

vii Educational and/or research use

Where a site has been used by educational establishments for teaching or research concerning invertebrates this is indicated. A well studied site can be of considerable scientific interest even if it is not outstanding in other respects.

The Invertebrate Index

The categories used for species statuses are explained below and are modelled on those used for other biological interests within NCC. When assessing the value of a site by using the occurrence of rare species, it is necessary to weight them depending on their national or regional importance. The various statuses have been placed in a hierarchy with Red Data Book species at the top and Regionally notables at the bottom, expressed in a system of points as follows:

Category	Points
RDB1, 2, 3 or 5	100
RDB4, pRDB	50
Notable A	50
Notable B	40
Notable	40
Notable (Region)	40
Regionally notable	20

NB 'RDB Appendix' species (those believed extinct before 1900) should obviously not occur in recent records, but if rediscovered they will usually be placed automatically in an RDB category. Where there are good grounds to believe that a species has become extinct more recently it may be treated as an Appendix species.

The Invertebrate Index is calculated by summing the points for each species since 1950. If the sum reaches the magic figure of 200 the site is currently deemed to be a potential candidate for selection as an SSSI on the basis of its invertebrates.

Whilst account has been taken of the Invertebrate Index in making the evaluation given in this report, the 200 point threshold has not been used because it is unrealistically low. In consequence there is a wide spread of Invertebrate Index scores within each of the five ISR grades.

The main problem with the Invertebrate Index as it stands is that the number of rarities found on a site depends very much on the amount of effort put into looking for them. To some extent this is not too important because sites which continue to attract entomologists must have something going for them, but some sites are well worked simply because they are convenient. Classic examples are the grounds of entomological research establishments and specialist's gardens - both tend to score very highly on the Invertebrate Index. What is required is an index corrected, for recording effort, which can then be used to rank sites within a region and habitat type, but no suitable method has yet emerged.

To do this rigorously is very difficult because the relative amounts of sampling effort represented by casual collecting and various trapping methods must be quantified in some way.

The number of species recorded for any given group tends to increase linearly with increasing effort in the early stages of a survey. As more effort is put in the law of diminishing returns starts to operate and more and more effort is required to add an additional species. Few sites are well enough worked for any substantial group of invertebrates for the relationship between effort and the number of species to deviate far from a straight line, therefore the number of species recorded can be taken as a rough measure of effort.

Thus a score like the Invertebrate Index, calculated for a restricted group of organisms, can be corrected by expressing it as an average per species, providing that the total number of species recorded is known. This is not generally the case in the ISR because contributors are specifically asked only for the 'best' species they have found. However such information is available for many sites in the north-east for several well recorded groups and the application of this technique is explored in the Regional Review of Rare and Notable species (ISR Report 72).

Alphabetic list of sites including alternative names

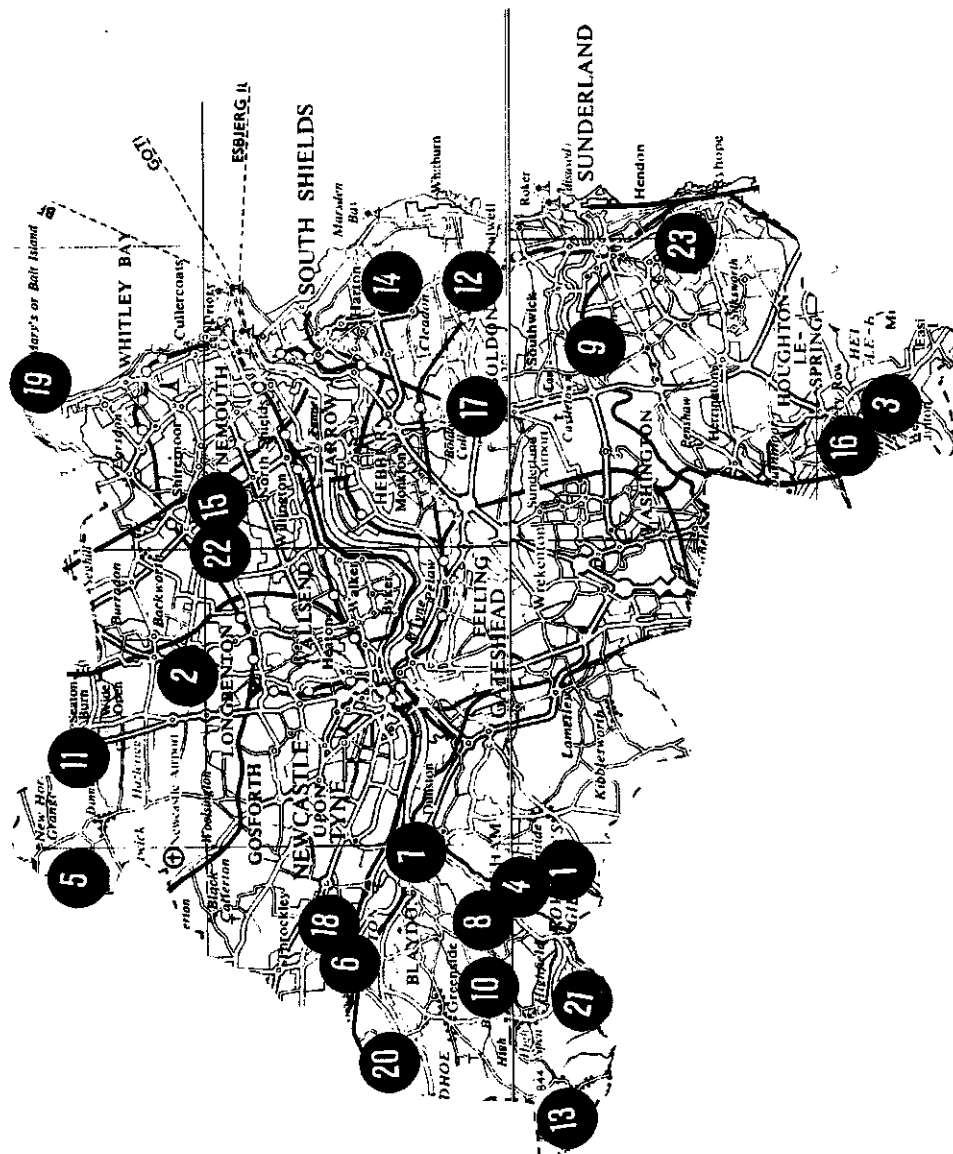
Site name	Grid	Grade	Site No.
AXWELL PARK	NZ1961	D	24
BARLOW BURN	NZ1561	C	10
BARMSTON POND	NZ3257	?	27
BEDA HILLS	NZ15	C	13
BETLEY PLANTATION	NZ1558	?	36
BEWES HILLS	NZ1663	?	41
BIG WATERS	NZ2273	C	11
BLAYDON BURN	NZ1662	?	28
BLAYDON POND	NZ1962	B	7
BOG WOOD	NZ1561	C	10
BOLDON FLATS	NZ3761	C	12
BRADLEY HALL POND	NZ1263	C	20
BURNHILLS	NZ1561	C	10
CHOPWELL WOODS	NZ15	C	13
CLARA VALE	NZ1365	?	29
CLEADON HILL	NZ3963	C	14
CLOCKBURN LANE	NZ1860	?	30
DAMHEAD WOOD	NZ1860	?	30
DERWENT CRAGS	NZ15	C	13
DUNSTON POND	NZ22625	?	31
FULWELL QUARRY	NZ3859	?	32
GIBSIDE	NZ1859	B	1
GOSFORTH PARK	NZ2570	B	2
HADRIAN PARK POND	NZ312696	C	15
HALLOW HILL	NZ1565	C	18
HASTINGS HILL	NZ3554	?	33
HERRINGTON HILL	NZ3452	?	34
HETTON BOG	NZ3448	B	3
HETTON WOODS	NZ3448	B	3
HIGH HAINING HILL	NZ3550	?	35
HOUGHTON SCARP	NZ3550	?	35
JESMOND DENE	NZ2665	D	25
JOE'S POND	NZ3248	C	16
LINTZFORD WOOD	NZ15	C	13
LOW SPEN WOODS	NZ1558	?	36
MARSDEN COAST	NZ4064	D	26
MILKWELLBURN WOOD	NZ1057	?	37
MILLBANK WOOD	NZ1860	?	30
MOUNT PLEASANT MARSH	NZ3460	C	17
NEWBURN MARSH	NZ1565	C	18
OLD HOLLINSIDE	NZ1860	?	30
PADDOCK HILL WOOD	NZ1760	B	4
POCKERLEY FARM POND	NZ2255	?	38
PRESTWICK CARR	NZ1974	B	5

Site name	Grid	Grade	Site No.
RAVENSWORTH ESTATE	NZ2259	?	39
REIGH BURN	NZ1565	C	18
RYTON WILLOWS	NZ1564	B	6
SAINT MARY'S ISLAND	NZ3575	C	19
SHIBDON POND	NZ1962	B	7
SLED LANE POND	NZ1263	C	20
SNIPES DENE	NZ1859	B	1
STANLEY BURN	NZ1163	?	40
STARGATE QUARRY	NZ1663	?	41
STROTHER HILLS	NZ1557	C	21
SWALLOW PONDS, WALLSEND	NZ3069	C	22
THORNLEY WOOD	NZ1760	B	8
THROCKLEY POND	NZ1565	C	18
TIMBER BEACH	NZ3658	B	9
TUNSTALL HILLS	NZ3954	C	23
VIADUCT WOOD	NZ1859	B	1
WARDEN LAW QUARRY	NZ3750	?	42
WASHINGTON WILDFOWL PARK	NZ3356	?	43
WHITBURN BEACH	NZ414628	?	44
WINDY NOOK	NZ2760	?	45
WOOLSINGTON HALL POND	NZ2070	?	46

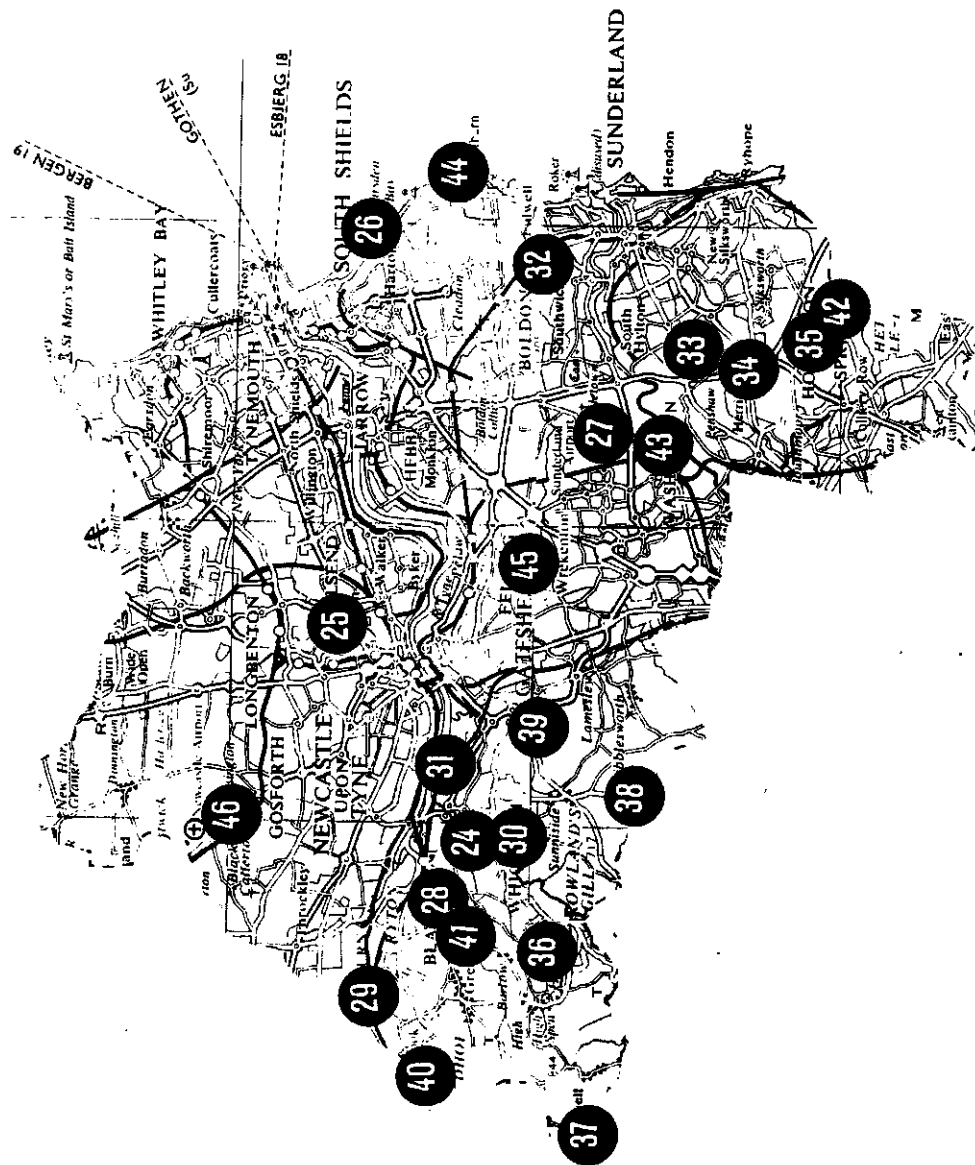
Site summary table

The number of Red Data Book and notable species includes only records from 1950 onwards. Only species included in the Red Data Book (In press) are included in the 'RDBs' column, pRDB species are counted as 'Notable'.

No.	Site name	Grid	Grade	S			Trust Resv.	Number of RDBs	Notables
				N	S	L			
1	GIBSIDE	NZ1859	B	p				1	16
2	GOSFORTH PARK	NZ2570	B	*				2	10
3	HETTON BOG	NZ3448	B	*				0	7
4	PADDOCK HILL WOOD	NZ1760	B					0	11
5	PRESTWICK CARR	NZ1974	B	*				0	8
6	RYTON WILLOWS	NZ1564	B	p				0	6
7	SHIBDON POND	NZ1962	B	*	*	*		8	28
8	THORNLEY WOOD	NZ1760	B	p				2	24
9	TIMBER BEACH	NZ3658	B	*		*		1	7
10	BARLOW BURN	NZ1561	C					0	3
11	BIG WATERS	NZ2273	C	*		*		0	4
12	BOLDON FLATS	NZ3761	C					0	9
13	CHOPWELL WOODS	NZ15	C					0	16
14	CLEADON HILL	NZ3963	C	*				0	0
15	HADRIAN PARK POND	NZ312696	C					0	1
16	JOE'S POND	NZ3248	C	*		*		0	2
17	MOUNT PLEASANT MARSH	NZ3460	C	*		*		0	0
18	NEWBURN MARSH	NZ1565	C	*		*		0	3
19	SAINT MARY'S ISLAND	NZ3575	C	*				0	3
20	SLED LANE POND	NZ1263	C					0	3
21	STROTHER HILLS	NZ1557	C	p				0	7
22	SWALLOW PONDS, WALLSEND	NZ3069	C			*		0	2
23	TUNSTALL HILLS	NZ3954	C	*				0	4
24	AXWELL PARK	NZ1961	D					0	0
25	JESMOND DENE	NZ2665	D					0	0
26	MARSDEN COAST	NZ4064	D	*				0	0
27	BARMSTON POND	NZ3257	?					0	0
28	BLAYDON BURN	NZ1662	?					0	1
29	CLARA VALE	NZ1365	?					0	2
30	DAMHEAD WOOD	NZ1860	?					0	1
31	DUNSTON POND	NZ222625	?					0	0
32	FULWELL QUARRY	NZ3859	?	*				0	1
33	HASTINGS HILL	NZ3554	?	*				0	1
34	HERRINGTON HILL	NZ3452	?	*				0	1
35	HIGH HAINING HILL	NZ3550	?	*				0	1
36	LOW SPEN WOODS	NZ1558	?					0	1
37	MILKWELLBURN WOOD	NZ1057	?					0	4
38	POCKERLEY FARM POND	NZ2255	?	*		*		0	0
39	RAVENSWORTH ESTATE	NZ2259	?					0	1
40	STANLEY BURN	NZ1163	?					0	2
41	STARGATE QUARRY	NZ1663	?					0	14
42	WARDEN LAW QUARRY	NZ3750	?					0	2
43	WASHINGTON WILDFOWL PARK	NZ3356	?					0	2
44	WHITBURN BEACH	NZ414628	?					0	8
45	WINDY NOOK	NZ2760	?					0	1
46	WOOLSINGTON HALL POND	NZ2070	?					0	0



Map showing location of sites graded B and C in Tyne and Wear.



Map showing location of sites graded D and ?
in Tyne and Wear.

Representation of habitats in Tyne & Wear

Woodland

Most of the woodland in the county is located in the Derwent Valley. The most extensive area of good quality deciduous woodland remaining is in the steep valley within Thornley Wood but there are also good areas in the Dam Head/Cocklawburn/Hollinside complex, Strother Hills, Chopwell (especially in the Lintzford Valley), Gibside (in Snipes Dene and Viaduct Wood) and Paddock Hill. The Stanley Burn supports somewhat similar woodland to the Derwent Valley sites but has been very little investigated entomologically.

Many of the other sites included in this report contain woodland elements with reasonable areas at Gosforth Park, the Barlow Burn/Blaydon Burn area and Ryton but much of this is heavily modified with conifers and other exotic species.

The status of the woods in the Ravenworth Estate in the Team Valley is unknown to me.

Wetlands

Shibdon Pond is by far the best wetland site currently known in the North-east, but there are several other sites with good potential such as the marshy fringes of Ryton Willows, the Throckley Pond/Reigh Burn complex, Boldon Flats and Mount Pleasant Marsh. The reedbeds at Big Waters might also turn out to support wetland fauna.

The area of calcareous springs at Hetton Bog deserves special mention as a very unusual habitat within the area which is likely to have an equally unusual fauna.

Open Water

Most of the open water in the area consists of small- to medium-sized ponds. Many of these are subsidence ponds and are likely to increase in size and number for some time yet. Where these have formed in areas with a long history of wet conditions, as at Shibdon, they are likely to provide rich sites. Big Waters is one of the largest pools in the area and supports quite a good dragonfly fauna, but most other groups have yet to be recorded. Wallsend Swallow pond is another subsidence pond in the same general area which does not seem to be particularly rich, probably because it is rather muddy and very variable in water level, but the nearby Hadrian Park Pond is richer (and probably older).

The ponds in the Tyne valley (Shibdon Pond, Ryton Willows and Sled Lane Pond) are all reasonably well worked and all are rich in aquatic invertebrates and support a good dragonfly fauna.

In the Derwent Valley Axwell Park lake is the largest pond, but is not in good condition because of its current management. The two ponds at Gibside are rich and support a good dragonfly fauna and are interesting for several other invertebrate groups.

The ponds further south in the county, which include the subsidence ponds at Pockerley Farm and Barmston are rather less well recorded. The ponds along the River Wear at Washington Wildfowl Park are recently created but are likely to develop some interest as time goes on.

Ponds also occur in old quarries and sand workings including Stargate Quarry, Burnhills, Warden Law Quarry and in an old clay pit at Joe's Pond. Most of these are rather bare and often steep sided and support a characteristic fauna associated with bare substrates.

Gosforth Park Lake has been quite a rich site with a good dragonfly fauna and several other interesting records. This interest has been lost at present because the lake has been drained, but apparently not for the first time.

Moorland

The nearest thing to moorland in the county occurs, or used to occur, at Prestwick Carr. Historically species such as Large Heath were recorded. Rather upland, acid elements still occur in the fauna especially in the old peat diggings south of the present SSSI boundary

Coastal habitats

The coastal areas in Tyne and Wear are very heavily modified by man and the estuaries of the Tyne and Wear have both been completely reclaimed as docks and shipbuilding facilities.

Saltmarsh has been virtually eradicated or fouled by pollution and the only remaining area at Timber Beach well up the Wear in Sunderland is very small (4.3 acres) although it has a good range of the typical fauna. Never the less the improving water quality in these estuaries together with the industrial decline which is leaving much of the riverside derelict, is allowing saltmarsh to return and there is evidence of regrowth in Jarrow Slack and the mouth of the River Derwent. These new areas may develop interest in time.

There were once small areas of sand dune at South Shields and Roker but these have gone. There are apparently some small for dunes forming inside the mouth of the Tyne but no invertebrate records are available.

Rocky shore occurs along much of the coast and holds some interest where wrack accumulates in winter for the wrack breeding specialists. St. Mary's Island has been picked out as a spot where very large accumulations occur and research based at Durham University has been carried out at Whitburn Beach, although the current state of this area is unknown to me.

Calcareous grassland

The Durham Magnesian Limestone belt runs northwards through Tyne and Wear to finish in the cliffs of Marsden (although there is a small outcrop north of the river at Tynemouth). Limestone grassland occurs on a number of sites which are mostly rather small and as yet poorly known for invertebrates. The Durham Argus Butterfly reaches its northern limit in the extreme south of Tyne & Wear at High Haining Hill and many of the other specialists on limestone grassland in Durham have not yet been found in Tyne & Wear.

Limestone quarries such as those at Marsden and Fulwell are also being colonised by limestone grassland.

Other grasslands

The large areas of sand workings including Stargate quarry, Barlow Burn and Blaydon Burn support dry, very floriferous grassland which supports a

rather specialised fauna including several scarce species nationally which are quite common locally (eg. *Calliopus elisae* and *Ranphomyia spinipes*).

Man-made habitats

Not surprisingly such a highly urbanised and industrialised area contains a great deal of man-made habitat. Subsidence pools, quarries and sand workings have already been mentioned.

The extensive sand-pits at Stargate deserve further mention for their very specialised conditions especially where a spring gives running water over bare sand. This supports a very unusual beetle community including the waterbeetle *Laccobius sinuatus* well north of its usual range. Unfortunately this situation is the very first stage in a seral succession and it is more or less impossible to manage such an area as a conservation site. However extensive areas of sand workings exist in the area ranging from those still being worked, through derelict pits such as Stargate to reclaimed areas and the highly mobile, first coloniser species involved are well able to exploit the transient habitats within the general area.

The county is also well endowed with old railway lines which can provide good invertebrate habitat, especially where cuttings provide sheltered south facing banks rich in flowers. The Derwent Walk Country Park is probably the largest stretch of such habitats and one of the best cuttings at Lockhaugh is included in the proposed boundaries for Paddock Hill Wood.

Most man-made of all are the artificially created conservation parks such as Benwell Nature Park and Windy Nook. A small amount of invertebrate information is available for the latter. Some care must be exercised over records from these sites because much of the plant material is deliberately introduced and may well have brought its associated fauna with it.

Breakdown of ISR sites by habitat (SSSIs are underlined.)

Artificial habitat (road verge etc.)

29 CLARA VALE (?)

Acid bog or mire

5 PRESTWICK CARR (B)

Calcareous grassland or scrub

14 CLEADON HILL (C)

32 FULWELL QUARRY (?)

33 HASTINGS HILL (?)

34 HERRINGTON HILL (?)

35 HIGH HAINING HILL (?)

26 MARSDEN COAST (D)

9 TIMBER BEACH (B)

23 TUNSTALL HILLS (C)

42 WARDEN LAW QUARRY (?)

Coastal cliff

26 MARSDEN COAST (D)

19 SAINT MARY'S ISLAND (C)

Coniferous plantation

13 CHOPWELL WOODS (C)

1 GIBSIDE (B)

36 LOW SPEN WOODS (?)

37 MILKWELLBURN WOOD (?)

5 PRESTWICK CARR (B)

39 RAVENSWORTH ESTATE (?)

Deciduous & mixed wood

10 BARLOW BURN (C)

28 BLAYDON BURN (?)

13 CHOPWELL WOODS (C)

30 DAMHEAD WOOD (?)

1 GIBSIDE (B)

2 GOSFORTH PARK (B)

34 HERRINGTON HILL (?)

3 HETTON BOG (B)

25 JESMOND DENE (D)

36 LOW SPEN WOODS (?)

37 MILKWELLBURN WOOD (?)

4 PADDOCK HILL WOOD (B)

39 RAVENSWORTH ESTATE (?)

6 RYTON WILLOWS (B)

40 STANLEY BURN (?)

21 STROTHER HILLS (C)

8 THORNLEY WOOD (B)

23 TUNSTALL HILLS (C)

43 WASHINGTON WILDFOWL PARK (?)

Breakdown of ISR sites by habitat

Neutral grassland

10	BARLOW BURN	(C)
4	PADDOCK HILL WOOD	(B)
5	<u>PRESTWICK CARR</u>	(B)
6	RYTON WILLOWS	(B)
45	WINDY NOOK	(?)

Hedgerow or scrub

18	<u>NEWBURN MARSH</u>	(C)
----	----------------------	-----

Parkland

24	AXWELL PARK	(D)
25	JESMOND DENE	(D)

Lowland pond or lake including margins

24	AXWELL PARK	(D)
10	BARLOW BURN	(C)
27	BARMSTON POND	(?)
11	<u>BIG WATERS</u>	(C)
13	CHOPWELL WOODS	(C)
29	CLARA VALE	(?)
31	DUNSTON POND	(?)
1	GIBSIDE	(B)
2	<u>GOSFORTH PARK</u>	(B)
15	HADRIAN PARK POND	(C)
16	<u>JOE'S POND</u>	(C)
18	<u>NEWBURN MARSH</u>	(C)
38	<u>POCKERLEY FARM POND</u>	(?)
6	RYTON WILLOWS	(B)
7	<u>SHIBDON POND</u>	(B)
20	SLED LANE POND	(C)
41	STARGATE QUARRY	(?)
22	SWALLOW PONDS, WALLSEND	(C)
42	WARDEN LAW QUARRY	(?)
43	WASHINGTON WILDFOWL PARK	(?)
45	WINDY NOOK	(?)
46	WOOLSINGTON HALL POND	(?)

Quarry or sand pit

41	STARGATE QUARRY	(?)
----	-----------------	-----

Stream or river including margins

10	BARLOW BURN	(C)
13	CHOPWELL WOODS	(C)
1	GIBSIDE	(B)
3	<u>HETTON BOG</u>	(B)
4	PADDOCK HILL WOOD	(B)
8	THORNLEY WOOD	(B)
43	WASHINGTON WILDFOWL PARK	(?)

Breakdown of ISR sites by habitat

Saltmarsh & mudflats

9 TIMBER BEACH (B)

Reedbed, Fen, Carr or grazing marsh

11 BIG WATERS (C)
28 BLAYDON BURN (?)
12 BOLDON FLATS (C)
15 HADRIAN PARK POND (C)
3 HETTON BOG (B)
17 MOUNT PLEASANT MARSH (C)
18 NEWBURN MARSH (C)
6 RYTON WILLOWS (B)
7 SHIBDON POND (B)
41 STARGATE QUARRY (?)

Habitat type	Number of sites				No. also SSSIs				%SSSI
	A	B	C	D	A	B	C	D	
Acid bog or mire	0	1	0	0	0	1	0	0	100
Calcareous grassland or scrub	0	1	2	1	0	1	2	1	100
Coastal cliff	0	0	1	1	0	0	1	1	100
Coniferous plantation	0	2	1	0	0	1	0	0	33
Deciduous & mixed wood	0	6	4	1	0	2	1	0	27
Neutral grassland	0	3	1	0	0	1	0	0	25
Hedgerow or scrub	0	0	1	0	0	0	1	0	100
Parkland	0	0	0	2	0	0	0	0	0
Lowland pond or lake including margins	0	4	8	1	0	2	3	0	38
Stream or river including margins	0	4	2	0	0	1	0	0	17
Saltmarsh & mudflats	0	1	0	0	0	1	0	0	100
Reedbed, Fen, Carr or grazing marsh	0	3	5	0	0	2	3	0	63
<hr/>									
Total number of sites	0	9	14	3	0	5	7	1	50