

THE VASCULUM

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Edited by:

A. COLES and 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 15th June, 1991.

Vale et Salve

This issue of *The Vasculum* sees the first change in editorship of the journal in 23 years. The retiring incumbent, Tom Dunn, was joint editor with Professor Heslop- Harrison from July 1963, taking up sole editorship in April 1967 and holding the responsibility since then. Unfortunately, recent ill-health combined with the great work load of co-ordinating lepidoptera recording in Co. Durham (including the compilation of the Microlepidoptera volume of the *Moths and Butterflies of Northumberland and Durham*) has meant that Tom has had to pass the reins on to other hands.

In his time as editor Tom revived the journal by establishing the October issue as a larger volume. His contribution to the journal did not stop at editing other people's pieces: he made many contributions of his own both in the form of articles, notes and records. It is heartening to know that this source of interesting material will not dry up and Tom has already submitted copy for this year's October issue.

During Tom's time there were also published two supplements: the first being a bibliography of the natural history of the North-East, published in 1971, and the second was the Macrolepidoptera volume of *The Moths . . .* (published in 1986), written by Tom together with Jim Parrack.

Members of the Northern Naturalist's Union, past and present, owe a tremendous debt to Tom for continuing and developing our journal, and the new editors can only hope that they can continue his achievement.

FORTHCOMING EVENTS

The N.N.U. summer events programme is as follows:

Sat. June 1 WHITTLE DENE, NORTHUMBERLAND Leader: Nick Cook

Sat. July 6 CASSOP VALE, CO. DURHAM Leader: Tom Dunn

Sat. Sept. 7 CASTLE EDEN DENE, CO. DURHAM Leader Dennis Hall

Sat. Oct. 5 HARBOTTLE CRAGS, NORTHUMBERLAND Leader: James Milligan

Members will be sent full details of meeting places and times prior to the events. This year's **Heslop-Harrison Memorial Lecture** will be held on November 2, at the Holy Trinity Church Hall, Vane Terrace, Darlington where the NNU will be guests of the Darlington and Teesdale Naturalists' Field Club which is celebrating its Centenary year. The speaker will be Prof. P. R. Evans, M.A., Ph.D., D.Phil, and the title of "From the Arctic to the Tropics: Shorebird Migration through Teesmouth".

THE SOCIETIES

ANNFIELD PLAIN AND STANLEY NATURALISTS' CLUB

On June 16 the Club visited Teesdale. One party walked down river from Cronkley Bridge to Newbiggin and Middleton. The other party went to the caves near the Youth Hostel before proceeding down the valley. Teesdale specialities such as *Trollius europaeus*, *Potentilla fruticosa* and *Polygonum viviparum* were among the many wild flowers seen.

Jenny Wade

CONSETT AND VALE OF DERWENT NATURALISTS' FIELD CLUB

On June 9, the Club visited the Northumbrian coast between Craster and Sea Houses. Members were delighted to see the dunes covered with burnet roses, bloody cranesbills and cowslips as well as many other flowers. At Low Newton it was harts-tongue fern that impressed.

Jenny Wade

Unfortunately, the two societies above, and indeed the NNU, have lost a long standing member: Mr. Arthur Hauchin died last year.

DARLINGTON AND TEESDALE NATURALISTS' FIELD CLUB

Phyllis Hornsey has been elected as the president of the club. It is particularly appropriate that Phyllis should take the reins in the Club's Centenary year. Mr. Leslie Woodhouse has been elected an honorary member in recognition of his long service to the DTNFC — not least 30 years spent as treasurer.

Members have been active in conservation issues including lodging objections to the appeal from Darlington RFC who wished to develop land near Baydale Beck. On the positive side the Club has been responsible for planting some 1200 bluebell bulbs.

It is with much regret that the Club received news of the deaths of the following members: Mrs. Margaret Grace Crocker and subsequently her husband Mr. Arthur Stanley Crocker, Mrs. Ethel Calvert, Mr. Geoffrey Wood, Mr. George Miller, Mr. Bill Robinson

SPECIALIST SECTION REPORTS

BOTANY: Congratulations are due to Myra Burnip who has received Wildf lower Society recognition by becoming one of the few people to have identified over 2000 species of plants in the wild. The year's field visits included a survey of plants growing between Cotherstone and Barnard Castle and a visit to Blackhall Rocks. The latter was notable for brookweed (*Samolus valerandi*) and roundleaved wintergreen (*Pyrola rotundifolia*). A visit to Cassop Vale produced a list of 124 species.

ENTOMOLOGY: Lepidoptera recording in the area has suffered a setback with the sad loss of Bill Robinson. This year's records are most notable for the omissions no green-veined whites, small coppers, small skippers, wall browns, common blues, small heaths, small pearl-bordered fritillaries, nor Durham argus's have been seen this year.

FRESHWATER: There are encouraging signs of the improving water quality of the River Tees with introduced stocks of grayling and trout thriving. Between April and June, natural hatches of flies provided another indication that things are returning to normal following the infamous 1983 pollution incident. The most exciting news, however, must be the report (by word-of-mouth, admittedly) that an otter has been spotted in Teesdale.

GEOLOGY: The year has seen more geological activity in the Club, than for some time, with visits to the Middlehope Burn, Robin Hood's Bay, the River Greta, and to Gordale and Malham Cove.

MAMMALS: The limited number of records is insufficient to indicate major changes in status or distribution but common seals are now breeding at Teesmouth. This good news is tempered by the continued disturbance to badger setts in the Darlington area. Several species were seen on the outings, but the high-light was an otter seen at Leighton Moss in Lancashire.

FUNGI: Early records seemed to share fire as a common theme with a spectacular display of the giant cup fungus, *Peziza proteana*, around a charred log at Gainford and the rare *P. violacea* from an old bonfire site in Hamsterley Forest. The hot summer led to a desperate search for dampness around Brinkburn Pond which provided spectacular successes with twenty new county records and possibly only the second British record of one species. This was followed by the discovery of an undescribed species of *Anthracoia* from a dried-up side channel of the River Tees at Gainford.

ORNITHOLOGY: The main event of the year was the arrival of parrot crossbills throughout the North East including in the Hamsterley area. Other notable sightings were as follows: a larger-than-usual flock of swans in the Bolton Gravel Pits/Kiplin area (26 whoopers and 14 Bewicks); a long-tailed duck, 4 ruddy ducks and over 1000 wigeon at Bolton Gravel Pits; a red-footed falcon at Teesmouth; good numbers of breeding sand martin. From the 1990 Annual Report

CLEVELAND NATURALISTS' FIELD CLUB

NNU members will welcome the recent publication of the CNFC's Proceedings (vol. 5 pt. 1). The main paper in the current volume is a compilation of recent records of fungi in Cleveland by Alex Weir. The volume is most significant, however, because it is the first to be published in nearly 60 years!

The editorial regrets the 'dark ages' from 1932 to the present day when the disappearance of the Proceedings led to a failure to document changes in the flora and fauna of the county. Current CNFC members are to be congratulated on reviving the Proceedings and deserve every success with the production of future issues.

BOOK REVIEW

"Bird life of the Borders" by Abel Chapman, published by Spredden North Classics 1990, Hardback £16.95. Paperback £9.95, 286pp.

First published over a century ago, in 1989, this was the first of the ten books on natural history, hunting and travel written by Abel Chapman. Chapman was born in Sunderland in 1851, and died at Houxty, near Wark in Northumberland, in 1929. He travelled extensively in Europe and Africa, behaving like many other Victorian Naturalists: shooting large numbers of birds and mammals. You really have to read the book whilst bearing in mind the nineteenth century context, when this was normal behaviour for a naturalist, who was just a particularly observant huntsman. You may still wince when he recounts how he shot Hooper (*sic*) and Bewick's swans, rare geese, and vagrant waders, but read the detailed descriptions of bird behaviour — Chapman knew much more about birds than most people in his time, and probably in ours.

"Bird life of the Borders" is mostly about "punt-gunning" for ducks and geese on the Northumberland coast, and grouse shooting on the moors. The text is full of behavioural detail and interesting anecdotes about the birds, and is illustrated with Chapman's own drawings. It is an interesting history lesson, in changing attitudes to wildlife, shooting and conservation. On reading it you should be aware that Chapman was instrumental in the early protection of the Cota Donana and the Kruger National Park.

This book is essential reading for anyone interested in either the history of shooting or birds in the North-East.

John Durkin

NOTES AND RECORDS

NOTES

The Status of Grey and Red Squirrels in North East England

It is now fourteen years since the Museums North Natural History Panel organised a survey of red and grey squirrels in the north-east of England. In 1977, odd records of greys were recorded in Co. Durham as far as Hamsterley Forest. That they have continued to spread north since then is not in dispute; it is a question of how far they have got, and how can the spread be arrested.

In order to determine the current distributions of the two species the Museums have developed a questionnaire which has been sent to all local members of the Royal Forestry Society Timber Growers U.K., and the Country Landowners Association. An encouraging response has been received and records are being processed at Sunderland Museum.

It is hoped that the data will form the basis for future studies, and I would be most grateful for any reports of either species of squirrel from vice-counties 66, 67 or 68. These can be sent to me at Sunderland Museum.

Hamsterley Forest is recognised as an area occupied by red and grey squirrels, so the following paper by Gordon Simpson is particularly appropriate.

Alec Coles

The Spread of the Grey Squirrel (*Sciurus carolinensis*) into Hamsterley Forest, Co. Durham.

Hamsterley Forest covers about 2,000 ha of Co. Durham between Weardale and Teesdale. The forest is owned by the Forestry Commission and planting, mainly of conifers, commenced in 1927.

For decades the Forest has been noted for its fluctuating population of Red Squirrels but recently, the Grey Squirrel has spread into the area.

When the population of Red Squirrels reaches a peak, conifers, mainly Scots Pine, are severely debarked. As a general rule debarking occurs mainly on younger trees up to about 30 years old, nevertheless the thin bark towards the top of older trees is attacked too. Debarking often starts in the top third of the tree, just above a whorl of branches. In peak population years I have seen over 50% of the bark removed from the trunk of Scots Pines about 20 years old. If the tree is ring-barked, the tree top will die and eventually gales will break it off. The tree may also die if insufficient living branches remain below the ring-barking. If the tree trunk is spot-barked, resin flows copiously coating the wound, and the surrounding bark slowly spreads over the wound and the resin. The resulting disfigured timber can only be used for chipboard. Even with the possibility of such damage to conifers, most foresters are endeared to the Red Squirrel. The Grey Squirrel tends to cause similar damage to broadleaved trees such as Beech, Ash and Sycamore.

In October 1979 I was posted from North Yorkshire, where Grey Squirrels occupy the forests, to Hamsterley Forest, at that time the domain of Red Squirrels. Following the severe winter of 1978/79 the Red Squirrel population had crashed, but I kept records of any sightings. On 21st January, 1981 the Forest Ranger, M. McEwan, shot a Grey Squirrel at map reference NZ095335. During discussions I discovered this was the second Grey Squirrel sighting as McEwan had shot another in 1968/69 at the same location. On 19th August, 1981 I saw a Grey Squirrel cross the Forest Drive near the Bedburn Toll, NZ093315, and on the same day Carol Greenwell saw one at the same place. These reports aroused interest and several members of the forest staff told me about subsequent sightings. By the late eighties sighting were increasing but reports declined as interest waned.

The following list is a fairly comprehensive record of sightings of Grey Squirrels in or close to Hamsterley Forest up to about 1986, when records from forest staff declined. The list of Red Squirrel sightings are almost all my own so they cannot be compared with Grey Squirrel sightings where numerous people were involved. The decline in Red Squirrel sightings does not necessarily reflect a decline in population; it is mainly due to a change in my job whereby I covered all Durham Forest District from 1985 onwards. Where no name is mentioned the records are mine.

GREY SQUIRREL SIGHTINGS

1968/69	1 shot by M. McEwan	NZ095335
21 Jan. '81	1 shot by M. McEwan	NZ09533E
19 Aug.'81	1 at	NZ093315
23 Sept. '83	1 seen by C. Grayson	NZ076302
7 May '85	1 seen by A. Mason	NZ093335
7 July '85	1 at	NZ059287
5 Sept. '85	1 seen by Kirsi Peck in tetrad	NZ0630
11 July'86	1 seen by A Mason	NZ091336
6 Feb. '87	1 at	NZ065287
14 May '87	1 at	NZ062356
7 Sept. '87	1 at	NZ093315
8 Sept. '88	1 at	NZ08130C
16 May '89	1 at	NZ069299
19 Sept. '89	1 at	NZ068299
15 Dec. '89	1 at	NZ075309
21 March '9C	1 dead at	NZ084344
26 April '90	1 at	NZ093313
2 May '90	1 at	NZ095316
1 June '90	1 at	NZ078308
29 Oct. '90	1 at	NZ095316
29 Oct. '90	1 at	NZ093335
29 Oct. '90	1 at	NZ092336
13 Jan '91	3 seen by B. Walker	NZ082311

RED SQUIRREL SIGHTINGS

16 Oct. '79	NZ086313	17 Oct. '82	NZ055227	
22 Nov. '79	NZ092315	10 Mar. '83	NZ071302	
24 April '80	NZ051284	11 Mar. '83	NZ079305	
18 May '80	NZ073303	11 April '83	NZ087313	
20 June '80	NZ092313	27 April '83	NZ066298	
9 Sept. '80	NZ067299	29 July '83	NZ078305	
28 Oct. '80	NZ067299	10 Nov. '83	NZ074304	Dead
28 Oct. '80	NZ073303	24 Feb. '84	NZ059285	
16 Mar. '81	NZ064296	17 April '84	NZ066306	
17 Mar. '81	NZ087316	16 May '84	NZ074305	
17 Mar. '81	NZ088312	13 June '84	NZ063292	
11 May '81	NZ055295	15 July '84	NZ072295	Dead
13 May '81	NZ087305	17 July '84	NZ054300	
19 May '81	NZ064295	5 Oct. '84	NZ038291	
31 May '81	NZ056279	5 Nov. '84	NZ083317	
4 June '81	NZ066305	4 April '85	NZ033294	
4 June '81	NZ073301	6 April '85	NZ079313	
23 June '81	NZ079303	17 May '85	NZ018307	
20 July '81	NZ075307	22 July '85	NZ089312	
30 July '81	NZ049297	2 Oct. '85	NZ063297	
3 Aug. '81	NZ093314	10 Oct. '85	NZ087311	Two
12 Aug. '81	NZ063297	18 Dec. '85	NZ029278	B. Walker
17 Aug. '81	NZ093315	17 Jan. '86	NZ036292	
18 Aug. '81	NZ093315	24 June '86	NZ093313	
22 Sept. '81	NZ072303	1 July '86	NZ081305	
14 Oct. '81	NZ093314	2 Oct. '86	NZ093313	
16 Nov. '81	NZ077313	11 July '87	NZ077313	
11 Jan. '82	NZ093313	27 Oct. '88	NZ085313	
23 June '82	NZ098315	8 Nov. '88	NZ058301	
23 June '82	NZ055301	27 May '89	NZ093314	A. Greening
8 July '82	NZ055275	31 May '89	NZ088309	J. Youngs
20 July '82	NZ073302	20 July '89	NZ087311	
15 Oct. '82	NZ091313			

RECORDS

Botanical Records

Several people have commented on the paucity of plant records in recent issues of the *Vasculum*. I therefore hasten to repair the omission, so far as I am able, noting records which have come my way as B.S.B.I. Recorder for County Durham, during the seasons 1988/89.

At the same time I should like to point out that we are trying to keep the Durham Flora up to date so I should welcome additional records to, or known losses from, the local flora. Notes on localities which are evidently under-recorded, but which might prove interesting, would also be welcome.

Now that Sunderland Museum possesses a reasonably powerful computer it becomes easier to enter new records without the labour of writing and transcribing thousands of index cards. Records can therefore be sent to Alec Cores or to me. We are in close touch and all information will be reciprocated.

Main contributors to the records are listed initials as in the flora; their full names are as follows:-

Appleyard, Miss P. R.; Bungard, S. J.; Burnip, Mrs. M.; Coles, A.; Graham, G. G. & Mrs. P. S.; Humphreys, B. M.; McAndrew, R. T.; McCutcheon, D. E.; Mitchell, D. N.; Moore, L.; Robbins, S.; Sykes, Mrs. M.; Wharton, T. S.; Whitwell, Mrs. A.; Wilson, R. B.

SPERMATOPHYTA - Flowering plants

Agrostis gigantea Roth Black Bent

Arable field by new entrance to Thrislington. GGG 33G.

Athaea hirsuta L. Rough Marsh-mallow

Disturbed ballast. Coal Dock, West Hartlepool, May, 1989. RTMcA. 53B.

Ammi majus L. Bullwort

Margin of Mowbray Park, Sunderland, 1988, AC. 35X.

Atropabella-donna L. Deadly Nightshade.

Behind Silver Street, Durham. P. Gates; St. John's College, J. Cobb, 24R: near Kelf's Lane, Gateshead, DMa.26Q: disturbed ballast. Coal Dock, Hartlepool, RTMcA, 53B.

Bidens tripartita L. Trifid Bur-marigold.
Hurworth Burn Reservoir inflow, 1988, AWh & GGG. 43C. Recorded in the area over 100 years ago.

Bromus diandrus Roth Great Brome
Fulwell Mill Car Park, 1988, AC. 35Z.

Bromus inermis Leys. Interrupted Brome
Well established on verge outside Windlestone Hall. GGG & MB. 22U.

Bromus tectorum L. Drooping Brome
Dry grassland on coal waste, Hylton, Sunderland, 1989, AC. 35U.

Calamintha sylvatica Bromf. *subsp. ascensifens* (Jord) P. W. Ball Common Calamint.
Landslip, Castle-Eden Dene, P. Williams, conf. R. M. Harley. 44K. A second locality for the County.

Carex curta Good. White Sedge
Sphagnum flushes in blanket peat, Langdon Fell, 1988, GGG. 83M, R. S.

Catabrosa aquatica (L.) Beauv. Whorl-grass
Inflow stream, Hurworth Burn Reservoir, 1988, GGG & AWh. 43C.

Centaurea jacea x nigra [C. x *drucei* C. E. Britton]
Disturbed ballast, Hartlepool, RTMcA, PRA, S. Robbins. 53B.

Cichorium intybus L. Chicory
Gilley Law, 1989, AC. 35R. East Herrington, J. Scurfield. 35K. Gateshead, DMA26Q.

Clematis vitalba L. Traveller's Joy, Old Man's Beard.
Sidgate Brickworks, A. M. Rose. 1988. 24R

Conyza canadensis (L.) Crong. Canadian Fleabane.
Railway Station platform, Hartlepool, PRA 1988. 53B.

Cotoneaster lacteus W. W. Smith.
Tannery/Brewery site. W. of Yarm Bridge, SJB. det. J. Palmer. 41 B.

Eleocharis uliginosa (Link) Schultes Slender Spike-rush.
Hurworth Burn reservoir margin, 1988, GGG & AWh. 43C.

Epilobium brunnescens (Cockayne) Raven & Engelhorn New Zealand Willow-herb.
Quarry Road, Langdon Fell, 1988, GGG, BMH & TSW. 93S. Pathside. Teesbank Woods, MS.OJ.

Epipactis palustris (L.) Grants Marsh Helleborine
Small hollow in old quarry, Thrislington; sterile plants seen, 1989, M. R. Lowe. 33B.

Euonymus europaeus L. Spindle
Scrub on Magnesian Limestone, Fox Holes Dene, Easington, 1989, AC & DIMM. 44L.

Euphrasia arctica Lange ex Rostr. *ssp. borealis* (Townsend) Yeo
Daddy Shields, (DHM) det. Yeo, per J. W. Patrick.

Euphrasia confusa Pugsf.
Pathside, Hurworth Burn Reservoir, 1988, GGG. 43C.

Filaginella uliginosa (L.) Opiz Marsh Cudweed.
Hurworth Burn Reservoir margin, 1988, GGG & AWh. 43C.

Genista anglica L. Petty Whin
Among *Calluna*, top of Black Bank Plantation BMH. 03X.

Geranium pyrenaicum Burm. f. Hedge row Crane's-bill
Grass by footpath, Blackwell Bridge, D. Green. 21 R. Old Timber yard, Seaton Carew, 1987, PRA. 53A. Hedgebank near Butsfield Quarry, 1988, L. Moore. 04X.

Hieracium pellucidum Laest. Hawkweed.
Rocks by river above Wynch Bridge, GGG, det. D. McCosh. 92E.

Humulus lupulus L. Hop
Near bridge over River Wear at Frosterley, JWD. 031. The most westerly record in the County.

Hypericum humifusum L. Trailing St. John's-wort
Near open-cast workings, White Lea Farm, Billy Row, BMH. 13N.

Juniperus communis L. subsp. *communis* Juniper
Single plant between Lanchester & Cornsay; also at W. Butsfield Quarry, TCD. 14M, 04X.

Lepidium rudemale L. Narrow-leaved Pepperwort
Trampled footpath near earthworks, N. Hylton, 1990, AC. 35U.

Liriodendron tulipifera L. Tulip Tree
Blaid's Wood, Durham, A. M. Rose. 24Q.

Listeracordata (L.) R.Br. Lesser Twayblade
1 mile SE of Edmundryers, 1988, RBW & LM. 04J.

Lithospermum officinale L. Common Gromwell
Limestone coastal grassland. Fox Holes Dene, Easington, 1989, AC & DNM. 44L.

Malva parviflora L. Least Mallow
Disturbed ballast, Hartlepool, RTMcA, PRA & SR. 53B.

Melilotus indica (L.) All. Small Melilot
Disturbed ballast, Hartlepool, RTMcA, PRA & SR. 53B.

Mentha x gentilis L. Bushy Mint, Ginger Mint
This must now be called *Mentha x gracilis* Sole on the authority of Dr. R. M. Harley who confirmed our specimen.
Riverside, Great Wood, Egglestone, GGG. 02A.

Mentha x verticillata L. Whorled Mint.
Damp grassland, Doxford Park Enterprise Zone, Sunderland, 1989, AC. 35R.

Mercurialis annua L. Annual Mercury
Disturbed ballast. Coal Dock, Hartlepool, RTMcA. 53B. Waste ground, Carr House Sidings, Seaton Carew, PRA. 53R.

Montia sibirica (L.) Howell Pink Purslane
Pathside, Mowbray Park, Sunderland, 1989, AC. 35X.

Orobanche minor Sm. Common Broomrape
3 spikes on Clover, Faverdale Sidings, Darlington. D. Green. 21T.

Ophrys apifera Hudson Bee Orchid
Dry coastal grassland. S. Bents near Whitburn, Mrs. Reedes, conf., 1989, AC. 46A.

Parapholisstrigosa (Dumort.) C. E. Hubbard Hard Grass
Saltmarsh, Timber Beach, Sunderland, 1989, AC. 35U.

Parentucellia viscosa (L.) Caruel Yellow Bartsia
Wildfowl Trust, Washington, A. Donnison, 1985. 351. Still there, 1989, AC & T. C. Dunn.

Polygonum pensylvanicum L. Pinkweed
Arable field above Cong Burn, Walldridge, 1989, AC. 25K.

Potentilla anglica Laichard Trailing Tormentil
Path through StrothersWood near Point Burn, 1988, RBW. Specimen deposited in Hb.SUN, conf. GGG. 15M.

Potentilla intermedia L.
Waste ground, old timber yard, Carr House Sidings, Seaton Carew, PRA, RTMcA. 53A.

Potentilla norvegica L. Ternate-leaved Cinquefoil
Waste ground, old timber yard, Carr House Sidings., Seaton Carew, PRA, RTMcA. 53A.

Prunus cerasifera Ehrh. Cherry Plum
Croxdale near A6074, 1988, PSG. 23T. Planted trees, Ladley Burn, DEMcC. 03U.

Pyrola media L. Intermediate Wintergreen
Perkins Hill, Hamsterley Forest, G. Simpson & B. Walker 02J.

Ranunculus lingua L. Greater Spearwort
3 plants, damp grassland, Doxford Park, 1989, AC. 35R.

Rubus adenanthoides A. Newton
Woodland along bridleway, Picktree, 1988, GGG & MB. 25W. Durham Road near market place. Bishop Auckland, GGG. 22E.

Rubus anisacanthos G. Braun
Bracks Wood, Bishop Auckland, 1988, GGG. & PSG. 22E. verge, Rowantree Lane, 12E. Hamsterley Forest Border, 02U. Along entrance road to Great Wood, Egglestone. 92W. Woodland strip, near sports pavilion, Picktree. GGG. 25W.

Rubus radula Weihe ex Boenn.
Scrub, Fox Holes Dene, Easington, 1989, AC, conf. GGG. 44L.

Rubus ulmifolius Schott
Scrub, Fox Holes Dene, Easington, 1989, AC & DNM. 33U.

Salix triandra L.
Transitory. Sprouting log on Timber Beach, 1989, AC. 35U.

Sanguisorba minor Scop. subsp. *muricata* Aschers. & Graebn. Fodder Burnet
Old railway line to Malton, RBW, conf. GGG. 14T.

Senecio x londinensis Lo us ley (*S. squalidus x viscosus*)
Carr House Sidings, Seaton Carew, PRA det. GGG. 53A.

Setaria pumila (Poiret) Schultes (*S. lutescens*) Yellow Bristle-grass
Casual in Garden, Granville Avenue, Hartlepool, 1982, TMcA. 43W. Flowerbed, Darlington town centre, 1988, MB. 21 X.

To be continued

G. G. Graham

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A. COLES and L. JESSOP

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BY THE WAY

Secretaries of societies and other contributors should send their notes to the Editors before 15 November, 1991.

TROUBLES AT THE HANCOCK

The Hancock Museum is an institution to be proud of. Not only are the displays a great source of inspiration and education - they are always buzzing with visitors - but the reserve collections, which embody the achievements of the great Northumbrian naturalists, are in constant use by specialists.

The Hancock was founded on the generosity of the victorian magnates, people who believed that it was their duty to support those non-commercial things that together enhance the life of the region. Latterly, like many institutions, the Hancock came to depend for its upkeep on public funding, from the University of Newcastle. Now the University, under increasing financial pressure, says that it is unable to continue its current level of support.

The building and collections are cushioned from the impact of this decision because they belong to the Natural History Society of Northumbria. It is the annual running costs that will have to be reduced. It has been suggested that staff should be cut to a bare minimum, but what value are the collections without the staff to curate them? Who will update the displays and put on temporary exhibitions? Who will undertake the educational activities? Who will answer the countless enquiries from the public and academics? Who will organise the records of the local fauna and flora? Who will arrange access to the collections? Above all, who will check that moth and beetle are not reducing the collections to dust, or that the priceless collections of coal measures fossils are not crumbling from pyrite decay. Without staff, what is now a rare treasure-house will become a warehouse full of trivial objects, worthless because no-one can interpret their significance.

Thankfully, the situation is not beyond redemption. Even before the University revealed its plans to reduce funding for the Hancock, the Museum's management were working on an ambitious development scheme. The major objective of this was to create more space for much needed customer-care facilities. These include a "nature centre" type development, a cafe/restaurant and a new lecture theatre. All these would improve services and generate much needed income. The cost is likely to be in excesses of £2 million, and a fund-raising consultant has been engaged to investigate the feasibility of such a scheme.

However, the money has yet to be found, and the current period of uncertainty cannot be good for morale. It is to be hoped that the University managers will make every effort to ensure the maximum level of support for the Museum, and will not set unrealistic income targets.

The Hancock Museum is inextricably linked with the development of Natural History in Northern England. Many members of the NNU will regard the current situation with alarm and register their support for the Museum and its staff.

FORTHCOMING EVENTS

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Members will be sent full details of meeting places and times prior to the events.

Sat. Nov. 2

HESLOP-HARRISON MEMORIAL LECTURE "From the Arctic to the Tropics: Shorebird Migration through Teesmouth" Holy Trinity Church Hall, Vane Terrace, Darlington. Speaker: Prof. P. - R. Evans.

THE SOCIETIES

The editors have received no reports from the natural history societies.

NOTES AND RECORDS

NOTES

A pink form of Primrose. Pink-flowered forms of the common Primrose *Primula acaulis* are rarely seen, although the Rev. G. G. Graham records about half a dozen sites in VC66 in his Durham flora. Two plants with about six flowers of this variety were seen on 12 May 1991 on what had recently been a hedge-bank (although the hawthorn hedge had been cut right down), just beyond the National Trust's Ebchester Wood. TCD

The Holly Blue Butterfly Again. Dr. Ellis's notes in the *Vasculum* 75(3), pp 43-44 of last October led to some speculation as to what might be taking place in the world of Holly Blue Butterflies. Were those seen at Tynemouth isolated strays from southern parts which would fail to survive the rigours of our northern climate or would there be a faint chance, under the much-talked-of warming up of the climate, for them to become residents in the area?

The answer seemed to be partly provided on 15 April when a single male was flying in the Hermitage woods at Chester-le-Street. It was the wrong time of the year to be carrying a net but there were a few specimen tubes in my coat pockets left over from last Autumn. The day was quite cold so the butterfly was not very active and after about fifteen attempts it was finally captured

in a tube. That evening, after a lot of telephoning, two members of the N.N.U. photographing team, Lance Moore and Keith Dover were able to come to my house where they enjoyed a two-hour session of photography. The butterfly was fed on diluted honey next morning when it was a joy to see it take the food quite readily. It was then re-tubed and returned to the same spot in the wood during the afternoon. I felt sorry for the little insect when I was doing this for the weather had worsened and it actually snowed the following day. I had hoped to see further specimens as siblings were probably about, but no more were seen in succeeding weeks.

TCD

Common Rock Rose (*Helianthemum nummularium* L.) as foodplant for larvae of the Common Blue Butterfly (*Polvommatius icarus* Rottemburg). Larvae of the Common Blue Butterfly characteristically feed on Bird's-foot Trefoil (*Lotus corniculatus* L.), the ova having been deposited on the upper surfaces of the leaves, especially near their axils. In addition, various other Leguminosae such as Greater Bird's-foot Trefoil (*L. uliginosus* Schkuhr), Restharrow (*Ononis* spp), Black Medick (*Medicago lupulina* L.) and White (Dutch) Clover (*Trifolium repens* L.) are occasionally used (Emmet & Heath, 1989). Choice of food plant may depend on availability and the season (Dennis, 1985). According to Emmet & Heath (1989), South (1906) stated that ova had been found on plants other than Leguminosae, such as Plantaginaceae (Plantains, *Plantago* spp., Umbelliferae (Burnet Saxifrages, *Pimpinella* spp.) and Compositas (Yarrow, *Achillea mille-folium* L.).

However, ova may be laid on plants other than the host plant (Dennis, 1984, 1985) and their presence does not prove that these are necessarily the food plants. Subsequently, in Stovin's (1944) account of the caterpillars of British Butterflies, which is based upon South's earlier work, it is stated that the Common Blue larva is recorded as also feeding on Red Clover, Burnet Saxifrage and Yarrow. One wonders if this is a statement of proven fact or merely an extrapolation from the earlier work. More recently, ova have been reported by Dennis (1984) on Cranesbill (*Geranium* sp., Geraniaceae) and by Mabbett and Williams (1989) or Horseshoe Vetch (*Hippocrepis comosa* L, Leguminosae), even though in the latter instance the more usual food plant was growing nearby.

The purpose of the present communication is to document the use of Rockrose (*Helianthemum nummularium* L.) as a food plant for the larva of the Common Blue butterfly. This plant is unrelated to the Leguminosae, belonging to the Cistaceae.

As part of a long-term project to record photographically the individual stages in the life cycles of the British butterflies I collected (on 3 July 1990) what I took to be six Northern Brown Argus (*Aricia artexeres* spp. *salmacis* Stephens) ova deposited on the upper surfaces of leaves of the Common Rockrose. This was growing in small patches along that stretch of the Durham Coast about 1 km north of Castle Eden Dene mouth where magnesian limestone outcrops and boulder clay form the cliffs and where wild flowers and butterflies abound. In the vicinity of the Rockrose 10 Northern Brown Argus butterflies were seen on the wing, feeding at flowers or resting on the vegetation. Both males and females were present, but none was seen laying. Common Blue butterflies were numerous (well over one hundred were counted). Birds-foot Trefoil is common hereabouts.

Microscopically, the ova appeared similar in size, shape and in their raised surface reticular patterning. All the collected ova hatched, commencing on the 13 July 1990, and the larvae were fed solely on Rockrose, provided either as fresh-cut leaves once or twice daily or on the growing potted plant. After several months the larvae ceased feeding prior to hibernation on the potted foodplant. Only two larvae were recovered after hibernation, which was short-lived, and these recommenced feeding in the last week of December 1990.

One caterpillar moulted on 10 January 1991 and again on 2 February 1991, and fully-grown measured 11.5mm in length (up to 13mm when elongated) by the end of February. The mature larva was green and did not have the lateral pink markings expected in the Northern Brown Argus larva: Pupation occurred on 5 March 1991. The pupa was 10.5mm long, greenish and the larval exuviae remained attached at the anal segment. It lacked the lateral abdominal pink markings and the characteristic black "eyebrow" markings of the Northern Brown Argus pupa. The lack of these various features in the larva and pupa suggested that this was the pupa of the Common Blue butterfly and not that of the expected Northern Brown Argus. This view was confirmed subsequently when the pupa darkened and a bluish coloration of the wings was visible before emergence of a normal female Common Blue ("blue" form) occurred forty days later at around 11 a.m. on the 14 April, 1991.

The other surviving larva moulted twice after emerging from hibernation, the final moult being on the 2 February 1991. The mature larva was 10mm long and had the pink lateral abdominal markings of a Northern Brown Argus larva. Pupation occurred on the 9 March 1991 and the Pupa (10mm long) was that of a Northern Brown Argus with characteristic pink abdominal and dark brown crescentic "eyebrow" markings. The larval exuviae remained attached to the anal segment. A normal Northern Brown Argus butterfly emerged forty days later at 11.45 a.m. on the 18 April 1991. The butterflies emerged some ten weeks earlier than would be expected in the wild. The normal growth and development of both species occurred in the absence of attendantants.

From the foregoing observations it is concluded that Common Blue butterflies may deposit ova on Common Rockrose and that the Rockrose provides a perfectly adequate food source for the subsequent growth and development of its larva. Clearly it is unwise to assume that ova found on Rockrose in the wild are necessarily those of the Northern Brown Argus, even though that species is known to occur in the locality. The Common Blue frequently flies in company with the Northern Brown Argus. The limited nature of the present observations precludes any conclusions with regard to the frequency with which Common Rockrose is utilised by the Common Blue butterfly as a host plant for breeding purposes. Further observations of ovipositing females in the field are needed.

References

- Dennis, R. I. H., 1984. Egg-laying sites of the Common Blue butterfly, *Polyommatus icarus* (Rottemburg) (Lepidoptera: Lycaenidae) : the Edge Effect and Beyond the Edge. *The Entomologist's Gazette* 35 : 85-93.
- Dennis, R. I. H., 1985 *Polyommatus icarus* (Rottemburg) (Lepidoptera: Lycaenidae) on Brereton Heath in Cheshire: Voltinism and switches in resource exploitation. *The Entomologist's Gazette* 36: 175-179.
- Emmet, A. M. & Heath, J., 1989 (eds.) *The Moths and Butterflies of Great Britain and Ireland. 7(1) The Butterflies*. (Harley Books).
- Mabbett, R. & Williams, M., 1989 (eds.) *West Midlands and Gloucestershire Butterfly Report 1989*. (West Midlands Branch of the British Butterfly Conservation Society).
- South, R., 1906. *The Butterflies of the British Isles*. (Warne) (quoted by Emmet & Heath, 1989).
- Stokoe, W. J. & Stovin, G. H. T., 1944 *The Caterpillars of the British Butterflies*. (Warne).
- H. A. Ellis

The Tortrix moth, *Acleris abietana* Hubn. During recent years we have been fortunate in finding *Acleris abietana* in a number of forests in the North-East. This species was introduced with conifers such as *Abies* and *Picea* and first recorded in Scotland in 1965. There had been a few records after this and it was thought that the species might have become extinct in Britain. In November 1986 Jim Parrack found one in the Kielder Rothamsted trap. This was the beginning of a marked recovery in the frequency of finding the moth. It appeared in the Hamsterley trap on 30 April 1987 and on several subsequent occasions, and in the Chopwell trap on 20 December 1987 and also many times afterwards. Finally a single specimen turned up in the Castle Eden Dene trap on 30 March 1991, presumably having become established in the small grove of conifers that are the headquarters of the reserve's colony of red squirrels.

TCD

The Yellow Archangel, This plant, which is rather uncommon in VC66, lived happily in Lumley Woods near Chester-le-Street for many years until the wood was clear-felled and replanted during the late 1950's and 1960's. The colony was found only along the border of the road to the gardener's house. This road was used extensively by the foresters during the lumbering work and as a result the *Galeobdolon luteum* was badly damaged by the extraction of the felled logs. It was, at one time, thought it would not survive such rough treatment and indeed the colony looked to be in a poor state for several years. This year (1991) I was pleased to see it thriving again and spreading out once more.

TCD

Coleophora hydrolapathella Hering. This small case moth was added to the British list only a short time ago in the 1970's, found feeding on the great water dock, *Rumex hydrolapathum*, in the Norfolk fens. It was a surprise to find a specimen in the Rothamsted trap at Chester-le-Street on 13 July 1989, as already recorded briefly in the *Vasculum* 75(1). The moth had been sent to E. S. Bradford for identification, but when I later notified Col. A. M. Emmet (editor of "The

Moths and Butterflies of Great Britain and Ireland") for inclusion in a future volume of that publication, he found the record to 'remarkable' that he asked me to have it confirmed by a second specialist. The genitalia, preparation was sent to Canon David Agassiz, who has now kindly confirmed Eric Bradford's Identification as being correct. During the intervening years I have been trying to find some of the foodplant of the moth growing near Chester-le-Street without success. The origin of the moth therefore remains a mystery. If any member knows a colony of (*Rumex hydrolapathum* nearer to Chester-le-Street than Butterby Marsh, I would be pleased to know of it.

TCD

RECORDS

The following animals were recorded on the 189th Field Meeting at Sacriston Wood on July 7 1990 (this is a continuation of the list in *Vasculum* vol. 75 no. 4),

MOTHS

Epirrita dilutata - November Moth

N. Cook

BEETLES

Pterostichus niger

Geotrupes stercorarius

GALLS

Andricus kollari - Marble galls caused by hymenopteran on oak.

SPIDERS AND HARVESTMEN

Pardosa pullata

Metallina segmentata

Zygiella X-notata

Lepthyphantes minutus

Linyphia clathrata

Linyphia triangularis

Paroligolophus agrestis

Mitopus moria

Phalangium opilio

WOODLICE

Oniscus asellus

Porcellio scaber

Philoscia muscorum

MILLIPEDES

Polydesmus agustus

G. Fenwick

Botanical Records

(Continued from *Vasculum* 76(1) - recorders' initials as for that issue.)

SPERMATOPHYTA - Flowering plants

Stachys annua (L.) L.

Disturbed ballast, Hartlepool, RTMcA, PRA & SR 53B.

Trientalis europaea L. Chickweed Wintergreen

Black Cleugh Craggs, 1988, RBW & LM. 04J.

Vaccinium vitis-idaea L. Cowberry

Under Pinus, Maryland Bridge Plantation, Hamsterley Forest. GS, GGG, BW. 02U.

Vulpia myuros (L.) C. C. Gmelin Rat's-tail Fescue

Priory Garage, Gateshead, 1988, AC, conf. GGG. 26R.

G. G. Graham.

PTERIDOPHYTA - ferns and club-mosses

Asplenium marinum L. Sea Spleenwort

Sheltered bay, Potter's Hole, MB, 1989. 46B.

John Thornhill recorded the fern in 1839 from Byer's Quarry; no doubt the same locality.

Asplenium ruta-muraria L. Wall-rue

Wall Tops, Horsley Hall, also St. Helen's Church, West Auckland, 1989, GGG & BMH. 93U 12Y.

Cystopteris fragilis (L.) Bernh. Brittle Bladder Fern Wall, Horsely Hall, BMH & GGG. 93U.
Dryopteris carthusiana (Villar) H.P. Fuchs Narrow Buckler-fern . Damp heath, Waldridge, 1989 AC & DNM. 24P.
Equisetum hyemale L. Rough Horsetail, Dutch Rush Flushed area, Bradley Burn, BMH. 13C
Huperzia selago (L.) Bernh. ex Schrank & Mart. Fir Clubmoss
 Two plants in old quarry spoil near Harthope Quarry, Langdon Common, GGG & DEMcC. 83S.
Selaginella kraussiana (G. Kunze) A. Braun Krauss's Clubmoss
 Near George Stephenson's Grave, West Cemetery, Darlington, D. Green, 1988. 21S.

Seaton Carrs Since publishing the list of plants at Seaton Carrs in *The Vasculum* (Vol. 72, No. 3; Vol. 73, No. 1) several more plants have been recorded in the area. The site has been partially developed for houses and has faced a great deal of abuse such as fly dumping, sub-soil being spread and holes being made over the area.

Plants seen:

Potentilla x intermedia, det. Russell McAndrew. First seen in a newly disturbed area in 1989. This year about 90 plants were recorded in an irregular area covering 5m by 10m.

Montia perfoliata (Willd) Howell. Seen in 1989 on disturbed area near disturbed land. In 1990 over 20 plants were seen in the same area.

Anacamptis pyramidalis L. One plant seen.

Saxifraga tridactylites (L) det. Russell McAndrew. One plant seen on mound developed on site of ash material.

Geranium dissectum (L) A few plants seen on disturbed land in the centre.

Veronica polite Fries. A few plants.

Stephen Robbins

Moth Trap at Allerwash Hall, Interesting records 1990

The ever-earlier emergence of many moths noted over the past few years continued in the Spring until mid-June when the weather turned less favourable. The most remarkable was: *Semiothisa liturata* (Clerck] - Tawny-barred Angle on 2.5.90, a month earlier than the previous record.

First Records

Macrothylacia rubi (Linn.) - Fox Moth 31.5.90

Melanchra persicariae (Linn.) - Dot Moth 20.7.90

Hydraecia petsitiis (DoubledilY) - Butterbur 14.8.90

Nycteola revayana (Scopoll) - Oak Nycteoline. Autumn 1990

(Identified by TCD amongst some micros)

Noteworthy Records

It was an excellent year for *Drymonia ruficornis* (Hugnagel) Lunar Marbled Brown, which appeared most nights from 21 st April to 7th May in two's and three's, with 7 on 2nd May and 17 on 4th May.
Dryobotodes eremite (Fabricius) - Brindled Green 23.8.90

Acronicta alni (Linn.) - The Alder, single specimens on 28.5.90 and 31.5.90. This moth may have a very short period of emergence as all five specimens recorded at Allerwash since 1980 were taken between 28th May and 3rd June.

Celaena leucostigma (Hubner) - The Crescent 11.8.90, only the second Allerwash record.

Tethea ocularis ssp. *octogessima* (Linn.) - Figure of Eighty, 29.6.90. Only previous records 26.6.86 (2) and 3.7.87. According to Dunn & Parrack only one other North East record this century.

Pseudoterpn pruinata (Hufnaqell) - Grass Emerald 19.7.90 and 23.7.90 both outside trap which may indicate that the birds get more than I see!

Autumn Emergence

Hypena proboscoides It.inn.1 - The Snout; following earliest record on 10.6.90 and the usual summer emergency, single specimens appeared on 1.10.90 and 8.10.90. Only previous autumn record at Allerwash 8.10.89 (Vascuiurn, Dec. 1989).

Xestia c-nigrum (Linn.1 - Sectaceous Hebrew Character; following only one record for 1990 taken on 2.8.90, another turned up on 12.10.90. According to Dunn & Parrack this is the first autumn record for Northumberland since 1970, and records from west Northumberland are few.

Phlogophora meticulosa (Linn.) - Angle Shades. Singles taken in the trap on several nights each month since 28.5.90, and on 23.8.90 several were seen at dusk on honeysuckle flowers. ~- October, the catches grew until on 13.10.90 there were 31 in the trap or on the ground roundabout. A further 26 specimens were identified on October 15. This is in sharp contrast to the position up to the early 1980's when one record in a year was noteworthy.

Moths in Decline

Euplexia lucipere (Linn.1 - Small Angle Shades. Far fewer in 1990 than in previous years. 1986 was an excellent year with catches most nights from 2.6.86 to early July, and one on 11.8.86. There was a similar pattern in 1987 but numbers have dropped off in the three subsequent seasons.

Anaplectoides prasina (D & S) - Green Arches. Although 28.5.90 was the earliest date on which I have recorded this moth, there were only a few more taken as the season progressed. Again, numbers peaked in 1986 and 1987 (as reported in *The Vasculum* of April 1989) but have since declined.

P. L. Tennant

LEPIDOPTERA - Butterflies and Moths

Phyllonorycter junoniella Zeller. 66 & 67. This small moth forms blotch mines in the leaves of cowberry, *Vaccinium vitis-idaea*. I was pleased to receive sprigs of this plant with tenanted mines typical of this microlepidopteron on 6 May 1991. They were collected by Dr. N. B. Rossiter on Puddington Moor (NY8442) just inside the county borders with Northumberland and Cumbria. This is the first record for VC66 since John Gardner found it in Upper Teasdale in 1912. Dr. Rossiter first discovered it at Knight's Cleugh (NY8652) in VC67 and he has since found colonies at seven further sites in that vice-county.

TCD

Lupin Aphid (*Macrosiphum albifrons*). In June 1989 several of these large aphids were seen on cultivated lupins in gardens in Hartlepool. It is a species from North America which feeds on lupins. It is about four times larger than the usual black and green flies, and is greyish in colour. It was first recorded at Kew in 1981.

When it was reported in the Hartlepool Natural History Society's Newsletter *The Spine*, this was believed to be the first occurrence, but several people then said they had seen it on lupins in the town two years before the record appeared.

It was also seen on a trip to Wallington Hall in July 1990.

Stephen Robbins

Witches Brooms

Aesculus hippocastanum, one on tree, Ward Jackson Park, Hartlepool.

Betula pubescens, frequently seen in the region.

Betula pendula very common. At Wallington I counted 35 galls on one tree. There are usually 3 or 4 on a tree.

Carpinus betulus, Wallington. One tree alongside the River Wansbeck has over 40 galls. Some more trees on hedgerow near A696 have a smaller number of galls.

Corylus avellana, Dalehouse near Staithes. Only one gall on a plant.

Larix sp., "Wood near Newton under Roseberry. Three galls on one stem of a plant.

Prunus avium, several in area e.g. Saltburn Glen, Darlington West Cemetery.

Sambucus nigra, two plants affected in hedgerows around school playing field at Brinkburn, Hartlepool. One shrub has two galls (another one was cut off in early 1989); the other has one gall. The largest is 0.5 metres across.

Ulmus glabra, one gall high up in tree in Ward Jackson Park, Hartlepool.

Stephen Robbins

Glow Worms at Allerwash 1990. These appeared 13.6.90 and last seen 13.9.90. On 17th June, 24 were counted. At 3.30 a.m. one morning at the end of June, a woodcock was seen pecking furiously at that part of the lawn where there had been a concentration of glow worms the previous evening. Perhaps the 'ineffectual fire' attracts predators as well as mates!

P. L. Tennant

New Book. A recently-published book has come to the editors' attention. Called *Weardale: Clearing the Forest*, it was written and published by Peter Bowes. The book covers the history of the dale from Saxon times to the present, and details the way in which various human activities have shaped the landscape. There is much in it of interest to the naturalist, from the historical development of agriculture in the dale to the practicalities of mineral extraction.

A Durham Beetle. The Castle Eden Argus is well-known as Durham's own butterfly. There is, however, a little-known beetle that may be thought of as Durham's own beetle. *Stenus fossulatus* is a species of rove beetle that was first found in Castle Eden Dene by Rev. C. E. Tottenham in 1936. In July 1981 it was rediscovered by Chris Reid, who found it only on fairly fresh earthslips in the dene, and he published his findings in the *Entomologist's Monthly Magazine* vol. 118. Castle Eden Dene is still the only known British locality for this species. I do not know if anybody has tried searching any of the other denes for *Stenus iossutetus*, but if the right habitat can be located - sparsely vegetated expanses of clay, probably in a damp area - I see no reason why it should not be found. Beetles of the genus *Stenus* are large-eyed long-legged active predators, and unusually for rove beetles, they are often found hunting in the open. There is a key in the Royal Entomological Society's *Handbook* for Staphylinidae that should enable the species to be identified.

Moths at Washington Wildfowl and Wetlands Centre. An active programme of light-trapping at the Washington Wildfowl and Wetlands Centre over a five year period has resulted in an extensive list of lepidoptera, exceeding 300 species. Despite this high level of activity, new species are still being added to the list, and this year these include: Pale Brindled Beauty (*Apocheima pilosaria*), caught on the 6th March; Small Quaker, *Orthosis cruda* (6 March); Yellow Horned, *Achlya flavi-cornis* (14 March); Twin-Spotted Quaker, *Orthosis munda* (22 March); Bordered White, *Bupalus piniaria* (24 May); Miller, *Acronicta leporina* (23 June); Poplar Grey, *Acronicta megecephala* (24 June); Tawny-barred Angle, *Semiothisa liturata* (30 June); Shoulder-striped Wainscot, *Mythimna comma* (5 July) and Peppered Moth, *Biston betularia* (7 July).

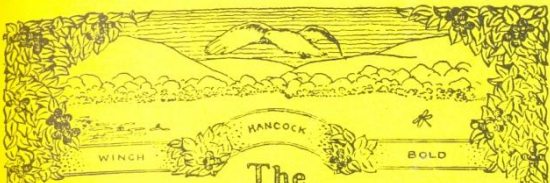
A. Donnison

Bee Orchids north of the Tyne. In 1988, a single bee orchid *Ophrys apifera* Huds. was found growing in Wallsend by a party led by Or Veronica Woolley. This discovery caused much excitement at the time, being the northern-most occurrence of this species in Britain, and its only station north of the River Tyne. Later, the same year, the site was burnt by vandals, and the plant disappeared. After a two-year absence, the plant has been rediscovered by David Mitchell and Terry Garnick, of North Tyneside's country-side staff. This year, two flowering spikes were seen on 24 June.

For obvious reasons, the exact site is not being widely publicised, but it is heartening to know that the plant is still present.

This new site represents the continuation of an apparent slow migration north by the species. There will be those, no doubt, who point to this phenomenon as another example of the results of global warming.

Death's-Head Hawk Moth *Acheronria atropos* L. A dead imago of this uncommon visitor to the North-East was found in General Graham Street, High Barnes, Sunderland (NZ3856) on 12 July, this year. It was brought to Sunderland Museum by Mrs. Robson, who found it in her back yard.



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**THE ORIGINS AND EARLY DEVELOPMENT OF BOTANY IN THE DURHAM
DIVISION OF THE UNIVERSITY**
**R. A. Baker, Centre for Combined Studies and Department of Pure and Applied Biology,
University of Leeds**

At the first annual meeting of the Northern Naturalists Union (NNU) held in the new Science laboratories in Durham in 1924, Professor J. I. O. Masson, Head of the Science Department, said that this was the first of a series of visits and that they might prove beneficial to the University and the Union alike¹. The link between the NNU and the University at that time was close and meetings were regularly held at Armstrong College, the Hancock Museum and at Durham. Several of the staff of the University were on the NNU Committee. In 1927 Dr. B. M. Griffiths was President of the Union, having been a founder member.

Benjamin Millard Griffiths (1886-1942)² was appointed the first Reader in Botany and Head of the Department at Durham in 1924 at a salary of £500 per year, on the understanding that his "lectures would not exceed 14 hours per week"³. Griffiths arrived from Armstrong College in Newcastle, where he had been a lecturer in Botany, and was to remain at Durham until 1939 when he resigned on the grounds of ill-health caused by Parkinson's disease (personal communication David Masson). His appointment was the first in any biological subject in the Durham division of the University. By 1926 the Science staff had reached a total of 11; 4 chemists, 3 physicists, 2 geologists and 2 botanists (Gibby 1986). Elsie Phillips, a first class honours graduate in Botany from the University of Liverpool had joined the fledgling department as a lecturer in Botany in 1925.⁴

Science began in Durham in 1924 in association with a new department of education, financed with a grant from the Durham County Council, on condition that the teaching would primarily be for the training of science teachers — "the educational need introduced science" (Bettenson 1988).

The Botany Department was housed in a single storey building, later to have sides and an upper storey added, "remarkable for external simplicity and ugliness" (Gibby 1986) and consisted at first of one laboratory, a museum shared with Geology, and a room for the Head of the Department. There was no room for the lecturer or the botany technician. Pass and Honours courses were provided. Between 1924 and 1934 the number of botany students rose from 2 to 22 most of whom would not be honours students.⁵ Honours students in Botany between 1927 and 1944 amounted to a total of 10, 3 at first class and 7 at second class level⁶ compared with 96 in Physics and 62 in Chemistry over the same period. Only one Botany postgraduate student was listed in the first 10 years and in the same period 13 publications all by Dr. Griffiths, chiefly on phytoplankton and freshwater biology, are recorded for the Botany section. Dr. Griffiths' research was based at Butterby Marsh near Durham where the Department had a small hut and boat.

The courses were almost entirely taxonomic in the first year but in the second and final years the syllabus covered topics in evolution, genetics and the physiology of plants. Initially, Tom Dunn⁷ intended to study Chemistry but told Professor Masson at interview he wanted to study Biology instead. Professor Masson replied "Well I am sorry Mr. Dunn you will not be able to do Zoology because we don't have a department". It may seem odd today that Botany was established without Zoology. At that time however, Botany was the more important subject in the school curriculum.

The University was well aware of the deficiency. In a memorandum as early as 1925 it was stated that "It is most desirable that provision should be made for adding a branch in Zoology at the earliest possible moment"⁸ The NNU at their annual meeting in Durham on February 28th 1931 also noted the absence of Zoology, "To naturalists it is disappointing that it has not been possible to provide for Zoology as yet, but hopes that a pious founder will soon make good this defect"⁹ However, by the time Dr. Griffiths retired in 1939 the matter remained unresolved and early in 1940 it was decided to temporarily suspend the Readership in Botany "until such time as the existing plans for making provision for the teaching of Zoology as well as Botany in the Division can be put into effect"¹⁰. in 1943 Professor J. William Heslop Harrison was called in as an adviser. He advocated two departments with close co-ordination and upheld the idea of a Joint Honours School in Botany and Zoology, not a General Honours course, nor an Honours School of Biology. He thought each of the subjects would need three teachers. He recommended the proper procedure would be to start with two Readerships; the Reader in Botany should be the prior appointment.¹¹ His recommendations were accepted. David Henriques Valentine was appointed Reader in Botany in 1945 and James Birkett Cragg in Zoology a year later.¹²

A comparison between the college at Newcastle and the Durham Colleges with regard to the origins of science teaching and in particular biology is interesting. The first appointment in Newcastle in the area of biology was made in 1873 when Henry Alleyn Nicholson (1844-1899) was appointed Professor in Natural History, which "Emerged from complex negotiations with the Natural History Society, an unenthusiastic College of Medicine and an obviously reluctant Senate" (Bettenson 1971). Thus the Society was consulted and its members were actively involved in the establishment of science (Goddard 1929). Fifty years later the Durham division realized that if it was to keep up with similar institutions it must introduce science and it was the County Council who provided the financial assistance to make this possible.

The Botany department was to remain small until the expansion which took place in universities in the 1960's and finally disappeared when Botany and Zoology were combined into a reorganised Department of Biological Sciences in 1988.

Acknowledgements

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References

- Bettenson, E. M. (1971) *The University of Newcastle upon Tyne A historical introduction*. 106pp. University of Newcastle upon Tyne.
- Bettenson, E. M. (1988) 1937 The Great Divide. *The Durham University Journal* LXXX (2) (New Series XLI X 2), 173-179.
- Gibby, C. W. (1986) Academic Durham in 1926. *The Durham University Journal* LXXIX (1) (New Series XLVI 11 (1)), 1-6.
- Goddard, T. R. (1929) *The History of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne, 1829-1929*. 195pp. A. Reid and Company, Newcastle.
- Lunn, A. G. (1983) Editor *A History of Naturalists in North East England*, 112pp. Department of Adult Education, University of Newcastle upon Tyne.

Notes

1. The *Vasculum XI* (1) 1924, 93-94.
2. Benjamin Millard Griffiths (1886-1942) born Kidderminster, FLS 1922, D.Sc. 1923. Demonstrator Queen's University, Belfast 1914, Lecturer Botany Reading 1920, Newcastle 1921. President NNU 1927. Council Freshwater Biological Association. Research interests in ecology and taxonomy of freshwater algae.
3. Joint Board Appointed to Administer the Departments of Science and of Education in connexion with the Durham Colleges, in the University of Durham. Minutes of the Joint Committee for Science Minute Book 1 minute 227 p. 168. (Held at Old Shire Hall, University of Durham).
4. Printed memorandum dated November 1925 and signed by John S. E. Pembertori, Chairman of the Joint Board and inserted into Minute Book 1 of the Joint Committee (see Note 3).
5. University of Durham (Durham Division) Department of Science, Printed report and record of the period October 1924 to December 1934. Inserted at back of Minute Book 2 of the Minutes of the Joint Committee for Science (see note 3).
6. Minutes of the Joint Committee for Science Minute Book 4. Data re students dated February 1945 (see note 3).
7. Discussions with Tom Dunn, former editor of *The Vasculum*, who was the only final year Botany Honours student in the 1931—1932 session. See acknowledgements.
8. Memorandum 1925, Section B under Courses of Study — see note 4.
9. *The Vasculum XVII* 1931. 72.
10. Minutes of the Joint Committee for Science. Minute Book 4 dated 18/1/1940 Minute 54.
11. *Ibid* dated 11/11/43, paragraph 28.
12. University of Durham Calendars.
13. Henry Alleyn Nicholson (1844—1899). Lunn (1983), cited in references, provides background biographical information. He held the Chair of Natural History at the College of Physical Science in Newcastle from 1873 to 1875.

THE DISTRIBUTION AND ABUNDANCE OF BUTTERFLIES ON THE MAGNESIAN LIMESTONE GRASSLANDS OF COUNTY DURHAM

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INTRODUCTION

The semi-natural grasslands which develop over magnesian limestone in County Durham and Tyne and Wear support a characteristic plant community of high diversity and containing many rare species, as well as species at their northern or southern distributional limits.

The older, primary grasslands have been maintained by stock and rabbit grazing. Secondary grasslands, of more recent origin, have developed mainly in disused limestone quarries.

The total national resource for these grasslands is around 270ha (Pritchard, 1989), of which about 65% occurs in County Durham and Tyne & Wear. Both primary and secondary grasslands are of limited extent, being mostly confined to twenty-four sites which warrant SSSI status. Their importance for conservation is well recognised (e.g. Doody, 1982).

The grasslands are under threat from a number of sources. Quarrying, infilling, dumping, agricultural improvement, overgrazing, recreation and urban development are all past and potential threats to the extent and quality of the remaining grassland.

Perhaps the greatest threat is agricultural neglect. The absence of stock grazing on many sites has led to succession to scrub and woodland. Under these conditions the grassland appears to lose its fine-grained structure and becomes ranker and tussocky, disappearing altogether once dense scrub and woodland become established.

There has been a wide range of phytosociological studies of these grasslands (e.g. Heslop-Harrison and Richardson, 1953) but very few of the invertebrate fauna or indeed of the effect of habitat change and habitat management.

This paper presents some preliminary results of a study of one such invertebrate group, the butterflies, of the magnesian limestone grasslands.

The two aims of this part of the study were:

1. To review historical trends and establish the current butterfly distribution.
2. To monitor butterfly abundance on selected sites.

METHODS

Butterfly Distribution

Historical records for vice-counties 66, 67 and 68 have been summarised on tetrad (2km x 2km) maps by Dunn and Parrack (1986) and by Cook (1990). These were analysed to establish the known species richness for each of the twenty four sites.

Additional records were made during 1990 by occasional site visits timed to coincide with the main periods of emergence.

Butterfly Abundance

Three sites, Cassop Vale, Sherburn Hill and Thrislington Plantation were selected for a detailed study of butterfly abundance.

Site selection was based on the following criteria:

1. Large site, sufficient to contain an adequate transect.
2. Large areas of magnesian limestone grassland.
3. Diversity of butterfly habitat in terms of the composition and structure of vegetation.
4. Known high butterfly diversity.
5. Range of grassland management techniques utilized, some of which are controllable.

Butterfly abundance was monitored on each site during 1990 from 1st April to 29th September using the method devised by Pollard (1977) and now used in the National Butterfly Monitoring Scheme.

Transect routes were devised for each site, utilizing existing paths and sheep tracks. Where no established path existed, the route was marked by posts. Each route was divided into a maximum of fifteen sections which corresponded to differences in habitat or habitat management. Consequently transect sections varied from 30m to 250m in length, but the width was fixed at 5m.

Transect counts of butterflies in each section were made by walking the route and noting individuals seen up to 5m in front of the recorder. Transects were walked weekly on any day during each recording week providing certain conditions, designed to reduce the variability in butterfly activity caused by weather, were met:

1. Time of recording was restricted to 10.45 a.m. to 15.45 p.m. (BST).
2. Transects were not walked if the shade temperature was below 13°C, nor between 13°C and 17°C unless there was at least 60% sun. Above 17°C transects were walked in any conditions provided it was not raining.
3. Sunshine, defined by 'shadows cast', was recorded for each section and expressed percentage
4. Windspeed was estimated using the Beaufort scale and transects were not walked in excess of 5.

Results were analysed by summing the weekly counts to produce an annual index value for each species. Estimates were made for weeks where transects were not completed due to poor weather. A section index value was calculated by summing the weekly counts for each section.

Four parameters were calculated from the annual index values for each site:

1. Species richness(s): the number of species recorded.
2. Total numbers of individuals (N): the sum of the annual indices.
3. Density of individuals (N/km): the summed annual indices divided by the total **transect length**
4. Diversity (Simpson's Index): a measure of both species richness and the evenness with which individuals are distributed amongst the species.

$$\text{Simpson's Index} = \frac{1}{\sum_{i=1}^s P_i^2}$$

where P_i = the proportion of individuals that each species contributes to the total.

s = total number of species.

Results

Butterfly Distribution

Recent historical sources record sixteen species on the magnesian limestone grassland. Dunn (pers. comm.) reports two recent additions to the list, the small skipper (*Thymelicus sylvestris* Poda) and the ringlet (*Aphantopus hyperantus* L.).

Nineteen new tetrad records were made during the 1990 season. Table 1 summarises the known records for each of the twenty four sites prior to the 1990 season together with additional records and the current total.

TABLE 1
SUMMARY OF TETRAD RECORDS FOR MAGNESIAN LIMESTONE
GRASSLAND SSSIS

<i>Site Name</i>	<i>NUMBERS OF BUTTERFLY SPECIES</i>		
	<i>Records Prior to 1990</i>	<i>Additional 1990 Records</i>	<i>Total Records</i>
Bishop Middleham Quarry	17	0	17
Casop Vale	10	3	13
Castle Eden Dene	9*	0	9*
Durham Coast	14	0	14
Hawthorn Dene	12	0	12
Pig Hill	2	2	4
Pittington Hill	4	2	6
Raisby Hill Grassland	6	0	6
Sherburn Hill	13	2	15
The Carrs	2	0	2
Thrislington Plantation	13	5	18
Town Kelloe Banks	12	0	12
Wingate Quarry	13	0	13
Claxheugh Rock and Ford Limestone Quarry	0	0	0
Cleadon Hill	0	2	2
Fulwell and Carley Hill Quarries	13+	0	13+
Harton Down Hill	0	0	0
Hastings Hill	1	2	3
Herrington Hill	2	1	3
High Haining Hill	12	0	12
High Moorsley	4	0	4
Moorsley Banks	0	0	0
Trow Point to Whitburn Steel	7	0	7
Tunstall Hills and Ryhope Cutting	12	0	12

* excludes one extinct species
 +Excludes single record for one species

Many of these records were for relatively common species, suggesting a pattern of underrecording rather than genuine gaps in distribution. Some of the records were more significant including the discovery of a large colony of the northern brown argus (*Aricia artaxerxes* ssp. *salmacis* Stephens) and confirmation of a small colony of small skippers.

Butterfly Abundance

Annual index values for the three sites are given in Table 2. Table 3 show Thrislington Plantation having high species richness, total individuals and density compared to the other two. Sherburn Hill has a much higher diversity index which indicates individuals more evenly apportioned amongst the species.

TABLE 2:
ANNUAL INDEX VALUES FOR THREE MAGNESIAN LIMESTONE GRASSLAND SSSI'S

Species	ANNUAL INDEX VALUES		
	Cassop Vale	Sherburn Hill	Thrislington Plantation
Small skipper *	0	0	1
Large skipper *	2	5	6
Dingy skipper *	1	6	20
Large white	0	12 113	10 112
Small white	13 112	17 1133	10 112
Green veined white	13 114	14.5 1130	12 117
Orange Tip	0	4	2
Small copper	0	0	0
Northern brown argus *	11	4	79
Common blue *	10	41	131
Red admiral	0	0	4
Painted lady	3	0	2
Small tortoiseshell	s3 1130 a0	s30 1119 a1	1 1119 a8
Peacock	s0 a0	s6 a0	s0 a1
Wall *	10 112	12 119	14 1121
Meadow brown *	191	70	194
Small heath +	129	79	746
Ringlet *	0	0	53

i, II Generations
s - spring a - autumn seasonal flights
+ Generations indistinct
* Sedentary or colonial species

TABLE 3:
ANALYSIS OF ANNUAL INDEX VALUES

Parameter	Cassop Vale	Sherburn Hill	Thrislington Plantation
Species Richness (S)	11	13	17
Total Nos. Individuals (N)	394	355.5	1305
Density of Individuals (N/km)	273.0	272.6	644.7
Diversity (Simpson's Index)	2.847	6.873	2.736

Closer examination of the species list reveals two broad categories:

1. Sedentary species which form distinct colonies and may be described as characteristic of the magnesian limestone grassland (Ratcliffe, 1977).
2. Mobile or highly mobile species some of which are immigrants. Variations in indices for this group are therefore less likely to reflect real site differences.

The four parameters above were recalculated using only data for the sedentary species (Table 4). Thrislington Plantation would appear to be much the best site with Cassop Vale second and Sherburn Hill third. Furthermore, Sherburn Hill has a much higher proportion, both species and individuals, of the mobile/immigrant species group.

**TABLE 4:
ANALYSIS OF ANNUAL INDEX VALUES FOR SEDENTARY SPECIES**

<i>Parameter</i>	<i>Cassop Vale</i>	<i>Sherburn Hill</i>	<i>Thrislington Plantation</i>
Species Richness (S)	7 (64)	7 (54)	9 (69)
Total Nos. Individuals (N)	346 (88)	216 (51)	1265 (96)
Density of Individuals (N/km)	239.8	165.7	620.0
Diversity (Simpson's Index)	2.244	3.583	2.534

Figures in parentheses are percentages of sedentary species indices to total indices for each parameter.

Very high numbers of some sedentary species such as meadow brown (*Maniola jurtina* L) and small heath, (*Coenonympha pamphilus* L) were recorded at Thrislington Plantation and Cassop Vale resulting in a lower diversity index. Sherburn Hill appears more diverse having fewer numbers of these two species, though some of the other sedentary species were more common at this site than at Cassop Vale (Table 2).

Possible explanations for these site differences in abundance can be investigated by examining the data for each transect, section by section.

One possible difference in the sites lies in the range and size of habitats present including both short and tall swards of limestone grassland as well as neutral grassland (often improved), scattered scrub, dense scrub and woodland.

Examination of the effect of habitat on one parameter, butterfly density (Figure 1), clearly shows limestone grassland having higher values than neutral grasslands (Figure 1a). Recently cleared scrub may take some time to be recolonised by butterflies as well as its limestone flora (Figure 1a. Sections 2, 3, 12).

FIG 1A THE EFFECTS OF HABITAT ON BUTTERFLY DENSITY AT CASSOP VALE

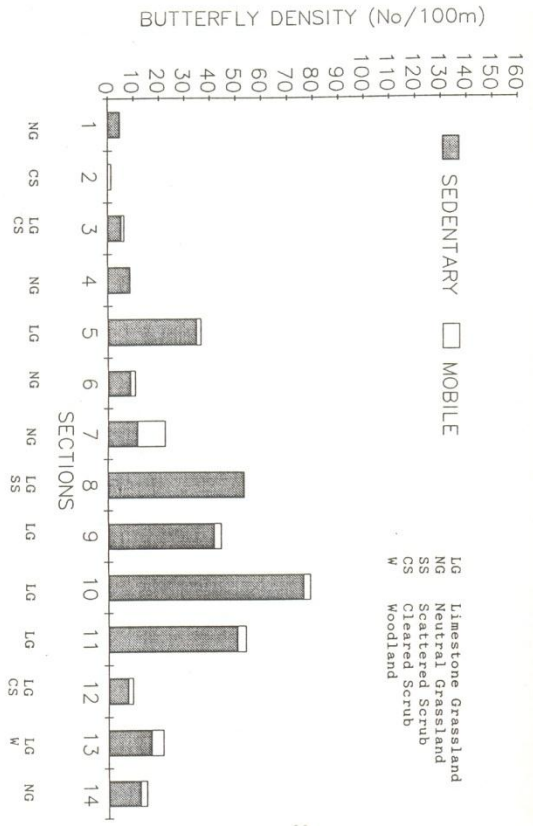
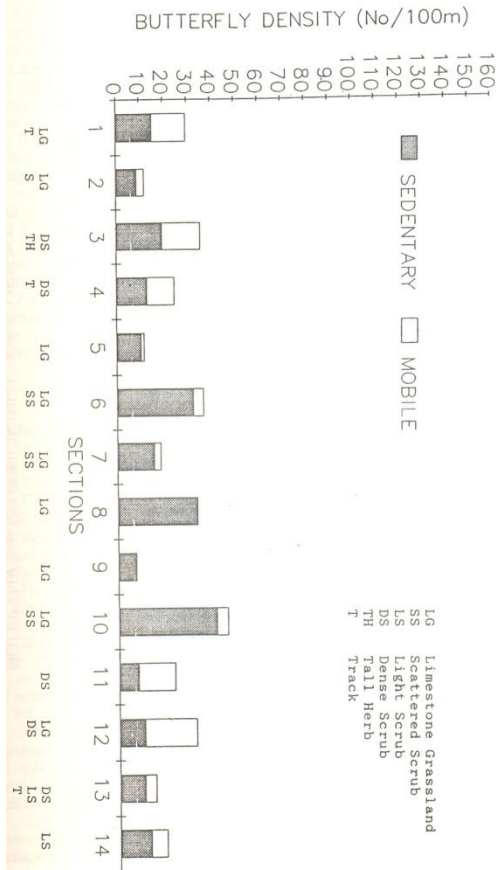


FIG 1B THE EFFECTS OF HABITAT ON BUTTERFLY DENSITY AT SHERBURN HILL



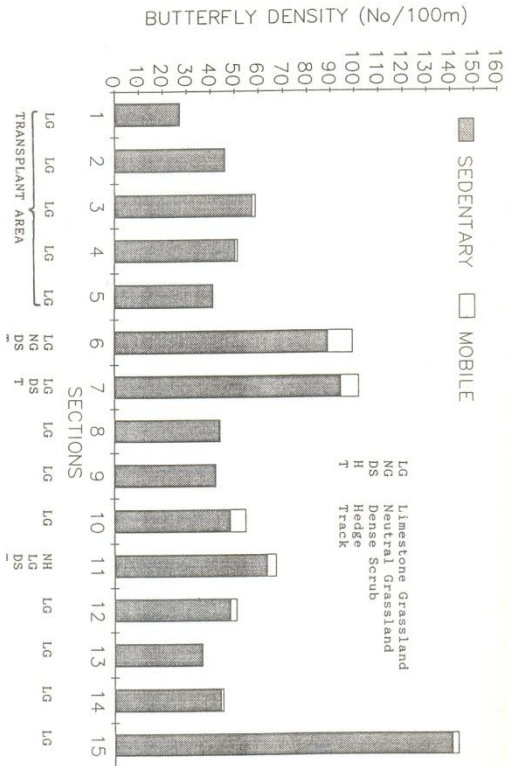


FIG 1C THE EFFECTS OF HABITAT ON BUTTERFLY DENSITY AT THRISLINGTON PLANTATION

Subseral succession from limestone grassland to open scrub creates a mosaic of grassland and patches of scrub and does not appear to have a detrimental effect on butterflies and may even be beneficial, providing some shelter (Figure 1b, Sections 6, 10). Low counts were recorded for some sections (e.g. Figure 1b, Sections 5, 9), which appeared ideal habitat except for their relatively exposed location. Succession to closed scrub, however, results in fewer butterflies and a greater proportion of mobile and immigrant species (Figure 1b, Sections 4, 11, 12, 13).

Thrislington Plantation is almost exclusively limestone grassland, neutral grassland being mostly confined to the disused railway track. Dense scrub is restricted to the edges of the site and to the disused track. Much scrub has been removed, particularly in the transplant area. It is not surprising, therefore, to record a high density of butterflies across most sections. The disused railway track (Figure 1c, Sections 6, 7 and 11) seemed to offer very good conditions with grassland on the track and scrub along the edges providing shelter. The highest density recorded from all sites was Section 15 (Figure 1c) with a relatively tall sward and scrub providing shelter from the prevailing westerly winds.

Finally, butterfly density on the relocated grassland 'turves' of Steetley's transplantation project (Figure 1c, Sections 1, 2, 3, 4, and 5) appear comparable to the rest of the site. Without pre-transplant data for Thrislington Plantation, it is, of course, impossible to say whether relocation has had any real effect on butterfly density.

DISCUSSIONS AND CONCLUSIONS

The Changing Pattern of Butterfly Distribution

Robson (1899) lists twenty-eight species as resident on the magnesian limestone in the mid-eighteenth century and on a range of habitats, including woodlands such as Castle Eden Dene.

The comma (*Polygona c-album* L), small pearl-bordered fritillary (*Boloria selene* D & S) pearl-bordered fritillary (*Boloria euphrosyne* L), silver-washed fritillary (*Argynnis paphia* L), speckled wood (*Pararge aegeria* L) and the scotch argus (*Erebia aethiops* Esper) were all recorded for woodland habitats, but not, apparently, on the limestone grassland.

Five species of butterfly recorded on limestone grassland, mainly from Blackhall (Durham Coast, SSSI), have become extinct since about 1850. These are the marsh fritillary (*Eurodryas aurinia* Rott.), dark green fritillary (*Argynnis aglaja* L), small blue (*Cupido minimus* Fuessly), grayling (*Hipparchia semele* L), and the gatekeeper (*Pyronia tithonius* L). It is possible that the latter four may eventually return. The dark green fritillary occurs in west Durham and Northumberland, the small blue occurs just over the border in Scotland, the grayling on the Northumberland coast and the gatekeeper in Yorkshire and occasionally at Teesmouth (Dunn, pers. comm.).

Although the holly blue (*Celastrina argiolus* L) was never recorded from the magnesian limestone, its recent appearance at Tynemouth (Ellis, 1990), suggests that this mobile species could be encountered again in Durham if it continues to spread northwards. It is recorded from chalk downland in the south if the site contains scrub or woodland.

The new tetrad records would appear to suggest a pattern of underrecording rather than genuine gaps in distribution since many were for relatively common species which could reasonably be expected to be found on most sites.

Large sites would appear to be more species rich. However, these larger sites tend to be best known and probably visited more frequently by both amateur naturalists and professional ecologists. For example, Castle Eden Dene is a National Nature Reserve; Thrislington Plantation, Cassop Vale and Durham Coast are nationally important sites mentioned in the Nature Conservation Review (Ratcliffe, 1977). In addition, Thrislington Plantation has been monitored regularly during the transplantation project and part of Cassop Vale is owned by the Nature Conservancy Council. Other examples are Wingate Quarry, a Local Nature Reserve, and Bishop Middleham Quarry, Town Kelloe Bank and Hawthorn Dene, all Durham Wildlife Trust reserves. Some sites are likely to have been visited more frequently because of the presence of rare species (e.g. northern brown argus).

More regular recording could fill these gaps. Examination of the emergence periods for these species suggest site visits should be made at the end of May, at the end of June to early July and again in mid August.

There is a small group of species which appears, at present, to have a genuinely restricted distribution. These are the small skipper, northern brown argus and the ringlet. The small skipper is currently extending its range through Durham and could conceivably turn up on any limestone grassland sites. The northern brown argus is restricted to sites where its food plant, common rockrose (*Helianthemum nummularium* Mill) grows in abundance and the ringlet is restricted at present, to a single site.

The national butterfly mapping scheme, developed by the Institute of Terrestrial Ecology's Biological Records Centre, maps distribution at the ten kilometre square scale. One ten kilometre square, therefore, covers twenty-five tetrads. The magnesian limestone grasslands are covered by seven ten kilometre squares. The 1990 tetrad records did not add any new records to this national mapping scheme.

Application of Transect Counts to Magnesian Limestone Grassland

Pollard (1977) and others have shown good correlation between transect counts and absolute estimates of population size by mark and recapture and there is no reason to doubt the validity of the results from these three sites.

Large differences in relative abundance occur between sites. Most species are more abundant at Thrislington Plantation than the other two sites and possible reasons for this have been advanced. The order of magnitude of these differences may be important in a regional context; for example, the population of the northern brown argus at Thrislington Plantation is clearly of some regional significance whereas the Sherburn Hill population appears in a precarious state.

Clear differences exist between all three sites for some of the more abundant species (e.g. common blue *Polyommatus icarus* Rott; meadow brown *Maniola jurtina* L; small heath *Coenonympha pamphilus* L). Some of the butterflies however, were recorded in such small numbers that it would be difficult to distinguish between the sites (e.g. large skipper *Ochlodes venata* Br & Grey).

One species, the small copper (*Lycaena phlaeas* L) was not recorded on any transect, though occasionally encountered off the transect at Thrislington Plantation. Similarly the large white (*Pieris brassicae* L), orange tip (*Anthocharis cardamines* L) and red admiral (*Vanessa atalanta* L) were all noted off the transect at Cassop Vale.

This is obviously a practical limitation of the method. The transects must be as representative as possible and observations throughout the season suggest that it is unlikely their locations could be improved. The length of the transects may be a contributory factor to some low annual index values. Thrislington Plantation has a relatively

long transect (2.024 km) reflecting the overall size of the site. However, the transect lengths at Cassop Vale (1.443 km) and Sherburn Hill (1.304 km) are limited by the overall size of the site and particularly by the extent of limestone grassland. This problem would clearly limit monitoring butterfly abundance to the larger sites.

Transects were completed at the first opportunity during each recording week. The maximum number of transects in a season is twenty six per site. Twenty two counts (85% of maximum) at Cassop Vale and Sherburn Hill and eighteen counts (69% of maximum) at Thrislington Plantation were made which met the recording criteria. One hundred and eighty two days were available for recording. Transects were completed on forty three days (23.6%); when practicable more than one site was covered in a recording day. When counts had been made for all three sites early in the week, no attempt was made to re-record on the remaining days of that recording week, thus accounting for a further forty seven days (25.8%). It was not possible therefore, to record on ninety two days, forty eight (26.4%) of which were due to unavailability for a variety of reasons (e.g. work, holidays, illness). Weather conditions prevented surveying on the remaining forty-four days (24.3%).

Weather conditions were no worse at Thrislington Plantation; Cassop Vale and Sherburn Hill being nearer to Durham were visited at the first opportunity and Thrislington later in the week.

Conditions for recording were most difficult during April, parts of May and the last weeks of September. High winds on these exposed sites on the magnesian limestone escarpment were frequently a problem as were low shade temperatures early in the season. At temperatures between 13°C and 17°C there was often insufficient sunshine to meet the minimum sixty per cent criterion.

Since 1990 was a hot, dry summer it can be concluded that in a poor season some considerable recording difficulties could be encountered. This would seem a common problem in northern England and Scotland. Pollard, Hall and Bibby (1986), for example, quote Upper Teesdale NNR, a Butterfly Monitoring Scheme site, as achieving only fifty per cent transect counts in one season.

Monitoring Butterfly Abundance and Habitat Management

Close correlation apparently exists between butterfly density and habitat type, particularly for the sedentary or colony forming species. Some broad conclusions that can be drawn from the data are:

1. Butterflies are more abundant on limestone grassland than neutral grassland.
2. Butterflies remain abundant on a mosaic of limestone grassland and patches of scrub
3. Abundance appears to decline in exposed areas.
4. Overall abundance declines in closed scrub and the proportion of mobile and immigrant species increases.

The monitoring method employed at these sites records relative abundance or more precisely butterfly activity. This could explain why density is lower on exposed parts of the sites. These apparently suitable areas (e.g. Sections 5, 9 Sherburn Hill) might be used for breeding but less frequently used by adults for feeding and resting. High counts for mobile and immigrant species largely reflect attraction of adult butterflies to suitable feeding areas. For example, the small tortoiseshell (*Aglais urticae* L.) was very common in Section 7 Cassop Vale and Section 3 Sherburn Hill. The common feature of these two sections was a high density of creeping thistle (*Cirsium*

arvensis L.) on which adults were frequently recorded nectaring; the summer generation completely disappeared from Cassop Vale when the thistles were mown.

One way to confirm the relationship between habitat and butterfly abundance is to introduce different management regimes and record subsequent changes in abundance and in the habitat. The whole of a site may be managed or individual sections.

Pollard, Hall and Bibby (1986) have shown that annual fluctuations and short-term trends in abundance are usually due to the effects of weather. For most species these fluctuations are synchronous over large areas or regions; some even exhibit synchronous fluctuations nationally. Regional and national trends can therefore be used as 'controls' and departures from these trends, either over the whole site or in individual sections, can be related to habitat change by succession (slow) or by management (fast).

Management regimes on the three sites are:

1. Cassop Vale: Three grazing 'enclosures' erected in May 1990 so that habitat change could be monitored; dense scrub clearance in Sections 2 and 3, bordering Sections 11 and 12 (March 1990); spring, summer and autumn grazing by cattle and sheep (April to December 1990).
2. Sherburn Hill: scrub clearance from mosaic of limestone grassland and patches of scrub in Section 10 (March 1991) grazing is not possible on this site which is used for informal recreation and is not fenced.
3. Thrislington Plantation: no management.

Monitoring abundance of the sedentary group of species will continue over the following seasons together with relevant habitat characteristics. Management regimes may be altered in subsequent years depending on the results obtained.

References

- Cook, N. J. (1990) *An atlas of the butterflies of Northumberland and Durham* Northumberland Biological Records Centre.
- Doody, J. P. (1982) Grassland. In *The Magnesian Limestone of Durham County* (Ed. by T. C. Dunn) pp 45-60. Durham County Conservation Trust.
- Dunn, T. C. and Parrack, J. D. (1986) *The Moths and Butterflies of Northumberland and Durham / Macrolepidoptera* Vasculum Supplement No. 2.
- Ellis, H. A. (1990) The holly blue *Celastrina argiolus* Linn., in Tynemouth a new record for Northumberland. *Vasculum* 75 3:43-44.
- Heslop-Harrison, J. W. and Richardson, J. A. (1953). The Magnesian limestone area of Durham and its vegetation. *Trans. North Nat. Union* 2 pt. 1. 1 -28.
- Pollard, E. (1977) A method for assessing changes in abundance of butterflies. *Biological Conservation* 12 115-134.
- Pollard, E. Hall, M. L. and Bibby, T. J. (1986) *Monitoring the abundance of butterflies 1976-85* Research in conservation No. 2 Nature Conservancy Council.
- Pritchard, A. (1989) *A strategy for the magnesian limestone grasslands* Confidential reports to the Nature Conservancy Council (Unpublished).
- Ratcliffe, D. A. (1977) *A nature conservation review* Vol. 2 Cambridge University Press.
- Robson, J. E. (1899) *A catalogue of the Lepidoptera of Northumberland, Durham and Newcastle upon Tyne* Nat. Hist. Trans. Northumb. Vol. 12, Pt. 1.

AN INVESTIGATION INTO AN INSECT EPIDEMIC ON HARNISHA HILL, COUNTY DURHAM.

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INTRODUCTION

Harnisha Hill, altitude 490 metres, is on the south-facing slopes of Raven Seat (altitude 589 metres) in the eastern Pennines of County Durham (VC66). The whole slope is part of the Raby Estate and managed as a grouse moor by Lindsay Waddell, the head keeper. It is some distance from any road, difficult of access and very exposed, not the sort of countryside to visit during bad weather. The keeper asked for help to solve an entomological problem concerning damage to the heather, *Calluna vulgaris*, in 1987. The following account gives details of investigations during the years 1987-1990, which resulted in the solution of the problem.

RESULTS

In July 1987, a telephone call from Ian Findlay, the warden in Upper Teesdale informed me of a cry for help from Lindsay Waddell, the grouse keeper on Harnisha Hill (grid ref. NY9532, NY9631 and NY9632). It appeared that something was attacking the bilberry plants (*Vaccinium myrtillus*) so vigorously that they were becoming completely eaten off, the culprit then turning its attention to his treasured heather, (*Calluna vulgaris*), which was being carefully nurtured in order to feed the grouse, Ian Findlay was asked if he would be good enough to obtain specimens for identification. Eventually, material consisting of damaged bilberry sprigs arrived by post. With them was a single very worn specimen which was set and tentatively placed in my collection as *Olethreutes palustrana* Lien. & Zeil. The specimen was in such poor condition (having been collected in pouring rain) and without any abdomen, that further specimens were requested. The weather that Summer was extremely wet and this, together with the lateness of the season made it impossible to obtain further specimens that year.

The weather in 1988 was, if anything, worse than in 1987, so visits to Harnisha Hill were not possible.

In 1989 pressure of work in other parts of VC66 kept me busy until the end of June when I contacted Ian Findlay again and a visit was arranged. The following timetable of subsequent events explains how the investigation proceeded.

5-7-1989. We found that we had picked a beautiful sunny day with temperatures up to 80°F., excellent for a visit to the remote high grouse moors of West Durham. Ian was waiting at Middle End Farm where I parked my car and transferred to his Land Rover to climb up to the shooting lodge at NY970309 (approx. altitude 490 metres). From here I worked grid squares NY9630 and NY9730. Everywhere there were signs of damage to the bilberry plants, the leaves being brown and dead. Moths were flying in large numbers and I took 13 specimens for further investigation. One specimen was *Olethreutes schultzi* Fabr. and the other 12 were all tentatively identified as *Olethreutes palustrana* Lien. & Zeil. This species was new to me, so I sent specimens to Ted Hancock, who quickly confirmed the identification. My interest had been thoroughly aroused not only because of the moth's rarity but also because it had not been noted in VC66 since John Gardner found it in Upper Teesdale in May 1896 "flying up from grass in a wood of stunted fir trees" (Bradley, Tremewan & Smith) and also in 1897 (Robson). During the afternoon we also met Lindsay Waddell,

the grouse keeper, from whom we obtained much information of damage that had occurred in previous years. Apparently it had been much more widespread over the moor during 1986 and 1987 when much of the bilberry had been completely destroyed, whereupon the larvae had turned their attention to the heather. He mentioned that he thought the larvae had attacked the bases of the bilberry shoots when the leaves had all been used up. The damaged bilberry shoots were searched for larvae, but none were found. The presence of the remains of silken cocoons in the terminal dead leaves indicated that larvae had been there but the moths had already emerged.

I knew that a student, Miss Carole Fielding in the Department of Biological Sciences at Durham University, was at that time working on the nutritional properties of *Calluna* with respect to moth larvae. I contacted her supervisor, Dr J. Coulson, and it was arranged for her to provide some assistance and in exchange to open up another area for her to investigate.

18-7-1989. With Carole Fielding the grouse moor was visited again, but without the Land Rover. The car was left near the old mine workings at the foot of Harnisha Hill and we climbed up to the shooting lodge. On the way up the hill, moths were found in abundance as soon as we encountered patches of bilberry. In the lower altitude stretches all the specimens examined were found to be *Rhopobota naevana* Hb. Just below the shooting lodge at about 450 metres, the specimens suddenly changed to *Olethreutes palustrana* Lien. & Zeil. The *R. naevana* were encountered only rarely at the ratio of about one *naevana* to 30 *palustrana*. This made me think that the extensive damage to the bilberry at the high altitude stretches could be due to *Olethreutes palustrana*. No further visits were made in 1989, since it was decided that the most important part of the investigation would be to look at the early stages of bilberry damage and it was now too late for that.

During the winter much searching of the literature resulted in finding that *O. palustrana* was said to feed on moss. We had already become convinced that this species was the culprit causing the damage to the bilberry and heather on Harnisha Hill. This did not square with the life history account in Bradley, Tremewan & Smith (1979). Could these findings be incorrect or could the larvae also survive on bilberry and heather under certain conditions of which we were unaware? This was the problem we had to solve.

26.4.1990. We made our first visit of the year to the Harnisha Hill site with the help of the University Land Rover. No larvae were found on either bilberry or heather, neither of which were in full leaf at that date. Patches of moss growing on the barer parts of the moor were then examined, and right away larvae were indeed found. There were several species of mossy mounds on the moor but larvae were present only on a single species, *Dicranum scoparium*. The larvae were in practically every stage of development from second instar to almost full grown, indicating a long period of emergence of the imago. The larvae agreed with the description in Bradley, Tremewan & Smith (1979), although more uniformly grey-black than brown-black in colour as described by them.

Several handfuls of *Dicranum scoparium* and other mosses were collected for further examination. The larvae were present in large numbers, feeding on the moss stems in a silken gallery with head-end upwards, the rest of the caterpillar parallel to the moss stems, two or three of which were spun together to form the tube. When disturbed they wriggled about vigorously in the typical Tortricoid manner. Samples

were placed (1) in glass-topped tin boxes with damp moss, (2) in a brown paper bag closed by a strong elastic band, both containers being placed in my porch but shaded from direct sunlight.

9.5.1990 On our second visit of 1990, caterpillars were still feeding on *Dicranum scoparium*, but there was no sign of any connection with *Vaccinium myrtillus*, which appeared quite healthy and as yet undamaged in any way. Further samples of *Dicranum scoparium* were collected, together with sprigs of the new growth of bilberry, each with a little root attached. An experiment was set up to see if the larvae had any connection with the bilberry in their later stages of development. The moss was arranged so as to cover the base of a plastic box to about one inch in depth. The moss was first examined to make sure that it contained larvae, which were again in some numbers. Whole shoots of bilberry were stood in the moss so that the rooted part was immersed to the full depth of one inch. Two boxes were so arranged.

6.6.1990 Six specimens of *Olethreutes palustrana* hatched in the glass-topped tin boxes set up from the 26.4.1990 collection and ten in the plastic bag. Further moths continued to emerge from 7.6.90 to 10.7.90.

10.7.1990. Ten moths hatched in the experimental plastic boxes containing the material from the 9.5.90 collection. There was no evidence of any connection between the larvae or the pupae and the bilberry twigs or between moths and bilberry. The twigs remained completely undamaged and apparently quite healthy. This remained the position during succeeding days as further moths appeared. At this time *O. palustrana* also continued to emerge from the material collected on 26 April, a total of some 58 moths over a period of about ten weeks.

13.6.1990. On the third visit to Harnisha Hill, *O. palustrana* was now in full flight but not in the huge numbers seen during the previous year. The bilberry shoots were now showing signs of damage, with spun-up tips containing small grey-green larvae with black heads, black prothoracic plates and anal plates mottled with black. The terminal leaves of the bilberry shoots were now brown and withering as Lindsay Waddell had described during the original infestation in 1986. Several shoots were collected and placed in glass-topped tins then put in the porch as for *O. palustrana*.

5.7.1990. Five specimens of a dark form of *Rhopobota naevana* Hb. emerged from the Harnisha Hill bilberry shoots collected on 13.6.90.

9.7.1990. Three more *R. naevana* emerged from the bilberry and there were several more on subsequent days during early July. One further visit to the site was made by myself in July 1990. I found nothing conditions exactly as we had seen in July 1989, with both *O. palustrana* and *R. naevana* in some numbers and the usual damage to the bilberry but none to the heather.

Discussion

The results in 1990 combined with those of 1989 indicated that we had been mistaken in thinking that *O. palustrana* was the pest species damaging the bilberry and heather on Harnisha Hill, but that the culprit was *Rhopobota naevana*. This species is a well-known pest of bilberry which is found at various stations in VC66 and is especially abundant on Waldridge Fell. It has not, however been recorded on *Calluna vulgaris*, although it has been noted on *Erica carnea* on the continent (Bradley, Tremewan & Smith). Its numbers vary from one year to the next depending upon

weather and parasites. The lack of any evidence of its feeding on heather in 1989 and 1990 showed that this was an unusual occurrence which had no permanence. The heather damage on Harnisha Hill in the mid-1980s was probably the result of an overflow from the bilberry, its preferred foodplant, during a phase of unusual abundance. If sufficient bilberry is always present the moth will always feed on this and leave the heather alone.

Although the whole exercise disproved our original hypothesis that the pest species was *Olethreutes palustrana*, it did at least result in the rediscovery of this species in VC66 and bring me in contact with a species I had not met with before.

I must thank Ian Findlay, Lindsay Waddell and Carole Fielding for their help with transport and access arrangements in facilitating visits to Harnisha Hill, and Bob Harris for companionship on most of the visits. I must also mention Ted Hancock for confirming the identity of *O. palustrana* by carrying out the preparation and examination of the genitalia, and lastly Doug McCutcheon for identifying the *Dicranum scoparium*.

References

Bradley, J. D., Tremewan, W. G. & Smith, A., 1979 *British Tortricoid Moths: Olethreutinae*. Ray Society.

Robson, J. E., 1905. A Catalogue of the Lepidoptera of Northumberland and Durham and Newcastle upon Tyne. *Transaction of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne*. 15(1), pp. 48 and 99.

THE SMALL SKIPPER *Thymelicus sylvestris* Poda THRIVING NEAR SPENNYMOOR, COUNTY DURHAM. A NEW RECORD FOR THE VC66 LIST

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The Small Skipper is a common butterfly in rough grasslands over much of southern England, the Midlands and in Wales. Although at least one popular book on butterflies (Thomas, 1986) states that the Small Skipper is absent from Northern England there are a few well-known locations in the North-East, in County Durham. Thus, for example, the butterfly is common in the Low Barns Nature Reserve, Wittonle-Wear, where it was first discovered by R. L. Quigley in August 1985 (Dunn and Parrack, 1986). It has also been noted on grass verges near Crook (Cook, 1990) and recorded at the Rockwell Reserve and New House Farm, Heighington in the South of the County (*The Vasculum* 1990, 75(1), p. 7). Additional sites have undoubtedly gone unrecognised or unrecorded.

I was surprised and delighted to discover a hitherto unrecorded colony of the Small Skipper near Spennymoor, County Durham on 24 July 1990. The main location extended from the car park at the beginning of the Auckland Walk (NZ245338) and then along both sides of the footpath on the course of the old dismantled railway, to Bishop's Cottages (NZ240337).

In the areas of rough grassland there were numerous wild flowers and several types of grasses, including Yorkshire Fog (*Holcus lanatus*). Between 11.30 a.m. and 12.15 p.m. I noted some 25-30 male and female Small Skippers. Favourite food plants included Tufted Vetch, Red Clover, Bird's-Foot Trefoil and Thistles. A second visit later the same day between 4.15 p.m. and 5.30 p.m. revealed 17 male and female Small Skippers. A further Small Skipper was noted, apparently isolated, on the pathside

400 metres beyond Bishop's Cottages (NZ236336) where there was a local more open area by a stile, opposite a seat.

Shortly after my visit I notified Tom Dunn of this new location, and it is interesting to note that in his letter of acknowledgement (15 August 1990) he refers to the fact that he had previously come across three Small Skippers at the Bishop Auckland end of the rail track beside Coundon Station building in 1989. This is about 5.5 km from the locality I examined. He suggested that the whole length of the railway track would become colonised over the next few years.

I revisited the Spennymoor locality this year on 2 August 1991 to check on the persistence and size of the colony, to follow its possible extent a little further along the disused railway path and to note the various foodplants utilised. Walking the 2.2 km from the car park at the beginning of the Auckland Walk near Spennymoor (NZ245338) to Byers Green Car Park and Picnic Site (NZ227327) between 1.25 a.m. and 12 noon I encountered 126 male and female Small Skippers. The most favourable locations were in the open grasslands at the beginning and the end of the walk, where 69 and 34 were seen respectively. In the intervening section, where the path was narrow and encroached-upon by young silver birch, oaks and gorse, only one was seen, near Bishop's Cottages. In localised open areas from 6—9 were seen, six near the stile and seat 400 m. from Bishop's Cottages (NZ236336), seven near Old Park terrace (NZ230334) and nine in the larger triangular open grass space beyond (NZ228333). Presumably the butterflies have spread along the route of the disused railway and colonised the more favourable areas described.

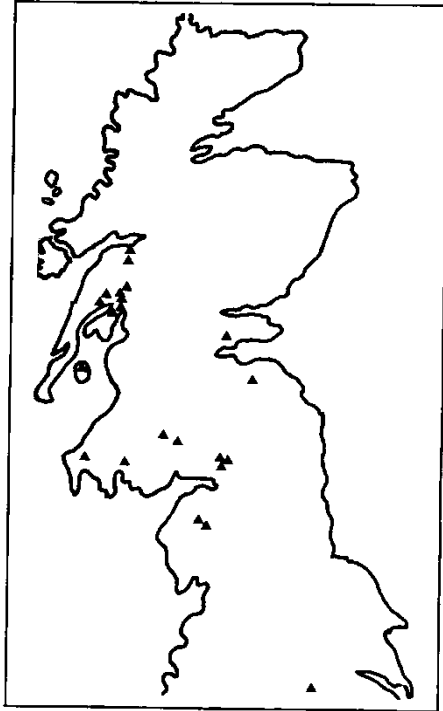
Between 12.30 p.m. and 2.30 p.m. I noted several female Small Skippers alighting on grass stems and walking up and down or revolving round the stems in characteristic fashion to locate the grass sheath for ovipositing. Ova were identified in several grass sheaths. Ovipositing females were particularly active in the tall grasses of the car park roadside (NZ245338) where fortunately only about one metre of the verge had been trimmed by the local authority. Although butterflies were most active in sunshine, some continued to fly when the sun clouded over.

Small Skippers were seen feeding particularly on Red Clover (*Trifolium pratense*), Bird's-foot Trefoil (*Lotus corniculatus*), Tufted Vetch (*Vicia cracca*), Thistles (*Cirsium* spp.) and Knapweed (*Centaurea nigra*), and less frequently on White Clover (*Trifolium repens*), Meadow Vetchling (*Lathyrus pratensis*), Hop Trefoil (*Trifolium campestre*) and Wild Mignonette (*Reseda lutea*).

Clearly the Small Skipper is flourishing where there is rough grassland to the sides of this particular stretch of the dismantled old railway, and is as successful here as it is at the Witton-le-Wear Nature Reserve. The old track is an excellent site for other butterflies, and I listed the following six additional species on my several visits: Large White (*Pieris brassicae*), Small White (*Pieris rapae*), Green-Veined White (*Pieris napi*), Meadow Brown (*Maniola jurtina*), Common Blue (*Polyommatus icarus*) and Small Tortoiseshell (*Aglais urticae*).

References

- Cook, N. J., 1990. *An Atlas of the Butterflies of Northumberland and Durham*. (Hancock Museum, Newcastle upon Tyne). p. 14.
Dunn, T. C. and Parrack, J. D. 1986. *The Moths and Butterflies of Northumberland and Durham. Part 1: Macrolepidoptera. (The Vasculum — Supplement No. 2)*. (The Northern Naturalists Union), p. 1
Thomas, J. A., 1986. *RSNC Guide to Butterflies of the British Isles*. (Newnes, Twickenham), p. 43.



*Fig 1. Northern Records of group dying 1936 -58, after Murray & Young (1961)
Sites approximate*



Fig. 2. Northern Records of group dying 1959- 89, from records of F. C. Research Station, Roslin. Sites approximate.

NOTES ON *RHIZINA UNDULATA* FR. IN NORTHERN BRITAIN

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SUMMARY

Frequent assumptions in the literature that *Rhizina undulata* Fr. is a common fungus and that it is in decline owing to changes in forest management are queried. Some Yorkshire records are examined and Forestry Commission data on outbreaks of "group dying of conifers", caused by *Rhizina undulata*, in Northern Britain over a fifty-four year period are analysed.

INTRODUCTION

Rhizina undulata Fr. (Ascomycotina: Pezizales) is an easily identified fungus, well known for its capacity to kill conifers by attacking their roots (Murray & Young 1961; Jalaluddin 1967). It develops on and around the sites of fires where spores in the surface soil have been subjected to temperatures of 30-45°C. It subsequently produces apothecia (disc-shaped fruit bodies) attached to the ground by rhizoids. Mycelia that reach the roots of living, or recently felled, trees spread via the bark to roots of adjacent trees which are eventually killed over an area of up to 0.1 ha. during a period of up to seven years. This is the phenomenon known as "group dying". Initial tree deaths may subsequently be increased by wind-blow, and in plantations considerable commercial losses may follow. Such losses have stimulated field and laboratory studies so that the life-history of the fungus is well known and understood.

Rhizina undulata is known to attack conifers in a range of genera but Sitka Spruce, *Picea stichensis*, is particularly susceptible. Hardwood trees seem to be immune and even conifers are not attacked if the soil is alkaline (Jalaluddin 1967a). Today, incidence of the disease is generally believed to be much lower than in the past because the lighting of fires by forestry workers to prepare snacks and meals has long been discouraged. (*R. undulata* was formerly known as "the tea-break fungus" because of its appearance on such sites). It is known that the fungus rarely survives for longer than two years on roots of felled or dead trees so that, if replanting is delayed for such a period, even on sites where the fungus has fruited, there is little danger of the young trees becoming infected. Moreover, as modern forestry practice is now also discouraging the burning of lop and top, the incidence of group dying is expected to decline still further and the fungus encountered less frequently.

A COUNTY DURHAM RECORD

Despite a particular interest in fire-site fungi, the author had never encountered *R. undulata* until notified of fruit bodies in Hamsterley Forest, Co. Durham in late October 1989. An examination of county records revealed only two other sightings this century. Moreover, Mr. G. Simpson, the finder of the Hamsterley fruit-bodies, a Forestry Commission Officer of many years' field experience and a keen amateur naturalist, had not seen this fungus since 1966 whilst working in Yorkshire.

RHIZINA UNDULATA IN YORKSHIRE

Massee & Crossland (1905) give single specific records made during a comparatively short period from all Yorkshire vice-counties except VC61. The listing, therefore of records from all vice-counties except VC65 by Mason & Grainer (1937) would appear to be an error perpetuated in Bramley (1985). Otherwise Bramley

merely describes *R. undulata* as "occasional in occurrence", suggesting, as indicated in the introduction to this flora, that its compilers had more than five records from post-1937.

Only two modern records of group dying in Yorkshire have been found, not surprisingly since this phenomenon has a westerly distribution, *Picea stichensis* being more frequently planted in wetter areas. Murray and Young (1961) give one record from the Bradfield Estate where Sitka Spruce trees planted in 1922 were observed to be under attack in 1954. The second record, made and communicated to the author by Mr. G. Simpson, is from Flainsey Rigg, Dalby Forest in VC62 where, on 2 November 1965, *R. undulata* was observed to be killing young transplants of Lodgepole Pine, *Pinus contorta*. This record is of some significance since, according to Ms. G. A. MacAskill of the Forestry Commission Northern Research Station, Roslin, (pers. comm.) it is unique in the station's records as a case of transplants' being under attack.

As Yorkshire records of *R. undulata* occurring **without** the observed development of group dying would be difficult to extract from the proceedings, transactions and minutes of the county's many flourishing Natural History Societies, it was decided to concentrate on one area — around Scarborough — where mycological records are known to have been kept with a degree of consistency for the last fifty years. Mr. C. Stephenson of Scarborough has provided no fewer than ten such records, five from 1945-53 and five from 1975-87. It would, of course, be unwise to extrapolate from such a heavily-afforested area to the rest of the county but there seems some justification for the comment of a former Scarborough recorder (F. C. Rimington in Scarborough F. N. S. records, 1953) that *Rhizina inflata* (= *R. undulata*) is "locally common" there. Mr. Stephenson also reports (pers. comm.) that the later records are all from clear-felled areas replanted after about six months with conifers. Presumably the local soils are sufficiently alkaline to prevent the subsequent development of group dying. So long as such practices continue, there seems little likelihood of *R. undulata* becoming extinct in Yorkshire.

GROUP DYING IN NORTHERN BRITAIN

The Forestry Commission booklet. Forest Record No. 46 (Murray & Young 1961) lists twenty-two records of group dying in its northern area (defined as north of a line from Humber to Mersey) between 1936 and 1958 (fig. 1). Subsequent records kindly provided by the commission's Northern Research Station, Roslin, for the years 1959-89, amount to only nine (Fig. 2). These rather sparse records should be regarded with circumspection for a number of reasons. For example, there is no evidence that all observed cases were actually reported as the figures cover private estates as well as the Commission's own lands. Secondly, the total planted areas for the two periods no doubt differ in size and in distribution of species. Finally, management practice has no doubt altered in a somewhat piecemeal manner in time and across the region. However, an analysis of the bald figures indicates a probability of less than one in a thousand that the apparent decline in incidence since 1962 has been due to chance alone ($\sigma = \text{less than } 0.001$). In particular it should be noted that, in the formerly heavily infected area to the west and north of the Argyll Forest Park, the disease appears to have been successfully kept at bay in recent years. There seems to have been less success in Dumfries and Galloway and in Cumbria and the single instance in Yorkshire appears to be an isolated case.

CONCLUSIONS

It is generally assumed that *R. undulata* must have evolved in association with the random outbreak of forest fires though this author has been unable to discover any record of the development of group dying subsequent to such an outbreak. The survival strategy involved does not appear essential to the survival of the fungus itself although it is not known how long airborne spores may survive once they come to rest in a substratum suitable for the growth of apothecia. In a highly-managed environment the survival of the *R. undulata* has become much more dependent on the fire-lighting activities of man. It appears never to have been common and the evidence given in this paper suggests that it is now frequent only where, for whatever reason, fire-lighting in forestry areas is still commonly practised. The associated phenomenon of group dying of conifers does appear to be in decline in northern parts of this country following dissemination in the 1960's of information about how its development may be prevented. Nevertheless it may be significant that of nine recorded post-1964 cases, five date from the last ten years [1982(3) and 1989(2)]

ACKNOWLEDGEMENTS

The author is indebted to Ms. G. A. MacAskill, Mr. G. Simpson and Mr. C. Stephenson for information used in this article and to Mr. A. Dowson for statistical analysis.

REFERENCES

- Bramley, W. G. (1985) *A Fungus Flora of Yorkshire 1985* Y.N.U. Leeds.
Cooke, R. (1981) *Fungi*. Collins, London.
Jaleluddin, M. (1967a). Studies on *Rhizina undulata*. I Mycelial growth and ascospore germination. *Tran. Br. Mycol. Soc.*, 50,449-59.
Jaleluddin, M. (1967b). Studies on *Rhizina undulata*. II Observations and experiments in East Anglian plantations. *Trans. Br. Mycol. Soc.*, 50,461-72.
Mason, F. A. & Grainger, J. (1937). *A Census Catalogue of Yorkshire Fungi*. Hull.
Masse, G. & Crossland, C. (1905). *The Fungus Flora of Yorkshire*, Hull. Murray,
J. S. & Young, C. W. T. (1961). *Group Dying of Conifers*, Forest Rec., no. 46, 19 pp. London.

AIR POLLUTION IN HARTLEPOOL

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About two years ago a quick survey of Hartlepool was made to look at the spread of *Rhytisma acerinum* (Tar Spot) on *Acer pseudoplatanus* (Sycamore) in the town. It became apparent during the survey that the disease could be seen on trees throughout the town. A previous survey carried out several years earlier had shown the disease to be on the perimeter of the built-up area but not in the town itself. This increase was attributed to improvements in the quality of the air. There are obviously other factors involved in this increase but these notes cover the great efforts made in Hartlepool to control air pollution, especially that produced by domestic coal.

There are many elements released during the burning of coal and one of the worst is Sulphur, which is produced in several forms. The nature and types of bi-product produced depend on the type of coal and burners involved. Soft coal in an old fashioned grate usually produces carbon dioxide, water, sulphur dioxide and sulphur trioxide.

Sulphur has been used as a fungicide for centuries. Dioscorides in the first century AD used it in dermatological preparations. In recent times William Forsyth, gardener to King George III, introduced lime sulphur for the control of peach mildew. In 1834 T. A. Knight reported the control of peach leaf curl (*Taphrina deformans*) and red spider mites on peach by sprinkling the trees in early summer with water holding a solution or suspension of a mixture of lime and flowers of sulphur. Sulphur fungicides are valuable for the control of powdery mildews and leaf moulds. The finer the particles of sulphur the more effective it is as a fungicide and the better it adheres to the plant. Several forms are used: flowers of sulphur (obtained from sublimation of ordinary ground sulphur), green sulphur (obtained from coal gas purification), and precipitated sulphurs.

The acidity of the soil is increased by sulphur dioxide. This is caused by the formation of the sulphurous acid and by the oxidation to sulphuric acid. This increases mineral losses by leaching, notably of calcium. This inhibits bacterial nitrification. Horticulturalists have used sulphur to produce a lower pH in the soil in order to grow calcifuge (lime-avoiding) species. The amount required depends on the reduction needed, the soil texture and the presence of free lime in the soil.

Lichens were used as the first indicators of atmospheric pollution but there are several fungal diseases that can serve the same purpose. Black spot on roses (*Diplocarpon rosae*) has increased as a result of legislation used to control air pollution. Interestingly, gardeners wrote to the local paper at Hartlepool protesting at the Clean Air Act because they were experiencing an increase in black spot on roses as well as greenfly. Sulphur is recommended as an acaricide, as well as a fungicide, against a wide range of fungi such as powdery mildews and rusts. Looking around the town there is a great deal of black spot, not only on cultivated roses but also on the wild species. There has been a visibly increase in the occurrence of powdery mildew on rose (*Sphaerotheca pannosa*) and powdery mildew on hawthorn (*Podosphaera oxyacanthae*). *Erisiphe graminis* on grass was also noted. There was a great deal of peach leaf curl (*Taphrina deformans*) on trees in the town. Rust on groundsel (*Puccinia lagenophroae* on *Senecio vulgaris*) is abundant as is albugo on Shepherds Purse (*Capsella bursapastoris*). In the last few years Oak mildew (*Microsphaera alphitoides*) has been recorded in the town. Although care must be taken here as the disease was first noted in Britain after 1908.

APPENDIX A

On a local level there has been a great effort to reduce the problems of air pollution. In November 1874 the County Court heard a case, brought by John and Andrew Shotton of Carr House Farm, against the local iron company, for damages to crops and tillage by smoke from the works. About four acres of crops were affected. The judgement was in favour of the plaintiffs and costs were awarded.

Under the Public Health Acts the local authority could issue notices and take legal procedures against offenders. In September 1890 the Improvement Commission heard complaints about dense black clouds of smoke being produced by a paper works in the town. It was reported that better stoking could reduce the amount of smoke produced. It was resolved that a public notice should be served to reduce this smoke problem.

In April 1932 the Medical Officer of Health submitted details to the authority of damage to crops and livestock caused by smoke and grass from a local cement works, and all steps were taken to resolve the problem. It is now known that black smoke and the numerous chemicals released through poor burning can cause serious problems.

In 1850, there were great fears over the damage to buildings from air pollution. Today it is known these can either have a direct or an indirect cost. Direct costs include cleaning, corrosion damage, extra lighting and medical factors whilst indirect costs include damage to soil crops, effects on animals, interference with transport and reduced human effectiveness due to illness. Smoke affects health, winter visibility and allows more sunshine to reach the ground. In 1953 the Beaver Committee, in their interim report on Air Pollution, published a map containing 294 'Black Areas' including Hartlepoons, where pollution was considered a great problem. The first smoke control order was made in 1962 and in December of that year a public enquiry held over it. The Minister of Housing and Local Government confirmed the order in April 1963. The second smoke control order was made in 1965.

In 1955 the Hartlepoons were described as having black and oily smoke pouring from every nook and cranny. The amount of solids deposited throughout the town varied, at one time there were over 31 tons recorded in a month. In Hartlepool the following grim statistics were recorded: 2,100 tons of dirt and dust settled every year (piled on the area of a tennis court this would measure 13.5 ft. high). This was calculated as about 4 cwt. on the average house and garden. One year, 300 tons of soot were deposited over a square mile, and at one time, 15 cwt. of soot, sulphur, ash and grit fell on the town every three hours! Hartlepool was the third major urban area in the north to complete its smoke control programme in 1982. It now has a level of 20 microgrammes/m³ a day compared to an average of 295 in 1963 and is striving for a still lower figure.

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BY THE WAY

Secretaries of societies and other contributors to the Vasculum should send their notes to the Editors before 15th March 1992.

CONFUSING STATEMENTS

Most naturalists and conservationists will have welcomed the introduction of planning legislation in recent years to allow for the completion of an Environmental Impact Statement (leading to an Environmental Impact Assessment) in advance of potentially damaging actions. It seems however that the value of such controls is in danger of being eroded by the quality of the statements themselves.

Despite the criteria laid down by law, it seems possible that a statement can be produced by almost anyone on the basis of a single visit to a site. As a result, the ecological component of such statements is often a list of vascular plants, and even this may be compiled out of season. Such lists are useful, but they hardly tell the whole story. It is now possible to establish the importance of other ecological indicators (for instance aquatic and terrestrial ooleoptera), and the 'quality' of a site as measured by invertebrate indicators is not necessarily related to its botanical interest.

If the ecological elements of Environmental Impact Assessments are to mean anything, there must be consideration of a wider range of factors and a commitment to study a site to an acceptable standard. This will inevitably slow the process of consultation and result in greater costs to developers. It is however a price that must be paid if the system is to be effective in controlling inappropriate developments rather than a hollow exercise to enable developers to salve their consciences. This problem has recently been addressed by a team of consultants and their report is now with the Department of the Environment.

NNU Members are reminded that subscriptions are now due for 1992. A reply slip is enclosed with this issue of the Vasculum.

FORTHCOMING EVENTS

The following summer events were provisionally agreed at a recent NNU council meeting. Further details will be available with the April Vasculum:

Sat. 30 May DEVILS WATER nr WHITLEY CHAPEL

Sat. 20 June PITTINGTON HILL

Sat. 18 July CHOPWELLWOOD

Sat. 5 September FORD MOSS

OBITUARY: Dr. Richard Wilson

On 4 August the NNU lost one of its most active botanists when Dick Wilson died suddenly, and tragically, of a heart attack, whilst doing what he loved best, walking his dog and botanising in the north Durham countryside.

Dick had been Associate Specialist at Shotley Bridge Hospital, where he had worked since 1953. His retirement in 1985, allowed the pursuit of his passion for natural history a passion that had been awakened early in life, as evidenced by the detailed observations in his school notebooks. His meticulous note-taking continued right up to his death, whilst the quality of his herbarium specimens, such as the rare *Potentilla anglica* that he found and identified at Strother Wood in 1988, was exceptional. Dick did not however confine himself to seeking out the rare and wonderful. With equal vigour, he sought to complete the botanical record for the Lancheater area by locating common species that had escaped recording in time for the publication of Gordon Graham's Flora and Vegetation of Co. Durham'.

As a committed conservationist, Dick would not suffer fools, and was quick to take up his pen to protest when the need arose, despite this he was a gentle and mild-mannered person. He will be sadly missed by all who knew him and our sympathies go to his sisters Tessa and Annette.

Lance Moore and Alee Coles

THE SOCIETIES

THE NORTHERN NATURALISTS' UNION

1991 saw a full programme of field meetings. Brief details for the first of these appear in this issue of the Vasculum. The remainder will appear in subsequent issues. The meetings were notable for the large numbers attending. Our field secretary, Lance Moore is to be congratulated on the excellent programme and the way in which it is administered. It is particularly pleasing to see the mix of young families and experienced naturalists exchanging observations and knowledge.

The 24th Heslop-Harrison memorial lecture was held at Darlington in honour of the centenary of the Darlington and Teesdale Naturalists' field club. Professor Peter Evans spoke to a large audience on 'Bird Migration through Teesmouth.' In lieu of his fee, Professor Evans asked if a donation could be made to the Durham Wildlife Trust and the NNU was happy to oblige.

DARLINGTON AND TEESDALE NATURALISTS' FIELD CLUB-THE FIRST 100 YEARS

The first meeting of the Darlington and Teesdale Naturalists' Field Club was held on the 29 April 1891. It had been called by Dr Richard Taylor Manson for those interested in the natural history of the district. A motion was put to the meeting that the objects of the club were to be "the study of the natural history of the district, compiling a catalogue of the recent and fossil fauna and flora of the same and the procuring and arrangement of specimens of local natural history". The subscription was fixed at 5/-, and there were twenty two founder members. The second meeting was held five weeks later when seven new members were welcomed. Dr Manson proposed that the Mechanics Institute be asked to provide a suitable room for the

use of the Club. The Institute offered a room for the rent of 2/- a night, with a minimum charge of £5 a year. This charge allowed for fifty meetings annually, so it was decided to hold weekly meetings on Tuesday evenings, a tradition that continues today. During the first year excursions were made to Thickley Quarry near Shildon, Hell Kettles and Stapleton. A Butterfly Orchid was found near Neasham and Grass of Parnassus at Redcar Field. In 1892 the formal evening lectures were started. The first was given by Mr W. Stock and entitled "The Lithology and Chemistry of the Rock Well". This area is now known as Rockwell Pastures and is a local nature reserve often visited by present day Field Club members. Shooting specimens was quite acceptable one hundred years ago and Mr Geldard exhibited a white starling that had been shot at Fighting Cocks [sic], a spotted crane and water rail from Haughton-le-Skerne and a ring ousel from Great Ayton. In 1910 it was decided to allow ladies to join. They were to pay an annual subscription of 2/6d, the same as juniors. At the next meeting about twelve ladies were in attendance, "adding to the interest of the proceedings"! At the A.G.M. of 1914 Mr V.R. Wooler presented the club with a silver whistle and chain for the use of the president on excursions. Present day presidents hold the post for one year, and each year the whistle and chain are handed over by the outgoing president to the new incumbent. In 1896 a considerable number of members visited the River Tees between Middleton and High Force. The day ended with a meat tea being taken at the High Force Hotel. On Sunday 9 June 1991 Prof. David Bellamy led a party to Upper Teesdale, the outing ending with High Tea being taken at the same hotel. The Field Club has a long association with the Northern Naturalists' Union. In 1991 the Field Club had the honour of hosting the Heslop-Harrison Memorial Lecture where a large audience heard a very interesting lecture on bird migration given by Prof. Peter Evans. Old records and photographs of the Field Club were on show, and these aroused a great deal of interest. Other special events during 1991 included a centenary dinner at the King's Head, and on this occasion Brian Walker was the after dinner speaker. The last event of the centenary year again involved David Bellamy, which was held in the Liddiard Theatre of Polam Hall. The large audience heard of environmental problems from Britain to Australia. Field Club members have produced a booklet about the Field Club, which is available for £4.00 (inclusive of postage and packing) from Mrs P. Hornsey, 27 Abbey Road, Darlington.

C.L. Evans

The editors would like to congratulate the DTNFC on their centenary, and on their continuing achievements. The Club is an example to any local natural history society through the strength and breadth of its membership, through its impressive events programme, and through the quality of its officers. May the next 100 years be just as successful!

NOTES AND RECORDS

NOTES

Red Data Book for British Invertebrates Invertebrates tend to be the Cinderellas of the animal kingdom when it comes to conservation. To bring their existence to the attention of planners and conservationists as well as to serve the needs of those people interested in invertebrates, information about the rarest species has been brought together and published in the form of Red Data Books. The volume covering the Insects was published in 1987 and a volume covering other invertebrates in the main, molluscs and spiders has recently been published (Bratton, J.H., (ed.) 1991. *British Red Data Books: 3, invertebrates other than Insects*, pp. 252). Of local interest is an account, on page 68, of *Vertigo genesii*. Yet another of the "glacial relicts" of Upper Teesdale, this snail is now only found in Britain on Widdycroft Fell. There are subfossil remains that show that it was once widespread in lowland Britain, but that it rapidly became extinct there during the early postglacial period. On the continent it is virtually restricted to the Alps and the mountains of central Scandinavia.

The existence of *V. genesii* at Upper Teesdale was recognised only about ten years ago, about two hundred years after the area was first discovered by botanists. This is both disappointing and encouraging: disappointing because of the neglect that has been shown to some elements of our fauna, encouraging because of the hope of further interesting discoveries to come. LJ

RIGS Geologists unite! RIGS is the acronym for the rather clumsily named Regionally Important Geological/Geomorphological Sites. This is a scheme initiated by English Nature to provide a level of protection for geological sites that are not Sites of Special Scientific interest, but are of value particularly from an educational point of view.

RIGS groups have been established in many counties of the British Isles, often attached to wildlife trusts. Geologists from all over the North East have recently met with representatives from the wildlife trusts, planning authorities and English Nature with a view to establishing a RIGS group, or groups for this part of the country.

The aim is to advise English Nature on which sites are worthy of RIGS status, maintain site documentation for these sites, and ensure they are managed and marketed for safe educational use. Anyone requiring further information, or wishing to join the group, should contact Steve McLean at Sunderdiand Museum, or Andy Newman at the Hancock Museum.

Steve McLean

Butterfly Conservation Butterfly Conservation is the new, snappy, name of the British Butterfly Conservation Society. One of the fastest-growing conservation bodies in Britain, it is keen to expand further by establishing new regional groups.

One of your editors (LJ) attended the inaugural meeting of the northern group in Durham on the 9th November, where a keen audience was treated to two talks: first Sam Ellis described his research on the inland colonies of the Northern Brown Argus (recently published in *The Vasculum*) and secondly Nick Cook gave a lightning tour of the northern butterflies with the aid of his marvellously high-quality slides.

Two members of the senior management of Butterfly Conservation were present at the meeting. They gave the impression of being a very professional team (indeed one is a management consultant), with their talk of "bottom up organisations" and "planned growth". At the same time they obviously have a tremendous devotion to butterflies. In introducing their society they pointed out that the organisation is a specialist one for promoting the protection of both butterflies and their habitats. They are very much aware of the strengths of existing societies and trusts and have no intention of poaching on their territory.

At the inaugural meeting volunteers were sought to act as a nucleus of the northern group, and I saw several names being jotted down. The group covers Cumbria as well as the North East, but it is hoped that as the organisation grows more groups will develop covering smaller areas.

LJ

Red Alert! Red Alert! is the Campaign to save our native Red Squirrels in the Northumbria region. Funded by the Northern Rock Building Society, the Campaign is a partnership between the wildlife trusts of Cleveland, Durham and Northumberland, Museums North and the University of Newcastle-upon-Tyne. NNU members will have read my appeal for squirrel records (*Vasculum* vol. 76 part 1) as part of an initial survey carried out in 1990-91. This survey attracted over 1000 records, mainly from woodland owners, and enabled the baseline distributions of red and grey squirrels to be set.

Red Alert! is calling on the general public to help fill in the gaps in our knowledge, and to take red squirrels to their hearts. Recording packs, including full colour posters and activity sheets are available from the three wildlife trusts and from natural history museums in the north east.

In addition, Peter Lurz, a post-graduate zoology student at the University of Newcastle-upon-Tyne, is studying the habitat requirements and preferences of the two species in the region, in particular the effects of different exotic conifer species on red squirrels.

Red Alert! will promote interest in one of the North East's most attractive mammals, and will hopefully give dues to how woodland management can tip the balance back in favour of reds.

The Campaign was launched on October 21, at Blagdon, the home of the Rt. Hon. the Viscount Ridley. This was particularly appropriate as noone has done more to bring together the parties interested in squirrel distribution and ecology in the North East than Lord Ridley himself.

AC

Short-cloaked moth found in Washington The Short-cloaked moth (*Nola cuculatella*) reaches the most northerly extent of its British distribution in North-east England. Although not uncommon as far north as Yorkshire, in Durham it is known only from Darlington and Sacriston, and in Northumberland there are only old (1890's) records from Meldon Park (see Dunn & Parrack's *Moths and Butterflies*)

Two adults of this moth were attracted to a light trap at the Washington Wildfowl and Wetlands Centre (NZ3356) during the night of the 22-23 July 1991. They were identified by A. Donnison and L. Jessop, and later released. Two further adults were collected on the 26th July. This is the most northerly modern British record of this species, although, as Robson suggested, it "may very easily be overlooked, especially by those who do not collect micros".

LJ

An unusual fungus from Cumbria During a visit to Cumbria at the end of May 1991, my attention was caught by numerous small brown discs of an unfamiliar cup fungus on dead stems of what was later identified as a shrubby variety of *Spiraea* in the garden of our hired cottage at Thackthwaite (VC70: NY422254). Dr T. Laessoe of Kew has since identified the fungus as *Godronia spiraea* (Rehm) Seaver). It has apparently been collected in Scotland by R.W.G. Dennis, the authority on British Ascomycetes, but has probably not previously been published as a British species.

The fungus should be looked for on *Spiraea* but is most likely to be encountered in Western districts where spreading varieties of this plant are becoming semi-naturalised

A W Legg

An irregular fungal fruiting The routine examination of a small group of fragile, tawny toadstools which appeared on my lawn in late June 1991 led to their determination as *Conocybe dunensis* T.J. Wallace and P.D. Orton. As the name implies, this species is considered to be restricted to coastal dune grassland where it is not uncommon. Why it should appear so far from its native habitat in a Darlington back garden presented a puzzle.

A solution was suggested by recollection of a visit to North Gare dunes (VC66) in late October 1990. On that occasion a length of blue plastic rope had been unearthed from a dune slack because a group of immature puffballs (*Lycoperdon* sp.) was growing on its surface, their mycelium having become entwined from below with the plastic fibres. This rope had lain on my lawn for several days awaiting maturation of the puffball fruitbodies. It seems possible that drying sand from the rope had been deposited along with spores of *C. dunensis* and that these had germinated in the temporarily favourable habitat.

Mr A. Weir of Stockton has confirmed that he has recently collected fruit-bodies of *C. dunensis* from North Gare dunes. Moreover the genus *Conocybe* consists, for the most part, of small-fruited fungi apparently adapted to an opportunistic lifestyle. They are generally characteristic of disturbed ground and pathsides where they seldom appear in the same place for more than a single season. They would appear to rely, rather like annual "weeds" "seeding themselves", on spore deposition rather than perennation of vegetative mycelium. Such generic characters would doubtless have contributed, in the past, to the speciation of *C. dunensis* in the harsh but relatively long-lasting dune habitat

Dr T. Laessoe of Kew has confirmed my determination but, because of the strange ecology, has filed the material at Kew under the name *Conocybe* cf. *dunensis* pending further investigation.

A W Legg

Wild Flowers in the 1850s A few years ago I saw a local flower show programme that listed as one of its classes "a bunch of wild flowers". Fortunately this practice has nearly died out, and it is now only seen on rare occasions. It was once a common event to have wild flower dasses in flower shows, and I have produced these notes to show how common it was in the area, and sadly some of the rarer plants that were collected. An article in the Durham Advertiser in August 1854 on the Village Flower Show, taken from the Literary Gazette states that "of wild flowers, a prize of 1/- (5p.), and four of 6d. (2.5p.) [was] offered for the five best nosegays not exceeding 18" x 12" (450 x 300 mm), prepared by children between 8 and 14 years of age, and a prize of 1/-, and two of 6d. for similar nosegays from children under 8 years of age; and three of 2/6, 2/- and 1/6 (12.5, 10 and 7.5p.) were offered to the children of the parish school who shall answer the questions about the local wild flowers. On the day the village botanists are sauntering up the long walks with the produce of their rambles". After arranging their nosegays they "stand round to receive their prizes and to be asked questions. It was announced that one little girl had added twelve new species to the [local] flora".

There were several horticultural society shows being held in the area. The Darlington Horticultural Society, the Wear Valley District Floral and Horticultural Society, the Lanchester Floral and Horticultural Society, the Tudhoe Floral and Horticultural Society and the Durham County Floral and Horticultural Society. All of these had dasses devoted to wild flowers. In 1851 the Darlington Society had a rule that the flowers were only to be collected within twenty miles of that town and were not to exceed 36 specimens. The previous year the paper listed 150 species: sadly, included in the list were *Listera ovalis*, *Epipactis latifolia* and *E. palustris*.

Species listed from the Durham show held in September 1851 included, for example, *Digitalis purpurea*, *Galeopsis versicolor* (large-flowered hemp), *Geranium pheum* (dusky crane's bill) *Myosotis palustris* (forget-me-not), *Atropa belladonna* (deadly nightshade), *Adonis autumnalis* (pheasant's eye), *Silene maritima* (sea catchfly), *Linaria vulgaris* (yellow toad flax), *Erigeron acer* (blue fleabane), *Panassia palustris* (grass of Parnassus) and *Pyrola rotundifolia* (Round-leaved wintergreen).

In June 1852 the Darlington Society requirement had been reduced to 24 specimens, and the plants also had to be named and labelled with the localities where they were found. The plants were described as a 'good collection' and although not named, there was a reference to *Cypripedium calceolus* (Cassie Eden Species) and 'other rare and beautiful British Orchids' which were in Mr P...s stand. The Durham Horticultural Society in the same year had a dried specimen of *C. calceolus* with other dried orchids. At their August show *Epipactis latifolia*, *E. palustris* and *E. grandiflora* were listed.

The wild flowers were presented in different ways. In 1852 Mr J. Wells of Gilesgate, Durham, was described as 'having the most interesting horticultural exhibit'. It was a collection of British plants which 'he searches out, collects, and arranges them in an expertly way'. He received an extra prize at the show for his arrangement. At the Darlington Show in 1852 Mr Pape won first prize with his wild flowers, including several orchids, but the winner of the second prize, Mr Allison, had also made a collection "which was interesting to the lovers of the floral gems that adorn the graves, wilds and green lanes of happy England". At the Durham show in 1851 Mr Wells had 'an interesting stand of wild flowers . . . which was commended by the judges'.

Some displays were exhibited in the form of bouquets or a nosegay of wild flowers, whilst others were included with horticultural species. At the Wear Valley show Mr H. Mitchell had the Arms of England created with wild flowers and fruits the newspaper suggested other plants should have been substituted to make a better display. The following year the same gentleman made up 'St George and the Dragon'

At the beginning of this article I mentioned children collecting and identifying flowers. I have only found the name of one child, this was Master W. George Laycock who received first prize at the Lanchester show in 1854. The reports of this show also mentioned Mr West of Gilesgate Durham, who was described as an indefatigable botanist and a persevering and untiring collector. Mr Pape, who won prizes on several occasions, was head gardener at South End, Darlington.

Stephen Robbins

**RECORDS
WHITTLE DENE**

The following species were recorded on the NNU Field Meeting to Whittle Dene on 1 June 1991. The party left Ovingham church, crossed a stretch of grassland, entered woodland, followed the Whittle Burn to a footbridge upstream of Whittle Mill, and returned along the the far bank re-crossing at the Mill. The locations given below relate to this route.

Species	Location
BRYOPHYTES	
<i>Mnium hornum</i>	In woods below mill
VASCULAR PLANTS	
<i>Dryopteris dilatata</i>	Beyond the mill
<i>Geranium sylvaticum</i>	Beyond the mill
<i>Geum urbanum</i>	In woods below the mill
<i>Geum rivale</i> x <i>urbis</i>	Beyond the mill
<i>Alchemilla xanthochlora</i>	Grassland
<i>Sanicula europaea</i>	In woods below the mill
<i>Benaria erecta</i>	In stream below the mill
<i>Vaccinium myrtillus</i>	Beyond the mill
<i>Lysimachia nemorum</i>	In woods below the mill
<i>Stachys officinalis</i>	At field edge across the bridge
<i>Teucrium scorodonia</i>	Beyond the mill
<i>Ajuga reptans</i>	In woods below the mill
<i>Petasites hybridus</i>	Beyond the mill
<i>Hyacinthoides non-scripta</i>	Beyond the mill
<i>Allium ursinum</i>	In woods below the mill
<i>Lucula sylvatica</i>	In woods below the mill
<i>Melica uniflora</i>	In woods below the mill
<i>Atopocurus pratensis</i>	At field edge across
<i>Anthoxanthum odoratum</i>	Beyond the mill
HYMENOPTERA	
<i>Bombus pascuorum</i>	At the bridge
COLEOPTERA	
<i>Pyrochroa serraticomis</i>	Beyond the mill
<i>Phyllobius pomaceus</i>	Grassland
LEPIDOPTERA	
<i>Adela reamurella</i>	
<i>Pieris brassicae</i>	
<i>Pieris rapae</i>	
<i>Pieris napi</i>	
<i>Anthocharis cardamines</i>	Grassland
<i>Lycena phlaeas</i>	
<i>Aglais urticae</i>	Grassland
<i>Lasiommata megera</i>	Grassland
<i>Eupithecia vulgata</i>	Beyond the mill
DIPTERA	
<i>Bibio marci</i>	Beyond the mill
<i>Rhagio scolopacea</i>	Grassland

<i>Empis tessellata</i>	At field edge across bridge
<i>Melanostoma scalare</i>	At the bridge
<i>Epistrophe eligans</i>	At field edge across bridge
<i>Leucozona lucorum</i>	Grassland
<i>Rhingia campestris</i>	In woods below the mill
<i>Eristalis pertinax</i>	Beyond the mill
<i>Hefophifus pendulus</i>	Beyond the mill
<i>Xylota sylvorum</i>	Beyond the mill
<i>Sarcophaga camaria</i>	At the bridge
<i>Scathophaga stercoraria</i>	Grassland

BIRDS

Bluetit	Nesting in Bridge
Chaffinch	In woods below the Mill
Chiffchaff	Grassland
Rook	Grassland.
Sparrowhawk	Grassland
Whitethroat	Beyond the Mill
Willow warbler	Grassland
Wren	Woods below the Mill

CASSOP VALE

The following plant species were recorded on the NNU Field Meeting to Cassop Vale on 6 July 1991. The party walked down into the Vale from Cassop Village, passing the species-rich grassland slope to the south. After searching the grassland the group proceeded westwards through woodland before turning north to take the path between agricultural fields and dimb up onto the 'gorsey', south facing grassland on the north side of the Vale. From here, the group returned to Cassop via improved meadows and the pond.

Species	Location
<i>Ctenidium molluscum</i>	Grassland slope
<i>Calha palustris</i>	Around the pond
<i>TroHus europaeus</i>	Grassland slope
<i>Ranunculus acris</i>	Woodland
<i>Ranunculus repens</i>	Woodland
<i>Ranunculus flammula</i>	Around the pond
<i>Ranunculus sceleratus</i>	Around the pond
<i>Cardamine amara</i>	Around the pond
<i>Matthiola longipetala ssp bicomis</i>	Grassland slope
<i>Viola tricolor</i>	Cereal field, mixed barley and wheat
<i>Polygala vulgaris</i>	Gorse field and grassland slope
<i>Hypericum perforatum</i>	Gorse field
<i>Silene vulgaris</i>	Grassland slope
<i>Cerastium glomeratum</i>	Grassland slope
<i>Chenopodium bonus-henricus</i>	Grassland slope
<i>Unum catharticum</i>	Gorse field and grassland slope
<i>Geranium pratense</i>	Grassland slope
<i>Geranium robertianum</i>	Woodland
<i>Medicago lupulina</i>	Improved grassland
<i>Melilotus officinalis</i>	Grassland slope
<i>Trifolium pratense</i>	Grassland slope
<i>Trifolium medium</i>	Around the pond
<i>Trifolium campestre</i>	Around the pond
<i>Lotus corniculatus</i>	Grassland slope
<i>Vicia cracca</i>	Improved grassland
<i>Vicia sepium</i>	Woodland

<i>Lathyrus pratensis</i>	Around the pond
<i>Lathyrus montanus</i>	Grassland slope
<i>Filipendula ulmaria</i>	On wetter ground
<i>Potentilla palustris</i>	Around the pond
<i>Potentilla erecta</i>	Grassland slope
<i>Fragaria vesca</i>	Gorse field
<i>Geum urbanum</i>	Woodland
<i>Geum rivale</i>	Woodland
<i>Geum rivale x urbanum</i>	On wetter ground
<i>Alchemilla xanthochlora</i>	Grassland slope
<i>Sanguisorba minor ssp. minor</i>	Gorse field
<i>Rosa canina</i>	Grassland slope
<i>Rosa mollis</i>	Spoil heaps
<i>Crataegus laevigata</i>	On wetter ground
<i>Hippuris vulgaris</i>	In the pond
<i>Conopodium majus</i>	Grassland slope
<i>Heracleum sphondylium</i>	On wetter ground
<i>Rumex acetosa</i>	Around the pond
<i>Corylus avellana</i>	On wetter ground
<i>Calluna vulgaris</i>	Around the pond
<i>Primula veris</i>	Grassland slope
<i>Centaurium erythraea</i>	Gorse field
<i>Myosotis palustris</i>	Around the pond
<i>Veronica beccabunga</i>	Around the pond
<i>Rhinanthus minor</i>	Around the pond
<i>Odonites verna</i>	Woodland
<i>Mentha aquatica</i>	Around the pond
<i>Thymus praecox</i>	Gorse field
<i>Stachys officinalis</i>	Gorse field and grassland slope
<i>Glechoma hederacea</i>	On wetter ground
<i>Plantago media</i>	Gorse field and grassland slope
<i>Campanula rotundifolia</i>	Around the pond
<i>Galium odoratum</i>	On wetter ground
<i>Galium palustre ssp. elongatum</i>	Around the pond
<i>Viburnum opulus</i>	Woodland
<i>Senecio ericifolius</i>	Improved grassland
<i>Matricaria matricarioides</i>	Cereaf field, mixed barley and wheat
<i>Leucanthemum vulgare</i>	Improved grassland
<i>Carduus nutans</i>	Grassland slope
<i>Cirsium palustre</i>	Around the pond
<i>Centaurea scabiosa</i>	Gorse field
<i>Leontodon taraxacoides</i>	Grassland slope
<i>Pilosella officinarum</i>	Around the pond
<i>Alisma plantago aquatica</i>	In the pond
<i>Hyacinthoides non-scripta</i>	On wetter ground
<i>Juncus bufonius</i>	Around the pond
<i>Tamus communis</i>	Gorse field and woodland
<i>Ustera ovata</i>	Grassland slope
<i>Coeloglossum viride</i>	Grassland slope
<i>Dactylorhiza fuchsii</i>	Around the pond
<i>Dactylorhiza fuchsii ssp fuchsii</i>	Around the pond
<i>Dactylorhiza purpurella</i>	Around the pond
<i>Typha latifolia</i>	Around the pond
<i>Carex caryophyllea</i>	Gorse field
<i>Dactylis glomerata</i>	On wetter ground
<i>Cynosurus cristatus</i>	Grassland slope
<i>Brieta media</i>	Grassland slope
<i>Scelerita albicans</i>	Grassland slope
<i>Phleum pratense ssp. pratense</i>	On wetter around