



# The Ivel Valley Pond Survey

2002

By

C. Andrews and A. Proud



# CONTENTS

1	INTRODUCTION .....	1
2	AIMS .....	1
3	METHOD .....	2
3.1	Field Survey Method.....	2
3.2	Research survey method .....	3
4	RESULTS .....	3
4.1	Parish .....	4
4.2	Origins of ponds .....	5
4.3	Existing use of ponds .....	6
4.4	Existing management of ponds .....	7
4.5	Landowners' management ideas.....	8
4.6	Distance from nearest public access.....	8
4.7	Areas of ponds .....	8
4.8	Pond area shaded by trees .....	8
4.9	Depth of water in pond .....	9
4.10	Water Source, evidence of pollution and seasonal water level change .....	9
4.11	Landscape category .....	9
4.12	Flora .....	9
4.13	Fauna.....	11
4.14	Loss and gain of ponds from the 1970 and 1999 OS map comparison .....	12
5	DISCUSSION .....	12
5.1	Current rate of decline .....	12
5.2	Health of ponds in the Project area.....	13
5.2.1	Ponds occurring in areas with some form of Nature Reserve designation .....	13
5.2.2	Pond which occurred on the urban fringe.....	14
5.2.3	Ponds which occurred in woodland.....	14
5.2.4	Ponds which occurred in farmland .....	15
5.3	Ponds with possible County Wildlife Site (CWS) status .....	16
6	Action Plan .....	16
6.1	Dry ponds .....	16
6.2	Ponds most in need of management .....	17
6.3	Creation of new ponds.....	21
6.4	Funding .....	21
7	EVALUATION .....	21

## EXECUTIVE SUMMARY

The 'Ponds for Life', Ivel Valley Pond Survey has been funded by English Nature, Bedfordshire County Council and the Ivel Otters and Rivers Project.

One hundred ponds were surveyed by trained volunteer surveyors during the summer months of 2001 and 2002. The data is held on a data base at the Ivel and Ouse Countryside Project headquarters in Biggleswade Library.

The aims of the Pond Project were to

- Determine the current rate of decline in the number of Ivel valley ponds and use the figures as an incentive to prevent further losses.
- Determine the health of a range of countryside ponds (in woodlands, meadows, arable land, etc) through the physical characteristics, flora and fauna.
- Identify those ponds which are under the greatest threat and those which are of greatest wildlife and amenity value; and promote their positive management.
- Identify sites of old ponds and where appropriate their restoration.
- Identify appropriate sites for the creation of new ponds.
- Secure funding for the management, restoration and creation of ponds in the Ivel valley.

For the purpose of this survey a pond is defined as a man made or natural water body between 1m<sup>2</sup> and two hectares (20,000 m<sup>2</sup>) in area which holds water for four months of the year or more.

The Project area is shown in map 1.

The ponds to be surveyed were selected using 1:25,000 Ordnance Survey maps, 1999. Seven ponds not marked on the maps but known to exist were also surveyed.

Ponds were surveyed in 20 of the 25 parishes in the Ivel valley area.

Over 30 parameters were recorded for each pond but not all have been analysed for this report.

The health of the ponds was determined from the biotic index (BI). The BI is calculated by identifying the animal least tolerant of pollution, determining if there is more than one species of that animal and noting how many species in total were present (see table 1, page 4).

Of the 82 ponds for which it was possible to calculate a BI (scale of 0 to 10) none had a BI of 10 (the highest diversity) but 43 had a BA of between 6 and 9. Six ponds had a BI of 0 or 1.

## 1 Introduction

There is little if any information currently available on the state of ponds in the Ivel valley Project area (map 1). A map search (OS maps 153 and 208 1:25,000) revealed that there are approximately 300 ponds in the project area. The Bedfordshire and Luton Biodiversity Action Plan stated that countywide there has been a pond loss of approximately 27%. This figure is from the Bedfordshire Landscape and Wildlife Change (1993) which looked at the loss of ponds from 1902-1976 and from 1976-1991. The lack of specific local information and the national trend of declining numbers and quality of ponds (during the 1900's 75% of Britain's 1.6 million ponds were destroyed, Williams *et al*, 1999) resulted in the inclusion of the need for more information on the valley's ponds in the Bedfordshire and Luton Waterways and Wetlands Biodiversity Action Plan (2000). The ponds in the valley are classified as either aquifer fed naturally fluctuating water bodies or eutrophic standing waters (Bedfordshire and Luton Biodiversity Action Plan, 2000).

A pond is defined as a

“Man-made or natural water bodies between 1m<sup>2</sup> and 2 hectares (20,000m<sup>2</sup>) in area which holds water for four months of the year or more” (Pond Conservation, 1993)

As part of its Biodiversity Action Plan responsibilities the then Ivel Valley Countryside Project (now Ivel and Ouse Countryside Project, IOCP) initiated an Ivel Valley Pond survey. Funding was sought and successfully obtained from English Nature, Bedfordshire County Council and the Ivel Otters and Rivers Project.

## 2 Aims

The aims of the survey were to

- Determine the current rate of decline in the number of Ivel valley ponds and use the figures as an incentive to prevent further losses.
- Determine the health of a range of countryside ponds (in woodlands, meadows, arable land, etc) through their physical characteristics, flora and fauna.
- Identify those ponds which are under the greatest threat and those which are of greatest wildlife and amenity value; and promote their positive management.
- Identify sites of old ponds and where appropriate promote their restoration.
- Identify appropriate sites for creation of new ponds.
- Secure funding for the management, restoration and creation of ponds in the Ivel valley.

### 3 Method

#### 3.1 Field Survey Method

A member of the Project staff attended an Aquatic Habitats: Surveying and Monitoring Techniques at Bristol University and two members attended a two day practical surveying course in Kent run by the Groundwork Trust. As the survey was to be carried out by volunteers with a wide range of abilities and previous knowledge, a comprehensive survey form requiring only basic identification skills was devised by project staff in order to obtain comparable results, see appendix 1.

A pond survey pack was produced which included a pond net (mouth 25cm by 25cm), white tray, magnifier and detailed instructions (appendix 2) stating

- When to survey
- How to survey
- Detailed instructions on how to complete the survey form
- A detailed health and safety section
- Equipment list
- Landowner liaison advice
- Plant identification card (from the Field Studies Council)
- Invertebrate identification card (from the Field Studies Council)

Ponds were identified within the Ivel valley using the OS maps 153 and 208 1:25,000, 1999. Landowners were contacted and permission for the pond to be surveyed was obtained. Ponds were then allocated to volunteer surveyors.

The need for volunteer surveyors was advertised in local libraries, on the IOCP website, in the annual report, in newsletters, directly to local wildlife groups and through the Wildlife Trust.

Training days were held in April 2001 and 2002. The training sessions comprised of an indoor lecture and an out door practical session to instruct surveyors on how to carry out the survey and to aid species identification.

The volunteers were asked to survey ponds between April and September, as this is the time that coincides with the most plant and animal life.

The three minute method of invertebrate sampling was used. This involves dipping the net and sweeping in the pond in the different habitats available for a total of three minutes. The time the dipping net is in the water is divided proportionally between the microhabitats present in the pond. Each microhabitat is netted vigorously to dislodge and collect creatures. In ponds with stony or sandy substrates the bed of the pond was kicked up to disturb and capture creatures. Deep accumulations of silt were avoided as it is difficult to find creatures in silt and disturbance of silt reduces clarity.

The sample was then emptied into a white tray which contained enough water to allow the creatures to move around. Any large stones, twigs, leaves etc were examined for invertebrates and then removed to make viewing easier. The sample was then sorted and all species recorded to family level where possible. A few minutes were also spent searching the pond for species which live on the water surface or firmly attached under stones. These species were included in a separate section of the recording form.

Ponds were identified within the Ivel valley using the OS maps 153 and 208 1:25,000, 1999. Landowners were contacted and permission for the pond to be surveyed was obtained. Ponds were then allocated to volunteer surveyors.

### **3.2 Research survey method**

In order to calculate a rate for the loss of ponds in the project area 68 of the approximately 215 one kilometre squares in the project area (approximately one third of the area) were searched for ponds using OS maps from the 1970s and 1999.

## **4 Results**

During 2001 and 2002 100 ponds were surveyed. In some cases ponds were found to no longer exist. As recording the current rate of decline of ponds in the Ivel valley was one of the aims of the survey these ponds were recorded as part of the survey.

Surveyors returned their forms to the Project at the end of each season and the data was entered on an Access database. There were 37 fields of data corresponding to the data sections collected on the survey form.

The biotic index (BI) (measure of diversity and health) of each pond was calculated using table 1 and entered on the database.

The BI table was adapted from a number of existing indices, taking into account the pond types and species present in the Ivel valley (C. Andrews, 1999).

The Biotic Index is used to give an indication of the health of a pond, based on the invertebrate species recorded in the three minute sample. It is calculated by identifying the animal least tolerant of pollution, determining if there is more than one species of that animal; and noting how many species in total were present.

Out of approximately 300 ponds in the Project area, the 100 surveyed were chosen based on landowner information and consent; accessibility; landowner requests and the desire to survey ponds in a range of habitats and landscape settings.

**Table 1 Biotic Index Table for Ponds**

Water quality	Animal	Number of species	Total number of different species				
			0-1	2-5	6-10	11-15	15+
			BI	BI	BI	BI	BI
Clean water	Stonefly larvae	>1 Stonefly Spp		7	8	9	10
		Only one stonefly spp.		6	7	8	9
	Mayfly larvae	>1 mayfly spp.		6	7	8	9
		Only 1 mayfly spp.		5	6	7	8
	Caddisfly larvae	>1 caddisfly spp.		5	6	7	8
		Only 1 caddisfly spp.	4	4	5	6	7
	Water shrimp	All of above absent	3	4	5	6	7
	Water louse	All above spp. Absent	2	3	4	6	6
Polluted water	Blood worm	All above spp absent	1	2	3	4	

#### 4.1 Parish

Of the 25 parishes in the Project area 20 parishes had ponds surveyed. An analysis of the distribution of the ponds surveyed per parish is given in table 2. As the table shows the ponds were fairly well distributed throughout the Project area.

**Table 2 Number of ponds surveyed per parish**

<b>Parish</b>	<b>Number of ponds surveyed</b>
Arleseey	2
Biggleswade	11
Blunham	2
Clifton	2
Dunton	7
Everton	8
Henlow	4
Langford	2
Meppershall	1
Moggerhanger	1
Northill	12
Old Warden	1
Potton	6
Sandy	17
Shefford	4
Stanford	5
Stotfold	3
Sutton	5
Tempsford	5
Wrestlingworth	2
<b>Total number parishes 20</b>	<b>Total number of ponds 100</b>

#### **4.2 Origins of ponds**

To ascertain the origin of the pond was not always easy. Eighteen ponds were classified as origin unknown and 24 were classed as man made. Only three ponds were classed as natural and nine ponds had been dug especially for conservation purposes. A full analysis of the origin of the surveyed ponds is given in table 3.

**Table 3. Origins of ponds**

<b>Origin of pond</b>	<b>Number of ponds</b>
Unknown	18
Man made	24
Man made for conservation	9
Drainage channel	6
Gravel pit	5
Sand quarry	4
Medieval fish pond or moat	4
Irrigation pond or reservoir	4
Hanging pond	4
Natural	3
Brick pit	3
Carp pond	2
Widened water course	1
Spring	1
Sluiced water course	1
Mill pond	1
Horse and cart washing pond	1
Dew pond	1
Balancing pond	1
<b>TOTAL</b>	<b>93</b>
Ponds no longer present	7
<b>TOTAL</b>	<b>100</b>

#### **4.3 Existing use of ponds**

In only one case was it not possible to ascertain the existing use of the pond. Half of the ponds were not being used for anything. The use of eight ponds had been changed to wildlife giving a total of 17 ponds specifically allocated to wildlife and conservation.

Seven ponds were found to be no longer present and three ponds had been converted to ornamental use. A full analysis of the existing usage of the ponds is given in table 4.

**Table 4. Existing use of ponds**

Existing use	Number of ponds
None	50
Conservation	17
Pond no longer present	7
Irrigation	8
Drainage	5
Fishing	4
Ornamental	3
Water for farm animals	2
Balancing pond	1
Water sports	1
Dumping	1
Not known	1
<b>TOTAL</b>	<b>100</b>

**4.4 Existing management of ponds**

Over half (53) of the ponds surveyed receive no management. Only one of the conservation ponds is actively managed for wildlife the rest being “left to nature” which had been classed as no management. Thirteen ponds had seasonal vegetation clearance and seven had scrub clearance or coppicing. The known management is detailed in table 5.

**Table 5. Known management of ponds**

Main form of management	Number of ponds
Unknown	10
None	53
Seasonal vegetation clearance	13
Scrub coppicing or clearance	7
Dredged	2
Reprofiled	2
Fish stocked	1
Grazed	1
Hedge planted	1
Water level control	1
Conservation	1
Barley straw	1
<b>TOTAL</b>	<b>93</b>
No longer present	7
<b>TOTAL</b>	<b>100</b>

#### 4.5 Landowners' management ideas

In just under half of the ponds surveyed the landowner's ideas for management were not known. Eighteen of the landowners were interested in developing or continuing management for wildlife and conservation.

#### 4.6 Distance from nearest public access

Twenty-eight ponds were within 10m of some form of public access.

#### 4.7 Areas of ponds

Of the ponds which contained water at the time they were surveyed, only six were less than 49m<sup>2</sup> and five were over 5,000m<sup>2</sup>. Fifty-five of the ponds were between 100m<sup>2</sup> and 1999m<sup>2</sup>. The analysis of the pond areas is given in table 6.

**Table 6. Pond areas**

Area of pond in m <sup>2</sup>	Number of ponds
<49	6
50 – 99	7
100 – 499	32
500 – 999	23
1,000 – 2,499	8
2,500 – 4,999	5
>5,000	6
<b>TOTAL</b>	<b>87</b>
Ponds absent	7
Ponds data not recorded	6
<b>TOTAL</b>	<b>100</b>

#### 4.8 Pond area shaded by trees

Ponds benefit from some shading to reduce algal blooms but too much shading decreases the amount of light reaching the pond. It also increases the amount of organic matter in the pond thereby increasing the danger of the pond silting up.

Slightly under half (47) of the ponds had between 0 and 24% of their surface area shaded by trees. Sixteen of the ponds had between 75% and 100% of their surface area shaded of which six were between 90-100% shaded. The results are shown in table 7. The 16 ponds with between 75% and 100% shading would benefit from increased light.

**Table 7. Percentage shading of ponds**

<b>Percentage</b>	<b>Number of ponds</b>
0-24	47
25-49	13
50-74	13
75-100	16
<b>TOTAL</b>	<b>89</b>
Ponds absent	7
Ponds data not recorded	4
<b>TOTAL</b>	<b>100</b>

#### **4.9 Depth of water in pond**

Recording the depth of water in deep ponds is very difficult. Surveyors were asked not to endanger themselves and simply take a measurement as far out as it was safe to go. In many cases this was only the depth at arms reach. Depths varied from three centimetres to 10m in irrigation reservoirs (landowner information).

#### **4.10 Water Source, evidence of pollution and seasonal water level change**

A variety of terms were used by surveyors to record water source including run off, land drainage, rain water, ground water and it is difficult to be certain what is exactly meant by these terms. The majority of the ponds were fed by precipitation and run off and/or drainage. Only three ponds listed a piped source of water and six were fed by springs.

Nineteen of the ponds recorded evidence of pollution. This was either litter and rubbish (9), organic, e.g. cattle waste or excessive leaf litter (5), an oily film (3), an algal bloom (1) and a bad smell (1). None recorded evidence of pollution from a water source but no direct analysis was made.

Seasonal water level change is another characteristic which is very difficult to measure. Most ponds recorded some level of change which varied from 10cm to three metres.

#### **4.11 Landscape category**

The landscape category was recorded either as farmland, woodland, nature reserve or urban fringe. Of the ponds surveyed 56 were recorded in farmland, 16 occurred in woodland, 12 occurred in nature reserves and nine occurred in urban fringe.

#### **4.12 Flora**

Water plants, both marginal and submerged can be difficult to identify when not in flower. It is suspected that not all plants present were recorded because of this.

However the number of species present is a measure of the plant diversity of the pond. The frequency of the number of different species is shown for marginal plants in table 8 and submerged plants in table 9.

Fifteen ponds recorded no marginal plants present. It is not certain if this was because of lack of identification skills on behalf of the surveyor or if there really were no marginal plants present. Thirty ponds recorded between one and three species present and 36 ponds recorded between four and eleven species.

Table 8. Frequency of marginal plants species

<b>Number of marginal plant species</b>	<b>Number of ponds</b>
0	15
1	16
2	14
3	10
4	7
5	7
6	4
7	5
8	2
9	6
10	1
11	4
<b>TOTAL</b>	<b>91</b>
Ponds absent	7
Ponds data not recorded	2
<b>TOTAL</b>	<b>100</b>

Table 9. Frequency of submerged plants

<b>Area of pond in m<sup>2</sup></b>	<b>Number of ponds</b>
0	32
1	11
2	22
3	16
4	7
5	1
<b>TOTAL</b>	<b>79</b>
Ponds absent	7
Ponds data not recorded	14
<b>TOTAL</b>	<b>100</b>

### 4.13 Fauna

Badger setts were recorded in the banks of two ponds.

Mallard, moorhen, coot and kingfisher were occasionally recorded.

Fish were recorded from 28 of the ponds. In some cases (3) the ponds had been stocked with fish but most cases it was mainly sticklebacks that were recorded.

Common frog (*Rana temporaria*) were recorded from 19 ponds, common toad (*Bufo bufo*) from 14 ponds and smooth newts (*Triturus vulgaris*) from 15 ponds. Great crested newts (*Triturus cristatus*) were recorded in one of the training day ponds (Newton Bury Moat) but not recorded on the actual survey. Great crested newts are also known to occur in Shortmead pond (TL 189 457) and Stratton Moat (TL 207 437), but again were not recorded on the actual survey.

Invertebrate diversity is used to determine the health of a pond by calculating the biotic index. This is recorded on a scale of 1 – 10 (see section 4.0 Results). The higher the biotic index the greater the diversity of the pond. A biotic index of 0 was recorded when a pond was completely devoid of life. It was possible to record a biotic index for 82 of the surveyed ponds, table 10.

Table 10. Biotic Index

<b>Biotic Index (BI)</b>	<b>Number of ponds</b>
0	2
1	4
2	13
3	5
4	5
5	10
6	17
7	11
8	13
9	2
10	0
<b>TOTAL</b>	<b>82</b>
Pond dry at time of survey	10
Not able to calculate BI	1
Pond no longer present	7
<b>TOTAL</b>	<b>100</b>

None of the ponds recorded a biotic index of ten but only two were totally devoid of life. In one case it was not possible to calculate the biotic index due to unreliable survey results. Seven ponds were known to be no longer present and ten were dry at the time of the survey but may hold water during the winter months.

The two ponds with a BI of 9 were pond number 40 at Stratton Moat Biggleswade and pond number 82 near Moggerhanger.

#### 4.14 Loss and gain of ponds from the 1970 and 1999 OS map comparison

A comparison of 70 km<sup>2</sup> (approximately one third of the Project area) showed a loss of seven ponds. There were three new ponds on the 1999 map which were not shown on the 1970 map.

## 5 Discussion

### 5.1 Current rate of decline

The rate of decline in the project area can be estimated both from the loss according to the OS maps between 1970 and 1999 and from the field survey.

Of the 100 ponds surveyed seven were found to be no longer present and ten ponds were dry at the time they were surveyed. It is not possible to know if the dry ponds were dry all year round and therefore no longer classified as ponds. The dry ponds need to be resurveyed in the winter to ascertain that they do hold water for a minimum of four months of the year, or can no longer be classified as ponds.

It is estimated that there are 300 ponds in the project area given this, and that only one third of the area was checked for pond losses it could be estimated that the total loss of ponds in the Project area is 42 (see table 11 below). It must be emphasised, however, that this is only an estimate.

**Table 11 Pond loss 1970 to 2002**

Method of survey	Loss in survey area	Estimated loss in total project area
Map search	7	21
Field survey	7	21
<b>TOTAL</b>		<b>42</b>

If there were approximately 321 ponds in 1970 and 42 have been lost this represents a loss of 10.3%. The Bedford and Luton Biodiversity Action Plan reports a pond countywide loss of 27%. The survey which gave the loss of 27% did not include woodland and parkland ponds and is therefore not comparable with the Ivel valley survey.

This decline is counteracted by the creation of new ponds. New ponds are classified as those that are five or less years old. Five years was taken as a figure as the cumulative knowledge of the Project staff would know if the pond really was a new pond. Five of the ponds surveyed had been constructed in the last five years i.e. since 1997. There are also new ponds in the Project area which were not surveyed.

The map search also revealed three new ponds that had been created since the 1970s.

**Table 12 Pond gain 1970 on 2002**

<b>Method of pond identification</b>	<b>Estimated pond gain</b>
Map search comparing 1970 to 1999	3 in survey area (1/3 of Project area) therefore estimate 9 for total Project area
Not shown on 1999 but known to have been excavated between 1970 and 1997 but not surveyed	3
Surveyed ponds known to have been created since 1997	5
Ponds not surveyed but known to have been created since 1997	6
<b>TOTAL (estimate)</b>	<b>23</b>

The above methods of identifying new ponds results in a gain of 23 new ponds in the project area. Using the estimated figure of 42 (see sections 5.1) for the loss of ponds in the Project area this results in a net loss of 19 ponds since the 1970s in the Project area. Due to the method of calculating this figure it must be taken only as a rough guide.

## **5.2 Health of ponds in the Project area**

There is little evidence of active pond destruction; the much greater danger present being that of neglect leading to possible pond loss. Twenty-nine of the ponds in the Project area are in need of management. If no management takes place these ponds will soon be lost representing a much higher loss of ponds.

### **5.2.1 Ponds occurring in areas with some form of Nature Reserve designation**

Twelve of the ponds occurred in some form of designated nature reserve. Of these all but three had a biotic index (BI) of 5 or over. The BI only tells us about the invertebrate diversity of the pond. A pond may maintain a high diversity while it is becoming choked with aquatic vegetation as is shown with the pond at Warren Villas Nature Reserve (pond number 5) and Henlow Common Pond (number 84). These ponds are very overgrown but have a biotic index of 8 and 6 respectively. The following ponds had BIs of under 5: Jack's Pond at the RSPB (number 55) (BI4), Old Warden Tunnel's pond (number 100 (BI 2) and Arlese Old Moat (number 88) (BI 4).

Jack's Pond had been cleared out just before it was surveyed so it was expected to have a poor biotic index and this will hopefully improve as vegetation and invertebrates recolonize the pond.

Old Warden Tunnel's pond contains water from October to May. Since 1986 the pond has only retained water twice all year in 1987 and 1999. The area does however remain damp providing habitat for a different range of wildlife. The water source of the pond has been found to be a leaking drain and hence the Wildlife Trust has decided to leave the pond as it is as there is no control over the water source.

The low BI of Arlesey Old Moat needs to be investigated. The pond was surveyed by experienced surveyors in July 2002. It is surrounded by trees but they do not totally shadow the pond. There is a good growth of aquatic vegetation around the pond with stands of Typha, Iris, Bur reed and Reed Sweet Grass. Water dropwort (not to species level) and Celery water crowfoot were recorded. Bog bean (*Menyanthes trifoliata*) (Dony, 1976, only records Bobgean in four tetrads in the county) is known to be present but it was almost certainly introduced. Water Milfoil was recorded among the floating or submerged vegetation. This pond needs to be resurveyed in 2003 to confirm the low BI, to ascertain whether Water dropwort and Water milfoil are present and to decide if any management is required.

### **5.2.2 Pond which occurred on the urban fringe**

Nine ponds occurred on urban fringes. In some cases these are ponds in farms based in villages. The pond at Hatch, number 1, had a BI of 4 and the pond at Shortmead House had a BI of 3. The other remaining urban fringe ponds had BIs of 5 or over except the pond at Stotfold playing field, number 85, which was dry at the time of survey.

The pond at Shortmead House is to be restored in 2003.

The pond at Hatch is 70% shaded which might account for the low BI. Ten species were recorded but none of them were high water quality indicators. The pond needs to be revisited in 2003 to determine if low water quality is the reason for the low BI and if any management can be introduced to improve the BI.

### **5.2.3 Ponds which occurred in woodland**

Of the 16 ponds present in woodland 11 had BIs of five or more. Of the five ponds surveyed in Potton Wood there is only one with a low BI. It was 50% shaded and very over grown with vegetation.

The Henlow scout pond, number 75 needs to be checked as this is being left to wildlife. It is possible that a resurvey would result in a higher BI.

The ponds found to be most in need of management were ponds numbers 68, 69 and 70 all situated in the vicinity of Cox Hill, Sandy. These ponds are in what is now an informal recreation area. The exact ownership and degree of public access is not certain. They are silted up, over shadowed and hold no life other than midge larvae and bloodworms. Considering the locations of these ponds in a recreational area they would greatly benefit being opened up and dug out.

#### 5.2.4 Ponds which occurred in farmland

Many of these farmland ponds are no longer in use. Therefore unless the farmer is interested in conservation they have been neglected for many years. The main results of neglect is silting up and the build up of scrub around the edge which is flailed like a hedge resulting in an impenetrable build up of vegetation around the pond edge.

Of the 56 ponds recorded in farmland 31 had a BI of 5 or over. It is important to remember that a pond may retain a high biotic index but still be over run with vegetation and gradually being lost.

The four ponds surveyed on the Everton Estate were almost devoid of all life. Pond numbers 78, 79 and 80 are surrounded by scrub and would greatly benefit from being opened up and dug out.

Ponds numbers 11, 12 and 16 in the Dunton area are surrounded by scrub and newly planted trees. The landowners plans for the ponds are not known.

The pond at Gannock's Castle (number 89) is under the management of Beds County Council and adjacent to a playing field. It had a BI of 3 and was mainly composed of "black smelly decaying organic matter". As a pond which is part of a historic site it would be an ideal case for future management, although there may be concerns about the removal of silt building up or damage to archaeological structures.

Three ponds at Sutton, numbers 33 (BI4), 34 (BI 2) and 35 (BI4) are owned by farmers sympathetic to wildlife and who are willing to under take work on the ponds if it is felt necessary and they are advised what to do. In some cases the ponds need clearing and digging out and/or trees and scrub removed to reduce shading.

Pond numbers 61 (BI3) and 62 (BI2) near Hatch are owned by a farmer who would like to see them as they looked when he was young but has neither the manpower or time to undertake the work. Both ponds are silting up and are heavily over grown round the edge with scrub which has been flailed over the years.

Pond number 42 (BI 2) at Sanfordbury is also in need of scrub clearance around the edges. The ideas for management of this pond by the owner are not known.

Pond number 86 (BI 3) near Stotfold is choked with aquatic vegetation and needs clearing out. The owner is sympathetic to conservation and needs to be advised on future management of the pond.

Stanford Mill Pond (number 71, BI not calculated) is so over grown that surveyors were not even able to reach the pond itself. This is a historic site as there was once an old mill there, it is beside a footpath. Unfortunately trees have been planted around part of the pond. The pond would benefit greatly from being opened up with possible further development as a site of amenity value for the local community.

### **5.3 Ponds with possible County Wildlife Site (CWS) status**

Only one pond fulfilled the still water CWS guideline criteria:

Water bodies at least 0.05 ha in size supporting either:

- i. 5 submerged and floating species
- ii. 15 submerged, floating and emergent species

including at least one restricted or three more general wetland indicator species.

Pond 82 at Girtford is large enough and recorded five species of floating or submerged species. The pond needs to be resurveyed to confirm the number of species present.

## **6 Action Plan**

The results of this survey have highlighted the loss of ponds and that some ponds are in need of management. The following action points have been proposed.

- Visit all ponds which were dry when surveyed. Monitor during the winter to ensure that there is water present for at least four months of the year.
- Prioritise ponds most in need of management, obtain funding and landowner consent
- Identify areas for the creation of new ponds, obtain funding and landowner consent
- Resurvey ponds with possible CWS status

### **6.1 Dry ponds**

The following ponds were dry when surveyed and need to be revisited twice with four months in between (see definition of a pond) during the winter months to ascertain if they are dry in winter and hence a lost pond.

**Table 13 Dry Ponds**

<b>Pond No</b>	<b>Map Ref</b>	<b>Location</b>	<b>Comments</b>
8	TL 169 537	Tempsford	Managed for wildlife
13	TL 233 433	Dunton	
17	TL 177 539	Tempsford	
24	TL 242 468	Wrestlingworth	
39	TL 227 472		
47	TL 213 438	Biggleswade	New balancing reservoir created near or on this site
54	TL 182 517	Everton	
65	TL 174 494	Sandy	
83	TL 183 408	Langford	Managed for wildlife
85	TL 223 374	Stotfold	

## **6.2 Ponds most in need of management**

Table 14 identifies the ponds in need of significant management. The table identifies the potential management required, the next steps and who should be carrying them out. They have been prioritised according to our best knowledge of the sites.

**Table 14 Ponds in need of management**

Priority 1 work required within one year  
 Priority 2 work required within next three years  
 Priority 3 work required within next five years

**Key** IOCP Ivel and Ouse Countryside Project  
 BRAG Bedfordshire Amphibian Group  
 ACORN  
 TEASEL  
 WT Wildlife Trust  
 BWG Beeston Wildlife Group

Pond no	Mapref	Location	Priority	Potential management required	Next steps	When	By whom	Completion date	By whom
1	TL 157 479	Hatch	3	Scrub clearance	Contact landowner and establish access and aims	2003	IOCP, BWG	2007	IOCP
82	TL 157 494	Girtford	1	Confirm possible CWS status	Resurvey	2003	IOCP	2003	IOCP
25	TL 246 500	Potton	2	Investigate low BI	Resurvey	2003	IOCP	2005	IOCP
33	TL 206 477	Sutton	2	Investigate management required	Contact owner to discuss requirements	2003	IOCP	2005	IOCP, landowner
34	TL 208 473	Sutton	2	Investigate management required	Contact owner to discuss requirements	2003	IOCP	2005	IOCP, landowner
35	TL 207 485	Sutton	2	Investigate management required	Contact owner to discuss requirements	2003	IOCP	2005	IOCP, landowner

Pond no	Map ref	Location	Priority	Potential management required	Next steps	When	By whom	Completion date	By whom
42	TL 147 405	Standfordbury	2	Scrub clearance	Contact landowner to discuss management	2003	IOCP	2005	IOCP
61	TL 143 477	Hatch	1	Scrub clearance	Contact landowner to discuss management	2003	IOCP	2003	IOCP
62	TL 143 472	Hatch	1	Scrub clearance	Contact landowner to discuss management	2003	IOCP	2003	IOCP
68	TL 178 497	Sandy	3	Rubbish, tree and scrub clearance	Establish ownership and responsibility	2003	IOCP, BWG	2007	IOCP, landowner
69	TL 174 497	Sandy	3	Rubbish, tree and scrub clearance	Establish ownership and responsibility	2003	IOCP, BWG	2007	IOCP, landowner
70	TL 177 497	Sandy	3	Rubbish, tree and scrub clearance	Establish ownership and responsibility	2003	IOCP, BWG	2007	IOCP, landowner
71	TL 171 409	Stanford	2	Investigate feasibility of Mill Pond restoration	Establish land ownership	2003	IOCP		
75	TL 181 389	Henlow	1	Investigate low BI	Resurvey	2003	IOCP	2003	IOCP

Pond no	Map ref	Location	Priority	Potential management required	Next steps	When	By whom	Completion date	By whom
78	TL 198 512	Everton	1	Scrub clearance	Approach owner to establish aims of management	2003	IOCP	2005	IOCP, landowner
79	TL 197 510	Everton	1	Scrub clearance	Approach owner to establish aims of management	2003	IOCP	2005	IOCP, landowner
80	TL 196 509	Everton	1	Scrub clearance	Approach owner to establish aims of management	2003	IOCP	2005	IOCP, landowner
86	TL 222 380	Stotfold	1	Vegetation clearance	Establish land ownership	2003	IOCP	2005	IOCP, TEASEL
88	TL 189 372	Arlesey Old Moat	1	Resurvey to check BI and plant species identify if any management needed	Resurvey	2003	IOCP, WT, ACORN	2003	WT, ACORN
89	TL 159 529	Tempsford	2	Scrub clearance, investigate potential for deepening	Approach owner to establish aims of management	2003	IOCP	2005	IOCP, County Council

### 6.3 Creation of new ponds

As our survey has shown there has been an estimated net loss of 19 ponds in the Project area. New ponds are needed to maintain this valuable habitat. It is hoped to create ten new ponds in the valley by 2008.

**Table 15 Location of possible new ponds**

Potential location	Next steps	By whom	When	To be managed by
Newton Moat, Dunton	Approach landowner	IOCP	2003	Owner
Baulk Wood, Clifton	Develop plans	Mid Beds DC	2003	Mid Beds DC
Saxon Gate, Biggleswade	Excavate ponds	Mid Beds DC	2003	Mid Beds DC
Shortmeade House, Biggleswade	Support funding bid	BRAG	2003	Owner
Stotfold	Excavate ponds	IOCP	2002	TEASEL

### 6.4 Funding

Funding will rely on a range of sources such as landowners, English Nature, Environment Agency, local organisations and in kind contractor services.

## 7 Evaluation

- Forty-two ponds were found to have been lost from the valley since the 1970's. This was off set by the creation of 23 new ponds resulting in a net loss of 19 ponds (These are estimated figures).
- The health and diversity of 100 ponds in the Ivel valley was successfully ascertained by surveying 100 ponds.
- Twenty-five people were trained and subsequently surveyed ponds in the Ivel valley
- Those ponds which are most under threat and those with the greatest wildlife value have been identified.
- Further funding to undertake habitat enhancement work on those ponds most under threat will be sought.

## **Acknowledgements**

The project would not have been possible without the help of all volunteers who gave their time and energy, to them thank you. Thanks are also due to the landowners for allowing us access to their land and ponds and to R Lawrence for his comments on this report.

The project was funded by English Nature, Bedfordshire County Council and the Ivel Rivers and Otters Project.

## **References**

Andrews C 2001 *A method for surveying Bedfordshire Ponds. Unpublished.*

Bedfordshire Wildlife Working Group 1998 *Bedfordshire and Luton Wildlife Sites Selection Guidelines*, Bedfordshire Wildlife Working Group.

Bedfordshire Wildlife Working Group 2000 *Bedfordshire and Luton Biodiversity Action Plan*. Bedfordshire Wildlife Working Group.

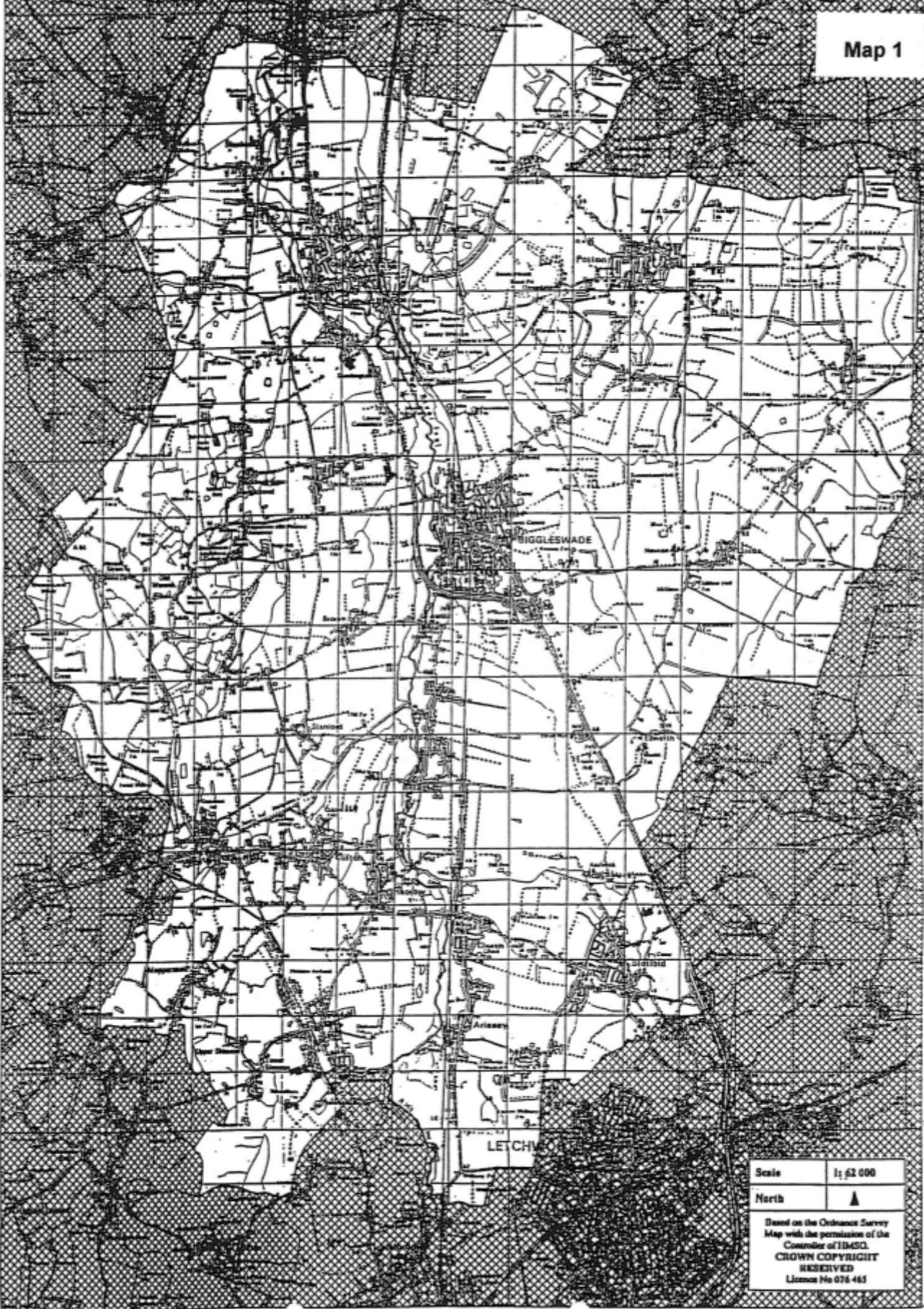
Dony JD, 1976 *Bedfordshire Plant Atlas*. Borough of Luton Museum and Art Gallery

William MG, 1993 *Bedfordshire Landscape and Wildlife Change A Review of Natural Resources*. Bedfordshire County Council

Williams P., Biggs J., Whitfield M., Thorne A., Bryant S., Fox G. and Nicolet P. 1999. *The Pond Book: a guide to the management and creation of ponds*. Ponds Conservation Trust, Oxford

# IVEL VALLEY COUNTRYSIDE PROJECT

Map 1





**Please tick the boxes for the plants/animals recorded in the pond**

<b>27. Tree/Shrub Species</b> around pond:									
Willow (tree)		Alder		Oak		Hawthorn		Birch	
Willow shrub)		Ash		Elder		Blackthorn		Sycamore	
Poplar		<i>Coniferous</i>							
Others not shown (name):								+ unidentified	
Total no. of tree/shrub species around pond (incl. unidentified)									

<b>28. Marginal plants</b> around pond edge:									
Reedmace		Water plantain		Marsh marigold		Water mint		Gipsy wort	
Flag iris		Soft rush		Flowering rush		Common reed		Hard rush	
Brooklime		Horsetail (m'sh)		Bur-reed		W forgetmenot		Water crowfoot	
Purple loosestrife		Arrowhead		Common club rs					
Others not shown (name):								+ unidentified	
Total no. of marginal plant species around pond (incl. unidentified)									

<b>29. Pond Plants/Weeds</b> floating or submerged in the water:									
Duckweed		Water crowfoot		Water lily (ylw)		Starwort		Frogbit	
Blanket weed		Hornwort		Water soldier		Water lily (wht)		Canadian p/w	
Amphib bistort		Water milfoil		Broad leave p/w		Curled p/w			
Others not shown (name):								+ unidentified	
Total no. of pond plants/weed species around pond (incl. unidentified)									

<b>30. Invertebrates</b> in pond:									
Mayfly larvae		Whirligig beetle		Pond skater		Dragonfly nymph		Pond snail	
Stonefly larvae		Diving beetle		Water boatman		Hog louse		Rams horn snail	
Caddis fly larvae		Gt diving beetle		Dmselly nymph		FW shrimp		Worm	
Water spider		Midge larvae		Leech		Red tail maggot		Water scorpion	
Water flea		Water measurer							
Others not shown (name):								+ unidentified	
Others recorded outside 3 minute sample									
Total no. of invertebrate species around pond (incl. unidentified)									

<b>31. Amphibians/Reptiles</b> found in/around pond: record spawn (s), tadpole (t); carcass (c); mature (m)									
Duckweed		Water crowfoot		Water lily (ylw)		Starwort		Frogbit	
Blanket weed		Hornwort		Water soldier		Water lily (wht)		Canadian p/w	
Amphib bistort		Water milfoil		Broad leave p/w		Curled p/w			
Others not shown (name):								+ unidentified	
Total no. of pond plants/weed species around pond (incl. unidentified)									

<b>32. Were any fish recorded? If yes – record species/size.</b>
--

<b>33. Other animals/birds seen on or near pond:</b>
--

<b>34. Is it known if any of the above species have been introduced by man? If yes, which ones?</b>
---

<b>35. Please use the space below to record any additional notes :</b>
--

# 'Ponds for Life'

## Ivel Valley Pond Survey

# Survey Pack



# CONTENTS

	<u>Page</u>
<b>1.0 Introduction</b>	
1.1 Why survey the ponds of the Ivel valley?	1
1.2 Aims of the survey	1
<b>2.0 Guidance Notes</b>	
2.1 What is a pond?	2
2.2 Which ponds to survey?	2
2.3 When to survey	2
2.3 Preparation – before leaving home	3
2.3.1 Land owner consent	3
2.3.2 Health and Safety	3
2.3.3 Equipment checklist	4
<b>3.0 Conducting the Survey</b>	
3.1 The Survey Form	5
3.2 Surveying for Invertebrates	8
<b>4.0 Results</b>	
4.1 What you do with the results	9
4.2 What we do with the results	9

## **1.0 Introduction**

### **1.1 Why Survey the Ponds of the Ivel Valley?**

Ponds have been an integral part of our landscape for centuries and provide a habitat for an abundance of wildlife. However, recent evidence has shown that ponds in the open countryside are decreasing, both in quantity and quality, on a national scale. During the 1900's, 75% of Britain's 1.6 million ponds were destroyed. If this trend continues, by 2011 only 75 ponds will remain in the entire Ivel valley and they will on average be 2 miles away from the next nearest pond. This will have a devastating impact on wildlife.

The Ivel Valley Pond Survey is a new initiative aimed at recording the location and health of the remaining ponds in the valley at the start of the 21<sup>st</sup> century. The information gained will enable us to direct positive management to those ponds which are under the greatest threats, and those ponds which are of greatest wildlife and amenity value. We hope to halt the decline of ponds; and even reverse the trend by improving the conservation value of existing ponds and promoting pond restoration and creation.

### **1.2 Aims of the Survey**

With the information gained from a historic map-based study; and the practical 'in-the-pond' survey, we aim to:

- Determine the current rate of decline in the number of Ivel valley ponds and use the figures as an incentive to prevent further losses.
- Determine the health of a range of countryside ponds (in woodlands, meadows, arable land, etc) through the surveying of physical characteristics, flora and fauna.
- Identify those ponds which are under the greatest threat and those which are of greatest wildlife and amenity value; and promote their positive management.
- Identify sites of old ponds and where appropriate promote their restoration.
- Identify appropriate sites for the creation of new ponds.
- Secure funding for the management, restoration and creation of ponds in the Ivel valley.

## **2.0 Guidance Notes**

### **2.1 What is a Pond**

There are many definitions of a pond, some very complicated. For the purpose of this survey we shall use the widely accepted definition of:

A pond is any body of water between 1m<sup>2</sup> and 2 hectares (20,000m<sup>2</sup>)  
which holds water for at least 4 months of the year.

### **2.2 Which Ponds to Survey?**

If we were to aim to include all bodies of still-water within the Ivel valley in our survey, we would give up before starting! If all garden ponds, angling ponds, lakes and roadside balancing ponds, were to be included, probably thousands of survey forms would be needed and comparisons would be at best difficult, at worst meaningless.

For the purpose of this survey, only ponds in the open countryside will be studied. Generally, these ponds are the most valuable to wildlife, but are also the most neglected and at most risk of destruction. Garden ponds, in-town ponds, 'commercial' fish ponds, and ponds built as part of road and housing run-off schemes will be omitted from this survey.

It is estimated that there are over 300 'open countryside' ponds within the Ivel valley that fall into the above definition.

Our ultimate hope is to survey all of these open countryside ponds. However, as this is still a large undertaking, it is necessary to target specific ponds in the early stages. Proportionally representative numbers of woodland, grassland and arable land ponds will be selected, along with those ponds suspected of being of high wildlife value, from across the valley.

### **2.3 When to Survey**

Ideally, a pond should be surveyed a number of times throughout the year as this enables seasonal variations in species and water levels to be recorded. However, with time resources often limited, this is not always possible.

A one-off survey is best done during the spring and summer months (April – September). This is simply to coincide with the period that most plant and animal life will be evident. Surveying earlier than this will increase the chances of recording spawning amphibians, but fewer plant species will be evident. Surveying later than this reduces the chances of recording emerging amphibians and many plant species will be 'dying back'.

## **2.4 Preparation – before leaving home**

### **2.4.1 Landowner Consent**

It is important that ponds are surveyed only where landowner consent has been given. It is only by working with landowners that the ultimate aim of improving pond management and restoring ponds will be achieved. We need to ensure that we do not alienate the very people with whom we are wanting to work, by visiting their ponds without their consent or against their wishes.

The Project will write to all relevant landowners on your behalf, detailing the project and asking for consent for a trained volunteer to survey the pond(s) on their land.

You will not be asked to survey ponds where consent has not been given. Details of the landowner who has granted consent will be given to you. Please contact the landowner to inform them of the proposed date/time of surveying. You have been provided with a ‘letter to landowners’, which can be shown if evidence of authority/consent is required whilst on site. There are a couple of questions in the survey form, relating to existing use/management and future management ideas, which the landowner may be happy to give you information on.

### **2.4.2 Health and Safety**

Although we all used to mess around in ponds without a care in the world, it is important to be aware of health and safety issues and take the necessary precautions.

- Where possible, take a second person along with you. This person can not only assist if you encounter any difficulties, but can also help in recording survey findings.
- Tell someone where you are going, and what time you expect to return.
- Check with your GP that your tetanus vaccination is up to date.
- Cover any pre-existing cuts with a waterproof plaster (See ‘Weil’s disease’ below)
- Take a basic first aid kit with you, including antiseptic wipes and waterproof plasters
- Beware of holes, branches, roots, uneven ground etc. obscured by vegetation.
- Wear Wellington boots or thigh length waders with good grip. Do not wear chest waders (in the event of falling into the pond, these can fill up and become too heavy to enable escape from the water). Always test the depth of water and sediments before entering the pond with a thumb stick or similar (such as handle of dipping net). If you are at all unsure, do not enter the water but conduct your survey from the safety of the bank.

- Take note of the weather before you set off, and wear suitable clothing. Stop surveying if the weather becomes too inclement. Never survey a woodland pond in high winds.
- Beware of Giant Hogweed. This is an enormous plant in the same family as cow parsley that is sometimes found along riverbanks and around ponds. It produces large amounts of sap that can cause severe irritation, swelling and blistering in the presence of sunlight. Recurrent skin problems may result. Look it up in a flower book so that you can identify and avoid it. Got to your GP if you suffer any blistering.

### **‘Weil’s Disease’ (Leptospirosis)**

This disease, which leads to flu like symptoms and vomiting can be fatal. It is passed from rats to humans through water and urine.

- Always clean cuts/scratches thoroughly and cover with a waterproof plaster.
- Avoid rubbing eyes, nose and mouth with hands that have been in or near the water, or are otherwise dirty.
- Never eat or drink anything with hands that have been in or near the water, or are otherwise dirty.
- If you experience flu like symptoms and vomiting within 2 weeks of undertaking the survey, contact your GP immediately.

#### **2.4.3 Checklist of equipment to take on survey**

- Survey Pack including
  - Guidance notes
  - Survey forms
  - Letter to landowners
  - EN licence & letter
  - Identification keys
- Equipment kit including
  - Dipping net
  - Tray
  - Plastic teaspoon
  - Plastic cup
  - Magnifying glass
  - Metre ruler
- Map of location of pond and access to pond
- Pencils
- Clipboard
- Large plastic bag (in which to place clipboard in wet weather)
- Small plastic bags (for unidentified plant samples – optional)
- Additional identification books/keys
- Camera (optional – expenses will be reimbursed)
- Long tape measure (desirable but not essential)
- Grapnel (desirable but not essential)
- First Aid Kit

## **3.0 Conducting the Survey**

### **3.1 The Survey Form**

The Ivel Valley Pond Survey form has been designed to enable surveyors to record a large amount of information with ease. Much of the form is self explanatory and some aspects can be filled before leaving home. Please see the enclosed example of a completed form. All measurements are to be recorded in metres (approximate).

1. Record the **parish** in which the pond is located, (this information can be obtained from an OS map).
2. Your **name**.
3. The name of the **farm or site** on which the pond is located.
4. Record the **date** on which the pond is surveyed.
5. Record the 6 figure **OS grid reference** of the pond location.
6. Record, the approximate **distance from the pond to the nearest public access** (public footpath, public bridleway, nature reserve, public open space)
7. Record, *if known*, the **origin of the pond** (clay/gravel pit, fallen tree, cattle/livestock watering hole, old line of watercourse, bomb crater, moat, fish pond, etc).
8. Record the **existing use of the pond** (cattle/livestock watering hole, fishing, active conservation, no apparent use etc).
9. Record, *if known*, the **existing management of the pond** (dredging? Weed control? Scrub clearance? Etc)
10. Record, *if known*, the **landowner's ideas for the future management of the pond** (this information will only be possible to obtain if you are able to speak directly with the landowner).
11. Record the **type of immediately adjacent habitat** (scrub, woodland, grassland etc)
12. Record the **approximate area of immediately adjacent habitat**.
13. Record the **surrounding landuse** (pasture, arable, woodland, etc. The wider landscape setting of both the pond and the immediately adjacent habitat. The surrounding landuse may be the same as the immediately adjacent habitat, eg woodland).
14. Record any **obstructions to vehicular access to the pond** (trees/scrub, fencing, cropped field, overhead wires/height restriction barriers, buildings etc).

15. Record, *if known*, the **water source** for the pond (ditch fed, pipe fed, direct run off, direct rainfall/water table only, etc).
16. Record a description of the **soil/substrate** of the pond (clay, gravelly, chalky, artificial (concrete/rubber), etc).
17. Record the approximate **area of the pond** (in m width x m length).
18. Record the estimated **% of pond shaded by overhanging trees/bushes**.
19. Record the estimated **% of pond surface covered by pond plants/weeds**.
20. Record the **maximum depth of water** in the pond. (Use metre ruler or handle of dipping net. Do not put yourself at risk of falling in and beware of deep sediment. If centre of pond is too deep/dangerous to measure, record the depth at the deepest, safely accessible point, and make note, eg, 1.5m from bank, water depth = 0.4m).
21. Record any **evidence of pollution** in the pond (oil, slurry, litter (crisp packets etc), dumping (shopping trolley, tyres etc), etc).
22. Record the **maximum depth of sediment** in the pond. (Use metre ruler or handle of dipping net. The sediment is the layer of silt/leaf litter between the bottom of the open water and the solid substrate beneath. On reaching resistance when pushing into sediment, stop, as puncturing of clay lined ponds could occur. Do not put yourself at risk of falling in. If centre of pond is too deep/dangerous to measure, record the depth at the deepest, safely accessible point, and make note, ie, 1.5m from bank, sediment depth = 0.15m).
23. Record the **seasonal variation in water level** (fluctuation between highest and lowest levels. Look for evidence of 'high tide' mark on adjacent trees or a clear winter level of water; and record if pond is known to dry out in the summer).
24. Record the **number of ponds within a 500m radius** of the pond you are surveying (this information can be obtained from an OS map).

#### Sketch map

(Draw a simple annotated plan of the pond showing shape, scale, areas of shading, significant areas of marginal and pond plants, other notable features.)

(25-29. Record the species present in/around the pond by ticking the boxes of those present. Record any others you identify. Record the number of unidentified species present.)

25. Record the **tree/shrub species** in the immediately adjacent habitat.
26. Record the **marginal plants** around the pond edge. (Marginal plants are 'semi aquatics' which grow in the marshy/swampy margin of the pond.)

27. Record the **pond plants/weeds** present in the pond. (Pond plants/weeds are ‘true aquatics’ which grow entirely in the water, either rooted in the pond bed or floating.)
28. Record the **invertebrates** present in the pond. Where more than one species of a particular animal is present, ie 2 forms of mayfly, place 2 ticks in the box. (Please see the additional notes on ‘Surveying for Invertebrates’.)
29. Record the **amphibians/reptiles** recorded in or around the pond. (These may or may not be present, partly depending upon the time of year you undertake the survey. Record presence and form, ie spawn, tadpole, mature, carcass.)
30. Record any **fish** present in the pond. (If identified, record species, otherwise record approximate size and description, to give indication of species.)
31. Record any **animals/birds** seen on or near pond. (Record species seen, ie moorhen, kingfisher, robin, dragonfly, rabbit, etc; or evidence of presence ie, nest, otter spraint, deer footprint, etc.)
32. Record whether any of the plants/animals present in the pond are **species introduced by man**. (This information may only be possible to obtain if you are able to speak directly with the landowner).
33. Record any **additional notes** which you consider would be helpful. (Other information obtained from landowner such as age of pond; evidence of children playing in/around pond; new development occurring near pond; willow trees in need of management, colour/appearance of water if unusual, particular dominance by 1 or 2 species of plant/invertebrate, etc.)

## **3.2 Surveying for Invertebrates**

Although plunging a net randomly into a pond will enable species to be recorded, a more scientific approach will provide more meaningful and comparative results.

### **3.2.1 3 Minute Sample**

A widely accepted method for surveying invertebrates is the '3 minute sample'. The time that the dipping net is in the water and actively sampling (3 minutes) is divided equally among the microhabitats (distinct areas of different character) present in the pond. These microhabitats will always include surface water, water column and pond bed; but may also include among marginal plants, among pond plants/weeds, among tree/shrub roots and overhanging branches etc. For a pond with 6 microhabitats, 30 seconds is spent sampling each area.

The total 3 minute sampling time refers only to the time of active sampling and does not include time moving between microhabitats.

Each microhabitat is netted vigorously to dislodge and collect creatures. In ponds with stony or sandy substrates, the bed of the pond should be kicked up to disturb and capture creatures. Deep accumulations of silt should be avoided as muddy water makes finding creatures very difficult.

The sample is then emptied onto the tray which should contain enough water to allow the creatures to move around (3-5mm). Any large stones, twigs, leaves etc are removed to make viewing easier (examine these items for creatures before returning them to the pond). The sample is then carefully sorted and all species recorded. It may take a couple of minutes for you to 'get your eye in' and see anything at all, so be patient – there is virtually always something present! A white plastic teaspoon and cup will help with catching and identifying the smaller creatures.

### **3.2.2 Additional invertebrate sampling**

After completing the sorting, return the entire sample to the water and wash the net and tray. Additional records can be made of species present in the pond but not collected by the net sample. These could include creatures firmly attached to the underside of stones and fast moving surface dwellers such as pond skaters. A couple of minutes should be spent looking for these; and any species found that were not present in the 3 minute sample should be recorded separately.

## **4.0 Results**

### **4.1 What you do with the results**

When you have completed the survey form for a pond, or set of ponds, please return, it by post or hand, to the Project office. You will then be given the opportunity to choose some more ponds to survey!

When you have completed your final survey, please return the surveying equipment to the Project office.

### **4.2 What we do with the results**

The pond survey results will be inputted onto a database. The information will be used to draw a picture of the current state of ponds, both on an individual basis and on a valley-wide scale. The results will then be used to meet the aims of the Project:

- Determine the current rate of decline in the number of Ivel valley ponds and use the figures as an incentive to prevent further losses.
- Determine the health of a range of countryside ponds (in woodlands, meadows, arable land, etc) through the surveying of physical characteristics, flora and fauna.
- Identify those ponds which are under the greatest threat and those which are of greatest wildlife and amenity value; and promote their positive management.
- Identify sites of old ponds and where appropriate promote their restoration.
- Identify appropriate sites for the creation of new ponds.
- Secure funding for the management, restoration and creation of ponds in the Ivel valley.