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THE VASCULUM

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Edited by:
L JESSOP
Sunderland Museum and Art Gallery, Borough Road, Sunderland.

BY THE WAY

Secretaries of societies and other contributors to The Vasculum should send their notes to the editor before 15 July 1996

CALLING ALL AUTHORS

At the Annual Meeting of the N.N.U. on March 30, it was pointed out that the Union is currently very sound financially, and a suggestion was made that money could be made available to publish a book on some aspect of the natural history of North-East England. There was some discussion as to what form this publication should take whether it should concentrate on the distribution of a particular group of animals and plants, or on a certain place or type of habitat.

As far as animal and plant groups are concerned, although a review of some of the more obscure groups nematodes or mites for instance might be scientifically interesting, the N.N.U. cannot really afford to subsidise a publication that sells only to the author and a few friendsl The group chosen must, therefore, be one that is popular. Some groups are already well covered by recent publications so we can rule out, for instance, higher plants, Lepidoptera, birds, molluscs and seaweeds. Among suggested groups to be covered were: fish, amphibia, reptiles and mammals, Fungi and Odonata (Dragonflies and Damselflies). Guides to the geology of County Durham and Northumberland also exist, but this should not preclude the book having a geological theme fossils or minerals of Northumberland and Durham, for instance?

As for habitat-based publications, the Durham Coast and Weardale were two areas suggested. For this sort of book we would need to bring together geologists, botanists, zoologists and perhaps local historians to write it as a joint venture (which is much easier said than done!). We would obviously not want to repeat the work already published in the Durham County Wildlife Audit, but might, perhaps, want to focus on one aspect of it in much more detail.

It was agreed at the meeting not to decide upon any one project without canvassing the views of the members. If anyone has positive suggestions, is prepared to write a book or even has a manuscript ready for publication, please contact the editor.

N.N.U. FIELD MEETINGS, 1996

Make a note in your diary of the field meetings for 1996.

May 18	Weardale (leader George Wall)
June 15	Middleton Hall, near Belford (leader Nick Cook)
July 16	Bishop Middleham Nature Reserve (leader Cliff Evans)
September 21	Briarwood Banks, near Bardon Mill (leader lan Douglas)

The customary notices advising the meeting place and time to meet will be sent out to members nearer the dates of the meetings.

Audit of County Durham's Wildlife

Julie Stobbs, Environment Department, County Hall, Durham DH1 5UQ

A fitting climax to European Nature Conservation Year 1995 took place at Durham's County Hall on December 7 1995, when Professor David Bellamy launched the *Durham Wildlife Audit*. Marking the culmination of seven years of work on a field-by-field Phase One survey covering the whole of the county, the report was produced in partnership between English Nature (the main authors) and the publishers, Durham County Council.

The *Durham Wildlife Audit* is A4 in size, 123 pages long and is printed in full colour with a wealth of attractive photographs. There is a large number of figures showing, for example, the distribution of different types of habitat within the county and the proportion found in the various districts. A species chapter provides important cross-referencing through its descriptions of the status of various taxonomic groups and by highlighting important and vulnerable species. The final two chapters outline the extent to which sites are protected through conservation designations and consider habitat conservation into the next century. The acceptance of *Crucial Nature Capital* (sites designated as National Nature Reserves, SSSIs, etc.) and *Constant Natural Assets* (areas where native biodiversity should not be allowed to fall below minimum levels) will be an important part of ensuring that full attention is given to conservation considerations in developing a sustainable future for the county.

N.N.U. President Phil Gates, writing in the *Country Diary for* the Guardian stated "When I first read the Audit I felt rather like someone who has just discovered that he is heir to a fortune", before going on to refer to some of County Durham's most treasured assets described in the Audit, such as Yew and Juniper woodland, the Magnesian Limestone grasslands and the coastal denes.

The document represents the first quantitative assessment of the distribution and abundance of wildlife in the county, and places great emphasis on the importance of its conservation. The combination of the survey information held by English Nature and the County Council, together with the 'digested' statistics in the form of the audit, provide invaluable resource material for two main functions. First, they constitute an important yardstick for assessing the likely impact of proposed new developments, and secondly they provide significant baseline information against which future changes in out countryside can be monitored as we go into the 21st century. Among the sustainability indicators that have been identified for the county through *Local Agenda 21* are sites with numbers of butterfly species and ponds supporting populations of amphibia.

We hope that in ten or twenty years' time it will be possible to repeat the Phase One survey, although the amount of work involved in conducting a complete survey of the County should never be underestimated. Both English Nature and Durham County Council have invested major resources in the project and the contribution of others including Northumbrian Water, the National Rivers Authority and five of the district councils (Darlington, Derwentside, Easington, Sedgefield and Teesdale) towards the cost of the Audit are also gratefully acknowledged.

Copies of the *Durham Wildlife Audit* are obtainable by writing to: Director of Environment, Durham County Council, County Hall, Durham, enclosing a cheque for £15. Alternatively, it is possible to see, and buy, copies at the County Hall Helpdesk. For further information about the Audit, please do not hesitate to telephone me on 0191 383 4085.

Some notes on Microlepidoptera

T.C. Dunn. The Poplars, Durham Road, Chester-le-Street, County Durham DH3 3LY

338 *Phyllonorycter cavella* (Zell.)
In November 1986, J.D. Parrack found large blister mines under birch leaves at two sites in North Northumberland (VC68), which may have belonged to this species, but the occupants failed to emerge *(Moths and Butterflies of Northumberland & Durham* 2, p. 82). That was our only note at the time of going to press. Since then, the Chopwell trap contained a single specimen of this species on 12.vi. 1994, our only firm record to date.

350 *Phyllonorycter insignatella* (Zell.)
A single specimen (great surprise!!) in the Chester-le-Street trap on 16.viii. 1992. (see *MBN&D* 2: 88).

351 *Phyllonorycter lautella* (Zell.*)*
This species is somewhat rare in the north of England, but quite widespread in the country as a whole. Sang found it at Darlington and Hodgkinson recorded it from West Northumberland in Robson's Catalogue. These records are now well over a hundred years old, and have not been repeated until recently. The Chopwell trap produced a single specimen on 13.v.1992.

426 *Yponomeuta malinellus* Zell. Although this insect is still regarded by some workers as perhaps only a subspecies of *Yponomeuta padella* (Linn.) the general consensus at present is towards separation (see Emmet 's, 1988, *A Field Guide to the smaller British Lepidoptera).* Until about 1988 it was found only rarely in our counties. Since then, however, there has been a notable increase, both in individual numbers and also in the colonies on the apple trees affected. They are most numerous on wild trees but I have also noted infection on cultivated varieties. The first instance of this was at Burnopfield on 24.vi. 1990, when three nests were found on my daughter's trees!

468 *Rhigognostis incarnatella* (Steud.)
This extremely rare plutellid was known to only four Scottish vice-counties and four from Ireland, all of which are some distance from VC66. In 1992 two specimens were found in the Chopwell trap on 28.vii and 1.viii, and a further individual on 3.viii. 1993. After its absence in 1994, these captures were followed by one on 2. iv. 1995: this specimen was in excellent condition, possibly because of a late emergence from its pupal shell in the Autumn of 1994, followed by immediate hibernation until the spring of 1995, hibernation being a known habit of this species. According to Maitland Emmet's records, these captures appear to be the first and only ones for England.

494a *Coleophora prunifoliella* Doets.
Two specimens were taken at light in the Rothamsted trap at Chester-le- Street, on 4.viii.1992 and 6.viii. 1992, both identified by Eric Bradford. These are the first records for VC66 and so far the most northerly site for the country. According to *The Field Guide to the smaller British Lepidoptera,* larvae have been found feeding on blackthorn, as far as is known at present.

509 *Coleophora violacea* (Strom.) A single recent specimen of this species appeared in the Hamsterley Rothamsted trap (VC66) on 18.v. 1993. This is a fairly common moth in most of the country which, for some unknown reason, has always been rare in our counties.

568 *Coleophora versurella* Zeil.
Taken in the Chester-le-Street garden trap on 24.vii. 1992. The first northern record for this more southern species (del. E. Bradford).

891 *Mompha nodicolella* Fuchs. This is a double-brooded species, the second generation surviving well into May and sometimes into June during good years. Those taken in the spring of their second year are usually so damaged as to be difficult to identify without investigating their genitalia. Because of this, it is probable that badly rubbed specimens were ignored for some time. This explains the sudden appearance in the Rothamsted traps during the early part of 1993 of two specimens in the Shildon trap, seven at Chester-le-Street and 1 at Castle Eden Dene (No. 2 trap), after identification by Eric Bradford. Several more have been identified during 1994 and 1995, in a further number of sites.

969 *Pandemis corylana* (Fabr.)
This species, reportedly abundant in Robson's *Catalogue*, seemed to suffer almost complete collapse as described in *MBN&D* 2. The single record in Northumberland (VC67) and a similar position in Durham in 1991 were the only exceptions to this strange vacuum especially as the moth was reported as common enough in surrounding counties. Suddenly, in 1992, a return to the previous position began with further records in Chopwell for 28.vi. 1992, 11.vi.1992 and more in 1993. In addition this surprising set of captures was accompanied by even more surprising results in Hamsterley and Castle Eden Dene for traps No. 1 and 2. Such abundance has continued during 1994.

1037 *Croesia holmiana* (Linn.)
Our statement in *MBN&D 2* that this moth had become extinct with us was refuted on 15.viii.1993 when a single specimen in beautiful condition was found in the Shildon trap, the first example for almost 100 years.

1063 *Celypha striana* (D. & S.) Two specimens of this moth were recorded in *MBN&D* 2, which were found in a Rothamsted trap operated by Mrs Sykes at Stainton on 1.vii. 1992. The final typescripts for the book had gone to the printers before these records for 1992 became available. There are two further specimens from Stainton to record, one on 2.vii.1992 and another on 7.vii. 1992; one at Shildon (VC66) on 7.vii.1992 and another at Chopwell on 28.vii. 1992. No further specimens have been seen in 1993 or 1994

1079 *Olethreutes bifasciana* (Haw.)
A note on page 262 of *MBN&D 2* for this species recorded individuals by Sang for 1872 from VC66, and others by Bolam in June 1887 from VC68. After an absence of more than a hundred years, five specimens were found at Chopwell in July 1993 , and at Hamsterley one was taken on 22.vi.1993 and one on 3.vii. 1993. This species is a pest of *Pinus*, the larva feeding in the young blossoms which are destroyed. Found in pine plantations over most of Britain but more common in the south until recently when it began to spread. Further specimens have been found at Chopwell during 1994 and at Belford (VC68) where a Rothamsted trap operated by Roger Edwards produced one on 25.vii. 1994.

1099 *Endothenia marginana* (Haw.)
After its success in Hamsterley during 1992, recorded on page 208 of *MBN&D* 2, a single specimen turned up in the Stainton trap on 26.vi.1993 and a further two on 12.vii. 1994. More recently, a single specimen appeared in the Chester-le-Street trap on 31.V.I 995, thus continuing its spread.

1102 *Endothenia nigricostana* (Haw.)
As noted in *MBN&D* 2, this is rather a southern species, having been recorded only by Sang for VC66 in July 1860. The larva feeds on *Stachys sylvatica* in scrub and open woodland areas. A single specimen was taken at Malton Nature Reserve (VC66) on 23.vi.1992 by Terry Coult. The moth was finally determined by Eric Bradford.

1208 *Blastesthia posticana* (Zett.)
The only record in our book for this species was one from Catton (VC67) in July 1984. Since that date it appeared in the Hamsterley trap (VC66) twice in 1992 (24.vi. and 25.vii.). Like *Olethreutes bifasciana* this too is a feeder on *Pinus* species: the caterpillar is found in a bud (which is aborted) of a lateral shoot of a young tree.

1209 *Blastesthia turionella* (Linn.)
Not previously recorded in the north of England, where it has suddenly appeared in two forestry plantations simultaneously. Like the previous species the larva feeds in and aborts a terminal bud, which has earned for it the common name of the "Pine bud Moth". In this as already mentioned, it is usually the central bud of the leading shoot that is attacked, thus causing somewhat lop-sided growth of the tree. Moths were taken on 21.vi.1993 in Chopwell Wood and on 21.vi.1993 in Hamsterley Forest, and again the following year in Chopwell Wood on 28.vi. 1994.

1227 *Pammene inquilina* Fletch.
The single specimen recorded for 1.iii.1989 (VC67) has now been joined by another singleton on 19.iv.1993 from Hamsterley Forest (VC66). This inquiline in oak apples and spongy galls also on oak, is similar in life history to those of P. *argyrana* and *P. albuginana* except that the date of emergence from the gall is somewhat earlier than of *P. argyrana* and very much earlier than the rarer P. *albuginana* which seldom appears on the wing until June.

1413 *Hypsopygia costalis* (Fabr.)
Although reported from VC67 in *MBN&D 2* by J.D. Parrack at Catton in August 1984 and by B.N. Rossiter from Dipton Woods (also VC67) on two occasions on 30.vii.1984 and 26.viii. 1984, this species had never been found in VC66 at the time of going to press. Since then R. Woods has found it at Gainford on 15.vii.1992 and 1.viii. 1993. These records fill the gap nicely between VC67 and VC62 to the south in Yorkshire, and from there very frequently further south, although not for VC65 just across the Tees from Gainford.

1473 *Ephestia elutella* (Hubn.)
Another moth which, although recorded by B.N. Rossiter and E.G. Pelham- Clinton for VC67 and VC68 respectively, had not been seen in VC66 until 1992. Two specimens, confirmed by Eric Bradford, were taken in the Rothamsted trap at Chester-le-Street on 28.V.1992 and 7.vii. 1992. (I should mention that I do not keep Gerbils at the Poplarsi!).

Red-eared Terrapins in North-East England

Keith Bowey, c/o Thomley Woodlands Centre, Rowlands Gill, Tyne & Wear NE391AU
John Durkin c/o Dept of Planning, South Tyneside Town Hall, Westoe Road. South Shields, Tyne & Wear

Introduction
Recent years have seen an increasing interest in introduced and naturalised species by natural historians, both nationally (see Leves, 1977 *Naturalised Animals of the British Isles)* and within the region. This interest is fired by a number of motivations, including an interest in how the non-native species adapt to local conditions and what impact the introduced species may have on native flora and fauna.

This short article is intended to stimulate interest in the Red-eared Terrapin *(Chrysemys scripta elegans)* and to encourage the documentation of sightings, so that a more informed picture may be built up of the species' distribution across the region. The current information does not make claim to being complete, it is merely intended to be a prompt to encourage other observers to contribute their sightings to the, currently paltry, database.

The Red-eared Terrapin is a North-American amphibious reptile, commonly kept in captivity in the U.K. The species is a predator, feeding on aquatic invertebrates and small fish. In recent years there have been an increasing number of reports of the species from a wide range of wetland sites across the region. The species has been particularly notable in the Gateshead and South Tyneside areas. This may reflect the relatively higher number of observers in those urban environs or it may indicate that the species' distribution is, in reality, centred on wetland close to the conurbations, which contain the houses and aquaria from which they have been discarded. The vast majority of sightings occur during the high summer, when the animals become more obvious as a result of their basking behaviour. Logs, stones and small islets are all favoured "haul out spots" during warm weather.

The following short report has been compiled from records held by the Countryside Management Team of Gateshead's Department of Leisure Services, the Countryside Officer for South Tyneside, and the authors' personal observations of the animal.

Documented Sightings, 1983-1995

Barmston Pond (Sunderland) (NZ327571). One was noted at the south end of the pond during 1994, it was estimated to be approximately 25cm in length.
Boldon Business Park Lake (South Tyneside) (NZ342609). One was reported at the east end of the lake during 1995.
Bradley Hall Pond (Gateshead) (NZ123632). At least one animal has been noted, 1991.
Curling Pond, Ryton Willows (Gateshead) (NZ155649). Animals were seen regularly through the summer months over the period 1983-1995. A maximum of up to three individuals were noted at any one time, although it is conceivable that more may have been present. The last sighting was during summer 1995, when only a single animal was seen. An anecdotal report suggests that this animal was picked up dead late in that year.

River Derwent at Owlet Hill, Derwent Walk Country Park (Gateshead) (NZ183597). One wasobserved in the river, on at least one date during summer 1995. This is the only known sighting,to the authors' knowledge, of an individual in a local river system.
Far Pastures, Derwent Walk Country Park (Gateshead) (NZ173593). Individuals were first noted at this new wetland site in 1991, only one year after its completion. Another, or the same, was present in 1993.
Gateshead Central Nursery (Gateshead) (NZ227606). This locality has a number of individuals, in the water features of the greenhouse display areas. Included amongst these are a number of animals removed from some of the Gateshead S.S.S.I. wetland sites.
Mount Pleasant Marsh (South Tyneside) (NZ340609). This site would appear to be the 'headquarters' of the "wild" South Tyneside population, with at least three, and possibly up to six, individuals present. They range in size, up to 25 cm, and have been present at the site since at least 1989, remaining until 1995. During the summer of 1995 individuals were noted feeding on dead and dying fish and tadpoles, which were succumbing as a result of the low water levels produced by the drought.
Primrose, Jarrow (South Tyneside) (NZ332638). At least one, and possibly a number of individuals have been noted at this locality, 1992-1995, one being in the size range 12-15 cm. Possibly a different animal has also been noted at the site, some 500m. away, on a broadened stretch of the River Don at NZ331642.
Pelaw Quarries Pond (South Tyneside) (NZ309625). At least one animal has been noted, 1994.
Shibdon Pond (Gateshead) (NZ195627). Animals have been observed in the pond during 1991, 1992 (up to three individuals noted), 1993, 1994 and 1995. Three animals have been removed from the pond over the period 1991-1995, the most recent in spring 1995, but at least one individual (approximately 25 cm long) remained into the autumn of that year. In 1992 a large female was removed, after being found wandering through vegetation, apparently searching for egg-laying sites!
Sled Lane Pond, Craworook (Gateshead) (NZ128633). Two were seen basking on one of the small logs at the western end, June 1995.
South Shields Marine Park Lake (South Tyneside) (NZ373675). The remains of a dead individual were found during July 1995. Red-eared Terrapins have also been known to have 'appeared' in the wildfowl 'collection pools' at Washington Wildfowl and Wetland Centre in 1993, but at how many other wetland sites in the region is it currently present?

Discussion

The fact that this species can survive for long periods of time, in the sometimes harsh climate of the north-east, is not in dispute see the records over a twelve-year period from Ryton Willows! Despite the rigours of the local climate the animals are capable of reaching a considerable size, the largest individual at Ryton being compared to the size of a large breakfast plate (perhaps 30cm in length). This suggests that food availability is not a significant problem.

Presumably, the most significant factor in the spread of the species is the disposal of unwanted pets in a local pond, either when their owners become tired of them or when the animals become uncomfortably large for their allocated quarters. The appearance of terrapins in some waters during the mid-1980s is almost certainly a result of health concerns raised at that time about keeping the animals as pets. Various terrapin species were, at one time or another, proposed as potential sources of botulism and salmonella infections. There must have been a tremendous Increase in the number of releases into the wild following the "Ninj'a Turtle" craze of the early 1990s. Following on from the success of a televised cartoon series, vast numbers of terrapins were imported into Britain as pets for children who wanted to own a "Ninja Turtle" which was followed a few months later by mass disposal of the now- unwanted pets. Movement between local waters by the species have, at present, not been documented. This suggests that, once "dumped" in a suitable habitat, the animals are relatively sedentary. Animals seen at, apparently different, localities in the Jarrow area may refer to the same individual. Many years of observation at Ryton Willows show no spread: the pond (Curling Pond) inhabited by the terrapins is connected to another (Gut Pond) approximately 150 metres away by a small stream, and at no time has there been any observation of terrapins in the latter pond, or any suggestion of animals commuting between the two sites. The impact of the species, as a predator upon aquatic invertebrates, is of particular interest, especially at sites such as Shibdon Pond and the Curling Pond (Ryton Willows) where they are potential competitors, with coarse fish and wintering wildfowl respectively, for this food resource. Both of these localities are Sites of Special Scientific Interest. There are few meaningful observations of the feeding behaviour or food preferences of the species in the field, and at the present we simply do not have any real idea about the species' biology, as a "wild animal", in the region. The record of one animal removed from Shibdon Pond in late spring 1992 is perhaps the most intriguing of all sightings registered thus far. It was picked up some 20 yards from the pond edge, and a comment was made, half-jokingly, that it may be investigating sites at which to lay eggs. Whilst still in captivity, two days later, this animal did indeed lay an egg! It was not known whether the egg was fertile but it raises the proposition that the species has, at least, the potential to lay eggs in our region. Other observations suggest that Red-eared Terrapins *may* indulge in sexual activity in local waters. Whether the species could ever breed successfully is, of course, another matter altogether.

Reports of Red-eared Terrapins in the region, for summation in a future issue of *The Vasculum* can be forwarded to either authors or to the editor. Pleaseprovide a six-figure grid reference and as many details as possible.

RECORDS

N.N.U. Field Meeting to Crimdon

On Saturday 24 June 1995, David Mitchell led the N.N.U. field meeting to Crimdon (VC66: NZ4836). It was a very windy, cool day and there was a sea fret that made the day appear even more gloomy. However, undaunted we set off, first down the dunes and then on to the beach. Some interesting plants such as Spear-leaved Orache *Atnplex hastata* were seen. Continuing along the beach we stopped at the cliffs to look at the Limestone of the Seaham Formation. We then made our way on to the cliff top. The cold wind ruled out any possible sightings of butterflies, but the flora was interesting. Among the species recorded was Juniper *Juniper communis*, growing very low to the ground, which David had discovered on an earlier visit. Partridges with chicks were also seen on the cliff too.

Cyperaceae		**Orchidaceae**	
Carex flacca	Glaucous Sedge	*Dactylorhiza fuchsii*	Common Spotted Orchid
Carex arenaria	Sand Sedge	*Anacamptis pyramidalis*	Pyramidal Orchid
Poaceae		**Cruciferae**	
Koeleria macrantha	Crested Hair Grass	*Sisybrium officinale*	Hedge Mustard
Amophila arenaria	Marram Grass	**Lamiaceae**	
Elymus farctus	Sand Couch	*Stachys sylvatica*	Hedge Woundwort
Briza media	Quaking Grass	**Umbelliferae**	
Phragmites australis	Common Reed	*Conium maculatum*	Hemlock
Cupressaceae		*Heraclium sphondylium*	Hogweed
Juniperus communis	Juniper	*ChaerophyIlum lemulentum*	Rough Chervil
Rosaceae		Rubiaceae	
Rosa *pimpinellifolia*	BumettRose	*Galium verum*	Ladies' Bedstraw
Sanguisorba minor	Salad Burnett	**Ranunculaceae**	
Potentilla erecta	Tormentil	*Thalictrum minus*	
Leguminosae		**Resedaceae**	
Lotus comiculatus	Birds-foot Trefoil	*Reseda lutea*	Mignonette
Anthyllis vulnararia	Kidney Vetch	**Polygalaceae**	
Astragulus danicus	Purple Milk Vetch	*Polygala vulgaris*	Milkwort
Trifolium medium	Zig-zag Clover	**Chenopodiaceae**	
Ononis repens	Rest Harrow	*Atriplex prostrata*	Spear-leaved Orache
Solanaceae		**Scrophulariaceae**	
Solanum dulcamara	Bittersweet	*Rhinanthus minor* agg	Yellow Rattle
Geraniaceae	Bloody Cranesbill		
Geranium sanguineum	Common Stork's-Bill		

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BY THE WAY

Secretaries of societies and other contributors to The Vasculum should send their notes to the editor before 15 July 1996

Obituary

Antoinette Nelly Gibby

We were saddened to hear of the death, in June last year, of Mrs Gibby, a former secretary of the Northern Naturalist's Union. Married to the late Dr Jack Gibby (of the Department of Physical Chemistry at the University of Durham), Nelly Gibby was an active and well-travelled botanist.

She was an associate of Professor Valentine in his time as vice-county 66 botanical recorder, when she accompanied many of the region's best known botanists on field excursions, including Professor Heslop-Harrison and Dr. Kathleen Blackburn. Her most constant companron, however, was her daughter, Mary, with whom she spent the last two years of her life, in Buckinghamshire.

When Rev. Gordon Graham took over as vice-county recorder, she continued to botanise avidly, and he remembers her as a close friend and inspiration in his early days in the region in particular, a precarious scramble on Cronkley Fell! Nelly was dedicated to field botany, and made donations and interest-free loans to the Durham Flora Project to enable the publication of the Flora in 1988. She contributed records to the Flora, including those of the thorn apple (*Datura stramonium)* that turned-up in her own garden in Durham city and persisted for many years.

As secretary of the NNU, her duties stretched well beyond committee business, and she is still remembered for the excellent food that she provided at meetings!

Mrs Gibby was an active member of the Botanical Society for the British Isles, and exhibited annually at annual meetings, especially on the theme of botanical stamps. In addition, she was a member of the International Federation of University Women, and attended meetings of the International Botanical Congress. In these capacities she travelled all over the world, and never missed the opportunity to botanise. Her herbarium of plants was donated to Tyne and Wear Museums in 1993, and includes specimens from a number of European locations, but is predictably strongest in Co. Durham material.

Despite ailing health in her latter years (she was 94 when she died), Mrs Gibby continued to travel when possible. In her active years, there can be few people who better personified the enthusiasm and dedication of a local naturalist.

T.C. Dunn & A. Coles

Dragonflies

Several years ago there was discussion over coffee at the Hancock Museum about the *Special Publication* series of distribution atlases covering various groups of animals and plants in the North East. Somebody suggested that it might be a good idea to produce an atlas of the Dragonflies and Damselflies for the series. From that simple suggestion has flowed a project that has been taking up my time, on and off (and it must be said, more ‘off’ than 'on’) for the last six years.

At several stages a version has been produced 'ready for publication', only to become outdated when new records have acquired. What is, probably, the final version is now almost ready to go off to the printers.

Two records of interesting species have recently been passed to me as editor of *The Vasculum* and rather than as writer of the atlas.Terry Coult and Dean Howard saw three males of *Sympetrum flaveolum* at Malton Nature Reserve on 19 August 1995; the insects had gone by 22 August. The only previous records I know of in the North East for S. *flaveolum* are: (1) J. W. Heslop-Harrison, who noted in *The Vasculum* in 1946 (31: 23) that he had seen it near the pond west of the old Target Heap, Birtley "although I have seen this species on one previous occasion locally", and (2) N. Harwood who recorded it from Lovell Hill Ponds (I don't have a date for this record). It is worth taking a closer look at the reddish dragonflies: don't assume they are all *Sympetrum striolatum!*

There have been several sightings of the Banded Demoiselle, *Calopteryx splendens*, in recent years. A predominantly southern species in Britain, the records from our area comprise the most northerly extent of its range in the eastern half of the country, and it is encouraging to see it apparently spreading here. The first modern sighting was in VC66 by J.W. Heslop-Harrison, who noted in 1946 that he had Durham specimens from Teesmouth before "the last war" (i.e. pre-1939) *(Vasculum* **31:** 15). Preceding this record in terms of publication date are two notes by J.B.Nicholson. On 22 June 1942 a single male was taken on the Durham bank of the Tees below Middleton-one-Row *(Vasculum* **27:**7), and three males were taken, and several more seen on the wing between 23 and 25 June 1946 at Skerningham.

After a gap of over forty years specimens were reported from a site some seventy kilometres to the north of the previous localities. L. Silcock in a note to *Recording News* in 1988 (12: 1) reported that she had seen C. *splendens* at Marlish Farm on the River Wansbeck on a total of six occasions around mid July on sunny days. From 1991 onwards a number of reports suggest that there are populations on the River Blyth, especially at Belasis Bridge and lower downstream between Plessey Woods Country Park and Humford Mill.

The most recent sighting was by H.A. Ellis, who noted a single male on 22 June 1996 flying and perching among vegetation at the side of the River Blyth about 700m. east of Hartford Hall (grid ref. NZ252803)

In County Durham, C. *splendens* has been seen on the lower River Derwent (Lockhaugh and Ladyhaugh at Hall Meadows), at Brasside Pond and there have been several sightings on the Wear in or near Durham City. I have seen the species on Billingham Beck in Billingham.

Full details of all of these sightings will be published in the forthcoming *Atlas.*

L. Jessop

Observations on the Copper Underwing, *Amphypyra* sp. (Lepidoptera, Noctuidae) and the parasitoid *Microplitis ruricola* Lyie (Hymenoptera: Braconidae)

H.A. Ellis. 16 Southlands, Tynemouth, Tyne & Wear. NE30 2QS.

Introduction

During the NNU Field Meeting to Gainford Great Woods on 27 May 1995, I collected a caterpillar of the Copper Underwing moth resting on sandstone beneath an oak tree near the spring head of Gainford Spa (NZ162173). The Copper Underwing is not a single species (Fletcher, 1968) and various authors have reported differences between the adults of the two recognised species *Amphipyra pyramidea* and *A. berbera svenssoni* (Goater & Christie, 1969; Craik, 1980). The caterpillars of the two species are claimed to show differences as well, but there does not appear to be general agreement in the literature as to which features are characteristic of each species (Craik, 1980; Henwood, 1980; Carter & Hargreaves, 1994).

Based on the description and illustrations in Carter & Hargreaves (1994), the features of the Gainford caterpillar were initially thought to favour *A. pyramidea* rather than *A. berbera svenssoni* (Ellis in *Vasculum* **80(4):** 72). Unfortunately the adult could not be examined since the caterpillar was parasitised and died. The Copper Underwing is rare in the North East and there does not appear to be any information concerning the caterpillar or its parasitism in our region. For these reasons I thought it might be useful to: (1) bring together some of these local records for *Amphipyra* species, mostly culled from *The Vasculum* 1980-96; (2) describe the Gainford caterpillars more detail and consider how it compares with the descriptions of *A. pyramidea* and *A berbera svenssoni* in the literature, and *(3)* give an account of the parasitoid the caterpillar harboured. (The term 'parasitoid is used in preference to the more commonly used 'parasite': strictly speaking a parasitoid kills its host but a parasite does not).

Local Records

Dunn & Parrack (1986) state that, apart from an unsubstantiated report in the 19th Century, there are no records of either *A. pyramidea* or *A. berbera svenssoni* in Northumberland and County Durham. Since 1986 there have been a very few local records reported in *The Vasculum* and all since 1990.

These are:

> *A. berbera svenssoni:* Allerwash Hall, Tyne Valley 15.ix. 1991, 1 ex.(P.L *Tennant) (Vasculum*77(1): 7); Malton Nature Reserve (NZ180461) 4.ix.1992 (T. *Coult) (Vasculum* 77(4): 85, also listed in *Vasculum* 79(2): 15-23); Garden at Shildon, County Durham 5.viii.1992 (D. *Kipling) (Vasculum* 78(1): 7); Gainford Spa, County Durham 27.v. 1995, caterpillar *(H.A. Ellis) (Vasculum* 80(4): 72. A further record *of A. berbera svenssoni* from Allerwash is noted in the RECORDS section of the present issue

Amphipyra sp.: Allerwash Hall, Tyne Valley, 20. ix. 1994, 2 exx. and 1.x.I 994, 1 ex. (P.L*Tennant) (Vasculum* **80(4):** 71)

No doubt there are additional records that have been overlooked or gone unreported. For example, I know of one specimen of Copper Underwing (probably *A. pyramidea)* which was caught on 20 August 1995 in a light trap by Mary Carruthers in her garden in Manor Road, Tynemouth. From the paucity of reports for such an interesting pair of species it is reasonable to conclude that *Amphipyra* species, although widely distributed, are distinctly uncommon in our region. Both *Amphipyra* species are secretive, remaining concealed during daytime and, whilst known to come freely to sugar, are attracted to light in only small numbers (Skinner, 1984). The adult moth data above relate to the use of light traps and it could be argued that this partially explains the lack of local records. Indeed, it might be more profitable to try beating possible trees in mixed woods for the caterpillars. Light traps have been in regular use at the same locations for decades in our region and yet it seems that it is only in the last five years or so that the Copper Underwing has been recorded. For example, Peter Tennants trap records for Allerwash Hall cover a period of twenty years, but he did not record the species until 1991 and then again in 1994. It is this type of observation which supports the view that the Copper Underwing is a relative newcomer to our region rather than that it has been overlooked in the past.

Identity of the Gainford Caterpillar
There is no doubt that the caterpillar was that of the Copper Underwing moth, *Amphipyra* species, but it has proved impossible to assign it to *A. pyramidea* or *A. berbera svenssoni*. A written description was made shortly after collection and colour photographs were obtained. These have proved to be helpful in preparing the following account:

Ground colour, body bright green, head capsule shiny green with black ocelli and pale appendages. *Spiracles'*, white centres small and indisinct (but larger on 8th abdominal segment) and each surrounded by a conspicuous thick black peritreme. *Abdominal hump*, the 'horn' on the 8th abdominal segment tipped with red. *Legs*, thoracic legs green, marked distally with black spots. Abdominal prolegs and anal claspers green, marked distally with pink. *Mid-dorsal line*, white, continuous throughout all segments to base of 'horn' on 8th abdominal segment. *Spiracular line*, creamy white, continuous from 3rd abdominal segment to anal claspers but interrupted and partially missing from 1st and 2nd abdominal segments. On 2nd thoracic segment, creamy ventrally but orange/pink dorsally. *Subdorsal line*, interrupted creamy white and undulating (zigzag), but distinct

These features correspond to *A. pyramidea* as described by Carter and Hargreaves (1994), with the exception of the red-tipped 'horn' which favours *A. berbera svenssoni.* However, the latter is said to lack an orange line in the thoracic region and to have a continuous zigzag subdorsal line, unlike the Gainford specimen. Both Craik (1980) and Henwood (1980) agreed that the presence of a red 'horn' on the 8th abdominal segment is characteristic of *A. berbera svenssoni.* Henwood described *A. berbera svenssoni* as having spiracles that appear black due to a thick black peritreme (as in the Gainford specimen) and *A. pyramidea* with white spiracles and less-thick black peritremes. However, Craik described the opposite.

It seems that the only way to identify the species with certainty is to examine the genitalia of the adult moths, for the accounts of the larvae in the literature are frequently contradictory and the Gainford specimen showed features that may be considered characteristic of both species.

Fate of the Gainford caterpillar
Following collection the caterpillar ate very little of the oak leaves provided and after a few days ceased feeding and remained at rest on a leaf. On 14 June 1995 a solitary maggot-like larva emerged from a small hole in the second abdominal segment immediately above the spiracular line. It spun a silky fawn-coloured oval cocoon, 6-7 mm long, alongside the caterpillar on the wall of the container. The caterpillar remained alive, but static unless disturbed, and was still alive when, on 25 June 1995, the adult parasitoid emerged from its cocoon. The parasitoid survived only a few days in the container, and the caterpillar carcase became shrunken.

The parasitoid
The parasitoid emerged by cutting through its cocoon towards one end and the pole was lifted aside as a 'hinged lid*. No further specimens emerged. I recognised it as some form of hymenopteran, with the wing venation of a Braconid. For precise identification the adult, its cocoon and the remains of the host were sent to Dr Mark Shaw at the Royal Scottish Museum in Edinburgh, who determined it as a female *Microplitis ruricola* Lyle (Hymenoptera, Braconidae).

M. ruricola has previously been recorded from both *Amphipyra* species, but in his letter Dr Shaw added the caveat that, since the caterpillar is killed before maturation, host identification may only be reliable to the genus level. He has labelled the Gainford specimen as ex *Amphipyra ?pyramidea*.

Biology of *Microplitis ruricola*
Some species of the genus *Microplitis*, such as *M. ocellatae* which is not uncommonly found in local Poplar Hawk-moth caterpillars, are gregarious whilst others, as in the present instance, are solitary endoparasitoids. *M. ruricola* larvae feed on the haemolymph of the host which, as noticed here, remain alive until after the adult wasp has emerged from its cocoon. The rapid development of the parasitoid to the adult state (11 days) was a little surprising since my previous experience of this genus *(M. ocellatae)* led me to expect similar development time and for it to overwinter in its cocoon.

Both *Amphipyra* species are univoltine and overwinter as ova, so to synchronise the life cycles of host and parasitoid the adult of the latter would have to overwinter in the cocoon or hibernate for many months. Alternatively, it could utilise some additional host species. Reference to the literature reveals that *M. ruricola* is not host-specific to *Amphipyra* species: the type series, for instance, was reared from *Anarta myrtilli* (Beautiful Yellow Underwing) (Nixon, 1970), and it has also been recorded from *Calophasia lunula* (Toadflax Brocade). In addition, Dr Shaw told me that he has reared what he believes to be *M. ruricola* from *Apamea unanimis* (Small Clouded Brindle) caterpillars and that these individuals overwintered in cocoons.

Overall, it seems that *M. ruricola* uses several different Noctuid hosts at different times of the year and that the cocoon stage can be short-lived (summer) or long-term (overwintering). It is interesting that, in spite of its recent arrival and/or rarity, the Copper Underwing has already been used as a host by this particular parasitoid.

Frequency of *Microplitis ruricola*

This is difficult to assess. Few specimens are made available for expert examination and even in their hands it may be difficult to separate closely- related species with certainty (nixon, 1970; Shaw, *pers. comm).* Shaw (1981) found several different species of parasitoids *ex Amphipyra* sp. caterpillars collected in Pamber Forest, Hants. Of 27 parasitised larvae there were 26 with Braconidae (20 *Rogas grandis* Giraud, 1 *Apanteles acasta* Mixon and 4 *A. fulvipes* Haliday) and only one *Microplitis* specimen, later identified by Dr Shaw as a male *M ruricola* (Shaw, *pers. comm).*Shaw (1981) also refers to several campoplegine Ichneumonidae that may parasitise *Amphipyra* species, including *Spudastica kriechbaumeri* (Bridgman) and species of *Campoletis* and *Hyposoter*

Summary and conclusions

Amphipyra species (Copper Underwing moths) are distinctly uncommon in Northumberland and Durham, and the finding of a caterpillar in the region must be very unusual. A caterpillar found at Gainford is described in detail to serve as a baseline for any future comparisons. It is extremely difficult, if not impossible, to assign a caterpillar to one or other of the two species of Copper Underwing *A. pyramidea* and *A. berbera svenssoni,* since there is lack of agreement concerning the characteristic features of the species.

The Gainford caterpillar was parasitised by *Microplitis ruricola* (Braconidae). Reference is made to the known biology of this species, and to other parasitoids known to attack *Amphipyra* species.

There is much scope for further enquiry in our region, amongst other needs to ascertain: (1) the distribution and frequency *of Amphipyra* species; (2) whether only one, or both, species occur in any given locality; (3) the incidence of parasitisation of the caterpillars and the identity of individual species of parasitoid, and (4) in the case of *M. ruricola* the identity of other host species that enable it to survive throughout the year. As a beginning, anyone living near Gainford would be well-placed to undertake some or all of these studies.

Acknowledgement

I am grateful to Dr Mark Shaw for the determination of *M. ruricola* and for his encouragement and helpful correspondence in relation to parasitoids of Lepidoptera in general.

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RECORDS

Red Admiral
1995 must be regarded as the year of the Red Admiral *(Vanessa atalanta).* At Allerwash I had one in the moth trap on both 6.x. and 15.x. and J counted 15 on ivy blossom on the south end of the Hall on 15.x. and there were still two moving between the Ivy, yellow Buddleia and the heathers on 21.x. In Chesters walled garden on IO.ix. I counted approximately 200 on the Buddleia with relatively few Peacocks and Small Tortoiseshells.

P.L Tennant

Comma
A Comma was seen on the Buddleia in my garden at Malton (NZ1746) on 16 August 1995.

T. Coult

Lepidoptera at Allerwash Hall in 1995
There were four species new to Allerwash in the twenty-first year of running this trap:

1368 *Margaritia sticticalis.* 2.viii. 1995, 2 exx. confirmed J.D. Parrack. According to Dunn & Parrack since 1872 nothing has been seen or heard of this very rare immigrant in our counties.
1439 *Numonia advenella.* 18.viii.1995 (also on 20.viii. 1994) confirmed JDP. D& P give one record for Vice-County 67, but JDP notes five records since publication.
2098 *Axylia putris* (Flame) 1.ix.1995 confirmed JDP
All recent records are coastal according to D & P.
2369 *Nonagria typhae* (Bulrush Wainscot), 18.viii.1995 confirmed JDP

The following records are particularly interesting:
1716 *Rhodometra sacraria* (The Vestal). 12.x.1995 and two more on the following night. My only previous record of this rare immigrant was 6.x.1985.
2241 *Xylena vetusta* (Red Sword Grass), 15.x. 1995. Only my third record, and the first in the autumn.

2270 *Omphaloscelis lunosa* (Lunar Underwing), 29.ix. 1995. Only my third record.
2271 *Xanthia citrago* (Orange Sallow), 30.vii.1995 and three later following only five records since my first (a larva) in 1983.
2297 *Amphipyra berbera svenssoni* (Svensson's Copper Undenting), 19.viii.1995 and then on odd nights, sometimes with three in the trap until 4.x. A total of fifteen specimens. JDP checked the identification of six specimens. I find they are particularly prone to attack by pests on the setting board or in the cabinet.
2312 *lpimorpha subtusa* (Olive), 5.viii. 1995. According to D &Pa decidedly scarce species in Northumberland.
2336 *Apamaea ophiogramma* (Double Lobed) 2.viii. 1995. Only my third record.

The long hot summer of 1995 was followed by a number of unusual autumn records.
1652 *Thyatira batis* (Peach Blossom) 21 .viii. and 6.ix. "Single brooded flying from late May to late July with a very small second generation occurring occasionally in Southern England in late August and early September" (Skinner).
1837 *Eupithecia subfuscata* (Grey Pug), 15.vii.1995 and 11.ix.1995. "Usually single brooded flying in May and June. Sometimes a partial second brood in August" (Skinner).
1981 *Laothoe populi* (Poplar Hawk), 12.ix. 1995. This followed an excellent first brood. In the trap most nights from 29.iv to 17.vii.with seven on 26.vi.
2007 *Pheosia tremula* (Swallow Prominent), 19.viii. and ll.ix. Only three previous autumn records
2199 *Mythimna pattens* (Comon Wainscot), 16.ix. and 7.x. My first autumn records. "Single brooded from the Midlands northwards" (Skinner)
2477 *Hypena proboscidalis* (Snout), 30.ix.1995, 15.x.1995 and a very fresh specimen on 22.x. 1995. "Virtually entirely univoUine with us" (D & P)
2187 *Orthosia stabilis* (Common Quaker). The arrival of this spring moth on 18.xii. 1995 was a surprise. The earliest I have previously taken it is 3.iii. 1989.

P.L. Tennant

N.N.U. field meeting to Harbottle Forest

The following plants were recorded at Harbottle Forest (grid ref. NT9402) during the field meeting on 9 September 1995.

Acaena novae-zelandiae	Pirri-pirri-bur	*Dryopteris filix-mas*	Male Fern
Achillea millefolium	Yarrow	*Erica cinerea*	Bell Heather
Achillea ptarmica	Sneezewort	*Erica tetralix*	Cross-leaved Heath
Agrostis capillaris	Common Bent	*Fraxinus excelsior*	Ash
Bellis perennis	Daisy	*Galeopsis tetrahit*	Common Hemp-nettle
Betula pubescens	Downy Birch	*Galium saxatile*	Heath Bedstraw
Blechnum spicant	Hard Fern	*Genista anglica*	Petty Whin
Calluna vulgaris	Heather	*Holcus lanatus*	Yorkshire Fog
Campanula rotundifolia	Harebell	*Holcus mollis*	Creeping Soft Grass
Carex binervis	Moor Sedge	*Hypochaeris radicata*	Cat's Ear
Cerastium fontanum ssp tnviale	Common Mouse-ear	*Juncus acutiflorus*	Sharp-flowered Rush
Cirsium arvense	Creeping Thistle	*Juncus effusus*	Soft Rush
Cirsium palustre	Marsh Thistle	*Juncus squarrosus*	Heath Rush
Cirsium vulgare	Spear Thistle	*Juniperus communis*	Juniper
Conopodium majus	Pignut	*Lotus comiculatus*	Birdsfoot-trefoil
Corylus avellana	Hazel	*Lotus pedunculatus*	Large Birdsfoot-trefoil
Crataegus monogyna	Hawthorn	*Nardus stricta*	Mat Grass
Cynosurus cristatus	Crested Dog's-tail	*Oreopteris limbosperma*	Lemon-scented Fern
Cytisus scoparius	Broom	*Oxalis acetosella*	Wood Sorrel

Dactylis glomerata Cock's-foot
Deschampsia cespitosa Tufted Hair Grass
Deschampsia flexuosa Wavy Hair Grass
Digitalis purpurea Foxglove
Dryopteris dilatata Broad Buckler Fern
Phalaris arundinacea Reed Canary-grass

Plantago lanceolata Ribwort Plantain
Plantago major Greater Plantain
Poa annua Annual Meadow Grass
Polypodium vulgare Polypody
Potentilla erecta Tormentil
Prunella vulgaris Self-heal
Pterdium aquilinum Bracken
Quercus petraea Sessile Oak
Quercus robur Pedunculate Oak
Ranunculus repens Creeping Buttercup
Rubus fruticosus agg. Bramble
Rubus idaeus Raspberry
Rumex acetosa Common Sorrel
Rumex crispus Curled Dock
Rumex obtusifolius Broad-leaved Dock
Sagina procumbens Procumbent Pearlwort
Salix aurita Eared Willow
Seneciojacobaea Common Ragwort
Sorbus aucuparia Rowan
Stellaria uliginosa Bog Stitchwort

Succisa pratensis Devil's Bit Scabious
Taraxacum officinale Dandelion
Trifolium pratense Red Clover
Urtica dioica Stinging Nettle
Vaccinum myrtillus Bilberry
Vaccinum vitis-idaea Cowberry
Veronica chamaedrys Germander Speedwell
Veronica serpyllifolia Thyme-leaved Speedwell
Viola riviana Common Dog Violet

Fungi

Calocera pallidospathulata
Calocera viscosa
Claviceps purpurea Ergot
Collybia maculata Spotted Tough Shank
Collybia peronata Wood Woolly Foot
Dacrymyces stillatus
Fistulina hepatica Beefsteak Fungus

Luzula sylvatica Great Woodrush
Molinia caerulea Purple Moor Grass

Hygrophoropsis aurantiaca False Chanterelle
Lactarius vellereus Fleecy Milkcap
Leccinum scabrum Brown Birch Bolete
Marasmius androsaceus Horse Hair Fungus
Marasmius scorodonius
Mycena sanguinolenta
Ovularia obliqua
Peziza badia
Piptoporus betulinus Birch Bracket
Pluteus cen/inus Fawn Pluteus
Russula densifolia
Russula cyanoxantha Charcoal Burner
Tyromyces caesius

Mosses and Liverworts

Dicranum majus
Dicranum scoparium
Leucobryum glaucum
Pellia epiphylla
Plagiothecium undulatum
Rhytidiadelphus loreus
Rhytidiadelphus squarrosus
Rhytidiadelphus tnquetrus
Thuidium tamariscinum

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The species composition and local distribution of Bumblebee populations utilising Oil-seed Rape during spring, in North-East England.

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Introduction

Oil-seed rape *Brassica napus* ssp oleifera, like many Cruciferae, flowers relatively early in the spring, and bright yellow fields of it have become a familiar feature of the British countryside. Winter rape seed is sown in August and in the North East the plants flower principally in May the next year and are harvested in late July to early August depending on weather conditions. The flowers are abundant at a time when there is a relative paucity of nectar- bearing flowers, and emerging queen bees of the genus Bombus may be found foraging in relatively large numbers in the crops.

Spring Rape flowers later in the year, at a time when there is a much wider selection of forage available to bumblebees. Only small amounts of Spring Rape were grown in Gateshead during 1995, the period of this study.

Gateshead has a mixed agricultural mosaic of permanent pasture, some cereals and, for a largely urban area, a significant amount of woodland (circa. 18% of total land area - Bowey et aI., 1993). Although mostly an urban borough, large areas were identified in the Tyne & Wear Nature Conservation Strategy (Nature Conservancy Council, 1989) as being of "high wildlife and conservation value". Geographically, topographically and ecologically the borough is varied, with a wide range of major habitats represented (Bowey et al. 1993). The highest point is 259 metres above 0.0., and the lowest is tidal mud-flat along the river Tyne at sea level.

Oil-seed rape is grown widely in the borough, indeed the only area lacking rape is along the northern boundary, parallel to the River Tyne.

Whilst the bumblebee fauna of Gateshead is poor in terms of the number of species, the common species are present in good numbers (Eales, unpublished). It is these that form the principal focus of this current study.The study aimed to identify the species of bumblebee using oil-seed rape within Gateshead; to ascertain their relative abundance; to map their distribution, and to determine their density in rape

The Study Area

All study fields fell within the boundaries of Gateshead borough. Because Spring Rape is a minor crop locally, the more commonly planted Winter Rape was investigated much more fully. One crop of Spring Rape was examined for evidence of use by bumblebees.

The sites were situated in a variety of localities and altitudes (ranging from 15 to just under 200 metres above O.D.), and adjacent to a range of different habitats. The crops of rape were identified during an extensive ground survey conducted during late April1995: all arable fields in the borough were visited and examined in order to identify their crop type. The presence or absence of bumblebee species was determined by undertaking "bumblebee transects" through and around the fields during the flowering season.

The transect system used was a "moving box", line-transect. This comprises a 10 x 5m imaginary space, 5m each side of, and 5m in front of the observer. If a bumblebee entered this 'box' during the period of the transect then it was identified and logged. As a corollary only those species that can be easily identified in the field could be included in the survey. Bumblebees were identified by eye, where necessary with the aid of 10x40 binoculars, with reference to Chinnery (1989) and Prys-Jones & Corbet (1987). Only bees that were seen to be foraging, or had been foraging, in the rape flowers were counted. Transect routes were conducted approximately 5-10m from the field boundaries. Wherever possible, large fields were bisected by walking along tractor wheel tracks, thereby sampling the centre of the crop.

Tallies of each species noted along the transect were recorded and the totals of each species per visit, per field were calculated. These data were used to calculate the density of bumblebees using rape fields and eventually an index of abundance through the season (for details, see Appendix 1). Only positively identified individuals were counted during transects, so the results tend to underestimate numbers of certain species that are more easily confused in the field, for example *Bombus hortorum* and *B. lucorum.*

Time of day and weather conditions are known to affect foraging rate and objective in bumblebees (Loken, 1949; Miamoto, 1960) but it was not possible in the present study (because of limited time available) to standardise the timing of the surveys with reference to time of day and meteorological conditions. Nor was it ascertained whether the bees were foraging for nectar or for pollen (subsequent observations, in spring1996, suggest that some species, including *B. lapidarius* and *B. terrestris* feed on both). Time of day and weather conditions may affect this behaviour (Free, 1955). The transects were conducted over a wide range of times, from shortly after dawn in good weather, to early evening.

Fifty three fields of rape were visited between late Aprri and the end of June1995, by which latter time nearly all of the flowers had dropped and the crop had, by and large, set seed. Each field was visited at least once during the season, with some being visited on a number of occasions. Three different control fields were also surveyed: one of Winter Wheat, one of Winter Barley and one of Spring Rape.

A six-figure Ordnance Survey grid reference was recorded for each site, based on the centre of the field. Maps were plotted using the JNCC's biological recording computer programme RECORDER (see Fig 4 & Maps 2-6)

Results

A total of 99 transects were undertaken through rape fields on which bumblebees were recorded. The total transect length amounted to over 84.1 km, with a mean of 0.85 km (S.D. 0.33, n =53). There were 375 registrations of bumblebees, a mean of 3.79 bees per transect. Converting this to 'bees per km' gives 4.46, equivalent to a bee density of 4.46 per hectare of rape crop. This figure is an absolute minimum, as many bees that were settled and feeding on flowers during the surveys were not visible and therefore remained uncounted. The mean field size in which the transects were undertaken was 6.88 hectares (s.d.= 4.28, n = 53 , see Table 1), giving a mean number of bumblebees per rape field in Gateshead of 31.29.

Table 1 - Species richness of Bumblebees in Rape fields, Gateshead Borough, Spring1995**.**

No. of species per field	No. of fields in sample	Mean size of field in sample
0	2	2.45
1	11	5.40
2	19	6.58
3	7	4.69
4	10	4.85
5	4	13.37

Bumblebees were recorded using rape across the borough, from the most easterly to the most westerly fields (see Fig. 4) and over an altitudinal range of almost 200 m (from 17 m above sea level to 210 m). They were present in 51 of the 53 fields surveyed, 96.23 % of the total. Of these fields, four registered five species and ten registered four species, whereas only two fields failed to register any bumblebees at all. The modal value of bumblebee species per crop was 2, with 19 (35.85% of the total) fields registering this number, (see Table 1). Either one or two species were present in 56.6% of fields in which bumblebees were recorded.

Six species of bumblebee were recorded using rape flowers, the most widespread and numerous species being *Bombus lapidarius.* This species was present in 46 out of the 53 fields (86.79%) surveyed. Not only was *Bombus lapidarius* the most widespread species, it was also the most numerous, making up more than 57% of the total of all bumblebees recorded in rape fields (see Fig. 1). *B. pascuorum, B. hortorum* and *B. terrestris* were equally widespread in terms of the number of fields in which they were recorded (see Table 2), but *B. pascuorum* formed a larger percentage of the total bumblebee numbers than those species (see Fig. 1).

B. lapidarius had four of the five highest transect counts of any single species, regardless of time of day, season or meteorological conditions experienced on the transect. Only on one occasion on any transect did a species other than *B. lapidarius* tally more than five individuals: fifteen *B. lucorum* were noted on 13 June. On the same transect 25 specimens of *B. lapidarius* were noted, the highest transect score of any species for the whole season. Extrapolating from this figure gives a density of 83.33 S. *lapidarius* per hectare and a total population for the field in which the transect was conducted of over 438 insect - an indication of the numbers of bumblebees that sometimes resort to rape fields! However, transects varied in length according to size of the field, and individual transect tally scores should be used with caution, only as indicators of the relative abundance of a species at the time of the survey.

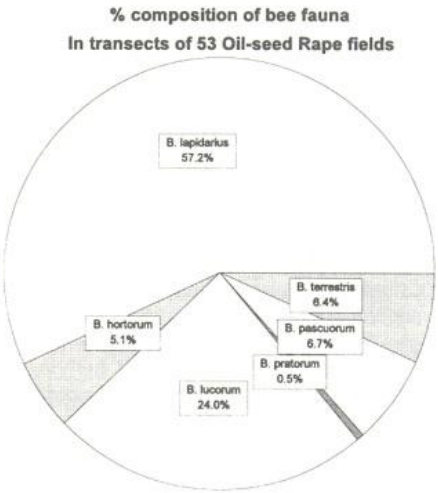
The least widespread species was *B. pratorum,* noted in only two fields. This may be due to the fact that this species has a short tongue and tends to specialize on flowers that have a very short corolla depth, such as hawthorn *{Crataegus monogyna)* and bramble *(Rubus fruiticosa)* (Alford, 1975). *B. pratorum* may not be capable of tapping the less accessible nectaries of oil- seed rape (Brian, 1957; Hobbs *etal,* 1961; Hobbs, 1962). This species was only noted towards the end of the main flowering period of the crop in early June and the two observations may have referred to inexperienced workers, (see Figure 3 for dates of *B. pratorum).*

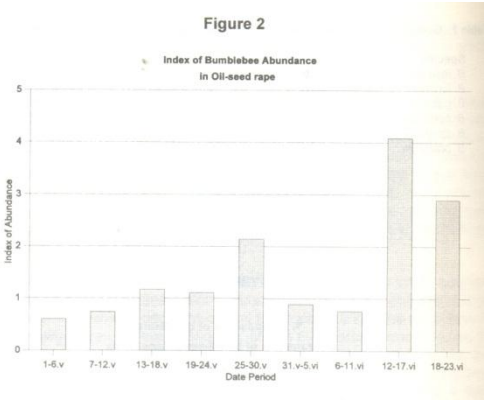
The percentage of fields in which each species was noted is listed in Table 2. Fig. 2 illustrates how bumblebee abundance in rape changed through the season, (for details on calculation of Index of Abundance, see Appendix 1).

Table 2 - Occupation of Rape fields by *Bombus* Species, Gateshead Borough, Spring1995

Species	% Occupation	No. of fields	Alt. Range (m)
B. lapidarius	86.8	46	17-210(193)
B. lucorum	69.8	37	17-195(178)
B. pascuorum	28.3	15	17-170(153)
B. hortorum	28.3	15	17-175(158)
B, terrestris	28.3	15	17-180(163)
B. pratorum	3.8	9	110-170(60)

Figure 1





The index values in Fig. 2 illustrate a peak occurring between 13-30 May. This peak, not surprisingly, coincided with the main flowering period of rape in spring1995. If the actual numbers of bumblebees in the wider countryside were to be considered then one might expect the indices to continue rising through the season into high summer, as more workers hatch and became active. There is evidence of this occurring in rape fields, from the later peak between 12-23 June. This June peak may appear anomalous, given that the flowering period of rape was almost over by then, but a relatively small number of transects (4) were undertaken during that time, and by chance those transects (see Table 3) encompassed at least one unusually late flowering crop during each sampling period. These, as a consequence, held larger than expected numbers of bees and consequently the index of abundance for each of the periods was skewed. Re-calculating the mean for the penultimate period without the data from this exceptional transect gives a mean of 1.5 bees per transect and an index of abundance of 0.27, as opposed to 4.09 - much nearer the expected result.

Table 3 - Bumblebee Registrations per Transect, by Date Period, Spring 1995

Date Period	No. of Transects	Bumblebee Registrations per date period	Mean No. of Registrations per transect
1 - 6 May	24	54	2.25
7 -12 May	5	14	2.80
13 -18 May	3	22	7.33
19 -24 May	25	104	4.16
15 -30 May	2	16	8.00
31 - 5 Jun	22	74	3.36
6 -11 Jun	12	34	2.83
12 -17 Jun	3	46	15.33
18 -23 Jun	1	11	11.00
Total	97	375	3.87

Observations in the early part of the season in1995 suggest that *Bombus lapidarius* was one of the first species of bumblebee to emerge in the spring and utilise rape. Other species noted during early season were *Bombus terrestris* and *lucorum*, with small numbers of *B. pascuorum* on a single date. *B. lucorum* showed a gradual rise in its numbers relative to other species through the season but was well represented almost from the outset of the survey period. By contrast, *B. hortorum* did not appear until mid May and then remained in evidence through to late June, whilst *B. pascuorum* seemed to be mainly present, at low levels, through the middle part of the survey season. Figure 3 illustrates how the relative abundance of the six species varied through the survey period.

Figure 3 shows that *Bombus lapidarius* formed the largest component of the bumblebee fauna in rape in almost the whole season. During only one date period did any species, B. *lucorum*, form a larger percentage, (54%), of the total fauna. By the end of the survey period very few bees were noted associating with the crop although a number were noted in the hedge-banks and the associated vegetation of the field boundaries.

The transects conducted in control fields revealed only *B. lapidarius* foraging in flowering spring rape. However, this observation was based on a single visit. Results from the other crops showed no foraging bumblebees at any time in the season, not surprising as both barley and wheat are wind-pollinated and have no nectar.

Figure 3 - Relative Species Abundance (Percentage of Total Fauna), By Date Period, Of Bumblebees Using Rape, Gateshead, 1995

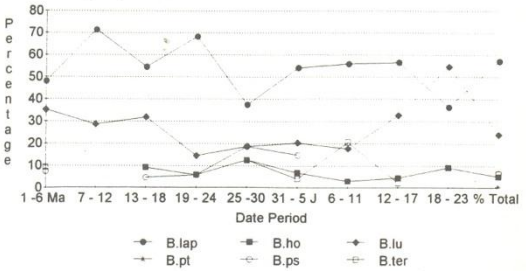
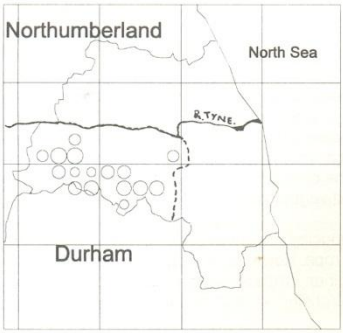


Figure 4 - Distribution map of all Bumblebee species using rape fields in Gateshead Borough, Spring 1995

The map shows the coincidence of the six *Bombus* species by tetrad (2 x 2 Km square). The largest diameter circle represents the presence of all six species.



Conclusions & Discussion

Oil-seed rape is used widely by bumblebees for foraging during the main flowering period of the plant in north-east England, over 96% of surveyed fields in Gateshead registering foraging bumblebees. A relatively wide range of species uses the crop: almost 40% (39.62%) of fields had three or more of the commonly-encountered species present. The number of species recorded in fields varied according to conditions met with during site visits and by the flowering condition of each individual crop. The most species-rich sites, i.e. those four sites (7.55% of those surveyed) that held five species, were distributed over a range of altitudes, from 45m to 150m above O.D., the mid- range of the total altitudinal range of the crop sample. These 'species rich' sites were mainly large fields, the mean field size being 13.37 hectares (see Table 1), almost double the mean size for all fields in the sample, only one being smaller than the mean for the whole sample. By way of contrast, the mean field size for the two sites that did not register any bees during the survey was 2.45 hectares. It appears that the species richness of bumblebees in rape fields is related to field size: as an artefact of surveying, larger fields have longer transects and thus there is a greater probability of encountering bees along the survey route. However, in ecological terms, large fields have a longer boundary between the crop and adjacent habitats, and are thus more likely to attract a more diverse bumblebee fauna.

B. lapidarius was undoubtedly the commonest bee species recorded, being almost twice as common as the next common species, S. *hortorum* (see Fig. 1). Its presence in a crop did not corellate with altitude or any other readily obvious ecological factor. It may be coincidental, but the relatively few fields in which S. *lapidarius* was not recorded tended to be those exhibiting restricted or poor hedgerow structure around the margins.

The presence or absence of bumblebees in rape did not show any obvious association with the altitude of the field in which they were recorded. The two fields in which no bees were recorded were situated at 50m and 120 m above O.D., well within the altitudinal range (45-150m) of the four fields that held the most species. All species, excepting *B. pratorum* (for which there were only two sightings), used fields over a relatively wide altitudinal range, of at least 150 m. Even *B. hortorum* and *B. terrestris*, which are considered to be lowland species' in the north-east (Eales unpublished), were recorded at altitudes of over 175 m. (see Table 2).

As the season progressed the number of recorded insects tended to decline. This was noticeable in late May/early June (see Table 3 and Fig. 2) as the flowers became fewer and the foraging opportunities for bees were reduced.

This was contrary to the trend of increasing numbers of bumblebees in the wider countryside during that period.

Observations made during survey suggested that even when only occasional flowers were present in rape fields and ample alternative nectar supplies were relatively close by, a few bumblebees were still to be seen visiting rape flowers. This suggests that at least some bees forage selectively, or preferentially, on rape flowers. It is unclear whether bumblebees visit all parts of the crop uniformly, although they seemed to be in slightly higher numbers towards the field margins (an observation untested mathematically). This may be due to local sheltering effects from the wind by hedges and other landscape features, rather than because of qualitative differences between rape flowers in the centre and the edges of fields. It is known that bumblebees forage as close to the nest as possible, to maximise foraging efficiency, tending to forage within a few hundred metres of the nest site (Brian, 1952; Free & Butler, 1959). Since bees are likely to make nests in the hedgerows around the field margins rather than in the rape fields themselves their foraging behaviour may tend to concentrate the bees around the crop boundaries. However observations on warm, sunny days (again, unquantified) appeared to suggest a more even distribution of bees across the whole of the crop in those conditions. Perhaps local air and weather conditions, possibly in combination with foraging strategy, are responsible for the speculated phenomenon of field-edge foraging.

The forage provided by Winter Rape flowers in early spring may be a significant contributory factor in the survivorship and, therefore, the subsequent successful breeding of some queen bumblebees. Large numbers of bees are certainly concentrated in rape crops. It was calculated that 2.62 bees per hectare - most of these being queens - are found in rape fields in early May (see Appendix 1). The nectar and pollen provided by the crop, at a time when there are few flowering plants in the countryside, may be important for foraging queens. At this stage of the season, when adverse weather conditions might reduce foraging efficiency and opportunities, the concentration of nectar and pollen available in a field of oil-seed rape could be important to a queen as she attempts to establish a colony. Indeed, it is possible that it is at this stage of the season that the future reproductive success of a queen, in some situations, might be largely determined. It is conceivable that the widespread availability of rape in the British countryside might result in a greater number of queens establishing colonies than would otherwise occur. Queens that use rape fields as foraging sites may have a selective advantage over other queens of the same species. If foraging in rape is selective within a species, and *does* confer an advantage, a "rape-using habit" might be expected to evolve in some species of bees.

It is conceivable that changes to the Common Agricultural Policy, and the level of subsidies on oil-seed rape, might lead to a reduction in the amount of rape grown and a consequent negative impact on bumblebee populations. What future for our bumblebees if they have *already* developed 'rape habits' and the much-maligned rape, like much of our nectar bearing wild flora before it, also disappears from the countryside?

British bumblebee populations are widely reported to have declined in the last thirty years or so, often as a result of agricultural intensification, growth in field size and the loss of hedgerows (Williams, 1982). It would therefore seem to be important to discover more about the current relationship of bumblebees and rape if we are to conserve current stocks and our full range of species.

There are obvious opportunities for developing this research along a number of further lines.

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Acknowledgements

Harry Eales proffered advice on identification, commented on early drafts of this paper and provided much background information, Mark O'Connell (University of Durham) was of considerable assistance in analysing and interpreting the results, and provided much needed support and advice on the preparation of the text. Les Jessop of Tyne and Wear Museum Service assisted with the computing and map generation. Many thanks to all of them for their time and unstinting support, and to all of the land-owners who so graciously allowed me access to their fields for the purpose of the study. The work was undertaken with the assistance of a Small Ecological Projects Grant from the British Ecological Society and with the support of my employers, the Leisure Services Department of Gateshead Metropolitan Borough Council.

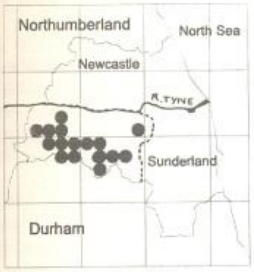
Appendix 1

Bumblebee Density

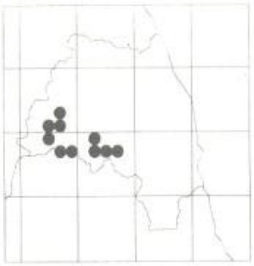
Each transect being 10m wide, 1 km of transect (i.e 1000 x 10m) equals one hectare. The early season bumblebee density was calculated by determining the number of bumblebees in the twenty nine transects undertaken during the first two date periods of May (68 in total). The total length of transects during these date periods was calculated = 25.89 km. This gave a mean of 2.65 bees per km oftransect (which, using the 10m wide transect box, is equivalent to 2.65 per hectare). This calculation assumes that no bee is registered twice during a transect and that the distribution of bees is even over the whole of the field.

Index of Bumblebee Abundance

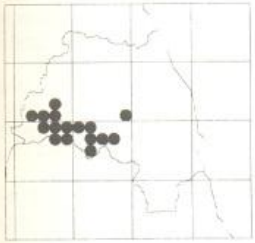
The Index of Bumblebee Abundance, used in **Fig. 2**, was calculated by dividing the percentage species composition for each six-day date period of the survey season by the number of crop transects in which bumblebees were registered during that period. For example, Period One (May 1st to 6th) registered 14.4% of all bumblebee records for the survey period, 24 transects through fields accounted for these records, giving an Index Abundance of 0.6. Using such an index compensates, in part, for variation in survey effort through the season.



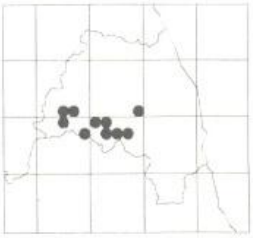
Map 1 *Bombus lapidarius* recorded using oil-seed rape fields in Gateshead Borough, Spring 1995.



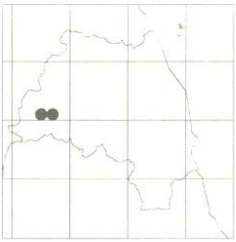
Map 2 *Bombus hortorum* recorded using oil-seed rape fields in Gateshead Borough, Spring 1995.



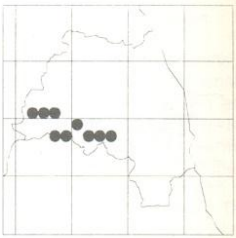
Map 3 *Bombus lucorum* recorded using oil-seed rape fields in Gateshead Borough, Spring 1995.



Map 4 *Bombus pascuorum* recorded using oil-seed rape fields in Gateshead Borough, Spring 1995.



Map 5 *Bombus pratorum* recorded using oil-seed rape fields in Gateshead Borough, Spring 1995.



Map 6 *Bombus terrestris* recorded using oil-seed rape fields in Gateshead Borough, Spring 1995.

New and significant records of fungi from VC66,1994**-199**

A.W. Legg. 36, Carleton Drive, Darlington, County Durham. DL3 9QP

The accompanying list of fungus records continues the series published periodically in *The Vasculum* since1990. Of the 201 taxa in the list,199 are considered to be newly-recorded for the old county of Durham. Two more are mentioned because of especial significance. In response to queries, the author would like to point out that, unless otherwise indicated, all collections were made by himself.

It is also again stressed that probably very few, if any, of the records are of new colonists of VC66, There is, as yet, no way of knowing. Many of these fungi are likely to be common. They are, for the most part, newly-recorded because they are so inconspicuous or ephemeral as to escape notice, difficult to identify when found and because very few people have either the interest or skills needed to search them out and ascribe names to them.

As usual, a high proportion of the finds are from Darlington West Cemetery, which continues to be searched more intensively than other sites. The total count for the cemetery to the end of May1996 is 756 taxa over a 25-year period. That list and the present one have been boosted recently by determinations (especially of Coelomycetes) made at the International Mycological Institute, Egham, Surrey.

The author would like to record here his gratitude to the mycologists of that establishment and the Herbarium of Kew Gardens, as well as to Mr A. Henrici and Dr & Mrs M.B. Ellis, who have patiently worked their way through the steady stream of problematical specimens he has submitted.

In addition to the code K for the Royal Botanic Gardens, Kew, readers will find the letters **IMI** for the International Mycological Institute followed by a six-figure number indicating that material of the pertinent fungus has been preserved under that number in the Institute's dried reference collection. Four-figure National Grid references are also given for each record.

BASIDIOMYCOTINA: AGARICALES, CORTINARIALES, RUSSULALES

Agaricus depauperatus (Moll.) Pilat. In rings in grassy clearings, Darlington West Cemetery; NZ2713: 29.ix.1995.
Agaricus romagnesii\Nasser. Solitary amongst grass, Darlington West Cemetery; NZ2613; 7.x.1994.
Bolbitius aleuriatus (Fr: Fr) Singer. Gregarious on woody debris, Whorlton; NZ1014; l.x.1995.
Conocybe brunneola Kuhner. Gregarious by forest track, Chopwell Wood; NZ1358; 23.ix.1995.
Conocybe moseri Watling. Amongst short grass, Darlington West Cemetery; NZ2613; 7.x.1995.

Coprinus amphithallus Lange & Smith. By track, Whorlton: NZ1014; 1.x.1995.
Coprinus callinus Lange & Smith. In bare soil under *Fagus,* Darlington West Cemetery; NZ2713; 9.ix.1994.
Coprinus friesii Quel. On dead grass litter, Baydale, Darlington, NZ2514; 3.viii.1994.
Coprinus tigrinellus s.l. On dead grass litter, Baydale, Darlington: NZ2514; 3.viii.1994.
Cortinarius duracinus Fr. Solitary under *Fagus,* Darlington West Cemetery; NZ2713; 23.ix.1994
Cortinarius cf gentilis (Fr.) Fr. Amongst mixed trees, Darlington West Cemetery; NZ2713; 13.x.1995.
Cortinarius hemitrichus (Pers.) Fr. Under *Betula,* Darlington West Cemetery; NZ2714; 30.ix.1994.
Cortinarius sp. subg. *Telamonia.* Under *Quercus,* Darlington West Cemetery; NZ2713; 23.ix.1994.
Cystolepiota bucknallii (Berk. & Br.) Singer & Clemencon. By pathside with deciduous trees, Castle Eden Dene; NZ4238; (coll. A. Weir) 8.x.1995.
Cystolepiota moelleri Knudsen. By pathside with deciduous trees, Castle Eden Dene; NZ4238; (coll. H. EIlis) 8.x.1995.
Enteloma favrei Noordel. Gregarious amongst mossy grass, Holy Trinity Churchyard, Darlington; NZ2814; 27.iv.1994. **K**
Gomphidius maculatus (Scop.) Fr. Solitary with *Larix,* Flatts Wood, Barnard Castle; NZ0317; (coll. A. Weir) 17. ix.1994.
Hebeloma pumilum Lange. Solitary amongst grass by *Pinus nigra,* Darlington West Cemetery; NZ2613; 23.ix.1994.
Hemipholiota populnea (Pers: Fr.) Bon. On fallen *Populus* trunk, Billingham Beck; NZ4423; 27.x.1995. Rare.
Hygrocybe subminutula (Murr.) Pegler. Gregarious amongst mossy grass, Darlington West Cemetery; NZ2713; 16.ix.1994.
Hygrophorus hedrychii Vel. Solitary with *Betula,* Flatts Wood, Barnard Castle; NZ0318; (coll. J. Manson) 17.ix.1994.
Inocybe microspora Lange. Under *Tilia,* Darlington West Cemetery; NZ2714; 16.ix.1994.
Inocybe cfumbratica Quel. Amongst grass, Darlington West Cemetery; NZ2713; 7.x.1995.
Lactarius circellatus Fr. Under *Carpinus,* Flatts Wood, Barnard Castle; NZ0318; 17.ix.1994. Not recorded in VC66 since 1907.
Marasmius graminum (Libert.) Berk. On grass litter by field-side, Baydale, Darlington; NZ2514; 3.viii.1994.
Marasmius hudsonii (Pers. ex) Fr. On fallen leaves of *Ilex,* Whorlton, NZ1114; 1 .x.1995. K. A Red Data list fungus whose nearest known site is near Richmond, Yorkshire.
Marasmius limosus Boud. & Quel. On debris of *Phalaris,* Billingham Beck; NZ4422; (coll. A. Weir) 27.x.1995. **K**. Another rare fungus previously unknown from N.E. England.
Melanoleuca cf. stridula (Fr.) Metr. Amongst short grass, Darlington West Cemetery; NZ2714; 4. ix.1994.
Ossicaulis lignatilis (Pers: Fr) Redhead & Ginns. In fissure at base of *Populus* trunk, Billingham Beck; NZ4423; (coll. A. Weir) 27.x.1995. Rare.
Oudemansiella longipes (Kumm.) Moser. By *Salix* and *Alnus* on alluvial soil, Whorlton; NZ1014; 1.x.1995. Uncommon.
Panaeolus fimicola (Pers.) Quel. By *Ulmus,* Darlington West Cemetery; NZ2714; 4.ix.1994.
Psilocybe cf muscorum (Orton) Moser. On debris of *Chamaecyparis,* Darlington West Cemetery; NZ2714; 4.xi.1995. Fitting the suggested species though the habitat is inappropriate.
Resupinatus trichotis (Pers.) Sing. On Fallen *Fagus* branch and shed bark, Darlington West Cemetery; NZ2713; 11.xi.1994.

Russula albonigra (Krombh.) Fr. With *Quercus,* Darlington West Cemetery; NZ2714; 29.viii.1994.
Russula cf amoeniolens Romagn. Under *Acer,* Darlington West Cemetery; NZ2714; 7.x.1995.
Russula chloroides (Krombh.) Bres. With Quercus, Darlington West Cemetery; NZ2713; 19.viii.1994

BASIODIOMYCOTINA: APHYLLOPHORALES

Brevicellicium olivascens (Bres.) Larss. & Hjorst. On fallen branches of *Tilia*, Darlington West Cemetery; NZ2714: 7.i.1995. Det. A. Henrici.
Byssomerulinus corium (Fr.) Parm. On fallen *Aesculus* branch, Darlington West Cemetery; NZ2714; 7.1.1995. Det. A. Henrici.
Ceriopora viridans (Berk. & Br.) Donk. On log of *?Acer*, Billingham Beck; NZ4423; 31.v.1995. Det. A. Henrici.
Lachnella villosa (Pers. ex Fr.) Gillet. On dead stems of *Epilobium hirsutum*, Low Brankin Moor; NZ3013; 11.viii.1994. **IMI** 363161.
Phanerochaete sordida (Karst.) Erikss. & Ryv. On indet rotten deciduous wood, Gainford Spa Wood; NZ1617; 23.iv.1995. Det. A. Henrici.
Phlebiopsis gigantea (Fr.) Julich. On old logs of *Pinus*, Chopwell Wood; NZ1358; 23.ix.1995. Det. A. Henrici.
Thelephora anthocephala (Bull. ex. Fr.) Pers. On bare ground under *Prunus laurocerasus*, Darlington West Cemetery; NZ2714; 14.x.1994. Det. A. Henrici.

BASIDIOMYCOTINA: UREDINALES

Melampsora symphyti Bubak. II on *Symphytum*, Billingham Beck; NZ4522; 31.v.1995.
Puccinia horiana P. Henn. Ill on lower surfaces of leaves of cultivated *Chrysanthemum* from nurseries at Hurworth; NZ3010; 26.x.1995.
Puccinia magnusiana Korn. I on leaves of *Ranunculus bulbosus*, Hardwick Hall Country Park, Sedgefield; NZ3429; 12.viii.1995. First record since 1907.
Puccinia tanaceti DC. Ill on eaves *of Artemisia vulgaris*, Blackwell riverbank, Darlington; NZ2713; 18.ix.1994. Conf. K. Payne.
Pucciniastrum vaccinii (Wint) Jorst. II on leaves of *Vaccinium myrtllus*, Chopwell Wood; NZ1358; 23.ix.1995.
Uromyces ervi West. II and III on leaves and stems of *Vicia hirsuta*, Low Brankin Moor, Darlington; NZ3013; 11.viii.1994. Conf. K. Payne. Uncommon.

ASCOMYCOTINA

Acanthophilus helicosporus (Berk. & Br.) Walker. Plentiful on old culms of *Carex acutiformis*, Billingham Beck; NZ4522; 31.v.1995.
Anthostomella punctulata (Rob. ex Desm.) Sacc. In dead leaf of *Carex pendula*, Baydale, Darlington; NZ2514; 18.vii.1994.
Apiospora montagnei Sacc. *Arthrinium* state only on dead leaves *of Arundinaria*, Darlington West Cemetery; NZ2713; 24.ii.1995.
Ascobolus brassicae Crouan. Incubated on dung of field vole, Baydale, Darlington; NZ2514; 29. iv.1995.
Ascobolus minutus Boud. Incubated on rabbit dung, Darlington West Cemetery; NZ2714; 22.iv.1994.
Berlesiella nigerrima (Bloxam ex Currey) Sacc. Over growing old stromata of *Diatrype stigma* on lopped *Acer* branches, Hardwick Hall Country Park, Sedgefield; NZ3428; 12.iii.1995.
*Calycellina phalaridis (*Lib. ex. P. Karsten) Hohnel. On old stems *of Phalaris arundinacea*, Baydale, Darlington; NZ2514; 29.iv.1995.
Crocicreas complicatum (P. Karsten) S. Carp. On dead attached branches of *Cytisus*, Baydale, Darlington; NZ2514; 12.iv.1995.
Crocicreas culmicola (Desm.) S. Carp. On dead grass stems, Baydale, Darlington; NZ2514; 3.viii.1994.
Crocicreas stramineum (Berk. & Br.) S. Carp. On dead, lying leaves *of Holcus*, Baydale, Darlington; NZ2514; 10.iv.1994.
Cryptodiaporthe aesculi (Fuckel) Petrak. In fallen branch *of Aesculus*, Darlington West Cemetery; NZ2714:15.iv.1995.

Cryptodiaporthe castanea (Tul.) Wehemeyer. In fallen twig of *Castanea*, Winston: NZ1416; 4.iv.1994.
Cryptodiaporthe galericulata (Tul. & C. Tul.) Wehemeyer. In fallen *Fagus* twig, Darlington West Cemetery; NZ2713; 31.iii.1995.
Cucurbitaria laburni (Pers.*)* de Not. *Camarosporium* and perfect states in fallen twigs of *Laburnum*, Darlington West Cemetery; NZ2713; 3.iii.1995. **K**.
Cucurbitaria sorbi P. Karst. In dead twig of *Sorbus domestica*, Darlington West Cemetery; NZ2714: 30.vii.1994. **IMI** 363159a. Not in 1985 checklist as British.
Cucurbitaria spartii (Nees ex Sch. & Kunze) Ces. & de Not. In dead attached twig of *Cytisus*, garden of Trinity Hall, Trinity Road, Darlington; NZ2814; 6.iv.1995.
Dermea ariae (Pers.) Tul. ex P. Karsten. *Foveostroma* state in dead attached branches of *Sorbus aucuparia*, Darlington West Cemetery; NZ2714; 5.v.1995.
Dermea cerasi (Pers.) Fr. *Foveostroma* state in dead attached twigs of *Prunus* sp. Darlington West Cemetery; NZ2713; 13.viii.1995.
Diapleella clivensis (Berk. & Br.) Munk. In dead lying material of *Iris*, Billingham Beck; NZ4423; 31.V.1995. **K**.
Diaporthe arctii (Lasch.) Nitschke. var. *artemisiae* Rehm. In dead standing stems of *Artemisia vulgaris*, Low Brankin Moor, Darlington; NZ3013; 11.viii.1994.
Diaporthe ilicina Cooke. In dead twig of *Ilex*, Darlington West Cemetery; NZ2714; 8.vii.1995. **K**.
Diaporthe impulsa (Cooke & Peck) Sacc. In dead attached twig of *Sorbus aucuparia*, Darlington West Cemetery; NZ2714; 26.vi.1994.
Diaporthe phaseolarum (Cooke & Ellis) Sacc. var. *sojae* (Lehman) Wehemeyer. In dead stems of *Vicia fabae*, Darlington West Cemetery; NZ2713; 9.vii.1994.
Diaporthe rhododendri auct. In dead twig of *Rhododendron ponticum*, Darlington West Cemetery; NZ2714; 19.v.1995. (sometimes subsumed under *D. eres* s.l.) **K**.
Diaporthe sarothamni Auersw. ex. Nitschke. In dead attached branch of *Cytisus*, Chopwell Wood; NZ1458; 19.iv.1995.
Diaporthe velata (Pers.) Nitschke. In dead twig of *Tilia*, Darlington West Cemetery; NZ2713; 19.v.1995.
Elsinoe velata (Burkh.) Jenkins. *Sphaceloma* state only in living stem of *Rubus 'fruticosus'*, Darlington West Cemetery; NZ2714; 24.vi.1995.
Enchnoa infemalis (Kunze ex Fr.) Fuckel. In fallen twigs of *Quercus*, Darlington West Cemetery; NZ2713; 9.iv.1994. **K**.
Erysiphe biocellata Ehrenb. Conidial state only on basal leaves of *Ajuga*, Darlington West Cemetery; NZ2714; 9.vii.1994.
Erysiphe graminis DC. Conidial and perfect states on indet. grass, Darlington West Cemetery; NZ2714; 16.vii.1994.
Flavoscypha phlebophora (Berk. & Br.) Harmaja. Clustered on old lawn, Holy Trinity churchyard, Darlington; NZ2814; 29.xi.1995. **K**. Rare.
Gibberella cf pulicarius (Fr.) Sacc. On thin dead *Ilex* twig, Darlington West Cemetery; NZ2714; 21.iv.1995. **K.**
Gloniella moliniae (de Not.) Sacc. On dead lying grass stem, Winston; NZ1416; 16.viii.1994.
Griphosphaeria corticola (Fuckel) Hohnel. *Seimatosponum* state in dead dry *Rubus 'fruticosus'* stem, Darlington West Cemetery; NZ2714; 24.ii.1995.
Herpotrichia macrotrichia (Berk. & Br.) Sacc. In dead standing stem of *Rubus idaeus*, near ground, Baydale, Darlington; NZ2514; 10.vi.1994.
Hyaloscypha (Phialina) lachnobrachya (Desm.) Nannf. On old *Salix* leaf amongst pathside vegetation, Gainford Spa Wood; NZ1617; 5.xi.1995. **K**.
Keissleriella culmifida (P. Karsten) Bose. On indet. dead grass culm, Baydale, Darlington; NZ2514: 3.viii.1994. **IMI** 363160

Lachnum ciliare (Schrader) Rehm. On dead dry leaves of *Quercus* in a ditch, Chopwell Wood, NZ1457,23.ix.1995.
Lasiosphaeria hirsuta (Fr.) Ces. & de Not. On decorticate log of *?Acer*, Billingham Beck: NZ4422; 31.v.1995.
Leptosphaeria agnita (Desm.) Ces. & de Not. On dead stems of *Eupatorium cannabinum*, Piercebridge-Gainford riverbank; NZ2015; 17.vii.1994.
Leptosphaeria coniothyrium (Fuckel) Sacc. Conidial and perfect states on dead stem of *Rubus 'fruticosus'*, Darlington West Cemetery; NZ2714; 18.viii.1994.
Leptosphaeria culmicola (Fr.) P. Karsten. In dead lying *Iris* culms, Billingham Beck; NZ4423; 31.V.1995. **K**.
Leptosphaeria derasa (Berk. & Br.) Auersw. On dead stems of *Senecio jacobaea*, Baydale, Darlington; NZ2514; 3.viii.1994.
Leptosphaeria eustoma (Fuckel) Sacc. On indet. grass stems, Baydale, Darlington; NZ2514; 18.vii.1994.
Leptosphaeria graminis (Fuckel) Sacc. On old *Phalaris* stem, Baydale, Darlington; NZ2514; 19.xi.1995.
Leptosphaeria libanotis (Fuckel) Niessi. On dead stems of *Angelica*, Low Barns, Witton-le-Wear; NZ1631; 19.vi.1994.
Leptosphaeria nodorum E. Muller. Near nodes on old grass stems, Baydale fieldside, Darlington; NZ2514; 7.vii.1994.
Leptosphaeria tritici (Gorov) Pass. On dead *Phalaris* stems, Low Brankin Moor, Darlington; NZ3013:11.viii.1994.
Leucostoma curreyi (Nitschke) De Fago. In dead twig of *Cedrus*, Darlington West Cemetery; NZ2714; 3.iv.1994. **K**.
Leucostoma niveum (Hoffm.) Hohnel. *Cytospora* state in *Populus* twig, Darlington West Cemetery; NZ2713; 7.i.1995.
Lophiostoma semiliberum (Desm.) Ces. & De Not. In indet. lying grass stem, Baydale, Darlington; NZ2514; 16.x.1994.
Lophodermium arundinaceum (Schrader) Chev. In *Phragmites* culms, Billingham Beck; NZ4423; 31.v.1995.
Lophiodermium gramineum (Fr.) Chev. In dead lying indet grass stem, Baydale, Darlington; NZ2514; 18.v.1995.
Lophodermium pinastri (Schrad.) Chev. On fallen *Pinus* needles, Chopwell Wood; NZ1358; 19.iv.1995.
Melanconis chrysostroma (Fr.) Tul. & C. Tul. In thin dead attached twigs of *Carpinus*, grounds of Darlington College of Technology; NZ2714; 6.vii.1994.
Melanconis modonia Tul. & C. Tul. In fallen twig of *Castanea*, Darlington West Cemetery; NZ2713; 27.v.1994.
Microascus manginii (Loub.) Curzi. *Scopulanopsis* state only on incubated fox dung, Low Barns, Witton-le-Wear; NZ1631; 20.viii.1995.
Micropeziza karstenii Nannf. On moribund culms of *Phalaris*, Low Brankin Moor, Darlington; NZ3013; 11.viii.1994.
Micropodia oedema (Desm.) Boud. Overgrowing *Phragmidium violaceum* on old leaves of *Rubus 'fruticosus'* suspended in vegetation, Gainford Spa Wood; NZ1617; 23.iv.1995. **K**. Rarely collected.
Mollisia cf caespitica (P. Karsten) P. Karsten. On old decorticate wood, Darlington West Cemetery; NZ2714; 11.vi.1994.
Mollisia caricina Fautr. On dead *Phalaris* stems, Baydale, Darlington; 16.x.1994.
Mollisia hydrophila P. Karsten) Sacc. On old *Phragmites* culms, Billingham Beck; NZ4423; 31.v.1995.
Mollisiopsis lanceolata (Gremmen) D. Hawksw. On dead lying *Filipendula* stems, Billingham Beck; NZ4422:31.v.1995.

Morenoina arundinariae J.P. Ellis. On dead stems of *Arundinaria*, Darlington West Cemetery: NZ2713; 20.v.1994. Conf. Mrs J.P. Ellis.
Nectria ditissima Tul. & C. Tul. On thin dead attached *Fagus* twig, Darlington West Cemetery; NZ2713:12.v.1995. **K**.
Nectria galligena Bres. On dead attached twig of *Sorbus aucuparia*, Darlington West Cemetery: NZ2713; 28.iv.1995.
Nectria leptosphaeriae Niessi. Overgrowing *Leptospaeria acuta* on dead lying stem of *Urtica*, Billingham Beck; NZ4422; 27.x.1995. **K**.
Niptera ramincola Rehm. On old stromata and bark of dead, attached twig of *Sorbus aucuparia*, Darlington West Cemetery; NZ2713; 2.xii.1995. **K**.
Nitschkia cupularis (Pers.) P. Karsten. On fallen *Fraxinus* branch, Baydale, Darlington; NZ2514; 2.i.1995. **K**.
Nitschkia grevillei (Rehm.) Nannf. On old stromata of *Diatrype stigma* on indet. wood, Dinsdale Wood; NZ3412; 7.iv.1994.
Otthia spiraeae (Fuckel) Fuckel. *Diplodia* state in dead stems of *Prunus laurocerasus*, Darlington West Cemetery; NZ2714; 10.iii.1995. IMI 367194b.
Pezizella ebumea (Rob. ex Desm.) Dennis. On rotting *Carex acutiformis*, Billingham Beck; NZ4522; 31 v.1995.
Pezizella punctoidea (P. Karsten) Rehm. On dead lopped stems and leaves of *Epilobium hirsutum*, Low Brankin Moor, Darlington; NZ3013; 11.viii.1994. **IMI** 363162.
Phomatospora dinemasporium Webster. Comdial state only on old grass stems, Baydale, Darlington; NZ2514; 10.vi.1994. **IMI** 362348.
Phyllachora graminis (Pers.) Fuckel. On old dead grass stem, Low Barns, Witton-le-Wear; NZ1631; 19.vi.1994.
Phyllachora junci (Alb. & Schw.) Fuckel. Abundant on dead stems of *Juncus*, Winston; NZ1416; 16.viii.1994. Probably very common.
Podosphaera clandestina (Wallr.: Fr.) Lev. var *aucupariae* (Erikss.) V. Braun. On suckers of *Sorbus aucuparia*, Darlington West Cemetery; NZ2713; 7.i.1995. **IMI** 366203.
Potebniamyces coniferarum (Hahn) Smerlis. *Phacidiopycnis* state only in cone-scales of *Larix kaempferi*, Darlington West Cemetery; NZ2713; 7.i.1995. **IMI** 366203.
Pseudomassaria chondrospora (Ces.) Jacz. In fallen twigs of *Tilia*, Darlington West Cemetery; NZ2714; 30.xii.1993. **K**.
Pyrenopeziza artemisiae (Lasch) Rehm. On dead stems *of Artemisia vulgaris*, Neasham riverbank; NZ3210; 6.vii.1993. **K**.
Pyrenopeziza mercurialis (Fuckel) Bond. On old *Mercurialis* stems, Winston; NZ1416; 16.iv.1995.
Quatemaria dissepta (Fr.) Tul & C.TuI. In fallen *Ulmus* twig, Darlington West Cemetery; NZ2714; 19.iii.1994.
Rhizodiscina lignyota (Fr.) Hafellner. On decorticate trunk of fallen *Quercus*, Whorlton riverside; NZ1014; 1.x.1995. **K**.
Spilopodia melanogramma Boud. Characteristic "candy-stripe" pattern on old *Mercurialis* stems, Gainford Spa Wood; NZ1617; 23.iv.1995.
Splanchnonema pupula (Fr.) Kuntze. On old attached *Acer* twig, Winston; NZ1416; 16.viii.1994. **IMI** 363165.
Sporormiella pulchella (Hansen) Ahmed & Cain. Incubated on rabbit dung, Darlington West Cemetery; NZ2714; 11.xi.1994.
Sydowia polyspora (Bref. & V. Tavel) E. Muller. Conidial state only in fallen cones of *Pinus strobus*, Darlington West Cemetery; NZ2713; 24.ii.1995. IMI 367191.
Tapesia knieffii (Wallr.) J. Kunze. On dead standing culms of *Phragmites*, Billingham Beck; NZ4423; 31 .v.1995. **K.**
Therrya pini (Alb. & Schw.) Hohnel. On lopped branch of *Pinus*, Chopwell Wood; NZ1358; 19.iv.1995. K. Rarely collected.

Thyridaria rubronotata (Berk. & Br.) Sacc. On old attached twig of *Liriodendron tulipifera*, Darlington West Cemetery; NZ2713; 23.vii.1994. **K**.
Trochila craterium (DC) Fr. On dead lying *Hedera* leaves, Darlington West Cemetery; NZ2713; 19.viii.1995.
Trochila laurocerasi (Desm.) Fr. On dead leaf of *Prunus laurocerasus*, Darlington West Cemetery; NZ2713; 21.ix.1995.
Valsa ambiens (Pers.) Fr. *Cytospora* state in fallen *Ilex* twig, Darlington West Cemetery; NZ2714; 4.ii.1994.
Valsa pustulata Auersw. ex Nitschke. Cytospora state in fallen *Fagus* twig, Darlington West Cemetery; NZ2714; 25.x.1995.
Zignoella ?dolichospora Sacc. In fallen twig of *Quercus rubra*, Darlington West Cemetery; NZ2713; 2.vii.1995. **K**. Not in 1985 British checklist.

DEUTEROMYCOTINA: HYPHALES

Brachysporium nigrum (Link.) Hughes. On indet. rotten branch, Darlington West Cemetery; NZ2714; 23.vii.1994.
Calcarisporium arbuscula Preuss. On rotting *Meripilus giganteus*, Darlington West Cemetery; NZ2713; 4.xi.1994. Det. M.B. Ellis.
Cercospora zebrina Pass. On living leaves of *Trifolium*, Low Brankin Moor; NZ3013; 11.viii.1994.
Cladobotryum mycophilum (Oudem.) W. Gams & Hoozemans. On rotting *Pleurotus cornucopiae*, Winston; NZ1416; 16.viii.1994.
Corynespora olivacea (Wallr.) M.B. Ellis. On dead attached twigs of *Tilia*, Darlington West Cemetery; NZ2714; 11.viii.1994.
Cryptostroma corticate (Ell. & Ev.) Gregory & Waller. On dead attached twigs of *Acer pseutoplatanus*, Darlington West Cemetery; NZ2713; 16.xii.1995.
Endophragmia elliptica (Berk. & Br.) Ellis. On indet. stems of grass, Baydale, Darlington; NZ2514; 3.viii.1994.
Exosporium tiliae Link. On fallen *Tilia* twigs, Darlington West Cemetery; NZ2713; 26.v.1995.
Fusidium aeruginosum Link. On fallen *Quercus* leaves, Baydale, Darlington; NZ2514; 16.x.1994.
Oidiodendron griseum Robak. In wound of *Taxus* trunk, Darlington West Cemetery; NZ2714; 2.vii.1994. det. M.B. Ellis.
Periconia minutissima Corda. On dead lying leaves of *Arundinaria*, Darlington West Cemetery; NZ2714; 27.v.1994.
Pithomyces chartarum (Berk. & Curtis) Ellis. On dead stems of *Holcus mollis*, Darlington West Cemetery; NZ2714; 9.vii.1994.
Sarcopodium circinatum Ehrenb. On debris of *Trifolium* etc., Baydale, Darlington; NZ2514; 3.viii.1994.
Tetraploa aristata Berk. & Br. On dead grass stem, Winston; NZ1416; 16.viii.1994.
Trichoderma harzianum Rifai. On rotten lying *Fagus* branch, Darlington West Cemetery; NZ2714; 4.xi.1994. Det. M.B. Ellis
Trimmatostroma scutellare (Berk. & Br.) Ellis. On fallen *Larix* twigs, Darlington West Cemetery; NZ2713; 7.i.1994.
Volutella melaloma Berk. & Br. On dead lying leaves of *Carex acutiformis*, Billingham Beck; NZ4522; 31.v.1995.

DEUTEROMYCOTINA: COELOMYCETES

Camarosporium ilicis Oudem. In dead attached *Ilex* twig, Darlington West Cemetery; NZ2713; 7.i.1995. IMI 366201.
Camarosporium rosae Grove. In mummified rose-hip *(Rosa canina)*, Hardwick Hall Country Park, Sedgefield, NZ3428; 12.iii.1995.
Camarosporium sp. In thin, dead attached twig of *Quercus Hex*, Darlington West Cemetery; NZ2714: 21.iv.1995. IMI 367601.

Cheirosporia botryospora (Mont.) Berk. & Br. On dead suspended branch of *Hedera*, Darlington West Cemetery; NZ2714; 24.iii.1995. **K**.
Coniothyrium olivaceum Bon. In dead branch of *Ailanthus*, Darlington West Cemetery; NZ2714; 12.ii.1995. **IMI** 367189. "The material may be of var. *ailanthi-glandulosae* Sacc."
Coryneum elevatum (Riess) Sutton. In thin, dead, attached twigs of *Quercus ilex*, Darlington West Cemetery; NZ2714; 21.iv.1995.
Cytospora cedn Sydow & E.J. Butler. In fallen branch of *Cedrus*, Darlington West Cemetery; NZ2713; 15.1.1995. **IMI** 366612.
Cytospora cf. chamaecyparidis auct. In old twig of *Chamaecyparis*, Darlington West Cemetery; NZ2714; 3.iii.1995. **IMI** 367193.
Cytospora intermedia Sacc. In fallen twig of *Quercus rubra*, Darlington West Cemetery; NZ2713; 5.iii.1994.
Cytospora laurocerasi Fuckel. In dead stems and leaves of *Prunus laurocerasus*, Darlington West Cemetery; NZ2714; 17.ii.1995.
Cytospora salicis (Corda) Rabenh. In fallen twig of *Salix*, Darlington West Cemetery; NZ2613; 22.iv.1994.
Dinemasporium cytosporoides Sacc.) Sutton. In dead *Rhododendron* twig, Darlington West Cemetery; NZ2714; 21.iv.1995. **IMI** 367600a.
Diplodia ilicicola Desm. In fallen *Ilex* twig, Darlington West Cemetery; NZ2714; 13.v.1994.
Diplodia mutila Fr. apud Mont. In indet. twig, Baydale, Darlington; NZ2514; 29.iv.1995.
Diplodina sp. In old *Tilia* twig, Darlington West Cemetery; NZ2714; 15.1.1995. **IMI** 366611.
Fusicoccum juglandium Died. In dead twig of *Juglans*, Darlington West Cemetery; NZ2714; 21.1.1994. **IMI** 361074.
Gloeosponum samarium Allesch. In old samaras of *Fraxinus*, Dinsdale Woods; NZ3412; 7.iv.1994. **K**.
Melanconium stromaticum Corda. In fallen *Carpinus* twigs, grounds of Darlington College of Technology; NZ2714; 24.v.1994.
Microsphaeropsis sp. On acorn of *Quercus rubra*, Darlington West Cemetery; NZ2713; 29.iv.1994. **IMI** 362343.
Microsphaeropsis sp. On dead twig of *Sorbus domestica*, Darlington West Cemetery; NZ2714; 30.vii.1994. **IMI** 363159b.
Pilidium acerinum Kunze. In fallen leaves of *Castanea*, Darlington West Cemetery; NZ2714: 16.xii.1995. **IMI** 369933.
Phoma macrocapsa Trail. On dead *Mercurialis* stems, Winston; NZ1416; 16.iv.1995. *Phoma samarum* Desm. On old *Fraxinus* samaras, Darlington West Cemetery; NZ2713; 9.iv.1994.
Phomopsis ailanthi (Sacc.) Traverso. In dead attached twigs of *Ailanthus*, Darlington West Cemetery; NZ2714; 21.iv.1995. **IMI** 367603.
Phomopsis ambigua (Sacc.) Trav. A and B conidia in fallen twig of *Pyrus*, Darlington West Cemetery; NZ2713; 31. iii.1995.
Phomopsis conegalensis (Sacc.) Trav. In fallen *Aesculus* twig, Darlington West Cemetery; NZ2713; 7.1.1995. **IMI** 366202
Phomopsis epilobii (Preuss) Grove. In dead stems of *Epilobium montanum*, Darlington West Cemetery; NZ2714; 24.vi.1995.
Phomopsis juglandia (Sacc.) Hohnel. In dead twigs of *Juglans*, Darlington West Cemetery; NZ2713; 3.ii.1995. **IMI** 366613.
Phomopsis mulleri (Cooke) Grove. In dead stems of *Rubus 'fruticosus'*, Baydale, Darlington; NZ2514; 29.iv.1995.
Phomopsis oblita Sacc. In dead stems *of Artemisia vulgaris*, Low Barns, Witton-le-Wear; NZ1631; 19.vi.1994.
Phomopsis pemicosa Grove. In dead stems of *Prunus laurocerasus*, Darlington West Cemetery; NZ2714; 10.iii.1995. **IMI** 367194a

Phomopsis pterophila (Nits.) Died. On old *Fraxinus* samaras, Dinsdale Woods: NZ3412; 7.iv.1994.
Phomopsis tinea (Sacc.) Died. In dead *Viburnum* stem, Darlington West Cemetery; NZ2714; 10.iii.1995.
Septocyta ruborum (Lib.) Petrak. In cut green stems of *Rubus 'fruticosus'*, Low Coniscliffe, Darlington: NZ2413:3.v.1994.
Thyriostroma spiraeae (Fr.) Died. In dead stems of *Filipendula*, Low Barns, Witton-le-Wear: NZ1631; 19.vi.1994.

ZYGOMYCOTINA

Mucor geneviensis Lendner. On dung of pheasant, Darlington West Cemetery: NZ2713: 26.v.1995.
Peronospora arenariae (Berk.) Tul. On living leaves of *Moehringia*, Darlington West Cemetery: NZ2713:3.vi.1995.
Peronospora grisea (Unger) Unger. On living leaves of *Veronica beccabunga*, Hell Kettles, Darlington: NZ2810:6.vi.1995.
Piptocephalus repens va Tiegh. Incubated on rabbit dung, Darlington West Cemetery: NZ2714: 11.xi.1994.

Laboulbeniales (Fungi: Ascomycotina) recorded from County Durham

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The Laboulbeniales are highly specialised fungi, ectoparasitic on insects and other invertebrates (Weir & Beakes,1995). The group was first recorded from County Durham (VC66) as recently as1992, when two species *(Laboulbenia vulgaris* and *L. pedicillata)* were found in Jarrow and recorded in this journal *(Vasculum* **77:**5).

Since then, considerable progress has been made in defining the status of the British Laboulbeniales, to the degree that a preliminary *British List* has been presented (Weir,1996). Through my own field studies and with the aid of material supplied by other entomologists, sixteen species have now been recorded from County Durham (Vice-County 66). I would be grateful if entomologists could bring further material to my notice.

ASCOMYCOTINA: LABOULBENIALES

Asaphomyces tubanticus (Middleh. & Boelens). Castle Eden Dene, Longnewton (Stockton), Jarrow.
Euzodiomyces lathrobii Thaxt. North Gare.
Hydraeomyces halipli (Thaxt.). Warden Law Quarry, Hetton Bogs, Boldon Flats.
Laboulbenia argutons Cepede & F. Picard. Castle Eden Dene, Hart Warren, Billingham Bottoms.
Laboulbenia casnoniae Thaxt. Billingham Bottoms.
Laboulbenia fasciculata Peyr. Tyne & Wear.
Laboulbenia flagellata Peyr. Egglescliffe.
Laboulbenia giardii Cepede & F. Picard. ICI No 4. Brinefields (NZ5125).
Laboulbenia nebriae Peyr. Castle Eden Dene.
Laboulbenia notiophili Cepede & F. Picard. Rainton Park Woods, Hartburn Village (Stockton).
Laboulbenia pedicillata Thaxt. Primrose (Jarrow).
Laboulbenia vulgaris Peyr. Primrose (Jarrow).
Misgomyces dyschirii Thaxt. Cowpen Marsh, Hartlepool.
Monoicomyces homalotae Thaxt. Hart Warren.
Rhacomyces furcatus (Thaxt.) Thaxt.Castle Eden Dene, Hartburn (Stockton).
Stichomyces conosomatis Thaxt. Castle Eden Dene.

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A survey of the *Drosophila* (Diptera: Drosophilidae) of Castle Eden Dene, County Durham

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Introduction

Castle Eden Dene is a steep sided valley cut through the magnesian limestone plateau that covers much of east Durham. It contains a rich variety of woodland species and was designated as a National Nature Reserve in 1985 (Anon, 1989). A previous survey of the Dene recorded 379 species of Diptera, representing around 6% of the British fauna (Luff & Selman, 1977). However, that survey did not include some of the major dipteran groups, including the Drosophilidae.

The main aim of the present investigation was to provide a primary survey of the *Drosophila* of Castle Eden Dene in order to augment the Diptera list already existing. Information was also gathered on the relative attractiveness of different types of bait and also how the age of the bait affects the *Drosophila* catch.

Method

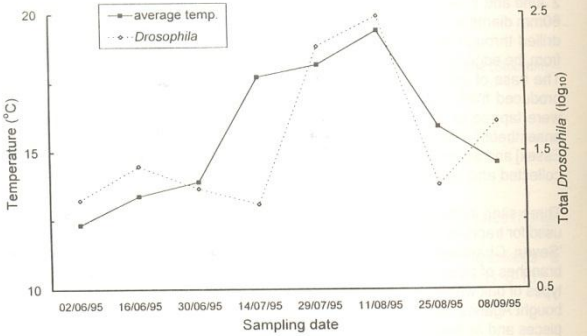
Collecting was carried out on eight occasions, at fortnightly intervals, between 2 June and 8 September1995. Traps consisted of plastic cups (open ended, 60mm diameter) with screw-on plastic lids. Nine holes (4mm diameter) were drilled through the lids to allow entry of flies. The holes were situated away from the edge of the cup to allow ease of entry but difficulty of escape for flies. The base of each cup was pierced to allow drainage of rain water and fluid produced from decomposing bait. When checking for *Drosophila*, the traps were tapped to dislodge flies to the bottom of the cup. The flies were then anaesthetised using a portable carbon dioxide gun [EDMY Ltd, Manningtree, Essex] and aspirated into glass vials. The *Drosophila* present in each trap were collected and stored in 75% methylated ethanol.

Three sites in the centre of the Dene, approximately *72* kilometre apart, were used for trapping (these sites were near to the 'Devil's Scar', 'Beech Grove' and 'Seven Chambers' areas of the Dene). The traps were suspended from branches of trees, usually yew and hazel, about 50cm from the ground. Four types of bait were used to attract *Drosophila*, apple, banana, mushroom (shop-bought Agarics) and beer (Guinness). The vegetable baits were chopped into pieces and approximately 20g placed into each trap. For beer-baited traps, a wad of tissue paper was soaked in the liquor and placed in the trap. Two ages of each bait were used, 'fresh' and 'old'. Old bait consisted of baits which had been chopped, sealed in plastic bags and stored for one week at 25°C before being placed in the field (in the case of Guinness, this meant opening the bottle a week before being used). Two replicates of each bait, of each age were used at each site on each sampling occasion. The traps were placed out in morning, before 1100 hrs, and collected 48 hours later. Specimens were identified by reference to Shorrocks (1972) and Bachli & Burla (1985).

Results and Discussion

In total, 13 species of *Drosophila* were found in the Dene, all typical of a British woodland (Table 1, for comparison, see similar species list for a woodland in (Yorkshire obtained by Shorrocks, 1975). The most abundant species was *D.deflexa*, individuals of this species making up just under half of the total catch. Basden (1954) suggested that this species was associated with shrubs and trees, typically found in moist woods and tended not to be captured in open sites. Although he suggested that this species tended to be uncommon in Scotland, Basden suspected that it may be locally frequent.

Figure 1. Trends for average temperature and total *Drosophila* catch for the whole collecting period



D.obscura and *D.subobscura* were also found to be relatively common in Castle Eden Dene. Both of these species are widespread, with a tendency to be abundant and are commonly found in woodland habitats (Shorrocks, 1972) The three most abundant species made up just over 90% of the specimen collected.

Of the other species collected, *D.subsilvestris* and *D.tristis* are also thought to be typical woodland species and *D.confusa, D.cameraria* and *D.phalerata* are thought to be primarily woodland fungus feeders (Shorrocks, 1972). These latter three species were all captured on mushroom baits. *D.andalusiaca* is considered as rare but is thought to be associated with water courses and may be locally abundant (Shorrocks, 1972).

Some species which were expected to be found at the site were not taken, for example relatively ubiquitous species such as *D. immigrans* and *D.hydei.* The low numbers of *D.funebris* and *D.melanogaster* specimens was also unexpected. This may have been due to the relatively small area of the Dene which was sampled and it is possible that these species, and others such a *D.buskii,* would be found more often where the Dene is near to human habitation (Shorrocks, 1972).

Castle Eden Dene, as one of *the* major woodland sites in the North East, might be expected to contain some of the rarer British *Drosophila* species *D. fenestrarum* has only recently been found in northern England (Davis & Jenkinson,1992) and is often associated with water courses such as those found in the Dene. Also, the proximity of the nearby brewery may provide suitable habitat for another scarce drosophilid, *D. virilis,* which in Britain tend only to be associated with the brewery habitat (Newbury *et* a/., 1984). Neither of these species were found in the present survey.

The abundance of flies in the traps differed significantly between collecting trip (Kruskall-Wallis test, $H_{adj} = 35.35$, $P<0.001$ for 7 d.f.), the highest numbers of flies being collected in late July and early August. Intuitively, this difference was thought to be correlated with the average temperatures for the periods whe the traps were in the field. Unfortunately, the nearest coastal location to the Dene where temperature data are systematically collected is at the University of Sunderland, approximately 17km north. Although it is conceded the temperatures within the Dene will tend to be very variable, due for example to different aspect and different levels of shading, temperature data for Sunderland have been used as a general indicator of trends in the broader

Table 1. Numbers of each species captured with each type of bait over the whole collecting period. Number given for each bait category is the total catch of flies from 48 traps. Figure in brackets gives the percentage of traps of each category which contained *Drosophila*.

	Bait								
	Apple		Banana		Mushroom		Guinness		Total
Species	Fresh	Old	Fresh	Old	Fresh	Old	Fresh	Old	
D.ambigua Pomini	-	2	-	4	-	-	1	-	7
D.andalusiaca Strobl	-	-	1	-	-	-	-	-	1
D.cameraria Haliday	-	-	-	-	-	4	-	-	4
D.confusa Staeger	-	-	-	-	-	1	-	-	1
D.deflexa Duda	-	19	-	273	-	-	-	16	308
D.funebris (Fabricius)	-	-	-	2	-	4	-	-	6
D.kuntzei Duda	-	-	-	-	-	4	-	2	6
D.melanogaster Meigen	-	-	-	-	-	-	1	-	1
D.obscura Fallén	5	29	-	110	-	2	6	15	167
D.phalerata Meigen	-	-	-	4	1	3	-	1	9
D.subobscura Collin	-	6	4	51	1	2	13	10	87
D.subsilvestris Hardy & Kan.	-	-	-	12	-	-	3	4	19
D.tristis Fallén	-	-	-	6	-	-	2	-	8
Total	5 (2)	56 (29)	5 (17)	462 (65)	2 (6)	20 (38)	26 (29)	48 (31)	624

regional climate. The initial hypothesis is given some support by these date (Figure 1), there being a significant positive correlation between average temperature [(high + low)/2] and total *Drosophila* collected ($r = 0.74$, $P<0.04$ for 6 d.f.). It is not surprising to find an increase in insect activity with warmer temperatures (e.g. Stevenson & James, 1953) however the details of this aspect of the behaviour of woodland *Drosophila* requires further investigation

The different bait types were differentially successful in attracting drosophilids. A General Linearized Interactive Modelling (GLIM) analysis was performed to assess which factors influenced the presence or absence of *Drosophila* in each trap (Table 2; see percentage figures for bait categories in Table 1). Sampling site within the Dene did not significantly influence the likelihood of finding *Drosophila* in a trap. There was a significant statistical interaction between the type of bait used and age of the bait in their effects on attracting *Drosophila.* Generally, the older baits tended to attract greater numbers and a greater diversity of *Drosophila* species (see also Shorrocks, 1970). Old banana was by far the most successful bait, in terms of numbers of traps which contained flies and with regards to the number of flies collected. Traps baited with Guinness were equally likely to contain flies regardless of whether the bait was fresh or a week old; however, twice as many individual flies were captured on old Guinness than on fresh. The catch for *D. subobscura* showed little response to the age of the Guinness, showing a similarity to the findings of the more detailed work of Shorrocks & Nigro (1981).

Table 2. Results of GLIM analysis on the factors affecting the presence/abscence of drosophilids in traps

	degrees of freedom	chi^2	p
site	2	3.25	>0.10
bait x age of bait	3	15.9	<0.0.005
age of bait x site	2	0.2	>0.95
bait x site	6	8.1	>0.10
bait x age of bait x site	6	3.3	>0.75
Total	383		

'Bait' and 'age of bait' could not be examined independently as they already formed part of a significant interaction term. This is a typical procedure for GLIM analysis

'Bait' and 'age of bait' could not be examined independently as they already formed part of a significant interaction term. This is a typical procedure for GLIM analysis.

This initial sampling study has revealed a typical, but previously unrecorded, woodland *Drosophila* fauna at Castle Eden Dene. However, it is believed that these species probably do not constitute a complete faunal list. It is known that some species of *Drosophila* are not attracted to conventional *Drosophila* baits (Basden, 1954; Shorrocks, 1972) and so the use of other types of bait and the collection of rotting vegetation for the breeding out of *Drosophila* may provide other species. Also, sampling a more extensive area of the Dene and sampling at different times of the year, (especially Autumn when some fungal-feeding species may become more abundant) may also reveal further species.

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The natural occurrence of hybrids between two species of *Fucus* on the north-east coast of England

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Introduction

Whereas some *Fucus* plants obviously belong to an individual species (such as *Fucus spiralis* L. or *Fucus vesiculosus* L), others seem to have characters of two species, and have been regarded as naturally occurring hybrids. This paper reports studies on the occurrence of such entities on the north-east coast of England.

The Order Fucales contains the dominant brown seaweeds found in the intertidal zone on the shore. Species of the genus *Fucus* are notoriously variable in their appearance, as a result of the effects of various environmental factors, and both *Fucus spiralis* (the flat or spiralled wrack) and *Fucus vesiculosus* (the bladder wrack) are sometimes difficult to distinguish with certainty. The position is further confused by the existence of plants which appear to be intermediate between these two species. It has been concluded that these plants are hybrids (McLachlan *et al*, 1971; Scott & Hardy,1994). Kalvas and Kautsky (1993) discovered from their study that a high degree of morphological variation was found not only between Baltic and North Sea populations but also between populations within the same area exposed to different degrees of wave exposure. They found significant differences in length and weight of individuals, thallus breadth, number of branchings and receptacles and receptacle weight. With increasing disturbance (i.e. increased degree of exposure) the size, (both in length and weight), decreased and branchings were fewer. The morphology of the plants changed considerably along the exposure gradient. At the most sheltered sites *Fucus vesiculosus* had many air bladders which decreased in number with increasing exposure.

Powell (1963) stated that plants of most *Fucus* species can cross fertilise with plants of other species, and hybrid forms (particularly between *Fucus spiralis, Fucus vesiculosus* and *Fucus ceranoides* L.) occur in nature, although apparently not too commonly in established populations on rocky shores. Hybrids are found most commonly in fairly open communities: for example, on new intertidal surfaces, or on cleared rock that is becoming recolonized, or on mud affected shores near estuaries.

Under laboratory conditions, hybridisation between *Fucus vesiculosus* and *Fucus serratus* L. was successfully conducted by Williams (1899). Kniep (1925) carried out the crossing in both directions and obtained 4% development from eggs of *Fucus vesiculosus* and antherozoids of *Fucus serratus* and 2% for the reciprocal cross. Burrows and Lodge (1951) obtained some success with trial cultures of *Fucus* eggs, growing on sterile bricks and fertilized by releasing antherozoids over them. The eggs were planted straight lines, and the germlings grown in the laboratory.

The objective of the present project was to study natural hybrids betwe *Fucus vesiculosus* and *F.spiralis* of plants from two sheltered areas (St. Mary's Island, Tyne & Wear, grid ref NZ3575, and Berwick upon Tweed, Northumberland, grid ref NU0252) and an exposed area (Cullercoats, Tyn(Wear. grid ref NZ3670) usind Anderson's hybrid analysis method.

Materials and Methods

The investigation was conducted from mid May until early July,1994. Populations of *Fucus vesiculosus* and *Fucus spiralis* were studied during low tide from the top of the *Fucus spiralis* zone down to the middle of the zone of *Fucus vesiculosus.*

On a sheltered shore at St. Mary's Island it was found that there were two distinct algal vegetation densities. A dense growth of fucoid algae was found on rock surfaces on the lower shore and a spaced population was found on the upper and middle zones. The shore floor consists mainly of gravel, small stones, and boulders of varying sizes. Generally, a profile of the shore in both transects was flat from the upper until the middle of the fucoid zone. The fucoid algae were attached to the rock surface along the shore from the upper shore and extended downwards and appeared to be limited by the absence of continuous rocks. Two other species were also found growing in small quantities in the middle area: *Ascophyllum nodosum* (L.) Le Jol. and *Ulva lactuca* L..

An exposed area of shore at Cullercoats, North Tyneside has several steep slopes and consists mainly of a rocky platform with sand, small stones, and gravel (in the upper zone) covered with a dense growth of fucoid algae at all levels. Several rockpools were also occupied by *Corallina officinalis* L, *Ulva lactuca, Himanthalia elongata* (L) S.F.Gray and *Fucus serratus.*

The site at Berwick upon Tweed (next to the pier) was found to have a very dense population of *Fucus serratus* rather than *Fucus spiralis* and *Fuci vesiculosus* at all levels. The habitat from of the site where the data were collected is level from the upper to the lower zone with rocky platforms, sand and several boulders in the upper zone. Freshwater entered from the right side of the pier. *Corallina officinalis* and *Ulva lactuca* were also found in that area. There were very limited substrata for *Fucus spiralis* in the upper zone.

Two 40m transects, 15m apart at each site, were run down the shore from the top of the *Fucus spiralis* zone to the middle of the *Fucus vesiculosus* zone and all plants attached on the transect lines were scored for five different characters. Characters were used in the separation of *Fucus spiralis* and *Fucus vesiculosus*, as shown in Table 1 (Anderson's (1936) hybrid analysis method, devised for the analysis of hybrid populations of *Tradescantia*, was adopted). A score from 0 to 4 was given to five different characters of *Fucus vesiculosus* and *Fucus spiralis*. The extreme *Fucus spiralis* character was set as 0 and the *Fucus vesiculosus* was set at either 2 or 4. A score 4 was give to the two most important of specific characters (sex and air bladders) and other characters score as 2. If a character seemed intermediate between these two extremes (frond shape and receptacle shape) a score of 1 was entered The scores for each plant were combined to form hybrid index values. As result, a minimum score of 0 represented a plant of *Fucus spiralis*, and maximum score of 14 represented a plant of *Fucus vesiculosus*. Thes contrasting score values provided a standard of reference for assessing the intermediacy and variability of hybrid populations (Grant, 1981) and intermediate scores were taken to represent hybrids or back crosses.

Table 1. Characters used in the separation of *Fucus spiralis* and *Fucus vesiculosus*

No.	character	*F. spiralis*	Hybrid	*F. vesiculosus*
1	sex	Hermaphrodite(0)	-	Dicecious (4)
2	Air bladders	None (0)	-	Present (4)
3	Receptacle shape	Rounded sterile margin	1	Elongate pointed (2)
4	Frond shape	Spirally twisted (0)	1	Flat (2)
5	Receptacle shape	No dichotomies (0)	1	1-2 dichotomies (2)
Total	-	0	-	14

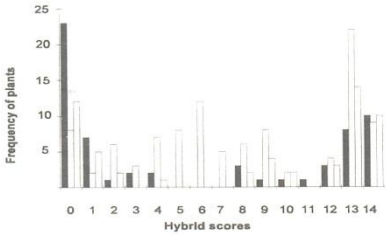
Spearman's correlation coefficients (Sokal and Rohlf, 1981) were used to test the relationship between the position of plants on the shore (measured as the distance from the plant's holdfast to the top of the transect line) and their hybrid scores. In order to observe sex ratio of plants from each location with a 1:1 expectation, a chi^2 test for goodness of it (Sokal and Rohlf, 1981) was used.

Critical values of the Chi^2 test (Sokal and Rohlf, 1981) were used to compare the distributions of hybrid scores within and between sites.

Results

The transects at site one (St. Mary's Island) involved 32 and 30 plants (38 hermaphrodite, 14 male and 10 female), those at site two (Cullercoats) involved 50 and 52 plants (26 hermaphrodite, 42 male and 34 female), and those at site three (Berwick) involved 43 and 21 plants (27 hermaphrodite, 19 male, and 9 female). Chi^2 tests for goodness of fit (Sokal and Rohlf, 1981) were used to compare the observed sex ratio with a 1:1 expectation. The results showed that males were significantly more common than females at all sites: in the site one population Chi^2 = 0.66, 0.5 >p>0.1, in the site two population chi^2 = 0.84, 0.5 >p>0.1, and in the site three population chi^2 = 3.58, 0.1 >p> 0.05.

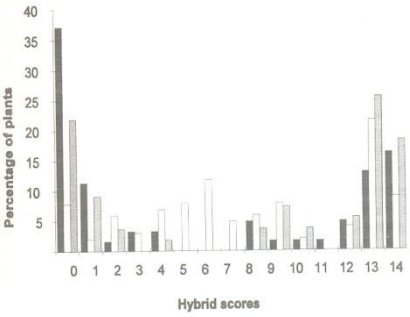
Fig.1 The frequency of plants and their hybrid scores



Site one black bars: site 2 white bars: site three grey bars.

Fig.1 shows the frequency of the plants and their hybrid scores at site one (black bars), site two (white bars) and site three (grey bars). Plants with a hybrid score of 0 (pure *Fucus spiralis)* were found from site one, site two and site three and number 23, 8 and 12 plants respectively, plants with score of 14 (pure *Fucus vesiculosus)* were found from those sites: 10 plants from site one, 9 plants from site two and 10 plants from site three. Only plants collected from site two have a score of 5 (8 plants), score of 6 (12 plants) and score of 7 (5 plants) but none has score of 11. The most frequent score of plants collected from site one, site two and site three are 23 plants (score 0), 22 plants (score 13) and 14 plants (score 13) respectively.

Fig.2 Percentage of the plants and their hybrid scores



site one black bars: site two white bars: site three grey bars.

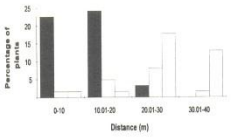
Fig.2 shows the percentage of the plants at three sites which were found to have each of the possible hybrid scores. Critical values of the chi^2 test (Sokal and Rohlf, 1981) were used to compare the distributions of hybrid scores within and between sites. Comparing transect 1 and transect 2 from site one (St. Mary's Island), the distributions of frequencies of scores do not differ (chi^2 = 17.203, 0.5 >p> 0.1), the same is true comparing transect 1 and transect 2 from site two (Cullercoats) (chi^2 = 25.390, 0.05 >p> 0.025) and comparing transect 1 and transect 2 from site three (Berwick) also do not differ (chi^2 = 13.190, 0.9 >p> 0.5). Given the results and the fact that the transects were only 15 m apart, and in apparently homogenous habitat the data collected were pooled to form one set per site. A chi^2 statistic test to compare the distributions of the frequency of scores from each site suggests that the three sites differ significantly (chi^2 = 62.897, p< 0.001). Statistical analysis also showed that the comparison of site one and site two, between site two and site three differ significantly (chi2 = 52.414, p< 0.01) and chi^2= 41.461, p< 0.01) respectively, but between site one and site three do not have significant correlations (chi^2 = 11.040, 0,9 >p> 0.5).

It can be seen from fig.2 that, if rigorous criteria are used, 46.77% of plants at site one, 83.33% of plants at site two, and 60% of plants at site three can not be categorised as being either typical *Fucus spiralis* or typical *Fucus vesiculosus.* If less rigorous criteria are used, and plants with scores of 0, 1 and 2 are considered to be *Fucus spiralis*, and those scoring 12, 13 and 14 to be *Fucus vesiculosus*, 16.13% of plants at site one, 50% of plants at site two and 16.36% of plant at site three cannot be categorised as being pure examples of either species. Thus, intermediates, which can be assumed to be hybrids, are common at the three sites.

Spearman's correlation coefficient (Sokal and Rohlf, 1981) was used to test the relationship between the position of plants on the shore (measured as distance from the plants holdfast to the top of the transect line) and their hybrid scores. The result of the analysis suggests that a strong relationship exists at site one (transect 1) ($r_s = 0.80$, $p < 0.01$) and transect 2 ($r_s = 0.732$, $p < 0.01$) and site two transect 1 ($r_s = 0.717$, $p < 0.01$), transect 2 ($r_s = 0.712$ $p < 0.01$) and also at site three transect 1 ($r_s = 0.731$, $p < 0.01$), but there is no positive correlation at transect 2 ($r_s = 0.21$, $p > 0.05$).

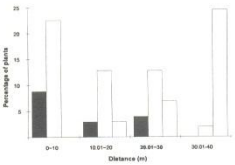
Fig.3 shows the distributions of plants in each hybrid score class found in each distance class from the top of the two transect lines at site one. It can be seen that plants with hybrid scores between 0-2 were found from the top of the shore (0m) until 20m (downward of the shore). Most of the plants with hybrid scores between 3-11 were found between 10.01m to 30m. Finally, plants with hybrid scores from 12 to 14 generally occupied the shore floor from 30.01m to 40m.

Fig. 3 Hybrid score classes at St Mary's Island



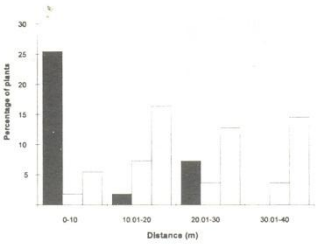
The distributions (percentage of the population) of plants in each hybrid score class found in each distance class from the top of the transect line at site one (St. Mary's Island).
Solid bars: plants scoring 0, 1 and 2
Open bars: plants scoring 12, 13 and 14
Hatched bars: plants with scores between of 3 and 11.

Fig.4 Hybrid score classes at Cullercoats



The distributions (percentage of the population) of plants in each hybrid score class found in each distance class from the top of the tansect line at site two (Cullercoats).
Solid bars: plants scoring 0, 1 and 2;
Open bars: plants scoring 12, 13 and 14
Hatched bars: plants with scores between of and 11.

Fig.5 Hybrid score classes at Berwick



The distributions (percentage of the population) of plants in each hybrid score class found in each distance class from the top of the transect line at site three (Berwick).
Solid bars: plants scoring 0, 1 and 2
Open bars: plants scoring 12, 13 and 14
Hatched bars: plants with scores between 3 and 11.

The vertical distributions of plants in each hybrid score class found at each distance class from site two is shown in Fig.4. Plants with hybrid scores between 0-2 were found from the top of the shore (0m) until 30m down the shore. While plants with hybrid scores between 3-11 were found at all levels, but the majority of those occupied the shore from 0-10m (23 plants or 22.55% from 102 collected plants), and from 20.01-30m (13 plants or 12.75%). Finally, plants with hybrid scores between 12-14 occupied the shore between 10.01m until 40m and the highest frequency was at the base of the shore between 30.01 until 40m (25 plants or 24.51%).

The distribution of plants in each hybrid score class at each distance class from site three can be seen from Fig.5. Distribution of 55 plants with hybrid scores between 0-2, 3-11, and 12-14 is as follows: Plants with hybrid scores between 0-2 were found between O-IOm (14 plants or 25.455%), 10.01-20m (1 plant or 1.818%), and 20.01-30m (4 plants or 7.273%), 20.01-30m (2 plants or 3.636%) and between 30.01-40m (2 plants or 3.636%). Finally, plants with hybrid scores between 12-14 were found between 0-10m (3 plants or 5.455%), 10.01-20m(9 plants or 16.364%), 20.01-30m (7 plants or 12.727%), and 30.01- 40m (8 plants or 14.545%).

Discussion

Although the limits of a zone are generally rather distinct, a mixture of heterogenous *Fucus* species (hybrids) were found at Cullercoats in the upper and middle zone which were difficult to identify as either *Fucus spiralis* or *Fucus vesiculosus.* Conversely, this was not observed at St. Mary's Island where *Fucus spiralis* and *Fucus vesiculosus* were adjacent. Burrows and Lodge (1951) and Niemeck and Mathieson (1976) also found hybrid fucoid populations at the transitional zone between *Fucus spiralis* and *Fucus vesiculosus.* Burrows and Lodge (1951) emphasized that hybrids occur between the species and that they would be most competitive in the transition areas between the sharply defined zones of the parents. Furthermore, Burrows and Lodge (1955) stated that *Fucus spiralis, Fucus vesiculosus* and *Fucus serratus* are distributed in relation to tide levels in such a way that, when all three are present on the shore in abundance, they are limited to fairly well defined zones with *Fucus spiralis* in the upper part, *Fucus vesiculosus* in the mid tide region and *Fucus serratus* in the lower part. Under such conditions the species appear to be separated by clear cut characters. In situations where the shore is more sparcely covered by vegetation or where clearance experiments have been carried out, the zonation becomes less distinct, the species extend their ranges up and down the shore, and individuals are then often more difficult to refer to one or other taxonomic species. *Fucus serratus* is usually distinct, but *Fucus spiralis* and *Fucus vesiculosus* have often little to separate them except the hermaphrodite condition of the former and the dioecious condition of the latter. It is to be emphasized that, for intertidal species, a difference of only two or three vertical feet in tidal position may mean a considerable difference in ecological conditions in terms of exposure to a drying atmosphere, changing light intensity and temperature. At Cullercoats, it was found that populations of *Fucus spiralis* and *Fucus vesiculosus* mix together from the upper zone of *Fucus spiralis* until the lower zone of *Fucus vesiculosus*. This condition may be related to the elevation of the shore floor along a transect line from where all plants were scored. In general, a profile of the shore in both transects was not level, so it would affect the distribution of those plants. But, in St. Mary's Island and Berwick, plant populations grew sparsely at each distinct zone.

The presence or absence of suitable substrata is probably one of the most important factors determining the local distribution of *Fucus spiralis.* Niemeck and Mathieson (1976) found that the plant was only found on coarse metasedimentary and metavulcanic rocks both with abundance of cracks and fissures. Gibb (1950) has also emphasized the importance of substratum in determining the horizontal and disjunct distributions of seaweeds. Lewis (1972) stated that *Fucus spiralis* favours a sheltered rather than an exposed habitat. The rock outcrops with their many cracks and fissures probably provide some degree of protection for developing zygotes and adult plants of *Fucus spiralis.* At Berwick, *Fucus spiralis* was only found in a small amount in the middle zone, mixed with *Fucus serratus* and *Fucus vesiculosus.*

Scott and Hardy (1994) stated that whilst it is not essential for populations of the two species to coexist, since gametes can be transported from their source of origin by water movements, there is a much higher probability of hybridisation resulting when the species are present together and it is only in these circumstances that one might expect a hybrid population to develop. Kniep (1925), cited in Scott and Hardy (1994), suggested that the most favourable position for hybrids would be in the regions between the more sharply defined zones of the parent species. Nevertheless it is of course, necessary for the gametes of both spe.cies to be shed at the same time.

The hermaphroditic condition of *Fucus spiralis* might enable this species to remain distinct (and not hybridise readily) more easily than a dioecious species such as *Fucus vesiculosus.* Due to the method of gamete liberation, *Fucus spiralis* eggs are in the presence of *Fucus spiralis* sperm from the moment of their release (since they are produced in the same conceptacles), whereas a dioecious species is dependant on attracting gametes from another plant (Scott and Hardy,1994). From their study on the observations of the occurence of hybrids between two species of fucoid algae, they found no indication that one species is more or less successful than the others. It is true that the results of these observations at five locations also give no indication that one species was more or less dominant than the others.

The two species of *Fucus spiralis* and *Fucus vesiculosus* overlap on the shore, the former inhabits a zone on the upper shore and the latter occupies the middle and lower shore. Hybrids which have a preponderance of *Fucus spiralis* characters will be found adjacent to the population of that parent, those with a preponderance of *Fucus vesiculosus* characters will be found near that parent (Scott and Hardy,1994). Generally, from statistical analyses (Spearman's correlation coefficients), it can be seen that a strong relationship exists at all sites where a majority of *Fucus spiralis* occupies the upper zone of the shore. *Fucus vesiculosus* lies at the lower zone of the shore and hybrids live between both of them, except at location 3 transect 2 (Berwick). This may be a result of too small a number of plants being used for examination (21 plants) or, in other words, it was not representative of the entire population. The topography of the shore itself (very flat) so that a border between upper shore (zone of *Fucus spiralis)* and lower shore (zone of *Fucus vesiculosus)* is not clear might also be partially responsible. Based on chi^2 statistic analysis, it is clear that comparisons between transects at site one (St. Mary's Island), site two (Cullercoats) and site three (Berwick) showed no differences.This might be because of the distance between transects (only 15m apart) and the apparently homogenous habitat. Comparing between locations, it can be concluded that St. Mary's Island was not different from Berwick, but both of them differ significantly from Cullercoats. One reason for this is that Berwick and St. Mary's Island are sheltered areas while Cullercoats is an exposed area.

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THE VASCULUM

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Edited by:
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BY THE WAY

Secretaries of societies and other contributors to The Vasculum should send their notes to the editor.

Last of the old-style Vasculum

This year, much thought has gone into proposals to improve *The Vasculum,* and the changes were discussed at a meeting of the N.N.U. council in November. This will be the last issue of the old-style *Vasculum:* in future there will be four issues a year, as in the past, but they will be more or less of equal size. An average of four to five sheets (20-24 pages) per issue would maintain the current output, but there is scope for increasing production.

Each issue will have a coloured cover sheet with a new design replacing the original 1915 artwork. The inside sheets of the cover will contain information on the N.N.U. as well as names and addresses of official recorders of our local flora and fauna. Production will be brought forward a month, so that the *Vasculum* year ties in with the calender year, instead of having the last issue appear in the January of the year following the first three issues.

The list of recorders will be, I hope, of great interest to readers of *The Vasculum.* While some recorders have in the past complained that too few people are sending records to them, other people have complained that they can never find out who to send their records to! Whereas I know (or have a good idea of) the names and addresses of most of the recorders of various groups of animals and plants, I am at a loss to put names to certain groups. Could those people wanting to be included as official recorder (of any plant or animal group) in a list on the cover of *The Vasculum* please, therefore, let me know within the next few months.

The extra pages in each issue will offer the opportunity to spread the longer articles throughout the year. However, remember that articles don't write themselves, and we can't continue to rely on a few contributors if it wasn't for Hewett Ellis, this particular issue would be thin indeedl So, get pencil to paper or finger to keyboard and send the articles rolling in.

I hope the changes will be for the better, and will attract new members as well as new authors. So, for the moment it is 'out with the old', and in two months time it will be 'in with the new'.

BOOK REVIEW *A New Herball Part I* by William Turner
***Ed* Chapman, G.T. L and Tweddle, M.N. CUP 1996 362pp.**

If William Turner (1505-65) is truly the 'Father of English Botany', this facsimile edition of his *A New Herball* is significant indeed. The first edition of *New Herball* was published in 1551 and it seems extraordinary that it was not then reprinted for over 400 years. This was remedied in 1989 when Castle Morpeth Borough Council made their copy of Part I of the *Herball* available for publication by The Mid Northumberland Arts Group and Carcanet Press. The volume reviewed here is Part I, as reprinted by Cambridge University Press (1996) who have also published a second volurne containing Parts II and III (originally published in 1562 and 1565 respectively).

On account of its historic importance alone this is a wonderful volume. One has to remember that Turner was working at the time of the Reformation and that he was arguably the first 'scientific botanist'. Whilst the definition of 'scientific' is open to debate, it is indisputable that his decision to publish his major works in English, rather than Latin (for which he was much criticised) made his learning and discoveries available to a wide audience. So passionate was he about this, that on one occasion he compared a priest who did not preach in English to a hypothetical watchman on the walls of Berwick who, on seeing the Scots approaching, might shout *Veniunt Scoti* instead of a warning in English; no one would understand him and the Scots would take the town! It is, therefore, as much for this dedication to the English language that Turner is hailed 'The Father of **English** Botany'.

Part I of the *Herball* contains 157 facsimile pages, including a short prologue followed by the descriptions of the characteristics of herbs. The clarity and quality of the original calligraphy is exceptional although the illustrations are variable in draughtsmanship and intensity. The latter problem, however reflects the original material rather than the printing process. Indeed, a combination of good paper and more-even printing makes this version of noticeably better quality than the 1989 facsimile.

Despite the clarity of the reproduced script, it can be hard on the eye, so the transcripts that follow the facsimile pages are invaluable. In addition to the transcripts, the first 326 pages include a glossary, further reading, a list of names, places and terms and a short biographical account of Turner by George Chapman.

All of these 326 pages appear identical to the 1989 printing. This new edition, however, has an additional, and invaluable further 36 pages. These contain the indexes compiled by Frank McCombie and they comprise Chapter Headings, Persons, Places, Turner's English Names, Modern English Names, Scientific Names and Virtues. It is these indexes that make the current edition a supreme reference text as well as something to thumb through and enjoy.

In conclusion, this is a beautiful book; the current edition is better produced than its predecessor (the cloth binding is also superior, and the dust jacket design is less fussy) and the addition of the indexes greatly enhances its usefulness. The trouble is that the price has more than doubled from £30.00 in 1989 to 65.00 for the current edition (containing Parts II and III), this will set you back a further £125.

As we witness the replacement of printed texts with CD-ROM, it is a pleasure to hold a book such as this but it is a shame that so few people will be able to own it, for it runs the risk of pricing itself out of the market.

Paxillus rubicundus Orton from Plankey Mill, Northumberland: an addition to the VC67 list.

H.A. Ellis. 16 Southlands, Tynemouth, Tyne & Wear. NE30 2QS

After the conclusion of the N.N.U. Field Meeting at Briar-wood on 21 September 1996, I walked along the bank of the River Allen near Plankey Mill and discovered (at grid ref. NZ798614) a single specimen of an unusual Paxillus-like fungus growing among pebbles and the roots of Alder. The surface of the brown cap was patterned with dark brown stellate scales somewhat reminiscent of that of Dryad's saddle *(Polyporus squamosus)*, but the underside, with markedly decurrent gills, was like that of Brown Roll-rim *(Paxillus involutus)* without the characteristic roll-rim. The spore print was clay-buff coloured and microscopy revealed ellipsoid spores with a pore and smooth surface, and measuring 8.1 x 5.2 microns on average.

None of the usual textbooks illustrate or describe this species and I referred the specimen to Kew. Dr Brian Spooner identified it as *Paxillus rubicundus* Orton, and has subsequently informed me that this species, although widely distributed, is uncommon in the U.K.

It has been recorded from Perthshire, the Scottish Highlands, Hebrides (Islay), South-West England (Devon), North Yorkshire and North Wales. It seems to be exclusively associated with Alder. Alan Legg, one of our most experienced local mycologists, tells me that he has not encountered *P. rubicundus.* The species should now be added to the VC67 list of Fungi.

It is not clear how widespread or frequent P. *rubicundus* may be locally, for it could readily be overlooked or misidentified as *P. involutus.* It would be worthwhile making a deliberate search for this species wherever Alders grow, for example along river banks and in carrs.

Museum enquiries Berry Bugs

(a note by the editor)

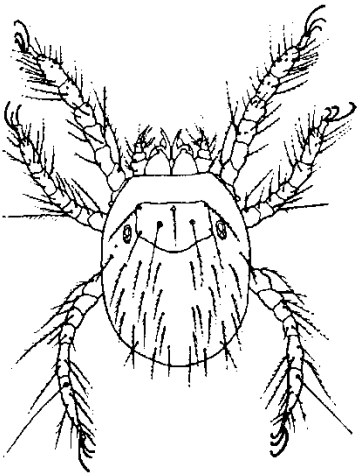
Towards the end of Summer, I usually get at least one enquiry from a member of the public about "Berry Bugs". The complaint is that, following a walk in the country, often to collect blackberries, the enquirer is suffering from the bites of the Berry Bug.The symptoms of Berry Bug bites as described small red pimples have led me to believe in the past that they result from the bites of cat fleas, or from an allergy. The fact that nobody suffering from Berry Bug bites has been able to tell me what the bugs look like made me wonder whether 'bugs' were involved at all, or was it a case of Delusory Parasitosis (the belief that the sufferer is being attacked by actually non- existent small creatures)? I could find no reference to anything called Berry Bugs in the reference books I consulted.

A few months ago I acquired a very long run of the *History of the Berwickshire Naturalists' Club* from R.D. Steedman's bookshop in Newcastle. Some of the numbers have made very interesting reading. To my surprise an early volume contained an answer to the "Berry Bug Question".

In Volume **5,** p. 395 is an account of a field meeting on 30 July 1868 by the Club. It includes the following: " A short seat here among the grass and ground ivy, brought up *Acarus autumnalis*, the harvest bug, as the theme of conversation. It is equally prevalant about Melrose as on the sea coast. It is otherwise named the "Berry Bug", from its occurrence in gardens when the gooseberries ripen. It is no bug, but an extremely minute mite, that burrows under the skin, causing those pimples that create so much uneasiness. ..... it prevails to such an extent on the grassy ledges at the sides of stone-walls in fields. .... whenever we walk along these grassy rims in Autumn, we never fail to get our ancles[sic] quite blistered over with them; or, if we chance to take shelter from a shower behind a fence, the mites penetrate all parts of our clothing. Sometimes, in hot weather, I have laid my coat upon the grass by the seaside, and found, on going home, that I had incurred a disagreeable penalty not to be got rid of for many days."

Referring to a more recent work, Evans, Sheals & Macfarlane(1961), we find that the Harvest Mite is now known as *Trombicula (Neotrombicula) autumnalis* (Shaw). The species belongs to the same family as the Chiggers, a group of animals which can make life very unpleasant in the tropics.

It is the larva of the Berry Bug that causes the problem a fact observed by the members of the Berwickshire Naturalists' Club in 1868. The larvae infest all warm-blooded animals, and are said to be particularly numerous in the ears of rabbits. The mites do not transmit disease, but can cause a dermatitis known as trombidiosis. In humans, the favourite areas for infestation are the ankles, groin and armpits. The larvae feed for two or three days before leaving to move into the soil to enter a quiescent phase.



Further information on Harvest Mites and Chiggers is given in Smith (1973) from which the above fiqure is taken.

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Lycopodium clavatum (Stag's-horn Clubmoss)

Dr J.A. Richardson. 19 The Avenue, Birtley, County Durham DH3 1AA

L *clavatum* is a fairly recent colonist of old pit-heaps and quarry spoil. Many of the Durham pit-heaps have been removed, reclaimed or re-sown, so this habitat is now largely lost to us (Graham, 1988). This Durham rarity was reported by me in 1972 for Marley pit heap near Sunniside. Ten years later it had disappeared and close searches made annually failed to locate it.

Then, on 25 September 1996, I refound the plant growing 200m. from the original site with *Calluna vulgaris* (Heather), *Vaccinium myrtillis* (Bilberry) and *Festuca ovina* (Sheep's-Fescue). The colony was small but vigorous with 18 fertile branches on which the cones were shedding their bright yellow spores (lycodium powder).

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Possible overwintering Comma (*Polygonia c-album)* in Northumberland (VC67)

Dr H.A. Ellis. 16 Southlands, Tynemouth, North Shields. NE30 2QS

The Comma butterfly is still uncommon in County Durham and a distinct rarity in Northumberland. I first saw one in Northumberland in the Summer of 1995 (10 August), feeding on Buddleia in my garden in Tynemouth *(Vasculum* **80(4):** 70). More surprising was my finding a Comma in Northumberland in Spring, on 13 May 1996 near Bothal. The locality was a sunny riverside path in woodland in the Valley of the River Wansbeck between the Weir and Climbing Tree Dene (NZ229862). At 1100 hrs it was seen flying along the path and up into a sycamore tree. Later the same day, at 1300 hrs it was again observed for several minutes flying along the pathside and stopping frequently to feed on dandelion flowers. It was approachable enough to obtain several photographs and could be seen to be in good condition somewhat faded, but without wing damage.

The Comma appeared to have established its territory in this sunny part of the wood. One can only speculate regarding its origins. It may have arrived recently from further South, but the possibility that it was present in the woodland the previous Summer-Autumn and had hibernated there cannot be excluded. Woodlands are favourite places for the adult of this species to hibernate.

The Small Skipper, *Thymelicus sylvestris* Poda in Newcastle upon Tyne and North Tyneside (VC67)

Dr H.A. Ellis. 16 Southlands, Tynemouth, North Shields. NE30 2QS

During August 1996 I observed several Small Skipper butterflies at two new locations in South-East Northumberland (VC67). These were:

1. *Big Waters Nature Reserve,* Brunswick Village near the eastern boundary of Newcastle upon Tyne, where on 3 August I was surprised to find four male and female Small Skippers. I revisited the site on the following day when conditions were warmer and sunnier and recorded twelve Small Skippers. All were in the rough and damp grassland between the car park exit gate and the row of electricity pylons by the A1 roadway (NZ230733 to NZ234734). Two very worn specimens of Large Skipper *Ochlodes venata* were readily distinguishable. The presence of the Large Skipper in the Big Waters Nature Reserve has been known for more than a decade (since 17 July 1984 reported by C.J. Gent in 1985 in *The Vasculum* 70:5).

2. *Weetslade Pit Heap* near Wideopen, North Tyneside, where on 4 August I recorded 19 male and female Small Skippers in the sheltered grassy areas at the eastern side of the old pit heap (NZ258726 to NZ257728). At the time of an earlier visit to this site on 8 July 1996 I recorded Large Skippers but no Small SkiDDers. These are the only personal records I have of the Small Skipper in South- East Northumberland. The fortunes of this species have improved in the North East during the last few decades. It has increased in number and spread throughout County Durham (VC66) as documented by Dunn & Parrack (1986) and Ellis (1991, 1993), but still remains little recognized in Northumberland. Thus, Cook (1990) had no records from that county (VC67 & VC68) and there are only a few reports of its presence in the southernmost part of Vice County 67 about the River Tyne. These are: Parkwood near Ebchester 30 July 1994 (H. Eales, *Vasculum* **79(4):** 71), the South side of the Tyne near the Spetchells, 28 June 1994 (Dawson, 1995) and the North side of the Tyne at nearby Horsley Wood, 30 July 1995 (Dawson, 1996). The Small Skipper tends to occur in discrete colonies and is easily overlooked or dismissed as the more familiar Large Skipper. The number observed represents but a small proportion of the total and given the numbers recorded the present two colonies must be of moderate size and therefore have been present for several seasons.

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RECORDS

N.N.U. Meeting at Middleton Hall, Belford, 15 June 1996.

On joining the N.N.U. in 1983, some feeling of its provenance could be gained from the editor (Tom Dunn) giving each field meeting a chronological number. As this custom ceased about five years ago, I have counted back and concluded that the above trip was the NNU's 212th! In reading the back issues of *The Vasculum*, I also noted that this is the sixth field trip that I have led and that each has been blessed with fine weather; for example:

Longhorsley Moor: "Hot & sunny" *(Vasculum* 71(4))
Prudhoe: "Beautiful sunny weather*' *(Vasculum* 73(2))
Briarwood Banks: "Warm, sunny afternoon" *(Vasculum* 75(2))

The fifteen members and friends who gathered at Middleton were treated to "hot weather and unbroken sunshine"! We were the guests of Bellway Homes, who lease Middleton Hall and the associated sporting estate from the Greenwich Hospital Trust. It was a day for the entomologists, and the "moth enthusiasts" turned out in force. A Robinson trap had been set in the grounds of the Hall the previous evening and produced ten different species. This rather meagre catch possibly indicated that, close to the coast, hot cloudless days produce cool nights. It was interesting to note that the Hebrew Character (a moth of early Spring) was still on the wing.

The group walked through the grounds of the Hall, enjoying the sunken garden (with Pied Flycatcher) to the woods beyond. These are retained as cover for pheasants and other game birds, and game-keeper management was clearly evident.

Beyond the woods lay Sunnyside Crag, part of the Whin Sill which faces south-west at this point. It was a real sun trap, and we were disappointed not to find any reptiles. Terry Coult promised to return on a less-hot day, when a reptile survey could be expected to produce interesting species

Butterflies noted along the crag included: Large White, Small Tortoiseshell, Small Copper, Orange Tip and a female Painted Lady. There had been a huge migration of Painted Ladies through the region during the previous week, and this female was seen to crawl over thistles as if searching for an egg-laying site but no ova were subsequently found.

The outward journey ended at a well preserved lime kiln. On return through the woods, we were pleased to see a pair of Red Admiral butterflies in mating flight, and found evidence of a colony of Red Squirrels within a plantation of Scots Pine.

A relaxing and very sociable Summer's afternoon ended with a glass of Bucks Fizz (or a cup of tea), followed by a barbecue at the Hall.

Moths trapped at the Hall the previous evening were:

Selenia dentaria	Early Thorn
Epithecia abbreviata	Brindled Pug
Epithecia vulgata	Common Pug
Odontoptera bidentata	Scalloped Hazel
Laothoe populi	Poplar Hawk
Spilosoma lubricipeda	White Ermine
Orthosia gothica	Hebrew Character
Agrotis exclamationis	Heart and Dart
Hada nana	Shears
Apamea crenata	Clouded-bordered Brindle

N.N.U. Field Meeting to Briar-wood Banks (NY7962) 21 September 1996

The following list of fungi has been provided by A.W. Legg:

ASCOMYCOTINA (cup fungi and allies)		
Bisporella citnna	on indet fallen branch	
Coprobia granulata	on cattle dung	
Diatrypella favella	on fallen *Betula* branches	
Diatrypella quercina	on fallen *Quercus* branches	
Hypoxylon fragiforme	on dead lying *Fagus*	
Melanconis stilbosoma	on dead attached *Betula* twigs	
Mollisia cinerea	on indet fallen branch	
Phacidium multivalve	on fallen *Ilex* leaves	
Rhytisma acennum	on living *Acer* leaves	
Trochila ilicina	on fallen *Ilex* leaves	
BASIDIOMYCCTINA: AGARICALES; BOLETALES (Mushrooms and toadstools)		
Armillaria mellea agg.	Honey Fungus	rhizomorphs only on fallen tree

Clitocybe gibba	(infundibuliformis)	in grassy clearing
Hypholoma fasciculare	Sulphur Tuft	on stumps
Marasmius rotula	Little Wheel	on woody debris
Oudemansiella mucida	Porcelain Fungus	on fallen *Fagus* trunks
Paxillus involutus	Brown Roll-rim	near *Quercus*
Psathyrella hydrophila		on rotting indet. stump
Russula delica		near *Betula*
Russula nigricans		with *Quercus*
Tricholomopsis rutilans	Plums & Custard	from remains of conifer stump
BASIDIOMYCOTINA: APHYLLOPHORALES"		
Coriolus versicolor		on indet stump
Daedalea quercina	Maze-gill	on *Quercus* stump
Inonotus radiatus		on dead standing *Ainus*
Peniophora quercina		on fallen *Fagus*
Piptophorus betulinus	Birch Bracket	on fallen *Betula*
Polyporus varius		on various fallen deciduous limbs etc.
Stereum gausapatum		on dead *Quercus*
(Bracket fungi and their allies)		
BASIDIOMYCOTINA: GASTEROMYCETES (Puff-Bails)		
Lycoperdon pynforme		on indet. rotting stump
BASIDIOMYCOTINA: UREDINALES (Rust Fungi)		
Puccinia obscura		on *Luzula sylvatica*
Puccinia vaccinii		on *Vaccinium myrtillus*

LEPIDOPTERA
1996 has been an exceptional year for butterflies. Nick Cook is compiling a report for inclusion in the next issue of *The Vasculum*, but in the meantime here are some records:

Strymondia w-album (White-letter Hairstreak) was seen and photographed on 17 August 1996 at Wylam Haughs, on the North bank of the Tyne to the East of the old railway Bridge (NZ1164).
Ralph Swinburn

Polygonia c-album (Comma)
Two sightings this year, both on the same day (14.ix. 1996). One in my garden at Malton (NZ1746) and one in the Woodland Trust's reserve at Black Plantation near Satley (NZ136449).
T. Coult

Seen three times at Washington Wildfowl Reserve in 1996: 29.v. (1);25.viii. (1 or 2); l.ix.(l).
A. Donnison

A fresh individual, resting on grass and flying in the sunshine was seen at 1405 hrs on 10 September 1996 at Wansbeck Riverside Country Park (NZ262864), about 100 metres downstream from the car park.
H.A. Ellis

Small Skipper at Derwent Walk Country Park
During a visit to Thornley WoodsNature Reserve on 21 July 1996 we caught and examined a number of Small Skippers, *Thymelicus sylvestn's*, which were flying over short grass on Owlet Hill next to the river Derwent (NZ186604). The number of individuals seen suggests an established colony. This was the first time the species has been recorded within the Derwent Walk Country Park and reflects its general range expansion within County Durham in recent years.

A specimen was collected by the warden, Stephen Westerberg, on 23 July 1996 and will be transferred to the collection at the Swalwell Visitor Centre.
Jonathan & Kyra Wallace

Moths at Malton Nature Reserve
Three species were new to the trap in 1996:
Pseudoips fagana (Green Silver-lines), taken on 10.vii.
Orgy/a *antiqua* (Vapourer), 9.x.
Lithophane leautien ssp hesperica (Biair's Shoulder Knot), 13.x.

Copper Underwings have been taken several times at Malton, and all have been Svensson's Copper Underwing. The first was on 20.ix.1992 (i.d. confirmed by Tom Dunn), then others on 25.ix.1993, 22.ix.1996, 28.ix.1996 and 29.ix.1996.
Terry Coult

Moths at Washington Wildfowl Reserve
In addition to the Comma, noticed above, the following species of interest were noted in 1996:
Apeira syringia (Lilac Beauty) 29.v. (1 ex.). Second record from reserve
lpimorpha subtusa (The Olive) S.viii. (1 ex.). New to reserve
Amphipyra berbera svenssoni (Svensson's Copper Underwing) 31.viii. (lex.), 3.ix. (1 ex.).
A Donnison