldensis A. Massal.

Distribution: Around Clitheroe, Chatburn and Downham (SD74SW, SE & NE, JPG, 2003).

Habitat: On limestone rocks and walls.

Verrucaria calciseda DC.

Former distribution: Worsaw Hill, Chatburn, 1910 (Wheldon & Travis).

Habitat: On bare, exposed limestone rocks.

Verrucaria dufourii DC.

Former distribution: Worsaw Hill, Chatburn, 1910 (Wheldon & Travis).

Habitat: On shady, bare limestone rocks.

Verrucaria hochstetteri Fr.

Distribution: Worsaw Hill (SD74SE, A&NB, 2003); Twiston (SD84SW, A&NB, 2004)

Former distribution: Near Hacking Boat on the R. Ribble, 1913 (Wheldon & Travis).

Habitat: Modern records are from hard limestone. Former record was on mortar in a limestone wall.

Comments: A common species nationally, this may occur much more widely both on mortar and on the limestone.

**Verrucaria maculiformis* Kremp.

Distribution: Hooke Cliffe, Pendle Hill, 1911; Horrocksford Quarries, 1913 (Wheldon & Travis).

Habitat: Respectively given as on limestone rocks in a gully at 750ft; and on black calcareous shales.

Comments: This is not regarded as a British species.

Verrucaria margacea (Wahlenb.) Wahlenb.

Former distribution: Hey Slacks Clough, Walverden Valley (Wheldon & Travis).

Habitat: On sandstone rocks in stream.

Verrucaria maura Wahlenb.

Former distribution: Hale Point, 1913 (Wheldon & Travis).

Habitat: Sandstone rocks at tide-level.

Comments: This site has not been visited during recent survey work.

Verrucaria muralis Ach.

Distribution: Scattered records across the northern half of the vice-county and in the south-east. Probably much overlooked.

Former distribution: Wheldon & Travis had records from around Maghull in the south-west.

Habitat: On old mortar and concrete.

Comments: *V. rupestris* Schrader was listed by Wheldon & Travis from limestone around Chatburn and from mortar at Little Crosby and on Horrocksford Bridge, Clitheroe. This taxon is now included within *V. muralis*.

Verrucaria nigrescens Pers.

Distribution: Probably throughout the vice-county. Common.

Habitat: On concrete and mortar; on limestone in the north.

Comments: Very tolerant of air pollution and probably never fully obliterated from the industrial lowlands.

**Verrucaria papillosa* Ach.

Distribution: Clitheroe and Chatburn (Wheldon & Travis).

Habitat: On calcareous stones by the R. Ribble, 1912; on shady damp limestone rocks, Bold Venture Quarry, 1913.

Comments: This is a rare species in Britain, known from S. Wales and N.E. Scotland. It grows on calcareous sandstone and schist.

**Verrucaria submersa* Schaer.

Former distribution: Chatburn (Wheldon & Travis).

Habitat: On half-buried stones (limestone) in banks of glacial drift by the R. Ribble, 1913; on damp, shady limestone rocks in an old quarry, 1914.

Comments: *V. submersa* is now understood to grow on siliceous rocks. The identity of this lichen is doubtful.

Verrucaria viridula (Schrader) Ach.

Distribution: Main found in the Ribble Valley.

Former distribution: Wheldon & Travis had a record from Clitheroe, 1912 and, as *V. mauroides*, Schaer from Worsaw Hill, Chatburn, 1910.

Habitat: On mortar, damp concrete and limestone walls. Exposed limestone rocks at the top of Worsaw Hill.

Xanthoparmelia conspersa (Ehrh. Ex Ach.) Hale

Distribution: (SD61NW, M. Gosling, 1992).

Habitat: Not recorded.

Xanthoria calcicola Oxner

Distribution: (SJ39NW, JPG, 2003).

Xanthoria candelaria (L.) Th. Fr.

Distribution: Thinly distributed in lowland parts of the vice-county.

Former distribution: Wheldon & Travis recorded this species only from a limestone wall near the Ribble at Low Moor, Clitheroe.

Habitat: Nutrient-enriched boles of farmland trees, less often on main branches of *Salix fragilis* in sheltered carrs. Rarely on stonework.

Comments: In Cheshire to the south, this was a member of the assemblage of *Parmelia* and other sorediate species that appeared in humid willow carrs from the late 1970s. It has subsequently spread widely to farmland trees in that county. In South Lancashire it has not yet achieved such a general distribution as in the neighbouring county.

Xanthoria elegans (Link) Th. Fr.

Distribution: Very local, Eccleston (SD51NW; JPG 2003), Risley Moss (SJ69SE; JPG, 2000) and Rishton (SD72NW, A&NB, 2005)

Former distribution: Recorded by Wheldon & Travis from two railway bridges at Woodvale in 1914.

Habitat: On sandstone and gritstone enriched by bird-droppings; also, on concrete.

Xanthoria parietina (L.) Th. Fr.

Distribution: Throughout the vice-county, extending into urban centres.

Former distribution: Wheldon & Travis recorded the species very commonly on the Ribble valley limestone but elsewhere found it only rarely on siliceous rocks and masonry. It was then rare on trees.

Habitat: A wide variety of nutrient-rich or enriched substrates, including birds' perching stones, concrete, roof-tiles, the bark of street trees, hedgerow twigs and bushes; less often on ironwork, discarded tyres etc.

Comments: The distribution of the species as described by Wheldon & Travis in the early 20th century is evidence of the strongly acidifying air pollution that then pervaded the region, and of the leaching effects of this pollution on bark and other substrates. By the 1980s the species was appearing widely across the vice-county. During the last twenty years, the species has expanded from the suburbs inward towards city centres. Yellow patches formed by this species on roofs indicate those areas, along ridges, gables and beneath aerials, that receive bird droppings. The narrowly lobed, reddish form sometimes known as var. *ectanea* was recorded by Wheldon & Travis from a limestone gatepost between Worston and Downham in 1913. Similar plants have been seen more recently on coastal rubble at Hightown (JPG).

Xanthoria polycarpa (Hoffm.) Th. Fr. ex Rieber

Distribution: Throughout the vice-county.

Former distribution: Wheldon & Travis recorded this only from tree-stumps on the shore at Banks.

Habitat: Especially characteristic of the twigs of hedgerow bushes such as *Prunus spinosa* and *Crataegus*, where these have been enriched by bird droppings and agricultural sprays. Also common on the spongy bark of *Sambucus* and *Salix fragilis*.

Comments: The species is sensitive to sulphur dioxide pollution. Its rapid increase since the 1970s with improved air quality to become one of the commonest lichens in the region was not expected.

Mystery species:

Calloposma lacinosum A.L. Sm. (*Lecanora laciniosa* Nyl.)

Distribution: Found sterile on the bark of an ash-tree by the Ribble near Clitheroe, 1912 (Wheldon & Travis 1915).

Comments: This presumably refers to some epiphytic, non-lobate species of *Caloplaca* or *Candelariella*.

Calloposma erythrellum Nyl.

Wheldon & Travis (1915) reported this from sandstone at Hale Point and from limestone around Chatburn, Clitheroe and Worston.

Comments: The Hale Point sandstone is a likely site for *Caloplaca flavovirescens* (Wulfen) Dalla Torre & Sarnth. On the analogy of its occurrence on sandstone walls in Wirral (VC58). *C. flavovirescens* rarely grows on pure limestone however.

Icmadophila aeruginosus DC.

Distribution: Recorded by Stansfield (1868) from the Forest of Rossendale.

Comments: Described as "apparently extinct" by Wheldon & Travis (1915). This may refer to *I. ericetorum* (L.) Zahlbr., which grows on damp peat and rotted wood in moorland settings. However *Lecidea aeruginosa* Borrer became *Trapeliopsis flexuosa*. Both are possible in the Rossendale context. Can we follow up the DC lead?

Lecidea uliginosa var. *humosa* Ach.

Wheldon & Travis (1915) recorded this from clayey soil in a quarry at Little Crosby and from boulder clay banks of the Mersey at Hale.

Placynthiella uliginosa is restricted to more acidic habitats.

Lecidea pleiospora A.L. Sm.

Distribution: Freshfield 1912 & 1914 (Wheldon & Travis); Belmont near Rivington 1912 (A.J. Wilson).

Habitat: At Freshfield on decaying moss and scanty humus on the dunes; at Belmont on the ground (Wheldon & Travis 1915).

Comments: According to Wheldon & Travis, this had been described as a new species in *Journ. Bot.* xlix (1911) p41 from a lichen discovered in a claypit in Northamptonshire, which site had since been destroyed. The species was included in addenda to Mon. Brit. Lichens, vol. ii, p352.

Microglæna nuda Wheldon & Travis

Described from half-buried gritstone pebbles in glacial drift in the banks of the Ribble at Chatburn in 1913. The species did not achieve recognition. It was perhaps a species of *Verrucaria*.

Physcia pityrea Nyl.

Wheldon & Travis (1915) Amongst moss on the horizontal surface of gritstone coping of a culvert near Longton, 1911. Sterile.

Stereocaulon paschale Fr.

Distribution: On walls at Rainhill, mid-19th century (Rev. H. H. Higgins).

Comments: The identity of this lichen was not known to Wheldon & Travis (1915). *S. paschale* (L.) Hoffm, is a boreal species not known from Britain.

Checklist:

Acarospora fuscata (Schrader) Th. Fr.

Acarospora privigna Nyl. see *Sarcogyne privigna*

Acarospora pruinosa Jatta see *Sarcogyne regularis*

Acarospora simplex Jatta see *Polysporina simplex*

Acarospora smaragdula (Wahlenb.) A. Massal.

Acrocordia conoidea (Fr.) Körber

Acrocordia epipolaea A.L. Sm. see *Acrocordia conoidea*

Acrocordia gemmata (Ach.) A. Massal.

Amandinea punctata (Hoffm.) Coppins & Scheid.

Arthonia radiata (Pers.) Ach.

Arthopyrenia areniseda A.L. Sm. see *Pyrenocollema arenisedum*

Arthopyrenia punctiformis A. Massal.

Aspicilia calcarea (L.) Körber

Aspicilia calcarea var. *contorta* see *Aspicilia contorta*

Aspicilia contorta (Hoffm.) Kremp.

Aspicilia radiosa (Hoffm.) Poelt & Leuckert

Bacidia arnoldiana Körber

Bacidia bagliettoana (A. Massal. & de Not.) Jatta

Bacidia egenula (Nyl.) Arnold

Bacidia epiphylla Wheldon & Travis see *Bacidia egenula*

Bacidia latebricola Wheldon & Travis see *Bacidia arnoldiana*

Bacidia muscorum Mudd. see *Bacidia bagliettoana*

Bacidia salicicola Wheldon & Travis see *Scoliciosporum chlorococcum*

Baeomyces rufus (Huds.) Rebent.

Biatorella campestris Th. Fr. see *Sarcosagium campestre*

Biatorella moriformis Th. Fr. see *Strangospora moriformis*

Biatorina chalybeia Mudd. see *Catillaria chalybeia*

Biatorina coeruleonigricans A.L. Sm. see *Toninia sedifolia*

Biatorina lenticularis Koerb. see *Catillaria lenticularis*

Bilimbia aromatica Jatta see *Toninia aromatica*

Bilimbia lignaria A. Massal. see *Micarea lignaria*

Bilimbia sabuletorum Branth & Rostr. see *Mycobilimbia sabuletorum*

Bilimbia sphaeroides Branth & Rostr. see *Mycobilimbia sabuletorum*

Bilimbia squamulosa A.L.Sm. see *Mycobilimbia lobulata*

Bryoria fuscescens (Gyelnik) Brodo & D. Hawksw.

Buellia aethalea (Ach.) Th. Fr.

Buellia canescens De Not. see *Diploicia canescens*

Buellia griseovirens (Turner & Borrer ex Sm.) Almb.

Buellia myriocarpa Mudd. see *Amandinea punctata*

Caloplaca aurantia (Pers.) Hellb.

Caloplaca citrina (Hoffm.) Th. Fr.

Caloplaca crenularia (With.) J. R. Laundon

Caloplaca decipiens (Arnold) Blomb. & Forss.

Caloplaca flavescens (Huds.) J. R. Laundon

Caloplaca holocarpa (Hoffm.) A.E. Wade

Caloplaca marina (Wedd.) Zahlbr. ex Du Rietz

Caloplaca saxicola (Hoffm.) Nordin

Calloposma pyraceum Sydow. see *Caloplaca holocarpa*

Calloposma vitellinum Sydow. var. *aurellum* Ach. see *Candelariella aurella*

Calloposma vitellinum Sydow. see *Candelariella vitellina*

Candelariella aurella (Hoffm.) Zahlbr.

Candelariella medians (Nyl.) A.L. Sm.

Candelariella reflexa (Nyl.) Lettau

Candelariella vitellina (Hoffm.) Müll. Arg.

Catapyrenium squamulosum (Ach.) Breuss

Catillaria chalybeia (Borrer) A. Massal.

Catillaria lenticularis (Ach.) Th. Fr.

Cetraria aculeata (Schreber) Fr.

Chaenotheca ferruginea (Turner ex Ach.) Mig.

Cladina sylvatica Nyl. see *Cladonia arbuscula*

Cladonia alcicornis Floerke see *Cladonia foliacea*

Cladonia arbuscula (Wallr.) Flotow

Cladonia bacillaris see *Cladonia macilenta*

Cladonia caespiticia (Pers.) Flörke

Cladonia cervicornis (Ach.) Flotow

Cladonia chlorophaea (Flörke ex Sommerf.) Sprengel

Cladonia coccifera (L.) Willd.

Cladonia coniocraea (Flörke) Sprengel

Cladonia conista see *Cladonia humilis*

Cladonia crispata var. *cetrariiformis* (Delise ex Duby) Vainio

Cladonia digitata (L.) Hoffm.

Cladonia fibula Nyl. var. *radiata* Nyl. ex Cromb. see *Cladonia subulata*

Cladonia fimbriata (L.) Fr.

Cladonia fimbriata var. *conista* see *Cladonia humilis*

Cladonia flabelliformis (Floerke) Vainio f. *scabriuscula* (Del.) Vainio

see *Cladonia scabriuscula*

Cladonia floerkeana (Fr.) Flörke

Cladonia foliacea (Huds.) Willd.

Cladonia furcata (Huds.) Schrader subsp. *furcata*

Cladonia furcata subsp. *subrangiformis* (Sandst.) Abbayes

Cladonia gracilis (L.) Willd.

Cladonia humilis (With.) J. R. Laundon

Cladonia macilenta Hoffm.

Cladonia ochrochlora Flörke

Cladonia pityrea see *Cladonia ramulosa*

Cladonia pocillum (Ach.) Grognot

Cladonia polydactyla (Flörke) Sprengel

Cladonia portentosa (Dufour) Coem.

Cladonia pungens Floerke see *Cladonia rangiformis*

Cladonia pyxidata (L.) Hoffm.

Cladonia pyxidata var. *chlorophaea* Floerke see *Cladonia chlorophaea*

Cladonia pyxidata var. *pocillum* Fr. see *Cladonia pocillum*

Cladonia ramulosa (With.) J. R. Laundon

Cladonia rangiformis Hoffm.

Cladonia scabriuscula (Delise) Nyl.

Cladonia squamosa (Scop.) Hoffm.

Cladonia subcervicornis (Vainion) Kernst.

Cladonia subulata (L.) F.H. Wigg.

Cladonia uncialis (L.) Wigg. subsp. *biuncialis* (Hoffm.) M. Choisy

Clauzadea immersa (Hoffm.) Hafellner & Bellem.

Clauzadea monticola (Ach.) Hafellner & Bellem.

Collema auriforme (With.) Coppins & J. R. Laundon

Collema ceranoides Nyl. ex Cromb. see *Collema tenax* var. *ceranoides*

Collema cheileum Ach. see *Collema crispum*

Collema crispum (Huds.) F.H. Wigg.

Collema cristatum (L.) Weber ex Wigg.

Collema furvum Ach. see *Collema fuscovirens*

Collema glaucescens Hoffm. see *Collema limosum*

Collema granuliferum see *Collema cristatum*

Collema limosum (Ach.) Ach.

Collema melaenum Ach. see ?*Collema cristatum*

Collema pulposum Ach. see *Collema tenax* var. *vulgare*

Collema tenax (Swartz) Ach.

Collemodium turgidum Nyl. ex Lamy see *Leptogium turgidum*

Dimerella lutea (Dickson) Trevisan

Dimerella pineti (Ach.) Vězda

Evernia furfuracea Fr. see *Pseudevernia furfuracea*

Evernia prunastri (L.) Ach.

Flavoparmelia caperata (L.) Hale.

Foraminella ambigua (Wulfen) Fricke Meyer see *Parmeliopsis ambigua*

Fuscidea cyathoides (Ach.) V. Wirth & Vězda

Graphis scripta (L.) Ach.

Gyalecta cupularis Schaer. see *Gyalecta jenensis*

Gyalecta jenensis (Batsch) Zahlbr.

Gyalideopsis anostomosans P. James & Vězda

Gyrophora polyphylla Turn. et Borr. see *Umbilicaria polyphylla*

Haematomma ochroleucum (Necker) J. R. Laundon var. *porphyrium*

(Pers.) J. R. Laundon

Haematomma ventosum Massal see *Ophioparma ventosum*

Homodium tenuissimum (Koerb.) Horw. see *Leptogium tenuissimum*

Hymenelia lacustris (With.) M. Choisy

Hypocenomyce scalaris (Ach. ex Lilj.) M. Choisy

Hypogymnia physodes (L.) Nyl.

Hypogymnia tubulosa (Schaerer) Havaas

Hypotrachyna revoluta (Flörke) Hale

Lecania cyrtella (Ach.) Th. Fr.

Lecania erysibe (Ach.) Mudd

Lecanora albella (Pers.) Ach.

Lecanora albescens (Hoffm.) Branth & Rostrup

Lecanora allophana Nyl. see *Lecanora chlorotera*

Lecanora atra Ach. see *Tephromela atra*

Lecanora campestris (Schaerer) Hue

Lecanora atrypaea Nyl. see *Lecanora cenisia*

Lecanora badia Ach. see *Protoparmelia badia*

Lecanora cenisia Ach.

Lecanora chlorotera Nyl.

Lecanora circinata Ach. see *Aspicilia radiosa*

Lecanora conizaeoides Nyl. ex Crombie

Lecanora conizaea Nyl. see *Lecanora expallens*

Lecanora crenulata Hook.

Lecanora dispersa (L.) Sommerf.
Lecanora epanora (Ach.) Ach.
Lecanora expallens Ach.
Lecanora galactina Ach. see *Lecanora albescens*
Lecanora handelii Steiner
Lecanora hageni see *Lecanora dispersa*
Lecanora intricata (Ach.) Ach.
Lecanora irrubata Nyl. see *Protoblastenia rupestris*
Lecanora muralis (Schreber) Rabenh.
Lecanora parella Ach. see *Ochrolechia parella*
Lecanora polytropa (Hoffm.) Rabenh.
Lecanora saligna (Schrader) Zahlbr.
Lecanora sarcopsis Ach. see *Lecanora saligna*
Lecanora soralifera (Suza) Räsänen
Lecanora subfusca Nyl. see *Lecanora chlarotera*
Lecanora subfusca var. *campestris* Nyl. see *Lecanora campestris*
Lecanora sulphurea (Hoffm.) Ach.
Lecanora symmicta (Ach.) Ach.
Lecanora symmicta Nyl. see *Lecanora symmicta*
Lecanora umbrina see *Lecanora dispersa*
Lecanora urbana Nyl. see *Lecanora albescens*
Lecanora varia (Hoffm.) Ach.
Lecidea aeruginosa Borrer see *Trapeliopsis flexuosa*
Lecidea atrofusca Mudd. see *Lecidea sanguineoatra*
Lecidea coarctata Nyl. see *Trapelia coarctata*
Lecidea confluens (Web.) Ach.
Lecidea contigua Fr. see *Porpidia macrocarpa*
Lecidea crustulata Koerb. see *Porpidia crustulata*
Lecidea fuliginea Ach. see *Placynthiella icmalea*
Lecidea goniophila Schaer. see *Lecidella stigmataea*
Lecidea granulosa see *Trapeliopsis granulosa*
Lecidea hypnorum Lib.
Lecidea immersa Ach. see *Clauzadea immersa*
Lecidea lithophila (Ach.) Ach.
Lecidea lucida Ach. see *Psilolechia lucida*
Lecidea lurida Ach. see *Psora lurida*
Lecidea ochracea Wedd. see *Clauzadea monticola*
Lecidea parasema Ach. see *Lecidella elaeochroma*
Lecidea plana (Lahm) Nyl.
Lecidea protrusa Fr. see *Lecidella scabra*
Lecidea sanguinaria Ach. see *Mycoblastus sanguinarius*
Lecidea sorediza Nyl. see *Porpidia tuberculosa*
Lecidea uliginosa Ach. see *Placynthiella uliginosa*
Lecidella elaeochroma (Ach.) M. Choisy
Lecidella scabra (Taylor) Hertel & Leuckert
Lecidella stigmataea (Ach.) Hertel & Leuckert
Lepraria incana (L.) Ach.
Lepraria lobificans Nyl.
Leproloma diffusum J. R. Laundon
Leproloma lanuginosum Nyl. see *Leproloma membranaceum*
Leproloma membranaceum (Dickson) Vainio
Leptogium gelatinosum (With.) J. R. Laundon
Leptogium schraderi (Ach.) Nyl.
Leptogium scotinum Fr. see *Leptogium gelatinosum*
Leptogium turgidum (Ach.) Crombie
Lobaria pulmonaria (L.) Hoffm.
Melanelia exasperata (de Not.) Essl.
Melanelia fuliginosa (Fr. ex Duby) Essl.
Melanelia glabratula (Lamy) Sandler & Arup
Melanelia subaurifera (Nyl.) Essl.
Micarea denigrata (Fr.) Hedl.
Micarea lignaria (Ach.) Hedl.
Micarea prasina Fr.
Mniacea jungermanniae (Nees ex Fr.) Boud.
Mycobilimbia sabuletorum (Schreber) Hafellner
Mycobilimbia lobulata (Sommerf.) Hafellner
Mycoblastus fucatus (Shrt.) Zahlbr.
Mycoblastus sanguinarius (L.) Norman
Mycoblastus sterilis Coppins & P. James see *Mycoblastus fucatus*
Ochrolechia androgyna (Hoffm.) Arnold
Ochrolechia parella (L.) A. Massal.
Ochrolechia turneri (Sm.) Hasselrot
Opegrapha atra Pers.
Ophioparma ventosum (L.) Norman
Pannularia nigra Nyl. See *Placynthium nigrum*
Parmelia caperata (L.) Ach. see *Flavoparmelia caperata*
Parmelia exasperata de Not. see *Melanelia exasperata*
Parmelia fuliginosa Nyl. see *Melanelia fuliginosa* subsp. *fuliginosa*
Parmelia fuliginosa var. *laetevirens* Nyl. see *Parmelia glabratula*
Parmelia glabratula (Lamy) Nyl. see *Melanelia fuliginosa*
Parmelia incurva (Pers.) Fr.
Parmelia omphalodes (L.) Ach.
Parmelia physodes Ach. see *Hypogymnia physodes*
Parmelia revoluta (Flörke) Hale see *Hypotrachyna revoluta*
Parmelia saxatilis (L.) Ach.
Parmelia perlata (Huds.) Ach. see *Parmotrema chinense*
Parmelia subaurifera Nyl. see *Melanelia subaurifera*
Parmelia subrudecta Nyl. see *Punctelia subrudecta*
Parmelia sulcata Taylor
Parmeliopsis ambigua (Wulfen) Nyl.
Parmotrema chinense (Osbeck) Hale & Ahti
Peltigera canina (L.) Willd.
Peltigera didactyla (With.) J. R. Laundon
Peltigera hymenina (Ach.) Delise ex Duby
Peltigera lactucifolia (With.) J. R. Laundon see *Peltigera hymenina*
Peltigera membranacea (Ach.) Nyl.
Peltigera polydactyla (Necker) Hoffm.
Peltigera rufescens (Weis) Humb.
Peltigera spuria (Ach.) DC. see *Peltigera didactyla*
Pertusaria amara (Ach.) Nyl.
Pertusaria communis DC. see *Pertusaria pertusa*
Pertusaria corallina (L.) Arnold
Pertusaria dealbata Nyl. ex Cromb. see *Pertusaria corallina*
Pertusaria leioplaca DC.
Pertusaria pertusa (Weigel) Tuck.
Phaeophyscia orbicularis (Necker) Moberg
Physcia adscendens (Fr.) H. Olivier
Physcia aipolia (Ehrh. ex Humb.) Fűrrohr
Physcia caesia (Hoffm.) Fűrrohr
Physcia pulverulenta Nyl. see *Physconia distorta*
Physcia stellaris var. *leptalea* Nyl. see ? *Physcia adscendens*
Physcia tenella (Scop.) DC.
Physconia distorta (With.) J. R. Laundon
Physconia grisea (Lam.) Poelt
Placynthiella icmalea (Ach.) Coppins & P. James
Placodium dissidens Nyl. see *Xanthoria elegans*
Placynthiella uliginosa (Schrader) Coppins & P. James
Placynthium nigrum (Huds.) Gray
Platismatia glauca (L.) W.L.Culb. & C.F. Culb.
Platysma glaucum Nyl. see *Platismatia glauca*
Polysporina simplex (Davies) Vězda
Porpidia cinereoatra (Ach.) Hertel & Knoph
Porpidia crustulata (Ach.) Hertel & Knoph
Porpidia macrocarpa (DC.) Hertel & Schwab
Porpidia soredizodes (Lamy ex Nyl.) J. R. Laundon
Porpidia tuberculosa (Sm.) Hertel & Knoph
Protoblastenia rupestris (Scop.) Steiner
Protoparmelia badia (Hoffm.) Hafellner
Pseudevernia furfuracea (L.) Zopf
Psilolechia lucida (Ach.) M. Choisy
Psora lurida (Ach.) DC.
Psoroma hypnorum (Vahl) Gray
Punctelia subrudecta (Nyl.) Krog.
Pyrenocollema arenisedum (A.L.Sm.) Coppins
Ramalina calicaris (L.) Fr.
Ramalina farinacea (L.) Ach.
Ramalina fastigiata (Pers.) Ach.
Ramalina fraxinea (L.) Ach.
Rhizocarpon confervoides DC. see *Rhizocarpon reductum*
Rhizocarpon geographicum (L.) DC.
Rhizocarpon obscuratum (Ach.) A. Massal. see *Rhizocarpon reductum*
Rhizocarpon reductum Th. Fr.
Rhizocarpon oederi (Weber) Körber
Rinodina exigua Gray. see *Rinodina gennarii*
Rinodina gennarii Bagl.
Sarcogyne privigna (Ach.) A. Massal.
Sarcogyne regularis Körber
Sarcosagium campestre (Fr.) Poetsch & Schied.
Scoliciosporum chlorococcum (Graewe ex Stenhammar) Vězda
Scoliciosporum umbrinum (Ach.) Arnold
Squamaria saxicola Poll. see *Lecanora muralis*
Staurothele hymenogonia (Nyl.) Th. Fr.
Stereocaulon dactylophyllum Flörke
Stereocaulon pileatum Ach.
Stereocaulon vesuvianum Pers.
Strangospora moriformis (Ach.) B. Stein
Tephromela atra (Huds.) Hafellner ex Kalb
Thelidium incavatum Mudd
Thelidium mesotropum A.L. Sm. see *Thelidium minutulum*
Thelidium microcarpum (Davies ex Leighton) A.L. Sm. see *Thelidium zwackhii* (Hepp.) A. Massal.
Thelidium minutulum Körber
Thelidium zwackhii (Hepp.) A. Massal.
Toninia aromatica (Sm.) A. Massal.
Toninia sedifolia (Scop.) Tindal
Trapelia coarctata (Sm.) M. Choisy

Trapelia involuta (Taylor) Hertel
Trapeliopsis flexuosa (Fr.) Coppins & P. James
Trapeliopsis granulosa (Hoffm.) Lumbsch
Trapeliopsis pseudogranulosa Coppins & P. James
Tuckermannopsis chlorophylla (Willd.) Hale
Umbilicaria polyphylla (L.) Baumg.
Usnea articulata (L.) Hoffm.
Usnea florida (L.) Wigg.
Usnea subfloridana Stirton
Verrucaria aethiobola Wahlenb.
Verrucaria aquatilis Mudd
Verrucaria baldensis A. Massal.
Verrucaria calciseda DC.
Verrucaria dufourii DC.
Verrucaria hochstetteri Fr.
Verrucaria integra Carroll see *Verrucaria hochstetteri*
Verrucaria margacea (Wahlenb.) Wahlenb.
Verrucaria maura Wahlenb.
Verrucaria mauroides Schaer. see *Verrucaria viridula*
Verrucaria muralis Ach.
Verrucaria nigrescens Pers.
Verrucaria rupestris Schrader see *Verrucaria muralis*
Verrucaria viridula (Schrader) Ach.
Xanthoria calcicola Oxner
Xanthoria elegans (Link) Th. Fr.
Xanthoria lychnea Th. Fr. see *Xanthoria candelaria*
Xanthoria parietina (L.) Th. Fr.
Xanthoria polycarpa (Hoffm.) Th. Fr. ex Rieber

Doubtful records:

Acarospora macrospora (Hepp.) A. Massal. ex Bagl.
Acarospora squamulosa Th. Fr. see *Acarospora macrospora*
Aspicilia caesiocinerea (Nyl. ex Malbr.) Arnold
Aspicilia gibbosa (Ach.) Körber see *Aspicilia caesiocinerea*
Bacidia arceutina (Ach.) Arnold see *Micarea lignaria*
Bacidia beckhausii (Koerb.)
Bacidia effusa Arnold
Bacidia phacodes Körber
Baeomyces roseus Pers. see *Dibaeis baeomyces*
Biatorina graniformis A.L. Sm. see *Cliostomum corrugatum*
Bilimbia subviridescens A.L. Sm. see *Micarea prasina*
Catapyrenium lachneum (Ach.) R. Sant.
Cliostomum corrugatum (Ach.) Fr.
Collema fuscovirens (With.) J. R. Laundon
Dermatocarpon lachneum A.L. Sm. see *Catapyrenium lachneum*
Dibaeis baeomyces (L.f.) Rambold & Hertel
Diploschistes scruposus (Schreber) Norman
Lecanora atra var. *grumosa* Ach. see *Tephromela grumosa*
Lecidea expansa Nyl. see *Micarea erratica*
Lecidea gagei (Sm.) A.L. Sm.
Leptorhapis epidermis (Ach.) Th. Fr.
Micarea erratica (Körber) Hertel, Ramb. & Pietschm.
Opegrapha saxicola Ach.
Peltigera horizontalis (Huds.) Baumg.
Rhizocarpon petraeum (Wolfen) Massal
Tephromela grumosa (Pers.) Hafellner & Roux
Urceolaria scruposa Ach. see *Diploschistes scruposus*
Verrucaria maculiformis Kremp.
Verrucaria papillosa Ach.
Verrucaria submersa Schaer.