



**New England Resource Recovery Centre
Nr. Lee Mill, Devon**

Technical Appendix 12-9 – Invertebrate Survey Report

Viridor

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1.0 INTRODUCTION

This report summarises the findings of invertebrate surveys at the former New England Quarry site undertaken in 2008. It has been prepared by SLR Consulting Limited (SLR) on behalf of Viridor to provide further information in support of the Environmental Impact Assessment and mitigation proposals in respect of planning proposals for a resource recovery centre.

2.0 EXECUTIVE SUMMARY

A specialist survey for terrestrial and aquatic invertebrates was undertaken by Dr Martin Drake on behalf of SLR Consulting Ltd in mid June and mid July 2008. The survey targeted habitats likely to be important for a range of invertebrate species, using a suite of commonly applied sampling techniques. Techniques used included sweep-netting, vacuum sampling, pond-netting and direct searching.

A total of 546 species were identified, dominated by flies (337), beetles (68 species) and bugs (64 species). Of these, 410 were identified within the quarry and 252 in woodland habitats. Twenty-six rare or scarce species were recorded.

Within the quarry, the habitat supporting most uncommon species was the lake's margin. Long and short herb-rich swards supported markedly more species than did bare or sparsely vegetated ground, but few scarce and rare species were recorded. In combination with sparse scrub, short and long grassland were the most important dry habitats in the quarry. Scrub by itself was of less interest but still supported some uncommon specialists.

Within woodland habitats, the greatest concentration of uncommon species was associated with wet woodland Southwood Woods and localised seepages within Challonsleigh Plantation. Fewer species of interest were found in the dry woodland of Challonsleigh Plantation. Limited sampling of the stream and River Yealm suggested that they may also support interesting assemblages of invertebrates.

3.0 CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Viridor Waste Management Ltd; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

APPENDIX A

New England Quarry Invertebrate Survey

C. Martin Drake (2008)

Methods

Invertebrates were sampled by sweep-netting, vacuum-sampling, direct searching and pond-netting. The methods were used as described in Drake *et al.* (2007).

Sweep-netting consisted of sweeping the vegetation using a light-weight sweep-net for 10 minutes, during which time insects were removed frequently from the net using an aspirator. Sweeping was done over very short sparse vegetation, the water's edge, swards of all types, and scrub and tree foliage. The net was also used to collect insects dislodged by beating the branches of scrub and trees. Twenty-eight samples were taken (17 within the quarry, 11 in the woodland).

The vacuum sampler was a modified 2-stroke garden leaf collector / blower with a collecting bag placed in the entry pipe. It was run at a moderate speed for 3 minutes, during which time its pipe was pushed over and into the vegetation. It was used on almost bare ground and long swards. The sample was emptied from the collecting bag into the sweep-net where animals were collected using an aspirator. After most active insects had been removed, the debris was tipped into a white tray and searched for crawling insects. Eleven samples were taken, mostly supplementing sweep-net samples at grassland sites within the quarry.

Pond-netting was not standardised. Samples of aquatic invertebrates were collected from the lake margin and shallow pools, and by kick-sampling in a stream within the woodland. Animals were sorted from a white tray.

Direct searching under stones and pieces of wood was carried out for 10 minutes at three points within the quarry.

Direct observations of large active insects (butterflies, bees, crickets, hoverflies) were made while moving around the site.

A wide range of taxonomic groups was identified, although with a strong emphasis on flies (Diptera) since these groups can be collected rapidly using sweep-netting and vacuum sampling. Leaf hoppers were identified since they can sometimes reflect the quality of grasslands.

The site was visited on 15 and 16 June and 24 July 2008. Rain interrupted the first day's visit in mid afternoon, necessitating the return visit the following day. The weather was warm or hot on all visits and, although windy on the July visit, was suitable for direct sampling until it rained on the first day.

Rarity statuses were obtained from ISIS (2007 version, Webb & Lott, 2007) and the biological recording package Recorder 3.3, and updated using recent species status reviews (Falk & Crossley 2005; Foster in prep.). Species without statuses (mainly Ephydriidae shore-flies) have been given provisional statuses based on M. Drake's experience.

Two systems for allocating rarity status run in parallel at present. The system devised by the Nature Conservation Council (now the responsibility of the JNCC) is being replaced by that of the International Union for the Conservation of Nature (IUCN). Groups with IUCN

statuses covered in this report are several families of flies (Falk & Crossley, 2005) and water beetles (Foster, in prep.). The IUCN status takes precedence over the JNCC status, but the beetle review has yet to be formally published a decade after its draft, although the proposed statuses are clearly a better representation of current knowledge. Both systems are given in this report, and due account taken of species that have been downgraded.

Definitions of status categories are given in Appendix 1, species accounts in Appendix 2, brief description of each sampling point in Appendix 3 and the raw data in Appendix 4. The location of samples is shown on the map.

Results

A total of 546 species were identified, dominated by flies (337), beetles (68 species) and bugs (64 species). Of these, 410 were identified within the quarry and 252 in the woodland.

Twenty-six rare or scarce species were recorded. None was widespread at the site, and most were found as single individuals, or at least at only one sampling point. They included two scarce beetles, one scarce shore-bug, two scarce bees, 19 scarce flies and two flies with provisional Red Data Book status (Table 1).

Three species are outside their previously known range. The ground beetle *Microlestes minutulus* (not classed as rare) and the solitary wasp *Crossocerus distinguendus* (nationally scarce) are recent colonists in England and are spreading from the south-east corner of the country. The records from New England Quarry are the most westerly known so far. The shore-bug *Salduia arenicola* is normally restricted to seepages on soft coastal cliffs, so its occurrence inland at a stone quarry is remarkable. This appears to be a particularly important record, since the population was clearly well established and as large as that of the common *S. saltatoria* with which it was found.

Some species in the list are thought to be over-rated, based on the surveyor's own experience.

The water beetle *Laccobius ?sinuatus* is no longer regarded as scarce using the IUCN system. The specimen was a female and its identify left some room for doubt (only males can be positively identified) but its occurrence in the shallow stony pools by the lake was expected habitat for the species rather than of its commoner look-alike with which it may have been confused, which lives at stream and river margins. The tiny grass-fly *Melanochaeta pubescens*, is particularly frequent in southern England, and the tiny *Trachysiphonella* are likely to be overlooked and under-recorded. The riverine dance-fly *Hilara albiventris* and the pointed-wing fly *Lonchoptera nigrociliata* are widespread and sometimes abundant at shaded stony streams in western Britain, the soldierfly *Beris fuscipes* is frequent in southwest England (at least) and the four scarce limoniid craneflies also appear to be too frequent to warrant scarce status. Several of these statuses were based on Falk (1991) and more recent recording has shown them to be a little generous. However, as it is unlikely that there will be a revision of any of these groups in the near future, the formal statuses will be taken at their face value.

Habitats

Table 2 shows the number of species in each type of habitat. The numbers cannot be directly compared since different numbers of samples and methods were used in each area.

Lake Margin

Sampling was confined to the gently sloping shore on the south side of the causeway that divided the lake, since other shores were either inaccessible or dangerously steep and dropped into very deep water. The shoreline had a very gentle slope of just a few degrees so that the water remained shallow for several metres out. Shallow pools just a few centimetres deep and with silty shores and sparse willow saplings were the most productive areas.

This water margin was of particular interest within the quarry. More scarce species were found in this small area than in dry parts of the quarry. Uncommon species (local, scarce) comprised a markedly larger proportion of all recorded than in other habitats in the quarry.

Scarce species of the water margin included the shore-bug *Salduia arenicola* which is known in England from seepages at soft-rock cliffs on the south coast but not inland nor in other types of habitat. The thin layer of silt over small stones on the lightly wave-washed shore of the pools probably had some resemblance to its usual soft-rock habitat. Two scarce dolichopodid flies were recorded at the shore: *Campsicnemus pumilio* and *Rhaphium micans*. They are usually associated with water margins. The local dolichopodid *Chrysotus suavis* was also frequent at the water margin.

The small aquatic fauna was consistent with the sparse conditions with almost no form of cover for animals to live in. It included several common dragonflies, water bugs and water beetles. Two water beetles, *Laccobius ?sinuatus* and *Hydroglyphus pusillus*, were recorded in the shallow pools; they were previously regarded as scarce but are given a lower status on the IUCN criteria.

Grassland

The broad gradient from almost bare stones to close tall sward was divided into three categories to help distinguish the more important types.

Both long and short herb-rich swards supported markedly more species than did sparsely vegetated ground, as may be expected from the greater variety of niches and cover available. The same result was found when scrub was included in samples over long or short swards. The numbers of scarce and rare species were very low in all types, and none was obviously better or poorer for this suite of species.

Bare and sparsely vegetated ground was particularly unproductive, most notably where there was almost no vegetation but only small to large stones. Searching under stones produced an exceptionally limited fauna dominated by black ants *Lasius niger* which were found throughout the quarry, earwigs and common woodlice. The scarce minute ground beetle *Elaphropus parvulus* was found in the extensive patch of gravel in the north of the quarry; it is associated with sandy and gravelly soils. Other local species of freely draining soils were the ground beetles *Notiophilus substriatus* and *Olisthopus rotundatus*, and the lace-bug *Kalama tricornis*.

Bare ground is known to be valuable to many insects requiring warm microclimatic conditions, notably bees, wasps and some beetles. However, there was little indication that

bare ground was being used in the quarry. Low piles of relatively fine spoil on the top-most area overlooking the quarry were searched unsuccessfully for bee-holes. It is possible that most bare ground here was too stony to be easily burrowed into.

Short sward supported a few scarce species, including the bee-fly *Bombylius canescens* (a parasite of solitary bees), the 'flesh' fly *Sarcophaga subulata* whose larvae parasitise large moth caterpillars, and the minute fly *Trachysiphonella scutellata* whose larvae are thought to be associated with ants. The local leaf hopper *Aphrodes bicinctus* was frequent in the short open grassland. Occasional individuals were found of some uncommon species that were probably closely associated with the open conditions, including the lesser dung-fly *Sepsis duplicata*, the bee parasite *Thecophora atra*, the tiny shore-fly *Philygria picta* and the snail-killing fly *Coremacera tristis* whose larvae feed on snails in dry grasslands.

Longer swards did not appear to support any species that was not also found in shorter swards, except perhaps the dolichopodid fly *Chrysotus blepharosceles*. Several uncommon species were found only in the longer sward but in low numbers so a preference for longer grass cannot be confirmed.

Local species that were frequent in all types of sward were the picture-wing fly *Rivellia syngenesiae*, the small fly *Thaumatomyia hallandica* whose larvae probably feed on root aphids, and the small hoverfly *Paragus haemorrhous*.

All the grassland was notable for its floweriness. This is an important feature for insects, as flowers are a valuable food source for adults. However, there was a marked scarcity of both species and individuals in groups such as bees and hoverflies that are often associated with flowers.

Herb-rich areas are important since a higher richness of herbs usually leads to greater numbers of herbivorous insects. This was not reflected in the leaf hoppers, none of which was particularly uncommon and few were abundant, nor in picture-wing flies whose larvae feed in seed-heads and stems. A few local herbivores were recorded, including the leaf beetle *Cryptocephalus moraei* whose larvae feed on *Hypericum* species.

Only one damp area of grassland was located, at the lower side of the quarry not far from the river. The fauna in this small flowery glade included several common wetland species not recorded elsewhere, and the local hoverfly *Ripponensia splendens*, but the area was probably too small to support good populations of species of note.

Scrub

Samples were taken where scrub was a sparse component of the grasslands on the quarry ledges and where it had the character of woodland edge alongside more extensive areas with larger trees. Sampling the interior of the scrub was not easy since it was often too dense to penetrate, but one area of secondary woodland was sampled within the quarry boundary close to the river.

Scrub on the ledges consisted of mainly of grey willow and buddleia, with occasional small birch and young trees of variety of species. A limited herbivorous fauna associated with these was recorded, including the local leaf beetle *Cryptocephalus pusillus* whose larvae feed on young birch. Buddleia was in full bloom in the July visit but only common species of bumble bees and hoverflies were noted feeding on it, and there was a notable near-absence of butterflies.

A few scarce and uncommon species are associated with scrub understory where their larvae probably feed on decaying leaves. These included the three scarce flies: *Sapromyza*

albiceps, *Homoneura thalhammeri* and possibly the soldierfly *Chorisops nagatomii*. The adults of a few species are associated with scrub but it is not clear where their larvae feed. It is likely that the local dance flies *Platypalpus optivus* and *P. major* and the dolichopodid flies *Chrysotimus molliculus* and *Scellus notatus* are predators in the light shade provided by scrub.

Scrub areas probably provided a supply of small dead wood that is the larval food of small soldier beetles that included the scarce *Malthinus balteatus* (usually associated with true woodland) and the minute local *Malthodes pumilus* whose larvae are thought to be associated with heart-rot, but which can occur on grasslands with scrub.

The structure and shelter provided by the scrub was more important than its role as food for herbivorous insects. The scrub provided sheltered glades throughout the quarry, so that the combined effect of mixed grass sward and 'woodland edge' led to some particularly productive patches within the quarry, for example on the highest point on the south side of the quarry and in the extreme north-east corner. Two scarce solitary wasps, *Crossocerus distinguendus* and *Tiphia minuta*, were found in this mixed situation.

Channonsleigh Plantation

Several distinct habitats were recognised within the woodland of Channonsleigh Plantation. Much of it was rather dry base-rich secondary woodland with a ground layer dominated by ivy or dog's mercury and enchanter's nightshade. Most sycamore and ash were only a few decades old, but there were a few older beech at the south end. There was little dead wood on the ground and few signs of rot-holes and broken limbs, even on the older trees.

There were several wetland features in the woodland. Seepages arising at the foot of the steep slope on the east formed areas of wet woodland where the ground layer included iris and *Oenanthe crocata* over soft organic ooze. A second area of similar wet woodland at the south end of the wood followed the course of an ephemeral stream close to the east boundary. Running water and its margins were provided by the River Yealm which had some exposed gravel bars along its length, and a small gravelly to silty stream running parallel to the River Yealm for much of the length of the woodland. There was a small shaded pond at the north end of the wood.

Dry woodland

Two species of note were associated with just the dry woodland. The scarce lauxaniid fly *Sapromyza albiceps* has larvae feeding in leaf litter in woodlands and scrub. The local fly *Clusia flava* is a dead-wood species of small branches and coppice stools.

Wet woodland

The fly fauna of the wet areas was well represented. It included several rare or scarce craneflies, which is a group that is well developed in wet woodland and can give a good indication of its value. These craneflies were the scarce *Pilaria fuscipennis* found at several points in the wood, the provisionally Red Data Book *Paradelphomyia ecalcarata* and scarce *Atypophthalmus inusta* and *Limonia trivittata* at the southern end of the wood, *Diogma glabrata* collected along the stream, and *Cheilotrichia imbuta* at seepages below the steep slope. The local cranefly *Lipsothrix nervosa* was recorded twice; it is listed as a Biodiversity Action Plan species as a probably endemic species and as a representative of the group associated with saturated dead wood in streams and seepages. Together with several local craneflies of seepages and wet wood conditions, the cranefly fauna was a notable feature of the wet areas of woodland.

The presence of local flies in some other families supported this conclusion but few were of particular note; the dolichopodids *Syntormon bicolorillum*, *Hercostomus chetifer* and *Rhaphium brevicorne* are usually associated with wet woodland of high quality.

The rare lauxaniid fly *Plesiominettia filia* was found at the seepages below the steep slope. Its larvae probably develop in decaying leaf litter or dead wood in damp woodlands. The local hoverflies *Sphagina clunipes* and *S. elegans* also develop in damp dead wood.

Stream

One brief aquatic sample taken close to the confluence with the R. Yealm indicated a rather limited fauna dominated by the common shrimp *Gammarus pulex*. Despite this small fauna, it did include the riverine dragonflies *Cordulegaster boltonii* and *Calopteryx splendens* (or possibly *virgo* – separating smaller larvae is problematic). Sweep samples along the stream included several adults of the large local lacewing *Osmylus fulvicephalus* and the scarce 'dung' fly *Acanthocnema glaucescens*; the larvae of both these species develop in the mossy shaded stream margins.

River Yealm

Only one sweep sample was taken by the river, at a partially shaded shingle bank with varying grades of sediment. This had been re-sorted by floods within the previous two weeks, judging from the flattened vegetation and clean appearance of the finer sediments deposited quite high on the banks. It was anticipated that some species associated with exposed riverine sediment (ERS) may be present, and this proved to be correct. The scarce pointed-wind fly *Lonchoptera nigrociliata* has larvae living under damp stones above water level at stream and river margins. The dance fly *Hilara albiventris* is associated with shaded stony streams and rivers, although its larval biology is unknown. The local shore fly *Athyroglossa glabra* is closely associated with exposed riverine sediments, but does occur uncommonly on other stony shores, such as at the quarry lake in this survey. This ERS fauna was not particularly well developed.

The scarce soldierfly *Beris fuscipes* was also recorded by the river, and its larvae probably develop in seepages or damp organic ooze nearby.

Woodland pond

The small pond near the northern edge of the woodland was shaded by willows around its margin which was devoid of vegetation but the centre had a stand of *Scirpus lacustris* and *Sparganium erectum*. The pond was unlikely have much invertebrate interest owing to the heavy shade, and was not sampled.

Rough Ruderal-rich grassland

The area of ruderals and rank grassland on the old refuse tip was particularly flowery. The small scarce fly *Melanochaeta pubescens* was found here, although this species appears to be too frequent to warrant scarce status. The site supported more picture-winged flies (6 species) than the entire quarry (4 species) and reflected the herb-rich resource here, although all would be expected in this type of habitat in south-west England.

Limitations of The Survey

Poor weather dogged this summer's survey work. Although conditions on the days of this survey were fine, they were among the few better days in June and July. Many common insects have been scarce or not seen at all at many places, and a similar scarcity was evident at the quarry. For instance, only two common grasshoppers were recorded (the apparent absence of Mottled Grasshopper was notable), and almost no Vanessa butterflies were seen in June and none at all on the buddleia in July. A total of only 17 hoverflies is also noticeably poor.

More aquatic sampling may have shown the stream, and certainly the river, to be of greater interest. This would need to take place in spring or autumn to be most effective.

Bare and sparsely vegetated ground appeared to be of low interest but more ground searching, pitfall trapping and intensive vacuum sampling in spring may show a more interesting beetle fauna.

Evaluation

Within the quarry, the habitats of greatest interest were the water margin, particularly where shallow, and continuous swards of all lengths. Scrub was of value principally for the way it affected shelter and provided 'woodland edge' habitat.

Features of low interest in the quarry were almost bare stony ground and scree, dense blocks of scrub (including gorse) and young planted trees.

Within the woodland, patches of wet woodland with seepages and soft ooze were of particular value. The small stream had moderate value. It was assumed that the river would be of some interest but was not sampled adequately.

Areas of lower value were the dry woodland floor below younger trees.

Acknowledgements

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Table 1. Rare and scarce species New England Quarry. The sample number is given for each occurrence.

Family	Species	Status		Quarry			Wood		
		JNCC	IUCN						wood - wet
Coleoptera									
Cantharidae	<i>Malthinus balteatus</i>	Scarce		11					
Carabidae	<i>Elaphropus parvulus</i>	Scarce				9			
Dytiscidae	<i>Hydroglyphus pusillus</i>	(Scarce)	LRlc	15					
Hydrophilidae	<i>Laccobius ?sinuatus</i>	(Scarce)	LRlc	15					
Staphylinidae	<i>Tachyporus ?formosus</i>	Scarce A					23	24	
Diptera									
Bombyliidae	<i>Bombylius canescens</i>	Scarce				17			
Chloropidae	<i>Melanochaeta pubescens</i>	Scarce					34		
	<i>Trachysiphonella scutellata</i>	Scarce				16			
Cylindrotomidae	<i>Diogma glabrata</i>	Scarce							32
Dolichopodidae	<i>Campsicnemus pumilio</i>	Scarce	LRns	13					
	<i>Rhaphium micans</i>	Scarce	LRns	13					
Empididae	<i>Hilara albiventris</i>	Scarce	LRns						36
Lauxaniidae	<i>Homoneura thalhammeri</i>	Scarce		4					
	<i>Plesiominetia filia</i>	pRDB3							24
	<i>Sapromyza albiceps</i>	Scarce				2		33	
Limoniidae	<i>Atypophthalmus inustus</i>	Scarce							26
	<i>Cheilotrichia imbuta</i>	Scarce							24
	<i>Limonia trivittata</i>	Scarce							26
	<i>Paradelphomyia ecalcarata</i>	pRDB2							38

Table 2. Number of species in rarity classes recorded in each type of habitat.

Area	Habitat	Number of species			Percentage of all uncommon species
		Total	Local	Scarce or rare	
Quarry	lake	100	22	5	27
	scrub	100	15	1	15
	scrub/long sward	103	13	4	17
	scrub/short sward	45	7	2	20
	sward - long	151	19	1	13
	sward - short	135	26	2	21
	sward - sparse	44	7	1	18
	wood - moist	55	11	0	20
Wood	sward - long	45	7	1	18
	wood - dry	63	11	1	19
	wood - moist	46	8	1	20
	wood - river	40	7	3	25
	wood - stream	10	3	0	30
	wood - wet	148	33	9	28

Appendix 1. Invertebrate Status Categories

JNCC System

Red Data Book Category 1. RDB1 - Endangered

Species in danger of extinction and whose survival is unlikely if the causal factors continue operating and whose numbers have been reduced to a critical level or whose habitats have dramatically reduced.

Red Data Book Category 2. RDB2 - Vulnerable

Species likely to move into the Endangered category in the near future if the causal factors continue operating. Includes species of which most or all of the populations are declining throughout their range and those in vulnerable habitats.

Red Data Book Category 3. RDB3 - Rare

Species with small populations that are not at present Endangered or Vulnerable, but are at risk. They are estimated to exist in only fifteen or fewer 10 km squares, and are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range.

Red Data Book Category I. RDBI - Indeterminate

Species considered to be Endangered, Vulnerable or Rare, but where there is not enough information to say which of the three categories (RDB1 to 3) is appropriate.

Red Data Book Category K. RDBK - Insufficiently Known

Species that are suspected, but not definitely known, to belong to any of the above categories, because of lack of information. They include species recently discovered or recognised in Britain, in poorly recorded or taxonomically difficult or unstable groups, inhabiting inaccessible or infrequently sampled but widespread habitats or of questionable native status.

Provisional Red Data Book pRDB

The prefix "p" before any Red Data Book category indicates a provisional grading.

Nationally Scarce (Notable) Category A - Na

Species which do not fall within RDB categories but which are uncommon and thought to occur in 30 or fewer 10 km squares of the National Grid or, for less well recorded groups, within seven or fewer Vice Counties.

Nationally Scarce (Notable) Category B - Nb

Species which do not fall within RDB categories but which are uncommon and thought to occur in between 31 and 100 10 km squares of the National Grid or, for less well recorded groups, within between eight and twenty Vice Counties.

Nationally Scarce (Notable)

Definition. Species which are estimated to occur in 16 to 100 10km squares in Great Britain. The subdividing of this category into Nationally Scarce A and Nationally Scarce B has not been attempted for some species because of either the degree of recording that has been carried out in the group to which the species belongs, or because there is some other reason why it is not sensible to be so exact.

Definitions of IUCN threat categories (IUCN 1994)

EXTINCT (EX). A taxon is *Extinct* when there is no reasonable doubt that the last individual has died.

EXTINCT IN THE WILD (EW). A taxon is *Extinct in the wild* when it is known to survive only in cultivation, in captivity or as a naturalised population (or populations) well outside the past range. A taxon is presumed extinct in the wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual) throughout its range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR). A taxon is *Critically Endangered* when it is facing an extremely high risk of extinction in the wild in the immediate future, as detailed by any of the criteria A to E.

ENDANGERED (EN). A taxon is *Endangered* when it is not *Critically Endangered* but is facing a very high risk of extinction in the wild in the near future, as defined by any of the criteria A to E.

VULNERABLE (VU). A taxon is *Vulnerable* when it is not *Critically Endangered* or *endangered* but is facing a high risk of extinction in the wild in the medium term future, as defined by any of the criteria A to D.

LOWER RISK (LR). A taxon is Lower Risk when it has been evaluated but does not satisfy the criteria for any of the categories *Critically Endangered*, *Endangered* or *Vulnerable*. Taxa included in the Lower Risk category can be separated into three sub-categories:

- **Conservation Dependent (cd).** Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation programme targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.
- **Near Threatened (nt).** Taxa which do not qualify for *Lower Risk (Conservation Dependent)*, but which are close to qualifying for *Vulnerable*; occurring in 15 or fewer hectads.
- **Nationally Scarce (ns).** Taxa occurring in 16-100 hectads, but which are not *Threatened*, *Lower Risk (near threatened)* or *Lower Risk (conservation dependent)*.
- **Least Concern (lc).** Taxa which do not qualify for *Lower Risk (Conservation Dependent)* or *Lower Risk (Near Threatened)*.

DATA DEFICIENT (DD). A taxon is *Data Deficient* when there is inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. *Data Deficient* is therefore not a category of threat or Lower Risk. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that a threatened category is appropriate.

NOT EVALUATED (NE). A taxon is *Not Evaluated* when it has not been assessed against the criteria.

Summary of the thresholds for the IUCN Criteria

Criterion	Main thresholds		
	Critically Endangered	Endangered	Vulnerable
A. Rapid decline	>80% over 10 years or 3 generations in past or future	>50% over 10 years or 3 generations in past or future	>20% over 10 years or 3 generations in past or future
B. Small range – fragmented, declining or fluctuating	extent of occurrence <100km ² or area of occupancy <10km ² (<1 x 10km ²)	extent of occurrence <5000km ² or area of occupancy <500km ² (<5 x 10km ²)	extent of occurrence <20,000km ² or area of occupancy <2000km ² (<20 x 10km ²)
C small population and declining	<250 mature individuals, population declining	<2500 mature individuals, population declining	<10,000 mature individuals, population declining
D1 Very small population	<50 mature individuals	<250 mature individuals	<1000 mature individuals
D2 Very small range			<100km ² or <5 locations
E. Probability of extinction	>50% within 10 years	>20% within 20 years	>10% within 100 years

Appendix 2. Accounts for rare and scarce species

Acanthocnema glaucescens Diptera Scathophagidae Notable
A fly with a widespread but sparse distribution with a northerly and westerly bias from southern England to northern Scotland. It is found by streamsides with boulders and moss, usually in wooded valleys, but occasionally in the splash zone of small waterfalls on exposed moorlands. The larvae feed on the egg masses of meniscus midges and caddisflies.

Atypophthalmus inustus Diptera Limoniidae Notable
A crane fly found mainly in the southern counties of England but it occurs northward to Yorkshire and in Wales. It is associated with damp woodlands and carr in the lowlands where the larvae develop in fungi.

Beris fuscipes Diptera Stratiomyidae Notable
A dark green soldier fly. It is widely distributed in Britain but most frequent in the south-west. It is usually associated with fens and marshes, often with woodland edge or other shelter, and its larvae are likely to develop in damp rotting debris.

Bombylius canescens Diptera Bombyliidae Notable
A bee-fly found mainly in south Wales and south-west England and sparsely to Oxfordshire and Shropshire. It is found at freely draining places with a hot microclimate, including soft-rock cliffs, limestone grasslands (especially south-facing screes and rocky slopes), heathy banks, shingle grassland and sandy alluvium on river banks. Its larvae are parasites of solitary bees, including *Halictus rubicundus*, *Lasioglossum nitidiusculum* and *L villosulum*.

Campsicnemus pumilio Diptera Dolichopodidae Notable - LRNs
A small dolichopodid distributed sparsely by widely in southern England, but also found in Wales and Scotland. It is a wetland species but its preferences are unclear; habitats include river margins, pond margins and coastal sites.

Cheilotrichia imbuta Diptera Limoniidae Notable
A small crane fly mainly associated with *Phalaris* or *Phragmites* growing on river banks in sheltered situations, rarely in other wet habitats. The larvae are assumed to be semi-aquatic. Records are scattered in Britain.

Chorisops nagatomii Diptera Stratiomyidae Notable
Found in deciduous woods and parkland. Biology unknown. Scattered records in Wales and England north to Yorkshire.

Crossocerus distinguendus Hymenoptera Sphecidae Na
This solitary wasp was discovered in Britain in 1978 and it appears to be a recent colonist. It is found mainly in south-east England but with occasional specimens from Yorkshire and the Midlands. It lives in open habitats including scrub and woodland edges where it preys on small flies and aphids.

Diogma glabrata Diptera Cylindrotomidae Notable
A crane fly with a wide distribution, generally in the lowlands. It is usually associated with ancient deciduous damp woodlands where the larvae develop in moss.

Elaphropus parvulus Coleoptera Carabidae Notable/Nb
A tiny ground beetle widely dispersed in southern England and north to south Lancashire and Wales. It may be spreading. It is found in sandy and gravelly soils, in old walls and cracked paths, seeming often to be associated with human habitation.

Hilara albiventris Diptera Empididae Notable - LRns
A dance fly widely distributed in Britain and found mainly in the west and north, with isolated occurrences in southern England. It is restricted to fast-flowing streams and rivers. The larvae are probably predators in wet sediment at the water's edge.

Homoneura thalhammeri Diptera Lauxaniidae Notable B
Records are scattered widely in England as far north as Yorkshire, south Wales and Skokholm Island, Pembrokeshire. Adults appear to show a preference for scrub of willow and other *Salix* species on disturbed sites. The larvae probably feed on decaying leaves.

Hydroglyphus pusillus Coleoptera Dytiscidae Notable B - LRlc
A small diving beetle widespread but local in central and southern England. It has now been found frequently over England, and will be downgraded to IUCN 'Lower Risk least concern'. It is most characteristic of recently created still water sites with a clay or mud substratum, but is also typical of the shallow ditch systems of the Somerset Levels, and occurs amongst shallowly flooded moss.

Laccobius sinuatus Coleoptera Hydrophilidae Notable/Nb - LRlc
A small crawling water beetle found widely in England and Wales. It is typically associated with relatively open, muddy edges of lowland base-rich water bodies such as land-slip pools, limestone quarries and fen drains. It tolerates eutrophic conditions below sewage outfalls and water with high conductivity from mine workings but is rarely found in brackish water.

Limonia trivittata Diptera Limoniidae Notable
A crane fly recorded widely in Britain. It is found in wet woodlands on calcareous soils, especially beside rivers. The larval biology is unknown but there seems to be a partial association with butterbur, *Petasites hybridus*, and the larvae may develop in petioles or rootstocks.

Lonchoptera nigrociliata Diptera Lonchopteridae Notable - LRns
Records are widely distributed in Britain. It is found at shaded streams and river banks where the larvae develop under stones at the water's edge. It is clearly a species of exposed riverine sediment.

Malthinus balteatus Coleoptera Cantharidae Notable B
A small grey and yellow soldier beetle found in damp broad-leaved woodland, especially carr and by streamsides, but also along the base of wooded limestone escarpments. The larvae probably develop in dead twigs and small branches. Adults have been recorded from the foliage of trees and shrubs such as willow, hazel and lime. Widespread in southern England but virtually absent north of the Midlands.

Melanochaeta pubescens Diptera Chloropidae Notable
A small fly found in brackish coastal levels and wetlands near the coast where reed grows. Its biology is unknown, but it is probably phytophagous and seemingly with a requirement for reedbeds. It is mainly a coastal species of southern England, ranging from Cornwall to Kent, and also Carmarthenshire in Wales, but with a concentration of records in the Essex and Thames Estuary coastal marshes. There is a very old (1860) inland record for Chippenham Fen which requires confirmation.

Microlestes minutulus Coleoptera, Carabidae Unknown
This tiny ground beetle is a recent colonist. The earliest recognised specimen dates from 1976, found in Suffolk. It has spread to scattered coastal localities in south-east England and may be locally abundant. It is found in sandy and gravelly soils, often in open situations.

Paradelphomyia ecalcarata Diptera Limoniidae pRDB2
A small cranefly with very few records from Wales and Devon. It is found in wet woods with seepages and small stream in calcareous districts.

Pilaria fuscipennis Diptera Limoniidae Notable
A cranefly found mainly in southern counties from Cornwall to Kent, with some sites in Wales, northern England, but it is rare in Scotland. Adults are associated with bare wet peat in alder carr and damp woods, especially around seepages. Larvae live in saturated, humic mud.

Plesiominettia filia Diptera Lauxaniidae pRDB3
A small fly. It has been recorded from six widely dispersed sites from Cornwall to Berkshire, Wales and southern Scotland. Its habitat is possibly in or around damp woodland and damp shaded areas. Other species in this genus develop in leaf litter, dead wood and rotting pine cones.

Rhaphium micans Diptera Dolichopodidae Notable - LRns
Medium sized metallic fly. Mainly found in the south but records extend northwards to Dunbarton. Widespread but scarce.

Saldula arenicola Hemiptera Saldidae Na
A shore-bug found in Kent, Hampshire, Dorset and Devon. It lives on more-or-less bare surfaces around seepages on soft-rock cliffs, and occasionally on bare ground by pools in landslips on such cliffs. It seems to be associated particularly with recent slippage areas. It is predatory.

Sapromyza albiceps Diptera Lauxaniidae Notable
A small yellow fly. Records are scattered widely in southern England north to Warwickshire and Norfolk, and with a few records in Wales and north to the top of Scotland. The habitat is damp broadleaved woodland but it has also been found in hedgerows and limestone scrub. The larvae of this family develop in decaying vegetable matter including fallen leaves.

Sarcophaga subulata Diptera Sarcophagidae Notable
A flesh fly found on chalk grassland, heaths and in woods. Larvae have been reared from the snail *Helix cantiana*. Southern England north to Worcestershire with recent records from Cornwall, Wiltshire and Surrey.

Tiphia minuta Hymenoptera Tiphidae Nb
This small solitary wasp is widely distributed in southern England north to Hereford, Derbyshire and Norfolk, and with rare occurrences in Wales and Scotland. Its habitat preferences are unclear but include grasslands, heathland, dunes and woodland clearings. The larvae are probably parasitoids of dung beetles.

Trachysiphonella ruficeps Diptera Chloropidae Notable
A tiny fly recorded from southern England and East Anglia from dry short grassland and heathland. Its larvae are probably associated with ants.

Trachysiphonella scutellata

Diptera

Chloropidae

Notable

A very small fly of unknown biology, although related species appear to be associated with ants. It is known from dry grassland, both calcareous and heathy in southern England north to Nottinghamshire, and particularly in East Anglia.

Appendix3. Site details

Samples 1 – 15 were taken on 15 June 2008, 16 – 26 on 16 June, 13, 16a, 17a , 27 – 39 on 24 July (some sites were repeated).

Sample	Habitat	Grass	Vegetation	Scrub	Dead mat
1	Very short rabbit-cropped herb-rich continuous sward	*			
2	Long grass and sparse willow, gorse and buddleia scrub	*			
3	ditto		*		
4	short to medium-length herb-rich sward with scattered willow. Young planted ash and some birch	*			
5	ditto		*		
6	Very short vegetation and lichen on thin soil with many bare stones		*		
7	Damp willow scrub margin with taller mixed grass and herbs	*			
8	Damp willow scrub margin with Equisetum telmateia	*			
9	Extensive area of sparse herbs over stone chippings		*		
10	Stony ground with boulders and very sparse vegetation			*	
11	Margins of dense scrub along track with tall mixed herbs and grass	*			
12	Lake margin of almost bare stones and silt with sparse willow saplings	*			
13	Lake margin and shallow pools with almost bare stones and silt with sparse willow saplings and occasional herbs	*			
14	ditto			*	
15	ditto				*
16	Very sparse vegetation on stony ground with sparse buddleia and willow	*	*		
16a	Sparse but continuous sward with scattered scrub	*			
17	Herb-rich short sward with scattered scrub	*			

17a	Herb-rich short sward with scattered scrub	*			
18	ditto			*	
19	Herb-rich long sward surrounded by willow and gorse scrub providing plenty of shelter	*			
20	ditto		*		
21	Damp herb-rich glade in tall willow scrub close to woodland	*			
22	Damp secondary woodland floor dominated by dog's mercury and enchanter's nightshade under sycamore and hazel	*			
23	Dry woodland floor dominated by dog's mercury and bluebells under sycamore and some beech	*			
24	Small gravelly woodland stream, partly braided	*			
25	Wet woodland with organic ooze in seepages with <i>Oenanthe crocata</i> , <i>Chrysosplenium</i> and <i>Iris</i> under ash and sycamore	*			
26	Wet woodland over sluggish seepage and ooze with <i>Oenanthe crocata</i> under beech, sycamore and oak	*			
27	Margins of dense scrub along track with tall mixed herbs and grass	*			
28	Tallish herb-rich sward	*	*		
29	Tallish herb-rich sward on thin soil	*			
30	Tall herb-rich sward with abundant knapweed	*	*		
31	Dry woodland floor dominated by ivy and wood rush under beech	*			
32	Stream margins in otherwise dry woodland	*			
33	Dry wood floor dominated by dog's mercury under ash and sycamore	*			
34	Rough grassland with abundant ruderals and willow with buddleia scrub	*			
35	Dry wood floor dominated by dog's mercury under ash, sycamore and hazel	*			
36	River Yealm exposed gravel and grit bar	*			
37	Small gravelly and silty woodland stream				*
38	Wet woodland over sluggish seepage and ooze with <i>Oenanthe crocata</i> under beech, sycamore and oak	*			

39	'Car park' area of sparsely vegetated compacted stones				
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Appendix 4. Raw Data

Status: 0 = unknown, 2 = common, 3 = local, 4 = regionally notable, 5 = Notable (B), 6 = Notable (A), 9 = pRDB3, 11 = pRDB2

Values in columns are the number of occurrences after combining dates and sampling methods.

Site numbers are in the second row, grouped by habitat type.

Quarry and wood are given as separate tables.

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse				wood				
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22
Araneae																																
Salticidae	Heliophanus cupreus	2					1			1	1							1				1					1					
	Heliophanus flavipes	2														1	1															
Opiliones																																
Leiobunidae	Leiobunum rotundum	2											1																			
Phalangidae	Phalangium opilio	2																1				1										
	Platybunus triangularis	2										1						1	1			1	1				1	1				
Isopoda																																
Armadillidiidae	Armadillidium vulgare	2																					1					1				
Porcellionidae	Porcellio scaber	2																										1				
Coleoptera																																
Cantharidae	Cantharis nigra	2																														

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood						
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22			
	<i>Malthinus balteatus</i>	5						1																											
	<i>Malthinus seriepunctatus</i>	3						1																											
	<i>Malthodes marginatus</i>	2						1																											
	<i>Malthodes minimus</i>	2																														1			
	<i>Malthodes pumilus</i>	3						1							1																				
	<i>Rhagonycha fulva</i>	2																1					1	1											
	<i>Rhagonycha lignosa</i>	2												1																					
	<i>Rhagonycha limbata</i>	2								1																									
Carabidae	<i>Amara aenea</i>	2																				1													
	<i>Amara tibialis</i>	3																			1														
	<i>Anchomenus dorsalis</i>	2			1																														
	<i>Bembidion genei</i>	2			1																														
	<i>Chlaenius vestitus</i>	3			1																														
	<i>Dromius linearis</i>	2															1																		
	<i>Elaphropus parvulus</i>	5																																	
	<i>Microlestes minutulus</i>	0																																	
	<i>Notiophilus biguttatus</i>	2																																	
	<i>Notiophilus substriatus</i>	3																																	
	<i>Olisthopus rotundatus</i>	3																																	
	<i>Paranchus albipes</i>	2			1																														
	<i>Pterostichus nigrita</i>	2			1																														
Chrysomelidae	<i>Crepidodera aurata</i>	2						1	1			1		1																					
	<i>Crepidodera aurea</i>	2					1	1					1				1																		

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood			
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22
	Crepidodera plutus	3					1																									
	Cryptocephalus moraei	3						1																								
	Cryptocephalus pusillus	3										1																				
	Galerucella lineola	2	1																													
	Gastrophysa viridula	2																														1
	Hydrothassa marginella	2																														1
	Neocrepidodera ferruginea	2										1						1		1	1											
	Neocrepidodera transversa	2																2					1									
Coccinellidae	Adalia bipunctata	2	1																													
	Coccinella septempunctata	2																2					1									
	Nephus redtenbacheri	2																								1						
	Scymnus frontalis	2														1						1										
	Subcoccinella vigintiquatuorpunctata	2																1														
Curculionidae	Polydrusus cervinus	2													1	1																
	Sitona humeralis	3																				1										
	Sitona lepidus	2																					1									
Dytiscidae	Hydroglyphus pusillus	5				1																										
	Hydroporus palustris	2				1																										
	Hygrotus inaequalis	2				1																										
	Hyphydrus ovatus	2				1																										
	Laccophilus minutus	3				1																										
Halipidae	Halipus ruficollis agg.	0				1																										

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood			
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22
Helophoridae	Helophorus brevipalpis	2			1	1																										
Hydrophilidae	Laccobius ?sinuatus	5				1																										
Oedemeridae	Oedemera lurida	3						1							1	1		1						1								
	Oedemera nobilis	2									1																					
Staphylinidae	Eusphalerum luteum	2													1																	
	Paederus littoralis	2														1				1	1											
	Stenus cicindeloides	3																					1									
	Stenus guttula	3			1																											
	Stenus providus	2																			1											
	Tachyporus dispar	2															1															
	Tachyporus hypnorum	2															1															
	Tachyporus pusillus	2															1															
Dermaptera																																
Forficulidae	Forficula auricularia	2																			1	1										
Diptera																																
Anthomyzidae	Anthomyza elbergi	3																1					1	1								
Asilidae	Leptogaster cylindrica	2													1					1												
Bibionidae	Dilophus febrilis	2																1														
Bombyliidae	Bombylius canescens	5																			1											
Calliphoridae	Lucilia caesar	2										1																				
	Melanomya nana	2								1										1	1			1	1							
	Pollenia angustigena	2										1																				
	Pollenia pediculata	2													1																	

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood			
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22
	Pollenia rudis	2													1																	1
Camillidae	Camilla nigrifrons	0					1																									
Chamaemyiidae	Chamaemyia aridella	2								1	1							1		1	1		1	1		1						
	Chamaemyia herbarum	2								1										1						1						
	Chamaemyia polystigma	2									1				1		1						1									
Chaoboridae	Chaoborus flavicans	2	1			1	1		1	1	1																				1	
Chloropidae	Meromyza femorata	2																				1	1	1								
	Meromyza triangulina	2													1	1										1						
	Thaumatomyia glabra	2								1	1		1	1					1													
	Thaumatomyia hallandica	3								1	1		2	1	1	1			1	1		1	1		1	1	1	1	1	1		
	Thaumatomyia notata	2											1		1	1	1					1	1									
	Trachysiphonella ruficeps	5																						1								
	Trachysiphonella scutellata	5											1																			
	Cetema simile/elongata	2									1				1	1			1	1		1				1						
	Meromyza ?bohemica	2																						1	1							
Clusiidae	Clusiodes albimanus	3																														1
Conopidae	Sicus ferrugineus	3										1			1																	
	Thecophora atra	3																							1							
Diastatidae	Campichoeta punctum	3																														1
	Diastata costata	2																								1						
	Diastata fuscula	2					1								1																	1
Dolichopodidae	Campsicnemus curvipes	2	1	1		1																										1
	Campsicnemus loripes	2																														1

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood			
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22
	<i>Campsicnemus marginatus</i>	3		1																												
	<i>Campsicnemus pumilio</i>	5		1																												
	<i>Chrysotimus molliculus</i>	3											1										1	1								
	<i>Chrysotus blepharosceles</i>	3					1		1		1		1		1	1		1								1						
	<i>Chrysotus cilipes</i>	2	1	1			1				1			1				1						2								
	<i>Chrysotus gramineus</i>	2	1	2			1	1	1		1	1	1	2	1	1	1	1	2		1	1		2	1	1		1		1	1	
	<i>Chrysotus neglectus</i>	2									1							1														
	<i>Chrysotus suavis</i>	3	2	3																1												
	<i>Dolichopus brevipennis</i>	3		1																												
	<i>Dolichopus festivus</i>	2							1																							
	<i>Dolichopus griseipennis</i>	2					1																									
	<i>Dolichopus latilimbatus</i>	3		2																												
	<i>Dolichopus plumipes</i>	2		2			1								1			1													1	
	<i>Dolichopus popularis</i>	2																													1	
	<i>Dolichopus simplex</i>	2		2										1				1														
	<i>Dolichopus trivialis</i>	2					1	1	1		1				1	1		1		1	1		1								1	
	<i>Dolichopus ungulatus</i>	2		1			1								1																1	
	<i>Dolichopus wahlbergi</i>	3					1																								1	
	<i>Hercostomus nigripennis</i>	3																						1								
	<i>Hydrophorus balticus</i>	3		1																												
	<i>Hydrophorus praecox</i>	3	1			1																										
	<i>Medetera muralis</i>	3		1																												
	<i>Medetera saxatilis</i>	3																						1								

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood			
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22
	Medetera truncorum	2									1			1		1										1				1		
	Neurigona quadrifasciata	3																													1	
	Poecilobothrus nobilitatus	2		1																					1							
	Rhaphium appendiculatum	2																													1	
	Rhaphium brevicorne	3	1	1																												
	Rhaphium micans	5		1																												
	Scellus notatus	3						1																								
	Sciapus platypterus	2						1																								
	Sybistroma obscurellum	2																													1	
	Sympycnus desoutteri	2		2				1																								
	Syntormon bicorellum	3																													1	
	Syntormon pallipes	2	1	1								1																			1	
	Tachytrechus insignis	3	1	1																												
	Tachytrechus notatus	3	1	1																												
	Teucophorus spinigerellus	3																													1	
Drosophilidae	Scaptomyza pallida	2												1		1	1	1	1						1	1					1	
Empididae	Chelipoda vocatoria	3						1																								
	Clinocera stagnalis	2		1																												
	Empis aestiva	2						1	1		1							1														
	Empis albinervis	3					1	1			2			1		1	1			1												
	Empis livida	2							1																							
	Hilara chorica	2	1	2				1	1					1	1											1				1		
	Hilara cornicula	3																													1	

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood					
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22		
	<i>Hilara fuscipes</i>	2						1		1				1				1																
	<i>Hilara litorea</i>	2						1																										
	<i>Hilara longifurca</i>	2	2					1																										
	<i>Hilara manicata</i>	2	1																															
	<i>Rhamphomyia longipes</i>	2					1	1										1																
	<i>Rhamphomyia nigripennis</i>	2																1														1		
	<i>Trichopeza longicornis</i>	2																														1		
	<i>Hilara ?griseifrons</i>	0								1																								
Ephydriidae	<i>Athyroglossa glabra</i>	3	1	2																														
	<i>Discocerina obscurella</i>	2	1	1																														
	<i>Hyadina guttata</i>	2													1			1		1			1											
	<i>Hydrellia griseola</i>	2	1															1																
	<i>Hydrellia maura</i>	2	1	2			1			1				1	1					1			2						1		1			
	<i>Limnellia quadrata</i>	2																				1												
	<i>Parydra coarctata</i>	0								1																								
			2	1	2																													
	<i>Parydra littoralis</i>	2																															1	
	<i>Philygria picta</i>	3												1												1								
	<i>Philygria vittipennis</i>	3																								1								
	<i>Psilopa nitidula</i>	2														1	1								1									
	<i>Scatella paludum</i>	2	1	2										1																				
	<i>Scatella stagnalis</i>	2	1	2																														
	<i>Scatella tenuicosta</i>	2	1	2																						1								

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood				
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22	
Fanniidae	Fannia armata	2					1																										
	Fannia fuscua	2					1								1																		
	Fannia postica	2					1																										
	Fannia sociella	2		1						1																							
Heleomyzidae	Gymnomus caesius	3																1															
	Heteromyza rotundicornis	3																														1	
	Suillia ?parva	0										1																					
Hybotidae	Bicellaria vana	2					1	1	1	1				1	1																	1	
	Drapetis ephippiata	3										1																					
	Hybos culiciformis	2								1	1											1											
	Hybos femoratus	2					1																										
	Leptopeza flavipes	3					1	1	1			1																					
	Ocydromia glabricula	2						1	1																							1	
	Oropezella sphenoptera	3																														1	
	Platypalpus annulipes	2													1			1															
	Platypalpus calceatus	2											1																				
	Platypalpus candicans	2					1	1										1															
	Platypalpus longiseta	2						1	1		1	1	1			1					1	1											
	Platypalpus major	3							1																								
	Platypalpus nigratarsis	2													1																		
	Platypalpus notatus	2									1																						
	Platypalpus optivus	3									1																						
Platypalpus pallidiventris	2		2			1	1	1		1	1	1	1	1	1	1	1	1	1	1	1				1								

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood					
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22		
	<i>Tachydromia aemula</i>	2												1																				
	<i>Platypalpus minutus</i> gp	2								1		1																						
Lauxaniidae	<i>Calliopum simillimum</i>	2						1										1																
	<i>Homoneura thalhammeri</i>	5								1																								
	<i>Meiosimyza rorida</i>	2					1	1				1						1														1		
	<i>Minettia fasciata</i>	2					1	1	1		1	1			1	1	1	1	2		1		1		1									
	<i>Minettia longipennis</i>	2						1							1																			
	<i>Sapromyza albiceps</i>	5													1																			
	<i>Sapromyza halidayi</i>	2						1					1																				1	
	<i>Sapromyza sexpunctata</i>	3					1		1																									
	<i>Tricholauxania praeusta</i>	2												1																				
Limoniidae	<i>Achyrolimonia decemmaculata</i>	3																															1	
	<i>Austrolimnophila ochracea</i>	2										1			1																		1	
	<i>Cheilotrichia cinerascens</i>	2										1																						
	<i>Dicranomyia autumnalis</i>	2												1																				
	<i>Dicranomyia chorea</i>	2						1																										
	<i>Dicranomyia modesta</i>	2																																1
	<i>Dicranomyia morio</i>	3													1	1																		
	<i>Erioptera lutea</i>	2						1																										
	<i>Ilisia maculata</i>	2																																1
	<i>Limonia nubeculosa</i>	2																																1
	<i>Molophilus obscurus</i>	2																																1
	<i>Molophilus ochraceus</i>	2																																1

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood				
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22	
	<i>Neolimnomyia nemoralis</i>	2					1																										
	<i>Neolimonia dumetorum</i>	2																														1	
	<i>Phylidorea fulvonervosa</i>	2					1																										
	<i>Rhipidia maculata</i>	2																														1	
	<i>Symplecta hybrida</i>	3		1																													
	<i>Symplecta stictica</i>	2		1																												1	
	<i>Trimicra pilipes</i>	3		1																													
Lonchopteridae	<i>Lonchoptera bifurcata</i>	2										1					1				1		1		1		1						
	<i>Lonchoptera lutea</i>	2											1	1	1	1	1				1		1										
Micropezidae	<i>Calobata petronella</i>	2		1																													
Milichiidae	<i>Phyllomyza flavitarsis</i>	0										1																					
Muscidae	<i>Coenosia mollicula</i>	2													1																		
	<i>Coenosia tigrina</i>	2		1																					1						1		
	<i>Eudasyphora cyanella</i>	2					1	1									1																
	<i>Eudasyphora cyanicolor</i>	2					1																										
	<i>Helina depuncta</i>	2					1																										
	<i>Helina impuncta</i>	2					1							1	1																		
	<i>Lispe tentaculata</i>	2		1	1																												
	<i>Phaonia pallida</i>	2					1																										
	<i>Polietes lardaria</i>	2												1	1		1				1												
	<i>Schoenomyza litorella</i>	2		1	2		1	1					1	2		1						1			1								
Opomyzidae	<i>Geomyza balachowskyi</i>	2																			1												
	<i>Opomyza germinationis</i>	2					1	1	1				1	1	1	1	1	1			1	1		2	1	1						1	

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood			
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22
	<i>Opomyza petrei</i>	2					1	1		1					1					1						1						
Platystomatidae	<i>Rivellia syngenesiae</i>	3	2				1			1	1			2	1	1	1	1	2	1	1	1		2		1	1					
Rhagionidae	<i>Chrysopilus asiliformis</i>	2											1																			
	<i>Chrysopilus cristatus</i>	2					1	1																								
Rhinophoridae	<i>Rhinophora lepida</i>	2					1						1																			
Sarcophagidae	<i>Nyctia halterata</i>	3																						1								
	<i>Sarcophaga dissimilis</i>	2					1																									
	<i>Sarcophaga haemorrhoea</i>	2											1																			
	<i>Sarcophaga subulata</i>	5																						1								
	<i>Sarcophaga vagans</i>	2											1											1								
	<i>Sarcophaga variegata</i>	2																1														
Scathophagidae	<i>Scathophaga stercoraria</i>	2	1				1	1	1	1	1	1	1	1	1	1				1	1	1		1								
Sciomyzidae	<i>Coremacera marginata</i>	3																					1									
	<i>Hydromya dorsalis</i>	2	2											1																		
	<i>Limnia paludicola</i>	2					1																1									
	<i>Pherbellia cinerella</i>	2												1									1			1						
	<i>Pherbellia ventralis</i>	3	1																													
Sepsidae	<i>Saltella sphondylii</i>	2																	1													
	<i>Sepsis cynipsea</i>	2								1				1	1			2	1				2	1	1							
	<i>Sepsis duplicata</i>	3																							1							
	<i>Sepsis fulgens</i>	2					1			1	1			1	1	1	1			1	1		1	1								
	<i>Sepsis orthocnemis</i>	2								1	1			1				2	1				2	1								
	<i>Sepsis punctum</i>	2	1																													

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood				
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22	
Family	Themira annulipes	2		1																													
	Themira lucida	2	1	1																													
	Themira minor	2	1	1																													
	Themira superba	3	1	2																													
Stratiomyidae	Beris vallata	2					1			1	1																						
	Chloromyia formosa	2						1										1		1													
	Chorisops nagatomii	5										1																					
	Chorisops tibialis	2																					1										
	Microchrysa flavicornis	2										1																					
	Oplodontha viridula	3																											1				
	Pachygaster atra	2									1																						
Syrphidae	Cheilosia vernalis	2																1															
	Chrysogaster solstitialis	2																1															
	Episyrphus balteatus	2		1															1														
	Eristalis interruptus	2																					1										
	Eristalis pertinax	2																					1										
	Eristalis tenax	2																					1										
	Melanostoma mellinum	2																	1														
	Melanostoma scalare	2													1									1									
	Neoascia podagrica	2										1							1														
	Paragus haemorrhous	3									1	1	1							1					1								
	Pipizella viduata	2									1					1		1		1													
	Platycheirus albimanus	2		1					1				1	1					1					1									

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood						
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22			
	<i>Platycheirus angustatus</i>	2													1	1																			
	<i>Platycheirus clypeatus</i>	2																					1	1	1										
	<i>Platycheirus rosarum</i>	3																					1												
	<i>Riponnensia splendens</i>	3															1																		
	<i>Sphaerophoria interrupta</i>	3																1					1	1											
	<i>Sphaerophoria philanthus</i>	2																	1																
	<i>Sphaerophoria scripta</i>	2																		1															
	<i>Syritta pipiens</i>	2																1								1									
	<i>Syrphus ribesii</i>	2																												1					
Tabanidae	<i>Haematopota pluvialis</i>	2					1	1											1																
Tachinidae	<i>Eriothrix rufomaculata</i>	2																								1									
	<i>Macquartia grisea</i>	2										1																							
	<i>Meigenia mutabilis</i>	2																																	
	<i>Phytomyptera nigrina</i>	3											1																						
	<i>Siphona geniculata</i>	2							1																										
Tephritidae	<i>Chaetostomella cylindrica</i>	2																																	
	<i>Sphenella marginata</i>	3																								1									
	<i>Tephritis neesii</i>	3																																	
	<i>Tephritis vespertina</i>	2																	1								1						1		
Tipulidae	<i>Nephrotoma flavescens</i>	2																	1							1									
	<i>Tipula lateralis</i>	2			1																														
Ephemeroptera																																			
Caenidae	<i>Caenis luctuosa</i>	3				1																													

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood					
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22		
	Caenis robusta	4				1																												
Hemiptera																																		
Cimicidae	Anthocoris nemoralis	2									1		1																					
	Anthocoris nemorum	2						1																								1		
Corixidae	Corixa sp.	0				1																												
	Sigara distincta	2				1																												
	Sigara lateralis	2				1																												
	Sigara nigrolineata	2				1																												
	Sigara scotti	2				1																												
Hydrometridae	Hydrometra stagnorum	2				1																												
Lygaeidae	Kleidocerys resedae	2		1			1		1		1																							
Miridae	Capsus ater	2										1																						
	Leptopterna ferrugata	2																									1							
	Megaloceroea recticornis	2					1				1																							
	Pithanus maerkelii	2									1	1				1					1	1				1								
	Stenodema calcarata	2																										1						
	Stenodema laevigata	2						1							1			1									1							
Nabidae	Himacerus apterus	2												1					1							1								
	Nabis rugosus	2																								1								
Notonectidae	Notonecta sp.	0				1																												
Pleidae	Plea minutissima	2				1																												
Saldidae	Saldula arenicola	6		1																														
	Saldula pallipes	2		1																														

QUARRY		Status	lake	scrub	scrub/long sward	scrub/short sward - long	sward - short	sward - sparse	wood	
Family	Species		12 13 14 15	7 8 11	3 4 5 27	16	2 19 20 21 30	1 3 17 18 28 29 17a	6 9 10 39 16a	22
	<i>Saldula palustris</i>	2	1							
	<i>Saldula saltatoria</i>	2	2				1			
Tingidae	<i>Kalama tricornis</i>				1		1		1 1	
	<i>Tingis cardui</i>	2		1						
Cercopidae	<i>Aphrophora alni</i>	2		1 1	1 1		1 1 1 1		1	2
	<i>Neophilaenus campestris</i>	2		1 1	1 1	2	1 1 1 1 1	1	2 1 1	
	<i>Philaenus spumarius</i>	2		1 1		1	1 1 1 2		2 1 1	1
Cicadellidae	<i>Aphrodes bicinctus</i>	3				1			2 1	
	<i>Arthaldeus pascuellus</i>	2			1			1 1		1
	<i>Cicadula persimilis</i>	2					1			
	<i>Deltocephalus pulicaris</i>	2					1	1 2		
	<i>Eupelix cuspidata</i>	2							1	
	<i>Eupteryx filicum</i>	3								1
	<i>Eupteryx urticae</i>	2								1
	<i>Eupteryx vittata</i>	2								1
	<i>Euscelis incisus</i>	2				1	2	2 1 1		
	<i>Euscelis lineolatus</i>	2						1		
	<i>Evacanthus acuminatus</i>	2				1	1			
	<i>Evacanthus interruptus</i>	2			1					
	<i>Idiocerus confusus</i>	2				1				
	<i>Idiocerus lituratus</i>	2	1							
	<i>Linnavuoriana sexmaculata</i>	2				1				
	<i>Macrosteles viridigriseus</i>	2	1				1	1 2	1	

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood						
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22			
	Megophthalmus scanicus	2																	1				1												
	Oncopsis avellanae	2									1																								
	Oncopsis flavicollis	2						1																											
	Psammotettix confinis	2													1				1	1	1		2	1	1	1			1		1				
	Psammotettix nodosus	2																		1	1	1				1									
	Streptanus sordidus	2																	1	1	1		1												
	Thamnotettix confinis	2															1																		
	Thamnotettix dilutior	2					1	1																											
	Zyginidia scutellaris	2					1					1						1	1							1	1			1					
Cixiidae	Cixius nervosus	2		1											1																				
	Tachycixius pilosus	2																1															1		
Delphacidae	Conomelus anceps	2																	1				1												
	Delphacinus mesomelas	3																			1														
	Javesella dubia	2																	2				1												
	Javesella pellucida	2																	1																
	Megamelodes quadrimaculatus	3																	1				1												
	Muellerianella fairmairei	2																	1				1												
Hymenoptera																																			
Apidae	Apis mellifera	2									1																								
	Bombus lapidarius	2																	1				1												
	Bombus pascuorum	2																	1																
	Bombus terrestris	2										1																			1				
Andrenidae	Andrena flavipes	3																				1													

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood			
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22
	Andrena ovatula	2												1																		
	Andrena subopaca	2																1														
Colletidae	Hylaeus confusus	3													1																	
Halictidae	Lasioglossum laevigatum	3													1																	
	Lasioglossum morio	2						1		1					2		1						1									
	Lasioglossum smeathmanellum	0																							1							
Sphecidae	Crossocerus capitosus	3						1							1																	
	Crossocerus distinguendus	6								1				1																		
	Passaloecus singularis	2															1															
Tiphiidae	Tiphia minuta	5							1																							
Formicidae	Lasius flavus	2																			1											
	Lasius niger	2	1	1	1		1	1	1		1	1	1	2		1	1	1		1	1			1	1	1	1	1	1	1	1	1
	Myrmica ruginodis	2					1			1	1					1				1												
Lepidoptera																																
Hesperiidae	Thymelicus sylvestris	2																1					1	1								
Lycaenidae	Polyommatus icarus	2																						1								
Satyridae	Maniola jurtina	2											1										1							1		
	Pararge aegeria	2						1																						1		
	Pyronia tithonus	2											1																			
Zygaenidae	Zygaena filipendulae	2																							1							
Mecoptera																																
Panorpidae	Panorpa communis	2													1																	
	Panorpa germanica	2					1	1																								

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood						
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22			
Megaloptera																																			
Sialidae	Sialis lutaria	2				1																													
Neuroptera																																			
Chrysopidae	Chrysopa perla	2													1						1														
Hemerobiidae	Micromus variegatus	2																			1	1													
Odonata																																			
Coenagriidae	Enallagma cyathigerum	2		1		1			1					1		1																			
Libellulidae	Orthetrum cancellatum	3				1																													
	Sympetrum striolatum/sanguineum	2				1																													
Orthoptera																																			
Acrididae	Chorthippus brunneus	2																																	
	Chorthippus parallelus	2													1																				
Meconematidae	Meconema thalassinum	2							1																										
Phaneropteridae	Leptophyes punctatissima	2					1	1	1					1	1	1	1	1	1							1								1	
Tetrigidae	Tetrix undulata	2		1					1																		1							1	
Tettigoniidae	Pholidoptera griseoptera	2							1																										
Plecoptera																																			
Chloroperlidae	Chloroperla torrentium	2							1																										
Trichoptera																																			
Leptoceridae	Mystacides azurea	2	1	2										1																					
Limnephilidae	Limnephilus lunatus	2		1																															
	Limnephilus marmoratus/stigma	2											1																						

QUARRY		Status	lake				scrub			scrub/long sward				scrub/short sward - long					sward - short					sward - sparse					wood					
Family	Species		12	13	14	15	7	8	11	3	4	5	27	16	2	19	20	21	30	1	3	17	18	28	29	17a	6	9	10	39	16a	22		
Mollusca																																		
Hydrobiidae	Potamopyrgus antipodarum	2				1																												
Hygromiidae	Trochulus striolatus	2																																
Lymnaeidae	Galba truncatula	2				1																												
	Radix balthica	2				1																												
Oxychilidae	Oxychilus alliarius	2																																
Hirudinea																																		
Glossiphonidae	Theromyzon tessulatum	2				1																												
Total			30	86	10	25	46	45	52	1	54	27	49	49	27	50	35	48	71	22	36	37	4	69	35	36	21	14	8	1	15	56		

WOOD	Family	Species	Status	wood - dry				wood - moist	river	stream	wood - wet				
			sward - long	34	31	33	35	23	36	37	24	25	26	32	38
	Amphipoda														
	Gammaridae	<i>Gammarus pulex</i>	2							1					
	Coleoptera														
	Cantharidae	<i>Malthodes marginatus</i>	2		1										
		<i>Malthodes minimus</i>	2								1		1		
		<i>Rhagonycha fulva</i>	2	1											
		<i>Rhagonycha testacea</i>	2								1	1	1		
	Carabidae	<i>Bembidion biguttatum</i>	2								1				
	Coccinellidae	<i>Propylea quattuordecimpunctata</i>	2	1											
	Curculionidae	<i>Barypeithes pellucidus</i>	2					1							
		<i>Cionus scrophulariae</i>	2	1											
	Elateridae	<i>Agriotes pallidulus</i>	2					1							
	Oedemeridae	<i>Oedemera lurida</i>	3	1											
	Scirtidae	<i>Cyphon palustris</i>	2						1					1	
	Staphylinidae	<i>Quedius maurus</i>	3					1							
		<i>Stenus clavicornis</i>	2		1										
		<i>Tachyporus obtusus</i>	2						1			1			
	Diptera														
	Anisopodidae	<i>Sylvicola cinctus</i>	2		1				1					1	
		<i>Sylvicola punctatus</i>	2			1	1								
	Anthomyzidae	<i>Anthomyza elbergi</i>	3	1											
		<i>Paranthomyza nitida</i>	2			1								1	
	Asilidae	<i>Dioctria linearis</i>	3		1										
		<i>Dioctria rufipes</i>	3						1						
		<i>Leptogaster cylindrica</i>	2	1											
	Calliphoridae	<i>Lucilia caesar</i>	2	1											
		<i>Melanomya nana</i>	2										1		
	Chloropidae	<i>Elachiptera cornuta</i>	2						1						
		<i>Melanochaeta pubescens</i>	5	1											
		<i>Thaumatomyia notata</i>	2	1											
		<i>Cetema simile/elongata</i>	2			1									
	Clusiidae	<i>Clusia flava</i>	3		1										
	Cylindrotomidae	<i>Diogma glabrata</i>	5											1	
	Diastatidae	<i>Diastata fuscula</i>	2			1	1	1				1			
	Dixidae	<i>Dixa nubilipennis</i>	2										1	1	
		<i>Dixa puberula</i>	2									1			

WOOD		Status	wood - dry				wood - moist		river	stream	wood - wet				
Family	Species		34	31	33	35	23	36	37	24	25	26	32	38	
	<i>Dixa submaculata</i>	3												1	
Dolichopodidae	<i>Anepsiomyia flaviventris</i>	3									1	1	1		
	<i>Argyra argentina</i>	2									1				
	<i>Argyra diaphana</i>	2									1				
	<i>Argyra leucocephala</i>	2			1									1	
	<i>Campsicnemus curvipes</i>	2						1			1	1	1	1	1
	<i>Campsicnemus loripes</i>	2											1		
	<i>Chrysotimus flaviventris</i>	3				1									
	<i>Chrysotus blepharosceles</i>	3		1											
	<i>Chrysotus cilipes</i>	2				1									
	<i>Chrysotus gramineus</i>	2	1		1	1	1	1			1	1	1	1	1
	<i>Chrysotus neglectus</i>	2							1						
	<i>Dolichopus festivus</i>	2	1									1			
	<i>Dolichopus griseipennis</i>	2	1		1										1
	<i>Dolichopus pennatus</i>	2										1			
	<i>Dolichopus plumipes</i>	2						1	1		1		1		1
	<i>Dolichopus popularis</i>	2		1											1
	<i>Dolichopus simplex</i>	2										1			1
	<i>Dolichopus trivialis</i>	2		1				1					1		1
	<i>Dolichopus ungulatus</i>	2									1	1			
	<i>Dolichopus urbanus</i>	2										1			
	<i>Dolichopus wahlbergi</i>	3			1	1									
	<i>Gymnopternus aerosus</i>	2							1		1				1
	<i>Gymnopternus celer</i>	3							1		1				
	<i>Gymnopternus metallicus</i>	2									1	1			
	<i>Hercostomus chetifer</i>	3							1						1
	<i>Hercostomus nanus</i>	3									1	1	1		
	<i>Lamprochromus bifasciatus</i>	3										1			
	<i>Neurigona quadrifasciata</i>	3						1			1				1
	<i>Poecilobothrus nobilitatus</i>	2		1											1
	<i>Rhaphium appendiculatum</i>	2							1						
	<i>Rhaphium brevicorne</i>	3							1						1
	<i>Sciapus platypterus</i>	2		1		1	1				1	1	1	1	
<i>Sybistroma obscurellum</i>	2		1	1	1			1		1			1	1	
<i>Syntormon bicolorellum</i>	3						1					1		1	
<i>Syntormon denticulatum</i>	3													1	
<i>Syntormon pallipes</i>	2													1	
<i>Teuchophorus nigricosta</i>	3									1					

WOOD	Family	Species	Status	wood - dry				wood - moist			wood - wet				
				sward - long	34	31	33	35	23	36	37	24	25	26	32
		<i>Teucophorus simplex</i>	3											1	1
	Drosophilidae	<i>Drosophila andalusiaca</i>	2					1	1			1	1		
		<i>Drosophila cameraria</i>	2										1		
		<i>Drosophila fenestrarum</i>	2				1						1	1	
		<i>Scaptomyza flava</i>	2			1									
		<i>Scaptomyza pallida</i>	2	1	1				1				1	1	1
	Dryomyzidae	<i>Neuroctena anilis</i>	2			1	1	1					1	1	1
	Empididae	<i>Chelipoda vocatoria</i>	3					1							
		<i>Dolichocephala irrorata</i>	2						1						
		<i>Empis aestiva</i>	2	1									1		
		<i>Empis lutea</i>	2		1										
		<i>Empis stercorea</i>	2											1	
		<i>Hilara albiventris</i>	5						1						
		<i>Hilara anglodanica</i>	3										1		
		<i>Hilara fuscipes</i>	2												1
		<i>Hilara longifurca</i>	2											1	
		<i>Hilara lurida</i>	3			1									
		<i>Hilara nigrina</i>	3												1
		<i>Hilara obscura</i>	3						1						
		<i>Hilara rejecta</i>	3												1
		<i>Kowarzia bipunctata</i>	3												1
		<i>Phyllodromia melanocephala</i>	2										1		
		<i>Rhamphomyia longipes</i>	2						1				1	1	
		<i>Rhamphomyia nigripennis</i>	2										1		
		<i>Trichopeza longicornis</i>	2						1				1	1	1
	Ephydriidae	<i>Athyroglossa glabra</i>	3						1						
		<i>Discocerina obscurella</i>	2						1						
		<i>Ditrichophora calceata</i>	2						1			1	1	1	
		<i>Ditrichophora fuscella</i>	2						1			1			
		<i>Hydrellia griseola</i>	2						1						
		<i>Hydrellia maura</i>	2						1						
		<i>Ilythea spilota</i>	2						1						
		<i>Limnellia quadrata</i>	2						1						
		<i>Parydra coarctata</i>	2						1				1	1	
		<i>Parydra littoralis</i>	2										1		1
		<i>Parydra quadripunctata</i>	2						1						
		<i>Psilopa nitidula</i>	2	1											
	Fanniidae	<i>Fannia sociella</i>	2					1							

WOOD		Status	wood - dry				wood - moist	river	stream	wood - wet				
Family	Species		34	31	33	35	23	36	37	24	25	26	32	38
Heleomyzidae	<i>Suillia atricornis</i>	2												1
	<i>Suillia bicolor</i>	2			1		1							
	<i>Suillia humilis</i>	3					1							
	<i>Suillia notata</i>	2		1			1							
	<i>Suillia variegata</i>	2		1	1		1							1
Hybotidae	<i>Ocydromia glabricula</i>	2		1	1	1	1			1		1	1	1
	<i>Oedalea tibialis</i>	3								1				
	<i>Oropezella sphenoptera</i>	3					1			1				
	<i>Platypalpus calceatus</i>	2												1
	<i>Platypalpus candicans</i>	2					1			1	1			
	<i>Platypalpus ciliaris</i>	2					1			1		1		
	<i>Platypalpus luteus</i>	2										1		
	<i>Platypalpus pallidiventris</i>	2		1						1				1
	<i>Platypalpus pallipes</i>	2			1									
	<i>Platypalpus pectoralis</i>	2			1									
Lauxaniidae	<i>Meiosimyza rorida</i>	2		1	1	1	1			1	1	1	1	1
	<i>Minettia fasciata</i>	2	1											
	<i>Minettia longipennis</i>	2			1		1	1					1	1
	<i>Peplomyza litura</i>	3			1		1			1	1	1	1	
	<i>Plesiominettia filla</i>									1				
	<i>Sapromyza albiceps</i>	5			1									
	<i>Sapromyza halidayi</i>	2												1
	<i>Sapromyza sexpunctata</i>	3												1
	<i>Homoneura notata</i> gp	3							1					
Limoniidae	<i>Achyrolimonia decemmaculata</i>	3						1		1				
	<i>Atypophthalmus inustus</i>	5											1	
	<i>Austrolimnophila ochracea</i>	2		1	1	1	1			1	1	1		1
	<i>Cheilotrichia imbuta</i>	5								1				
	<i>Dicranomyia fusca</i>	3								1		1		
	<i>Dicranomyia modesta</i>	2		1	1	1	1				1	1	1	1
	<i>Eloeophila submarmorata</i>	2												1
	<i>Erioptera lutea</i>	2								1				
	<i>Ilisia maculata</i>	2												1
	<i>Ilisiaoccoecata</i>	2										1		
	<i>Limonia macrostigma</i>	2					1			1	1			
	<i>Limonia nubeculosa</i>	2		1	1	1	1	1		1		1	1	1
	<i>Limonia trivittata</i>	5												1
	<i>Lipsothrix nervosa</i>	3			1									1

WOOD		Status	sward - long	wood - dry			wood - moist	river	stream	wood - wet				
Family	Species		34	31	33	35	23	36	37	24	25	26	32	38
	<i>Lipsothrix remota</i>	2								1				
	<i>Molophilus appendiculatus</i>	2		1								1		1
	<i>Molophilus bifidus</i>	2		1										1
	<i>Molophilus medius</i>	2								1	1			1
	<i>Molophilus ochraceus</i>	2								1	1			1
	<i>Neolimnomyia filata</i>	2								1	1			
	<i>Neolimnomyia nemoralis</i>	2								1				
	<i>Neolimonia dumetorum</i>	2		1			1					1		1
	<i>Ormosia nodulosa</i>	2										1		
	<i>Paradelphomyia ecalcarata</i>	11												1
	<i>Paradelphomyia senilis</i>	2								1	1			1
	<i>Pilaria discicollis</i>	2		1										
	<i>Pilaria fuscipennis</i>	5								1	1			1
	<i>Pseudolimnophila sepium</i>	2		1						1				1
	<i>Rhipidia maculata</i>	2				1								1
	<i>Euphyllidorea aperta</i>	2								1				
Lonchopterae	<i>Lonchoptera lutea</i>	2				1	1	1		1	1	1		
	<i>Lonchoptera nigrociliata</i>	5						1						
Micropezidae	<i>Calobata petronella</i>	2								1				
	<i>Neria commutata</i>	3								1				
Muscidae	<i>Coenosia tigrina</i>	2	1											
	<i>Eudasymphora cyanella</i>	2				1								
	<i>Helina reversio</i>	2					1							
	<i>Mydaea urbana</i>	2		1										
	<i>Phaonia pallida</i>	2		1			1							
Opomyzidae	<i>Opomyza florum</i>	2		1										1
	<i>Opomyza germinationis</i>	2				1	1			1	1			1
Pediciidae	<i>Pedicia rivosa</i>	3								1				
Phaeomyiidae	<i>Pelidnoptera fuscipennis</i>	3		1										
Platystomatidae	<i>Rivellia syngenesiae</i>	3	1											
Ptychopteridae	<i>Ptychoptera lacustris</i>	3										1		
Rhagionidae	<i>Chrysopilus asiliformis</i>	2	1	1		1		1						
	<i>Chrysopilus cristatus</i>	2								1				1
Scathophagidae	<i>Acanthocnema glaucescens</i>	5								1				
	<i>Scathophaga furcata</i>	2		1			1							1
	<i>Scathophaga stercoraria</i>	2		1	1	1	1			1	1	1		1
Sciomyzidae	<i>Coremacera marginata</i>	3	1											
	<i>Renocera pallida</i>	2								1				1

WOOD		Status	sward - long	wood - dry	wood - moist	river	stream	wood - wet
Family	Species		34	31 33 35	23	36	37	24 25 26 32 38
Sepsidae	Sepsis cynipsea	2	1					
	Sepsis flavimana	2	1					
	Sepsis punctum	2				1		
	Themira annulipes	2	1					
Stratiomyidae	Beris fuscipes	5				1		
	Beris vallata	2	1					
	Chorisops tibialis	2	1					
	Sargus iridatus	2						1
Syrphidae	Melanostoma scalare	2	1			1		
	Platycheirus albimanus	2						1 1
	Sphegina clunipes	3						1
	Sphegina elegans	3						1 1
	Syrirta pipiens	2	1					
Tabanidae	Haematopota pluvialis	2				1		
Tachinidae	Meigenia mutabilis	2	1					
Tephritidae	Chaetostomella cylindrica	2	1					
	Merzomyia westermanni	3			1			1
	Sphenella marginata	3	1					
	Tephritis formosa	3	1					
	Tephritis neesii	3	1					
	Terellia tussilaginis	2	1					
	Xyphosia millaria	2	1					
Tipulidae	Tipula fulvipennis	2		1				1
Ephemeroptera								
Ephemerellidae	Serratella ignita	3					1	
Ephemeridae	Ephemera danica	2					1	
Hemiptera								
Cimicidae	Anthocoris nemorum	2				1		1
Coreidae	Coriomeris denticulatus	2	1					
Miridae	Stenodema laevigata	2	1					
Nabidae	Himacerus apterus	2	1					
Saldidae	Saldula saltatoria	2				1		
Cercopidae	Aphrophora alni	2	1		1			1
	Philaenus spumarius	2	1	1 1				1 1
Cicadellidae	Eupteryx filicum	3						1 1
	Eupteryx urticae	2						1 1
	Eupteryx vittata	2						1
	Evacanthus acuminatus	2				1		1 1

WOOD		Status	sward - long	wood - dry	wood - moist	river	stream	wood - wet
Family	Species		34	31 33 35	23	36	37	24 25 26 32 38
	Lamprotettix nitidulus	3		1				
Cixiidae	Cixius nervosus	2			1			1
	Tachycixius pilosus	2			1			
Delphacidae	Megamelodes quadrimaculatus	3						1
Issidae	Issus coleoptratus	2			1			
Hymenoptera								
Apidae	Bombus lapidarius	2	1					
	Bombus pascuorum	2	1					
	Bombus terrestris	2	1					
Halictidae	Lasioglossum morio	2	1					
Sphecidae	Crossocerus cetratus	3	1					
	Psenulus pallipes	2	1					
Lepidoptera								
Hesperiidae	Thymelicus sylvestris	2	1					
Neuroptera								
Osmylidae	Osmylus fulvicephalus	3						1
Odonata								
Calopterygidae	Calopteryx ?splendens	3					1	
Cordulegasteridae	Cordulegaster boltonii	4					1	
Orthoptera								
Acrididae	Chorthippus brunneus	2	1					
	Chorthippus parallelus	2	1					
Phaneropteridae	Leptophyes punctatissima	2						1
Plecoptera								
Chloroperlidae	Chloroperla torrentium	2						1
Leuctridae	Leuctra nigra	3						1 1
Trichoptera								
Glossosomatidae	Agapetus fuscipes	2						1
	Glossosoma boltoni	2						1
Leptoceridae	Adicella reducta	2						1
	Oecetis testacea	2						1
Limnephilidae	Drusus annulatus	2					1	
Philopotamidae	Wormaldia occipitalis	2						1 1 1
Psychomyiidae	Lype reducta	2						1
Rhyacophilidae	Rhyacophila dorsalis	2					1	
Mollusca								
Hydrobiidae	Potamopyrgus antipodarum	2					1	
Planorbidae	Ancylus fluviatilis	2					1	

WOOD		Status	sward - long				wood - dry			wood - moist		river		stream			wood - wet		
Family	Species		34	31	33	35	23	36	37	24	25	26	32	38					
Lumbricina																			
Lumbricidae	Eiseniella tetraedra	2							1										
Total			45	34	28	23	46	40	10	61	50	51	38	48					