

THE VASCULUM

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Edited by:

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BY THE WAY

Secretaries of Societies and other contributors to the Vasculum should send their notes to the Editor before 15th June, 1987.

Please note that 1987 subscriptions were due on 1st January, 1987. The Hon. Treasurer would be grateful if you would forward the amount without further delay.

S.S.S.I.'s and I.S.R.'s

One of the early inventions of the old Nature Conservancy (now the Nature Conservancy Council), was the Site of Special Scientific Interest, S.S.S.I. for short. It is possible that most members will be aware that this was an attempt to prevent the destruction or modification of parts of our countryside that were especially rich in wildlife. It was only partially successful and many S.S.S.I.'s were destroyed by new civil engineering projects, pollution by industry and most of all by modern farming expansion. Recently the Nature Conservancy Council has been given more effective powers by the law to control this sort of vandalism. Many S.S.S.I.'s have also been acquired as nature reserves, either by N.C.C. as National Nature Reserves or by voluntary bodies like the Wildlife Trusts and sometimes by local councils as nature reserves of other designations (e.g. Local Nature Reserves, Trust Nature Reserves, etc.).

You may have wondered how a parcel of land comes to be registered as a Site of Special Scientific Interest. This has been decided by the officers of the Nature Conservancy Council after a careful survey of the site and consideration of its ecological diversity and richness of wildlife. This includes a number of criteria which have

to be satisfied before a decision is made. In the past most of these criteria were functions of the botanical structure of the site, chiefly because the plants are more constant inhabitants and their ecological affinities better known than those of the animals.

As an amateur entomologist it is many years since we first suggested to the Nature Conservancy Council that some kind of scheme for classifying sites according to the animal inhabitants should also be taken into account. Needless to say N.C.C. research workers had already reached the same conclusion and were already working on the idea. Since then the years have slipped by and now we have the fruits of all the research that has been going on. The N.C.C. has recently presented the N.N.U. with a very interesting set of eleven volumes entitled the Invertebrate Site Register for North East England. They cover Cleveland, and Tyne and Wear as well as Northumberland and Durham. Although their contents are still confidential, this is a great step forward and we take this opportunity to thank the Nature Conservancy Council for their gift. The way is now open for a more accurate assessment of sites in terms of both plants and animals. We commend the efforts of the N.C.C. in producing such a valuable piece of documentation.

REVIEWS

An Atlas of the Carabidae (Ground Beetles) of Northumberland and Durham by M. D. Eyre, M. L. Luff and S. G. Ball, ring bound in card covers published by Northumberland Biological Records Centre, 1986. Price (inc. p. & p.) £5.50 from the Hancock Museum.

This publication is No. 2 in the series of Special Publications from the Hancock Museum (No. 1 was reviewed in Vasc. Vol. 70, No. 2, July 1985). The arrangement follows that in the "Water Beetles of Northumberland and Durham" There are a few preliminary pages of introduction explaining the methods of collecting the records, the coverage attempted and abbreviations used. This is followed by 17 pages listing the species with numbers of tetrads in which they have been found pre and post-1950, and the relevant vice counties. The 114 distribution maps have been presented so as to avoid the physical discomfort of head turning from side to side that was necessary in Publication No. 1. This is a great improvement.

Finally there is an extensive bibliography and index.

The information has been very well researched and is presented clearly — a must for all coleopterists.

Provisional Keys to British Plant Galls, ed. F. B. Stubbs. Published by the British Plant Gall Society, £4.50 plus postage and packing.

The British Plant Gall Society was founded only in 1985, largely as a result of the enthusiasm and drive of one of our own members, Fred Stubbs, who has edited the many contributions to this book from the members of the society. In the early weeks of its foundation it became evident that the most urgent need of the membership was a means of naming the galls likely to be encountered during a day in the field anywhere in the British Isles. The urgency was so pressing that there has been no attempt to carry out any long series of critical researches into rare and unusual species and the "Provisional" part of the title indicates this. In such a short time the final result is to be applauded. The outlines of popular Cecidology are there and there is no doubt that it will provide a great stimulus to further work.

The galls are listed under the headings of the host plants which are arranged alphabetically. The keys are helped by little black and white sketches, which are sometimes a little too small to be perfectly clear and unambiguous. On the whole, however, they do their job.

There are mistakes, of course, one that struck us immediately being that the moth *Epiblema tetraquetrana* on page 14 became *Epinotia tetraquetrana* on page 17. The former name is non-existent. The second name is correct and should also appear on page 14. One or two other points have been avoided, such as specifically of galls to certain *Salix* species and no doubt to other closely related groups of host plants. These points presumably remain to be researched and sorted out before the definitive keys are produced. Nevertheless, this is an excellent beginning and good value for money.

THE SOCIETIES

DARLINGTON AND TEESDALE NATURALISTS' FIELD CLUB

The Annual Report for 1986 shows that the Field Club is a thriving society with much support for its many activities, the average attendance for the indoor meetings being identical to the previous year.

Archaeology. (L. Woodhouse). An apparent stone circle was discovered at the head of Arkengarthdale. The oldest railway bridge in the world at Causey Arch, was visited followed by Belsay Hall and the fourteenth century castle. Another visit was to Walworth, west of Darlington, to an extensive mediaeval village and finally a weekend at Cober Hill where the Saxon church of St. Gregory's Minster at Kirkdale was reviewed.

Botany. (P. Hannon). Eight field meetings were reported including the first to the Isle of Axhoime where several plants are at their southern limit in Britain. These included cranberry, bog rosemary and great yellow rattle. Another meeting near Scarborough included recording green hellebore and lily of the valley. Other meetings were to Causey Arch, Bollihope, a trip on the Settle to Carlisle railway, Hamsterley Forest and Holy Island. Local walks revealed a late year with "frost burn" on many conifers and evergreens.

Freshwater Life. (C. Birkbeck). An improvement in the state of the River Tees, after the pollution of 1983, was noted, including the reappearance of freshwater crayfish near Barnard Castle and more river flies were on the water. Salmon were also entering the river.

Geology. (M. Birtle). A field trip to Bollihope revealed Carboniferous fossils mostly corals and crinoids and investigations were also taking place at Winston.

Mammals. (D. I. Griss). Mink were seen more often on the River Tees. Red squirrels at BowLees and Common Seals at Seal Sands were also seen. Foxes and red deer were reported at Wilton.

Ornithology. (D. I. Griss). Gulls seen in the early part of the year included Mediterranean, Iceland and Ivory gulls. A serin, mealy and arctic redpolls as well as a large flock of brambling were also recorded. A large wigeon flock together with other duck and whooper swans were at Redcar. In the latter half of the year at Teesmouth

a variety of waders and other birds were recorded including green and white rumped sandpipers, spotted redshank, greenshank, bittern, marsh harrier, sooty shearwater and skuas.

The fifth annual weekend field study at Cober Hill, Cloughton was detailed as well as other joint group meetings, all of which were well attended.

NOTES AND RECORDS

NOTES

Another humming-bird hawk-moth. I was interested in the note in the December 1986 *Vasculum* about a Humming-bird Hawk-moth seen on 1st July 1986, for there was one at Blackhill soon after that — on July 12th. The time was 8.30 p.m., and the light not as good as I would have liked, and I had never seen one before, but it looked right. I recorded coarse black and grey speckles in its hinder parts and part of the hind wings an orange brown. It never settled, visiting flower after flower of a border of what I think is Red Valerian, *Centranthus ruber*, giving a sort of flicking movement between one flower and the next, and taking an occasional short fly around.

R. Wilson.

An Early Bird. In North Blunts Dene, Peterlee, (NZ 425408) I heard a robin singing at 4.10 a.m. on January 1st 1987. It was close to street-lighting. In Eric Simm's book 'British Thrushes' he says that this does happen occasionally next to lights. Perhaps street-lighting produces an effect of dusk/dawn throughout the night which are the normal singing times.

D. Jones.

Collared Dove Breeding. After several unsuccessful attempts at breeding earlier in the season, a pair of collared doves commenced nest building on 19th August in a *Prunus* tree in the garden. By the 23rd, the female was sitting on one egg. The nest survived Hurricane Charlie on the 25th, 26th with a very wet dove remaining sitting. After hatching, the young collared dove was not left alone in the nest for a week or more and afterwards for only short periods. By the 21st September, the parents both left the nest for periods, returning to feed the nestling. The young bird was by this time moving round on the nest platform and would face in various directions. It was flapping its wings on the 24th. The male collared dove was observed to first have a drink of water, then utter a few calls from the neighbouring apple tree before flying back to the *Prunus*, uttering a few more calls and feeding the young bird from its crop, then it would fly back to the apple tree. The same procedure took place several times again the next day but by the 26th September, the chick had moved three inches away from the nest platform which increased to two feet at midday the next day. After this the young bird became more mobile. By the 1st and 2nd October, the fledging was called back to the *Prunus* tree to be fed by the male bird. From the 6th to the 10th October, it was fed at dusk in the *Prunus* tree having been called there first by the male. At other times it was fed at various sites including in the apple tree.

On the 22nd October, the male and young collared dove arrived at the bird table when both fed on grain. The young bird was slow at feeding and inadvertently stepped into a bowl of water and had to climb out. The male also pecked at the juvenile if it came too near whilst it was feeding. The male continued crop feeding the juvenile for short periods up to 23rd November. After feeding, the male would fly off chased by the juvenile. Often, as time went on, the male would object and peck back at the juvenile or chase it away. As the juvenile grew older, its quiverings for food produced less response from the adult bird. On the 24th November, the male chased the juvenile away from the bird table and from then onwards, from the garden. A few days after this, the male was seen accompanied by a female frequently sitting together either on a favoured apple tree branch or at the old nest site.

H. M. Johnson.

A glimpse of ermine. On January 27th at Cowpen Marsh (NZ 509259), while waiting for a bus, my attention was drawn to what at first appeared to be a piece of tissue paper blowing across the grass. A second look revealed a pure white weasel hunting in the rough grass. In northern Britain it is quite normal for stoats to turn white during their pre-winter moult, but the literature

suggests that weasels moulting to a white coat is quite unusual, although normal in northern Europe and Asia. I wonder if anyone else has seen a white weasel this winter? On the same day I was lucky enough to see both a male and female smew at seal sands

D. Jones

A seal at Coxgreen. At about 8 p.m. on 15th July 1986, a Common Seal was observed in the River Wear at Coxgreen, Washington. This was witnessed by several people including some of the locals, who expressed surprise as they had never heard of a seal this far up the river. The river was at slack water, high tide just beginning to turn.

Kevin Reiling

Brambling (*Fringilla montifringilla*). On several occasions during early March 1987 a cock brambling was observed in the garden at the rear of my house in Gosforth partaking of Swoop which had been put out for the birds; on March 16th there was a party of four which included two cocks.

C.J.Gent

RECORDS

LICHENS

The following Lichens were collected during two hours of searching near Mickleton, NV 955238 (vice county 65) on 1st December 1986. Habitats investigated were stone walls (mostly whinstone) and woodland (courtesy of Mr. A. Scott, F.F.W.A.G.) Determination of the species involved a further 22 hours laboratory work.

<i>Collema auriculatum</i> (damp rocks by river)	<i>Rhizocarpon geographicum</i>
<i>Parmelia saxatilis</i>	<i>Pseudovernia furfuracea</i>
<i>Parmelia sulcata</i>	<i>Evernia prunastri</i>
<i>Parmelia clabratula</i>	<i>Ramalina farinacea</i>
<i>Parmelia clabratula</i> ssp. <i>fuliginosa</i>	<i>Usnea subfloridana</i>
<i>Parmelia laevigata</i>	<i>Peltigera praetexta</i> (fertile)
<i>Chaenotheca ferruginea</i>	<i>Lepraria incana</i>
<i>Xanthoria parvina</i>	<i>Lepraria neglecta</i>
<i>Hypogymnia physodes</i>	<i>Lepraria candelaris</i>
<i>Hypogymnia tubulosa</i>	<i>Arthonia radiata</i>
<i>Cladonia macilenta</i>	<i>Arthopyrenia fallax</i>
<i>Cladonia uncialis</i>	<i>Pertusaria pertusa</i>
<i>Cladonia polydactyla</i>	<i>Pertusaria hymenia</i>
<i>Cladonia coniocraea</i>	<i>Pertusaria dealbata</i>
<i>Cladonia pixidata</i>	<i>Pertusaria amara</i> var. <i>flotwiana</i>
<i>Lecanora intricata</i>	<i>Pertusaria albenscens</i> var. <i>corallina</i>
<i>Lecanora intricata</i> var. <i>soralifera</i>	<i>Diploschistes scruposus</i>
<i>Lecanora dispersa</i>	<i>Caloplaca sexicola</i>
<i>Lecanora rupicola</i>	<i>Catillaria griffithii</i>
<i>Lecanora campestris</i>	<i>Buellia atrata</i>
<i>Lecanora chlorotera</i>	<i>Porina chlorotica</i> var. <i>carpinea</i>
<i>Lecanora calcarea</i>	<i>Verrucaria hochstetteri</i>
<i>Lecanora conizaoides</i>	<i>Ochrolechia parella</i>
<i>Lecanora crenulata</i>	<i>Lecidea macrocarpa</i>
<i>Physcia adscendens</i>	<i>Lecidea pycnocarpa</i>
<i>Physcia tenella</i>	<i>Lecidea albocaulescens</i>
<i>Cetraria chlorophylla</i>	
<i>Platismatia glauca</i>	

FUNGI - MUSHROOMS AND TOADSTOOLS

<i>Amanita excelsa</i> (Fr.) Kummer	66
Northern bank of R. Tees at Low Force, 16-8-80.	
<i>Amanita pantherina</i> (DC. ex Fr.) Seer. Panther Cap	66
Northern bank of R. Tees at Low Force, 21-10-84.	
<i>Amanita fulva</i> (Schaeff.) Seer. Tawny Grisette	66,67
Woods near Elwick, 22-8-84 (66); Riding Mill area, 21-7-82 (67).	
<i>Lepiota cristata</i> Kummer	66
Finchale Woods, 19-9-84.	
<i>Lepistasaeva</i> (Fr.) Orion. Field Blewit	68
Fields on cliff-top at Spittal, Berwick, 28-10-79.	
<i>Tricholoma fulvum</i> (DC, ex Fr.) Sacc.	68
South bank of R. Till, near Tillmouth Park, 4-10-81.	
<i>Tricholomopsis platyphylla</i> (Pers. ex Fr.) Sing.	68
South bank of R. Till, near Tillmouth Park, 17-9-83.	
<i>Clitocybe odora</i> (Bull. ex Fr.) Kummer. Aniseed Toadstool	68
Woods near Elwick, 14-10-81.	
<i>Collybia peronata</i> (Bolt. ex Fr.) Kummer. Wood Woolly-foot.	68
Southern bank of R. Till, near Tillmouth Park, 17-9-83.	
<i>Marasmius oreades</i> (Bolt. ex Fr.) Fr. Fairy Ring Champignon	68
Roughting Linn, 24-6-84.	
<i>Mycena galericulata</i> (Scop. ex Fr.) S. F. Gray. Bonnet Mycena.	68
South bank of R. Tweed at E. Ord, on hawthorn roots, 8-1181.	
<i>Lactarius deliciosus</i> (L. ex Fr.) S. F. Gray. Saffron Milk-cap	67
Riding Mill area, 21-7-82.	
<i>Russula nigricans</i> (Bull. ex Merat) Fr. Blackening Russula	66
Northern bank of R. Tees at Low Force, 26-10-86.	
<i>Pluteus cervinus</i> (Schaeff. ex Fr.) Kummer	68
S. bank of R. Tweed at E. Ord, 27-19-79.	
<i>Paxillus involutus</i> (Fr.) Fr. Brown Roll-rim	66
Woods near Elwick, 21-10-81 and 22-8-84.	
<i>Clitopilus prunulus</i> (Scop. ex Fr.) Kummer (<i>Paxillopsis prunulus</i>)	66
Grounds of the D.L.L. Museum, Durham, 18-10-85, in profusion in the same area in 1986.	
<i>Pholiota squarrosa</i> (Muller ex Fr.) Kummer. Shaggy Pholiota	68
S. bank of the R. Till, near Tillmouth Park, 4-10-81.	
<i>Galerina (Pholiota) nutabilis</i> (Schaeff. ex Fr.) Orion	68
Roughting Linn, April 1979.	
<i>Gymnopilus junonius</i> (Fr.) Orion (<i>Pholiota spectabilis</i> (Fr.) Kummer)	68
S. bank of R. Till, near Tillmouth Park, 2-10-84.	
<i>Inocybe cookei</i> Bres.	66
Woods near Elwick, 22-8-84.	
<i>Hypoholoma fasciculare</i> (Huds. ex Fr.) Kummer. Sulphur Tuft	68
Roughting Linn, April 1979.	
<i>Hypoholoma sublateritium</i> (Fr.) Quel. Brick Caps	67
Plessey Woods, 19-11-83.	
<i>Agaricus xanthodermis</i> Geneviev. Yellow Stainer	68
Norham, S. bank of R. Tweed, 12-8-84.	
<i>Lachrymaria velutina</i> (Pers. ex Fr.) Konrad & Maubl. Weeping Widow	66, 68
Woods near Elwick, 22-8-84 (66); S. bank of R. Till, near Tillmouth Park, 4-10-81; Grassed areas at Spittal, Berwick, 28-10-79.	
<i>Coprinuscomatus</i> (Mull. ex Fr.) S. F. Gray. Shaggy Ink-cap	68
Grassed area at Spittal, Berwick, 28-10-79.	
<i>Coprinus disseminatus</i> (Pers. ex Fr.) S. F. Gray. Fairies' Bonnets	68
Roughting Linn, April 1979.	
<i>Oudemansiella radicata</i> (Reh. ex Fr.) Sing. Rooting Shank	68
S. bank of R. Till, near Tillmouth Park, 17-9-83.	
<i>Hygrocybe (Camarophyllus) pratensis</i> (Pers. ex Fr.) Fr. Wax Cap	68
Grassed areas near Spittal, Berwick, 28-10-79.	

<i>Boletus luridus</i> Schaeff. ex Fr.	66
N. bank of R. Tees at Low Force, 16-8-80.	
<i>Boletus edulis</i> Bull ex Fr. Cep	66
N. bank of R. Tees at Low Force, 16-8-80.	
<i>Boletus chrysenteron</i> Bull. ex St. Amans. Red-cracked Boletus	66
Woods near Elwick, 22-8-84.	
<i>Suillus flavidus</i> (Fr.) Sing	66
N. bank of R. Tees, at Low Force, 16-8-80.	
<i>Flammulina velutipes</i> (Curt. ex Merat)Greville. Dead Man's Fingers	66
Fields on the western outskirts of Hartlepool, 9-1-83; 3-3-83.	
<i>Sarcoscypha coccinea</i> (Fr.) Lamb. Scarlet Elf Cup	66
Haswell area, 6-2-87.	
<i>Xylaria polymorpha</i> (Pers. ex Merat)Greville. Dead Man's Fingers	68
S. bank of R. Till, near Tillmouth Park, 4-10-81.	
<i>Polyporus squamosus</i> Huds. ex Fr. Dryad's Saddle	68
On stumps of felled trees, by the R. Till at Etal, 20-5-84.	
<i>Coriolus (Polystictus) versicolor</i> (L. ex Fr.) Quel. Many-zoned Polypore	66
Finchale Woods, 10-10-77.	
<i>Vascellum pratense</i> (Pers.) Kreisel.	68
S. bank of the R. Till near Tillmouth Park, 17-9-83.	
<i>Auricularia auricula-judae</i> St. Amans. Jew's Ear	66
Finchale Woods, 10-10-77.	
<i>Peziza vesiculosa</i> Bull. ex St. Amans	68
S. bank of R. Till. near Tillmouth Park. 17-9-83.	

Dorothy E. Wolfe

A/ES — BIRDS

<i>Ardea cinerea</i> Grey Heron	67
Five in recently ploughed field near Low Gosforth Home Farm, October 26th, 1986.	
<i>Aythya fuligula</i> Tufted Duck	67
A female with seven fledglings on Big Waters, Seaton Burn, July 5 1986.	
<i>Perdix perdix</i> Grey Partridge	67
In view of the apparent decline of this species a covey of ten near Low Gosforth Farm on October 16 1986 was of interest.	
<i>Sitta europaea</i> Nuthatch	67
Three separate individuals heard calling at Wallington May 9, 1986.	
<i>Locustella fanceo/ata</i> Grasshopper Warbler	67
One in song at Big Waters, Seaton Burn July 5, 1986.	

C. J. Gent

LEPIDOPTERA – BUTTERFLIES AND MOTHS

<i>Rusina ferruginea</i> Esp. Brown Rustic	66
One on 2nd July 1986, at Bishop Auckland.	
<i>Mesapamea seca/ella</i> Remm. Remmi's Rustic	66
A very probable identification without dissecting genitalia, light trap at Shildon, 15th July, 1986.	
<i>Xestia triangulum</i> Hüfn. Double Square-spot	66
One at Bishop Auckland, 22nd July 1986.	
<i>Apamea unanimitis</i> Hb. Small Clouded Brindlee	66
Light trap at Shildon. 25th July. 1986.	

<i>Scopula floslactata</i> Haw. Cream Wave	66
One in light trap, Shildon, 25th July 1986.	
<i>Semiothisa wauaria</i> Thunb. The V-Moth	66
One taken 5th August at light, Shildon.	
<i>Cosmia trapezina</i> L. Dun-bar	66
One in the light trap at Shildon, 5th August 1986	
<i>Xanthia citrigo</i> L. Orange Sallow	66
Taken at Bishop Auckland, 9th September 1986.	

D. Kipling

<i>Thymelicus sylvestris</i> Poda. Small Skipper	66
South side of Hamsterley Forest (NZ 047269) July 1986. Several individuals feeding on creeping thistle flowers.	
<i>Boloria selene</i> D. & S. Small Pearl-bordered Fritillary	66
St. John's, Wolsingham. I first saw these on 14th July 1979, but have seen them regularly at this site ever since. I have never seen more than six individuals here at any one time.	

P. Gates

CECIDIA GALLS

<i>Dasyneura filicina</i> (Midge) on Bracken	66
In wooded area near Hart/Haswell railway line and on coast road to county boundary.	
<i>Eriophyes pteridis</i> (Mite) on Bracken	66
Roll on the end of a frond. A few plants only in the same area.	
<i>Chirosa parvicornis</i> (Midge) Male Fern	66
Two affected fronds near the Hart/Haswell railway line.	
<i>Adelges abietis</i> (Homoptera) Picea	66
On plants in gardens in Hartlepool.	
<i>Urocystis pompholygodes</i> (Fungus smut) Crowfoot gall on Wood anemone	66
Affecting a large number of plants west of Briarfields, Elwick.	
<i>Puccinia poarum</i> (Fungus rust) Coltsfoot	66
Occasionally seen near Hartlepool.	
<i>Albugo-Peronospora</i> Complex (Fungus) on Capsella bursa-pastoris	66
Seen from March to October around Hartlepool.	
<i>Hayhurstia atriplicis</i> (Aphis) on <i>Atriplex patula</i> and <i>A. litroralis</i>	66
Common over many areas of Hartlepool.	
<i>Eriophyes tiliae tiliae</i> (Mite) Lime	66
Seen on plants in Burn Valley and Rossmere Park.	
<i>Eriophyes tiliae exilis</i> (Mite) Lime	66
Burn Valley and Rossmere Park.	
<i>Phytoptus tetratrichus</i> (Mite) Lime	66
Burn Valley, Hartlepool.	
<i>Eriophyes leiosoma</i> (Mite) Lime	66
Rossmere Park and Burn Valley.	
<i>Contarinia tiffarum</i> (Midge) Lime	66
Common about June/July, Burn Valley, Rossmere Park, Tunstall Court grounds.	
<i>Eriophyes macrohynchus</i> (Mite) Sycamore	66
Common throughout Hartlepool town. Some leaves in Burn Valley very heavily affected. Also seen on cultivated varieties such as <i>A. pseudoplatanus</i> 'Brilliantissimum', <i>A. pseudo-platanus purpureum</i> , <i>A. pseudoplatanus</i> * Leopoldii'.	
<i>Aceria pseudoplatani</i> (syn. <i>Eriophyes megalonyx</i>) (Mite) Sycamore	66
Common. Also on cultivated species as in previous mite.	
<i>Phytomyza ilicis</i> (Gall Fly) Holly	66
Commonly seen on plants throughout Hartlepool, also affecting golden and silver cultivars.	
<i>Psylla buxi</i> (Psyllid) Box (<i>Buxus</i>)	66
Very common in gardens on all plants of box.	

S. Robbins.

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NEW OFFICERS

At the Annual General Meeting in March, Mrs. V. Whitfield agreed to take on the job of Hon. Secretary of the Northern Naturalists' Union. Denis Hall had held the post for 15 years and had guided the Union through times of expansion and we all thank him for his enthusiasm and loyalty. We must also mention Mrs. Hall, who, during all those years, has organised the refreshments at every one of the Annual General Meetings. Well done the Halls!

At the same meeting Mr. Dunn was at last able to hand over the Hon. Treasurership. Another volunteer, Mrs. M. Thompson agreed to take on the job for the time being, so relieving Mr. Dunn of some of his work, to allow more time for the production of Part 2 of the Moths and Butterflies of Northumberland and Durham.

Mrs. Whitfield lives at 3 Dudley Avenue, Sunderland, and Mrs. Thompson at 3 Shirley Gardens, Sunderland. Will all members note these new arrangements when writing in on N.N.U. business. It is especially important that all members who pay

their annual subscription by banker's order, should make arrangements with their bank to change the order before 1st January, 1988, so that the subscription is sent to Barclays Bank, Fawcett Street Branch, Sunderland instead of Chester-le-Street as at present. These new officers are listed in the 1987 membership programme card which should be consulted when necessary.

PINE MARTEN SURVEY OF ENGLAND AND WALES

A Nature Conservancy Council funded survey to assess the distribution and status of the non-Scottish Pine Marten population is collecting together all recent and historical records.

If you have any sightings, records of road casualties or any observations I would be glad to hear from you. Even records dating back to the late 19th century would be valuable in order to assess changes in distribution with changes in land use. Sensitive information will be treated with strict confidentiality. It is hoped that this base-line survey will suggest a conservation programme to both maintain all the present isolated populations and to encourage them to spread and coalesce.

All records should be sent to Rob Strachan, 5 Rose Terrace, Waterhouses, Durham
DH7 9BB

THE SOCIETIES

NORTHERN NATURALISTS' UNION

The 63rd Annual Meeting was held in the Hancock Museum, Newcastle upon Tyne on 4th April, 1987, by the kind invitation of the Natural History Society of Northumbria.

After a welcome from the Chairman, Dr. Lewis Davies, there followed a few moments of silence for the recent deaths of Dr. Edmund Burt (President 1982-84), Mrs. Grace Hickling (Secretary, Natural History Society of Northumberland) and Miss Ruth Wade of Annfield Plain.

The business meeting was more important than usual in that three new officers were elected. Mr. Hall retired from the post of Hon. Secretary after 15 years' devoted service, Mrs. Whitfield having agreed to take over. Mrs. Mattie Thompson had agreed to take on the job of Hon. Treasurer from Mr. Dunn who had been in office for 34 years. Mr. D. Pickering did not seek re-election as Field Secretary and this was taken over by Mr. Robert Woods.

During the reports Mr. Dunn announced a further small surplus on the year's working. Later, in his capacity as Editor he announced the publication of the long expected Part I (Macrolepidoptera) of 'The Moths and Butterflies of Northumberland and Durham' by T. C. Dunn and J. D. Parrack, being the second supplement to the *Vasculum*. These were later on sale to members. The business having been completed there followed a lecture by Dr. Valerie Standen on 'The effects of disturbance on wildlife in Alaska and Papua New Guinea'.

After a short introduction during which Dr. Standen outlined the main differences in climate between Alaska and Papua New Guinea and her interest in soil faunas, a more detailed account of prevailing methods of disturbance, illustrated by slides, followed. In Alaska the icecap with its attendant glaciers produces much mechanical disturbance by its movements and since large stretches of the country have only comparatively recently been freed of permanent ice cover, there is much stony ground with very little humus. The more ancient soils, with a dwarf shrub type of habitat or with muskeg vegetation consisting of small Black Spruce trees interspersed with surface pools in the summer, also suffer from a shortage of humus but for a different reason. Any leaf litter just accumulates on the surface because it is too cold for decay processes to work on it and eventually it takes fire and is burnt off. This type of disturbance burns off the spruce or dwarf shrubs as well, also affecting the ground fauna. The result is a patchwork vegetation after many years.

The oil pipeline has created a massive amount of disturbance. Apart from the initial disturbance of installation, during which care had to be taken not to damage the permafrost layer, it also bars the movements of the large migrating animals like the caribou. The sudden thaw in the spring is another massive disturbance which occurs every year but because of its regularity it was found that the soil fauna had become adapted to it and not too badly harmed by it.

In Papua New Guinea the natural vegetation is almost uniformly rain forest. The only natural disturbance is from erosion, a process which will never become stabilised because the mountains are very young and still rising. The majority of disturbance has been brought about by man, with the destruction of the forest. The type of agriculture practised for hundreds, perhaps even for thousands of years is of the type known as "slash and burn". The resulting "gardens" are found everywhere with a type of vegetation quite characteristic of long-standing work on them. Other kinds of disturbance such as that from fire, modern forestry work and mining were also shown.

The methods of soil sampling were described and the general conclusions were that disturbance was more serious in the arctic than in the tropics, chiefly because any damage by man, for whatever purpose, takes very much longer to repair in Arctic conditions than in the Tropics where re-vegetation is aided by the climate.

After a suitable vote of thanks by Dr. E. Turnbull, we all adjourned to the adjacent room for the usual tea provided so ably by Mrs. Hall.

Meanwhile the various exhibits were on show, such as some new plant galls by Mr. Dunn, live insects by R. Woods and N. Cook, and live spiders by M. Mann. At the same time Mr. Dunn had a busy time dispensing copies of the Moths and Butterflies of Northumberland and Durham to members who had paid for them in advance and also by sales. Readers may be interested to know that copies are still available from the Editor.

The 177th Field Meeting took place at Horsleyhope Ravine and Combe House Dene NNR near Muggleswick on 30th May, 1987, by kind permission of the Nature Conservancy Council. Mr. Dunn led a party of about 30 members into the woodlands which form part of a recently declared National Nature Reserve. Horsleyhope Ravine proved to be a mixed deciduous wood of varying age with much continuing

regeneration, the part near the road having a ground flora mostly of *Vaccinium myrtillus* on well-drained slopes but this changed to a more lush type of vegetation with *Allium ursinum*, *Chrysosplenium oppositifolium*, *Cardamine amara*, *Geum rivale*, and *Orchis mascula*. In the drier part we were delighted to see *Convallaria majalis* in its wild form. A fuller list, compiled by Mrs. Kelly and her friends is given elsewhere in this journal.

The entomologists worked hard but there was little on the wing at this time of the year. The bumble bees were very active, *Bombus lucorum*, *B. terrestris* and *B. muscorum* being particularly noticeable. The only two butterflies in evidence were *Pieris napi* and *Anthocharis cardamines*, but several moths were kicked up or beaten from bushes. Notable species were *Drepana falcataria*, *Perizoma alchemillata*, *Syndemis musculana*, *Ancylis badiana*, *Adela reamurella*, and *Phyllonorycter coryli*, the last named being beaten from hazel, its foodplant, in Combe House Dene.

Although there was still a nip in the air, this was one of the fine sunny days in quite a wet spring.

NOTES AND RECORDS

NOTES

A Butterbur Moth Caterpillar. The Butterbur Moth, *Hydraecia petasitis*, as its name suggests, uses the Butterbur plant, *Petasites hybridus* as its foodplant. The moth is seldom found very far away from stands of the plant, which is mainly found growing along our stream and river banks. The caterpillar feeds on the tuberous roots and the centres of the rhubarb-like stems that bear the leaves. It was a surprise, therefore, to see a nearly full-grown caterpillar in full view on a butterbur leaf on the bank of the River Wear in Rainton Park Woods during a County Council's Guided Walk.

T.C.D.

An Early Bird. I was interested in the note by D. Jones under the above heading in the April 1987 issue of 'The Vasculum', page 4.

There is no doubt that birds are stimulated into song by artificial lighting. On February 21st and 22nd 1985 a robin was singing on the floodlit slopes of Norwich Castle, and I have notes of both a robin and a song thrush singing after dark in the illuminated area around the Regent Centre Metro Station at Gosforth.

C. J. Gent.

Durham Bat Group. Bat activity is now at its peak, with this summer's young flying by the end of the month (June). One hopes that the weather is more conducive to good feeding during their first few weeks than it was for last year's juveniles.

Members attending the end of May field meeting held at Gainford, near Darlington, were privileged to take part in the largest emergence count made in the County to date. Six hundred and sixty one bats were counted out of a large stone hall overlooking the River Tees (emergence 9.20 to 10.45 p.m.)

This was certainly an underestimate of colony size as bats were still audible inside the roost when counting was stopped due to poor lighting conditions. A sample taken by handnet were all pipistrelles (*Pipistrellus pipistrellus*) but small numbers of Brown Long-eareds (*Plecotus auritus*) and Whiskered and/or Brandt's (*Myotis mystacinus/Brandtii*) are known to use the site. It is unusual to obtain such a high count so early in the season. Should the colony remain intact and successful breeding take place, one could expect counts including juveniles to reach a thousand. (The largest count from a single roost was made in June last year in Scotland—1166).

Throughout June fifteen County Durham bat colonies have been monitored by group members and most owners as part of the Institute of Terrestrial Ecology's annual bat colony survey. Results from last year's counts indicate that, nationwide, the average size of those colonies monitored was 86 individuals. This is a slight increase on the previous year's average of 83 bats per colony. There is considerable regional variation in colony size, ranging from a mean of 61 in South-east England to a mean of 336 in Scotland. The average colony in Northern England has 92 bats.

Gill Hinchcliffe.

Plants recorded at Horsleyhope Ravine NNR. During the NNU Field Meeting on 30th May, 1987, a number of wild flower enthusiasts got together to produce the following list:—

Sanicula europaea L. Sanicle.
Primula vulgaris Huds. Primrose.
Ajuga reptans L. Bugle.
Stellaria holostea L. Greater Stitchwort.
Stellaria nemorum L. Wood Stitchwort.
Stellaria alpine Grimm, Bog Stitchwort.
Geum rivale L. Water Avenis.
Geum urbanum L. Wood Avenis, Herb Bennett.
Viola riviniana Rchb. Common Violet.
Viola reichenbachiana Bor. Pale Wood Violet.
Oxalis acetosella L. Wood Sorrel.
Galium odoratum (L.) Scop. Sweet Woodruff.
Galium cruciata (L.) Scop. Crosswort.
Fragaria vesca L. Wild Strawberry.
Conopodium majus (Gouan) Loret. Pignut, Earthnut.
Mercurialis perennis L. Dog's Mercury.
Veronica chamaedrys L. Germander Speedwell.
Veronica montana L. Wood Speedwell.
Geranium sylvaticum L. Wood Cranesbill.
Geranium robertianum L. Herb Robert.
Lysimachia nemorum L. Yellow Pimpernel.
Convallaria majalis L. Lily-of-the-Valley.
Lathyrus montanus Bernh. Bitter Vetch.
Allium ursinum L. Ramsons.
Cardamine flexuosa With. Wood Bitter-cress.
Cardamine amara L. Large Bitter-cress.
Endymion non-scriptus (L.) Garcke. Bluebell.
Orchis mascula (L.) L. Early Purple Orchid.
Chrysosplenium oppositifolium L. Opposite-leaved Golden Saxifrage.
Prunus padus L. Bird Cherry.
Prunus spinosa L. Boackthorn.
Crataegus monogyna Jacq. Hawthorn.
Crataegus oxyacanthoides Thuill. Midland Hawthorn.
Potentilla sterilis (L.) Garcke. Barren Strawberry.
Melampyrum pratense L. Common Cow-wheat.
Moechringia trinervis (L.) Clairv. Three-nerved Sandwort.
Luzula sylvatica (Huds) Gaud. Greater Woodrush.
Luzula pilosa (L.) Wild. Hairy Woodrush.
Equisetum arvense L. Common Horsetail.
Equisetum sylvaticum L. Wood Horsetail.
Dryopteris filix-mas (L.) Schott. Male Fern.
Dryopteris dilatata (Hoffm) A. Gray. Broad Buckler Fern.
Athyrium filix-femina (L.) Roth. Lady Fern.
Pteridium aquilinum (L.) Kuhn. Bracken.
Thelypteris dryopteris (L.) Slosson. Oak Fern.
Blechnum spicant (L.) Roth. Hard Fern.

Glow Worms again. Two separate and unconnected sightings of Glow Worms have been noted from the South Tyne area near Allerwash. Liz Holden telephoned to say she saw two individuals on 26th June and Mary Pearson counted 13 on the evening 27th/28th June in exactly

the same area. Although Glow Worms have been reported from Magnesian Limestone grassland sites in Durham several times in recent years, we cannot remember any such report from Northumberland.

Ed.

RECORDS

LEPIDOPTERA BUTTERFLIES AND MOTHS

<i>Archiearis parthenias</i> L. Orange Underwing A male taken on Longhorsley Moor S.S.S.I., 23 April 1987.	67
	N. Cook.
<i>Nudaria mundana</i> L. Muslin Footman One taken at light, Oakerside Lodge, Peterlee, 15-7.86. New to the Castle Eden Dene list.	66
	C. Gardiner.
<i>Eupithecia pusillata</i> D. & S. Juniper Pug Two specimens at light, Hartlepool, 27 July 1982.	66
<i>Plusia putnami</i> Grote ssp. <i>gracilis</i> Lempke. Lempke's Gold Spot Twenty to 30 individuals of this moth arrived at light also on 27 July 1982 at Hartlepool.	66
<i>Apamea sublustris</i> Esp. Reddish Light Arches A single specimen at light, Hartlepool, 27th July 1982, because of which capture, I included Co. Durham in the distribution of this species in my book.	66
<i>Photedes ebyrni</i> Treit. Lyme Grass Quite plentiful, a few at light, but mostly sitting about singly and in cop on the Lyme Grass on the sand dunes near Seaton Carew, 27th July 1982. I have found this species in Sussex, Suffolk, Norfolk, Lines, and Fifeshire and consider it on the whole quite an invariable moth, but a number of the Durham ones were darker than normal and attractively streaked with blackish-brown; one of them is figured in my book on plate 38.	66
<i>Buxia tritici</i> L. White-line Dart Several at light 27th July 1982.	66
<i>Agrotis vestigialis</i> Hufn. Archer's Dart Several at light, Seaton Carew sand dunes 27 July 1982. Some very dark specimens in the catch.	66
<i>Thalophila matura</i> Hufn. Straw Underwing A dark aberration with the hindwings orange-brown instead of straw-yellow, at light, Seaton Sand Dunes on the same night.	66
<i>Eupithecia fraxinata</i> Crewe. Ash Pug A number of specimens appeared at light on Seaton Carew sand dunes on 27th July 1982, associated no doubt with the sea-buckthorn. Although they were rather worn even they seemed to be darker than those from southern England.	66
	Bernard Skinner.
<i>Anthocharis cardamines</i> L. Orange-tip Wylam, June 1969; Kielder, June 1970.	67
<i>Pseudoteipna pruinata</i> Hufn. Grass Emerald Kirkhill, Morpeth, 30-7-74 and 18-7-75.	67
<i>Scopula floslactata</i> Haw. Cream Wave Wylam, 27 June 1970.	67

<i>Eupithecia venosata</i> Fab. Netted Pug Beamish old railway line, larvae collected 23 July 1983 from Bladder Campion. Emerged 1984.	66
<i>Deilephila elpenor</i> L. Elephant Hawk-moth Wylam 27 June 1970.	67
<i>Xestia ditrapezium</i> D. & S. Triple-spotted Clay I know this species from western Scotland but did not keep the Wylam specimen. I have not given it another thought until now but see no reason to doubt it.	67
<i>Hadena confusa</i> Hufn. Marbled Coronet Two specimens taken on Inner Fame, 27-6-70. My wife and I found one each inside the respective loos whilst on a birdwatching trip!	68
<i>Hadena rivularis</i> Fabr. The Campion Beamish old railway line, larvae collected in Bladder Campion flowers, 23-7-83.	66
<i>Phytometra viridaria</i> Cl. Small Purple-barred Kirkhill, Morpeth, 18-7-75.	67
<i>Herminia tarsipennalis</i> Treit. The Fan-foot Wylam 27 June 1970	67

Mark R. Young.

The following moths have all been recorded at light at 1 Railway Cottages, Quarry House Lane, Nevilles Cross, Durham, v.c. 66.

Deilephila elpenor L. Elephant Hawk-moth. Found in garage. 7-7.85.
Agrotis exclamatoris L. Heart and Dart. June 1985 and 1986.
Lomaspili's marginata L. Clouded Border. 14 July 1985.
Campogramma bilineata L. Yellow Shell. Late June/July 1985.
Noctua pronuba L. Large Yellow Underwing. Late July-Sept, each year.
Noctua comes Hb. Lesser Yellow Underwing. August-Sept, each year.
Orthosia gothica L. Hebrew Character. 19-5-86.
Eupithecia vulgata Haw. Common Pug. June-July each year.
Opisthocraptis luteolata L. Brimstone Moth. June-July each year.
Xanthorhoe montanata D. & S. Silver-ground Carpet. June-July each year.
Xanthorhoe fluctuata L. Garden Carpet. Mid/late June.
Spilosoma luteum Hufn. Buff Ermine. Mid June.
Hepialus hecta L. Gold Swift. Mid-June.
Diarsia mendica mendica Fabr. Ingrailed Clay. Mid-June.
Euplexia lucipara L. Small Angle Shades. Mid-June.
Chloroclysta truncata Hufn. Common Marbled Carpet. Mid-June.
Spilosoma lubricipeda L. White Ermine. Mid/late June.
Selenia lunularia Hb. Lunar Thorn. Mid/late June.
Autographa pulchrina Haw. Beautiful Golden Y. Mid/late June.
Odontopera bidentata Cl. Scalloped Hazel. Mid/late June.
Oligia fasciuncula Haw. Middle-barred Minor. Mid/late June.
Eurrhpara hortulata L. Small Magpie. Mid/late June.
Acronicta rumicis L. Knot Grass. Caterpillar found on strawberry plants 18-8-85, moth emerged 28-6-86.
Hecatera bicolorata Hufn. Broad-barred White. End June.
Apamea sordens Hufn. Rustic Shoulder-knot. Early July.
Hepialus humuli humuli L. Ghost Moth. Early July.
Mythimna conigera D. & S. Brown-line Bright-eye. Mid July.
Aleis repandata repandata L. Mottled Beauty. Mid July.
Apeira syringaria L. Lilac Beauty. Mid July.
Cryphia domestica Hufn. Marbled Beauty. Mid July.
Mythimna ferrago Fabr. The Clay. Mid July.
Scotapteryx chenopodiata L. Shaded Broad-bar. Mid July.

R. Braithwaite.

The following list of Lepidoptera was compiled by Andrew Donnison, Kevin Reiling, Barry Stewart, Barry Hughes and Andrew Watts, at Washington Waterfowl Park during 1985, all v.c. 66.

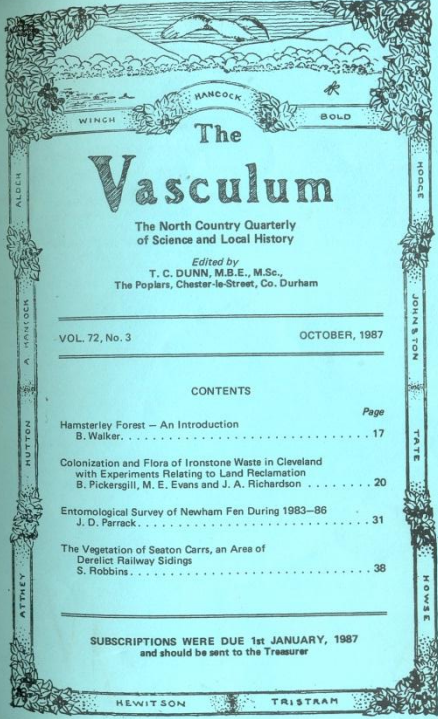
Laotoe populi L. Poplar Hawk-moth.
Deilephila elpenor L. Elephant Hawk-moth.
Cerura vinula L. Puss Moth.
Phalera bucephala L. Buff-tip.
Cilix glaucata Scop. Chinese Character.
Agrotis exclamationis L. Heart and Dart.
Diarsia mendica Fabr. Ingrailed Clay.
Xestia triangulum Hufn. Double Square-spot.
Xestia sexstrigata Haw. Six-striped Rustic.
Noctua comes Hb. Lesser Yellow Underwing.
Noctua janthina D. & S. Lesser Broad-bordered Yellow Underwing.
Noctua pronuba L. Large Yellow Underwing.
Naenia typica L. The Gothic.
Mamestra brassicae L. Cabbage Moth.
Lacanobia oleracea Bright-line Brown-eye.
Hadenaconfusa Hufn. Marbled Coronet.
Orthostia gothica L. Hebrew Character.
Mythimna lithargyria Fabr. Clay.
Mythimna contigera D. & S. Brown-line Bright-eye.
Allophyes oxyacanthae L. Green-brindled Crescent.
Xanthia icteritia Hufn. The Sallow.
Conistra vaccinii L. The chestnut.
Cryphia domestica Hufn. Marbled Beauty.
Acronicta psi L. Grey Dagger.
Acronicta rumidis L. Knot Grass.
Rusina ferruginea Esp. Brown Rustic.
Apamea lithoxylea D. & S. Light Arches.
Apamea monoglypha Hufn. Dark Arches.
Apamea crenata Hufn. Clouded-bordered Brindle.
Apamea sordens Hufn. Rustic Shoulder-knot.
Apamea remissa Hb. Dusky Brocade.
Mesapamea secalis L. Common Rustic.
Enargia ypsilon D. & S. Dingy Shears.
Oligia fasciuncula Haw. Middle-barred Minor.
Euplexia lucipara L. Small Angle Shades.
Phlogophora meticulosa L. Angle Shades.
Caradrina morpheus Hufn. Mottled Rustic.
Callistege mi Cl. Mother Shipton.
Diatrypsia chrysitis L. Burhished Brass.
Autographa jota L. Plain Golden Y.
Autographa pulchrina Haw. Beautiful Golden Y.
Autographa gamma L. Silver Y.
Abrostola triplasia L. The Spectacle.
Scoliopteryx libatrix L. The Herald.
Hypena proboscidalis L. The Snout.
Herminia nemoralis Fabr. Small Fan-foot.
Nola confusalis H.-S. Least Black Arches.

CECIDIA GALLS

Andricus quercus ramuli Cotton Wool Gall 66

Five young oaks about 12 ft high in one area of Waldrige Fell, 1-6-87. Several galls on each infected tree. A rather unusual gall anywhere in the country which I have not seen before in Durham.

T.C.D.



WINGCH HANCOCK SOLD

The Vasculum

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T. C. DUNN, M.B.E., M.Sc.,
The Poplars, Chester-le-Street, Co. Durham

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EDITORIAL

Publishing seems to be growing in importance in our various activities. We herewith present another collection of research material some of which, we hope, will interest some of you. The Editor thanks the authors for their continued cooperation and enthusiasm.

HAMSTERLEY FOREST - AN INTRODUCTION

B. Walker, Forestry Commission, Hamsterley Forest, Bishop Auckland, Durham

This is the first in a series of articles dealing with the flora and fauna of Co. Durham's largest man-made forest. This article is a general introduction to the forest, following its development, from its creation in 1927, to the present day. Future articles will deal with specific plant or animal families within the forest.

The re-forestation of Britain's uplands with alien conifers has always been (and probably will continue to be) a source of much controversy and heated debate. This is the first time anywhere in the world that such forests have been created by man. We have no precedents so it is difficult to say how these forests will develop or what they will look like in, say, 500 years time. Leaving aside all the arguments let us take a rational look at Hamsterley Forest and see whether or not our new forests are developing as good homes for our native wildlife.

The area now known as Hamsterley Forest was an agricultural and shooting estate belonging to the Surtees, a long-established and well known Durham family. The 5,000 acre (2500 ha) estate comprised a shooting house, three farms and a grouse moor. At the time the Forestry Commission purchased the land (1927) land use could be divided into the following categories:-

	%
Heather moorland	66.5
Unimproved pasture	17.5
Improved pasture and meadows	6
Broadleaved woodland	8
Coniferous woodland	2

It must be noted that these and subsequent categories are generalised. Any area under a 1/4ha is included in the major neighbouring category. This means that streamside broad leaves and groups less than a 1/4 ha are not recorded. Failed areas within conifer plantations if less than a 1/4 ha are recorded as conifer crops.

The initial planting of the forest took place between 1927 and 1951. At present the land use can be divided as follows:-

	%
Coniferous woodland	86
Broadleaved woodland	4
Pastures and meadows	4.5
Conservation areas	0.5
Recreational grassland	1
Forest rides and roads	4

We have been harvesting the initial crop for some years and as this proceeds we are re-structuring the forest to incorporate new ideas and practices for both forestry and landscape/wildlife conservation. The figures just quoted are changing and are changing continually and it is difficult to forecast precisely what will happen to the land use in the coming years.

It will be something like this:-

Coniferous woodland	82.5	
Broadleaved woodland.		8
Pastures and meadows	4.5	
Conservation areas	2	
Recreational grassland	1	
Forest rides and roads	2	

These categories are not plant communities or habitats, and within each category there is a varying amount of diversification. It is convenient however to take each category and have a closer look at it. This will illustrate the options available for wildlife in the forest.

i. Coniferous woodland:-

This is the largest category, without it there would be no forest. The main objective of the Forestry Commission is the production of timber for industry. The planting-felling cycle for one crop is about 40-50 years on the higher ground, with no thinning of the crop, and 50-60 years on the lower ground and thinning of the crop. The initial rapid planting of the forest produced a 'typical' even-aged forest. This is now being broken up by the felling and re-planting programme. The size of the new fields of trees (called compartments) is structured to fit into the landscape.

As soon as possible after felling, re-planting takes place, usually within one or two years. Where the previous crop was pine or larch the ground will be covered with vegetation. In Hamsterley, which is on the Millstone grit, this is usually Bracken (*Pteridium aquilinum*) or Wavy Hair Grass (*Deschampsia flexuosa*).

Where the previous crop was spruce there is little vegetation if the crop was successful. Within five years both types of site are well covered by the growing trees and a variety of plants according to the soils. Upland spruce sites are usually colonised rapidly by Rushes (*Juncus* spp), Cotton Grass (*Eriophorum angustifolium*), Ling (*Calluna vulgaris*) and in the early stages Sheeps Sorrel (*Rumex acetosella*). This is often called the pre-thicket stage. If competition to the trees from the herbs is too great the application of a selective herbicide may be required. With modern equipment chemical spraying can be very accurate. More than 50% of the herb cover will survive, and often only one such treatment is required to ensure the success of the crop. Once the branches on adjacent trees meet, the thicket stage has been reached. From now on the ground vegetation gradually reduces as the crop matures in the higher spruce compartments. Much work needs to be done studying the rise and decline of these communities and habitats and how wildlife interacts with them.

Anyone wishing to undertake a long term quadrat vegetation survey please get in touch!

ii. Broadleaved woodland:-

Several small broad leaved woodlands existed on the estate before it was purchased. A number of these still survive. Others were felled in the 1930's and replanted with oak and larch. Many of the older sites contain a lot of beech which is a poor

habitat for birds and insects in the forest. Some of the sites contain old oak, ash, hazel and holly and are more diverse. The felled and replanted areas are dominated by Creeping Soft Grass (*Holcus mollis*) and Brambles (*Rubus* spp) although some of the flora and invertebrate fauna have survived from the older wood. Most of the streambanks are bordered with natural or semi-natural linear woodland of alder, hazel, ash, bird cherry and willow.

iii. Pastures and meadows:-

The surviving pastures and meadows are an important wildlife and conservation landscape feature in the forest. Some of them have been enclosed for a very long time. (On a map dated 1847 they are described as 'ancient enclosures'). When the forest village was built each tenant rented a small-holding from the Forestry Commission. These holdings have become larger units, but little agricultural development has taken place. Most fields have not been ploughed since the 1950's. Two which were used as a forest nursery were returned to pasture/meadow in the 1950's and these have made quite a good recovery. The fields have had very little treatment with inorganic fertilisers. Most of the tenants use farmyard manure and a little lime. Plant communities are not as diverse as in Upper Teesdale and Weardale but are certainly much better than on farmland neighbouring the forest. Plant species include Cowslip (*Primula veris*), Ragged Robin (*Lychnis flos-cuculi*), Adder Tongue (*Orthotrichum vulgare*) and Sedges (*Carex* spp).

iv. Recreational grassland:-

This is a recent development. Some of the picnic places were created from fields in the Bedburn Valley, others on the site of a Ministry of Labour Camp and World War 2 P.O.W. Camp. Whilst little of interest can survive on the busiest areas some nice plants do occur on the others. On the less polluted and compacted areas meadow fungi often make a good showing. The perimeters of the picnic places make good habitats. They vary from coarse grass and weeds to Gorse and Broom.

Conservation areas:-

These areas do not fit conveniently into the other categories. The habitats in the conservation areas are often incompatible with the coniferous forest but are too valuable to lose. Some of them such as Sharnberry Gill contain a very varied moss flora, others, locally rare plants. Certain sites are noted for their populations of reptiles and butterflies.

The creation of ponds is a recent development. They can easily be accommodated in the forest structure and have obvious uses in the rare event of a fire. Ponds have been created on a variety of soils in the forest They are showing great promise and already provide a habitat for frogs, toads, newts, dragonflies and damselflies.

Conservation has become an important part of the forest structure and future conservation areas will be drawn from all the other categories.

vi. Forest rides and roads:-

The forest rides or 'fire breaks' are the man-made boundaries between the Compartments of trees. Often they are composed of the vegetation that was prevalent at the time of afforestation. Those on the high ground' have a ling community, on lower ground coarse grasses and whins prevail.

The forest roads are essential to the commercial forest. Their construction has produced new habitats and increased others. Roads built from local limestone have quickly attracted plants such as Vipers Bugloss (*Echium vulgare*) and Toadflax (*Linaria vulgaris*). Felwort (*Gentianella amarella*) and Spotted and Marsh Orchids (*Dactylorhiza* spp) have also appeared. Rubble from demolished houses was used as the construction of some roads and this has led to the appearance of occasional garden species such as Solomons Seal (*Polygonatum multiflorum*).

The cambered roads are often ditched at the sides providing a 'linear wetland' The excavated soil is often heaped in banks. This provides a well drained habitat which in some cases has developed into a linear heath land.

It can be seen from these summaries the 'coniferous monoculture' of Hamsterley Forest is not a simple habitat. It is a complex structure of many habitats.

In future articles subjects already researched such as plant distribution, mosses and liverworts, hover-flies, ants, small mammals etc. will be discussed in detail.

COLONIZATION AND FLORA OF IRONSTONE WASTE IN CLEVELAND WITH EXPERIMENTS RELATING TO LAND RECLAMATION

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INTRODUCTION

From the point of view of their fossil contents the rocks of the Jurassic period found in north-east Yorkshire are among the most famous and important strata in the world. Of more local fame, and for only a short time, were the iron-bearing seams found in the Lias series of the Jurassic beds. Ironstone from Cleveland charged the blast furnaces of Durham and Northumberland for over 150 years thus founding the great iron and steel industry of Tyne, Tees and Wear.

The first coke-fired iron blast furnace in the north of England was built by Isaac Cookson at Whitehills, Chester-le-Street in 1745 (Chapman, 1973). Although coal from local pits was plentiful, the ironstone nodules from thin bands on Waldrige Fell were soon exhausted; this was a common occurrence elsewhere in County Durham. However, an alternative source of ironstone ('beachstone') was found on the shore at Robin Hood's Bay and later it was excavated from bands in the cliffs at Boulby and Kettleiness on the north Yorkshire coast. The ironstone was transported by water to Picktree, near Chester-le-Street on the River Wear. In 1840 when the mines were opened at Grosmont in Eskdale the first cargoes on a regular basis were sent via Whitby to the furnaces of the Birtley Iron Company and the Tyne Iron Company at Wylam. For the next ten years all but one of the principal iron works on Tyneside and in County Durham used Grosmont ironstone. The exception was Charles Mark Palmer's blast furnace at Jarrow-on-Tyne. In order to secure his ore

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lies he purchased ironstone rights near Staithes, between Whitby and Saltburn. Here a seam of ore formed part of the rocky shore where it was quarried and shipped from his specially constructed harbour at Port Mulgrave. Palmer's coal exporting interests ideally fitted this arrangement for his colliers, after taking coal to London, would call on the return journey to take a cargo of iron ore back to the Tyne.

However it was when the railway reached this area that mining spread westwards from the coast throughout north Cleveland and the rapid expansion of the trade began. From a modest 4,000 tons of ore in 1850 output rose in five years to 300,000 tons and to 6.7 million tons in 1883. There were over fifty mines in a curved tract (approximately 12 x 4 miles) from Ormesby, Ayton and Eston in the west to Hunt-cliff, Skinningrove and Boulby on the coast. Although some of the mines closed down through being worked out, or because of the poor quality of the ore remaining, production was maintained at around 4.0 million tons annually until 1919. Thereafter mining declined from 1.5 million tons raised in 1945 to 0.7 in 1949 when the largest mine, Eston, closed. Lingdale ceased to produce in 1962, Kilton in 1963 and the last mine, North Skelton, closed in 1964 (see Table 1). Naturally, all this intensive activity for about a hundred years caused much land to be damaged by the whole paraphernalia of mining and the main and lasting eyesores were the huge heaps of waste material. However, the ravages of mining on Cleveland did offer interesting new habitats for the local plants and in places natural colonization over the years led to some revival of the landscape.

A flora of ironstone waste had not been previously compiled and the first aim of this work was to correct the deficiency. The second aim was to carry out greenhouse experiments to confirm some of the field observations and then to make practical suggestions for planting grassland and woodland against the time when the damaged land would be renewed by flattening the heaps and deliberately planting suitable vegetation.

THE WASTE HEAPS

The ironstone was worked from the middle Lias rocks by quarries, outcrop drifts and deep shaft mines. The ore contained 32% FeCO_3 and was described as low- grade phosphoric ore because it contained up to 1.5% P_2O_5 . The deposits were interbedded with shales and sandstones which were the main components of the waste heaps. The chemical composition of the waste immediately after tipping was extremely variable as the following results show:- SiO_2 , 27-51%; Al_2O_3 , 14-27%; FeO , 4-26%; other constituents were CaO , 5%; MgO , 3%; combined H_2O and CO_2 , 19%; SO_3 , 1%; P_2O_5 , trace to 1%.

The mode of waste dispersal depended on the locality and the working life of the mine. For example, at Spa Wood it was tipped down the valley slopes while at Roseberry it was deposited to form long low mounds. At the long-lived mine at Liverton the waste first formed a series of long mounds and then high cones were formed by means of a mechanically operated aerial ropeway.

The composition and rate of development of a plant community on new ground, such as ironstone waste, depends on a number of interrelated factors which include the kinds of seeds and the quantity naturally dispersed to the sites from the surrounding countryside, (2) the slope and aspect of the heaps, (3) the chemical and physical properties of the waste and (4) the rate of weathering to form soil-making particles. The breakdown of the material which began in the mine, continued

in transport and tipping, and was completed over many years in the open air. In order that the seeds may germinate and the seedlings successfully take root, the weathering processes must leave at the surface of the heap an adequate amount of small rock particles (2.0 to 0.002mm) which will hold the water necessary for growth the receptive stage at which incoming seeds have the first chance of producing new plants and starting the long slow build-up of organic matter leading to soil formation.

The surface layers of the heaps were initially coarse textured, free draining and dried out rapidly after rain. However, in gullies formed between mounds and in hollows on their flat tops the smallest particles removed by erosion from above collected and raised the water holding capacity. Moisture retention was also determined by shape, slope and aspect.

COLONIZATION

Invariably colonization began in the moister places where later the greater cover of vegetation occurred. This can be seen on the young conical heap at Kilton (see Table 1) where there is virtually no cover except in gullies and depressions. Liverton (50 years old) also provided a good example because, while most of the mounds and the lower slopes of the tall cone had 70 to 100% cover with trees and shrubs present, the upper parts of the cone had only from 0 to 30% and there were no woody species. In contrast, at Roseberry also 50 years old, the long low mound had virtually 80% cover throughout. Liverton also contrasted well with Lingdale because the latter had a similar distribution of cones and mounds but was only 10 years old. Lingdale had no trees, few shrubs and the herbs and grasses were restricted to 10% of the surface. Liverton (pH = 7.9) was the only site for *Briza media*, *Bromus ramosus*, *Agrimonia eupatoria*, *Campanula rotundifolia*, *Daucus carota*, *Erigeron acer*, *Luzula campestris*, *L. pilose*, *Sedum album* and *Viola riviniana*. Lingdale was also unique; it provided the only station for the unlikely colonist *Chenopodium bonus-henricus*. An example of how nearness of a seed source affected the colonists was at South Skelton (pH = 4.0). The long low mound (110m x 20m high x 60m wide at the base) was faced on two sides by damp ground on which willows and tufted hair grass were locally dominant. *Salix caprea* and *S. atrocinerea* formed a closed canopy on the slopes and *Deschampsia caespitosa* dominated the understory. The opposite slopes which faced the moors were completely covered in some places by *Ulex europaeus* and *Sarothamnus scoparius*, and in others by *Pteridium aquilinum*.

The plant succession was identified by examining parts of waste heaps aged from 10 to more than 50 years at nine sites. The species were listed in 1973/74 and the sites were revisited at intervals until 1986/87. In this time there had been little change in the pattern of colonization but an increase in area and density of vegetation in the gullies and depressions was very apparent. Tree growth was striking and at Spa Wood heights of 6m were found. On the steeper slopes the vegetation had spread very little and the cones remained bare with just isolated plants, usually *Hieracium* spp., present. The present flora of the Cleveland ironstone waste heaps is given in Table 1.

<i>Cirsium arvense</i>	+	+	+	+	+	+	+	+	+
<i>Cirsium palustre</i>	+	+	+	+	+	+	+	+	+
<i>Cirsium vulgare</i>	+	+	+	+	+	+	+	+	+
<i>Conium maculatum</i>				+					
<i>Crepis acutifolia</i>			+						
<i>Dianthus carota</i>		+							
<i>Digitalis purpurea</i>	+								
<i>Diphysa muralis</i>						+			
<i>Epilobium montanum</i>			+						
<i>Epipactis atrorubra</i>			+				+		
<i>Ergasteron acer</i>		+							
<i>Erodium cicutarium</i>	+	+	+						+
<i>Euphrasia officinalis</i>		+	+					+	+
<i>Fragaria vesca</i>	+	+	+						
<i>Galapogon tetralix</i>					+				
<i>Galium aparine</i>					+	+			
<i>Galium crucianum</i>	+	+						+	
<i>Galium saxatile</i>			+						
<i>Geranium dissectum</i>									
<i>Geranium molle</i>	+								
<i>Geranium robertianum</i>			+						
<i>Heracleum sphondylium</i>	+			+			+	+	+
<i>Heracleum borvale</i>	+	+		+			+	+	+
<i>Heracleum persopisquam</i>		+			+			+	+
<i>Heracleum pilosella</i>	+	+		+	+		+	+	+
<i>Heracleum umbellatum</i>		+	+		+		+	+	+
<i>Hypochaeris perforatum</i>		+							
<i>Hypochaeris radicata</i>	+	+	+		+		+	+	+
<i>Lanatum album</i>									
<i>Lappula commutis</i>		+							
<i>Lathyrus pratensis</i>			+		+			+	+
<i>Leonodon autumnalis</i>	+				+			+	+
<i>Leonodon hispidus</i>		+							+
<i>Leonodon saxosus</i>		+							+
<i>Linaria vulgaris</i>							+		
<i>Linum catharticum</i>			+				+		+
<i>Lonicera periclymenum</i>		+							
<i>Lota corniculata</i>	+	+		+		+	+	+	+
<i>Lactuca campestris</i>									
<i>Lactuca pilosa</i>			+						
<i>Marrubium maritimum</i>									
<i>Marrubium perforatum</i>	+				+			+	+
<i>Medicago lupulina</i>		+							
<i>Melilotus officinalis</i>								+	
<i>Mimulus verus</i>		+							
<i>Myosotis aurea</i>	+		+			+			
<i>Myosotis arvensis</i>			+						
<i>Odontites verus</i>								+	
<i>Plantago lanceolata</i>	+	+			+			+	+
<i>Plantago major</i>	+		+		+			+	+
<i>Polygonum serpyllifolium</i>									
<i>Polygonum persicaria</i>			+		+				
<i>Potentilla erecta</i>	+								
<i>Potentilla serotina</i>		+						+	+
<i>Primula veris</i>									
<i>Primula vulgaris</i>	+	+	+				+	+	+
<i>Prunella aquilinum</i>		+			+				
<i>Ranunculus repens</i>	+	+			+		+	+	+
<i>Ruscus acrolois</i>	+	+	+		+		+	+	+

Pioneer herbs were as follows:-

Centaurea nigra, *Chamaenerion angustifolium*, *Cirsium arvense*, *Hieracium spp.*, *Hypochaeris radicata*, *Lotus corniculatus*, *Reseda luteola*, *Senecio jacobaea* *Senecio viscosus*, *Sonchus asper*, *Trifolium repens*, *Tussilago farfara*.

These were followed by *Ranunculus repens*, *Rumex acetosella*, *Sonchus oleraceus* and *Taraxacum officinale*. *Teucrium scorodonia* was also one of the early arrivals on the acidic heaps but it was not represented by a single specimen on the high pH waste at Kilton, Lingdale or Liverton.

Shrubs were prominent amongst the colonists on all the sites and early arrival which did well were *Rubus fruticosus*, *Sarothamnus scoparius* and *Ulex europaeus*. Generally speaking trees did not appear until later as demonstrated by their relative abundance at the old sites and virtual absence at the young ones at Kilton and Lingdale. One factor which seems to be important in determining the speed of arrival of tree species is the proximity of an abundant seed source and this has been described above for South Skelton. Here willow groves of 4m tall trees have grown up 20 years after tipping ceased and a similar invasion began at Kilton after 10 years. Closeness to pine plantations seems to account for the appearance of *Pinus sylvestris* at two sites. Such regeneration has not been observed in County Durham on colliery waste (pH 4 to 6) or Magnesian Limestone (pH 7 to 8) except where pines have been planted on the actual site. In Durham *Betula spp.* are amongst the first arrivals and grow into tall trees with very little ground cover present. On ironstone waste birch was not successful as a colonizer but it began to appear late in the succession. Where there are extensive woodlands nearby (e.g. at Liverton and Spa Wood) there was colonization by *Acer pseudoplatanus*, *Fraxinus excelsior* and *Quercus petraea*. *Alnus glutinosa* was not present at any site, a position shared with the mine and quarry sites in Durham.

EXPERIMENTS

The chemical analysis of the waste (see p. 21) suggested that the essential elements for growth, nitrogen (N), phosphorus (P) and potassium (K) were likely to be deficient and this was confirmed for N and P by a detailed analysis carried out on material from the Lingdale site. The available values were as follows 4.3ppm NO₃⁻ nitrogen, 0.9ppm phosphorus, 51.7ppm potassium. The aim of this preliminary work was to obtain some indication of what substance might be added to the waste in order to promote growth of plants. The experimental plant was *Dactylis glomerata* which was an early colonist and grew well at all the sites. The experiments were performed in a cool greenhouse at the University Experimental Gardens, Newcastle upon Tyne using 13cm diameter plastic pots containing waste from the Lingdale site. Watering was carried out as and when required. It must be emphasised that although greenhouse experiments cannot be regarded as replacing field trials they can give good indications of performance in the field (Richardson and Evans, 1986).

Experiment 1. The effects of nitrogen, phosphorus and potassium on the growth of *Dactylis glomerata* on ironstone waste.

Dactylis glomerata was sown at a rate equivalent to 50 kg ha⁻¹ and the major nutrients were applied to the ironstone at two rates in all eight possible combinations: high rate, 50 kg ha⁻¹ of nitrogen (N), phosphorus (P) and potassium (K) and low rate, 5 kg ha⁻¹ of nitrogen (n), phosphorus (p) and potassium (k). The treatments

were made by using KNO_3 , KH_2PO_4 , $NaNO_3$, NaH_2PO_4 . The experiment was arranged in a single randomized block with three replicates. After 23 weeks the aerial growth was harvested and dried.

The results are given in Fig.1. Analysis of variance showed a significant effect of treatment on yield ($P=0.01$), of nitrogen ($P=0.01$) and of phosphorus ($P=0.001$) and a significant positive interaction between nitrogen and phosphorus ($P=0.01$). No other treatments were significant. The results confirmed the deficiency of plant nutrients N and P in ironstone waste and also demonstrated that toxic substances were not present in sufficient quantities to inhibit growth when nitrogen and phosphorus were applied. The yields obtained by the NPK treatments were approximately double those from any of the other treatments.

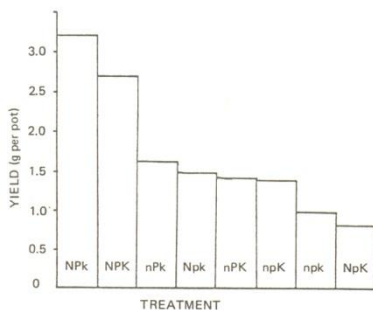


Fig. 1. Yield of *Dactylis glomerata* on ironstone waste with fertilizer

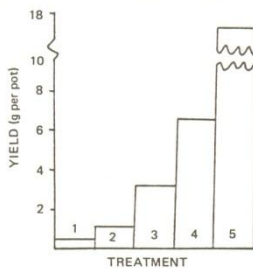


Fig. 2. Yield of *Dactylis glomerata* on ironstone waste with different treatments (see text).

Experiment 2. The effect of amelioration treatment on the growth of *Dactylis glomerata* on ironstone waste.

Dactylis glomerata was sown at 50 kg ha⁻¹ under the following treatments:—

1. raw waste
2. waste + untreated sewage sludge at 10 tonnes ha⁻¹
3. waste + Fisons 52 Regular 20.10.10 NPK granular fertiliser at 600 kg ha⁻¹
4. waste + untreated sewage sludge + Fisons 52 at the rates in 2 and 3
5. John Innes compost.

The experiment was fully randomized with three replicates and the above ground growth was harvested and dried after 23 weeks.

The results are given in Fig. 2. Analysis of variance showed a significant effect of treatment on yield (P=0.001). Although the germination rate was good on untreated waste all the plants were stunted and frail in shoot and root. Added NPK fertiliser increased yield almost ten times and fertiliser plus sewage sludge produced even greater response. The results suggested that higher fertiliser rates would produce a corresponding improvement in growth possibly approaching that on John Innes compost.

Experiment 3. The comparative growth of grass and legume species on ironstone waste.

The treatments were as follows:-

1. raw waste
2. waste + Fisons 20.10.10 at 500 kg ha⁻¹ (moderate NPK)
3. waste + Fisons 20.10.10 at 1000 kg ha⁻¹ (high NPK)
4. John Innes compost

The species were as follows:-

Sown at 25 kg ha⁻¹

Agrostis tenuis

Agrostis stolonifera

Poa pratensis

Festuca ovina

Sown at 35 kg ha⁻¹

Trifolium repens

Trifolium pratense

Sown at 50 kg ha⁻¹

Festuca longifolia

Festuca rubra rubra

Cynosurus cristatus

Holcus lanatus 69%

and *Cynosurus cristatus* 31 %

Dactylis glomerata

Lolium perenne

Growth on untreated waste and on waste with high NPK added are given in Fig. 3 where yield is expressed as a percentage of the mean yield on the John Innes com- post. Analysis of variance showed that the differences in yield under the treatments were highly significant (P=0.001), as were the yield differences between species. There was no significant species x treatment interaction. Although there were considerable differences in yield amongst the twelve species the same general pattern of response to moderate and high level treatments was shown. As before the yields on untreated waste were low and there was a marked positive response to added fertiliser. The *Holcus lanatus/Cynosurus cristatus* mixture, *Agrostis tenuis*, *Cynosurus cristatus*, *Festuca ovina* and *Poa pratensis* seemed to do best with the two legumes performing badly.

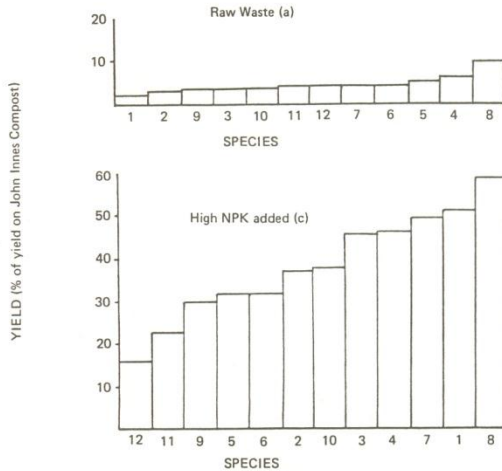


Fig. 3. Plant yields on ironstone waste; (a) raw waste (c) high NPK added (see text)

DISCUSSION

There are some 700 species (trees, shrubs, flowering plants, ferns and grasses) found within two miles of the nine sites and 134 of them sooner or later established themselves there. The pattern of plant succession was similar to that reported for colliery, limestone, blast furnace and china-clay waste. The first to arrive were plants with low nutritional requirements and the ability to withstand periods of drought. After 20 years when the organic content of the waste had increased and its chemical and physical properties had changed in favour of the plants, more species were represented; on low mounds and sheltered places on high cones the cover approached 40%. At over 50 years of age these places, e.g. Roseberry, had 80-100% cover with trees and shrubs well established. The exposed areas, e.g. Liverton, had virtually no plants and probably never will.

All these changes took place notwithstanding that initially the prospect of establishing a plant cover was extremely bleak. But whatever the conditions (chemical, physical, geographical) which excluded some species, others arrived on the waste and took root. There are opportunities here to study the physiological ecology of the species present; an aspect of colonization which will be especially important when the land is reclaimed to pasture or woodland. It will also be of great interest to discover

the mechanisms in plant roots which enable them to survive, for example, in material low in nitrogen and phosphorus and high in aluminium and iron.

The experiments showed that for reclamation purposes added fertiliser and possibly some organic matter, would be required to produce a reasonable grass cover. One application of 750 kg ha⁻¹ of 20-10-10 NPK fertiliser given at the time of sowing is recommended with perhaps a later dressing of 29-5-5 NPK if required. Field trials in County Durham on high and low pH material (Richardson and Dicker, 1972 Richardson and Evans, 1986) have conclusively shown that a deep topsoil cover is not essential. A suitable mixture of commercially available grasses could be selected from those listed in Table 1 and Experiment 3. The composition and rate of sowing of the mixture would depend on the use intended. For example, for a low maintenance cover which would stabilize the surface prior to tree planting, the mixture sown at 50 to 80 kg ha⁻¹, might contain *Agrostis tenuis*, *Festuca rubra*, *Festuca ovina*, *Holcus lanatus* and *Poa pratensis*. *Dactylis glomerata* is also recommended because it is a successful natural colonizer of all the sites and it did well when planted on derelict land in Durham. *Lolium perenne*, a demanding grass, would not be included in the mixture. However, if reclamation is made to farm grassland a mixture containing *Lolium perenne*, *Phleum pratense* and *Trifolium repens* is preferred (Richardson, Burn and Craig, 1987).

Trees planted directly into raw waste do not establish as well as those planted into grass and therefore woodland should be laid down when a reasonable cover has been achieved. The grass must not be so rank as to smother the saplings. Plantations on Magnesian Limestone and colliery waste (Richardson and Evans, 1987; Richardson, Burn and Craig, 1987) showed that establishment and growth were enhanced by the addition of NP fertiliser at planting and at intervals as required for three years afterwards. If hard pruning is carried out in exposed places losses would be considerably reduced. A suitable group of trees for initial planting on ironstone waste, based on observations in Cleveland and experiments in Durham, might be as follows:- *Alnus glutinosa*, *A. incana*, *Betula* spp., *Populus alba*, *Salix alba*. The following should be added to the list for higher pH waste:- *Crataegus monogyna*, *Fraxinus excelsior*, *Salix caprea*; and for lower pH waste, *Pinus sylvestris*, *Populus canadensis*, *Sorbus aria*.

ACKNOWLEDGEMENTS

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ENTOMOLOGICAL SURVEY OF NEWHAM FEN DURING 1983-86

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INTRODUCTION

Newham Fen is the remains of a considerably larger area of herb-rich fen that was part-drained to make way for the London-Edinburgh railway track. The remaining fraction consists of willow/birch fenland with an open central area now largely covered in *Phragmites* which in most years contains standing water. Instability of the water level, together with growth of regenerating willow/birch scrub and *Phragmites* threatens the central area that may be an essential factor in the maintenance of important botanical and invertebrate communities.

As well as being of known botanical significance, the Fen was recognised at the end of last century as being an important entomological site, supporting Small Eggar (*Eriogaster tenestris*), Ruddy Highflyer (*Hydriomena ruberata*), Dark Bordered Beauty (*Epione paralellaria*) and White Satin Moth (*Leucoma salicis*). Some of these species soon disappeared, possibly connected with the decreasing size of the Fen, but more probably due to widespread climatic or other changes not yet fully understood. When it was found, however, that *E. paralellaria*, now of rare occurrence in England, still survived on the site (22/7/1964, A. G. Long: 26/7/1983, JDP), it was decided to undertake a more thorough entomological investigation along the lines adopted at other Northumbrian Nature Reserves (Parrack, 1984), that is to say weekend light trapping and sugaring for Lepidoptera at approximately three-weekly intervals, together with more casual investigation of other orders as time and circumstances permitted. Towards the end of 1985, much of this work was taken over by P. Corkhill, Reserve Warden, in order to release the author for additional work at other sites: his additional records are acknowledged in the species lists.

RESULTS

Bad weather, particularly at weekends, during the early months restricted night work until early June in the first three years. Additionally, trapping returns tended to be poor for three main reasons:-

- i. the valley in which the Fen lies tends to be a fog and frost pocket, with low night temperatures persisting for much of the season;
- ii. the unwelcome attentions of Roe Deer, which on some occasions completely demolished the traps;
- iii. the presence of one or more bats, which prey avidly on moths assembling at light.

Maximum nightly counts for the Heath traps rarely, if ever, exceeded ca. 40 individuals per trap. As a result, a considerable amount of additional work has had to be undertaken by P. Corkhill before anything approaching a comprehensive list could be obtained.

The survey yielded:-

Butterflies

10 species, of which 5 breed or have bred in recent years; one of these, the Ringlet (*Aphantopus hyperantus* Linn.), is of considerable conservation interest in the North-east.

Macro-moths

110 species, of which the great majority probably breed regularly. The D B?-dered Beauty (*E. parate/aria*.D. & S.) is.no~ very rare (RDB 3 status), while ~rk PInion-streaked Snout (*Schrenkis costsestriqsls* Steph.) reaches its most north ~e station on the eastern side of the British Isles, and apparently its only known sit^{er}.y our north-eastern counties. A further 13 species have been recorded outside the oe e. I~ of the survey-mostly these are old records of species definitely or probably extinc;o

Micro-moths

53 species. Of these, *Aphelia unitana* Hb. is rare, though a north-eastern sp ciality. It is difficult to distinguish (especially when slightly worn) from the muc~ more plentiful *A.paleana* Hb. Its occurrence here (and, recently, on the Snook Holy Island-Parrack, 1986) is noteworthy in that it has previously tended to be re~arded as a species of higher altitude. Whether these specimens were just casual wind-blown strays, or represent a sim ilar tendency to that shown by several of the Macro-moths to have a more easterly component to their range in North Northumberland (see Dunn & Parrack, 1986), is a question that requ ire fu rther investigation. *Chilo phragmitella* Hb. is a Pyralid moth associated with *Phragmites* that is very scarce indeed north of Yorkshire, while *Cram bus uliginosel/us* is another extremely local species, though very characteristic of this type of habitat.

Diptera

c. 79 species so far identified, of which the great majority are common, though mention should be made of *Stratiomys potamida* Mg., taken in the larval stage by Drs. B. & I. D. Wallace during the period of the survey, and regarded as a very scarce species, though possibly under-recorded since its distribution appears quite wide- spread. *Tropida scita* Harr. is a scarce Syrphid fly of lush, open fens, very scarce in the north-east where it is confined to coastal lowlands.

Trichoptera

13 species, none of which at present have conservational value, though it is of interest that some species are associated more typically with stony, fast-flowing streams (notably *Agapetus tuscipex*, *Hydropsyche* spp. and *Potamophylax latipennis*). It is of interest that a sim ilar situation was found on the Snook, Holy Island (Parrack, 1986).

COMMENT

Conservational interests in this site present considerable, and to some extent conflicting problems. The majority of Lepidoptera species are probably associated with the willow/birch carr surrounding the central, open area, but it would appear that this latter area is of much greater interest in view of the rarity value of the species that it supports (and the same broad generalisation probably holds good in botanical terms, and in the case of the Odonata-11 species so far recorded-and the be~er Coleoptera). The willow/birch surround is doubtless of value in acting as an effective windbreak and helping to maintain the high humidity of the central area. At the same time, the extent to which willow and birch scrub is perm itted to encroach into the central area must need careful monitoring, even though this appears to be the pre- ferred habitat of *E. parate/aria*. Similarly, the retention of *Phragmites* is desira?le in view of the needs of *C. phragmitel/a*, *R. lutosa* and probably several other species, but this could easily take control if left to its own devices, to the detriment of the ground flora and those invertebrates that require a more open environment. The

difficulty of maintaining a satisfactory balance (compounded by problems with the later table, which shows considerable fluctuation from year to year) raise important questions, and it is gratifying that the Nature Conservancy is pursuing an active research policy towards this most valuable site.

A further point of interest is the presence of a sizeable herd of cattle in the fields surrounding the Fen. The animals spend a lot of time close to the fence surrounding the Fen, where large quantities of dung are deposited. This doubtless enriches the water draining into the Fen—a feature that might require monitoring— but in particular provides breeding grounds for large number of dung flies, that appear to be present in high concentration in the Fen. This is undesirable in that members of the *Scatophagidae* in particular are predatory on other species of Diptera, and may well be putting some of the scarcer species at risk—a probably unavoidable hazard.

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LEPIDOPTERA

B & f No	SPECIES	COMMENT
	MICROPTERIGIOAE	
0002	<i>Micropterix mansuetella</i> Zell.	
0005	<i>Micropterix calthella</i> Linn.	Common
	ERIOCRANIDAE	
0013	<i>Eriocrania semipurella</i> Steph.	PC/JDP.15/4/87
	HEPIAIDAE	
0016	<i>Hepialus hecta</i> Linn. Gold Swift	Since at least 1950. JWHH.
9917	<i>Hepialus lupulinus</i> Linn. Common Swift	
	NEPTICLIDAE	
0100	<i>Stigmella oxycanthea</i> Stt.	PC/JDP. leaf mines.
	INCURVARIIDAE	
0150	<i>Adela reumarella</i> Linn.	Common
	LYONETIDAE	
0263	<i>Lyonetia clerkei</i> Linn. Apple leaf Miner	PC/JDP. leaf Mines.
	GRACILLARIIDAE	
0335	<i>Phyllomorcyet salicivolella</i> Sirc.	
0337	<i>Phyllomorcyet spinioella</i> Dup.	
	GLYPHPTERIGIDAE	
0397	<i>Glyphipterix thrasonella</i> Scop.	Common
	YPONOMEUTIDAE	
0410	<i>Argyresthia brockelle</i> Hb.	Common
0452	<i>Ypsolopha nemorella</i> Linn.	
0453	<i>Ypsolopha dentella</i> Fabr. Honeysuckle Moth	Also by B & IDW
0460	<i>Ypsolopha parenthesella</i> Linn.	Common also by B & IDW
0461	<i>Ypsolopha ustella</i> Cl.	
0464	<i>Platella xylostella</i> Linn. Diamond-back Moth	Casual
	ELACHISTIDAE	
0597	<i>Elachista atricomella</i> Stt.	B & IDW

	OEOPHORIDAE	
0648	<i>Aphelia paleana</i> Hb. Timothy Tortrix	
0663	<i>Diurna fagella</i> D. & S.	Common
0666	<i>Semioscopia ocellanella</i> Hb.	PC/JDP, 15/4/87
0672	<i>Depressaria pastinacella</i> Dup.	
0689	<i>Agonopterix ciliella</i> Stt.	
0701	<i>Agonopterix ocellana</i> Fabr.	PC
0710	<i>Agonopterix conterminella</i> Zell.	B & IDW
	GELICHIDAE	
0858	<i>Hypatima rhomboidella</i> Linn.	PC, 26/10/86
	TORTRICIDAE	
0989	<i>Aphelia paleana</i> Hb. Timothy Tortrix	JDP, Common
0990	<i>Aphelia nitana</i> Hb.	Scarce: PRD/B 2 status
1015	<i>Eulia ministrana</i> Linn.	Common
1050	<i>Acleris boscana</i> Fabr.	PC/JDP 29/4/87
1053	<i>Acleris hastiana</i> Linn.	Common, PC
1055	<i>Acleris lyemana</i> Haw.	PC/JDP 15/4/87
1062	<i>Acleris emargana</i> Fabr.	Common also by B IDW
1076	<i>Olethreutes lacunana</i> D. & S.	Common
1111	<i>Bactra lancealana</i> Hb.	Common
1119	<i>Ancylis geminana</i> Don.	Abundant
1132	<i>Epinotia subcicellana</i> Don.	
1134	<i>Epinotia ramella</i> Linn.	Also by B & IDW
1138	<i>Epinotia nisella</i> Cl.	Abundant, varied; also by B & IDW
1151	<i>Epinotia stroemiana</i> Fabr.	
1184	<i>Epiblema scutellana</i> D. & S.	
1197	<i>Eucosma campolliana</i> D. & S.	PC
	PYRALIDAE	
1290	<i>Chilo phragmitella</i> Hb.	A good colony
1293	<i>Chrysoteuchia culmella</i> Linn.	Common
1297	<i>Crumbus alginosellus</i> Zell.	Scarce
1301	<i>Crumbus nemorella</i> Hb.	
1302	<i>Crumbus perrella</i> Scop. f. warringtonellus Stt.	Scarce
1304	<i>Agriphila straminea</i> D. & S.	Very common
1305	<i>Agriphila trisetella</i> D. & S.	Very common
1334	<i>Scoparia ambigua</i> Trt.	
1336	<i>Eudonia pallida</i> Curt.	Also B & IDW
1339	<i>Eudonia murana</i> Curt.	
1428	<i>Aphomia sociella</i> Linn.	
	PIERIDAE	
1551	<i>Pieris napi</i> Linn. Green-veined White	Common, breeding
1553	<i>Anthocharis cardamines</i> Linn. Orange-tip	11/5/84, 1 male PC
	LYCAENIDAE	
1561	<i>Lycæne phlaeas</i> Linn. Green-veined White	Common, breeding
1574	<i>Polyommatus icarus</i> Rott. Common Blue	28/7/86, 2 males
	NYMPHALIDAE	
1590	<i>Vanessa atalanta</i> Linn. Red Admiral	Cas. (Larvae 1959 JWHH)
1591	<i>Cynthia cardui</i> Linn. Painted Lady	Cas. 20/6/83 PC
1593	<i>Aglais urticae</i> Linn. Small Tortoiseshell	c 12 Oct. '82 & '83, PC. May breed some yrs.
1597	<i>Inachis io</i> Linn. The Peacock	Rare cas. visitor. PC
	SATYRIDAE	
1626	<i>Maniola jurtina</i> Linn. Meadow Brown	1964 Colony AGL, et seq.
1629	<i>Aphantopus hyperantus</i> Linn. Ringlet	1963 Colony AGL, et seq.
	LASIOCAMPIDAE	
1631	<i>Poecilocempe populi</i> Linn. December Moth	1925, GB: PC 28/10/86
1663	<i>Eriogaster lanestris</i> Linn. Small Eggar	24/6/1986, GB et. al.
1640	<i>Phialothrips potatoris</i> Linn. The Drinker	Since 1886 GB., common
	DREFANIDAE	
1648	<i>Drepana fulcataria</i> Linn. Pebble Hook-tip	1896, GB: 1983 JDP
1651	<i>Cliix glaucata</i> Scop. Chinese Character	Fairly common

	THYATRIDAE	
1654	<i>Tethea ocellaris</i> Linn. Figure of Eighty	3/9/1931 larvae possibly of this GB)
(1656	<i>Tetheella fluctuosa</i> Hb. Satin Lutestring	1890/91 larvae possibly of this GB)
(1657	<i>Ochropacha dapharis</i> Linn. Common Lutestring	1896, GB, 1979 etc. JDP
1659	<i>Achya flavicornis</i> Linn. Yellow Horned	1896 GB, 14/4/86 PC
	GEOMETRIDAE	
1663	<i>Alsophila aesculana</i> D. & S. March Moth	PC
1666	<i>Geometra papilionaria</i> Linn. Large Emerald	
1708	<i>Idaea biselata</i> Hufn. Small Fan-footed Wave	
1713	<i>Idaea aversata</i> Linn. Ribband Wave	Common
1716	<i>Rhodometra saccharia</i> Linn. The Vestal	2/10/85, PC (2), rare
1722	<i>Xanthorhoe designata</i> Hufn. Flame Carpet	PC, 19/5/87
(1725	<i>Xanthorhoe ferrugata</i> Cl. DK-barred T.-s. Carpet	26/5/1893, GB)
1727	<i>Xanthorhoe montana</i> D. & S. Silver-ground Carpet	Common
1728	<i>Xanthorhoe fluctuata</i> Linn. Garden Carpet	
1732	<i>Scotopteryx chenopodiata</i> Linn. Shaded Broad-bar	
1738	<i>Epirrhoe alternata</i> Mull. Common Carpet	Common
(1745	<i>Larentia clavaria</i> Haw. The Mallow	1929, GB. Could have been no more than cas.)
1747	<i>Anticlea derivata</i> D. & S. The Streamer	PC, 19/5/87.
1750	<i>Lampropteryx suffumata</i> D. & S. Water Carpet	PC
1755	<i>Eulithis testata</i> Linn. The Chevron	1929, GB Still present
1759	<i>Ecliptopera silaceata</i> D. & S. Small Phoenix	1896, GB. Still present
1760	<i>Chlorochysta stierata</i> Hufn. Red-green Carpet	PC, 18/4/87
1761	<i>Chloroclysta miata</i> Linn. Autumn Green Carpet	1948, JWHH: 1975 JDP
1762	<i>Chloroclysta cirrata</i> Linn. Dark Marbled Carpet	
1768	<i>Thera obeliscata</i> Hb. Grey Pine Carpet	PC, 2/10/86. Casual
1772	<i>Electrophaes corollata</i> Thunb. Broken-barred Carpet	1896, GB; 1979 JDP
1775	<i>Colostyia multistrigaria</i> Haw. Mottled Grey	PC, 19/5/87
1776	<i>Colostyia pectinaria</i> Knuth. Green Carpet	Common
1777	<i>Hydriomena furcata</i> Thunb. July Highflyer	Abundant
(1778	<i>Hydriomena impluviata</i> D. & S. May Highflyer	1929, GB. There is no Alder's)
(1779	<i>Hydriomena ruberata</i> Freyer Ruddy Highflyer	1915, JWHH: 1948, JWHH)
1795	<i>Epirrita dilutata</i> D. & S. November Moth	PC, 1/10/86
1803	<i>Perizoma alchemillata</i> Linn. Small Rivalet	
1809	<i>Perizoma didymata</i> Linn. Twin-spot Carpet	Often flying by day
1819	<i>Eupithecia exigua</i> Hb. Mottled Pug	Common
1834	<i>Eupithecia vulgata</i> Haw. Common Pug	
1881	<i>Trichopteryx carpinata</i> Borkh. Early Tooth-striped.	PC
1887	<i>Lomaspilis marginata</i> Linn. Clouded Border	Common
1906	<i>Opisthogynis luteolata</i> Linn. Brimstone Moth	Possibly recent arr.
1907	<i>Epiome parapallaria</i> Hufn. Bordered Beauty	1896, GB: 1964, GAE. Still present, scarce
1908	<i>Epiome paralellaria</i> D. & S. Dark Bordered Beauty	1890, GB (1): 1898, IE: 1925, JWHH (1)1964, JWHH: now up to 7-8 annually; also by day
1913	<i>Ennomos alniaria</i> Linn. Canary-shouldered Thorn	Common
1917	<i>Selenia dentaria</i> Fabr. Early Thorn	PC, 19/5/87
1921	<i>Crocullis elinguaris</i> Linn. Scalloped Oak	Scarce
1923	<i>Colobus pennaria</i> Hb. Feathered Thorn	PC. Fairly common
1926	<i>Apocheima pilosaria</i> D. & S. Pale Brindled Beauty	c. 1928, GB. Still present, PC
1931	<i>Biston betularia</i> Linn. Peppered Moth	1928, GB, 1979 et seq. JDP-all of the type
1933	<i>Agriopsis aurantaria</i> Hb. Scarce Umber	PC, 2/10/86
1934	<i>Agropis marginaria</i> Fabr. Dotted Border	PC
1935	<i>Erannis defoliaria</i> Cl. Mottled Umber	PC
1937	<i>Peribatodes rhomboidaria</i> D. & S. Willow Beauty	
1948	<i>Ectropis crepuscularia</i> D. & S. Small Engrailed	PC
1955	<i>Cabera puseris</i> Linn. Common White Wave	1915, JEH: 1948, JWHH: 1979 et seq., JDP
1960	<i>Cabera exanthemata</i> Scop. Common Wave	1915, JEH: 1975 et seq., JDP
1960	<i>Therip primaera</i> Haw. Early Moth	15-17/3/86, PC (2)
1961	<i>Camposea margaritana</i> Linn. Light Emerald	Common
	SPHINGIDAE	
1981	<i>Laotloe populi</i> Linn. Poplar Hawk-moth	1948, larvae JWHH 1975 et seq., JDP

	NOTODONTIDAE	
1994	<i>Phalera bucephala</i> Unn. Buff-tip	1948, JWHH larvae)
1995	<i>Cerura vinula</i> Unn. Pass Moth	1983 larvae)
1997	<i>Furcula furcilla</i> Cl. Sallow Kitten	1925, GB.: 1979, young larvae suspected JDP
2000	<i>Notodonta diomedarum</i> Linn. Iron Prominent	1896, GB.: 1948, JWHH larvae
200	3 <i>Eligmodonta ziczac</i> Unn. Pebble Prominent	Fairly common
2006	<i>Pheosia gnoma</i> Fabr. Lesser Swallow Prominent	1896 1925 GB)
2008	<i>Philonotus capucinus</i> Linn. Coxcomb Prominent	1948, JWHH. larvae: 1979 et. Seq. JDP
2017	<i>Clostera pigra</i> Hufn. Small Chocoidie-tip	1896, GB. 1964, GAE. 1 on <i>Salix repens</i>
2020	<i>Diloba caeruleocephala</i> Linn. Figure of Eight	28/10/86 PC
	LYMANTRIIDAE	
2031	<i>Leucoma selicis</i> Linn. White Satin Moth	1881, GB (3): 1896, GB. et. al. (last for N & D)
	ARCTIIDAE	
2057	<i>Arctia caja</i> Unri. Garden Tiger	Common
2060	<i>Spilosomalubricipeta</i> Linn. White Ermine	
	NOCTUIDAE	
2081	<i>Noxoa tritici</i> Linn. White-line Dart	1882,1889, GB.: now probably only casual
2089	<i>Agrotis exclamations</i> Linn. Heart and Dart	PC. 6/8/86, Casual
2107	<i>Noctua prunuba</i> Linn. Large Yellow Underwing	Common
2109	<i>Noctua comes</i> Hb. Lesser Yellow Underwing	Common
2111	<i>Noctua janthina</i> D. & S. Lesser B-b. Y. Underwing	Rather scarce
2114	<i>Graphiphona angur</i> Fabr. Double Dart	
2117	<i>Paradarsia glareosa</i> Esp. Autumnal Rustic	Scarce
2120	<i>Diarsia mendica</i> Fabr. Ingrailed Clay	Common
2130	<i>Xestia tritici</i> D. & S. Dotted Clay	Common
2133	<i>Xestia sexstrigata</i> Haw. Six-striped Rustic	Fairly common
2134	<i>Xestia xanthographa</i> D. & S. Square-spot Rustic	Common
2139	<i>Cerastis rubricosa</i> D. & S. Red Chestnut	PC. Regular
2158	<i>Lacanobia thalassina</i> Hufn. Pale-shouldered Brocade	Scarce
2186	<i>Orthosia gracilis</i> D. & S. Powdered Quaker	PC
2187	<i>Orthosia stabilis</i> D. & S. Common Quaker	PC
2188	<i>Orthosia incerta</i> Hufn. Clouded Drab	PC
2190	<i>Orthosia gothica</i> Linn. Hebrew Character	PC
2198	<i>Mythimna impure</i> Hb. Smoky Wainscot	Common
2225	<i>Brachyolomia viminalis</i> Fabr. Minor Shoulder-knot	Common
2245	<i>Allophyes oxycanthae</i> Linn. Green-brindled Crescent	PC. 1/10/86
2258	<i>Conistra vaccinii</i> Linn. The Chestnut	PC
2262	<i>Agrochola circetilets</i> Hufn. The Brick	PC 27/9/86,
2263	<i>Agrochola lota</i> Cl. Red-line Quaker	PC Regular.
2264	<i>Agrochola macilenta</i> Hb. Yellow-line Quaker	PC 28/16/86
2266	<i>Agrochola litara</i> Linn. Brown-spot Pinion	Common
2273	<i>Xenthia togata</i> Esp. Pink-barred Sallow	
2274	<i>Xanthia icteritia</i> Hufn. The Sallow	Fairly common
2280	<i>Acronicta leporina</i> Linn. The Miller	1948, JWHH. larvae on birch)
2284	<i>Acronicta psi</i> Linn. Grey Dagger	Common. 1948, JWHH.larvae
2299	<i>Amphipyra tragopoginis</i> Cl. The Mouse	Common
2321	<i>Apamea monoglypha</i> Hufn. Dark Arches	Very common
2322	<i>Apamea lithoxyloea</i> D. & S. Light Arches	PC
2330	<i>Apamea remissa</i> HB. Dusky Brocade	
2334	<i>Apamea sordens</i> Hufn. Rustic Shoulder-knot	
2343	<i>Mesapamea secalis</i> Unn. Common Rustic	Very common
2350	<i>Photodes pygmaea</i> Haw. Small Wainscot	Common
2353	<i>Laperina testaceae</i> D. & S. Flouced Rustic	PC
2360	<i>Amphipoea oculus</i> Unn. Ear Moth	PC
2361	<i>Hydraecia micacea</i> Esp. Rosy Rustic	PC. Common
2364	<i>Gortyna flavago</i> D. & S. Frosted Orange	PC. 1/10/86
2375	<i>Rhizatra lanosa</i> HB. Large Wainscot	Status needs further investigation
2425	<i>Colocasia corvif</i> Linn. Nut-tree Tussock	1896, GB.: 1915, JWHH.larvae on sallow JDP.
2434	<i>Diachrysis chrysitis</i> Linn. Burnished Brass 36	PC

2441 *Autographa gamma* Unn. Silver Y
 2442 *Autographa pulcherrima* Haw. Beautiful Golden Y
 2443 *Autographa jota* Unn. Plain Golden Y
 2450 *Abrostola triplasia* Unn. The Spectacle
 2469 *Scolipteryx libetrix* Unn. The Herald
 2471 *Hypena proboscoidalis* Unn. The Snout
 2484 *Schrankia costaeirrigulif* Steph. Pinion-st. Snout

: 1986 larvae on sallow, JDP
 Casual-usually common

May, 1986, PC
 PC
 2.24/7/85, PC, JDP

Due to the small size of many catches, the above comments on status can be only very general. Several new species were recorded in the fourth year of the Survey, so that much work still remains to be done. It seems however that many species may be rather scarce-perhaps being reinforced periodically from the nearby Twizell estate.

DIPTERA

TIPULIDAE
Nephrotoma appendiculata Pierre
Tipula varipennis Mg.
Tipula luna Westh.
Tipula paludosa Mg.
Helus longirostris Mg.
Pedicia rivosus Unn.
Limnophila ferruginea Mg.
Limnophila fulvoverosa Schum.
Limnophila nemoralis Mg.
 SIMULIIDAE
Simulium aureum spp. gp.
 BIBIONIDAE
Bibio marci Unn.
 STRATIOMYIDAE
Chloromyia formosa Scop.
Sargus iridatus Scop.
Stratiomys potamida Mg. B & IDW. larvae
Odontomyia viridula F.
Microsteyta polita Unn.
 RHAGIONIDAE
Chrisopilus cristatus F.
Rhagio scotopacea Unn.
 TABANIDAE
Haematopota pluvialis Linn.
 EMPIDIDAE
Hybos calliciformis F.
Hybos femoratus Müll.
Ocydromia glaberrima Fal.
Empis (Kriptempis) livida Linn.
Empis (Xanthempis) digramma Mg.
Empis (Xanthempis) stercorea Linn.
Empis (Leptempis) grisea Fal.
Empis (Pachymeria) tessellata F.
Empis nigripes F.
Empis nuntia Mg.
Hilara manra F.
 DOLICHOPODIDAE
Dolichopus trivialis Hal.
Dolichopus unguatus Linn.
Dolichopus simplex Mg.
Argyra confinis Zen.
Argyra diaphana F.
Argyra leucocephala Mg.
Campicnemus loripes Ha 1.

SYRPHIDAE

Syrphus ribesii Linn. Also B & IDW
Measyrphus corollae F.
Leucozona leucorum Linn.
Episyrphus balteatus DeG. Also B & IDW
Sphaerophoria scripta Linn.
Platycheirus clypeatus Mg. B & IDW
Rhingia campestris Mg. Also B & IDW
Sericomyia silentis Harr. Also B & IDW
Criorhina berberina F.
Syrta pipiens Linn.
Tropidia scita Harr. SGB
Helophilus pendulus Linn.
Eristalis tenax Linn.
Eristalis pertinax Scop. Also B & IDW
Eristalis intricarius Linn.
Eristalis nemorum Unn.
 LAUXANIIDAE
Lyciefla rorida Fal.
 HELEOMYZIDAE
Sailla bicolor Zen.
 SEPSIDAE
Sepsis cynipsea Linn.
 TACHINIDAE
Lydella ? senilis
 SARCOPHAGIDAE
Sarcophaga frenata Pand. and other spp.
 CALLIPHORIDAE
Belofardia agilis Mg.
Belofardia ? unctus Walb.
Lucilia caesar Linn.
 SCATOPHAGIDAE
Scatophaga inquinata Mg.
Scatophaga latiosa F.
Scatophaga squalida Mg.
Scatophaga stercoraria Unn.
 FANNIIDAE
Fannia similis Stein
 MUSCIDAE
Mesembrina meridiana Linn.
Dasyphora cyanella Mg.
Polietes lardaria F.
Morelia simplex Loew.
Hydrotaea albipuncta Zett.
Hydrotaea irritans Fal.

Muscina essimilis Fal.
Phaonia basalis Zett.
Helina laetifica A.-D.
Helina obscurata Mg.
Hebecnema affinis Mal.
Hebecnema unbratica Mg.
Haematobosca stimulans Mg.
TRICOPTERA
RHYACOPHILIDAE
Agapetus fuscipes Curt.
HYDROPSYCHIDAE
Hydropsyche instabilis Curt.

Hydropsyche siltalai Dobl.
Potamophylax latipennis Curt.
Glyptotaelius pellucidus Retz. Also B & ID
LIMNephILIDAE
Grammotaulius nigropunctatus Retz.
Limnephilus auricula Curt. .
Limnephilus lunatus Curt.
Limnephilus marmoratus Curt.
Limnephilus sparsus Curt. Also B & IDW
Limnephilus stigma Curt.
Limnephilus incisus Curt. B & IDW
Plectrocnemia consperse Curt. B & IDW

AUTHORITIES

GB=G. Bolam. SGB = S. G. Ball. PC = P. Corkhill. IE = I. Evans. GAE = G. A. Elliott. JWHH = J. W. Heslop Harrison. JEH = J. E. Hull. AGL = A. G. Long: JDP = J. D. Parrack. B & IOW = B. & I. D. Wallace.

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THE VEGETATION OF SEATON CARRS, AN AREA OF DERELICT RAILWAY SIDINGS

S. ROBBINS,

Burn Valley lodge, Elwick Road, Hartlepool, Cleveland

Seaton Carrs is an irregular shaped piece of land situated to the north of Seaton Carew. It is bounded by the main Newcastle/Middlesbrough railway line, by reclaimed rubbish tips, housing and low lying agricultural land which is subject to flooding. It is situated 300 metres from the North Sea.

The site is divided by a watercourse known locally as The Ste11, which runs approximately north east/south west. It has recently been cleaned out, the banks straightened, and is now partly enclosed in a culvert.

The area is generally level but falls off rapidly at the south west side. All the land has been made up with ash, brick rubble and ballast by its previous owners, British Rail. In places this layer is three metres deep overlying soft to firm clay. There are minor undulations across the area. On the south side of the Ste11, ridges extend in a north/south direction with slight hollows in between. These were the lines of the railway tracks before being lifted. In the northern section these lines run east to west and are slightly lower than the main area.

SITE HISTORY

Plans of the area show the site as The Carrs. Carr is old Norse for marshy ground overgrown with brushwood but if the area was covered with such vegetation it was cleared before the first Ordnance Survey maps of the area were prepared. This might explain the presence of species like *Glechoma*.

Early descriptions of the locality indicate sand dunes on the eastern side and it may be that it was once an exit for the River Tees. In May 1865 land was acquired by the W. Harbour and Railway Company from 'the Warden and Scholars of Merton College, Oxford. Merton College's estate in Seaton, according to the Victoria County History of Durham, originated in a grant from Bishop Robert Stickill in 1268, consisting of eight oxgangs which he had from Waiter de Carew. This manor was sequestered for the recusancy of a lessee in 1654 but the college successfully claimed it. In 1698 half of the manor of Stillington, with lands at Seaton, was leased by the College to Sir Ralph Jennison and then in 1791 to Robert Preston.

In 1835 the Hartlepool Dock and Railway Company ran their first load of coal to the docks at Hartlepool. Within a short time a new line was projected from Stockton which eventually ended at West Hartlepool. The N.E.R. took over the lines in 1857 and 1965 and operated the railways and ports in the town as one, even though the two towns did not amalgamate until 1967. With the expansion of the railways and docks more land was utilised as storage.

This site was part of a large group of timber yards, 65 acres in extent, situated between West Hartlepool and Seaton Carew.

Hartlepool has had a special reputation for timber imports since the first load arrived from the Baltic in 1840. By 1948 open timber storage and wood-working industries occupied 252 acres in the then two towns. This acreage accounted for half the area in the Hartlepoons devoted to industrial purposes. Two thirds of these imports were pitprops for the Durham and Midlands coalfields.

The wood was stored in large piles very close together, each stack consisting of about 200 pitprops. There were several catastrophic fires in the storage areas partly because of the wood shavings and brash on the ground, the most famous being in April 1949 when over 1,000 troops and 25 fire engines fought to control it. After several days it was extinguished without anyone being hurt although 25 acres of props were burned.

By 1980 a large area had been cleared of pitprops, tracks, sleepers and small buildings, the last part to be cleared being 'Seaton Carrs'. The piece of ground was then left with some parts having the sleepers still in position, and plants started to colonise the bare areas.

Attention was drawn to the area by R. McAndrew who showed slides of some of the plants at an August meeting (members night) of the Hartlepool Natural History Society. Some members then visited the site on their own and it was soon apparent that a large number of plant species had invaded the area. As no list was available it was decided that a survey should be carried out in 1986. In the meantime work had begun on upgrading and cleaning the Stell, followed by the site being purchased for ash extraction and subsequently, for housing. In this latter context trial holes revealed the ash to be four metres deep in places. The surface scrapings varied across the area, a piece of ground on the north west side revealing pure ash while another scraping on the eastern side brought to light partly burned pitprops and charcoal (the remainders of the great fire) covered with a thin layer of basic slag. Underneath

these were pulverised brick rubble and ash. In the last few months of 1986 gypsies and their horses used the Carrs, heaps of sea coal washings being illegally deposited alongside the rough tracks into the site. The result has been a wide variety of soil conditions for plants, giving it a total of over 200 species.

The most interesting community is an area near the north west corner now colonised by broom (*Cytisus scoparius*) and gorse (*Ulex europaea*). Here there are about twenty plants of *Verbascum nigrum* and *V. thepsus* and a large patch of *Glechoma hederacea*, several patches of *Teucrium scorodonia*, many plants of *Hypericum perforatum* and several of *Stellaria graminea*. My thanks go to Pat Appleyard who spent several days looking at the site to R. McAndrew who provided the initial lists and to Tom Dunn for his help and advice.

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PLANT LIST

EQUISETACEAE

Equisetum arvense L. Common horsetail

RANUNCULACEAE

Ranunculus acris L. Meadow buttercup

Ranunculus repens L. Creeping buttercup

Ranunculus sceleretus L. Celery leaved crowfoot. Two plants in wet clay on lower area on western side of the site.

Ranunculus ficaria L. Lesser celandine

PAPAVERACEAE

Papaver rhoeas L. Field poppy. R. McA. 1985

P. dubium L. Long headed poppy. On disturbed ground

P. somniferum L. Opium poppy. Two plants on disturbed ground

FUMARIACEAE

Fumaria officinalis L. Common fumitory. On garden rubbish

CRUCIFERAE

Sinapis arvensis L. Charlock. On rubbish near houses

Diploaxis muralis (L.) DC. Wall rocket

D. tenifolia (L.) DC. Perennial wall rocket. Very common over area

Capsella bursa-pastoris (L.) Medicus. Shepherds purse.

A few plants on garden rubbish *Cardamine hirsuta* L. Harvey. Bitter cress

Hesperis matronalis L. Dame's violet

Sisymbrium officinale (L.) Scop. Hedge mustard

S. orientale (L.)

S. stritissimum L. Tall rocket

Alussum maritima (L.) Desv. Sweet alison

RESEDACEAE

Reseda luteola L. Weld. In centre of area
R. lutea L. Wild mignonette. Several plants in ash on western side

VIOLACEAE

Viola arvensis Murray. Field pansy

V. tricolor L. Wild pansy

HYPERICACEAE

Hypericum perforatum L. Common St. Johns wort. Large group on south side and scattered plants over whole area

CARYOPHYLLACEAE

Silene alba (Miller) E.H.L. Krause. White campion. Scattered over area

S. vulgaris (Moench) Garke. Bladder campion. Mainly on ash on the eastern side

Saponaria officinalis L. Soapwort. One small group on east side, on ash

Cerastium fontanum Baumg. Mouse-ear. Scattered over site

C. semidecandrum L. Little Mouse-ear

C. tomentosum L. Garden plant. Three plants thrown over nearby boundary fences

Stellaria media (L.) Vill. Chickweed. On rubbish

Stellaria graminea L. Lesser stitchwort. On west side of site

Sagina procumbens L. Procrumbent pearlwort. On bare areas

Arenaria leptoclada (Reichenb) Guss.

A. serpyllifolia L. Thyme leaved sandwort. In bare areas

Spergularia rubra (L.) Jank. Presl. Sand spurrey

CHENOPODIACEAE

Chenopodium polyspermum L. All-seed. On disturbed ground on west side

C. album L. Fat hen. On disturbed ground

C. glaucum L. One plant on disturbed ground

C. rubrum L. Red goosefoot. About 10 plants in disturbed area

Atriplex littoralis L. Shore orache. A few plants on the east (sea) side and long the side of The Stell

A. hastata L. Hastate orache. Common in disturbed ground

A. patula L. Common orache. Common on west side and along Stell banks

A. prostrata

MALVACEAE

Malva sylvestris L. Common mallow

LINACEAE

Linum catharticum L. Purging flax. Common over area where vegetation not covering ground

GERANIACEAE

Geranium molle L. Dove's foot cranesbill

G. robertianum L. Herb robert

LEGUMINOSAE

Ulex europaeus L. Gorse

Cytisus scoparius (L.) link. Broom

Ononis repens L. Restharrow. On western side of site

Medicago lupulina L. Black medick

Mellilotus alutissimus Thell. Tall mellilot. Large numbers in centre and east of site

M. alba Desr. White mellilot. Several plants in centre of site

Trifolium dubium. Sibth. Lesser Yellow Trefoil. Occasional

T. compestre Schreber. Hop trefoil. Several plants on eastern side

T. hybridum L. Alsike clover. Several plants over area

T. repens L. White clover. Common on south side. Flowers developed phyllobothous forms in August on many plants

T. medium L. Zig-zag clover. On western side

T. erense L. Hare's foot. Forming large carpets on open areas on western side and on ash In centre of area

T. pratense L. Red clover. Common over area

Anthyllus vulneraria L. Kidney vetch. Forms large carpets especially on west side

Lotus corniculatus L. Bird'sfoot trefoil. Many plants on east side with Trifolium spp.

Vicia cracca L. Tufted vetch. Several plants mainly on east side.

V. sepium L. Bush vetch

V. sativa L. Common vetch
Lathyrus pratensis L. Meadow vetchling. Several plants
ROSACEAE
Rubus fruticosus L. sensu lato. Bramble. In undisturbed ground mainly on east side
Potentilla anserina L. Silverweed. On east side on ash
P. argentea L. Five plants in two groups near Stiel
P. rep tans L. Creeping cinquefoil. Common on undisturbed areas on extreme west and eastern perimeters
Fragaria vesca L. Wild strawberry. A few plants on western side
Rosa canina agg. Dog rose. A few plants near earthmounds on east side *R. rugosa* Thunb.
Crataegus monogyna Jacq. Hawthorn. Several plants on undisturbed bank on west side.
Sorbus intermedia (Ehrh) Pers. Several plants in north east corner
Malus sylvestris Miller. Crab apple. Believed to be from apple cores discarded on site. Two plants.
CRASSULACEAE
Sedum acre L. Wall pepper. On bare ground in centre of site
S. reflexum L. One plant in centre of site
S. album L.
ONAGRACEAE
Epilobium hirsutum L. Great hairy willow herb
E. montanum L. Broad leaved willow herb
E. adenocaulon Hausskn. American willow herb
Chamaenerion angustifolium (L) Scop. Rose bay. Several groups in industrial places
UMBELLIFERAE
Anthriscus sylvestria (L) Hoffm. Cow parsley. Plants scattered over all the site
Torilis japonica (Houtt) DC. Upright hedge parsley. On west side of site
Pastinaca sativa L. Wild parsnip. Common on east side
Heracleum sphondylium L. Hogweed. On north and east sides
Daucus carota L. Wild carrot. Common on west side
POLYGONACEAE
Polygonum cuspidatum Siab. and Zucc.
Polygonum aviculare agg. Knotgrass. Common
P. amphibium L. Amphibious bistort. Terrestrial form on east side near reclaimed rubbish tip
P. persicaria L. Persicaria. Two or three plants on garden rubbish
P. baldschuanicum Reg. Large plant at rear of houses on south west side
Rumex acetosella agg. Sheep's sorrel. On bare area on west side
R. crispus L. Curled dock. All over site
R. obtusifolius L. Broad leaved dock. All over site
SALICACEAE
Salix cinerea L. Common willow
GENTIANACEAE
Centaurea erythraea Rafn. Common Centaury. Plants scattered in bare areas on east side
BORAGINACEAE
Synphytum x uplandicum Nymann. Blue Comfrey. One plant in south east corner
Myosotis arvensis (L) Hill. Common forget-me-not
M. samositima Rochel. Early forget-me-not
Echium vulgare L. Viper's bugloss. About twenty plants in two areas. One group in centre had a pure white form
Convolvulus arvensis L. Bindweed. Around perimeter
Calysetegia sepium (L) R. Bro. Larger Bindweed. On the edges around the houses, and perimeter fence on the south side
SOLANACEAE
Solanum tuberosum L. Potato. One plant on garden refuse
Lycopersicon esculentum L. Tomato. A seedling in disturbed area
SCROPHULARIACEAE
Verbascum thapsus L. Mullein. On western side
Verbascum nigrum L. Dark mullein. Several plants on south-west side

Linaria vulgaris Miller. Yellow toadflax. On compacted ash on east side and on granite chippings on north side
Chaenorrhinum minus (L.) Lange. Small Toadflax. Recorded RMcA. 1985
Veronica chamaedrys L. Germander speedwell
V. arvensis L. Wall speedwell
V. hederifolia L. Ivy leaved speedwell
Rhinanthus minor L. *Sensu la to.* Yellow rattle
Odonites verna (Bellard) Dumort. Red rattle. Alongside track on the eastern side of the site and in south west area

LABIATAE
Actisno arvensis (Larn.) Dandy. Basil thyme
Prunella vulgaris L. Self heal. Common
Stachys sylvatica L. Hedge woundwort. On the west side of the site
Lamium album L. White dead nettle
Lamium purpureum L. Red dead nettle. On garden rubbish
Glechoma hederacea L. Ground ivy. On south west side
Teucrium scorodonia L. Wood sage. On west side of site

PLANTAGINACEAE
Plantago lanceolata L. Ribwort
P. major L. Rats tail plantain
P. media L. Hoary plantain
P. coronopus L. Buck's horn plantain. A few plants on east side

CAMPANULACEAE
Campanula rotundifolia L. Harebell. Common on east side

RUBIACEAE
Galium mollugo L. Great hedge bedstraw. Three plants on west side
G. verum L. Lady's bedstraw. Very common in two areas
G. spartea L. Goosegrass. Several plants on rubbish

CAPRIFOLIACEAE
Sambucus nigra L. Elder. On steep bank on west side

COMPOSITAE
Senecio jacobaea L. Ragwort. Scattered over site
S. squalidus L. Oxford ragwort. Scattered over site
S. viscosus L. Stinking groundsel. On bare areas and scrapings
S. vulgaris L. Groundsel
S. vulgaris var. *radiatus* Koch. Rayed groundsel
Tussilago farfara L. Coltsfoot. Several groups on south side
Solidago virgaurea L. Golden rod. One group on east side
Erigeron acer L. Blue fleabane. In bare areas
Bellis perennis L. Daisy
Achillea millefolium L. Yarrow. Common
A. ptarmica L. Sneezewort. Spotted by RMcA. in 1985
Tripleurospermum maritimum (L.) Koch. Scenless mayweed. Scattered over area
Marricaria matricarioides (Less) Porter. Pineapple weed. Along worn track in south east area
Chrysanthemum leucanthemum L. Ox eye daisy. All over the site
C. vulgare (L.) Bernh Tansy. Several plants in the centre of the site
Artemisia vulgaris L. Mugwort. Common
Arctium minus Bernh. *sensu lato* Lesser burdock. A few plants
Cardus nutans L. Musk thistle
Cirsium vulgare (Savi) Ten. Spear Thistle. Several plants in south west area
C. arvense (L) Scop. Creeping thistle. Common
Zentraurea nigra L. Hardheads. Mainly in east, undisturbed area
Hypochoeris radicata L. Cats ear
Leontodon autumnalis L. Autumnal hawkbit
Tragopogon pratensis L. Goats beard
Sonchus arvensis L. Field milk thistle. In scraped areas
S. oleraceus L. Field milk thistle. On rubbish
S. asper (L.) Hill. Spiny sow thistle. On rubbish
Heractium pilosella L. Mouse ear hawkweed

H. vagum Jordan
H. vulgatum Fries.
H. aurantiacum L. One plant on the south side
Crepis capillaris (L.) Wallr. Smooth hawkbit
Taraxacum officinale Weber *sensu lato*. Common dandelion. On disturbed areas
Calendula officinalis L. Pot marigold
LILIACEAE
Endymion hispanicus (Mill) Chouard. Garden bluebell
JUNCACEAE
Juncus gerardii Loisel. Midrush
Luzula multiflora (Retz.) Lej. Many headed woodrush
ORCHIDACEAE
Dactylorhiza fuchsii (Druce) 500. Common spotted orchid
D. purpurella (T. and T. A. Steph.) Northern fen orchid
CYPERACEAE
Scirpus maritimus L. Sea club rush. In Stell
GRAMINEAE
Phragmites australis (Cav.) Steudal. Reed. In Stell
Sieglingia decumbens (L.) Bernh. Heath grass
Festuca rubra L. Red fescue
Lolium perenne L. Ryegrass. Common alongside old rubbish tip
Vulpia bromoides (L.) S. F. Gray. Barren- fescue
V. myuros (L.) CC. Gmelin. Rats tail fescue. Found by Mrs. and the Rev. Gordon Graham
Catapodium rigidum (L.) C. E. Hubbard. Hard poa. On the east side where slag covers the remains of the fire
C. maritimum (L.) C. E. Hubbard. Darnel poa
Poa annua L. Annual poa
P. pratensis L. smooth stalked meadow grass
P. trivialis L. Rough stalked meadow grass
Dactylis glomerata L. Cocksfoot. Common especially on the north side
Anisanthea sterilis (L.) Nevski. Barren brome
Bromus mollis L. Lop grass. Scattered over site
Agropyron repens (L.) Beauv. Couchgrass
Hordeum murinum L. Wall barley. Several plants near to the houses on the east side
Arrhenatherum elatius (L.) Beauv. ex J. and C. Presto Out grass. Common
Holcus lanatus L. Yorkshire fog
M. mollis L. Creeping soft grass
Deschampsia cespitosa (L.) Beauv. Tufted hair grass
Calamagrostis epigejos (L.) Roth. Bush grass. Several large groups on east side of the site
Agrostis scolonifera L. Fenn
Alopecurus pratensis L. Meadow foxtail. A few plants
Anthoxanthum odoratum L. Sweet vernal grass
FUNGI FOUND ON SEATON CARRS. Compiled by Dorothy E. Wolfe
Lepiota cristata 9.9.84
Lepiota subincarnata 9.9.84
Two other *Lepiotes* _ identification not certain. This was a very good year for all the *Lepiota* species
Gymnopilus penetrans -growing on old timer, 9.9.84
Tremmicus hebeloides - an interesting find, as this species is gradually moving northwards
identified by Roy Watling of the Royal Botanic Garden, Edinburgh, 13.11.84
Pholiota abstrusa - also identified by Roy Watling, 13.11.84
Gymnopilus hybridus - det. Roy Watling, 13.11.84
Crucibulum laeve
Nidularia foecata - a new county record
Sphaerobolus stellata-these three Bird's Nests-were found on woodchips and sawdust, November '84. The Bird's Nests records are being mapped on a national basis, by Dr. Bruce Ing of Chester College. The material was sent to him for confirmation of my identification.
Lepiota nuda - 13.11.84
Tricholoma gibbosum - St. George's Mushroom, 22.6.84, a later date
Bovista plumbea - 5.6.84

THE VASCULUM

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BY THE WAY

Secretaries of Societies and other contributors to the Vasculum should send their notes to the Editor before 15th March, 1987.

SUBSCRIPTIONS

By the time you read this it will be time to pay your 1988 subscription if you haven't already done so. This remains at £3.00 (£3.50 family membership; £1.50 junior membership), for another year, in spite of inflation and the rising costs of printing. This has been largely due to your kindness in sending a little extra with your subscription. Please continue to do so and it may be possible to carry on with the present rates a little longer. We can, however, expect an increase in the very near future. May we remind those members who pay by Bankers Order that there is now a new Hon. Treasurer, Mrs. M. Thompson of 3 Shirley Gardens, Sunderland and therefore your bank should have been instructed to pay your subscription into the N.N.U. account at Barclays Bank, Fawcett Street Branch, Sunderland. If you omit to do so the payment will be returned to your bank account and you will fail to qualify as a member.

ENVIRONMENTAL ORGANISATIONS

The news about the necessity for caring for our countryside and the dwindling wildlife it still supports, seems to be gathering momentum. In the last decade a number of new Conservation Trusts have been set up. Apart from the County Trusts under the umbrella of the Royal Society for Nature Conservation, we now have a Woodland Trust and a Butterfly Conservation Trust to go with that very popular organisation the Royal Society for the Protection of Birds.

The most recent newcomer to the northern scene is the North East Environmental Network (NEEN). This is a body for initiating co-operation between the various environmental bodies, to exchange information on management projects, and share ideas about new projects. It would appear to do for environmental bodies what the Northern Naturalists' Union does for its constituent societies and field clubs. Its organ is 'Green Leaves', at present a directory listing some 450 organisations campaigning for the environment in the North East.

THE SOCIETIES

NORTHERN NATURALISTS' UNION

The 178th Field Meeting took place on 4th July 1987 along the old disused railway line between Lanchester and Langley Park, starting at the picnic site at Malton.

On a lovely sunny afternoon about 50 members and friends were present forming a very enthusiastic crowd from all parts of the region. We cannot remember seeing such a large gathering for a field meeting.

The leader, Dr. L. Davies, first of all organised a little dipping in the River Browney which flowed alongside the picnic site. He demonstrated the very prolific and varied fauna that feed in the shelter of the alga, *Cladophora*. Several of the common aquatic invertebrates illustrated splendidly the way food webs are set up in a specialised habitat. Between the picnic site and the railway line we passed through a small pine copse in which the local Conservation Trust Group had set up a number of bat boxes.

The verges of the railway track had become overgrown with a very rich mixture of plants where botanist and entomologist alike became fully occupied. No very rare plants were seen but the great variety and floral richness were very striking. Figwort was of great interest both as a plant and as the home of a beautiful black and white weevil.

Butterflies noted were Green-veined White, Orange-tip, Common Blue and Large Skipper. The Silver-ground Carpet Moth (*Xanthorhoe montanata*) was seen in clouds and other species seen were Yellow Shell (*Camptogramma bilineata*), Common White Wave (*Cabera pusaria*) and Pebble Hooktip (*Drepana falcataria*). Mr. Dunn laboured away for microlepidoptera, recording *Anthophila fabriciana*, *Argyresthia goedartella*, *Glyphyeryx simpliciella*, *Coleophora gryphipennella*, and *Nemophora degeeella*.

The afternoon was a great success and most encouraging to see such a large number of the younger generation with their boundless enthusiasm.

The 179th Field Meeting, on 12th September, 1987, followed the Earsden Urban Nature Trail. After a morning of torrential rain about 12 hardy souls met Mrs. White of the North Tyneside Recreation and Amenity Department at Earsden Church just as the rain was about to stop. She and Dr. Turnbull acted as co-leaders in what turned out to be a very pleasant sunny afternoon.

After waiting a few minutes for the completion of two weddings, we visited the churchyard and cemetery both of which are managed for wildlife, that is, little in the way of tidying up is done by church or local authority staff. Thence we followed a

field path bordered by an old elm hedge to the disused pit heap and pit yard of Fenwick Pit. Here we found much potential for wildlife conservation with several small temporary pools and very uneven terrain producing many distinct micro-habitats. Here our advice to Mrs. White was that landscaping the area would be counter-productive to wildlife and would be more likely to produce the kind of tidiness which results in a wildlife desert. Our next stop was a small pond near Holywell Grange Farm, where, to our amazement we saw a marvellous growth of Sea Aster (*Aster tripolium*) in what can only be fresh-water conditions. Mrs. White had a theory that the water may be brackish as a result of run-off from the nearby pit heap. We have our reservations about this but the fact is that the plant flourishes as luxuriantly as we have ever seen it in salt marshes, its usual habitat. Also growing in the water by the edge of the pond were *Ranunculus sceleratus*, *Alisma plantago-aquatica*, *Typha latifolia* and *Epilobium hirsutum*, a very fine collection of semi-aquatic plants.

Unfortunately it was too windy for many insects, the only butterfly seen being a Small White. Mines of *Lyonetia clerckella* were very plentiful on the leaves of an apple tree growing beside the track to the pond.

The 20th Heslop Harrison Memorial Lecture was held on 31st October 1987 in the Church Hall at Consett, by kind invitation of the Consett and Vale of Derwent Naturalists' Field Club. About 80 members and friends were present when the meeting was opened by Mr. Vallyley, the President of the Consett Club.

After a very short business meeting, chaired by Mr. Dunn in the absence of the President of the N.N.U., the speaker, Professor J. W. Cram, was introduced. His talk was entitled 'Plants in Dry Places'.

He began with a short introduction about the late Professor J. W. Heslop Harrison and then proceeded to outline his definition of 'dry places'. He emphasised that this did not mean habitats with no water at all like the moon where there is no life, but rather places where rainfall is extremely low and very irregular in its occurrence, perhaps as infrequent as once every two or three years, or where drainage is so rapid as to produce a substrate with little if any moisture, as on screes.

He then outlined three strategies adopted by plants to withstand such severe growth conditions. There were:—

- (a) as seeds or spores which can remain inactive for almost indefinite periods, then spring into life and complete a very short life cycle when water is available— as in ephemerals.
- (b) plants termed evaders which grow when water is available but can shut down and rest when growth conditions become severe. Examples are the cacti and the bromeliads. Another form of evading is that shown by plants with very deep tap roots which use subterranean water supplies, like the mesquite of Southern California.
- (c) plants which can grow very quickly when water is available, coming out of a resting condition remarkably quickly as the 'Resurrection Plant' of South Africa.

Professor Cram then took us through the various dry places in the world that he had visited with pictures of various plants that were adapted to dry conditions in special areas.

Thus in Southern California there were many ephemerals ('the desert in bloom' after rain); evaders like cacti and the deep rooted mesquite and ocotillo; there are no resurrectors.

In Venezuela again there are ephemerals and evaders with the addition of bromelads but no deep rooted species because the underground water is far too saline to allow any uptake. Again there are no resurrectors.

In African deserts we find ephemerals and a deep rooted evader in Welwitschia. Here there are no native cacti but many succulents, particularly of the Mesembryan- themum family which take their place. The special plants in South Africa, however, are the various resurrection plants of which there are many.

In Uzbekistan ephemerals and deep rooted species are the only examples of desert adaptation.

The Australian outback has produced fewer adaptations to the dry conditions. There are ephemerals and a deep rooted plant, Mulga, but saltbush appears only in the arid areas on the fringes of the real desert.

Strangely enough there is an arid region in England, namely the Breckland of Norfolk where the only really successful native plants are the mosses which to a large extent live on rain showers and the atmospheric moisture, for the ground layer has excessively rapid drainage.

After the lecture Mr. Valley called upon Mr. Brady to give a vote of thanks which he did with great skill. Finally Mr. Dunn thanked the Consett Club for inviting the N.N.U. and for supplying such splendid conditions for the talk. Members were invited to partake of the tea so kindly prepared by the Consett ladies and to view the exhibits which were laid out on the side tables. These consisted of a box of moths caught at Whitley Bay by Mrs. J. Beedle, a number of butterflies by R. Woods, live Spurge Hawk caterpillars and pupae, and spruce cones containing larvae of the Cloaked Pug by N. Cook, more Cloaked Pug larvae by T. Dunn who also exhibited the Alder moth, new to the area and caught in Castle Eden Dene N.N.R. by C. Gardiner of the Nature Conservancy Council, and books and leaflets of the British Plant Gall Society by Fred Stubbs

SUNDERLAND NATURAL HISTORY SOCIETY

On September 22nd a special meeting was held in Sunderland Museum to mark the 25th anniversary of the re-founding of Sunderland Natural History Society after a period of diapause. Mr. R. Lowe a very long-standing member, was the Honorary Chairman for this occasion and the guest speaker Mr. Peter Davis, former natural history curator of the museum. His topic for the evening was "The man who started it all", being an account of the events leading to the formation of the first Natural History Society in Sunderland, initiated by George Johnston of Berwick during the last century.

Refreshments were provided at a modest charge with all the proceeds going to the Durham County Conservation Trust Wildlife Appeal.

ANNFIELD PLAIN AND DISTRICT NATURALISTS' CLUB

A number of very successful field outings were enjoyed, particularly in the early part of the season when the spring flowers were a joy to behold. The first trip was to the Northumberland coast, starting at Embleton and ending at Alnmouth. This was followed by further spring walks at fortnightly intervals to Talkin Tarn, Malham, Kielder Forest, Rookhope, Kendal and the Scottish coast centring on Dunbar. So far the weather had been moderately kind with short spells of rain but always cold. Further summer walks round Shunner Fell, along Pocklington Canal, the Roman Wall and to Holwick in Teesdale were somewhat warmer and very enjoyable. The season ended with a number of very wet outings to Allendale, Keswick, Rievaulx, Otterburn and Bishop Auckland. The lists of flowers and birds compiled after each walk by various members are very impressive, indicating a keen interest in the wild- life of the countryside.

NOTES AND RECORDS

NOTES

An encounter with a Red Squirrel. On 5th October 1987, I was looking out for micro-lepidoptera in the Hermitage Woods at Chester-le-Street. From the corner of my left eye I saw or sensed a movement in a bare elm tree that had been attacked by Dutch Elm disease. A closer look at the tree revealed a red squirrel quite near the top. The tree was rooted at a lower level than the path I was following and it wasn't very old so that the squirrel was just above eye level and not more than 30 feet away. As soon as it realised that I had caught sight of it, it stopped climbing and tried to hide on the side of the trunk furthest away from me. This trunk was probably less than six inches in diameter. As I watched, now absolutely still, the squirrel's face slowly appeared round one side of the tree to take a peep at me. Realising that it was being watched it immediately jerked back behind the trunk and made a leap or two up the tree, covering perhaps another foot or a little more. The pantomime started again. The little face slowly appeared round the tree and then jerked back and the animal scuttled up another foot or so. The whole sequence of events was repeated again and again while I watched for perhaps 20 minutes. By this time the tree trunk was tapering off to almost twig size and it was near the top. There the squirrel stayed apparently afraid to move either up or down. At this point I thought it was time for me to move on and let it carry on with its own business whatever that was. On returning through the wood along the same path about three quarters of an hour later there was no sign of a squirrel anywhere.

T.C.D;

A Crowd of Old Ladies. The Old Lady (*Mormo maura*) is one of the more elusive moths although widespread and probably more common than the records indicate. It has a habit of appearing in odd corners (outhouses, curtains, etc.) more often than at light. This year, 1987, has provided more records of the species than ever before. Since it is known to prefer damp places, it is tempting to postulate that the excessive rainfall this year has had something to do with its greater activity. No less than six have been recorded from the Wildfowl Trust at the Washington Waterfowl Park. Of these two were found in hides, one inside a wader (boot) and three seen feeding on Buddleia flowers at night. Dr. L. Davies had one in the vestibule of his house in Durham on 18th August, Richard Braithwaite found one in his light trap at Neville's Cross on 2nd

September and one was found by Peter Tennant on 25th August when trimming the river bank at Warden (N. Tyne). It was actually in a hole in the bank only six inches from the water. Almost a surfeit of old ladies!

T.C.D.

A Convolvulus Hawk Moth. In this year of very few immigrant lepidoptera it is worth recording that Dominic Cassidy (aged 10 years) found a specimen of this moth at Sedgfield in early September. Even in the best of years this is a rare moth seldom reaching so far north as our area. Well done Dominic.

T.C.D.

Red Admirals in Moth Trap. At Allerwash the first autumn Red Admiral (*Vanessa atalanta*) arrived on 27th September 1987 and that evening I caught one in my MV moth trap. This was the third occasion on which this has happened here, the previous records being 20-9-80 and 10-8-86. Is this a common occurrence elsewhere?

P. L. Tennant.

Glow Worms. I was interested in the report on Glow Worms in the July issue of the Vasculum as we have seen them at Allerwash since we came here fifteen years ago. They are common from early June to early August across the lawns of the Hall and on the banks of the South Tyne. Mrs. Wrangham writes from Harehope Hall, Alnwick to report that at the side of their drive there has been a colony occupying an area about 500 yards long by 60 yards wide. They are usually seen for about a month from midsummer but this year the first was seen on June 2nd and they finished on July 4th. I have heard reports of a colony in the Kielder area so it looks as if a check on the distribution of Glow Worms in Northumberland in 1988 could be rewarding.

P. L. Tennant.

The Cloaked Pug. This species, *Eupithecia abietaria*, has had an intermittent history as a breeding species in this country. During the latter half of the nineteenth century it was well established in plantations of Norway Spruce in the New Forest, central Scotland and parts of Ireland. Then it declined as a breeding species and authenticated records have been missing for about 50 years. Recently, good breeding colonies have been discovered, and apparently well established in the North East, in Kyle Woods, Kielder Forest, and Hamsterley Forest.

T.C.D.

RECORDS

MOTHS AND BUTTERFLIES - LEPIDOPTERA

Whilst working as a summer warden on the Fame Islands (v.c. 68) this summer I have recorded the following

insects:—

Vanessa atalanta L. Red. Admiral. 2, 10, 11 June, 14 July, 24 August.

Aglais urticae L. Small Tortoiseshell. 19 July, 2 September.

Pteris rapae L. Small White. A probable on 3 July.

Pteris napi L. Green-veined White. 30 July.

Arctia caja L. Garden Tiger. 18 July — a mating pair.

Euxoa nigricans L. Garden Dart. 18 July.

Noctua pronuba L. Large Yellow Underwing. 18, 20, 21 July.

Xestia c-nigrum L. Setaceous Hebrew Character. 19 July.

Mamestra brassicae L. Cabbage Moth.

Lacanobia cleracea L. Bright-line Brown-eye. 23 July.

Apamea monoglypha Hüfn. Dark Arches. 25 June, 14, 18 August.

Oligia fasciata Haw. Middle-barred Minor.

Luperina testacea D. & S. Flounced Rustic. A probable on 18 July.

Hydraecia micacea Esp. Rosy Rustic. 21 July.

Autographa gamma L. Silver Y. 29 July, 14 August, day-flying.

Hepialus humuli L. Ghost Moth. A female.

Xanthorhoe fluctuata L. Garden Carpet. 18, 19, 23 July.

Pelurga comitata L. Dark Spinach.

Abraxas grossulariata L. Magpie. 29 July.

Camptogramma bilineata L. 30 July, 14, 18 August.

Hofmannophila pseudospretella Stt. Brown House-moth. Several.

OTHER INSECT FAMILIES

Philaenus spumarius Fallen. Froghopper.
Anthocoris nemorum L. Flower Bug.
Forficula auricularia L. Earwig.
Staphylinus olens Mueller. Devil's Coach-horse.
Necrophorus investigator Zett. Sexton Beetle.
Adalia 10-punctata L. Ladybird.
Lucilia caesar L. Greenbottle.
Calliphora vomitaria L. Bluebottle.
Metasyrphus luniger Meigen. Hover Fly.
Syrphus ribes H. L. Hover Fly.
Episyrphus balteatus Degeer. Hover Fly.
Eristalis arbustorum L. Hover Fly.

OTHER INVERTEBRATES

MOLLUSCA
Helix aspersa Garden Snail
Deroceras reticulatum Netted Slug
WOODLICE
Ligia oceanica Sea Wood louse
Porcellio scaber Scabby Woodlouse
SPIDERS AND HARVESTMEN
Amaurobius fenestratis,
Segestria senoculata,
Phalangium opilio,
Mitopus morio.

CECIDIA - GALLS

David Jones

Mycoplasma (Bacterium) causing Phyllanthous gall on *Trifolium repens*. 66
Very common in a field by Catcote Road/Sandwell School. I counted ten infected flowers on just three plants in early August. Visible from July to October.

Mycoplasma (probably) giving a Phyllanthous growth on *Plantago lanceolata*, 66
One on plant in Summerhill area.

Dasyneura trifolii (Midge) on *Trifolium repens*. 66
On several plants. Not so common as in 1985.

Dasyneura sp. (Midge) on *Trifolium pratense* 66
On one plant in the Summerhill area of Hartlepool.

Dasyneura ulmariae (Midge) on Meadowsweet 66
Common alongside wet areas where the plants grow.

Diastrophus rubi (Wasp) on *Rubus* 66
Two affected areas. One Hart/Haswell railway line near Hart station, the other Crirndon embankment on the east side near Hart Golf Course tunnel.

Xestophanes potentillae (Wasp) on *Potentilla reptans* 66
On one plant at the top of Burn Valley (an area recently trampled whilst a new fence was put in). Another plant seen in 1985 was cut out when the field was tidied up — in Elwick Road. Seen also in Durham County near Shotton.

Wachtliella rosarum (Midge) on *Rosa*. 66
Common around the town (Hartlepool).

Blennocampa pusilla (Sawfly) on *Rosa*. 66
Common. Occurs on cultivated species such as 'Manhattan', 'Penelope'.

Diplolepis rosae (Wasp) on *Rose*. 66
Not common, only three affected plants seen. Two on plants in hedgerows on west side near Crookfoot Reservoir.

Diplolepis spinosissima (Wasp) on Burnet rose. 66
On plants alongside railway line near Brus area.

Diplolepis eglanteriae (Wasp) on *Rose*. 66
Commonly seen in late August/September. Very common along Greatham back lane near ditch level.

Eriophyes similis (Mite) on Blackthorn. 66
Seen on west side of A19 and Hart/Haswell railway (leaf curling on young shoots, very common).

<i>Taphrina deformans</i> (Fungus) on <i>Prunus</i> . 6	6
Commonly seen on Peach plants e.g. Stockton Road, Ward Jackson Park.	
<i>Myzus cerasi</i> (Aphis) on <i>Prunus</i> .	66
Common, mostly seen on cultivated species such as 'Amanogawa'.	
<i>Eriophyes goniothorax typicus</i> (Mite) on Hawthorn	66
Very common, affecting numerous leaves, in some cases five sides of the leaves colonised. New infections occur in September.	
<i>Dasyneura crataegi</i> (Midge) on Hawthorn.	66
Commonly seen along cut hedges, only one or two on uncut hedges.	
<i>Eriophyes pyri</i> (Mite) on Rowan.	66
One or two plants affected in Elwick Road.	
<i>Eriophyes avellanae</i> (Mite) big bud on Hazel.	66
Seen along the Hart/Haswell railway line.	
<i>Eriophyes sp.</i> on <i>Hedera</i> .	66
On cultivated plants.	
<i>Dasyneura urticae</i> (Midge) on nettle.	66
Very common, affecting many plants in July/August, second infection in September.	
<i>Eriosoma ulmi</i> (Aphis) on Elm.	66
Very common in Brinkburn where 17 out of 20 trees were affected in July/August.	
<i>Eriophyes tristriatus typicus</i> (Mite) on Walnut	66
On leaves of trees in Ward Jackson Park.	
<i>Taphrina turgida</i> (Fungus) on Silver Birch.	66
On several plants in Burn Valley and on several trees in the town.	
<i>Eriophyes axillare</i> (Mite) on Alder.	66
Affecting plants in Burn Valley, Tanfield Road and Seaton Park.	
<i>Eriophyes brevitarsus typicus</i> (Mite) on Alder	66
Alongside the A19.	
<i>Eriophyes laevis inangulis</i> (Mite) on Alder.	66
Very common in the town.	
<i>Dasyneuraalni</i> (Midge) on Alder.	66
Tanfield Road.	
<i>Mikiola fagi</i> (Midge) on Beech	66
Affected leaves on Hart/Haswell railway.	
<i>Biorhiza pallida</i> (Cynipid wasp) on Oak.	66
One plant affected near Crookfoot Reservoir. A poor year.	
<i>Andricus kollari</i> (Cynipid wasp) on Oak.	66
On young trees in Tanfield Road.	
<i>Andricus fecundator</i> (Cynipid wasp) on Oak.	66
On several trees in the West Park, Greatham Park Lane and Tanfield Road areas.	
<i>Cynips divisa</i> (Cynipid wasp) on Oak.	66
Common on trees along Greatham Back Lane.	
<i>Neuroterus quercus baccarum</i> (Cynipid wasp) on Oak.	66
Commonly seen on oak in and around the town.	
<i>Neuroterus numismalis</i> (Cynipid wasp) on Oak.	66
Common on oak.	
<i>Neuroterus tricolor</i> (Cynipid wasp) on Oak.	66
On several plants Greatham Back Lane.	
<i>Pemphigus bursarius</i> (Aphid) on Poplar.	66
Seen on trees cut back during winter. Young growth affected by several galls.	
<i>Pemphigus spirothecae</i> (Aphid) on Poplar.	66
On quite a few trees near the main shopping centre and in the local parks.	
<i>Ascomyces aureus</i> (Fungus) on Poplar.	66
Common.	
<i>Dasyneura marginemtorquens</i> (Midge) on <i>Salix alba</i> .	66
On trees in Burn Valley.	
<i>Eriophyes marginatus</i> (Mite) on <i>Salix alba</i> .	66
On trees in Burn Valley and Rossmere Park.	
NOTE: All records are by S. Robbins and refer to Hartlepool and nearby villages and are for 1986.	