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THE VASCULUM

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Edited by:
L JESSOP

Sunderland Museum and Art Gallery, Borough Road, Sunderland.

BY THE WAY

Secretaries of societies and other contributors to The Vasculum should send their notes to the editors before 15 June 1995

"Year of the bug"

As most of our readers will know, the Hancock Museum is one of the largest museums in Britain devoted to Natural History. Originally designed to house only permanent displays, over recent years one of the large galleries has been used to house a series of temporary exhibitions. Because of the large size of the gallery, the museum can accommodate the biggest travelling exhibitions available such as the *Rainforest*, *Monsters of the Deep*, *Shropshire Mammoth*, and more recently *Dinosaurs Alive!*, which attracted some 230,000 visitors in a space of eight months. In 1994 the first "blockbuster" exhibition to be designed specially by the Hancock staff was on show: called *Claws*, it dealt very broadly with the biology of the cat family. For those who missed the display at the Hancock, it is currently on tour to other venues in the region, at Langbaugh (to 13 May), Dorman Museum at

Middlesbrough (18 May 15 July) and Sunderland Museum (22 July 15 October).

This year, two major exhibitions are being brought to the Hancock that deal with insects and other minibeasts (although "macrobeasts" would perhaps be a better description, judging by the size of the exhibits). The first, *Monster Creepy Crawlies*, is on show now: we are the first-ever venue for this exhibition and the giant models are very impressive indeed. This is to be followed by *Megabugs*, which has already been on show in several museums in Britain. In the Hancock's publicity, 1995 has been dubbed "the year of the bug"

My own interest in Natural History, as for many of us, was sparked by visits to the Hancock as a youth, in the days when you were likely to be the only visitor in the galleries, and there is no doubt that these blockbusters attract people in much larger numbers than did the old, Victorian displays of serried ranks of specimens laid out on scientific lines. 20,000 visitors came to *Monster Creepy Crawlies* in the first week alone, and many of these are young children the next potential generation of entomologists. Let us hope that the ranks of the N.N.U. will be swelled in future years by those who remember first getting interested in insects by seeing the giant models in 1995.

Unfortunately, the enormous workload generated by these projects, in addition to all the other demands of running a museum, have left little time for my co-editor Alee Coles to devote to *The Vasculum*, and he has reluctantly decided to give up the post. This leaves a severe gap in the operation of the journal, as I am a mere entomologist with no pretence of being an all-round naturalist. I am therefore seeking volunteers, preferably with skills in botany and ornithology, to gather and prepare material for publication.

A Mysterious moth

L. Jessop, Sunderland Museum and Art Gallery, Borough Road, Sunderland.

In December 1994 an unusual moth was brought to the Hancock Museum by a member of the public, Mr Firnister from Gosforth, who had found it sitting on his bedroom wall. Quite a pretty thing, its wings were marked with brown, white and grey in a such a way that they looked as if they had seeds stuck on them: a very convincing example of two-dimensional shading giving a three-dimensional effect. The legs were covered with bright pink hairs and

there was a prominent tuft of hairs on the thorax. A bright pink abdomen proclaimed that this is probably a distasteful species. I was totally baffled to identify it, even to the family level. Was it an Arctiid, a Hawk Moth, or even a prominent?

At a meeting of the N.N.U. at the Hancock shortly after its arrival the moth was shown to our leading "Moth Brains", but none was able to put a name to it. Shortly afterwards the moth died, and it was sent down to David Carter at the Natural History Museum, who has identified it as *Phobetron hipparchia* (Cramer), a member of the family Limacodidae. The Limacodidae is a mainly tropical family, and is represented by only two species in Britain (The Festoon Moth *Apoda avellana* and the Triangle Moth *Heterogenea asella*).

P. hipparchia is widespread in South America and feeds on the foliage of various trees. How it got to Newcastle is a mystery perhaps it was brought in with a consignment of plants or stowed away on a ship or aeroplane?

Two notable new toadstool records for County Durham (VC66)

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

Darlington and Teesdale Naturalists' annual Club Foray, held in Flatts Wood, Barnard Castle on 17 September 1994, produced a number of interesting records of larger toadstools. *Amanita phalloides*, the Death Cap, was found by the river associated with oak whilst three mature hornbeams played host to *Lactarius circellatus*, unrecorded in VC66 since 1907. These trees also sheltered the county's only known site of *Coprinus picaceus*, the Magpie, seen in some numbers on this occasion.

Of even more interest was the first county record (coll. A. Weir) of *Gomphidius maculatus*, found under *Pinus sylvestris* but almost certainly mycorrhizal with a neighbouring mature larch. This dull cream toadstool has thick, arched, decurrent gills and is glutinous to the touch. It reddens rapidly when handled and the red soon darkens to a dull brownish black. The lower part of the stem is punctate. It is likely to be confused only with the more frequently found *G. glutinosus*, a grey toadstool which does not bruise.

Some readers may be familiar with two other rather glutinous white toadstools which occur in beechwoods. These are *Hygrophorus cossus* and *H.*

chrysaspis, the former of which is characterised by a strong, unpleasant smell said to resemble that of the goat-moth larva and the latter acquires rusty brown staining either with age or through application of Sodium hydroxide. A similar but seldom-recorded fungus, *H. heydrichii*, is confined to birch and was unknown from VC66 until found on this foray. The author has collected it only once before from woods in upper Swaledale when foraging with Dr R. Walling of RBG, Edinburgh, who recognised it at once. Experts do not agree about its smell, but it, too, is glutinous when fresh and is best recognised by habitat and by the coloured gills, pale yellow with a distinct pinkish flush. A single specimen, collected by Mr J. Manson, was almost odourless but grew with birch and had the characteristic gill colour of *H. hedrychii*.

Fungi in Gosforth Park Nature Reserve

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

An N.N.U. Field Meeting to Gosforth Park Nature Reserve on 20 October 1990 yielded a list of 79 different species of fungi (*Vasculum* 75(4): 52). To that list may be added the following six species which my wife and I recorded in the Reserve on 22 September 1994: *Lentinellus cochleatus*, *Lenzites betulina*, *Hygophoropsis aurantiaca* (False Chanterelle), *Phellinus igniarius* (Willow Fomes), *Cortinarius pseudosalor*, and *Hydnum repandum* (Hedgehog fungus).

The first two of these additional species require further comment:

Lentinellus cochleatus. There were four groups of the fungus, each comprising several fruiting bodies and affecting the moss-covered bases of three separate trees (two identified as Silver Birch). We were able to identify the species from the characteristic gross appearances, the smell and by microscopic examination of the spores. Confirmation was subsequently obtained from Dr D.N. Pegler (Kew). *L. cochleatus* appears to be uncommon in Northumberland, and possibly in County Durham. This is the first time my wife and I have seen it in five years of local fungal foraging and a search of the recent extensive records for County Durham by A.W. Legg in *The Vasculum* between 1990 and 1994 has failed to reveal any mention of this species. It is interesting to note that in response to my query regarding the distribution of *L. cochleatus*, Dr Pegler, on the basis of the National Collection at Kew, stated the species is recorded from many counties of England and Wales, including Cumbria and Yorkshire, but does not mention Durham or Northumberland.

Lezifis betulina. The local status of this species is also uncertain. There were several fungi but all on the same dead fallen branch of Silver Birch. Marcel Bon (1987, *The Mushrooms and Toadstools of Britain and Northwestern Europe*, p. 318) states that it is "quite common", but my wife and I have not previously noted this species locally and interestingly Legg (1993, *Vasculum* **78(3)**: 27), whilst recording this species in Hamsterley Forest, states "no modern records known".

Four-spotted Moth *Tyta luctuosa* (Denis & Schiff.) new to County Durham (VC66)

Pamela & Hazel Johnson, Glenside, 11 Quarry Heads Lane, Durham DH1 3DY

The morning of 12 June 1994 was warm and sunny with a slight breeze, so we decided to visit a field in the city (grid reference NZ272415) where each year we have observed Chimney Sweepers (*Odezia afrata*) in the hope of obtaining a photograph of these moths before the hay was cut.

Silver Ground Carpet Moths (*Xanthorhoe montanata montanata*) were in among the meadow grasses but no Chimney Sweepers were visible. Suddenly we both saw a small moth flying with a rapid wing beat and a flight quite unlike the Carpets, descend next to some clover in flower. The four spots were distinctive when at rest, and so to aid identification of an unknown species we took a couple of quick photographs. At this point, the moth flew off and was blown away by the wind out of sight.

On a subsequent visit the Chimney Sweepers were seen but no signs of the mysterious moth.

The correct identity remained uncertain until the photographs had been processed. Then the moth appeared to resemble the illustration of the Four-spotted Moth in Skinner's *Guide*. The photographs were duly sent to Tom Dunn who expressed great interest and the identification was further confirmed by Adrian Riley, Paul Sokoloff and Bernard Skinner.

This species is of **Red Data Book Category 3** status (Vulnerable), and the most northerly records have hitherto been (one) from Lincolnshire and (several) from Nottinghamshire: its range has been markedly extended by this find. According to the red data book for insects (Shirt, 1987) it is locally

resident in Dorset, Suffolk, Hertfordshire, Kent, Essex and Nottinghamshire, and casually reported from Hampshire, Buckinghamshire, Surrey and Hereford & Worcester. It was formerly found locally in South-Eastern England but has much decreased in recent years.

Tom Dunn has notified the *Entomologist's Record* with a note on its occurrence in Durham. Our thanks are due to him for all the enthusiasm and thoroughness taken in procuring confirmation of this species.

References

Dunn, T.C., 1994. *Tyfa luctuosa* (Dennis & Schiffermüller), the Four-spotted (Lep.: Noctuidae), new to Durham (VC66). *Entomologist's Record* **106**:254.

Shirt, D.B., 1987. *British Red Data Books: 2. Insects* 402 pp. (Peterborough: Nature Conservancy Council).

Skinner, B., 1984. *Colour Identification Guide to Moths of the British Isles*. 267 pp. (Harmondsworth: Viking).

Durham and Cleveland Dragonfly Group

Members will be interested to learn of a new special-interest group being formed in our area. The *Durham and Cleveland Dragonfly Group* is a local group of the *British Dragonfly Society* (itself a very active society that promotes interest in dragonflies and damselflies). The aims of the new group will be to increase the awareness of, and further the understanding of, dragonflies and damselflies in the two counties. Five field visits have been arranged for 1995, and anyone with an interest in Odonata will be most welcome. All are on **Sundays at 10.00 a.m.**

18 June:	Brasside Pond. Meet at grid ref. NZ287458.
23 July:	Malton Nature Reserve. Meet at NZ182459.
30 July:	Eston Moor. Meet at car park, NZ552169.
13 August:	Witton-le-Wear. Meet at car park, NZ160315
29 August:	Lovell Hill Ponds. Meet at NZ590193.

Further details can be obtained from Dean Heward, by phoning 01325 369152.

Unusual Hawthorns in Horsleyhope Ravine N.N.R.

T.C. Dunn. The Poplars, Durham Road, Chester-le-Street.
Mrs A. Davies. 35 Hallgarth Street, Durham City.

During the Northern Naturalist's Union Field Meeting to Horsleyhope Ravine National Nature Reserve on 30 May 1987, Mrs A. Davies detected two unusual hawthorns with odd-shaped leaves. These were brought to the attention of TCD and a discussion took place there and then with the help of a shortened *Flora*. The *Flora* indicated that the bushes showed some characters of the Midland Hawthorn, *Crataegus laevigata* (Poiret) DC. Since neither flowers nor fruits were available at the time it was decided to delay further investigation to a later date,

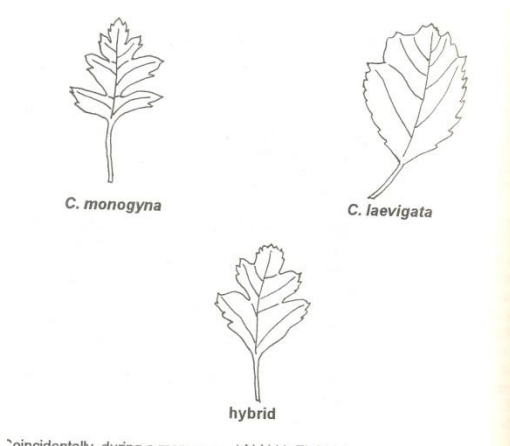
The opportunity to look at the bushes again did not occur until the spring of 1992. Then, Dr & Mrs Davies visited the site in May but failed to find the bushes. This was reported to TCD who visited the wood two days later and he immediately chanced upon the specimens again, from which he collected samples of leaves and flowers. The flowers were typically monogynous as in *Crataegus monogyna* Jacq., but the leaves were palpably different from those of pure *Crataegus monogyna*. There the puzzle rested until TCD casually mentioned the investigation to Dr Phil Gates of the Department of Biology at Durham University, who, showing immediate understanding and recall suggested that he would send TCD a copy of a paper by J.I. Byatt (1975: *Watsonia* **10**: 253-264) on hybridization between *C. monogyna* Jacq. and *C. laevigata* (Poiret) DC in south-east England.

Byatt's investigation showed that the two hawthorns readily hybridize under suitable distribution and habitat conditions in S.E. England. The sketches of typical leaves provide the answer to our problems, together with the discussion concerning flowers and fruits.

The leaves on the Horsleyhope plants agree perfectly with those of the hybrid leaf sketch. What is more, the laxer flower cluster with slightly wider petals but with mainly monogynous fruits also agrees with the leaf characters.

It would appear that there may be some possibility of an ancient hybridizing event or the influence of forestry work during planting some time ago. The wood itself contains several very ancient trees, particularly the oaks. In this connection it may be of some significance that TCD collected specimens of leaf mines from one of these oaks on 1 October 1986 that gave rise on 26

March 1987 to a specimen of the microlepidopteron *Phyllonorycter muelleriella* Zeil., a rather uncommon species which, according to A.M. Emmet (*Moths & Butterflies of Great Britain and Ireland* 2 page 314) is a strong indicator of ancient woodland.



Coincidentally, during a more recent N.N.U. Field Meeting along the banks of the North Tyne at Acomb (in May 1992) the leader, Dr J. Richards pointed out a hawthorn that also showed signs of some hybridisation with *C. laevigata*.

Thanks are due to Phil Gates for bringing to our notice the paper by Byatt, and to T. Coult for sketching the leaves.

Postscript:

Because of the nature of hybridisation in *Crataegus*, confirmation was required from the Botanical Society of the British Isles referee for this genus, Prof. A.D. Bradshaw. To this end, T.C. Dunn, Rev. G.G. Graham, B. Humphries and A.Coles visited the site in June 1994. Suitable flowering and fruiting material was collected, together with detailed descriptions of the growth forms of the trees.

Prof. Bradshaw confirmed the presence of the hybrid (*C. x macrocarpa* Hegetschw.), but suggested an alternative source that does not involve local hybridisation, nor necessarily the presence of both parents. *C. x macrocarpa* is a fertile hybrid and once introduced could possibly self-seed. It is possible that the source of original *C. x macrocarpa* could have been hedging material, or similar, brought to the area as seedlings, or cuttings. This material would need to have originated from an area within the natural range of *C. laevigata*. In addition, if this were the source, the translocation must have taken place a considerable time ago, because from the time of enclosure, commercially available hedging was almost exclusively *C. monogyna* which was most suitable on account of its growth form and spininess.

Whichever theory is closest to the truth, it is still difficult to explain how the trees found their way into such a secluded piece of ancient woodland.

A.Coles

N.N.U. Field Meeting to Brasside Ponds and Low Newton Junction

This meeting was held on 18 June 1994 when about 20 members and friends gathered behind Frankland Prison at 2.30 p.m.

Mrs Julie Stobbs led the first part of the outing along the old railway track towards Newton Junction. Alongside the track a number of small ponds were inspected for tadpoles and newts. The Great Crested Newt had been identified there last year but we failed to find it again. The margins of the ponds were now showing the fresh green rosettes of the Water Plantain, *Alisma plantago-aquatica* in some numbers. At the end of the track, the one-time site of the junction with the north-south railway, the area had been saturated with water from the railway banks, with the production of a flourishing lime-rich fen. Here we were greeted with the magnificent sight of hundreds of Northern Marsh Orchids, *Dactylorhiza purpurella*, while between them was the promise, in the near future, of a similar abundance of Common Spotted Orchids, *Dactylorhiza fuchsii*, and the hybrids between the two. In the same area the Hay Rattle, *Rhinanthus minor* was in full flower. This was a rather surprising habitat for it possibly because the limey substrate formed an attraction in spite of the wet fen conditions. All these plants were growing in a lush matrix of small sedges and fen grasses.

After a time inspecting the junction we returned to the vicinity of the prison where Tom Dunn took over as leader and talked for a short while on the history of the area at the end of the prison wall and the old Frankland track. This part of the Home Office property had been spared for conservation because of the abundance of the Narrow-bordered Five-spot Burnet Moth, *Zygaena lonicerae* and the Common Blue Butterfly, *Polyommatus icarus* which were very abundant when the prison boundaries were being discussed.

A tour of the pond then followed where many of the aquatic birds were seen, notably the huge flock of Canada Geese and a beautiful family of a female Great Crested Grebe with her tiny chicks

making their way across the pond.

This was a most enjoyable afternoon with the help of good weather as well as the outstanding natural history.

Equisetaceae

Equisetum fluviatile
Equisetum palustre
Equisetum arvense

Hydrocharitaceae

Elodea canadensis
Potamogetonaceae
Potamogeton pectinatus

Juncaceae

Juncus bufonius agg.
Juncus effusus
Juncus conglomeratus
Juncus articulatus

Orchidaceae

Dactylorhiza fuchsii
Dactylorhiza purpurella

Lemnaceae

Lemna minor

Typhaceae

Typha latifolia

Cyperaceae

Eleocharis palustris
Carex flacca
Carex nigra

Gramineae

Aira caryophylla

Glyceria declinata

Vulpia bromoides
Deschampsia flexuosa
Milium effusum

Water Horsetail
 Marsh Horsetail
 Common Horsetail

Canadian Pondweed

Fennel Pondweed

Toad Rush [agg.]
 Soft Rush
 Compact Rush
 Jointed Rush

Common Spotted
 Orchid
 Northern Marsh
 Orchid(plus hybrids)

Common Duckweed

Great Reedmace

Common Spike-rush
 Glaucous Sedge
 Common Sedge

Silvery Hair-grass

Small Flote-grass

Squirrel-tail Fescue
 Wavy Hair-grass
 Wood Millet

Phleum pratense ssp.
bertoloni

Ranunculaceae

Ranunculus flammula

Cruciferae

Sisymbrium officinale

Resedaceae

Reseda lutea

Hypericaceae

Hypericum perforatum

Caryophyllaceae

Silene vulgaris

Silene dioica

Silene alba

Cerastium fontanum

Linaceae

Linum catharticum

Leguminosae

Melilotus altissima

Melilotus officinalis

Lotus corniculatus

Vicia cracca

Vicia sepium

Lathyrus montanus

Rosaceae

Potentilla reptans

Alchemilla

xanthochlora

Sanguisorba

officinalis

Rosa canina agg.

Rosa sherardii

Smaller Catstail

Lesser Spearwort

Hedge Mustard

Wild Mignonette

Common St. John's
 Wort

Bladder Campion

Red Campion

White Campion

Common Mouse-ear

Purging Flax

Tall Melilot

Common Melilot

Common Birdsfoot

Trefoil

Tufted Vetch

Bush Vetch

Bitter Vetchling

Creeping Cinquefoil

Intermediate Lady's

Mantle

Great Burnet

Dog rose

Onagraceae		Scrophulariaceae	
<i>Epilobium hirsutum</i>	Great Willow-herb	<i>Unaria vulgaris</i>	Common Toadflax
<i>Epilobium palustre</i>	Marsh Willow-herb	<i>Rhinanthus minor</i>	Yellow Rattle
Hippuridaceae		agg.	
<i>Hippurus vulgaris</i>	Marestail	<i>Euphrasia nemorosa</i>	Eyebright
Polygonaceae		Labiatae	
<i>Rumex acetosa</i>	Common Sorrel	<i>Galeopsis tetrahit</i>	Common Hemp-
Betulaceae		agg.	nettle
<i>Betula pendula</i>	Silver Birch	Campanulaceae	
Fagaceae		<i>Campanula</i>	Harebell
<i>Quercus petraea</i>	Sessile Oak	<i>rotundifolia</i>	
Salicaceae		Caprifoliaceae	
<i>Salix fragilis</i>	Crack Willow	<i>Viburnum opulus</i>	Guelder Rose
<i>Salix caprea</i>	Goat Willow	Dipsacaceae	
<i>Salix cinerea</i>	Common Sallow	<i>Knautia arvensis</i>	Field Scabious
Ericaceae		Compositae	
<i>Calluna vulgaris</i>	Ling	<i>Achillea millefolium</i>	Yarrow
Gentianaceae		<i>Tanacetum vulgare</i>	Tansy
<i>Centaureum erythraea</i>	Common Centaury	<i>Cirsium palustre</i>	Marsh Thistle
Boraginaceae		<i>Centaurea nigra</i>	Black Knapweed
<i>Myosotis laxa</i> ssp. <i>caespitosa</i>	Tufted Forget-me-not	<i>Hieracium vulgatum</i>	Common Hawkweed
<i>Myosotis arvensis</i>	Common Forget-me-not		

...One to look out for

The latest New Naturalist volume, on Ladybirds by M.E.N. Majerus, is an excellent book, certainly one of the best in the series and no doubt destined to become a classic.

In it, we see that the five spot ladybird (*Coccinella5-punctata*) is found under stones and in plant flood debris on shingle banks, and in gorse foliage close to shingle. Majerus comments that the species is now apparently confined to west Wales and the Highlands of Scotland. Hardy & Bold noted in their catalogue of the beetles of our area in 1852, that James Hardy found it at the side of the Derwent below Gibside, by the side of Wooler Water below Langleyford, and near Wooler. It would appear that it hasn't been seen since. This is one for *Vasculum* readers to look out for the markings are similar to the common 7-spot ladybird (but of course there are two less spots in total), and the beetle is slightly smaller.

L. Jessop

Insect Records Hymenoptera

This continues the lists of records in *The Vasculum* 78(4): 72 and 79(2): 24. All are from Hamsterley Forest, unless otherwise stated. I would like to thank Andrew Liston for identifying the Symphyta

HYMENOPTERA

CEPHIDAE

Cephus nigrinus

NZ085305andNZ082311 19.vi.1987.

TENTHREDINIDAE

Loderus eversmanni

NZ042294, 19.vi. 1987.

Loderus pratorum gilvipes

NZ081310 and NZ042294, 19.vi.1987

Dolerus gessneri

NZ042294 and NZ085305, 19.vi.1987

Dolerus sanguinicollis

NZ088312, 18.iv.1987.

Empria ballica

NZ073304, 19.vi.1987.

Empria lunnera

NZ082311, 3.v. 1987.

Protomylytus pallipes

NZ042294, 19.vi.1987.

Tenthredo mioceras

NZ085310, 19.vi.1987.

Pachyprotasis variegata

NZ085312, 19.vi.1987.

Pseudodineura fuscula

NZ085312, 19.vi.1987.

Pristiphora amphibola

NZ048297, 19.vi.1987.

Pristiphora denudata

NZ092313, 3.v. 1987.

Pristiphora melanocarpa

NZ080310, 19.vi.1987.

Phyllocolpa leucosticta

NZ065300, 19.vi.1987.

Phyllocolpa scotaspis

NZ066300, 19.vi.1987.

Pachymematus extensicomis

Slaley Forest, tetrad NY95M, 26 May 1987

Pachymematus scutellatus

NZ053298and NZ045295, 19.vi. 1987.

CYNIPIDAE

Aulacidea hieradi (gall)

NZ055277. 10.viii. 1985.

MUTILUDAE

Mutilla europaea

NZ037275.6.viii.1990.

FORMICIDAE

Formica lugubris

Common in Spurliswood Valley and Chopwell Woods.
Staward Woods, tetrad NY86A. 1.vii.1987.

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Wild cats in Sunderland?

There has been much coverage in the news in recent years about sightings of wild cats in various parts of Great Britain, and local interest has been aroused by a mysterious big cat in County Durham, known as "the Durham Puma". The NNU membership is mainly centred on County Durham, and a large number of our members spend a considerable time in the local countryside. If there is a large felid roaming our area, then there is a likelihood that some of the *Vasculum* readers may have seen it, or know someone who has seen it.

As a journal of natural history, I feel we should neglect no part of our flora and fauna, and if any readers are certain they have seen something of interest, it should be reported.

One problem that many people have is in knowing exactly how large a "real" big cat is. Having handled taxidermy mounts of virtually all species of the family Felidae when installing up the *Claws* exhibition at the Hancock Museum last year, I know from first hand the difference in size, shape and colour between a leopard, clouded leopard, cheetah, puma and lion!

The *Claws* exhibition will be on show at Sunderland Museum over this summer the last chance you will get to see it before it leaves our area, and a very rare opportunity to see representatives of most species of cats gathered in one place. Don't miss it!

L. Jessop

Fungal conservation a contradiction in terms?

A. Weir, 32 Hartburn Lane, Stockton-on-Tees, Cleveland.

The last two decades have witnessed an unprecedented rise in concern for the protection of the Earth's biological diversity. Of course, nature conservation has been around for much longer, particularly in areas like the U.K. where an existing tiered framework of protected sites such as National Nature Reserves (NNRs), Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves (LNRs) form the backbone of the government's strategy. These "special sites" have until relatively recently been chosen primarily on the basis of interesting vascular plant assemblages or ornithological importance. In recent years entomologists and to some extent lichenologists have succeeded in getting those less popular groups into the designation criteria through such publications as the *Invertebrate Site Register*. One of the most species-rich groups of organisms in the U.K. remains outside this framework, however. With around 12,000 species of fungi found in the British Isles, a staggering 5,000 species from a single county (Yorkshire) and over 2,000 from a single well-studied site (Slapton Ley in Devon) these organisms present an enormous challenge to the scientific and conservation community. Their isolated position within the mainstream conservation movement is largely a result of-

- the difficulties involved in recording fungi, through reliance on the appearance of transient fruitbodies.
- the paucity of knowledge on the taxonomy, distribution and ecology of fungi.

- shortage of experienced mycologists
- public indifference, resulting in a lack of resources available for fungal conservation.

This lack of attention is regrettable in view of the role of fungi in the function of ecosystems, particularly through the formation of partnerships with vascular plants termed "mycorrhizae". These organisms are also intimately involved in litter decomposition and nutrient recycling, major processes affecting all ecosystems. Fungi have also been used as indicators of ecosystem health and as such are of immense importance in understanding man-induced effects such as pollution and habitat disturbance on our natural habitats.

Evidence that has been gathered over much of continental Europe suggests that many species of fungi have shown a serious decline over recent years and are indeed now threatened, and in a response to this there is a growing realisation that efforts must be directed to take account of fungi in conservation practice. As an example, in Britain we have what is considered to be one of the most threatened of all fungi in Europe, *Poronia punctata*, a species that occurs only on the dung of wild ponies in the New Forest (other horses are treated with antibiotics, which makes their dung unsuitable for the growth of the fungus).

In addition to international and national strategies it is important to raise awareness at the local level. Here in north-east England we have some of the finest and most diverse natural habitats and scenery of any part of the British Isles. Many of our most cherished sites such as Upper Teesdale and Castle Eden Dene are protected as NNRs and we now have modern and detailed floras covering the distribution of vascular plants and to some extent also bryophytes and lichens throughout our region. Yet, what do we really know about the fungal communities present in the protected sites, or about the general distribution of even the more common species on a regional basis? What is known of the effects of management practices carried out in our nature reserves upon the fungal component of the flora?

One could maybe take comfort in historical records to give some idea of the range of fungi present during the last century in our region. These were, after all, included in the flora produced by Winch and were studied during the early years of this century by A.W. Bartlett and J.B. Nicholson among others. However, fungal taxonomy and nomenclature have evolved rapidly during the last few decades, making it now very difficult to equate the names given by

some of these early workers to modern day taxa. To overcome this problem it is essential to have herbarium specimens to hand, but our regionally- important museum collections have notable lacunae in their collections as far as fungi are concerned. Sunderland Museum has 120 specimens in three herbaria, and among its vast treasure-house of nature the Hancock Museum boasts only a single fungus (donated by Bartlett in 1923) in its accession books.

Obviously there is an urgent need to improve our knowledge and understanding of these organisms both at the level of the individual site and regionally. Increased media exposure in recent years has sparked a growing interest in fungi among the general public, and as naturalists and conservationists we must capitalise on this. We also need a significant allocation of resources to bring the fungi into line with our knowledge of other groups. A partnership involving conservation organisations, scientific institutions and the community at large would perhaps go some way towards addressing this problem.

Regardless of what happens, members of the NNU could have a central role, both through this journal and *via* the useful transfer of knowledge that is an important part of our field meetings, in encouraging new "converts". We have already seen very important contributions to the study of fungi in County Durham published by A.W. Legg in *The Vasculum* in recent years let us hope that we can stimulate more people to take up the serious study of this fascinating group.

A little entomological history

T. C. Dunn. The Poplars. Durham Road. Chester-le-Street

The names used to identify the Tortrix moth *Eana penziana* (Thunberg & Becklin) have changed over the years by successive periods of taxonomic research. Eventually in the Ray Society publication of 1973, Bradley, Tremewan & Smith recognised two subspecies, *Eana penziana* ssp. *penziana* (Thunberg & Becklin), form *bellana* (Curtis) and *Eana penziana* ssp. *colquhounana* (Barrett). Emmet, in the second edition of the *Field Guide to the Smaller British Leiodoptera* (1988) uses a similar nomenclature.

Although the two subspecies are very similar in appearance, ssp. *penziana* f. *bellana* occurs in hilly and mountainous districts, the larva feeding on the grass *Festuca ovina*, while ssp. *colquhounana* prefers coastal areas and low-lying countryside nearby where the caterpillar can be found on *Plantago maritima* and *Armeria maritima*. Another interesting note in Bradley, Tremewan & Smith was that the subspecies *penziana* f. *bellana* had been found at Belford in Northumberland, although neither date nor authority were given for the record.

During our searches through old records, during the writing of the *Moths and Butterflies of Northumberland and Durham, Part 2*, we found that George Bolam, who was one of the original panel of editors of this journal, had recorded a specimen of *Eana penziana* on the whin-sill west of Belford in July 1887 and another in the same place six years later. This is undoubtedly the source of the Belford entry in Bradley *et al.* mentioned above. Bolam also recorded *E. penziana* ssp. *colquhounana* in 1877 in the *History of the Berwickshire Naturalists' Club* for 1925.

We also obtained from T. Winter a further record of five males taken in the Kielder Rothamsted trap on the night of 23/24 August 1973. Our record does not give the subspecies of these captures, but I guessed that they would be ssp. *penziana* f. *bellana*. A telephone call to T. Winter at Alice Holt forestry research station quickly settled the matter, where he very kindly looked through the specimens in the station's insect cabinet and found that he had retained two of the specimens and both were labelled "*bellana*".

During 1994, Adrian Riley of Rothamsted Experimental Station very kindly arranged for me to see the microlepidoptera collected by Roger Edwards, who operated the Rothamsted trap at Belford. It was with some delight and excitement to find specimens of *Sana penziana* ssp. *penziana* f. *bellana* in the trap catches as singles on nine occasions, one on 27 July, and the remaining eight in August, the last to arrive on the twenty-third.

One can look upon this as a brilliant breeding success for over 100 years, for a tiny moth, which surely has found a habitat that suits it perfectly. If we could interpret the value of wildlife habitat structure with the same degree of success, we might be able to prevent the destruction of useful sites for a few animals and plants already listed in the *Red Danger Books* as having "Endangered" or "Vulnerable" species.

Five-spot ladybird found in County Durham

Gordon Simpson, 2 Coniston Avenue, West Auckland, County Durham.

Following from the editors note in the last issue (...One to look out for) about the five-spot ladybird, *Coccinella quinquepunctata*, readers may be interested to note that I found a specimen of that species in my house about five years ago, apparently the only locality in County Durham where the five-spot has been found this century.

On 31 March 1990 I found a ladybird on my front window ledge at Coniston Avenue, West Auckland (Grid reference NZ175263). The specimen resembled a stunted version of the seven-spot (*Coccinella septempunctata*) and I thought it was either that, or possibly a variety of the two-spot (*Adalia bipunctata*) or ten-spot (*Adalia decempunctata*), but became a little suspicious when it did not fit the figures of the varieties given by Linssen in his *Beetles of the British Isles, Series II*. Using the Royal Entomological Society's *Handbook for the Identification of British Insects on Coccinellidae* (Volume V, part 7) I soon confirmed its identity as a five-spot ladybird.

The beetle was so brittle that it disintegrated when I tried to pin it, indicating that it had been dead for some time.

I have not seen another specimen of the five-spot in this locality, and do not know how the beetle arrived in my house. With today's ease of travel over considerable distances it could be questioned whether the beetle came from a local population, or whether it had come inadvertently from elsewhere I include this caveat because I have two species of wild plants in my garden that are not otherwise recorded in County Durham and I am confident that they have been introduced with garden plants brought from my children's homes in Devon and Dartford.

P. Hyman's 1992 *Review of the scarce and threatened Coleoptera of Great Britain, Part I* categorises the five-spot ladybird as being "Rare" (Red Data Book category 3), and comments that it is very local and with a disjunct distribution. Recently noted in West Wales, North West England and North East Scotland, the species is capable of high altitude dispersal, which may account for some of the records.

Museum enquiries -spiders

One of the most interesting sides of museum work is dealing with enquiries from members of the public. You never know what is going to be brought in next: it may be bed bugs, pieces of insects found in food, a dead bird picked up off the road, -or anything.

As far as spiders are concerned there is a certain amount of seasonality in the enquiries. In autumn there are always several phone calls concerning "an enormous spider which has just ran across my living room floor". This is of course one of the species of *Tegenaria*, the common House Spider. I always reassure the caller that these are occasional visitors and they shouldn't get an infestation, but despairing enquirer replied "but I have hundreds of them"!

Usually in the spring people phone in about an "unusual big fat spider with a face on the back". This refers to a Pea Spider (*Araneus diadematus*), which people mostly report finding in their sheds and outhouses.

In the last two years, each year in early spring there have been a dozen enquiries about an "ugly big red spider with a red body" being found indoors. This always turns out to be the Woodlouse-Eating Spider (*Dysdera crocata*), seems to be becoming increasingly common. Unfortunately it has a painful bite described by those people unfortunate enough to have been bitten like having a red hot needle pushed in to their skin. Some people elsewhere in Britain have developed an allergic reaction to the bite. The apparently sudden nature of the spread of this species as a domestic pest makes me wonder whether it, like the Vine Weevil, is being spread via plants bought in Garden Centres.

Although big hairy spiders are not infrequently brought in to the Hancock Museum, I have had only one enquiry brought in to Sunderland in the last six years. A teenage boy brought in his pet tarantula, which had recently died, and asked whether I knew of any way of preserving it. I put it in the freeze- drying apparatus, and he seemed quite happy with it when he picked it up a week later. I am, however, not able to offer a preservation service for all deceased pets!

L Jessop

Records

Figure of Eighty Moth

The figure of eighty moth *Tethea ocellaris* is rarely recorded in County Durham and Northumberland. I found a mature larva on Poplar at the edge of Preston cemetery, North Shields (NZ343694) on 10 September 1994. It pupated in a cocoon spun up the next day and an adult emerged 19 May 1995. The adult was photographed and released in Preston Cemetery.

H A Filk

N.N.U. Field Meeting to Low Newton Sand Dunes

The N.N.U. Field Meeting on 3 September 1994 was held at Low Newton Sand Dunes in Northumberland, where some 20 or more members and friends gathered in somewhat overcast weather. This was quite surprising as the day had been gloriously sunny until a few minutes before the start of the walk.

Although sea fog rolled in it remained dry with a slight breeze that did nothing to spoil the enjoyment of the afternoon. The walk was led by Richard Lockwood of the National Trust. Richard kindly stepped in when Mike Freeman was unable to lead due to unforeseen circumstances.

Richard described in detail the habitat that makes up Low Newton Haven, outlining the shelter the coast here offers, creating suitable conditions for great species diversity, even extending to octopus and squid!

The National Trust has leased the sea bed here from the Crown Estates to try to control the problem of boat mooring damaging the sea bed. Bait digging is still seen as another problem as no legal control exists. The area is an SSSI for wintering bird species. Chalets built on the dunes are to be demolished by the year 2002.

The following is the list of species seen and recognised at Low Newton, by Doug McCutcheon, Lance Moore and various members.

T.C.Dunn

Fungi*Trichopilus porphyrophaeus**Melanoleuca* sp.**Lichenes***Pyrenocollyma halodites*

On seashell

Pteridophytina*Pteridium aquilinum*

Bracken

dunes

Monocotyledones*Juncus articulatus*

Jointed Rush

Carex flacca

Glaucous Sedge

Prominent species in calcareous, more sheltered hollows, including rabbit-grazed lawns

Carex hirta

Hairy Sedge

Prominent species in calcareous, more sheltered hollows, including rabbit-grazed lawns

Carex caryophyllea

Spring Sedge

Prominent species in calcareous, sheltered hollows, including grazed lawns

Carex ofrubae

False Fox Sedge

In damp ground adjacent to *Salix* carr, near pond*Carex arenaria*

Sand Sedge

Prominent species in exposed

Carex remota

Remote Sedge

In damp ground adjacent to *Salix* carr, near pond*Leymus arenarius*

Lyme Grass

Prominent species in exposed dunes

Avenula pratensis

Meadow Oat

Prominent species in calcareous, more sheltered hollows, including rabbit-grazed lawns

Ammophila arenaria

Marram Grass

Prominent species in exposed dunes

Dicotyledones*Thalictrum minus*

Lesser Meadow-rue

Prominent species in calcareous, more sheltered hollows, including rabbit-grazed lawns

<i>Hypericum elodes</i>	Marsh St. John's Wort	Prominent species in calcareous, more sheltered hollows, including rabbit-grazed lawns
<i>Helianthemum nummularium</i>	Common Rock-rose	
<i>Silene alba</i>	White Campion	Prominent species in calcareous, more sheltered hollows, including rabbit-grazed lawns
<i>Geranium sanguineum</i>	Bloody Cranesbill	
<i>Ononis repens</i>	Rest-harrow	Prominent species in calcareous, more sheltered hollows, including rabbit-grazed lawns
<i>Filipendula ulmaria</i>	Meadowsweet	
<i>Potentilla palustris</i>	Marsh Cinquefoil	
<i>Potentilla anserina</i>	Silverweed	
<i>Potentilla erecta</i>	Tormentil	
<i>Fragaria vesca</i>	Wild Strawberry	
<i>Sanguisorba minor</i> ssp. <i>minor</i>	Salad Burnet	
<i>Rosa pimpinellifolia</i>	Burnet Rose	
<i>Hydrocotyle vulgaris</i>	Marsh Pennywort	
<i>Humulus lupulus</i>	Hop	
<i>Calluna vulgaris</i>	Ling	In short grassy area near the golf course
<i>Gentianella amarella</i> agg.	Felwort	
<i>Pinguicula vulgaris</i>	Common Butterwort	Prominent species in calcareous, more sheltered hollows, including rabbit-grazed lawns
<i>Thymus praecox</i>	Wild Thyme	
<i>Prunella vulgaris</i>	Self-heal	
<i>Galium cruciata</i>	Crosswort	
<i>Galium verum</i>	Lady's Bedstraw	
<i>Galium aparine</i>	Goosegrass	
<i>Achillea millefolium</i>	Yarrow	
<i>Achillea ptarmica</i>	Sneezewort	
<i>Rumex acetosa</i>	Common Sorrel	
<i>Rumex crispus</i>	Curled Dock	
<i>Urtica urens</i>	Small Nettle	
<i>Urtica dioica</i>	Stinging Nettle	

Ainus glutinosa
Fraxinus excelsior
Blackstonia perfoliata
Convolvulus arvensis
Calystegia sepium ssp. *sepium*
Lamium album
Plantago major
Plantago media
Plantago lanceolata
Plantago maritima
Plantago coronopus
Galium aparine
Sambucus nigra
Seneciojacobaea
Senecio erucifolius
Senecio squalidus
Senecio viscosus
Senecio vulgaris
Tussilago farfara
Erigeron acer
Bellis perennis
Achillea millefolium
Mafricaria matricarioides
Artemisia vulgaris
Cirsium vulgare
Cirsium arvense
Lapsana communis
Leontodon hispidus
Sonchus oleraceus
Sonchus asper
Armeria maritima
Myrrhis odorata
Pasiflora saffra
Heracleum sphondylium
Euphorbia helioscopia
Odonata
Sympetrum striolatum

Alder
Ash
Yellow-wort
Field Bindweed
Great Bindweed
White Dead-nettle
Ratstail Plantain
Hoary Plantain
Ribwort Plantain
Sea Plantain
Buckshorn Plantain
Goosegrass
Elder
Common Ragwort
Hoary Ragwort
Oxford Ragwort
Sticky Groundsel
Groundsel
Coltsfoot
Blue Fleabane
Daisy
Yarrow
Pineapple Weed
Mugwort
Spear Thistle
Creeping Thistle
Nipplewort
Greater Hawkbit
Common Sow-thistle
Prickly Sow-thistle
Thrift
Sweet Cicely
Wild Parsnip
Hogweed
Sun Spurge
Common darter

Lepidoptera

<i>Macrothylacia rubi</i>	Fox Moth Larva found
<i>Noctua pronuba</i>	Large Yellow Underwing
<i>Autographa gamma</i>	Silver Y
<i>Stigmella anomalella</i>	Rosy Leaf Miner
<i>Stigmella malella</i>	Apple Pygmy
<i>Endrosia sarcitrella</i>	White-shouldered House Moth
<i>Idaea biselata</i>	Small Fan-footed Wave
<i>Chloroclystis rectangulata</i>	Green Pug
<i>Lomasptilis marginata</i>	Clouded Border
<i>Opisthograptis luteolata</i>	Brimstone Moth
<i>Caradrina morpheus</i>	Mottled Rustic
<i>Autographa gamma</i>	Silver Y

Coelenterata

<i>Aurelia aurita</i>	Jellyfish
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Mollusca

<i>Oxychilus drapamaudi</i>

Diptera

<i>Psilopa</i>	Kelp Flies	On stranded seaweed
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Amphibia

<i>Bufo bufo</i>	Common Toad	Found under a metal sheet
<i>Rana temporaria</i>	Common Frog	In dozens in a wet patch of rushes

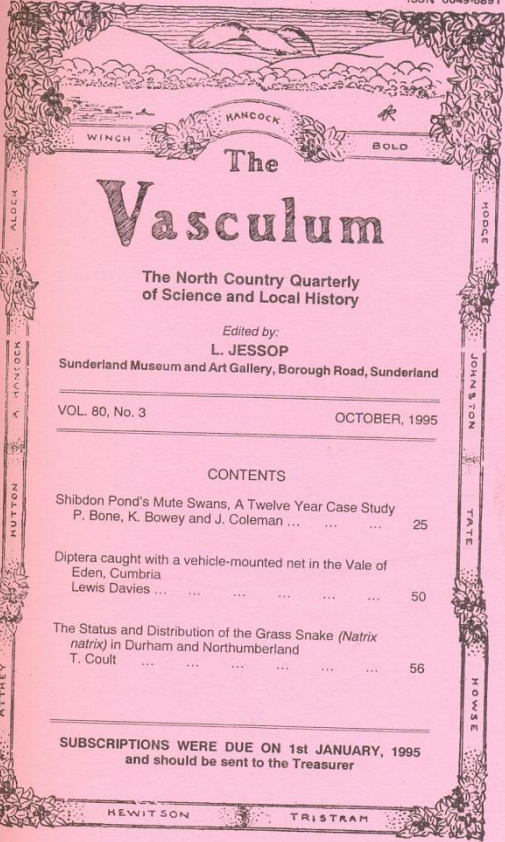
Mammalia

<i>Sorex araneus</i>	Common Shrew	Found dead
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Aves

<i>Fulmarus glacialis</i>	Fulmar	
<i>Ardea cinerea</i>	Grey Heron	
<i>Falco tinnunculus</i>	Kestrel	
<i>Haematopus ostralegus</i>	Oystercatcher	
<i>Pluvialis apricaria</i>	Golden Plover	A flock on an islet of whin sill
<i>Vanellus vanellus</i>	Lapwing	
<i>Sterna sandvicensis</i>	Sandwich Tern	
<i>Una aalge</i>	Guillemot	Found dead on the beach
<i>Carduelis carduelis</i>	Goldfinch	In the car park
<i>Carduelis cannabina</i>	Linnet	In the car park

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Shibdon Pond's Mute Swans, A Twelve Year Case Study

P. Bone (Durham Ringing Group).

K. Bowey (Countryside Management Team, Gateshead M.B.C.'s Dept. of Leisure Services).

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Introduction

The Mute Swan, *Cygnus olor*, is, in relative terms, an uncommon breeding species in vice-county 66, i.e. the old county of Durham. It is described in the *New Atlas of Breeding Birds* (Gibbons, 1993) as a "widespread but predominantly lowland species" and the distribution maps in that volume indicate that it is sparsely distributed in the county.

An analysis of Durham Bird Club annual reports between 1972 and 1992 (*Birds in Durham, 1972-93*) suggested that between one and twelve pairs attempted to nest annually in the county over that period. In total, birds were reported from some 15 - 20 breeding waters but in most years only a handful ever proved to be successful. The most complete coverage of the area, in terms of this species, came in 1990 with the National Mute Swan Survey, organised by the Wildfowl & Wetlands Trust, which revealed breeding pairs at twelve sites in the county, but at only one third of these were young actually fledged.

Traditionally the breeding population of the county has been considered to be between six and ten pairs although this is undoubtedly an underestimate. The situation probably reflects the bird-watcher's traditional indifference to the species, dismissing it, in part, as not really a truly wild bird.

Over the last decade or so Gateshead Borough has been something of a stronghold for the species, with birds successfully fledging young on at least one water in every year except one (1990) in the twelve seasons between 1983 and 1994. Over this period pairs of birds holding territory were noted at eight different localities (see **Table 1**) although young were only successfully fledged at five of these sites. The best year for the species locally was in 1986 when four pairs successfully reared young. In that year the borough held 40% of the vice-county's successfully breeding pairs of

Mute Swans (Bowey, Rutherford & Westerberg, 1993).

Table 1
Site Occupancy in Gateshead (by Paired Birds), 1983 -1994

	No. of Years occupied	No. of Years eggs laid	No. of Years young reared
Acer Pond	3	3	1
Axwell Park Lake	8	3	3
Far Pasture	2	1	1
Metro Centre Pools	1	0	0
Pelaw Quarries	1	1	0
Ryton Willows	2	2	0
Saltwell Park Lake	3	2	2
Shibdon Pond	12	11	11

Shibdon Pond Local Nature Reserve (Site of Special Scientific Interest), at Blaydon, Tyne & Wear (grid reference NZ195628), is situated close to the junction of the rivers Derwent and Tyne, to the south of the Scotswood Bridge, adjacent to the A1, London to Edinburgh, trunk road, and is approximately 30 acres in extent. The site is owned by Gateshead Metropolitan Borough Council and is leased to the Durham Wildlife Trust. It comprises a mosaic of wetland habitats, including: a large open water pond; reed mace, *Typha latifolia*, and reed-grass, *Glyceria maxima*, fen, which encloses marsh pools; damp grassland and scrub.

Between 1983 and 1994, Shibdon Pond proved to be the most regular breeding site for Mute Swan, in Gateshead and in the county as a whole. This paper documents the recent breeding history of the species at the site; relates some aspects of the breeding behaviour of the site's resident birds' outlines the patterns of juvenile dispersal from the site; examines subsequent movements of birds and compares the site's breeding performance with other similar habitats utilised by the species in the region. For this latter aspect data from the North-east Swan Study Group's 1989-1994 enquiry has been used (Coleman & Robinson [unpublished]).

Methods

Since 1989 all known breeding Mute Swans and their offspring in the north-east have been ringed by members of

the North-east Swan Study Group. Prior to this, from 1987, birds were ringed at Shibdon Pond by members of the Durham Ringing Group. In total eight years of ringing data were available from the site for analysis. Adult and immature swans are fitted with standard metal BTO rings as well as an engraved plastic "darvic" ring. This latter ring, both blue and red darvic rings have been used, is engraved with three white letters/numbers that can be easily read in the field using binoculars or a telescope. It is this device which allows presentation of the detailed analysis of local movements which is featured below. Life histories and movement itineraries of birds have been constructed from a catalogue of sightings and reports of birds individually identified by darvic number and contributed by bird-watchers. These sightings are entered onto a computer database with date, location and observer. Subsequent print-outs reveal the details of the individual bird's peregrinations around the region.

The detailed information on the site's breeding birds, including their behaviour, has been built up from observations made by the on-site wardening team of Gateshead M.B.C. staff and the borough-wide voluntary wardening scheme. The historical and county wide information was obtained by a literature search of the Durham Bird Club annual reports and archive, as well as reports from local bird-watchers.

Results

The Historical Situation

The species was found to have been present as a potential breeding bird at Shibdon Pond since the early 1960's. However, like others of their kind across the county, birds here were plagued by human interference. Despite this, pairs were regularly present and eggs were laid on a number of occasions but only twice during the 1970's were birds successful in rearing young. Anecdotal evidence suggests that eggs were regularly stolen and, on one occasion, one of the resident pair was shot through the neck with a crossbow bolt.

The only site in Gateshead which is known to have regularly held successfully breeding swans during the 1970's was Saltwell Park Lake. Birds also occasionally reared young at Axwell Park Lake and, on a single occasion in 1975, on the Gut Pond, at Ryton Willows.

This rather miserable record changed in 1983 with the implementation of a countryside wardening scheme within the borough of Gateshead. In that year a pair of birds, which had been present at Shibdon for at least the previous two seasons, managed to hatch and rear eight cygnets.

Subsequent to this birds bred successfully at the site in every year to 1994 with the exception of 1990, when the then-established pairing was disrupted by the death of the female and desertion of the site by the male. His body was later discovered, in early 1990, near Otterburn.

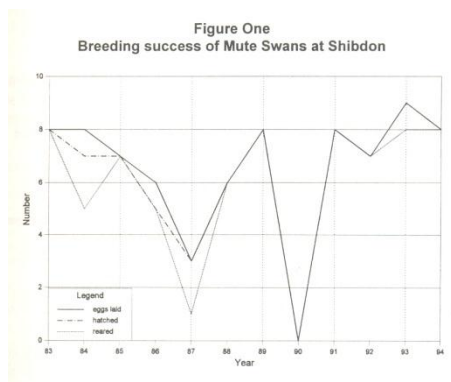
In 1990 a new pair took up site occupancy, constructed a nest, but did not breed. The male of that pair returned to breed successfully in the following season, although he was pair-bonded to a different female. That pair successfully reared families in the following three seasons before a divorce was precipitated by the intrusion of a male which had been holding territory on nearby Axwell Park Lake in the previous two summers. This male successfully paired with the resident female and reared a family in 1994, remaining in territory at the site into 1995, (for further details on this bird see Appendix 1).

In all years since 1983 only one territorial pair of birds has been present at Shibdon Pond. This situation changed in spring 1994 when a second pair of birds attempted to build a nest. Despite the fact that the second nest was some three hundred metres from the first the resident male's aggression did not allow this attempt to proceed. This "doubling up" incident mirrors similar observations in recent years in Northumberland (Coleman, 1990). This was very evident in 1994 when two pairs of swans bred on at least two waters, Big Waters and Hollywell Pond, that have traditionally held only one pair. It has been suggested that this phenomenon is occurring as a result of an increased competition for suitable nesting sites as local swan populations rise (Coleman & Robinson [unpublished]). The population rise has been attributed to an improved survival of first winter birds. This is believed to be due to the milder winters of the late 1980's and early 1990's, combined with a reduction in the effects on local birds of lead poisoning incidents after the banning of split shot (Coleman, 1990). This has led to an increased recruitment of birds into the breeding population.

Work in Northumberland has shown that breeding performance differs according to the nesting habitat. Still water sites are the most successful, in terms of the number of young reared, with river sites being less successful and estuarine sites being rather unsuccessful (Coleman & Robinson [unpublished]).

Breeding Performance

The average hatching and rearing rates (see **Figure One**) for Shibdon compare favourably with those calculated for other still waters in the region. This is particularly marked in recent years, 1991-1993. For instance, the pair of birds breeding at Shibdon from 1991-93 fledged a total of 23 young from 24 young hatched (25 eggs laid), at an average of 7.67 fledged young per year. The average success rate of Mute in the north-east of England, all habitats, is 2.40 fledged young per pair per year (Coleman & Robinson [unpublished]).



It should be noted that all young "reared" at Shibdon pond between 1983-94 (Figure One) were successfully fledged. Over those years the mean number per annum of eggs laid was 6.5, hatched 6.3 and reared 5.92.

Comparison of Breeding Success

The most detailed information on locally breeding birds has been produced by the work of the North-east Swan Enquiry, over the period 1989-1994 (Coleman & Robinson [unpublished]). To allow direct comparison of Shibdon's results with sites across the region the breeding details for Shibdon over this six year period were calculated and are presented below, Table 2.

Table 2
Breeding Success, Shibdon Pond 1989-1994

1989-1994 mean no. of eggs laid	= 6.67
1989-1994 mean no. of young hatched	= 6.67
1989-1994 mean no. of young reared	= 6.5

Figures for the number of young fledged per site were not available for the majority of sites in the region, however the rate of "young reared", at still water sites, was. It is this figure which is used for all comparative purposes, see Table 3. A cygnet was considered "successfully reared" when it had, in a state of good health, reached a size for it to be safely ringed.

Table 3
Average Breeding Data for All Still Water Sites Across the North-east (1989 - 1993)

(number of sites in study 30 in 1989, rising to 50 in 1994)

	1989	1990	1991	1992	1993	1994	Mean
Young hatched	3.2	4.4	5.2	3.5	3.2	3.8	3.88
Young reared	2.6	3.7	3.5	2.4	2.6	2.8	2.93

The data above show that Shibdon, as a breeding site, performs much better than one might expect considering the average production of young at similar sites across the region. Its mean production of young, of 6.2 per year, over the comparable period, is 2.22 times greater than the average for all still water sites in the region.

The breeding performance of Shibdon's birds can be placed in a wider geographical context by examining the published figures from three studies, in Oxford, the Midlands and the Hebrides. In these examples the average breeding performance of birds, in a variety of nesting habitats, ranged

between 1.77 (Hebrides) and 2.13 (Oxford) young fledged per pair, per year (Birkhead & Perrins, 1986). It should be noted, however, that these latter studies, at least the ones from the English mainland, include much data that came from the years suffering some of the worst effects of lead poisoning. The breeding success of some birds would have, presumably, been reduced as a result of this.

Comparison of Local Breeding Success

To discover how important Shibdon is as a breeding locality, within the context of the region, the site data were compared to those available from the three sites with the highest mean production of young of any still water sites in the region, Table 4.

Table 4
Breeding Success Data for Best Breeding Sites, Still Water, in North-east England, 1989-1994

h = young hatched, n/d = no data for that site in that year.

	1989	1990	1991	1992	1993	1994	Mean
Big Waters (h)	6	8	8	3	7	5	6.17
Young reared	6	6	7	2	6	4	5.17
Haggerston (h)	7	8	12	9	0	8	7.33
Young reared	7	8	3	7	0	5	5.0
Stokesley (h)	n/d	n/d	9	8	n/d	n/d	8.5
Young reared	n/d	n/d	9	7	n/d	n/d	8.0
Shibdon (h)	8	0	8	7	9	8	6.67
Young reared	8	0	8	7	8	8	6.5

Of the most successful still water sites in the region, only the Stokesley site has a higher average rearing rate than Shibdon. Of the other sites, Haggerston has a higher mean hatching rate but swans there were not as successful at rearing their broods as the birds at Shibdon. Current knowledge suggests that Shibdon is one of the two most successful breeding sites in the region, however the only site in the study with greater production of reared young, i.e. one in a sample of 50 sites in 1994, had only two years of comparable data available! Over this extended period, Shibdon's mean rate of rearing birds, 5.92, is higher than that for either Big Waters or Haggerston, for 1989-1994, two of the most successful waters in the region!

When considering the breeding performance of local birds it is worth noting that all of the comparative data above concerns the success of sites in

"rearing" birds. For Shibdon, for which fledging data were available, rearing success was found to be equivalent to the fledging success. Hence the use of data for "rearing" will inflate the calculated breeding success of the other study sites relative to that of Shibdon. This is because the rearing data do not take into account the, admittedly small, amount of mortality which may occur between "rearing" and fledging. So, in real terms, Shibdon is likely to be even more successful, relative to the above sites, in the production of fledged young than is indicated by the above figures.

Breeding Behaviour

The breeding behaviour of the birds at Shibdon Pond is not dissimilar to that of other birds nesting on closed water systems elsewhere in the region. The birds are largely territorial throughout the year. Heightened pair bonding activity takes place through late winter, especially in mild weather, increasing during March and early April. Copulation normally commences in the latter part of March or in early April. Birds are often seen prospecting for nest sites from late February onwards, with some trial building often taking place in March. Nest site selection is often completed by late March and building is well under way by early April. It would appear, from observation, that the female is responsible for nest site selection, carefully picking at pieces of vegetation, sometimes when the male is making it obvious, by more concerted building efforts that he prefers another locality: this does not necessarily agree with some published information (Birkhead & Perrins, 1986). Once the nesting locality has been chosen then the male undertakes the vast majority of the construction. The female takes a greater interest as the nest nears completion, taking on the duties of forming the nest cup, although in this situation the male is normally still responsible for gathering and transporting the majority of nesting material to the site. Egg-laying normally takes place through the middle period of April.

The Shibdon birds nest in marshland pools, away from the main open water area of the pond. The nest is usually situated in emergent fen vegetation, normally reed mace, which is also the principal material used in nest construction. In only one year during the period of study was the nest built away from the marsh pools, in that instance being situated on a spit close to the outlet stream of the pond. The birds do not always choose the most isolated spots for nesting, having frequently nested within ten metres of the main nature trail footpath through the reserve.

The nest is normally situated in standing water, of between 20 and 40cm depth, although there may be a considerable amount of silt below this. The nest can be relatively unobtrusive once the spring reed growth is underway but, in some years, it is very noticeable as the female sits during the early stages of incubation.

The males of all pairs that have nested at Shibdon have shown the typical aggressive behaviour of the species. The male, present from 1983 to 1989, was particularly aggressive and, in one instance, was seen to throw a medium sized dog into the pond.

Cygnets at Shibdon normally hatch around the last week of May, typical dates ranging between the 20th and 29th, although a range of hatching dates over a month period have been recorded (earliest known hatching date 4th May, latest date 1st June). The incubation period has been recorded as varying between 36 and 41 days with a mean incubation period of 37.8 days (calculated from five years of data for which accurate information were available). This does not differ greatly from other previously published data on the subject, with ranges of 34 to 38 days being quoted (Hollom, 1985; Harrison, 1980). The majority of diurnal incubation is usually undertaken by the females of the pairs. This has been the case for both resident females over the period, despite the fact that many references mention shared incubation between the sexes (Birkhead & Perrins, 1986; Hollom, 1985). Shibdon males have been recorded incubating but this has normally only occurred in the latter stages of the process, mainly in the last week before hatching. In warm weather, in the last week or so of incubation, the female will occasionally leave the nest unattended to feed.

Care of the cygnets has differed markedly between the two resident females which have produced young on site. The female resident from 1983 to 1989 was happy to bring her three to four day old cygnets to the front of the pond to be fed titbits, although this behaviour was normally accompanied by much threat-display. The female, present since 1991, normally ushers the cygnets far away from potential danger, taking them to feed principally to the more isolated north-east quadrant of the pond. She will only bring the cygnets to be fed bread after some three to four weeks, when they are of a significant size and, presumably, less prone to casual predation.

There are no documented cases of predation of swan young at Shibdon although foxes, *Vulpes vulpes*, are common and mink, *Mustela vison*, are

occasionally recorded. Cygnet mortality at Shibdon is low, as can be seen from comparisons of hatching and fledging success in Figure 1. A small amount of mortality is concentrated in the first week of life (three deaths of cygnets in this period over the twelve year study, i.e. 4.4% of the total number hatched) with, in one year 1987, the loss of two cygnets some two to three weeks after hatching. At Shibdon Pond the vast majority of mortality in young birds occurs shortly after fledging, when unskilled birds have to negotiate the overhead cables that cross the reserve. The cygnets are normally exercising their wings through late August and are, in most years, fully fledged by early to mid-September.

In some years the parents leave the site during October or November, accompanied by the juvenile birds, only to return without them a few weeks later. In other years the juveniles have wintered on the pond with the parents. In these instances aggression towards the youngsters, particularly from the male, becomes increasingly evident by February and juveniles are normally forced off site by March.

Dispersal of the Young & Subsequent Movements

An analysis of the movements of birds ringed as cygnets at Shibdon reveal some interesting trends. The graph shows that cygnets, for their first four years of life, are highly mobile, after which they have a tendency to return to their natal area, and become more sedentary.

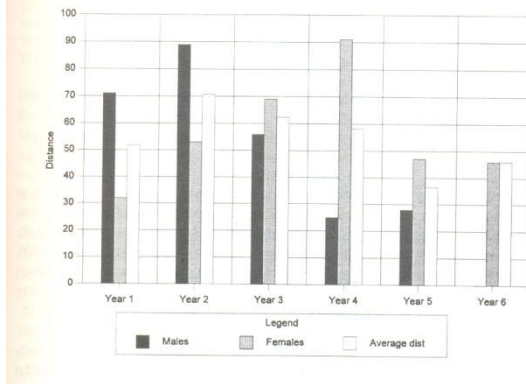
The general trend of dispersal of cygnets is for an initial northerly movement to local flocks and, subsequently, north to the moult herd at Berwick, in the summer of their first year. The journey to Berwick is normally broken by short stays at sites in the Ashington and Amble area. The post-moult, return journey mirrors the earlier summer movement.

During the first four years of life birds range widely across northern Britain, there are records from as far north as Loch Leven and Glasgow, with one record south into Yorkshire, (see map, Appendix 2). As the birds grow older they become ever more parochial in nature and their movements tend to extend only as far as the Berwick moult site. Over this period the average maximum distance, at which any bird is likely to be found away from the natal site tends to decrease with the increasing age of the bird, (see **Figure 2**).

The importance of Berwick upon Tweed, (91 km north north west of Shibdon Pond), as a moult site for birds from Shibdon is illustrated in **Table 5**, with

over 40% of any age class of Shibdon-ringed cygnets being present in most years. It is worth highlighting that as birds become older, i.e. those in year classes 4 to 6, they are noted less frequently at Berwick, as these birds will have breeding territories in which they remain to moult.

Figure 2 - The Average Maximum Distance (km) Moved in Any One Year, By Year Class of Bird, of Mute Swans Reared at Shibdon Pond



Due to the size of the Berwick herd, and the resultant difficulty in obtaining accurate ring registrations for all birds within the herd, then the figures presented will undoubtedly be an underestimate of the real total. It seems likely that most, if not all, of the extant non-territorial Shibdon-bred birds will be present at that site over the moult period.

Table 5
The Number of Shibdon-ringed Birds Recorded as Moulting at Berwick, as a Proportion of
all Shibdon-ringed Birds Known to be in that Year Class, 1989-1994

Year class: Yr 1 = first year birds, Yr 2 = second year birds, etc.)

Age class	Known No. in year class	No. moulting at Berwick	% of total at Berwick
Yr1	23	10	43.5%
Yr2	21	11	52.4%
Yr3	13	4	30.8%
Yr4	6	3	50.0%
Yr5	5	1	20.0%
Yr6	2	1	50.0%

In the winter many of these birds return to the Tyneside flocks, exhibiting a tendency to spend time as close as they can to their natal site. This propensity is well illustrated in **Table 6**, which shows the percentage of each age class of birds, by sex, which were recorded as approaching to within 0km (i.e. re-visiting Shibdon Pond) and within 1 km of their natal territory. In other words, spending time on the nearest suitable waters to the natal site which territorial aggression, by the Shibdon resident pair, allowed them recourse to. The fact that over 50% of most age classes of birds, regardless of sex, have been recorded within 1 km of their hatching site in subsequent winters illustrates the development of a well marked habit for winter natal site fidelity amongst Shibdon-bred birds. The sites used by birds returning to the area tend to be those which they frequented on first dispersal from the breeding site, i.e. the Metro Centre Pools and the River Derwent at Swalwell. At some time during most winters the majority of extant Shibdon-hatched birds will spend some of the period within 5km of their natal territory!

Table 6
Percentage of Each Year Class of Shibdon-hatched Birds, Returning to Winter Within 1 km
of the Natal Site

(data from North-east Swan Study Group Enquiry 1989-1994, sample size "n", in brackets)

Min. Distance - Age class	Males			Females		
	0km	1 km	Total	0km	1km	Total
Yr 1	14.3% (2)	42.9% (6)	57.2%	11.1% (1)	55.5% (5)	66.6%
Yr2	14.3% (2)	21.4% (3)	35.7%	-	57.1% (4)	57.1%
Yr3	11.1% (2)	44.4% (4)	55.5%	-	25.0% (1)	25.0%
Yr4	50.0% (1)	-	50.0%	-	50.0% (1)	50.0%
Yr5	33.3% (1)	33.3% (1)	66.6%	-	50.0% (1)	50.0%
Yr6	-	-	-	-	50.0% (1)	50.0%

Information which corroborates these assertions came from a study, during the winters of 1993 and 1994, of 30, non-territorial, individually recognisable Mute Swans which were noted at least once during the winter in the western half of Gateshead. The majority of the sightings were made at a small number of localities including: Shibdon Pond, Axwell Park Lake, the R. Derwent at Swalwell, Metro Centre Pools, Acer Pond, and Far Pasture Ponds. An analysis of these sightings showed that 46.67 % i.e. 14 birds, were of birds which had been bred at Shibdon Pond, whilst 23.3 % had been ringed elsewhere in Durham, with 20% relating to birds ringed in Northumberland. There were also a small number of birds reported from the Cleveland area.

This return of birds to their natal area is further highlighted by the evidence provided by an examination of the origins of locally breeding birds. Of the five territorial pairs recorded in the western half of the borough of Gateshead during 1994, all of them contained at least one bird which had been hatched at Shibdon Pond. Three pairs contained females and in two pairs the resident male had been bred at Shibdon. It would seem that not only do birds have a tendency to return to winter close to their birth place but also very evidently return to breed as close to their site of birth as possible (Coleman & Minton, 1979).

The pattern of moult migration, with a subsequent return to the Gateshead area to winter, ceases as birds become paired, find a territory and begin to breed. After this they become largely sedentary.

Causes of Mortality

Many different causes of death have been documented within the borough of Gateshead, but by far and away the commonest is collision with man-made objects, especially power cables, (see Table 7). In the early to mid-eighties there were a number of reports of birds with lead poisoning but this had all but disappeared as a cause of death by the early 1990's. Human persecution is always likely to be a factor in a largely urban area and the five known deaths in this category include: the apparent clubbing to death of an incubating female, two birds shot and the beheading of two recently fledged juveniles.

Table 7
Known Causes of Death in Gateshead Borough 1983 -1994

Collisions with power cables	18
Lead Poisoning	3
Collisions with other objects	2
Human persecution	5
Swallowing fishing tackle	1
Killed by resident male	1
Predation	1

The only documented case of apparent predation was by a fox on a first winter bird severely weakened, probably by a heavy endoparasitic burden. It is uncertain whether the bird was actually killed or scavenged by the predator. The numbers in each cause of death category are, of course, absolute minima.

Of all known causes of death the commonest for birds reared at Shibdon Pond is collision with overhead cables. Since 1983, 15 of the 71 juveniles, which have fledged from the site, are known to have been killed on the powerlines that cross the reserve, i.e. 21.13% of this age-class of birds, an average of 1.25 juvenile deaths per year.

Discussion

The results of the study show quite clearly that Shibdon Pond is a very successful breeding site for the Mute Swan and that the birds produced at the site have a strong tendency to return to breed on waters as close to their natal site as possible, a tendency well documented in previous studies (Coleman & Minton, 1979). Breeding birds have shown a very strong degree of site fidelity with only five birds, two females and three males, being involved in the successful pairings at the site over the period of the study.

Over the study period Shibdon has proved itself one of the most, if not the most, successful still water breeding locality in the region. Obviously it possesses all of the principal requirements of the species with regards to nesting and rearing a family. There is ample algal and macrophytic food available, in the form of stonewort, *Cara* sp., and starwort, *Callitriche stagnalis*. There is a surfeit of nesting sites safe from predation, and there is an adequate supply of nesting material. This latter factor can be important if a nest needs strengthening against flooding for instance. However, many sites possess all of these features but do not attain Shibdon's breeding success. Indeed all of these features were present at Shibdon during the 1970's when the species was singularly unsuccessful at rearing young on site. It has been estimated, from anecdotal evidence, that only seven cygnets were reared on site during that decade and in the early 1980's there were no successful breeding attempts. The only factor which is known to have changed, between the two periods, was the presence of a wardening team. Through a process of policing and education the staff involved have managed to protect the breeding birds and produced a very dramatic improvement in breeding success between the 1970's and the 1980's! In the 12 year period prior to the commencement of the wardening programme there were records of only two successful nestings at the site but in the 12 years since protection was initiated there have been no nest failures as a result of human disturbance and 71 juveniles have been fledged. In this same period, whilst there have been some attempts to rob or interfere with nests and attacks have been made on both adult and juvenile birds, there have been no known deaths on site as a result of human persecution and breeding success has risen by approximately 640% over successive comparable twelve year periods!

During 1994 there were seven pairs of territorial swans in the Borough of Gateshead. Three pairs did not nest, two because of a suspected lack of nest material and one because of human interference, the remaining four pairs made five nesting attempts. Three of these attempts failed as a result of human "attentions" and two nests were successful. Both of these successful nests were on sites warded by local countryside staff! It would seem that, despite the apparently enlightened times that we live in, human persecution, of one form or another, still has the capacity to severely impact upon the breeding success of Mute Swans on otherwise suitable waters.

Acknowledgments

Thanks must go to Gateshead M.B.C.'s Department of Leisure Services who, through their Countryside Management Team, manage the site on a day to day basis. They generously allowed the use of the detailed information built up over recent years by that team. The authors' particular thanks must be extended to the members of the Durham Ringing Group and the North-east Swan Study Group who have ringed and watched swans at Shibdon and elsewhere. Trevor Weston, John Durkin, Helen Saunderson and Biddy Tweddle provided useful historical information. Thanks go to the Durham Bird Club for access to its archive material and to Stephen Westerberg and Lindsay Rewcastle, who made useful comments on drafts of this paper. Studies such as this rely heavily on bird-watchers to report their sightings, so a huge debt of thanks is owed to all of the many observers who have, over the years, diligently reported those large white (or grey) things with "pretty plastic bracelets"!

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Appendix 1-Selected individual Life Histories of Shibdon-bred Birds

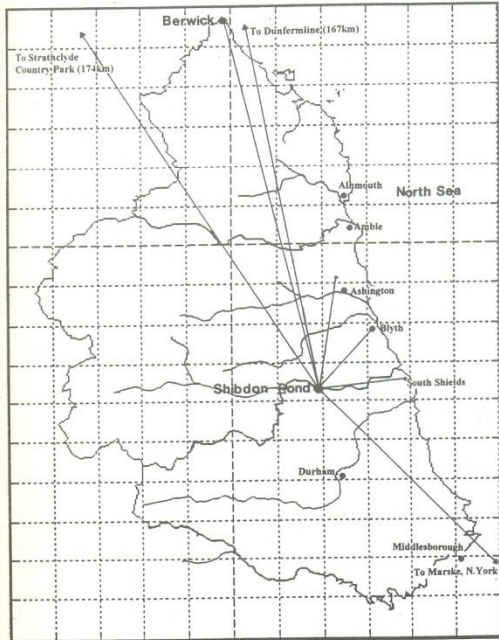
Z64874 - P9V (BTO ring number and darvic code) This bird has had the most eventful life history of any bird reared at Shibdon Pond. It hatched in 1989 and started its post-fledging period in typical fashion, being present at Killingworth Lake throughout its' first winter. However between May 1990 and December of that year it undertook a major journey northward, being re-found at Dunfermline, 167 km from its' hatching site. A few months later it was back at Killingworth Lake and it spent the subsequent summer in the moult flock at Berwick. During the autumn of 1991, as a second year bird, it made its first documented return to Shibdon Pond. In the late summer of the years 1991, 1992 and 1993, this swan invaded the territory of the then breeding pair at Shibdon. It had been present on Axwell Park Lake prior to visiting Shibdon and it held territory there, associating with a female, without breeding for part of 1992. In each of the three years the resident Shibdon male, whilst in wing moult, was attacked and chased from the main pond by P9V; in each case hiding in the adjacent marshes. In 1991 he regained territorial dominance as soon as his wing moult was completed. In 1992 he was driven from the pond and had to be taken, exhausted, into care for a few days before being re-introduced on to the pond where he once again re-asserted himself. This process was no doubt more easily facilitated by the fact that P9V managed to crash into a lamp post and through the windscreen of a car (and survive) during one of their more violent disputes of that summer. However in 1993, when P9V once again invaded, the resident male was forced to spend most of his time away from the main pond as he completed his wing-moult. Over this period P9V persistently made pair-bonding displays to the resident female who, initially, ignored him but, after a period of a fortnight or so, in the apparent absence of her mate, began to reciprocate. The resident male's cygnets behaviour to the intruder appeared no different to that which they had displayed to their genetic father and the intruder's to them, being rather indifferent, seemed little different from that of a genetic father to a full-grown brood of his own. On the odd occasion when the family did seem threatened, a boisterous dog nearby for instance, he would position himself between them and the threat and "busk" vigorously. The resident male was finally driven from the pond during the autumn period, whilst his cygnets were being encouraged to fly by their mother and the intruder male. No doubt it is of some relevance to this saga that P9V was hatched at Shibdon Pond in the summer of 1989, by the previous incumbents of the territory. Natal site fidelity is well documented in the Mute Swan, being common in both sexes although somewhat more so in females (Coleman & Minton, 1979). By the early spring of 1994 the intruder was fully pair-bonded to the resident female, nest-building was initiated and the previous year's cygnets were chased off the reserve. When the previously resident male tried to re-invade both of the pair were instrumental in chasing him away. During 1994 P9V successfully reared eight cygnets and at the beginning of 1995 he remained, with his mate, in territory at Shibdon.

U01891 - L3P This bird was ringed on 30th July 1991 and during its first winter it commuted back and forth across the Tyne between Killingworth Lake and Saltwell Park in Gateshead. After early April 1992 there were no summer reports of the bird until the following February when it was found at Strathclyde Country Park in Scotland. A month later it was back in the north-east, at South Shields Marine Park Lake, but the "local life" was not for it and by 30th June it had returned to Strathclyde Country Park, where it remained into September of that year. At 174km, this is the longest distance control of any bird hatched at Shibdon over the period of the study.

U01895-3EA This bird, hatched in the summer of 1991, is one of the most travelled of all Shibdon cygnets! As a first summer bird it had found its way to Torrey Bay, Fife, Scotland, before moving south to St Margaret's Loch nr. Edinburgh the following year. Subsequently it visited Berwick before returning to the Gateshead area, in the winter of 1993/94. It headed north again, to Berwick, that summer and in the August of 1994 appeared at Loch Leven, Fife. By October of 1994 it had returned to the Gateshead area and remained in the borough into early 1995.

U01892-L3S Hatched in the summer of 1991, most reports of this bird have been local, it frequented Saltwell Park, Killingworth and Blyth in its first winter being noted at Far Pasture in the spring of 1992. It returned, briefly, to Shibdon in December 1992 before spending the winter at Saltwell Park and Far Pasture. It moved to the coast, South Shields in March, and then spent the summer in the moult flock at Berwick. It returned to Gateshead the following winter and patronised the Derwent at Swalwell, the Metro Centre Pools, and Axwell Park. In January 1994 it moved back to Far Pasture where, after some small scale local movements in early spring, it settled and successfully bred for the first time, rearing five cygnets, that summer.

Appendix 2 - Map showing Principal Dispersal Routes, Controls and Significant Movements



Surface-active beetles from Scots Pine (*Pinus sylvestris* L.) woodland sites in the Border Forest Park

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Introduction

At Williams Cleugh (NY650999) on the eastern flank of the Deadwater Fell/Mid Fell watershed, at 300m. there is a small group of pine trees (*Pinus sylvestris* L.). These trees were present before the Forestry Commission acquired the land and planted up the surrounding hillsides with Sitka Spruce (*Picea sitchensis* (Bong.) Carrière). They were first reported as being possible relict Caledonian Pine (*P. sylvestris* var. *scotica* (Willd.) Schott.) by Mr Valdemars Blankenburgs about 1955 (Edlin, 1961). Their native status was also discussed by Edlin (*l.c.*) but so far cannot be proved.

In appearance these pines resemble Caledonian Pine in that they have short, greyish leaves and small cones, characteristics that persist in trees grown from seed in ideal conditions. The possibility of their being relict is further supported by the presence, in the cleugh with the pines, of *Trientalis europaeae* (L.) (Chickweed Wintergreen), often associated with native pine on podsols. About 1 km further up Williams Cleugh, Professor George Swan found *Diphasiastrum complanatum* (L.) J. Holub, morphotype *decepiens sensu* Syme (Yellow Cypress Clubmoss). This club moss is known to be often associated with areas of Caledonian Pine forest in Scotland (Jerry & Camus, 1991). The record of *D. complanatum* remains to be verified however.

The soil beneath the pines is a thin podsol with only about 25 mm of peat. The sandstone bedrock lies only a few centimetres below the surface with rock exposed in places. The slope is very steep and the ground vegetation is a typical upland *Vaccinium myrtillus* (L.) heath with *Calluna vulgaris* (L.), *Erica cinerea* (L.), *Potentilla erecta* (L.) Rauschel and *Deschampsia flexuosa* (L.) Trim.

In an effort to elucidate further the status of the Williams Cleugh pines, it was thought that an examination of the epigeal beetle fauna from beneath the pines might show species typical of Caledonian forests. As a control site, a

mature plantation of *P. sylvestris* by the road between Kielder and Gowanburn at NY632924 was also selected. The soil type, bedrock and ground vegetation were similar to those at Williams Cleugh, but had a greater percentage of *D. flexuosa* and *Pteridium aquilinum* (L.) Kuhn. The site was at only 200m. altitude and was more sheltered by the adjacent mature forest than were the trees at Williams Cleugh.

Methods

At each of the two sites, nine polypropylene pitfall traps, 70mm in diameter and 100mm deep, containing ethylene glycol to a depth of 10-15mm, were set into the ground with their rims flush with the ground surface. Each trap was situated 5m from the base of a tree on the downwind side. Traps were operated from May 1994, and the contents collected monthly until October 1994. The contents of all nine traps at each site were pooled on each date; all Coleoptera (beetles) were sorted from the catch, and stored in 70% alcohol prior to identification. All beetles except the smaller aleocharine Staphylinidae, were identified to species using Joy (1932) and published volumes of the Royal Entomological Society of London's Handbooks for the Identification of British Insects

Results and Discussion

The lists of species from the two sites are given in Table 1. The species lists from both sites suggest dryish conifer forest with some evidence of open moorland. Gowanburn Road is more species-rich (52 species), due largely to the greater numbers of litter-dwelling Staphylinidae and Leiodidae. Williams Cleugh, with 41 species, has rather more diverse species typically found on herbaceous vegetation, such as Elateridae and Cantharidae.

Upland or shade species are the ground beetles *Cychrus caraboides*, *Carabus glabratus*, *Calathus micropterus* and the rove beetles *Philonthus decorus* and *Quedius lateralis*. The leiodids *Nargus* sp. and *Sciodrepoides watsoni* are usually typical of woodland litter, but there are also typical moorland/grassland species such as *Patiobus assimilis* (a carabid), *Olophrum piceum*, *Stenus impressus* and *Othius myrmecophilus* (staphylinids), *Hypnoidus riparius* (an elaterid), *Byrrhus pilula* and *Cytilus sericeus* (byrrhids). The elaterid *Selatosomus incanus* is a rather local grassland species, seldom reported in pitfall traps, and the staphylinid *Quedius cinctus* and the rhizophagids *Rhizophagus bipustulatus* and *R. dispar* are coniferous forest species, often occurring under pine bark. The Lordithon species and *Autalia impressa*, as well as the carrion beetle

Oicoptoma thoracicum are found in woodlands on fungi. The dung beetles of the genera *Geotrupes* and *Aphodius* are indicative of grazing stock on moorland. The most unusual species is the ground-dwelling weevil *Trachyphloeus angustisetulus* (previously confused with *A. bifoveolatus*, see Jermin & Mahler, 1993), which is normally found on open, dry sites such as limestone, chalk or sandy grasslands. The weevils *Otiorhynchus nodosus* and *Strophosoma sus* are moorland species, the latter feeding exclusively on heather, while *Hylobius abietes* is the infamous Pine Weevil. The remaining three species of weevils (Curculionidae) are common in (mainly deciduous) woodlands, but the scolytid bark beetle *Hylastes cunicularius* is a pest of Spruce and Pine plantations.

Unfortunately the species caught did not confirm or otherwise the possible native status of the Williams Cleugh pines. However there were interesting differences between the two faunas, which reflect the general habitats and vegetation in which they were caught. Whilst it might seem unlikely that indicator beetle species of Caledonian Pine forest would be caught on the ground surface, it is known that weevils caught in pitfall traps are a good indication of the vegetation and management of the habitat (Eyre et al., 1989). Even carnivorous ground beetle (Carabidae) assemblages respond to both soil and vegetation characteristics (Luff et al., 1989) and there is no distinctive 'woodland' ground beetle fauna in north-east England (Eyre & Luff, 1994). The beetle fauna as a whole may therefore indicate a range of environmental factors. Many of the 'specialist' beetles of Caledonian Pine forest are saproxylic, relying on large amounts of (often old) dead or dying trees for their continued survival. It is therefore perhaps not surprising that no such species were found in the small group of trees at Williams Cleugh, but this study still provides additional information on the invertebrates of a little studied area of north-east England.

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Table One
Beetle species trapped at Williams Cleugh and Gowanburn Road

+ species present at site

-species not recorded at site

	William Cleugh	Gowanburn Road
CARABIDAE		
<i>Cychnus caraboides</i>	-	+
<i>Carabus glabratus</i>	+	+
<i>Carabus nemoralis</i>	-	+
<i>Carabus problematicus</i>	+	+
<i>Carabus violaceus</i>	+	+
<i>Leistus rufescens</i>	+	+
<i>Nebria brevicollis</i>	-	+
<i>Notiophilus biguttatus</i>	+	+
<i>Patrobus assimilis</i>	+	-
<i>Pterostichus madidus</i>	+	-
<i>Pterostichus niger</i>	+	-
<i>Abax parallelepipedus</i>	-	+
<i>Calathus micropterus</i>	+	+
HYDROPHILIDAE		
<i>Megastemum obscurum</i>	-	+
<i>Anacaena globulus</i>	-	+

LEIODIDAE		
<i>Nargus anisotomoides</i>	-	+
<i>Nargus velox</i>	-	+
<i>Choleva glauca</i>	-	+
<i>Sciodrepoides watsoni</i>	+	+
<i>Catops nigricans</i>	-	+
<i>Catops nigrita</i>	+	+
SILPHIDAE		
<i>Nicrophorus vespil/oides</i>	+	+
<i>Oicoptoma thoracicum</i>	+	-
<i>Silpha atrata</i>	-	+
STAPHYLINIDAE		
<i>Anthobium unicolor</i>	+	+
<i>Olophrum piceum</i>	+	+
<i>Omalius rugatum</i>	+	-
<i>Stenus impressus</i>	+	+
<i>Othius myrmecophilus</i>	+	+
<i>Othius punctulatus</i>	-	+
<i>Philonthus decorus</i>	+	+
<i>Ocypus brunnipes</i>	+	+
<i>Quedius cinctus</i>	-	+
<i>Quedius curtipennis</i>	+	+
<i>Quedius fuliginosus</i>	-	+
<i>Quedius lateralis</i>	-	+
<i>Quedius molochinus</i>	+	+
<i>Quedius picipes</i>	+	-
<i>Mycetoporus rufescens</i>	-	+
<i>Lordithon thoracicus</i>	-	+
<i>Lordithon trinitatus</i>	-	+
<i>Bolitobius inclinans</i>	-	+
<i>Tachinus elongatus</i>	+	+
<i>Tachinus marginellus</i>	+	+
<i>Tachinus signatus</i>	-	+
<i>Autalia impressa</i>	-	+
<i>Ocalea picata</i>	-	+
<i>Drusilla canaliculata</i>	+	-
GEOTRUPIDAE		
<i>Geotrupes stercorosus</i>	+	+
SCARABAEIDAE		
<i>Aphodius rufipes</i>		+
BYRRHIDAE		
<i>Cytilus sericeus</i>	+	-
<i>Byrrhus pilula</i>	+	+

ELATERIDAE

<i>Hypnoidus riparius</i>	+	-
<i>Athous haemorrhoidalis</i>	+	-
<i>Selatosomus incanus</i>	+	-
<i>Agriotes pallidulus</i>	+	-
<i>Dalopius marginatus</i>	-	+
<i>Denticollis linearis</i>	+	-

CANTHARIDAE

<i>Podabrus alpinus</i>	+	-
<i>Cantharis pellucida</i>	+	-

RHIZOPHAGIDAE

<i>Rhizophagus bipustulatus</i>	-	+
<i>Rhizophagus dispar</i>	+	-

CURCULIONIDAE

<i>Otiorhynchus nodosus</i>	+	-
<i>Otiorhynchus singularis</i>	-	+
<i>Trachyphloeus angustisetulus</i>	-	+
<i>Sarypeithes araneiformis</i>	-	+
<i>Strophosoma melanogrammum</i>	+	+
<i>Strophosoma sus</i>	+	-
<i>Hylobius abietis</i>	+	-

Diptera caught with a vehicle-mounted net in the Vale of Eden, Cumbria

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For studies on flight dispersal of the blood-sucking black-flies of the family Simuliidae from the river Eden, in a study area 8-15 km east of Penrith, a motor vehicle-mounted net was developed, described and figured in Davies and Roberts (1973). The main results on black-flies were published in Davies and Roberts (1980). On two days in 1977 the vehicle-net was used between 09.00 and 19.45 hrs to make ten return traverses of two roads, each 3 km long in the study-area, lying in two adjacent 10-km squares, NY53 and NY54, and running respectively SSE of the village of Langwathby, and S of Melmerby, all in Vice-County 70.

The purpose of this note is to list the Diptera other than Simuliidae taken by the vehicle-net on the two days, namely 29 July and 2 August 1977. The 1980 paper cited above includes details of the 778 female *Simulium reptans* Linn. and 315 *Simulium equinum* Linn. taken on the two days. Insects other than Diptera, consisting mainly of small Coleoptera and Hemiptera, were discarded.

The days of the net operation were both warm (19-25°C) with very light wind and hazy sun. For the present purpose the catches on the two roads and days are pooled to produce the list below, from a total catch of slightly over 2,220 non-simuliid Diptera pertaining to 24 families. The species determinations are my responsibility, except for the Anthomyiidae where Mr Michael Ackland, Oxford, kindly determined most of the species. In some families some specimens defied reliable naming and are in my view not of the species in the list. These unidentified species are given as "sp. indet" at the end of the family listing.

The names follow the second edition of Kloet & Hincks (1976), except for Anthomyiidae whose names follow the manuscript checklist compiled by Michael Ackland to whom I am indebted for a copy and for his determinations of these difficult and important Diptera, where generic groupings and placements are much changed since the above Kloet & Hincks list.

Species list for the catch

Following in species name is given the number of specimens taken; no figure indicates that ten or fewer individuals were taken. The identified species total 121, and with at least nine species indetermined means that about 130 species were represented in the catch.

STRATIOMYIDAE		LONCHOPTERIDAE	
<i>Beris fuscipes</i> Mg		<i>Lonchoptera lutea</i> Panz.	
<i>B. geniculata</i> Curt.			
<i>B. vallata</i> Forst.		PIPUNCULIDAE	
<i>Microchrysa cyaniventris</i> Zett.		<i>Verallia aucta</i> Fall.	
<i>M. flavicomis</i> Mg.		<i>Eudorlas halteratus</i> Mg.	
<i>M. polita</i> Linn.			
<i>Sargus splendens</i> Mg.		SYRPHIDAE	
		<i>Sphaerophoria menthastri</i> Linn.	
ASILIDAE		<i>Pyrophaena granditarsa</i> Fors.	
<i>Dioctria rufipes</i> Deg.		<i>Chrysogaster chalybeata</i> Mg.	
		<i>C. hirtella</i> Loew.	
EMPIDIDAE		<i>Neoscasia podagrica</i> Fabr.	
<i>Platypalpus interstinctus</i> Call.		<i>Syrirta pipiens</i> Linn.	
<i>P. pallidiventris</i> Mg.		<i>Eristalis arbustorum</i> Linn.	
<i>Hybos culiciformis</i> Fabr.		<i>Eristalis pertinax</i> Scop.	
<i>Bicellaria vana</i> Call.			
<i>Ocydromia glabricula</i> Fall.		TEPHRITIDAE	
<i>Trichina clavipes</i> Mg.		<i>Rhagoletis alternata</i> Fall.	
<i>Euthyneura myrtila</i> Macq.			
<i>Empis (Pachymeria) scotica</i> Curt.		MICROPEZIDAE	
<i>Empis (E.) aestiva</i> Loew		<i>Calobata cibaria</i> Linn.	
<i>Hilara beckeri</i> Strob.	14		
<i>H. canescens</i> Zett.		SEPSIDAE	
<i>H. chorica</i> Fall.		<i>Saltella sphondylii</i> Schr.	12
<i>H. comicula</i> Loew		<i>Nemopoda nitidula</i> Fall.	
<i>H. fuscipes</i> Fabr.		<i>Sepsis cynipsea</i> Linn.	
<i>H. intermedia</i> Fall.		<i>S. fulgens</i> Mg.	
<i>H. litorea</i> Fall.	53	<i>S. punctum</i> Fabr.	
<i>H. longovittata</i> Zett.		<i>S. violacea</i> Mg.	158
<i>H. quadrivittata</i> Mg.			
		SPHAEROCERIDAE	
DOLICHOPODIDAE		<i>Sphaerocera curvipes</i> Latr.	
<i>Dolichopus atripes</i> Mg.		<i>Copromyza atra</i> Mg.	37
<i>D. longicomis</i> Stann.		<i>C. equina</i> Fall.	
<i>D. plumipes</i> Scop.		<i>Leptocera humida</i> Hal.	
<i>D. simplex</i> Mg.		<i>L. fontinalis</i> Fall.	45
<i>D. trivialis</i> Hal.			
<i>Chrysotus neglectus</i> Wied.		PALLOPTERIDAE	
<i>Argyra leucocephala</i> Mg.		<i>Palloptera saituum</i> Linn.	
1 species indet.		<i>P. ustulata</i> Fall.	

LONCHAEIDAE		MUSCIDAE	
<i>Earomyia nigra</i> Mg.		<i>Polietes alboineata</i> Fall.	
PIOPHILIDAE		<i>P. lardaria</i> Fabr.	14
<i>Piophila foveolata</i> Mg.		<i>Mesembrina meridiana</i> Linn.	
<i>P. vulgaris</i> Fall.	12	<i>Dasyphora cyanella</i> Mg.	
OPOMYIIDAE		<i>D. cyanicolor</i> Zett.	
<i>Opomyza florum</i> Fabr.		<i>Orthellia viridis</i> Wied.	10
<i>O. germinationis</i> Linn.	28	<i>Morellia simplex</i> Loew	
DROSOPHILIDAE		<i>Azelia cilipes</i> Hal.	
<i>Drosophila simulans</i> Stur.		<i>A. macquarti</i> Staeg.	
CHLOROPIDAE		<i>Ophyria leucostoma</i> Wied.	
<i>Meromyza variegata</i> Mg.		<i>Hydrotaea albipuncta</i> Zett.	
<i>Chloropisca glabra</i> Mg.		<i>H. cyrtoneurina</i> Zett.	
<i>Thaumatomyia rufa</i> Macq.		<i>H. dentipes</i> Fabr.	
3 species indet.		<i>H. irritans</i> Fall.	505
TACHINIDAE		<i>H. occulta</i> Mg.	
<i>The/aira nigripes</i> Fabr.		<i>Muscina assimilis</i> Fall.	
<i>P/atymya fimbriata</i> Mg.		<i>Phaonia palpata</i> Stein.	
SARCOPHAGIDAE		<i>Helina anceps</i> Zett.	
<i>Sarcophaga camaria</i> Linn.		<i>Mydaea ancilla</i> Mg.	
<i>Sarcophaga crassimargo</i> Pand.		<i>Myospila mediatubunda</i> Fabr.	
<i>S. subvicina</i> Rohd.		<i>Graphomya maculata</i> Scop.	
<i>Brachicoma devia</i> Fall.		<i>Haematobosca stimulans</i> Mg.	
CALLIPHORIDAE		<i>Spilogona denigrata</i> Mg.	
<i>Calliphora vicina</i> R-D.	14	<i>Coenosia intermedia</i> Fall.	
<i>Calliphora vomitoria</i> Linn.		<i>C. lineatipes</i> Zett.	
SCATHOPHAGIDAE		<i>C. rufipalpis</i> Mg.	14
<i>Scathophaga stercoraria</i> Linn.	41	<i>C. tricolor</i> Zett.	
ANTHOMYIIDAE		<i>C. infantula</i> Rond.	
<i>Botanophila striolata</i> Fall.		2 species indet.	
<i>Delia echinata</i> Seg.		FANNIIDAE	
<i>D. florilega</i> Zett.	32	<i>Fannia manicata</i> Mg.	
<i>D. radicum</i> Linn.		<i>F. polychaeta</i> Stein	
<i>Hylemya vagans</i> Panz.	15	<i>F. rondanii</i> Strob.	
<i>H. variata</i> Fall.		<i>F. serena</i> Fall.	
<i>Pegoplata aestiva</i> Mg.	15	<i>F. umbrosa</i> Stein.	
<i>Anthomyia liturata</i> R-D			
<i>Adia cinerella</i> Fall.			
<i>Hydrophoria silvicola</i> R-D			
<i>Paradelia intersecta</i> Mg.			
3 species indet.			

Discussion

The list contains no surprises in that all the species are common and already recorded in North-West England but there are features that call for comment. The vehicle-net sampled an air stratum about 1.6 - 2.2 metres above the road surface while the car moved at 30 m.p.h. (48 km/hr). Very little of the roads was shaded by trees, being bordered by low walls or hedges, with broad grass verges, and traversing pastures and some cereal fields. Insects caught in the net can be considered to be mainly *en route* to elsewhere and not swarming over the road.

From dimensions of the net mouth given in Davies & Roberts (1973), the lengths (3 km) of each road, the number of traverses and assuming no incident wind (approximately true for the days in question) a total of about 67,000 m³ of air was filtered, yielding about 2220 non-simuliid Diptera, meaning a low density of 1 insect/29m³, or 0.03 Diptera/m³. When the 1093 female Simuliidae are added the Diptera density is still only 1 insect/20m³ or 0.05/m³.

The most abundant species in the non-simuliid list was the muscid *Hydrotaea irritans* (505 specimens), of which a quarter were males, a noteworthy fact. This species is the economically important 'head fly' that adversely affects sheep and cattle by gathering to lap up eye and wound exudations, and annoys humans by landing on head and limbs on warm, calm days. Around farm animals and humans, female *H. irritans* preponderate and males are rare, so the vehicle-net seemingly samples a dispersive aspect of this species' flight activity where males are proportionately much more abundant.

Many species listed are ecologically based on farm animals, their dung or on decaying animal matter, and include most families where one or more species was sufficiently abundant to exceed 50 specimens caught. This category includes all species of Sepsidae, Sphaeroceridae, Piophilidae, Scathophagidae and several of Anthomyiidae and most Muscidae, the last-named having the largest number of species (34), of the 24 families represented. This abundance of Diptera associated with farm animals or their dung accords with the largely livestock agriculture of the study area. Species with phytophagous larvae or living on decaying plant matter, such as Lonchopteridae, Pallopteridae, Lonchaeidae, Opomyzidae, Chloropidae as well as *Delia* spp. in Anthomyiidae and *Coenosia* spp. in Muscidae and some Fanniidae were collectively varied with about 26 species, but none exceeded 50 specimens taken.

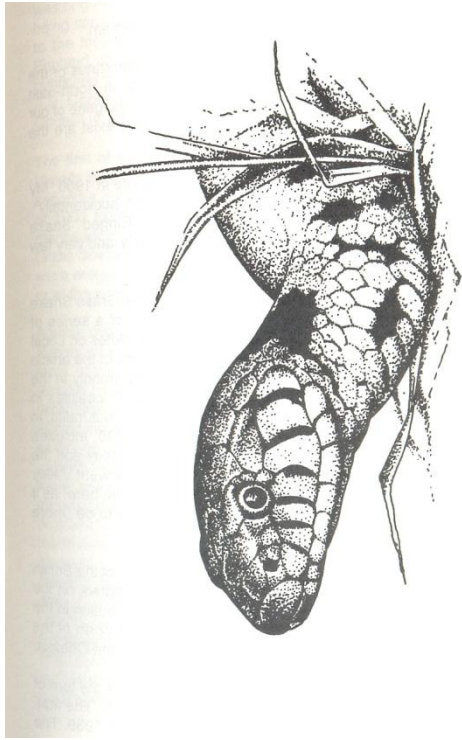
Species with predaceous adults, mainly preying on other Diptera, were well

represented by Empididae with 18 species, of which one (*Hilara litorea*) exceeded 50 caught, and Dolichopodidae with 8 species.

A final comment must concern a major element of the Diptera that was absent from the catch, namely the nematoceros families, such as Tipulidae, Chironomidae, Sciariidae and Mycetophilidae. This must reflect the nature of the habitat sampled by the net, namely air at 1.6 - 2.2 m. above the surface of unshaded tarmacadam roads. The catch thus consisted largely of Brachycera and Cyclorrhapha and is deficient in Nematocera, presumably because the adults of the latter largely fly close to more moist vegetated ground or woodland and scrub surfaces, and have adult body forms, physiological attributes and flight patterns that reflect such habits. It is perhaps significant that the only abundant Nematocera caught by the vehicle-net over roads were Simuliidae, that are built like Cyclorrhapha in terms of compact body form, short appendages, broad wings and matching flight habits, taking them well above and beyond vegetated ground.

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The Status and distribution of the Grass Snake (*Natrix natrix*) in Durham and Northumberland

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There has always been confusion and disagreement about the status of the Grass Snake, or Ringed Snake as it is sometimes known, in north-east England. Opinions vary as to whether it can be said to be a true indigene of our northern counties, or whether the few historical records which exist are the results of escaped pets or deliberate releases.

Richard Howse, then the curator of the Hancock Museum, wrote in 1900 "My opinion is that the Ring Snake does not occur here except .accidentally". George Bolam writing in 1917 said "Of the Grass or Ringed Snake (*Tropidonotus natrix*) there are I believe no Northumbrian records, and very few (if any) well authenticated ones for Durham".

In fact there is a scattering of historical literary references to the Grass Snake in both counties, the earliest I have come across being part of a series of newspaper articles in the Newcastle Weekly Chronicle entitled "Notes on Local Reptiles" by somebody called "JA" On 25 June 1881 the subject of the article was the Grass Snake. JA claims to have found the snake commonly in the vicinity of Wooller and goes on to catalogue a number of other localities in Northumberland where he has seen it. J.W Fawcett, the Satley naturalist, in a note to the Yorkshire journal *The Naturalist* in February 1900, included records of the Grass Snake from West Buttsfield in 1883, and Satley and the Derwent valley in 1886: all localities in north-west Durham. His Derwent Valley record is not included in the distribution map of early records given here, as it is geographically vague. Fawcett considered the Grass Snake to be "more common than the adder".

G.R Leighton M.D attempted to collate the known distribution of all of the British snakes in his book "British Serpents" published in 1901. His chapters on the Grass Snake amply illustrate the diversity of opinion over its distribution in the north. The "establishment" view being that it did not truly occur north of the Tees, with a few "outsiders" claiming its presence as far north as the Cheviot.

Three published attempts have been made in County Durham since the turn of the century to clarify the status of all of our northern reptile species. The first, a "Reptile and Amphibian Survey" in *The Vasculum*, begun in May 1939. The

second, also in *The Vasculum* a "Census of Local Amphibians and Reptiles" in March 1961. Then in 1984 the "North East Reptile and Amphibian Survey" was begun including the Counties of Northumberland and Durham, recording being carried out mostly by Dave Race, John Durkin and myself. In addition to the local surveys three national surveys have also included north-east England, apart that of Leighton already mentioned. Two by R.H. R. Taylor were published in The British Journal of Herpetology in 1948 and 1963, and one by A.S. Cooke and H.R.A. Scorgie was published by the Nature Conservancy Council in 1983.

The first of the local surveys produced records from the Team Valley and Urpeth Bottoms near Gateshead just prior to the turn of the century. The second a record from Stocksfield in south Northumberland and an old record of 1902 from Pelaw Wood near Durham City. Neither survey successfully clarified the problem of distribution or added much to what was known about Grass Snake distribution. It has always been suspected by some that reports were exaggerated or that the few individual animals caught were transplants or at the worst deliberate falsifications.

Against this background of uncertainty the North East Reptile and Amphibian Survey was begun in 1984. All of the northern reptile species came within its remit, of these the three common species were fairly well known but mysterious records existed for the Grass Snake and the sand lizard (*Lacerta agilis*), and determining the status of these species became a priority. The survey attempted to collate all the historical/literary records, collect anecdotal evidence and carry out field work to determine whether the Grass Snake did indeed occur in Durham and Northumberland. To this end museum records were searched, literary sources scrutinised and the media used to solicit information from the general public. A good number of records resulted, the problem then became how to interpret them. It was impossible to verify all of the historical records, and it was obvious that much of the anecdotal evidence gleaned from the public was mistaken. Indeed one deliberate attempt was made to falsify Grass Snake reports in the mid 1970s. As a result a certain amount of judgemental criticism was applied in an attempt to isolate the more reliable reports, and the distribution maps are based on the basis of these and subsequent fieldwork. To cloud the issue further, during the last twenty years or so the keeping of snakes as pets has become increasingly popular resulting in Grass Snakes turning up in some anomalous places as the aftermath of escapes or releases.

Because of observer bias the survey results are weighted in favour of the northern half of County Durham and the south of Northumberland, the north of vice-county 67 and all of 68 having little or no fieldwork done. Despite this an interesting cluster of reports developed in the Linhope area of the river Breamish in V.C. 68'.

As a result of the fieldwork a breeding "colony" of Grass Snakes was discovered and a further reliable report of breeding in the south of Northumberland was received in 1984. The first of these "colonies" has been monitored and assisted by the provision of a manure heap for egg laying since that time. Breeding was confirmed at this site in 1984 and 1988. In September 1989 I witnessed a frenzied attempt at autumn mating involving one female and four males, and in June 1990 I discovered the rotting remains of twenty seven eggs containing fully formed young snakes, which had presumably failed to hatch in 1989. Recent field work carried out by Colin Simms in 1995 indicates a colony of thirty five marked individuals of all ages except young of the year, in this discrete population as of mid August 1995.

Little is known, I believe, about the other localities discovered during the survey and it is quite possible that further systematic field work may yet reveal Grass Snakes to be alive and well in other parts of the two counties.

I have divided the distribution maps chronologically into three time zones, to show patterns of distribution rather than for any other reason. Indeed it is clear that the dearth of early records and observer bias has heavily influenced the results. Consequently not too much should be inferred from the maps, although a rough but interesting pattern can be seen. Ten-kilometre grid squares have been used to avoid pinpointing specific localities, whilst retaining an overall view of the pattern of distribution. Some records have been excluded either because they were vague or I considered them to be inconsistent, or do not have specific locations (only a vague area), the latter applying especially to areas in south Durham.

It is difficult to draw any hard and fast conclusions from the data available on the status of the Grass Snake, except to say that the old argument about whether it breeds in the North East is resolved, with one and possibly two known breeding populations. The rest of the data indicate a fluctuating pattern of distribution with certain key areas repeatedly producing records over a number of years. Long term fluctuations can almost certainly be ascribed to the detrimental effects of changes in land use and/or the vagaries of northern

weather, the Grass Snake here being on the extreme northern limit of its range. Despite any good qualitative evidence, my own feeling is that the species has been in a slow decline for a long time, and has disappeared from most of its former haunts, for example Simms's findings that it has gone from some localities where it once bred as probable indigene in south Durham *circa* 1950-1970 (pers. comm.). [At the Yorkshire Museum, 1965-1981, he received several reports for County Durham, and a few for Northumberland: all proved doubtful, or misidentifications]. Much potential habitat has been lost, even in his day, and at least one locality with a breeding stock in lower Teesdale has entirely gone since 1952. He stresses that slow worms, and even vipers are reported as "Grass Snakes" even by naturalists (a situation with which I am familiar) and casting doubt on the validity of some records. It seems that if populations do still exist it will be only in areas of prime habitat. I would however be quite happy for someone to do the necessary field work in the marginal areas where Grass Snakes are reported, and to prove me wrong.

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FIGURE ONE
Grass Snake records 1880-1925

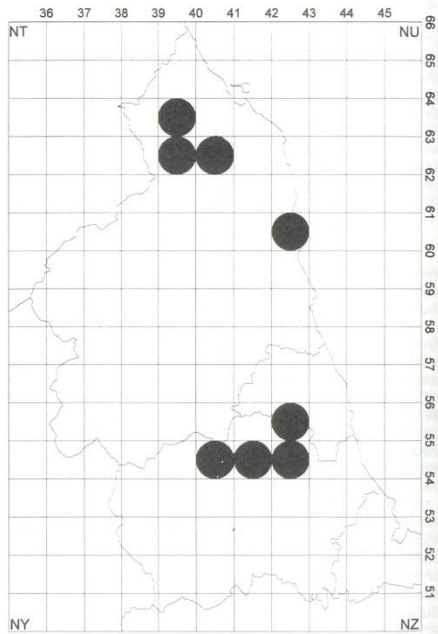


FIGURE TWO
Grass Snake records 1925 - 1975

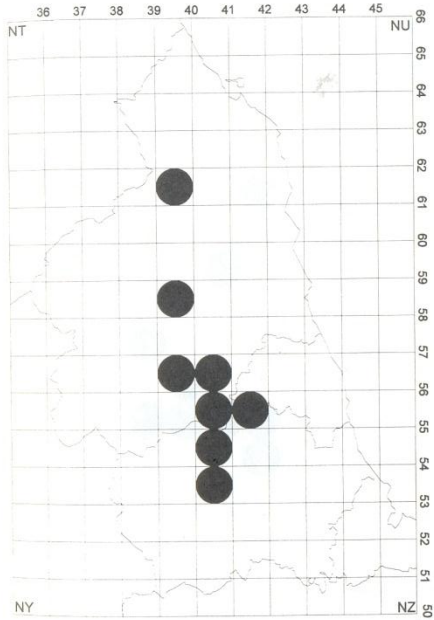
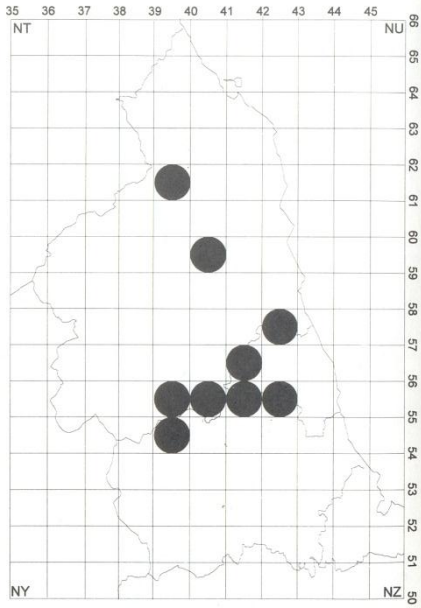


FIGURE THREE
Grass Snake records 1975 - 1995



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Edited by:

L JESSOP

Sunderland Museum and Art Gallery, Borough Road, Sunderland.

BY THE WAY

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

The Next 80 years?

With this issue, The Vasculum completes its eighth decade. It is interesting to look back at the past issues of the journal, from its beginnings as a privately published quarterly with a tremendous mix of reviews of the flora, fauna, geology and history of the North-East. After a break in publication during the Second World War, The Vasculum restarted as an organ of the Northern Naturalists' Union, and seems to have been barely kept alive for many years, mainly by the efforts of a single man, Prof. Heslop-Harrison. At that time, four 8-page issues appeared each year but resurgence began in 1971 with the specially enlarged October issue, a practice that continues to the present day.

Even within the very few years in which I have been involved with *The Vasculum*, as editor, there have been changes. Copy used to be sent to the printers for typesetting, now 90% of that work can be done on my computer and camera-ready copy sent for printing. One of the few jobs remaining for the printers is to typeset the front cover of the October issue, and this year they managed to miss out the title of one of the papers a very annoying omission, for which I greatly apologise, especially to Dr Luff.

As to the future, we must look for more ways to make the journal attractive. The 'small' issues have already expanded from eight to twelve pages, and I would like to see further expansion to sixteen, plus a decorative cover. We are, however, in desperate need of authors to write regularly on geology, birds and plants subjects of great general interest to naturalists, but very much under-represented in the journal.

Whatever happens in the near future it is interesting to speculate as to whether *The Vasculum* will still be here in another 80 years will it be still be available in paper form, or beamed into everyone's home by computer? Will computers still be around in 2076, or will they have gone the way of the pit shovel? Whatever, the chances are that nobody reading this in 1996 will still be here to find out!

Heslop-Harrison Memorial Lecture, 1995

The 1995 Heslop Hamson memorial lecture was held on Saturday 4 November at 2.30 in the lecture room of Stockton Library. Some forty members met for the lecture, which was hosted by the Cleveland Naturalists' Field Club.

Because of the illness of the President Tom Dunn, the President-elect, Dr Phil Gates chaired the meeting. The speaker was Dr Hewett Ellis, and his lecture was entitled *The Butterflies of Northumberland and Durham*. With the aid of some superb slides, Hewett covered the twenty-nine species of butterflies found in our region. He showed photographs of the eggs (taken through a microscope), larvae, pupae and adults of every species. Questions followed, and in giving the vote of thanks, Phil Gates commented on the excellent quality of the photographs.

After the formal part of the meeting was over, members enjoyed the tea and

cakes provided by the Cleveland Naturalists, and examined various displays and exhibits, bringing an end to a very pleasant meeting.

Phil Gates

Two Rediscovered Records of Fungi from VC66

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

Whilst browsing through old numbers of *The Vasculum*, I recently came across two interesting records of fungi which seem to have escaped the notice of Mr J. Durkin when he compiled his list of Durham Fungi (1986). As the species in question are easily identified and the original notes made by highly competent naturalists, it seemed worthwhile to draw the attention of readers to them in the hope that further records might be made.

Volvaria bombycina (Schaeff. ex Fr.) Singer J.B. Nicholson recorded this beautiful toadstool "springing from the trunk of an ash" in Haughton-le-Skerne, Darlington in 1944 (*Vasculum* **29**: 4). A photograph of this species is to be found on page 112 of Phillips (1981) and it is figured in most popular field guides. In recent years it has been reported as becoming more frequent in occurrence, with a preference for dead elm trees. Despite constant vigilance, I confess that I have never seen it on this substrate. In fact, the only time I did see it, it was growing from a wound in the trunk of a living ash at Pinchinthorpe near Guisborough (VC65). Alex Weir discovered it there during the summer of 1991 and fruit-bodies were in evidence again when he and I visited the site next to a lay-by at the eastern end of the village on 18.viii. 1992.

Schizophyllum commune Fr. A note by J.F. Nowers (*Vasculum* **15**: 2) reports this distinctive fungus growing on the end of a cask full of beer at Haughton Road Brewery, Darlington in August 1927. It was identified by the noted Yorkshire mycologist, F.A. Mason. The note also mentions that the cask was "made of American oak and ... about six years old".

As its name suggests, *Schizophyllum commune* grows gregariously and is characterised by "split gills". In fact it is not an agaric and does not have true gills at all, though, to the casual glance, it may appear to have. Although usually classified among the Aphylophorales, it occupies a somewhat isolated taxonomic position. It is fan-shaped and its usual hymenial structure

consists of elongated hollows radiating outwards from a central point of attachment to the substratum, at first joined laterally to each other and then separating to give the illusion of "splitting" gills.

Schizophyllum commune is a cosmopolitan fungus said to be plentiful only in the warm south-east of England, usually on *Fagus*, though common in warm climates elsewhere. Dennis (1986) reports Scottish records from Assynt and Aberdeenshire, Yorkshire records are mainly from timber yards though there are two from the 1940s on *Fagus* (Bramley, 1985). An apparently new habitat was recently brought to light by Prof. John Webster of Exeter University who reported conspicuous fruitings on hay-bales encased in black polythene sleeves seen at Parke, Bovey Tracey, Devon on 28 October 1990 (Webster, 1991). In 1994 a similar fruiting, on polythene-encased hay-bales, was reported from Ryedale, North Yorkshire (VC62 (C. Stephenson, *pers. comm.*).

Local naturalists should perhaps give this unlikely substrate more than a passing glance on their walks and rambles in future. A photograph of the fungus is to be found on page 187 of Phillips (1981)

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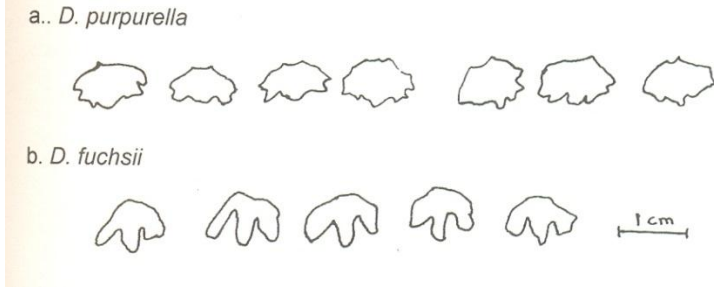
Dactylorhiza at Birtley

Jean Richardson & Audrey Black. 19 The Avenue, Birtley, County Durham
DH31AA

Following our note (*Vasculum* 75: 48) the mixed population (*Dactylorhiza purpurella*, *D. fuchsii* and the hybrid) rapidly increased to number many hundreds of plants in 1993. Factory building in 1994 seemed at first to mark the end of this colony, but we now report that two small areas, each the size of a football pitch, remain undisturbed and continue to support both the parents and the hybrid. Moreover, similar colonies now occur on many of the new roadside cuttings in Washington New Town which adjoins the Vigo site

on the east side.

Further to Burgess's note (*Vasculum* 70: 49 on labellum shapes, it might not be inappropriate to give outlines of the labella of *D. purpurella* and *D. fuchsii* from Vigo



***Onobrychis vicifolia* (Sainfoin) at Coxhoe**

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

Graham, in his *Flora and Vegetation of County Durham* (1988) states that Sainfoin may be a genuine native on Magnesian Limestone in Durham, but is now extinct as such; it has been later introduced with grass seed and is established in only a few places. On the roadside at Coxhoe on 9 July 1995 (Grid ref. NZ3235) there were seven *Onobrychis vicifolia* plants, with numbers of flowering spikes as follows: 11,8,8,6,3,1,0.

About thirty years ago, in the course of widening the Coxhoe to Cassop road, a steep, bare embankment of Magnesian Limestone was formed on the south-east side adjacent to the old quarry. My information is that the slope was not sown with grass seed: if it had been, there are now no signs of those grasses that are normally used in verge seed mixtures. It is possible that the quarry could have provided a refuge for Sainfoin, as quarries have done for other species here and elsewhere (Harrison & Richardson, 1953).

In many parts of the embankment colonization has been rapid and there are thickets which include ash, birch, *Cotoneaster*, elder, gorse, hawthorn, rose and willow. There are also places where the vegetation remains only sparse with 0-50% cover, and here the noteworthy species present were:

<i>Achillea millefolium</i>	Yarrow
<i>Briza media</i>	Quaking-grass
<i>Carex flacca</i>	Glaucous Sedge
<i>Centaurea nigra</i>	Common Knapweed
<i>Dactylorhiza fuchsii</i>	Common Spotted-orchid
<i>Festuca ovina</i>	Sheep's Fescue
<i>Fragaria vesca</i>	Wild Strawberry
<i>Gymnadenia conopsea</i>	Fragrant Orchid
<i>Knautia arvensis</i>	Field Scabious
<i>Leucanthemum vulgare</i>	Oxeye Daisy
<i>Lotus corniculatus</i>	Common Birds-foot-trefoil
<i>Ononis repens</i>	Common Restharrow
<i>Plantago media</i>	Hoary Plantain
<i>Polygala vulgaris</i>	Common Milkwort
<i>Primula veris</i>	Cowslip
<i>Sanguisorba minor</i>	Salad Burnet
<i>Sesleria albicans</i>	Blue Moor-grass
<i>Thymus praecox</i> subsp. <i>arcticus</i>	Wild Thyme
<i>Tussilago farfara</i>	Coltsfoot

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Happy ending for a Tawny Owl

Michael Mann. 22 Rose Lea, Witton Gilbert, County Durham, DH7 6RJ

It was snowing and very cold as I was travelling home on the night of the 17 November 1995 on the Ragpath road near Cornsay Colliery. The car in front of us hit a Tawny Owl, so we stopped the car, picked it up and took it home. By the time we arrived at Witton Gilbert the bird had started to come round, so I held its legs (as these birds can be quite dangerous). It was placed in a large flight in my shed, where that evening it ate a mouse and the best part of a large rat.

The next morning I went to get hold of it in order to release it, and it promptly sunk its talons into my hand however, I managed to get the bird into a box and it was released near the spot where it had been hit. It flew off, pursued by an angry flock of rooks, and seeming no worse for its ordeal of the night.

RECORDS

Chimney Sweepers, *Odezia atrata*

Chimney Sweeper moths, *Odezia atrata* used to be common in a field in Durham City where the hay was not cut before the end of June. The moths used to emerge at least a week or ten days prior to cutting.

In 1994 a large number had already emerged by 19 June and the meadow was cut by 28 June, after which a few moths were still visible.

This year, 1995, the hay was cut already by 9 June, much earlier than usual and before the emergence of any Chimney Sweepers. The field was searched on several occasions after this date but there were no signs of the moth. What had been a thriving colony has been seriously depleted this year, if not eradicated.

The search was extended to the neighbouring fields, which had not been harvested by 23 June. In one corner, at least six Chimney Sweepers were seen flitting in amongst the flowering grasses and pignut *Conopodium majus*, the moth's food plant. The other fields had no pignut and no Chimney Sweepers: it is hoped that this small group of moths may act as a stock colony and that the moth will eventually spread out again.

P. & H.M. Johnson

Recent Butterfly Sightings in Northumberland

In the last few years, trips around the county have confirmed that the ringlet *Aphantopus hyperantus* is continuing to extend its range in Northumberland. In 1990 it was recorded during systematic ornithological atlas work in nine tetrads in the Duddo area (NT9244, NT9440, NT9442, NT9444, NT9448, NT9646, NT9648, NT9842). On the day of the survey (16 July), it was the commonest butterfly in this area, occupying roadside verges alongside intensive arable farming. In 1991 it was found in similar habitat in the Biddlestone area on 15 July (NT9406).

By 1994 the Ringlet had spread to the South Tyne valley, being found in some numbers in Towsbank Wood (NY6658), near Eals on 30 July. This year (1995) it was found at the nearby Snope Burn (NY6854) on 9 July and at one new locality in the north of the county Milfield (NT9432) on 18 July.

A large skipper *Ochlodes venata* was at Marshall Meadows (NT9856), the northern extreme of the county, on 7 July 1993. There is a pre-1940 record for this species in the 10-Km square NT95 in *The Moths and Butterflies of Great Britain and Ireland* 7(1).

A freshly-emerged Comma *Polygonia c-album* was on flowers of *Buddleia davidii* at Ordley (NY9458), near the Devils Water, on 30 July 1995. The butterfly was observed for some 15 minutes and a number of close-up photographs were obtained.

The Small Skipper *Thymelicus sylvestris* has moved into the Devils Water area in 1995 being noted on 3 August in two small colonies at Peth Foot and one at Ordley, all in tetrad NY9458. This butterfly was first noted in Northumberland near Ebchester in 1994 (*Vasculum* 79(4): 71).

Nick Rossiter

Garden Butterflies in 1995

After a slow start, butterflies became very striking in their numbers in the garden at Quarry Heads Lane, Durham (NZ2741) this year (1995). Small Tortoiseshell (*Aglais urticae*) and Small and Large Whites (*Pieris rapae* and *P. brassicae*) became abundant followed by large numbers of Peacocks (*Inachis io*), especially on Buddleia flowers. Then many more Red Admirals (*Vanessa atalanta*) than ever seen before from mid-September and were still feasting from fallen apples by the beginning of October.

Two butterflies made their debut, again found on the Buddleia, first was a Small Skipper (*Thymelicus sylvestris*) on 27 July, and then a Painted Lady (*Vanessa cardui*) on 31 July and 1 August.

P & HM Johnson

Leiodoptera Records for 1995

Camberwell Beauty (*Nymphalis antiopa*)

Jarrow Dene off York Avenue) (NZ3263). 22 September. Simon Brough

On Saturday 12 August a mint specimen was spotted at the Botanic Gardens, Durham (NZ2740), sharing the Buddleia spikes with Peacocks, Small Tortoiseshells and Red Admirals. D.W. Lacey

Comma (*Polygonia c-album*)

One found in allotments at Wvlam (NZ1164)) on 26 July.

Dr R T, Swinburn

A Single specimen seen feeding on Buddleia in the garden at 16 Southlands, Tynemouth (NZ358701) on 10 August. It appeared to be in good condition and remained for about five minutes from 11.57 a.m. This is the first time I have seen a Comma in Northumberland.

Dr H.A. Ellis

One was seen at Dell's Lane, Consett on 17 August, and one at North Grain Beck, Hamsterley Common (NZ0432) on 31 August,

Ian Waller

Marbled White (*Melanargia galathea*)

A male was seen on 7 August at Bristleton Hilltop, eight miles from the Bishop Middleham Quarry site.

Ian Waller

Dark Green Fritillary (*Argynnis aglaja*)

On 26 July, in the middle of the very sunny spell, Alex Weir & I made a visit to Chillingham, part of the purpose of the journey being to check out a reported colony of Dark Green Fritillaries in the grounds of Chillingham Castle. A pleasant walk through the wooded valley (which has very fine specimens of old exotic trees) and past the lake brought us to a small meadow (at grid ref. NU066255) in which we had more than a dozen sightings of *Argynnis aglaja*, very active in the hot sunshine. According to *Dunn & Parrack* /, most of the Northumberland records of this species are from the North-East corner of the county, the vast majority of records being from

the sand dunes between Bamburgh and Berwick. This record is a little unusual in being so far inland.

Les Jessop

Red Underwing (*Catocala nupta*)

One was taken at Malton (NZ1846) on 8 October 1995.

Terry Coult

Lepidoptera at Allerwash Hall in 1994

There were five new records in the twentieth year of running this trap.

Trichiura crataegi (Pale Eggar). 29.ix. According to *Dunn & Parrack* widely if thinly distributed in upland areas of Northumberland.

Carsia sororiata ssp *anglica* (Manchester Treble Bar), 5.viii.

Acasis viretata (Yellow-barred Brindle). 13.v. This is rather special. Identity has been confirmed by J.D. Parrack, who also identified two of my previously unidentified captures, in June 1989 and June 1990, as being of this species. According to *Dunn & Parrack* "decidedly rare and local in our counties... Cow Green, 1972, Alston, 1980 and Cupola Bridge 1981 ... the only recent records"

Euxoa nigricans (Garden Dart), 17.viii. Confirmed by J.D.P.

Schrankia costaeigalis (Pinion-streaked Snout). June 1994. Confirmed by JDP. I had passed this over as a pyralid, exactly as suggested in *Dunn & Parrack*.

The following species appeared for only the second time:

Thera juniperata (Juniper Carpet). 21.x.

Amphipyra sp. Copper Underwings. Two on 20.ix. and one on 1.x.

Apamea ophiogramma (Double Lobed). 24.vii.

Other interesting records are:

Tethea ocularis octogesimea (Figure of Eighty). 29.vi.

Apocheima pilosaria (Pale Brindled Beauty), 24.xii.

Dunn & Parrack: "about the first species to appear in the New Year" which raises the question, is this record early or late?

Orgyia antiqua (Vapourer). 29.ix. This was only the second record I have ever taken in the trap. I have not seen it by day since 1990.

Brachionycha sphinx (The Sprawler). Taken each year since 1982 but rarely more than two or three sightings a year. However on 25.x. there were eleven in the trap and one at the house light!

Autographa gamma (Silver Y) 1 .v. This was my earliest ever record, and Autumn 1994 proved to be an outstanding season. One came to the trap as late as 19.xi. Up to a dozen at one time were to be seen on the Buddleia and Catmint, and when the Buddleia died down they moved to the heathers.

Peter Tennant

N.N.U. field meeting to Gainford Great Woods

On Saturday 27 May 1995, Robert Woods led a party of about twenty members into Gainford Great Wood (NZ1617 & NZ1618), having previously obtained permission for the visit from Raby Estates. The flora was particularly interesting, with very large drifts of Bugle (*Ajuga reptans*), along many of the rides. Wood Forget-me-not (*Myosotis sylvatica*) was also found, with blue

and white forms growing side-by-side. Dr Phil Gates compiled a list of the flora, and although Alan Legg said there was nothing unusual about the fungi, he produced a sizeable list of that group.

Robert Woods provided a list of Lepidoptera. The star of the day was a Peach Blossom moth (*Thyatira batis*): this very attractive moth had a queue of photographers waiting to take its portrait.

After leaving the woods some members, led by Robert Woods, visited the area where the Gainford Spa bubbles out of the riverbank. Members who tasted it were not very impressed. SO ended a very pleasant field outing.

A caterpillar found on a sandstone outcrop in the bank of the River Tees beneath an oak tree, near the sulphurous spring head (Gainford Spa (NZ162173) was collected and identified by H.A. Ellis as the larva of a Copper Underwing (*Amphipyra* sp.). Features corresponded to those attributed to *A. pyramidea* rather than to *A. berbera svenssoni* in the Colins Field Guide to Caterpillars of Britain & Europe. The adult is not available since the larva was subsequently found to be parasitised.

The following species were found in Gainford Great Wood

Ascomycotina

Calloria neglecta
On dead *Urtica* stems
Chaetosphaerella phaeostroma
widespread on rotting wood
Colpoma quercinum
on dead *Quercus* twigs and
branches
Crocicreas cyathoides
on dead *Urtica* stems
Cryptodaplothe brancicensis
in dead *Tilia* twig
Cryptosphaeria eunomia
in dead *Fraxinus* twig
Davyscyphus (lachnum) virgineus
on dead *Rubus "fruticosus"sterr*)
Diatrype disciformis
on dead *Fagus* wood
Diatrype stigma
on various branches

Mollisia fallax
on fallen *Pinus* cones
Nectria cinnabarina
imperfect state on attached *Tilia*
twig
Nectria epiphseria
on old pyrenomycete stromata
Potebnianmyces conferturum
imperfect state on old *Larix* cones
Pyrenopeziza petolaris
on old kees' petioles
Quatemana quatemata
on *Fagus* wood
Rhytisma acerinum
on old kees' leaves
Xylaria carpophila
on beech mast
Xylaria hypoxylon
old stromata on rotten logs etc.
Basidiomycoty na agaricales

Hercospora tiliae
in attached dead *Tilia* twig
Hyposylon fragiforme
on rotting *Fagus* wood
Lasiothraeria spermodites
on rotting *Fagus* wood and
overgrowing *H. fragiforme*
Lepthohercia acuta
on dead *Urtica* stems

Conohus versicolor
on logs
Datroia mollis
on rotting wood
Polyporus varius
on stump
Stereum hirsutum
on logs etc.

Basidiomycotina tremellales

Calocera pallidospatulata
on *Fagus* wood

Basidiomycotina urcinales

Kuhneella ureidinis
on living stem of *Rubus "fruticosus"*

Deuteromycotina coelomyces

Uberiella faginea
in *Fagus* twigs

Seplocyba ruborum
in living stems of *Rubus "fruticosus"*

Deuteromycotina hyphomycetes

Exosporium tiliae
on thin attached twig of *Tilia*

Pinaceae

Picea abies

Larix decidua

Pinus sylvestris

Ranunculaceae

Anemone nemorosa

Ranunculus repens

Ranunculus ficaria

Ulmaceae

Ulmus procera

Urticaceae

Urtica dioica

Fagaceae

Fagus sylvatica

Quercus robur

Betulaceae

Betula pendula

Caryophyllaceae

Stellaria holostea

Cerastium arvense

Silene dioica

Tiliaceae

Tilia x vulgaris

Violaceae

Viola nviniana

Viola reichenbachiana

Brassicaceae

Brassica

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Norway Spruce

Larch

Scots Pine

Wood Anemone

Creeping Buttercup

Lesser Celandine

English Elm

Common Nettle

Beech

Pedunculate Oak

Silver Birch

Greater Stitchwort

Field Mouse-ear

Red Campion

Lime

Common Dog-violet

Early Dog-violet

Coprinus atramentarius Common Ink

Cap. on ride

Hypophoma fasciculare Sulphur Tuft

leaf litter

Psathyrella fatua

disturbed soil

Basidiomycotina cortinariales

Hymenogastel tener Thin Nut Truffle

growing on rich soil by rille

Basidiomycotina "aphylloporales"

Alliaria petiolata

Ericaceae

Rhododendron ponticum

Primulaceae

Primula vulgaris

Lysimachia nemorum

Saxifragaceae

Saxifraga oppositifolia

Rosaceae

Rubus fruticosus agg.

Geum urbanum

Prunus spinosa

Prunus avium

Prunus padus

Sorbus aucuparia

Crataegus monogyna

Onagraceae

Circaea lutetiana

Euphorbiaceae

Mercurialis perennis

Hippocastanaceae

Aesculus hippocastanum

Aceraceae

Acer pseudoplatanus

Oxalidaceae

Oxalis acetosella

Geraniaceae

Geranium robertianum

Araliaceae

Hedera helix

Apiaceae

Anthriscus sylvestris

Cosopodium majus

Boraginaceae

Myosotis sylvatica Wood Forget-me-not

(blue and white flowered forms found)

Lamiaceae

Lamium album

Ajuga reptans

(pale blue, dark blue and white forms found)

Plantaginaceae

Plantago media

Oleaceae

Fraxinus excelsior

Scrophulariaceae

Scrophularia nodosa

Rubiaceae

Galium aparine Cleavers

Garlic Mustard

Rhododendron

Primrose

Yellow Pimpernel

Purple Saxifrage

Bramble

Herb Bennet

Blackthorn

Wild Cherry

Bird Cherry

Rowan

Hawthorn

Enchanter's-nightshade

Dog's Mercury

Horse-chestnut

Sycamore

Wood-sorrel

Herb-sorrel

Ivy

Cow Parsley

Figwort

White Dead-nettle

Bugle

Hoary Plantain

Ash

Common Figwort

Caprifoliaceae					
<i>Sambucus nigra</i>	Elder		Apiaceae	<i>Heracleum sphondylium</i>	Hogweed
<i>Symphoricarpos albus</i>	Snowberry		Lamiaceae		
<i>Lonicera periclymenum</i>	Honeysuckle		<i>Glechoma hederacea</i>		Ground Ivy
Asteraceae			Plantaginaceae		
<i>Arcium lappa</i>	Greater Burdock		<i>Plantago lanceolata</i>		Ribwort Plantain
<i>Lapsana communis</i>	Nipplewort		Scrophulariaceae		
<i>Taraxacum officinale</i> agg.	Dandelion		<i>Digitalis purpurea</i>		Foxglove
Poaceae			Rubiaceae		
<i>Milium effusum</i>	Wood Millet		<i>Cruciana laevipes</i>		Crosswort
<i>Poa nemoralis</i>	Wood Meadow-grass		Asteraceae		
Liliaceae			<i>Cirsium repens</i>		Creeping Thistle
<i>Hyacinthoides non-scripta</i>	Bluebell		<i>Tussilago farfara</i>		Coltsfoot
<i>Allium ursinum</i>	Ramsons		Araceae		
Lepidoptera			<i>Arum maculatum</i>		Cuckoo Pint
<i>Nematopogon schwarziellus</i>			Poaceae		
<i>Anthocharis cardamines</i>	Orange Tip		<i>Alopecurus pratensis</i>		Meadow Foxtail
<i>Thyatra batis</i>	Peach Blossom		<i>Bromus sterilis</i>		Sterile Brome
<i>Xanthorhoe montanata</i>	Silver-ground Carpet		<i>Dactylis glomerata</i>		Cocksfoot Grass
<i>Oprophletha brunnata</i>	Winter Moth (larva)				
<i>Apocheima pilosaria</i>	Pale Brindled Beauty (larva)				
<i>Agriopsis margin aria</i>	Dotted Border (larva)				
<i>Ectropis crepuscularia</i>	Small Engrailed				
The following were noted along a field edge and roadside:					
Ranunculaceae					
<i>Ranunculus acris</i>	Field Buttercup		Betulaceae		
Clusiaceae			<i>Corylus avellana</i>		Hazel
<i>Hypericum hirsutum</i>	Hairy St John's Wort		Caryophyllaceae		
Rosaceae			<i>Silene alba</i>		White Champion
<i>Filipendula ulmaria</i>	Meadow-sweet		Rosaceae		
<i>Geum rivulare</i>	Water Avens		<i>Rubus idaeus</i>		Wild Raspberry
<i>Geum rivulare</i> x <i>G. urbanum</i>	Hybrid Avens		Onagraceae		
<i>Sorbus</i> sp.	(unidentified exotic species, with flaking bark)		<i>Epilobium hirsutum</i>		Hairy Willowherb
Leguminosae			Balsaminaceae		
<i>Trifolium pratense</i>	Red Clover		<i>Impatiens balsaminiifera</i>		Himalayan Balsam
Euphorbiaceae			Apiaceae		
<i>Mercurialis perennis</i>	Dog's Mercury		<i>Aegopodium podagraria</i>		Ground Elder
Geraniaceae					
<i>Geranium pratense</i>	Meadow Cranesbill		<i>Heracleum mantegazzianum</i>		Giant Hogweed
<i>Geranium sylvaticum</i>	Wood Cranesbill		<i>Myrrhis odorata</i>		Sweet Cicely
			<i>Sanicula europaea</i>		Wood Sanicle
			Lamiaceae		
			<i>Stachys sylvatica</i>		Hedge Woundwort
			Scrophulariaceae		
			<i>Veronica chamaedrys</i>		Germander Speedwell
			Rubiaceae		
			<i>Gallium odoratum</i>		Woodruff
			Cyperaceae		
			<i>Carex pendula</i>		Pendulous Sedge
			Poaceae		
			<i>Melica uniflora</i>		Wood Melick