Table I Summary of yellow trap catches

	Typha	Glyceria	Scrub	Meadow
Number of individuals	1864	1400	3365	3809
Number of species	90	87	217	220
Diversity indices				
Fisher's alpha	19.74	20.54	51.08	50.80
Shanon-Wiener index (H)	4.17	3.78	5.71	5.06
Equitability (H_{max}=8.37)	0.498	0.451	0.682	0.605
Sommer's D	0.889	0.822	0.957	0.892
Equitability (D_{max}=0.997)	0.891	0.824	0.960	0.894

These results, and consideration of the species lists suggest that the reedbeds support fewer, specialist species often in considerable numbers resulting in a low species count and low disersity. By contrast the 'scrub' and 'meadow' sites have a more varied and diverse fauna.

Table II compares the catches from the four sites using the Euclidean distance between them calculated as follows:

$$\text{Euclidean distance} = \sqrt{\sum_{i=1}^{i=S}\left(\left(\frac{n_{i1}}{N_1}\right)-\left(\frac{n_{i2}}{N_2}\right)\right)^2}$$

Where S = total number of species in all traps
n_{i1}, n_{i2} = number of the i^{th} species in traps 1 and 2
N_1, N_2 = total number of individuals in traps 1 and 2

This gives a measure of the similarity between the relative abundances of the various species in the traps. If the same species were caught in the same relative abundance by a pair of traps they would have zero distance, whereas if the catches were completely dissimilar (ie. trap 1 caught only species A and trap 2 only species B) then the distance between them would be 1.

Table II Euclidean distances between yellow trap catches

	Glyceria	Scrub	Meadow
Typha	0.1769	0.3365	0.4428
Glyceria		0.4107	0.5063
Scrub			0.1932

Not surprisingly the 'Glyceria' and 'Typha' trap catches were similar to each other and rather different from the 'Meadow' and 'Scrub' catches. More surprisingly, the 'Meadow'

and 'Scrub' catches were also alike. The 'Glyceria' and 'Typha' catches and the 'Scrub' and 'Meadow' catches had just over half their species in common in each case, whereas there were less than a quarter in common between reedbed and non-reedbed samples.

Discussion and conclusions

Shibdon pond has a large and diverse insect fauna composed of several different faunal elements. It will take much more sampling of this, and other sites in the region to provide a full assessment of the importance of this reserve, but this survey consisting mainly of one season's work demonstrates the richness of the site.

The elements of the fauna which can be provisionally identified are as follows:

Open water species: So far water beetles and dragonflies are the only groups which have been examined. In a classification of freshwater habitats based on their water beetle fauna Eyre, Ball and Foster(in preparation) place Shibdon Pond as a typical example of a 'bare substrate, lowland pond'. The species present are typical of large lakes and indicates a type of habitat found at only two other localities in Tyne and Wear. The dragonfly fauna consists of all the wide-spread species in the region and there is only one other local site from which as many as nine species have been recorded (Close House).

Marsh species: This is the most important part of Shibdon's fauna and consists of many species associated with reedbeds and the edges of ponds. A number of species associated with Typha appear on the list including several hoverflies and some beetles. This is not surprising considering that Typha beds occupy much of the area of the reserve. The rich and varied marshland fauna, and especially the presence of many specialists, indicates that the site is an old, well-established marsh rather than a recent subsidence pond as its industrial setting might suggest. It was surprising that several of the marshland species were abundant in the rather small headland north-east of the old railway line, and shows that the fauna can survive in quite small areas of suitable habitat.

Species associated with herb rich, damp meadows: Several flies (a number of Syrphidae, Tephritidae and Otitidae), beetles and an ant associated with high quality grassland were found. The presence of many specialists again suggest an old and well established site. It is encouraging that these were not restricted to the rather small areas of such habitat on the reserve itself, but were also present in the much larger meadow north-east of the old railway line. Damp meadows are a rare habitat locally, most having been drained and/or re-seeded.

Species asscoiated with pasture: Grass-dwelling species were fairly prominent and flies like Opomyzidae, some Drosophilidae and the Dolichopdid *Chrysotus gramineus* can be found in great numbers in any pasture, even those which are intensively managed for agricultural purposes.

Species associated with farm stock and dung: Not surprisingly for a site next to a field of horses, a number of sweat-flies, and dung-living beetles and flies were caught.

Woodland edge/hedgerow species: Shibdon pond is an exposed site with no trees and it is therefore not surprising that woodland species are lacking. A number of woodland edge species which are typically associated with hedges and scrub were caught however. These included some associated with hawthorn and sallows - shrubs which have been planted on the site.

Ubiquetous species: Any large sample of insects includes many very abundant and mobile animals and the yellow trap catches were no exception. Flower-visiting flies, beetles

and Hymenoptera were attracted to the yellow traps by their colour, and carrion flies and beetles were probably caught because the trap contents started to rot after a week. The old railway line itself provides a profusion of flowers, such as hogweed, thistles, tansy and hard head, which attract common flower-visitors including many butterflies.

In conclusion, Shibdon ponds contains areas of old, long-established marsh fringed with damp meadow which are rare habitats locally and need to be protected. In the context of the road scheme the least damaging loss would be a strip of the large Typha beds on the south-west side of the old railway rather than the diverse and species-rich meadow along the north-east side. The meadows could justifiably be included in the reserve at some time in the future and their present grazing regime and lack of drainage should be continued.

INVERTEBRATE SITE REGISTER MASTER FORM

Site number 70/8

Name(s)

THORNLEY WOOD

County(s)

Tyne and Wear

Grid. Ref.

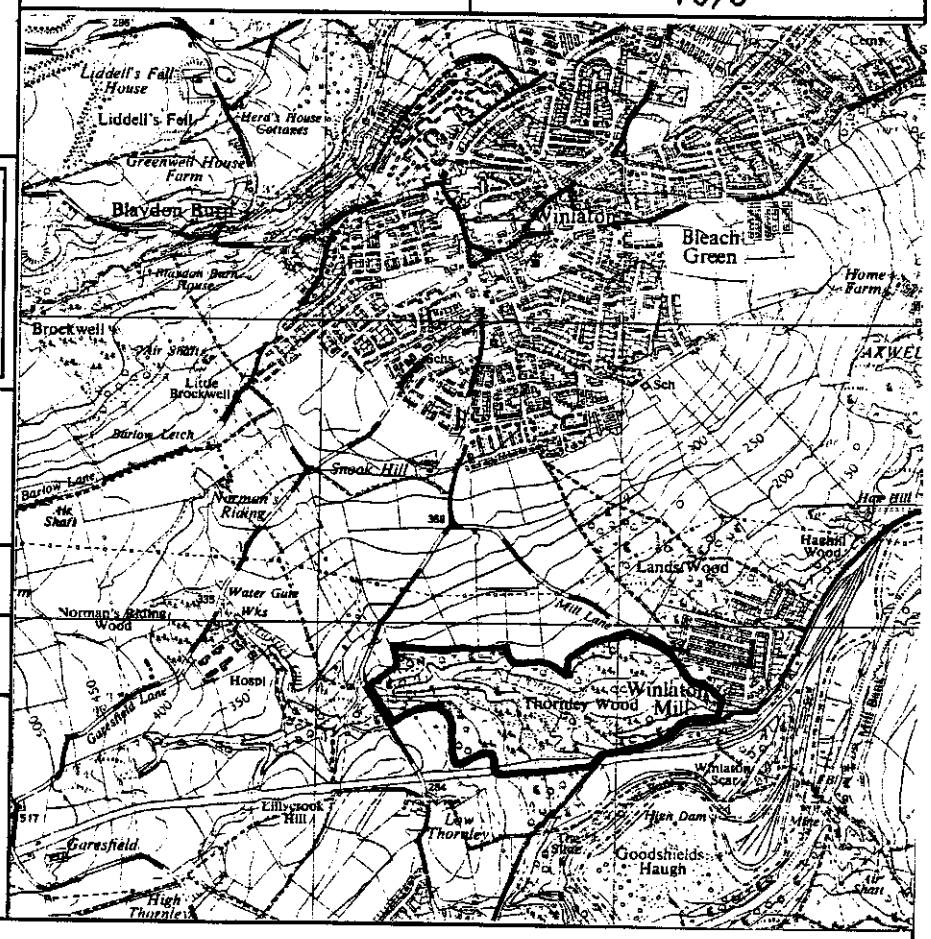
NZ1760

Grade

B

Status

pSSSI
Public Authority



Site description - Habitat

Extensive sessile oak woodland in a steep sided dene. The Oak/Birch woodlands include dry, acid areas with a ground flora dominated by Cow Wheat, Bilberry and Heather and wet flushes with Alder carr. The flatter areas either side of the valley have been planted with Conifers, Beech and Oak. Several open areas dominated by bracken and rough grassland with developing scrub. Old mineral line with large hawthorn hedgerows and broom/gorse scrub.

Invertebrate Interest - Coverage

Good woodland fauna typical of a Derwent Valley sessile oak wood including several nationally rare species. Well worked entomologically with an ongoing survey which started in 1976. The best remaining area of woodland in the lower Derwent Valley.

Comments - Conservation

Owned by Gateshead MBC and managed as a reserve since 1975. Proposed LNR. The wood is managed by wardens employed by Gateshead MBC who are stationed in the Interpretation Centre in Paddock Hill Wood which adjoins Thornley.

Red Data Book and Notable species recorded for THORNLEY WOOD

pRDB2

Dioryctria abietella	LEP:Pyralidae	1976	Sheppard, Dr D A

RDB3

Helina quadrinotata	DIP:Muscidae	1976	Sheppard, Dr D A
Stratiomys potamida	DIP:Stratiomyidae	1980	Ball, Dr S G

Notable/Nb

Drepanepteryx phalanoides (L)	NEU:Hemerobiidae	1976	Ball, Dr S G
Habitat indicator of Deciduous & mixed wood (3)			
Aleochara ruficornis	COL:Staphylinidae	1982	Eyre, M D
Attelabus nitens	COL:Attelabidae	1982	Walker, Mark (deceased)
Elodes minuta	COL:Scirtidae	1982	Walker, Mark (deceased)
Mick Eyre considers this questionable			
Grypus equiseti	COL:Curculionidae	1982	Eyre, M D
Hydroporus ferrugineus Stephens	COL:Dytiscidae	1985	Eyre, M D
Judolia cerambyciformis	COL:Cerambycidae	1982	Eyre, M D
Habitat indicator of Deciduous & mixed wood (2)			
Philonthus rotundicollis	COL:Staphylinidae	1982	Eyre, M D
Pterostichus cristatus	COL:Carabidae	1978	Eyre, M D
Crambus pratella	LEP:Pyralidae	1978	Sheppard, Dr D A
Eupithecia indigata	LEP:Geometridae	1976	Sheppard, Dr D A
1844,Ochreous Pug			
Bibio ferruginatus	DIP:Bibionidae	1977	Ball, Dr S G
Criorhina berberina	DIP:Syrphidae	1976	Ball, Dr S G
Habitat indicator of Deciduous & mixed wood (2)			
Dioctria oelandica	DIP:Asilidae	1976	Ball, Dr S G
Dolichopus rupestris	DIP:Dolichopodidae	1976	Ball, Dr S G
Hilara cornicula	DIP:Empididae	1984	Ball, Dr S G
Limnophila phaeostigma	DIP:Tipulidae	1976	Sheppard, Dr D A
Limonia trivittata	DIP:Tipulidae	1976	Sheppard, Dr D A
Pelidnoptera fuscipennis	DIP:Sciomyzidae	1978	Ball, Dr S G
Rhamphomyia anomalipennis	DIP:Empididae	1976	Ball, Dr S G
Sapromyza hyalinata	DIP:Lauxaniidae	1976	Ball, Dr S G
Scaptomyza flava	DIP:Drosophilidae	1984	Ball, Dr S G
Tipula obsoleta	DIP:Tipulidae	1977	Sheppard, Dr D A

Nr

Coniopteryx parthenia	NEU:Coniopterigida	1983	Eyre, M D
Deporaus mannerheimi	COL:Attelabidae	1982	Walker, Mark (deceased)
Pterostichus vernalis (Panzer)	COL:Carabidae	1985	Eyre, M D
Strangalia maculata (Poda)	COL:Cerambycidae	1976	Ball, Dr S G
Bena prasinana	LEP:Noctuidae	1976	Sheppard, Dr D A
2421,Scarce Silver-lines			
Habitat indicator of Deciduous & mixed wood (2)			
Hydrelia flammeolaria	LEP:Geometridae	1976	Sheppard, Dr D A
1876,Small Yellow Wave			
Habitat indicator of Deciduous & mixed wood (3)			
Idaea fuscovenosa	*LEP:Geometridae*	*1927*	*Campbell(1927)*
1705,Dwarf Cream Wave			

THORNLEY WOOD (Continued)

Jodis lactearia 1674,Little Emerald	LEP:Geometridae	1976	Sheppard, Dr D A
Odontosia carmelita 2010,Scarce Prominant	LEP:Notodontidae	1976	Sheppard, Dr D A
Habitat indicator of Deciduous & mixed wood (3)			
Serraca punctinalis 1944,Pale Oak Beauty	LEP:Geometridae	1976	Sheppard, Dr D A
Azelia gibbera	DIP:Muscidae	1976	Ball, Dr S G
Beris morrisii Dale	DIP:Stratiomyidae	1976	Ball, Dr S G
Drosophila cameraria	DIP:Drosophilidae	1978	Ball, Dr S G
Hybomitra distinguenda (Verrall)	DIP:Tabanidae	1976	Ball, Dr S G
Leptocera fuscipennis	DIP:Sphaeroceridae	1976	Ball, Dr S G
Xylophagus ater Mg.	DIP:Xylophagidae	1977	Ball, Dr S G
Andrena pubescens	HYM:Andrenidae	1978	Sheppard, Dr D A
Psithyrus vestalis	HYM:Apidae	1976	Sheppard, Dr D A

Local

Muellerianella brevipennis (Bohe	HEM:Delphacidae	1976	Sheppard, Dr D A
Hemerobius atrifrons McLachlan	NEU:Hemerobiidae	1982	Eyre, M D
Hemerobius pini Stephens	NEU:Hemerobiidae	1977	Eyre, M D
Hemerobius simulans Walker	NEU:Hemerobiidae	1977	Eyre, M D
Nothochrysa capitata (F)	NEU:Chrysopidae	1982	Eyre, M D
Sympherobius fuscescens (Walleng	NEU:Hemerobiidae	1982	Eyre, M D
Wesmaelius concinnus (Stephens)	NEU:Hemerobiidae	1976-1978	Eyre, M D
Amara apricaria (Paykull)	COL:Carabidae	1986	Eyre, M D
Bembidion harpaloides Serville	COL:Carabidae	1983	Reid, C
Bembidion mannerheimi Sahlberg	COL:Carabidae	1985	Eyre, M D
Bradycellus sharpi	COL:Carabidae	1983	Reid, C
Dromius quadrinotatus (Zenker)	COL:Carabidae	1977	Eyre, M D
Gymnetron pascuorum (Gyllenhal)	COL:Curculionidae	1982	Walker, Mark (deceased)
Xyloterus domesticus Ambrosia Beetle	COL:Scolytidae	1983	Reid, C
Habitat indicator of Deciduous & mixed wood (3)			
Epirrata filigrammaria 1798,Small Autumnal Moth	LEP:Geometridae	1976	Sheppard, Dr D A
Erynnis tages 1532,Dingy Skipper	LEP:Hesperiidae	1983	McCutcheon, Doug
Euchoeca nebulata 1874,Dingy Shell	LEP:Geometridae	1978	Sheppard, Dr D A
Conops flavipes L	DIP:Conopidae	1980	Ball, Dr S G
Ferdinandea cuprea	DIP:Syrphidae	1976	Ball, Dr S G
Habitat indicator of Deciduous & mixed wood (3)			
Liancalus virens (Scopoli)	DIP:Dolichopodidae	1983	Ball, Dr S G
Habitat indicator of Stream or river including margins (3)			
Lonchoptera tristis Mg	DIP:Lonchopteridae	1984	Ball, Dr S G
Melangyna cincta (Fallen)	DIP:Syrphidae	1977	Ball, Dr S G

66 species listed
Invertebrate Index = 1510

NATURE CONSERVANCY COUNCIL

INVERTEBRATE

SITE

REGISTER

SITE NAME: THORNLEY WOOD

GRID REFERENCE: NZ 174608

DATE OR PERIOD OF VISITS:

MODERN COUNTY: TYNE & WEAR

RECORDER:

ALTITUDE M.:

Site Status

National Nat. Res.	☐
RSPB Reserve	☐
County Trust Res.	☐
SSSI	☐
Local Authority	☑
Common Land	☐
Forestry Commission	☐
Min.of Defence	☐
National Trust	☐
Private Owner	☐
Other, please state	☐

Confidentiality

At discretion of NCC	☑
Consult recorder	☐

Sketch Map (showing main areas of invertebrate interest)

Site Description (habitats of interest) 82 acres

Mosaic of dene woodland with large areas of sessile oak ; flushed alder/birch on steep valley sides and plantations of pine and larch. Open areas dominated by bracken with scrub birch. Old mineral railway line runs along one edge with broom, sallow and birch.

Main Invertebrate Interest

General Comments (Site importance, conservation problems etc)

Proposed S.S.S.I and L.N.R.

Owned by Gateshead M.B.C., managed by Parks Services Dept.

(Please use back of sheet for further details – eg species lists, literature ref. etc)

Office use

NATURE CONSERVANCY COUNCIL

INVERTEBRATE

SITE

REGISTER

SITE NAME: THORNLEY WOOD

GRID REFERENCE: NZ

DATE OR PERIOD OF VISITS: 1976 – 1986

MODERN COUNTY: TYNE & WEAR

RECORDER: S G BALL

ALTITUDE M.:

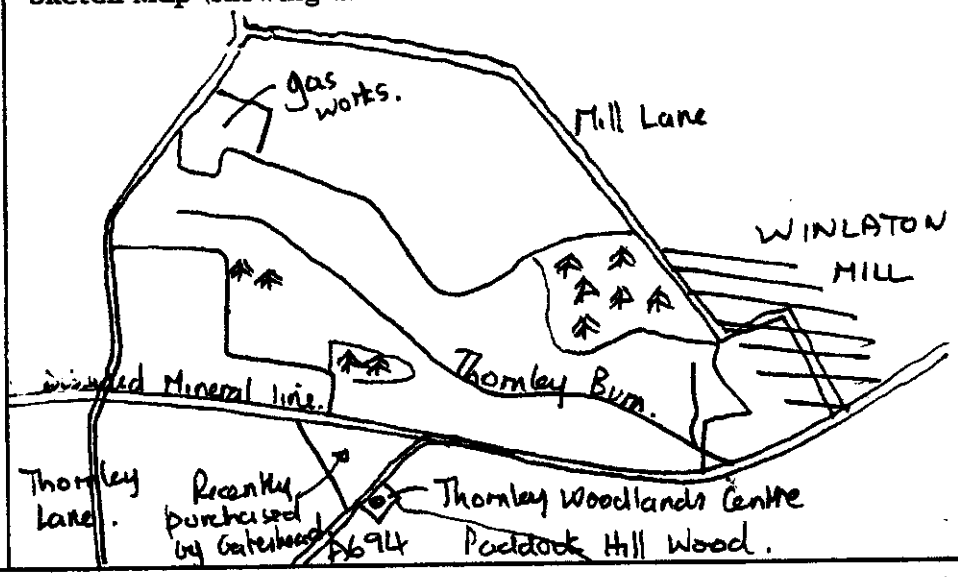
Site Status

National Nat. Res.	
RSPB Reserve	
County Trust Res.	
SSSI	✓
Local Authority	
Common Land	
Forestry Commission	
Min. of Defence	
National Trust	
Private Owner	
Other, please state	Gateshead MBC.

Confidentiality

At discretion of NCC	
Consult recorder	

Sketch Map (showing main areas of invertebrate interest)



Site Description (habitats of interest)

Steep, wet valley of Thornley Burn containing Sessile Oak Woodland with many wet flushes dominated by Alder. Some coniferisation on flat valley tops. Open areas at Thornley Lane end and on Old Mineral Line. Gateshead MBC have an interpretation centre which is to be linked to the wood through the triangle of land recently purchased – this contains a nice marshy area.

Main Invertebrate Interest

Well worked by SGB, Dave Shepherd, Mick Eyre etc especially in late 1970s. Good fauna typical of Derwent valley woodlands.

General Comments (Site importance, conservation problems etc)

Owned by Gateshead MBC and operated as a reserve since 1975. Long term plan to remove conifers.

(Please use back of sheet for further details – eg species lists, literature ref. etc)

Office use

INVERTEBRATE SITE REGISTER MASTER FORM

Site number 70/9

Name(s)

TIMBER BEACH

County(s)

Tyne and Wear

Grid. Ref.

NZ3658

Grade

B

Status

County trust reserve
SSSI

Site description - Habitat

Largest remanent of saltmarsh between Holy Island and Teesmouth located well inside the estuary of the River Wear. Intertidal rocks and mud grade through saltmarsh to swamp with Phragmites. The steep slope of the river bank has hawthorn and willow scrub. The mouth of Hylton Dene contains areas of limestone grassland and the adjacent reclaimed land has varied rank vegetation on very uneven ground.

Invertebrate Interest - Coverage

Good range of saltmarsh species recorded by DCCT insect survey. The only decent remanent of saltmarsh in Durham.

Comments - Conservation

Part of Wear River Bank SSSI. Owned by Sunderland Borough and leased to DCCT as a reserve.

Red Data Book and Notable species recorded for TIMBER BEACH

RDB3

Psila clunalis	DIP:Psilidae	1982	Bruce & Woodfall(1983)

Notable/Nb

Ceratinostoma ostiorum	DIP:Scathophagidae	1982	Bruce & Woodfall(1983)
Coenosia antennata	DIP:Muscidae	1981	Bruce & Woodfall(1983)
Dolichopus clavipes	DIP:Dolichopodidae	1982	Bruce & Woodfall(1983)
Dolichopus diadema	DIP:Dolichopodidae	1981	Bruce & Woodfall(1983)
Habitat indicator of Saltmarsh & mudflats			
Psila atra	DIP:Psilidae	1982	Bruce & Woodfall(1983)
Rhaphium consobrinum	DIP:Dolichopodidae	1982	Bruce & Woodfall(1983)
Tropidia scita	DIP:Syrphidae	1982	Bruce & Woodfall(1983)

Nr

Amara convexiuscula (Marsham)	COL:Carabidae	1981	Bruce & Woodfall(1983)
Dicheirotrichus gustavi Crotch	COL:Carabidae	1983	Bruce & Woodfall(1983)

Local

Platycheirus fulviventris (Macq.	DIP:Syrphidae	1981	Bruce & Woodfall(1983)

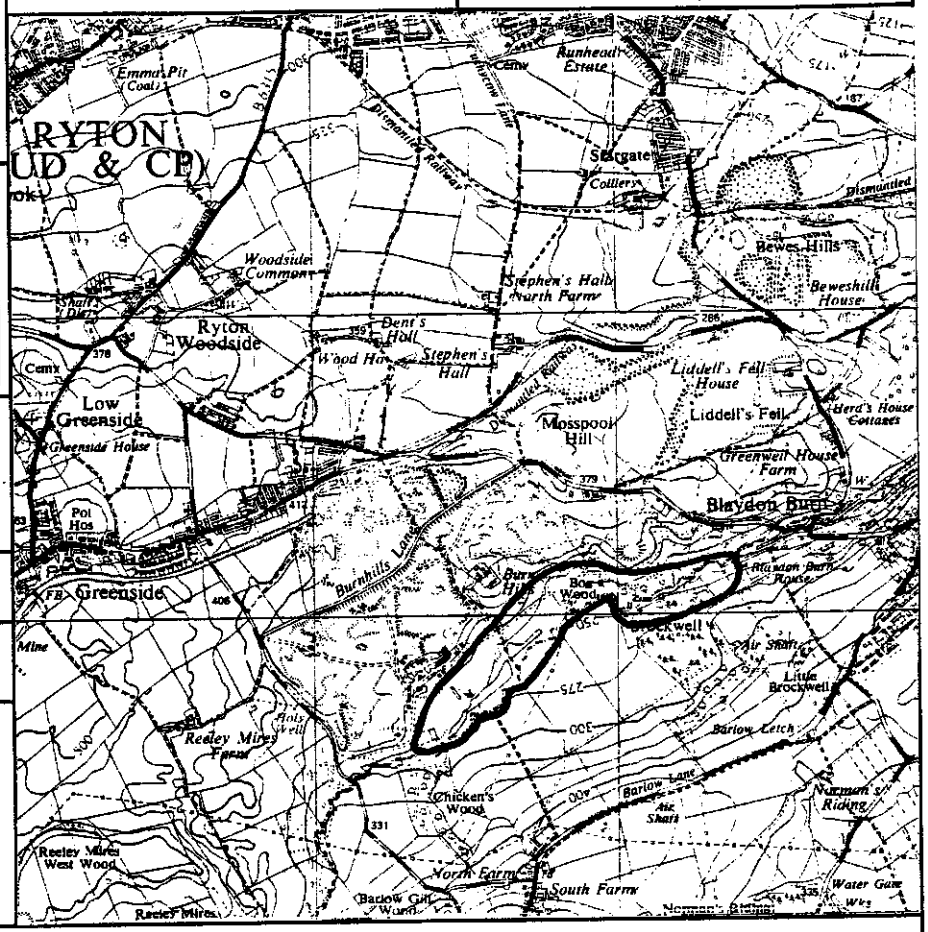
11 species listed
Invertebrate Index = 420

Site number
70/10

INVERTEBRATE SITE REGISTER
MASTER FORM

Name(s)

BARLOW BURN
BURNHILLS
BOG WOOD



County(s)

Tyne and Wear

Grid. Ref.

NZ1561

Grade

C

Status

Public Authority

Site description - Habitat

A complex area containing semi-natural woodland, plantations, the Barlow Burn and its marginal wet habitats (which at one point it widens into quite a large pond), and dry sandy grassland developed on old sandpits. The settling beds associated with the workings also provide both open water and extensive emergent, swampy vegetation (especially Typha beds).

Invertebrate Interest - Coverage

The various ponds support a good dragonfly fauna. The sandy grasslands provide extensive areas of flowers, especially Kidney Vetch which supports large populations of Burnets and Dingy Skipper and some uncommon dry grassland species. The woods have been little worked. A DCCT insect survey site.

Comments - Conservation

Parts of the old sand workings are being infilled as a tip and the whole area suffers from public pressure including motor-cycle scrambling. Some vandalism problems. Owned by Gateshead MBC and the old sand pits are part of a reclemation scheme.

Red Data Book and Notable species recorded for BARLOW BURN

Notable/Nb

Trechus secalis	COL:Carabidae	1981	Bruce & Woodfall(1983)
Argyra confinis	DIP:Dolichopodidae	1981	Bruce & Woodfall(1983)
Rhamphomyia spinipes	DIP:Empididae	1981	Bruce & Woodfall(1983)

Nr

Haliplus confinis Stephens	COL:Haliplidae	1981	Eyre, M D
Laccobius minutus (L)	COL:Hydrophilidae	1981	Eyre, M D

Local

Cicandela campestris L Green Tiger Beetle	COL:Carabidae	1981	McCutcheon, Doug
Stenus picipennis Erichson	COL:Staphylinidae	1981	Reid, C
Erynnis tages 1532,Dingy Skipper	LEP:Hesperiidae	1981	McCutcheon, Doug
Lonchoptera tristis Mg	DIP:Lonchopteridae	1981	Bruce & Woodfall(1983)

9 species listed
Invertebrate Index = 160

NATURE CONSERVANCY COUNCIL

INVERTEBRATE

SITE

REGISTER

SITE NAME: BURNHILLS

GRID REFERENCE: NZ 1561

DATE OR PERIOD OF VISITS: 1983/4

MODERN COUNTY: TYNE & WEAR

RECORDER: S G BALL

ALTITUDE M.:

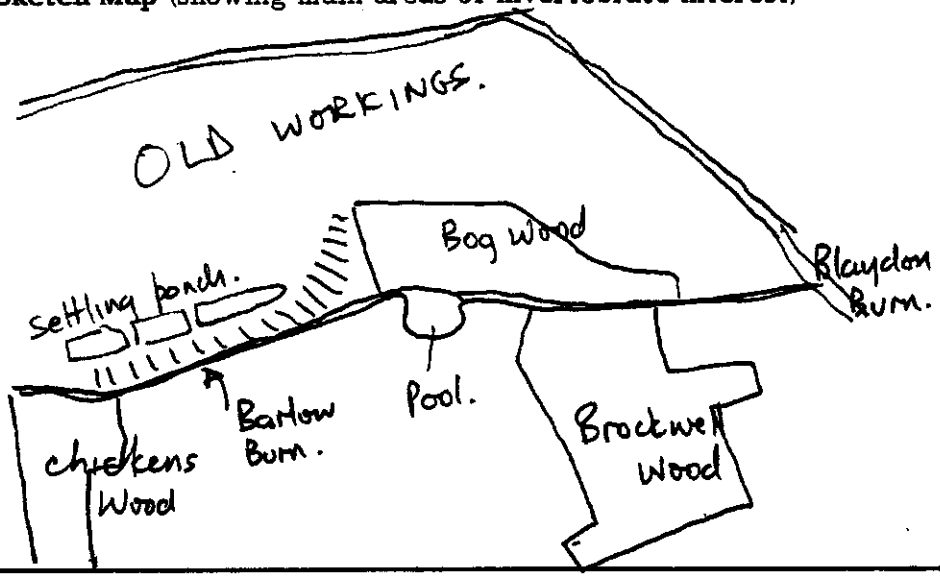
Site Status

- National Nat. Res. ☐
- RSPB Reserve ☐
- County Trust Res. ☐
- SSSI ☐
- Local Authority ☐
- Common Land ☐
- Forestry Commission ☐
- Min.of Defence ☐
- National Trust ☐
- Private Owner ☐
- Other, please state ☐

Confidentiality

- At discretion of NCC ☐
- Consult recorder ☐

Sketch Map (showing main areas of invertebrate interest)



Site Description (habitats of interest)

Extensive sand workings support swards of kidney vetch etc and swarm with Burnet / Butterflies ~~not~~ at the right time of year.
Old settling ponds good for dragonflies.
Bog wood is very wet and quite interesting, especially near the stream.
Brockwell / Chicken Woods are of little interest

Main Invertebrate Interest

Dingy Skipper - very abundant.
Dry grassland species.
Good dragonfly list from the pools (8 common sp).

General Comments (Site importance, conservation problems etc)

Very worried about. subject to a lot of dumping, vandalism, motorcycle scrambling etc.

(Please use back of sheet for further details - eg species lists, literature ref. etc)

Office use