



AQUATIC
INVERTEBRATE SURVEY
OF
PONDS AT BRADLEY
GREEN, CHESHIRE

2017

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1.0 INTRODUCTION

Andy Harmer Limited was commissioned in 2017 to undertake aquatic invertebrate surveys of twelve ponds at Bradley Green, Cheshire. This was undertaken in August.

The aim of the survey was to assess the invertebrate diversity of the ponds, and offer advice on management. Particular attention was to be paid to presence/absence of the beetle *Hydrochara caraboides* and snail *Omphiscola glabra* with options to extend the survey time should the surveyor feel that the habitat was favourable for either species.

It was agreed that the results would be displayed in tabulated form with a brief section on management guidance.

2.0 METHODOLOGY

Pond Survey Methodology

Survey using a GB long-handled pond net with 1mm mesh.

Survey all accessible aquatic habitats until nothing new is being found.

Remove invertebrates for laboratory identification if necessary.

Check for the presence of nationally scarce or protected species.

Record the following groups to species level where possible:

Tricladida	flatworms (<i>Polycelis nigra/tenuis</i> and <i>Dugesia lugubris/polychroa</i> are treated as aggregates)
Hirudinea	leeches
Mollusca	snails and mussels (Identification of <i>Pisidium</i> species not attempted)
Malacostraca	shrimps and hoglice
Ephemeroptera	mayflies
Plecoptera	stoneflies
Odonata	dragonflies and damselflies
Hemiptera	aquatic bugs
Coleoptera	water beetles
Megaloptera	alderflies
Trichoptera	caddis flies

Give an indication of the numbers of individuals of each species using the following system:

1	= r	Rare
2-10	= o	Occasional
11-50	= f	Frequent (Locally)
51 plus	= a	Abundant (Locally)

Where species are only recorded from the pond environs, e.g. odonata in flight, give an indication of the sex, life stage (e.g. adult, teneral, exuvia), and the behaviour (e.g. ovipositing, copulating) as well as the abundance.

Provide incidental records of amphibians, birds, mammals and fish that are encountered during the survey

The survey was undertaken in August 2017

Pond locations

Two maps (Figure 1 and figure 2) show the location and number of each pond.

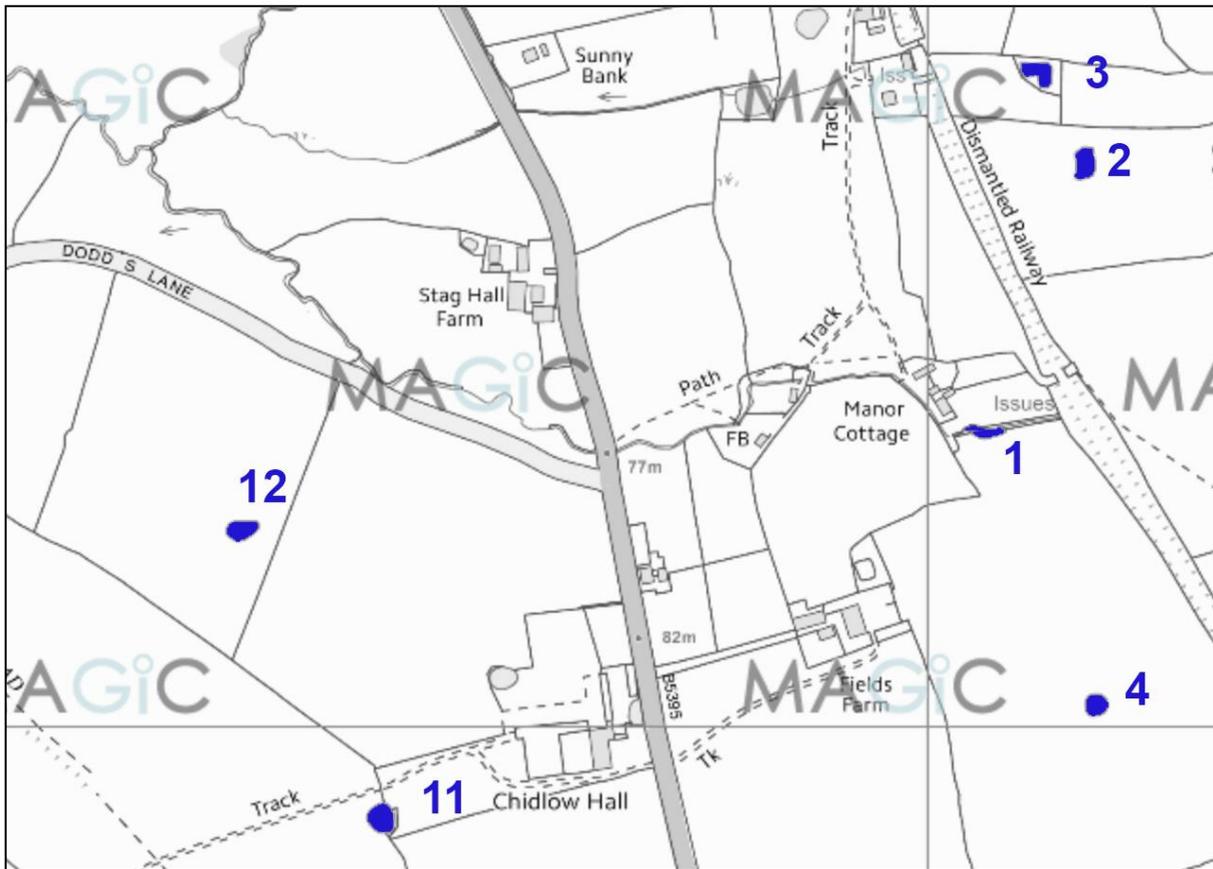


Figure 1: showing ponds in southern section

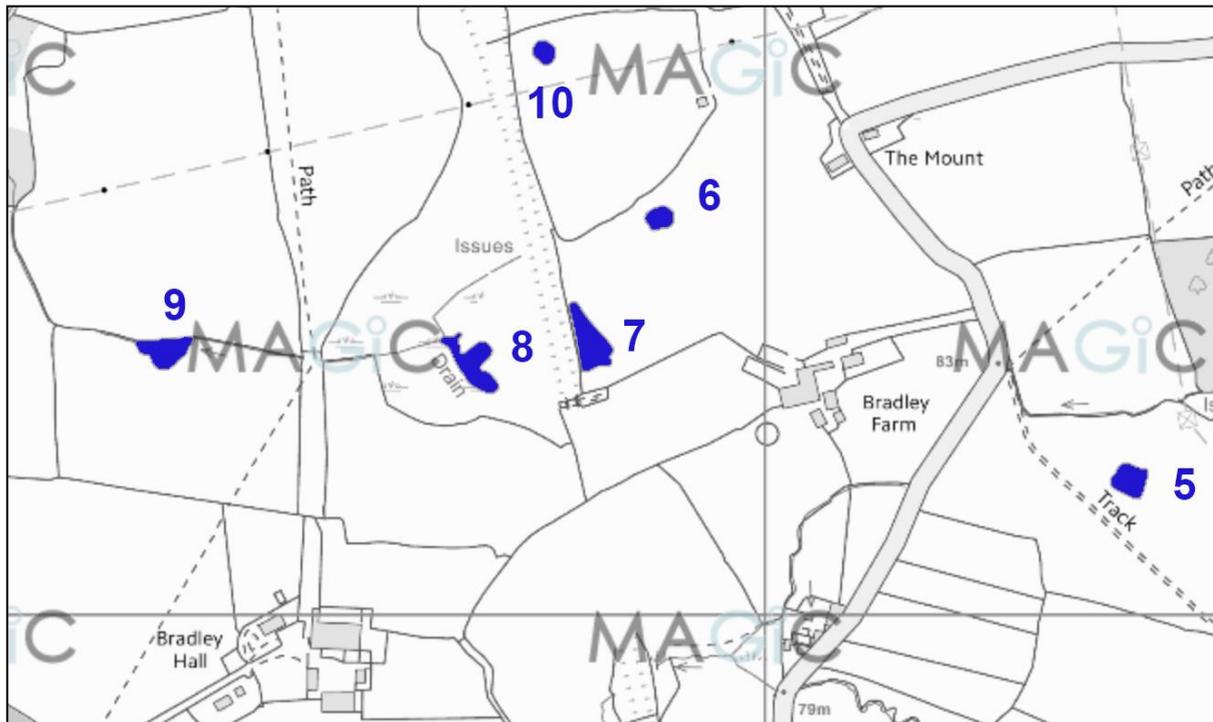


Figure 2: showing ponds in northern section

3. MANAGEMENT GUIDANCE

Pond 1 is not really a pond but a slow flowing linear water feature which dries as the summer progresses, but probably never completely; the surveyors had to trample vegetation to force water up and enable invertebrates to be netted. Though not threatened by scrub, the removal of the southern fence should be considered if livestock is ever present. The browsing of vegetation and poaching of the rush and flote-grass zone will benefit the invertebrate diversity and maintain the feature long term.

Pond 2 was considered to be a marl-pit but it only appears on maps towards the late 19th century, long after marl extraction was vogue. It's possible that it is a brick pit or had sand excavated. This had an excellent invertebrate diversity and had not only adult *Hydrochara caraboides* present but also a spent egg cocoon pointing to successful breeding. Though sheep are not regarded as the best animals to maintain favourable features at a 'Hydrochara pond' they seem to be doing a good job of maintaining a gentle grade to the edges, keeping the vegetation in check through browsing and trampling, and creating a mosaic of unshaded open water, mud, and vegetation of different species. No change in habitat management.

Pond 3 is fenced pond adjacent a paddock and is shaded on the majority of its perimeter. It appears to have deepened and consequently has an abrupt, rather than sloping edge. This provides deep open water which results in a greater diversity, and abundance, of corixids. No change required.

Pond 4 is the second of two ponds that had *Hydrochara caraboides* present; this time two adults were netted. This is a small pond that lies in a depression in the centre of a field where it is likely to have nutrient enrichment from nitrate run-off, and this is resulting in the proliferation of duckweed. The lack of perimeter scrub suggests an amount of cattle access over recent history and this helps prevent shading. Maintain current buffer zone and widen zone if possible.

Pond 5 is set in dairy pasture, has been fenced for many years and has an inflow and outflow. It has a substantial raft of vegetation made up mainly of *Typha latifolia*. Reed Bunting was noted at this pond. The steep sided eastern aspect of the pond, complete with mature trees and shrubs should be left, but there is an opportunity to open up some on the western boundary to cattle, so they can poach the edges. This can be achieved by either removing the fence completely or re-siting it so it cuts across a section of the pond.

Pond 6 has a reasonable diversity. When the water level drops here, mud is exposed across the pond. This pond would benefit long term from desilting.

Pond 7 cannot be found on any aerial photographs earlier than 2009 and appears to expand and contract its footprint from year to year. It contains a limited fauna consisting mainly of pioneer species and has no floating or

submerged aquatic plants. The dramatic changes in the pond levels will impact deleteriously on the flora and fauna until it stabilises.

Pond 8 had no open water at the time of the visit though ditches connected to the main 'water feature' had recently been wetted; a downpour had occurred prior to the visit. The only species encountered were those on vegetation or flying around the pond environs.

Pond 9 is shaded by Oak, Alder and Willow on its perimeter but has a small fringe of aquatic emergent vegetation on its southern margin. The water column is around fourteen inches deep and has no submerged or floating aquatic vegetation. The water has twiggy debris and leaf detritus. It has a respectable invertebrate fauna for a shaded pond, but this could be improved with the removal of some of the Alders, allowing more light to reach the pond, increasing the floral diversity and enabling the shallows to warm in sunny weather.

Pond 10 is a fenced off pond in pasture, completely shaded but for a small section on the southern margin. The mature shrubs and trees offer value to terrestrial invertebrates and birds etc, so work to benefit aquatic flora and fauna would impact on this. Leave unmanaged.

Pond 11 has undergone a refurbishment recently. This water feature should be left to stabilise. No management required.

Pond 12 could quite easily be improved if it was desilted in the western lobe of the pond. The mud should be dug out to a depth of a metre in its centre, scraped and sloped consistently towards the shoreline.

Hydrochara caraboides was encountered in two of the twelve ponds (Ponds 2 and 4) and evidence of breeding in one pond (Pond 2). *Omphiscola glabra* was not encountered during the surveys.

Great Crested Newt was not recorded from any of the ponds. Any larvae of the smaller newt species was recorded on the spreadsheet as Smooth Newt, as Palmate newt has not been recorded from the area despite numerous surveys in the region.

APPENDIX

APPENDIX 1 - RESULTS

APPENDIX 2 - PHOTOGRAPHS

APPENDIX 1 - RESULTS

Sample Point Number	Pond 1	Pond 2	Pond 3	Pond 4	Pond 5	Pond 6
YEAR:	2017	2017	2017	2017	2017	2017
Grid Reference	SJ 51024523	SJ 51124544	SJ 51084552	SJ 51134501	SJ 51304611	SJ 50904633
TOTAL SPECIES FOUND	12	41	38	29	15	33
TRICLADIDA:						
<i>Polycelis tenuis/nigra</i>		r	o	o	o	
Total Tricladida:	1	1	1	1	1	0
HIRUDINEA:						
<i>Erpobdella octoculata</i>						
<i>Haemopsis sanguisuga L</i>				o		
<i>Helobdella stagnalis</i>						
<i>Theromyzon tessulatum</i>						
Total Hirudinea:	0	0	0	1	0	0
MOLLUSCA:						
<i>Deroceras laeve</i>	o	r			r	o
<i>Acroloxus lacustris</i>						
<i>Potamopyrgus jenkinsi</i>						
<i>Radix balthica</i>			o			
<i>Lymnaea stagnalis</i>		o				
<i>Physa fontinalis</i>						
<i>Anisus leucostoma</i>						
<i>Anisus vortex</i>						
<i>Gyraulus albus L</i>		o	r	o		
<i>Hippeutis complanatus L</i>			o			
<i>Planorbarius corneus</i>						
<i>Sphaerium corneum</i>		r			o	
<i>Sphaerium lacustre</i>						
<i>Oxyloma pfeifferi</i>	o	o			o	r
<i>Pisidium spp.</i>				o	r	
Total Mollusca	2	5	3	2	4	2
EPHEMEROPTERA:						
<i>Cloeon dipterum</i>			o			o
<i>Serratella ignita</i>	r					
Total Ephemeroptera	1	0	1	0	0	1
MEGALOPTERA:						
<i>Sialis lutaria</i>				o		o
Total Megaloptera	0	0	0	1	0	1
ODONATA:						
<i>Aeshna sp</i>			o			
<i>Anax imperator</i>			r			
<i>Aeshna cyanea</i>		Ad			Ad	Ad
<i>Aeshna grandis</i>						Ad
<i>Aeshna mixta</i>						Ad
<i>Sympetrum sanguineum</i>		Ad				
<i>Sympetrum striolatum N</i>		Ad				Ad
<i>Coenagrion puella</i>		r	r			r
<i>Ischnura elegans N</i>		r				r

<i>Enallagma cyathigerum</i> N						
<i>Pyrhosoma nymphula</i>		o				
<i>Lestes sponsa</i>				Ad		Ad
Total Odonata:	0	6	3	1	1	7
MALACOSTRACA:						
<i>Crangonyx pseudogracilis</i>	f					o
<i>Asellus aquaticus</i>	f		f	f	o	o
<i>Asellus meridianus</i>		r				
Total Malacostraca	2	1	1	1	1	2
HEMIPTERA:						
<i>Corixa punctata</i>		r	o	o		r
<i>Hesperocorixa linnaei</i>						
<i>Hesperocorixa sahlbergi</i>		o	o	o		
<i>Sigara dorsalis</i>				r		
<i>Sigara lateralis</i>				o		o
<i>Callicorixa praeusta</i>						o
<i>Gerris lacustris</i>		f	o	o		r
<i>Gerris odontogaster</i>						
<i>Hydrometra stagnorum</i>			r			r
<i>Ilyocoris cimicoides</i>						o
<i>Nepa cinerea</i>			r	o		
<i>Notonecta glauca</i>		r	o	r		
<i>Notonecta maculata</i>				o		
<i>Microvelia reticulata</i>			o			
Total Hemiptera:	0	4	7	8	0	6
LEPIDOPTERA:						
<i>Cataclysta lemnata</i>		o	r			r
<i>Nymphula nymphaeata</i>						
<i>Nymphula stagnata</i>						
Total Lepidoptera	0	1	1	0	0	1
TRICHOPTERA:						
<i>Anabolia nervosa</i>						
<i>Limnephilus flavicornis</i> agg.						r
<i>Glyphotaelius pellucidus</i>						
Total Trichoptera:	0	0	0	0	0	1
COLEOPTERA:						
<i>Gyrinus substriatus</i>						
<i>Halplus ruficollis</i>			r			r
<i>Dytiscus</i> spp (larvae)			o			
<i>Hydaticus seminiger</i> Nb		r	o			
<i>Colymbetes fuscus</i>		r	o	r		r
<i>Ilybius ater</i>			r	r		r
<i>Ilybius fuliginosus</i>			o		r	
<i>Hygrobia hermanni</i> L			r			r
<i>Noterus clavicornis</i> L		f		o		o
<i>Acilius sulcatus</i>			r			
<i>Agabus bipustulatus</i>		o	o	o	o	

<i>Agabus nebulosus</i>		o		o		
<i>Agabus paludosus</i>	o					
<i>Agabus sturmii</i>						
<i>Laccophilus minutus</i> L		o	o	o		o
<i>Hydroporus angustatus</i>			r	r		
<i>Hydroporus palustris</i>		o	o			
<i>Hydroporus planus</i>		r			r	
<i>Hydroporus pubescens</i>		o				
<i>Hygrotus impressopunctatus</i> L			r			
<i>Hygrotus inaequalis</i>			r			
<i>Hygrotus nigrolineatus</i>						
<i>Hyphydrus ovatus</i>			r			
<i>Anacaena globulus</i>	o					
<i>Anacaena limbata</i>	o	o	o	r	r	
<i>Coelostoma orbiculare</i>	r	r				
<i>Cymbiodyta marginella</i>						
<i>Enochrus coarctatus</i> L		o	o	r		
<i>Enochrus testaceus</i> L		r				
<i>Helochares lividus</i> Nb		r				
<i>Helophorus brevipalpis</i>		r		o	o	r
<i>Helophorus grandis</i>		r	r		r	o
<i>Helophorus minutus</i>		r				
<i>Hydrobius fuscipes</i>		o		o		r
<i>Hydrochara caraboides</i> RDB1		r + COCOON		o		
<i>Laccobius bipunctatus</i>			r	o		
<i>Ochthebius minimus</i>		r				
<i>Scirtes hemisphaericus</i> L	f			r		
<i>Scirtidae (larvae only)</i>			o		o	o
<i>Altica lythri</i>						
<i>Hydrothassa marginella</i>		r				
<i>Anisosticta 19-punctata</i> L		r			r	r
<i>Coccidula rufa</i>	o	r	r			r
Total Coleoptera:	6	23	21	14	8	12
Smooth Newt	Adult	larvae	larvae	larvae	larvae	
Great Crested Newt						
Frog	Adult		Adult			

Sample Point Number	Pond 7	Pond 8	Pond 9	Pond 10	Pond 11	Pond 12
YEAR:	2017	2017	2017	2017	2017	2017
Grid Reference	SJ 50854621	SJ 50744621	SJ 50504622	SJ 50814647	SJ 50564492	SJ 50454515
TOTAL SPECIES FOUND	12	06	20	17	32	36
TRICLADIDA:						
<i>Polycelis tenuis/nigra</i>				r		o
Total Tricladida:	0	0	0	1	0	1
HIRUDINEA:						
<i>Erpobdella octoculata</i>	r			o	o	
<i>Haemopsis sanguisuga</i> L						
<i>Helobdella stagnalis</i>			r	r		r
<i>Theromyzon tessulatum</i>						

Total Hirudinea:	1	0	1	2	1	1
MOLLUSCA:						
<i>Deroceras laeve</i>		r	r		r	o
<i>Acroloxus lacustris</i>						
<i>Potamopyrgus jenkinsi</i>						
<i>Radix balthica</i>			o	r		o
<i>Lymnaea stagnalis</i>						
<i>Physa fontinalis</i>					o	r
<i>Anisus leucostoma</i>						o
<i>Anisus vortex</i>			r		r	
<i>Gyraulus albus</i> L				r		
<i>Hippeutis complanatus</i> L						
<i>Planorbarius corneus</i>						
<i>Sphaerium corneum</i>			o	r	r	o
<i>Sphaerium lacustre</i>						
<i>Oxyloma pfeifferi</i>			r		o	
<i>Pisidium spp.</i>						r
Total Mollusca	0	1	5	3	5	6
EPHEMEROPTERA:						
<i>Cloeon dipterum</i>				o	o	
<i>Serratella ignita</i>						
Total Ephemeroptera	0	0	0	1	1	0
MEGALOPTERA:						
<i>Sialis lutaria</i>			o			
Total Megaloptera	0	0	1	0	0	0
ODONATA:						
<i>Aeshna</i> sp						r
<i>Anax imperator</i>		Ad r			Ad r	
<i>Aeshna cyanea</i>		Ad r	Ad r			
<i>Aeshna grandis</i>	Ad o					
<i>Aeshna mixta</i>					Ad r	
<i>Sympetrum sanguineum</i>		Ad o				
<i>Sympetrum striolatum</i> N	Ad o	Ado	Ad r		Ad o	o
<i>Coenagrion puella</i>						r
<i>Ischnura elegans</i> N			r			o
<i>Enallagma cyathigerum</i> N						
<i>Pyrrhosoma nymphula</i>						
<i>Lestes sponsa</i>					Ad o	
Total Odonata:	2	4	3	0	4	4
MALACOSTRACA:						
<i>Crangonyx pseudogracilis</i>				o	f	o
<i>Asellus aquaticus</i>	f			o	f	f
<i>Asellus meridianus</i>						
Total Malacostraca	1	0	0	2	2	2
HEMIPTERA:						

<i>Corixa punctata</i>	o					r
<i>Hesperocorixa linnaei</i>			r			
<i>Hesperocorixa sahlbergi</i>			o	o		o
<i>Sigara dorsalis</i>			r		r	
<i>Sigara lateralis</i>	a		f		o	
<i>Callicorixa praeusta</i>					r	
<i>Gerris lacustris</i>	f		r		o	o
<i>Gerris odontogaster</i>						
<i>Hydrometra stagnorum</i>			r	r	r	r
<i>Ilyocoris cimicoides</i>						
<i>Nepa cinerea</i>						r
<i>Notonecta glauca</i>	r				r	
<i>Notonecta maculata</i>						
<i>Microvelia reticulata</i>						o
Total Hemiptera:	4	0	6	2	6	6
LEPIDOPTERA:						
<i>Cataclysta lemnata</i>						
<i>Nymphula nymphaeata</i>						
<i>Nymphula stagnata</i>						
Total Lepidoptera	0	0	0	0	0	0
TRICHOPTERA:						
<i>Anabolia nervosa</i>						r
<i>Limnephilus flavicornis agg.</i>						o
<i>Glyphotaelius pellucidus</i>			r	o		
Total Trichoptera:	0	0	1	1	0	2
COLEOPTERA:						
<i>Gyrinus substriatus</i>	o				r	
<i>Haliphus ruficollis</i>			r		o	
<i>Dytiscus spp (larvae)</i>						
<i>Hydaticus seminiger Nb</i>						
<i>Colymbetes fuscus</i>	r			r		
<i>Ilybius ater</i>						r
<i>Ilybius fuliginosus</i>						o
<i>Hygrobia hermanni L</i>						
<i>Noterus clavicornis L</i>					o	
<i>Acilius sulcatus</i>			r	o		
<i>Agabus bipustulatus</i>	o			o	o	
<i>Agabus nebulosus</i>	r					
<i>Agabus paludosus</i>						
<i>Agabus sturmii</i>			r			
<i>Laccophilus minutus L</i>					r	
<i>Hydroporus angustatus</i>				r		r
<i>Hydroporus palustris</i>				r	o	o
<i>Hydroporus planus</i>					r	
<i>Hydroporus pubescens</i>					r	
<i>Hygrotus impressopunctatus L</i>						
<i>Hygrotus inaequalis</i>						
<i>Hygrotus nigrolineatus</i>						

<i>Hyphydrus ovatus</i>						
<i>Anacaena globulus</i>						
<i>Anacaena limbata</i>						o
<i>Coelostoma orbiculare</i>						r
<i>Cymbiodyta marginella</i>						
<i>Enochrus coarctatus L</i>						o
<i>Enochrus testaceus L</i>						
<i>Helochares lividus Nb</i>					o	r
<i>Helophorus brevipalpis</i>						r
<i>Helophorus grandis</i>						r
<i>Helophorus minutus</i>						
<i>Hydrobius fuscipes</i>						
<i>Hydrochara caraboides RDB1</i>						
<i>Laccobius bipunctatus</i>					r	
<i>Ochthebius minimus</i>						
<i>Scirtes hemisphaericus L</i>						
<i>Scirtidae (larvae only)</i>					o	o
<i>Altica lythri</i>					r	r
<i>Hydrothassa marginella</i>						
<i>Anisosticta 19-punctata L</i>					r	r
<i>Coccidula rufa</i>		r				r
Total Coleoptera:	4	1	3	5	13	14
Smooth Newt					larvae	larvae
Great Crested Newt						
Frog						

APPENDIX 2 - PHOTOGRAPHS



Pond 1



Pond 2



Pond 4



Pond 3



Pond 5



Pond 6



Pond 7



Pond 8



Pond 9



Pond 10



Pond 11



Pond 12