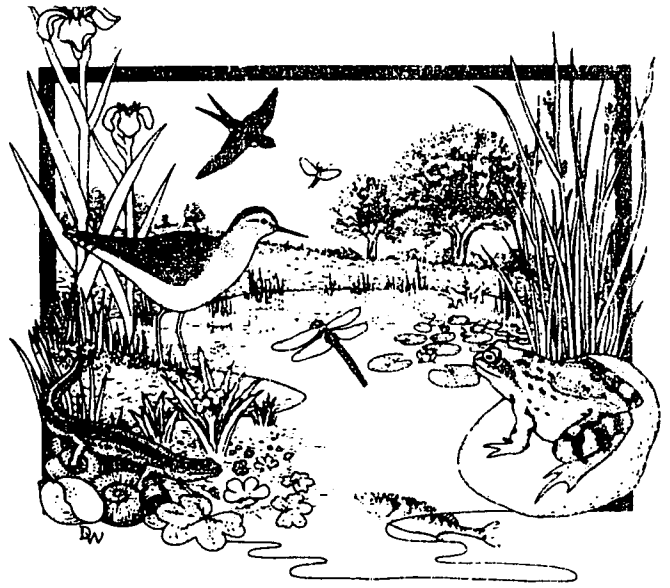


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**A SURVEY OF THE AQUATIC MACROINVERTEBRATES OF PONDS LYING WITHIN
100m OF THE PROPOSED WYMONDHAM BY-PASS**

A REPORT TO HERPETOFAUNA CONSULTANTS INTERNATIONAL

POND ACTION

DECEMBER 1989

c/o Biological and Molecular Sciences
Oxford Polytechnic
Headington
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SUMMARY

This report describes the results of surveys of five ponds lying within 100m of the proposed route of the Wymondham by-pass.

Rightup Lane Gravel Pit (TG 12400055) supported a moderately species-rich macroinvertebrate community (36 species recorded), including one local species. Rose Farm Pond (TM 09259815) and Willow Cottages Pond A (TM 11799982) both supported macroinvertebrate communities with fewer species (11 and 21 species recorded, respectively), with no local or rare species. Further species would almost certainly be recorded at all sites if surveys were repeated in spring and summer.

The survey results suggest that the macroinvertebrate community of Rightup Lane Gravel Pit is of moderate to high conservation value. The community recorded in Willow Cottages Pond A is of low conservation value. However, the pond is close to an area of semi-natural grassland which suggests that the pond may be relatively undisturbed and potentially able to support uncommon species. The macroinvertebrate community of Rose Farm Pond is of low conservation value.

Vegetation maps are presented for Rose Farm Pond (TM 09259815), Park Farm Pond (TM 10919939) and Willow Cottages Ponds A and B (TM 1179982 and 11809975 respectively).

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1. INTRODUCTION

This report describes the results of surveys of the aquatic macroinvertebrates and wetland vegetation of five ponds in the Wymondham area. All the ponds lie within 100m of the proposed route of the Wymondham bypass.

Aquatic macroinvertebrates were surveyed at three ponds (two remaining ponds were dry at the time of the survey):

Rightup Lane Gravel Pit (TG 12400055)

Rose Farm Pond (TM 09259815)

Willow Cottages Pond A (TM 1179982)

The survey results were used to assess the conservation value of the macroinvertebrate communities of the ponds.

Wetland vegetation was mapped at four ponds:

Rose Farm Pond (TG ~~12400055~~)

Willow Cottages Pond A (TM ~~09259815~~)

Willow Cottages Pond B (TM 11809975)

Park Farm Pond (TM 10919939)

Willow Cottages Pond B and Park Farm Pond, although extant, did not contain water at the time of the survey.

The vegetation maps are presented in Appendices 5.2.

2. METHODS

Survey work was undertaken on 22 and 23 November 1989.

2.1 Vegetation mapping

Sketch maps of the ponds were based on the outlines shown on the Ordnance Survey (OS) 1:1250 scale maps. The OS outlines were checked and modified in the field. The position of marginal trees and the extent of the main communities of wetland plants was marked on the modified maps.

2.2 Aquatic macroinvertebrate surveying

Aquatic macroinvertebrates were collected by vigorous sweeping of microhabitats in the ponds using a standard pondnet (Freshwater Biological Association pattern, 1mm square mesh). Sampling continued until no new macroinvertebrate taxa were being found. Samples were sorted on site and macroinvertebrates identified in the field, where possible. Species which could not be identified immediately were preserved in 70% ethanol and returned to the laboratory for microscopic examination.

The aquatic macroinvertebrate groups recorded are listed in Table 1 (over page). A list of the keys and guides used in identification of macroinvertebrates is given in Section 4 (see page 11).

2.3 Assessment of the conservation value of the macroinvertebrate communities within the ponds

The conservation value of the aquatic macroinvertebrate communities was assessed using the criteria described in Table 2 (see page 6).

TABLE 1. GROUPS OF MACROINVERTEBRATES RECORDED IN THE WYMONDHAM PONDS

GROUPS IDENTIFIED TO SPECIES LEVEL

Tricladida	(Flatworms)
Hirudinea	(Leeches)
Gastropoda	(Snails and limpets)
Bivalvia (excluding <u>Pisidium</u> spp.)	(Bivalves)
Malacostraca	(Shrimps and slaters)
Ephemeroptera	(Mayflies)
Odonata	(Dragonflies and damselflies)
Heteroptera	(Water bugs)
Megaloptera	(Alderflies)
Trichoptera	(Caddis-flies)
*Coleoptera	(Water beetles)

**Adults from the following families of Coleoptera were recorded:
Gyrinidae, Haliplidae, Dytiscidae, Hydrophilidae.

**TABLE 2. SYSTEM USED FOR ASSESSING THE NATURE CONSERVATION VALUE OF
AQUATIC MACROINVERTEBRATE COMMUNITIES**

CONSERVATION VALUE	DESCRIPTION OF COMMUNITY
VERY HIGH	<p>Supporting a rich community of macroinvertebrate species, including local species and/or rare (ie Red Data Book) species. Note that some sites with rare species may be relatively species-poor.</p> <p>Sites in this category are likely either to be Sites of Special Scientific Interest in their own right, or within larger SSSI's.</p>
HIGH	<p>Supporting a rich community of common macroinvertebrate species. A small number of local species present. No rare species.</p> <p>Could include sites on SSSI's or sites of local nature conservation value.</p>
MODERATE/LOW	<p>Supporting only common macroinvertebrate species. No rare or uncommon species.</p>

Within the two higher categories individual sites can be ranked on the basis of numbers of rare and uncommon species, provided that a constant amount of effort in sampling has been made.

3. THE AQUATIC MACROINVERTEBRATE COMMUNITIES OF THE WYMONDHAM PONDS

3.1 Conservation value of the aquatic macroinvertebrate communities

A list of the species recorded in the three ponds surveyed is given in Appendix 1 (see page 12).

Rightup Lane Gravel Pit supported the richest community with 36 species recorded. Willow Cottages Pond A and Rose Farm Pond supported communities that were relatively poor in species with 21 and 11 species recorded, respectively.

Rightup Lane Gravel Pit supported one local species, the hydrophilid water beetle Helochares lividus. This species is listed as Nationally Notable B by the Nature Conservancy Council. No local species were recorded in either of the other ponds.

The Rightup Lane Gravel Pit macroinvertebrate community is of moderate to high nature conservation value (see Table 2). The communities of Willow Cottages Pond A and Rose Farm Pond are of moderate to low nature conservation value.

It must be noted that the assessment of the conservation value of the macroinvertebrate communities has been made using data from a single season. Work by Pond Action has shown that collecting in two or three different seasons of the year (ie spring, summer and autumn) usually results in the recording of 30-50% more species than are found in a single season. It is possible that, amongst these new species, further uncommon species could be recorded.

3.2 Rose Farm Pond: detailed description

Rose Farm Pond was a small pond of approximately 0.035ha with steep banks (40-50 degrees) approximately 1.5m high. The base of the pond was gravel and organic silt. Ditches, which were dry at the time of the survey, ran into the south-east and south-west corners of the pond. The pond had been 'cleared out' within the last three years.

At the time of the survey there were few microhabitats available for macroinvertebrates. There were no submersed water plants and no stands of marginal wetland plants at or below water level.

The pond had the poorest macroinvertebrate fauna of the three ponds sampled (11 species recorded). None of the species recorded were rare or local. Water bugs (Heteroptera) dominated the macroinvertebrate community both in terms of numbers of species and numbers of individuals. 7 of the 11 species recorded were bugs and three species of corixid (Sigara dorsalis, Sigara falleni and Sigara lateralis) dominated the fauna numerically.

The very low number of species, and the absence of rare or local species, suggests that the macroinvertebrate community is of low conservation value. Although further species would probably be recorded when water levels were higher, it seems unlikely that these would either be sufficiently numerous or uncommon to increase the nature conservation value of the pond.

3.3 Willow Cottages Pond A: detailed description

Willow Cottages Pond A was a relatively small, very shaded pond of approximately 0.05ha. The pond had variable but often steep banks (30-80 degrees inclination, 1.5m-2m high). Ditches, which were dry at the time of the survey, ran into the south-west and north-west corners of the pond. The surroundings of the pond included areas of semi-natural grassland.

Microhabitats available for macroinvertebrates were limited to leaf litter on the bottom of the pond, the roots of surrounding willows and a marginal stand of Fontinalis antipyretica. Because of the heavy shade the pond supported no marginal wetland plants at or near water level and no submersed plants except F. antipyretica.

The pond had a relatively species-poor macroinvertebrate community with only 20 species recorded. None of the species found was local or rare. Two species were abundant in the pond: the corixid bug Hesperocorixa sahlbergi and the Nautilus ramshorn (Armiger crista). One species, the common hydrophilid water beetle Anacaena bipustulata, appeared to be outside its normal habitat of streams, rivers and pits (Friday, 1988).

The low numbers of macroinvertebrate species, and the absence of rare or local species, suggests that the community of Willow Cottages Pond A is of low conservation value. However, Pond Action's results (unpublished) suggest that the occurrence of semi-natural habitats in the surroundings of ponds increases the probability of recording rare or local species. The presence of semi-natural grassland close to Pond A therefore suggests that rare or local species could still be found. For this reason it is possible that the conservation value of the community may be higher than is indicated by the single season sample described here.

3.4 Rightup Lane Gravel Pit: detailed description

Rightup Lane Gravel Pit is the largest of the ponds surveyed with a wide variety of microhabitats available for macroinvertebrates. These include gravel banking, silted bottom substrates and stands of Eloдея canadensis, Stratiotes aloides, Typha latifolia and Potamogeton natans.

The site had the most diverse fauna of the ponds surveyed with 36 species recorded including one local species (the hydrophilid water beetle Helochaeres lividus). H. lividus, which has its

distribution centred in southern Britain, is of Nationally Notable B status (recorded from between 31 and 100 10x10km squares) but may be under-recorded. The gastropod and caddis-fly fauna were notably richer than at the other ponds surveyed. No one species was particularly abundant, although the mayfly Caenis horaria was common.

The general composition of the macroinvertebrate community, with a low ratio of number of water beetle species : number of gastropod species, was similar to that of other small gravel pits in lowland Britain (Pond Action unpublished results).

The macroinvertebrate community is of moderate to high nature conservation value (see Table 2).

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APPENDIX 5.1 AQUATIC MACROINVERTEBRATES RECORDED IN THE WYMONDHAM PONDS

	Rose Farm Pond	Willow Cottages Pond A	Rightup Lane Gravel Pit
TRICLADIDA			
<i>Dugesia tigrina</i>	-	-	+
HIRUDINEA			
<i>Erpobdella octoculata</i>	+	-	+
<i>Glossiphonia complanata</i>	+	+	-
<i>Glossiphonia heteroclita</i>	-	-	+
<i>Helobdella stagnalis</i>	-	-	+
<i>Theromyzon tessulatum</i>	-	+	-
GASTROPODA			
<i>Armiger crista</i>	-	+	-
<i>Gyraulus albus</i>	-	-	+
<i>Hippeutis complanatus</i>	-	-	+
<i>Lymnaea auricularia</i>	-	-	+
<i>Lymnaea palustris</i>	-	-	+
<i>Lymnaea peregra</i>	+	+	+
<i>Lymnaea stagnalis</i>	-	-	+
<i>Planorbis contortus</i>	-	-	+
BIVALVIA			
<i>Sphaerium corneum</i>	+	-	-
MALACOSTRACA			
<i>Asellus aquaticus</i>	-	+	+
<i>Crangonyx pseudogracilis</i>	-	+	+
EPHEMEROPTERA			
<i>Caenis horaria</i>	-	-	+
<i>Caenis luctuosa</i>	-	-	+
<i>Cloeon dipterum</i>	-	+	+
ODONATA			
<i>Coenagrion puella</i>	-	-	+
<i>Enallagma cyathigerum</i>	-	+	+
<i>Ischnura elegans</i>	-	-	+

	Rose Farm Pond	Willow Cottages Pond B	Rightup Lane Gravel Pit
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HETEROPTERA

<i>Callicorixa praeusta</i>	-	+	-
<i>Corixa punctata</i>	+	+	+
<i>Hesperocorixa sahlbergi</i>	+	+	-
<i>Ilyocoris cimicoides</i>	-	-	+
<i>Notonecta glauca</i>	-	+	+
<i>Plea leachi</i>	-	+	+
<i>Sigara distincta</i>	+	-	+
<i>Sigara dorsalis</i>	+	-	+
<i>Sigara falleni</i>	+	-	+
<i>Sigara lateralis</i>	+	-	-
<i>Sigara limitata</i>	+	-	-
<i>Sigara nigrolineata</i>	-	+	-

MEGALOPTERA

<i>Sialis lutaria</i>	+	+	+
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TRICHOPTERA

<i>Agraylea multipunctata</i>	-	+	+
<i>Agraylea sexmaculata</i>	-	-	+
<i>Mystacides longicornis</i>	-	-	+
<i>Phryganea striata</i>	-	-	+

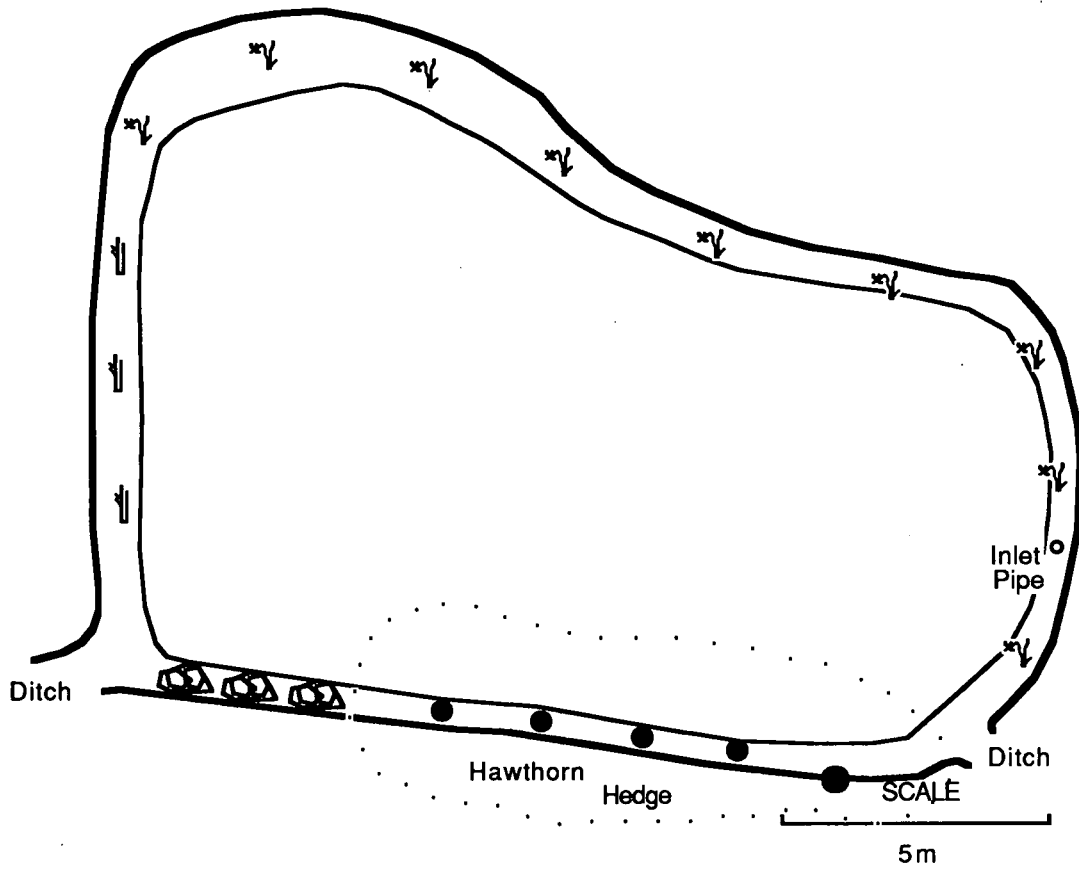
COLEOPTERA

<i>Anacaena bipustulata</i>	-	+	-
<i>Gyrinus substriatus</i>	-	+	-
<i>Haliphus lineatocollis</i>	-	+	-
<i>Haliphus ruficollis</i>	-	-	+
<i>Helochares lividus</i>	-	-	+
<i>Hygrotus inaequalis</i>	-	-	+
<i>Laccobius bipunctatus</i>	-	-	+
<i>Laccophilus hyalinus</i>	-	-	+
<i>Laccophilus minutus</i>	-	+	-
<i>Suphrodytes dorsalis</i>	-	+	-

APPENDIX 5.2 VEGETATION MAPS

TM 0915 889

FIGURE 1. ROSE FARM POND (TM 09259815) - Vegetation



VEGETATION

-  Mixed wetland community
-  Soft Rush
(*Juncus effusus*)
-  Bramble
-  Tree

BOUNDARIES




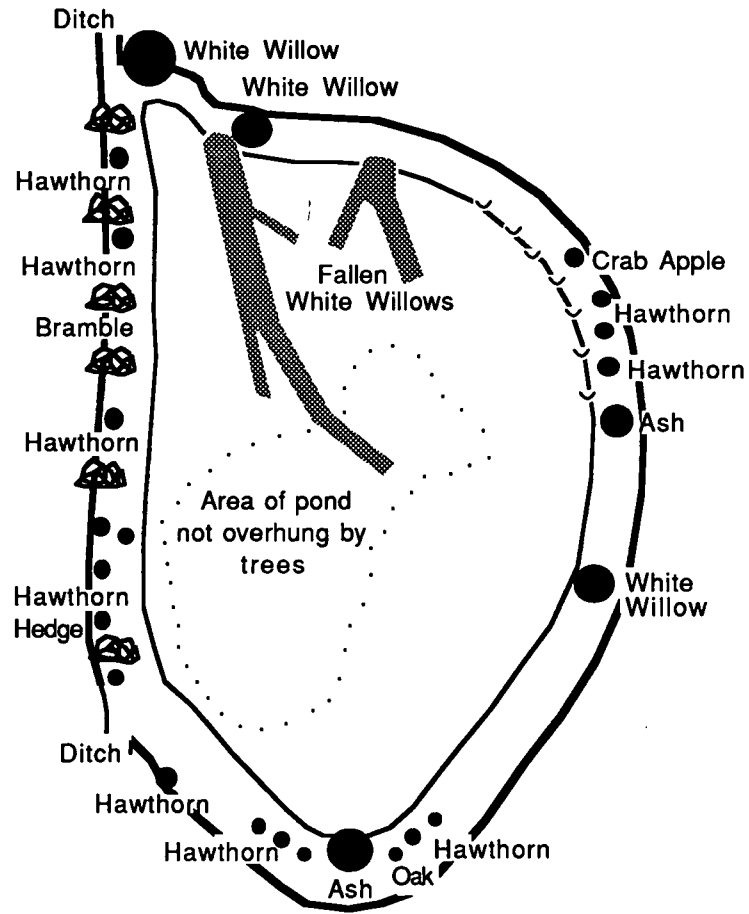

-  Pond boundary
-  Water line
-  Limit of overhanging trees

FIGURE 2. WILLOW COTTAGES: POND B. (TM 11799982)
- Vegetation



WETLAND VEGETATION

 Willow moss
 (*Fontinalis antipyretica*)


 Bramble

 Tree

BOUNDARIES

 Pond boundary

 Water line

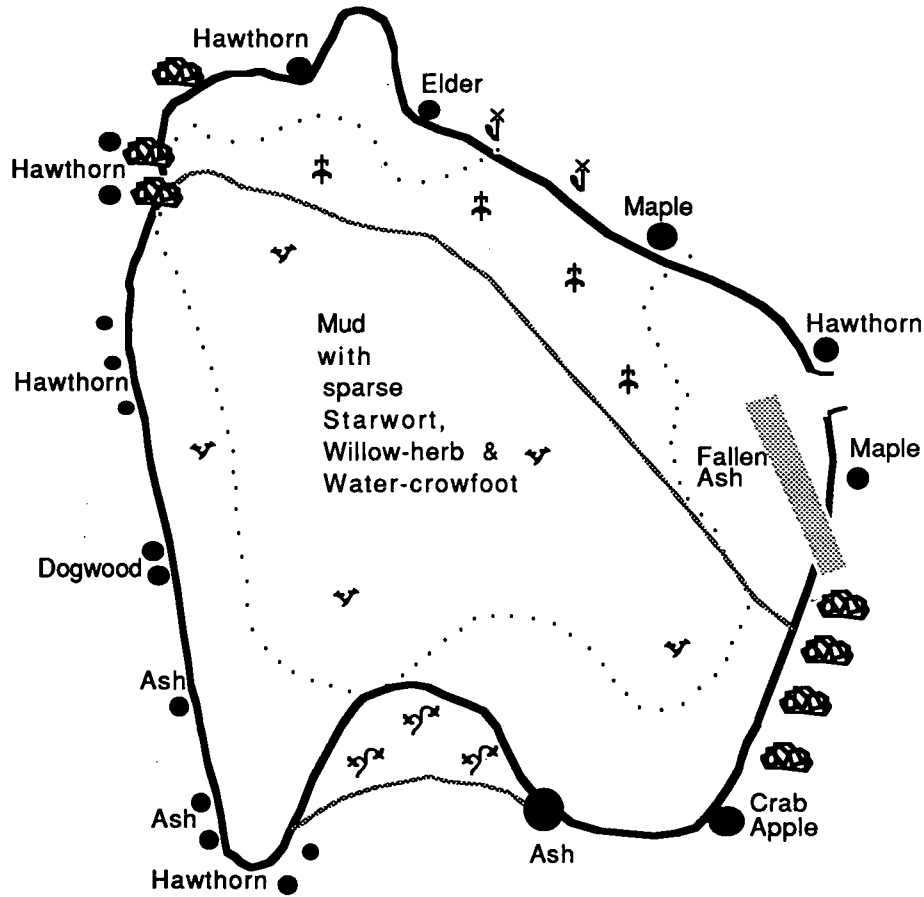
 Limit of overhanging
 vegetation

SCALE






5m

Upper level





FIGURE 3. WILLOW COTTAGES: Pond B. (TM 11809975) - Vegetation



WETLAND VEGETATION

-  Great hairy willow herb (*Epilobium hirsutum*)
-  Nettle (*Urtica dioica*)
-  Water starwort (*Callitriche* sp.)
-  Bramble
-  Tree

BOUNDARIES

-  Pond boundary
-  Base of banks
-  Vegetation boundary
-  Limit of overhanging vegetation

SCALE

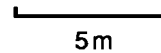
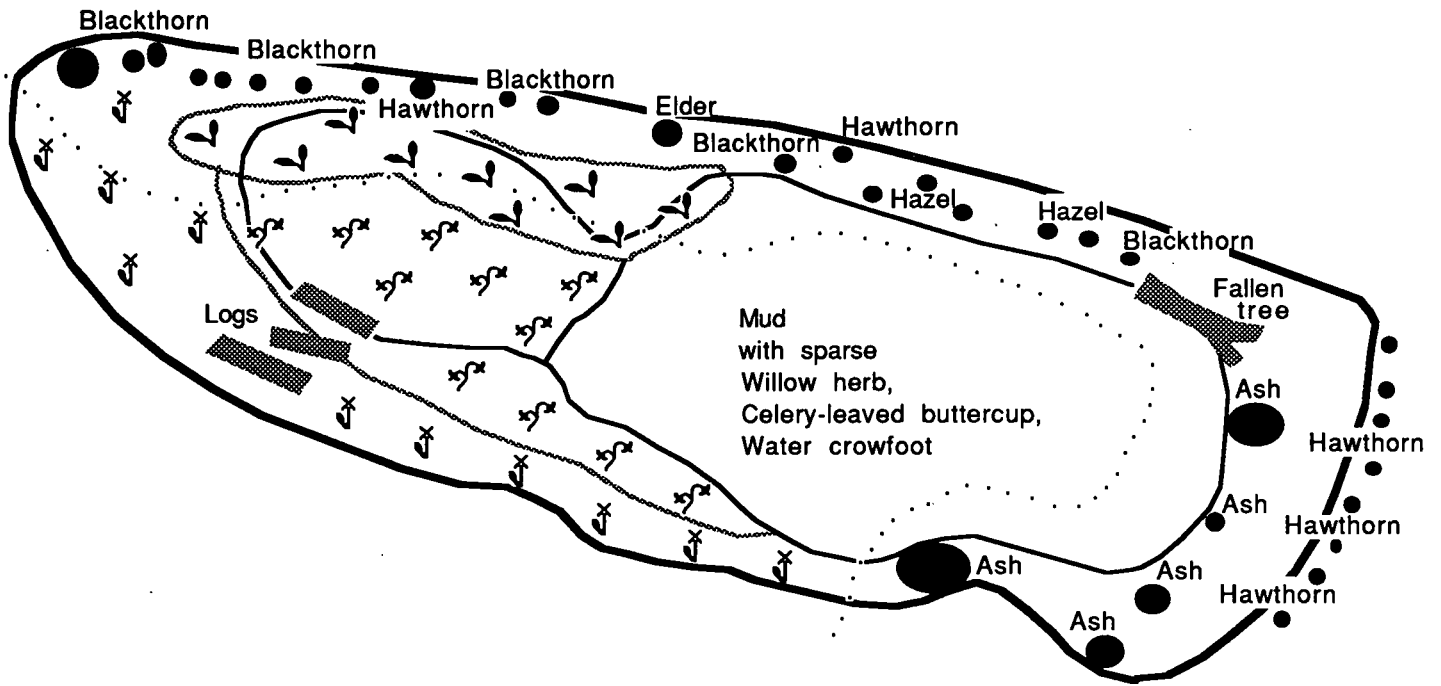










FIGURE 4. PARK FARM POND (TM 10919939) - Vegetation



WETLAND VEGETATION

-  Amphibious bistort
(*Polygonum amphibium*)
-  Bittersweet
(*Solanum dulcamara*)
-  Great hairy willow herb
(*Epilobium hirsutum*)
-  Tree

BOUNDARIES

-  Pond boundary
-  Base of bank
-  Limit of overhanging trees
-  Vegetation boundary

SCALE

