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DARFIELD-UPON-DEARNE ENHANCEMENTS

ECOLOGY SURVEYS

May 2009

Jerome Masters (Fisheries Technical Officer)

ea/br/e/std/v1

1.0 INTRODUCTION

Our project consists of:

- Converting the Environment Agency owned weir at Darfield (SE 42300 04713) into a rock ramp structure, passable to fish and invertebrates.
- Building a car park on Environment Agency owned land near to the right bank[1] of the River Dearne at Darfield (SE 42065 04600).
- Constructing a footpath on Environment Agency owned land along the right bank of the river to link the car park to the series of angling platforms upstream of the weir (approximately SE 42080 04613 to SE 42000 05048).
- Creating a canoe launch / recovery point on the right bank of the River Dearne, immediately upstream of Darfield Bridge (SE 42077 04590).

We are currently considering further habitat enhancement work near to the project site. This would take the form of pond creation on the left bank of the river. Possible sites are currently being investigated. These ponds will be constructed under Environment Agency permitted development powers and do not form part of our current planning application.

2.0 HABITAT SURVEY

In 1996, the National Rivers Authority carried out a River Corridor Survey (RCS) as part of their River Dearne Corridor Study. The sections of this survey relevant to our project are RCS lengths 25 and 26, covering 850 m of river. In 2008, Environment Agency Biodiversity Officers updated the survey for these lengths (Appendix 1), concentrating on the right bank, where our project works will be taking place.

2.1 RCS Length 25

Our proposed car park area is mainly vegetated with grasses. Plant species present include:

- *Dactylis glomerata* (cock's-foot)
- *Lolium perenne* (rye-grass)
- *Agrostis stolonifera* (creeping bent)
- *Alopecurus pratensis* (meadow foxtail)
- *Anthriscus sylvestris* (cow parsley)
- *Rumex obtusifolius* (broad-leaved dock)
- *Urtica dioica* (common nettle)

[1] The terms 'right' and 'left' bank refer to right and left hand sides when facing downstream.

There is a pond / wetland area within the floodplain in RCS Length 25, but not in an area we intend to develop. A turning circle will need to be created for vehicles during the construction of the rock ramp fish pass. This will be located on Environment Agency owned land upstream of the weir and will therefore not encroach into the pond / wetland area.

Species occurring around the edge of the pond are:

- *Solanum dulcamara* (bittersweet)
- *Ranunculus acris* (meadow buttercup)
- *Epilobium hirsutum* (great willowherb)
- *Urtica dioica* (common nettle)
- *Rumex obtusifolius* (broad-leaved dock)
- *Juncus effuses* (soft-rush)
- *Agrostis stolonifera* (creeping bent)
- *Glyceria fluitans* (floating sweet-grass)
- *Alopecurus sylvestris* (cow parsley)
- *Ranunculus sceleratus* (celery-leaved buttercup)
- *Phalaris arundinacea* (reed canary-grass)
- *Typha latifolia* (reedmace)

A drain runs into the river on the northern boundary of our proposed car park site. Near the drain, vegetation is dominated by *Agrostis stolonifera* (creeping bent), *Ranunculus acris* (meadow buttercup) and species similar to the pond's edge.

Beyond the ponds there are mature trees with potential to be bat roosts, but these are away from the area of works.

2.2 RCS Length 26

The riverbank and banktop strip comprise tall herbs, coarse grasses and bare ground. Plant species present include:

- *Dactylis glomerata* (cock's-foot)
- *Poa trivialis* (rough meadow-grass)
- *Arrhenatherum elatius* (false oat-grass)
- *Alopecurus pratensis* (meadow foxtail)
- *Anthriscus sylvestris* (cow parsley)
- *Heracleum sphondylum* (hogweed)
- *Lolium perenne* (rye-grass)
- *Plantago major* (greater plantain)

A length of bank is lined with self-seeded *Acer pseudoplatanus* (sycamore), *Quercus rober* (oak), *Crataegus monogyna* (hawthorn) and *Fraxinus excelsior* (ash), as well as stands of *Salix* (willow).

Our footpath will extend through RCS Length 26, but will this will be built away from the trees, which will be unaffected by the works.

3.0 TREE PROTECTION ORDERS

There are no Tree Protection Orders within our project boundary. Four stands of trees with Tree Protection Orders are near to our site (Appendix 2), but these will be unaffected by our works.

3.1 Mitigation

None required

4.0 AMPHIBIAN SURVEY

In May/June 2008, Ecoloserve Ltd. carried out an amphibian survey of the pond area in RCS Length 25 (Appendix 3).

Special attention was given to the presence or absence of great crested newts (*Triturus cristatus*), a species which is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981. The legislation protects these newts and their place of shelter. The protection extends to 500 m from any breeding pond. If great crested newts are present, then a licence would be required from Natural England and suitable mitigation measures would need to be in place before work could start. However, no evidence of great crested newts was found and so a license will not be needed.

Low numbers of toad *Bufo bufo* and smooth newt *Lissotriton vulgaris* tadpoles were found. The low numbers of amphibians in what appears to be a suitable habitat might be attributable to the extreme flooding in this location in the summer of 2007.

4.1 Mitigation

None required

5.0 WATER VOLES

A water vole survey was carried out within the project boundary in 2002, based on River Corridor Survey lengths.

In length 25, no water vole signs were found, although the habitat was suitable for most of its length, and bankside '*tunnels*' were noted. There was a high level of disturbance noted from dogs and humans.

In length 26, most of the length was fringed by trees and scrub making it generally unsuitable for water voles, although one water vole latrine was found and feeding signs.

A further survey was carried by our Ecological Appraisal team on 13 June 2008. The survey was carried out from a boat, along the right-hand bank. During the survey several water vole burrows were found (Table 1). The majority of burrows found were in clearings between trees.

No other water vole signs were found alongside burrow sites, which would normally indicate an inactive burrow. But the steepness of the river bank (with little area for footprints) and recent rainfall (which may have washed over latrine sites) provide reasons for treating these burrows as active.

The survey was difficult to carry out along some sections due to thick overhanging trees preventing close access to the bank. No burrows or signs were spotted in these areas but, due to the problems with visibility and access, an Environment Agency Biodiversity Officer examined these areas from the bank in October 2008. In addition to the signs recorded in Table 1, a possible tunnel through vegetation was discovered at this time at approximately SE 42295 04733.

A final water vole survey is being conducted on 28 May 2009. This will focus on the area around our canoe launch / recovery site, immediately upstream and downstream of Darfield Bridge.

Table 1. List of water vole signs and their locations (working upstream)

Water vole sign	NGR	Comments
Footprints	SE4205904555	Downstream of the road bridge and riffles.
Burrows	SE4209104604 to SE4216904630	Downstream limit marked by solitary willow and upstream limit marked by CSO on opposite bank.
Burrows	SE4223404636	Opposite stone outfall, in clearing between willows.
Burrows	SE4226004658	In clearing between willows and beech.
Burrow	SE4230304749	At fishing peg 4.
Burrow	SE4229505044	On bend opposite outfall.
Latrine	SE4198605064	

5.1 Mitigation

The car park will be placed so as to keep the edge over 5 m from the bank top and from a drainage ditch running into the river (also water vole habitat).

The footpath will be placed to the landward side of the flood bank where possible, to avoid excessive disturbance to the river bank.

Work to the weir will involve some disturbance to the bank, for 20 – 30 m downstream of the weir. From our 2008 survey, the nearest burrow downstream was about 70 m below the weir. Although no burrows were found within our working area, as a precaution, for 30 m downstream of the weir, prior to works we will cut vegetation to a height of 10 cm to 15cm.

The canoe launch / recovery point involves regrading approximately 30 m of bank immediately upstream of Darfield bridge. This area is being surveyed for burrows in May 2009. We will follow the displacement guidelines in Strachan and Moorhouse (2006)[2], as appropriate depending upon the results of the survey. If burrows are found within the footprint of the canoe launch / recovery site, detailed method statements will be prepared by contractors and submitted to Natural England for approval, based on the recommendations of Strachan and Moorhouse (2006). Following construction of the launch / recovery point, pre-planted coir rolls will be secured along the river edge to provide a fringe of riparian vegetation.

If any signs of water voles are found during the work, we will ask contractors to stop work immediately and contact an Environment Agency Biodiversity Officer for advice.

[2] Strachan R., Moorhouse T. (2006) Water Vole Conservation Handbook Second Edition. *Wildlife Conservation Research Unit, University of Oxford*

6.0 OTTERS

An otter survey within part of the project boundary was completed in March 2005 (Yorkshire Wildlife Trust) in report Site 7 Mill Houses Bridge. From the report:

"There is poor habitat either side of the river but the best is at the upstream end where the disused railway passes close to the river. There is access to both banks including dog walking. The only potentially suitable area to lay up is the disused railway line. The bridge is passable in high flows and mink are active in the area with food remains, numerous scats and prints. Evidence of otter (very old), mink and himalayan balsam were recorded at the site."

Our proposals are not in the area of the disused railway line, and are not likely to disturb the disused railway line. Our project will also not prevent the nocturnal passage of otters along the river bank. No further otter survey work has been undertaken.

6.1 Mitigation

None required.

7.0 FISH

Boat-based electric fishing surveys were conducted along 100 m lengths of river upstream (SE 41855 05371) and downstream (SE 42064 04559) of Darfield weir on 20 June 2008. Eight species of coarse fish were caught upstream of the weir and ten species downstream (Table 2). The numbers of fish caught of each size are shown in Appendix 4.

7.1 Mitigation

Work will take place outside of the coarse fish spawning season (15 March to 5 June inclusive). Best practice (including appropriate sediment control techniques) will be followed to prevent disturbance of the watercourse.

Table 2. Number and species of fish caught during a boat-based electric fishing survey of the River Dearne, Darfield on 20 June 2008, upstream and downstream of Darfield Weir.

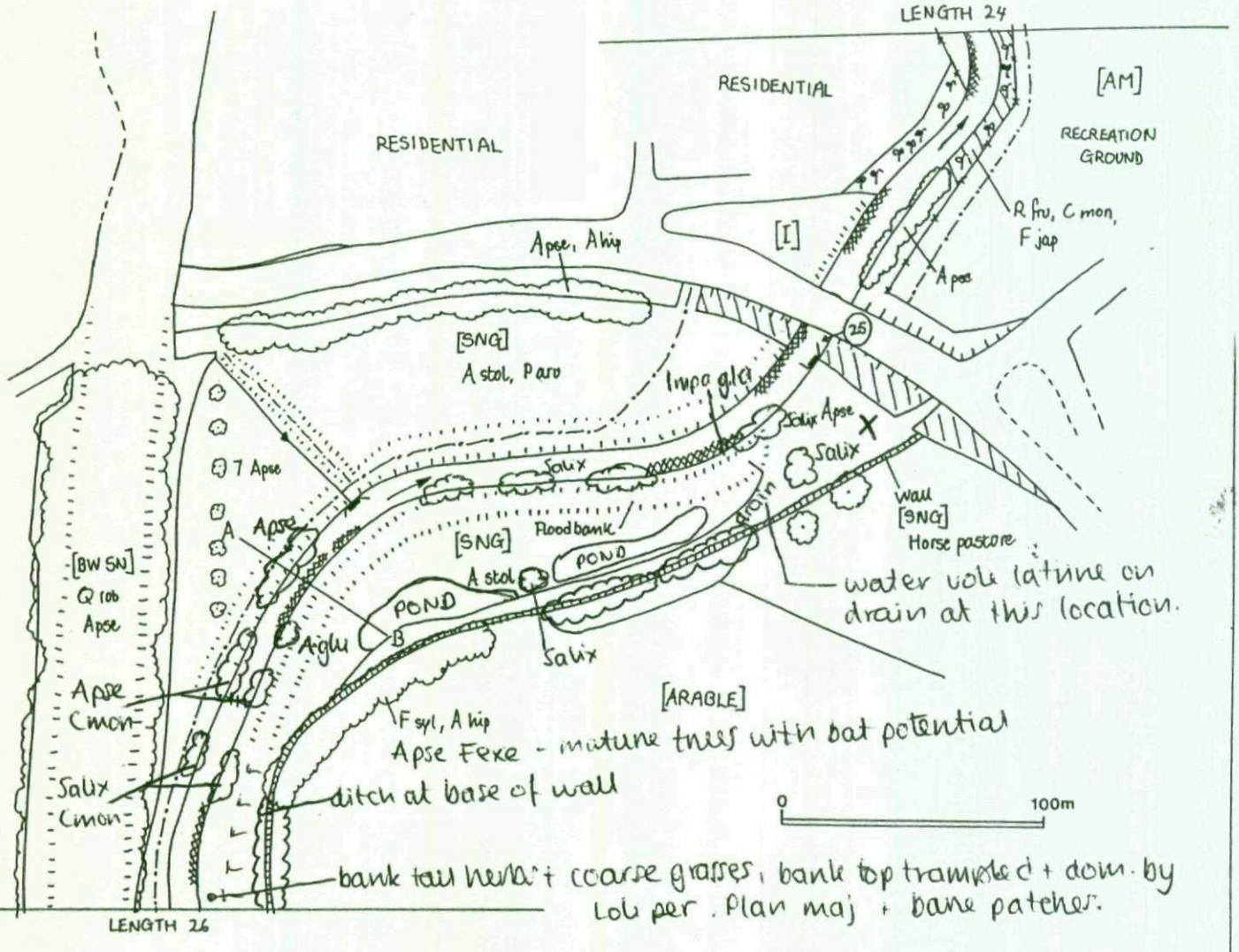
Species	u/s of weir	d/s of weir
barbel	3	4
bream		16
carp (common)		3
carp (mirror)		2
chub	16	14
dace	1	2
gudgeon	9	27
perch	4	7
pike	3	4
roach	28	23
minnow	2	
tench		3

APPENDIX 1:

River Corridor Survey maps completed in 2008, based on a previous survey conducted in 1996.

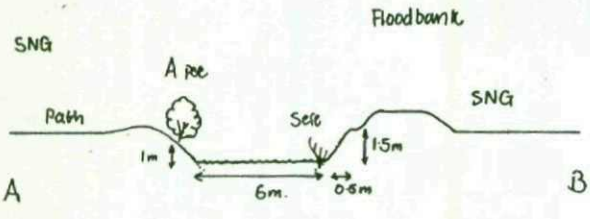
× Proposed car park area mainly Dact glo, Lol per, Agro sto, Alop pra, Anth syl, Rume obt, Urti dio.
Towards ~~pond~~ edge near Salix and drain it is wetter, dominated by A sto, Ranu acr and species similar to pond edge.
Trees need to be cut back for access – no bat potential.

SE 4202 0445



SE 4232 0476

River Dearne	
Length number: 25 Name: Paul Robinson Date: Dec-95	NORTH



PONDS edges

Sola dul	Junc eff	Phal aru
Ranu rep	Agro sto	Typh lat
Epil hir	Glyc flu	
Urti dio	Alop pra	
Rume obt	Ranu sce	

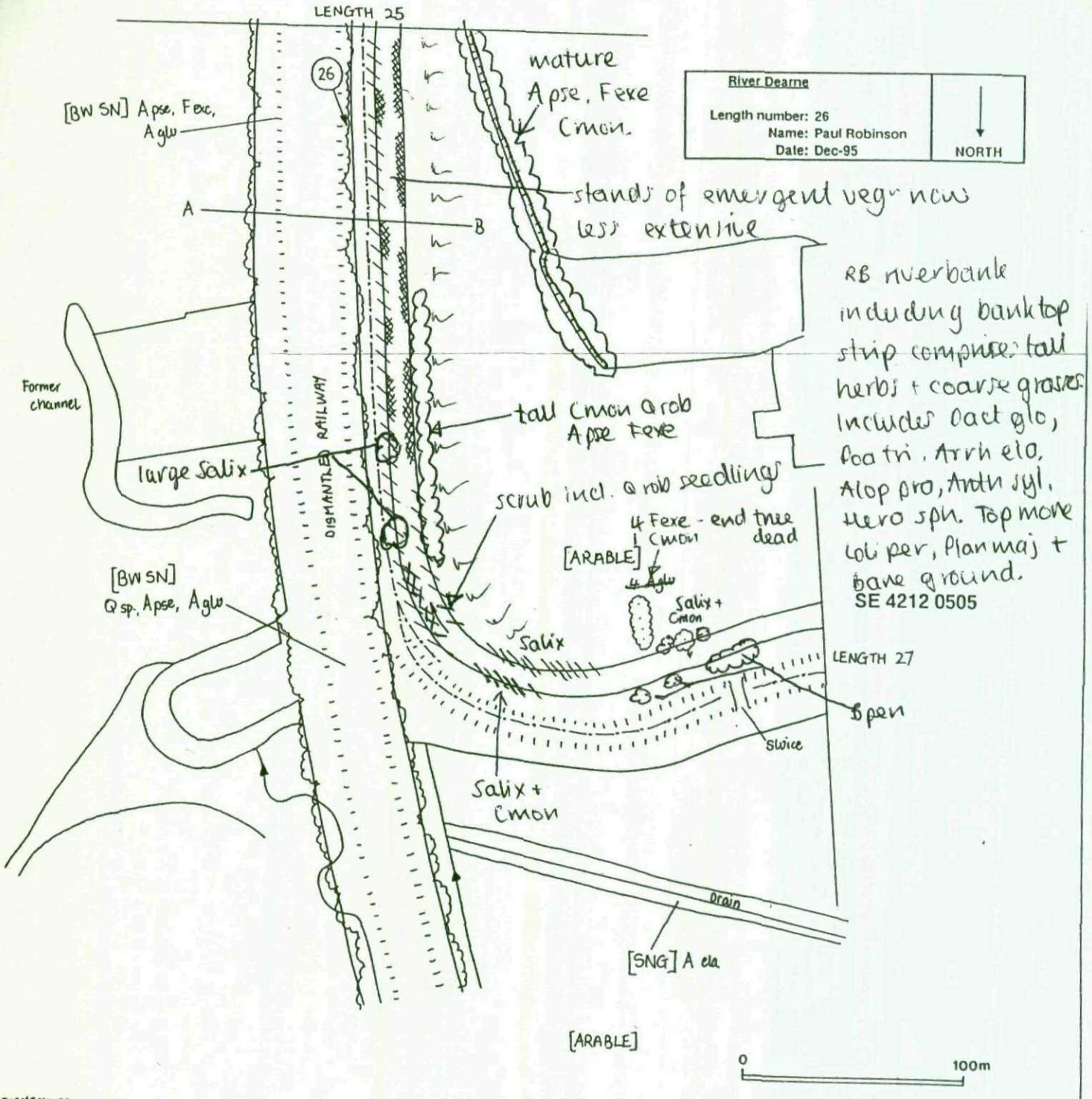
21 MAY 2008

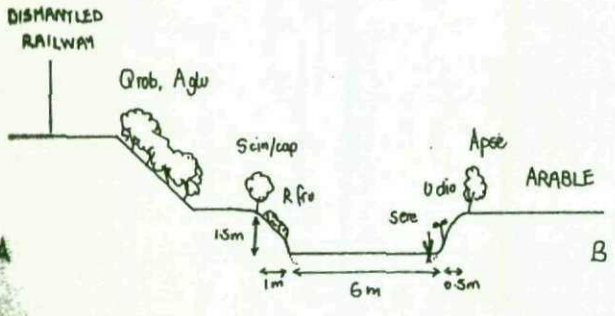
walk over survey of right bank to note changes + features of interest

ALB, AP, JH.

PENNY ANDERSON ASSOCIATES CONSULTANT ECOLOGISTS 52 LOWER LANE, CHINLEY, STOCKPORT, CHESHIRE, SK12 6BD	
TITLE: R.C.S. Length 25	
CLIENT: National River Authority Northumbria and Yorkshire Region	
PROJECT: River Dearne Corridor Study	
DATE: Jan '96	Figure 26

SE 4232 0476





21 MAY 2008

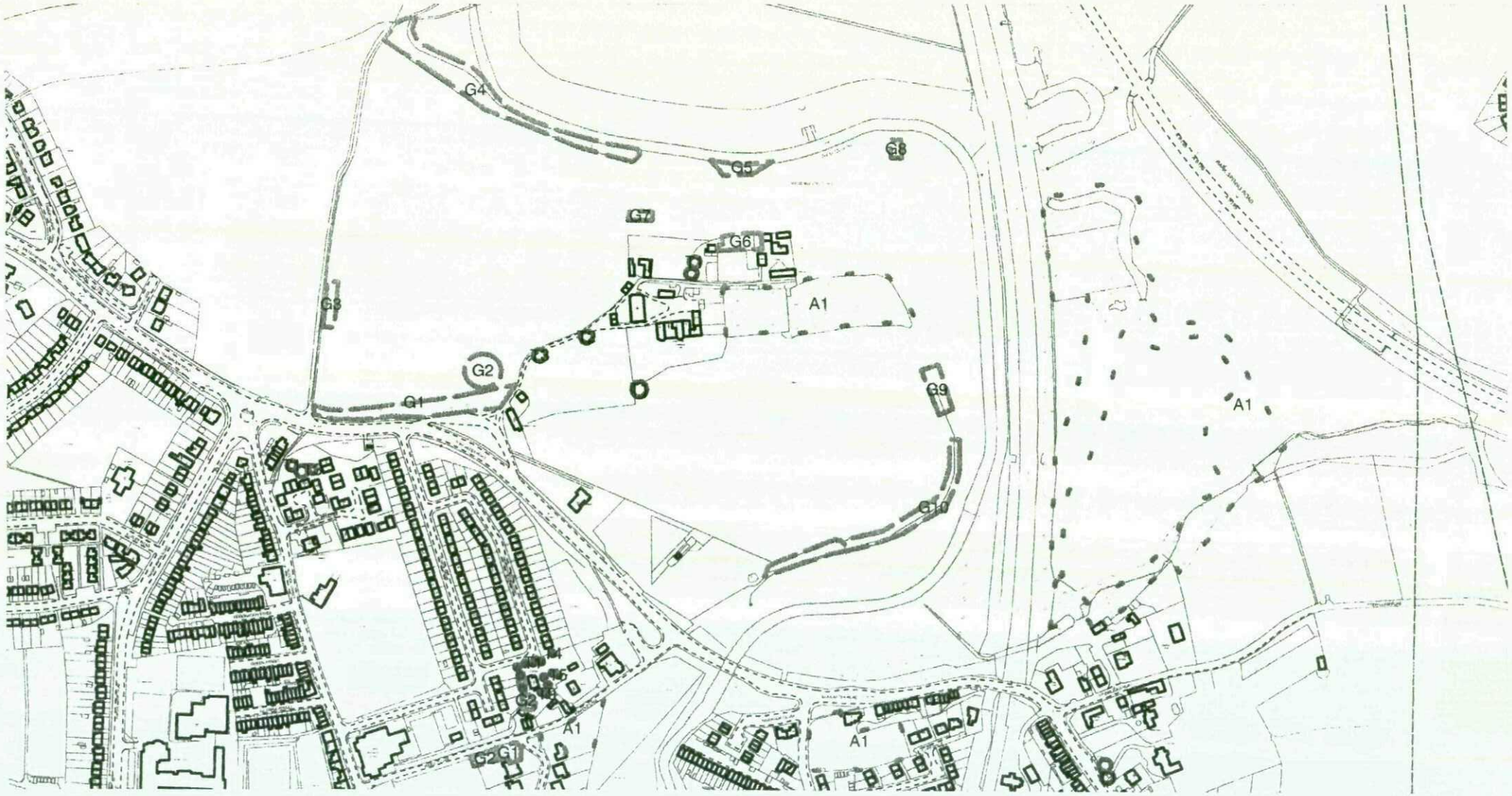
walkover survey of right bank to note changes + features of interest.

ALB, AP, JH

PENNY ANDERSON ASSOCIATES CONSULTANT ECOLOGISTS 52 LOWER LANE, CHINLEY, STOCKPORT, CHESHIRE, SK12 6BD	
TITLE: R.C.S. Length 26	
CLIENT: National River Authority Northumbria and Yorkshire Region	
PROJECT: River Dearne Corridor Study	
DATE: Jan '96	Figure 27

APPENDIX 2:

Tree protection orders within the vicinity of the project boundary.


G4
G5
G8
G7
G6
A1
G8
G2
G1
G9
A1
G10
A1
A1
G2
G1

APPENDIX 3:

Great crested newt and other amphibians survey

Ecoloserve
Ecologists for Business

Darfield Bridge. Barnsley.
Great Crested Newt (*Triturus cristatus*) and other Amphibians Survey.

May – June 2008

Ecoloserve
Ecologists for Business

Darfield Bridge. Barnsley.
Great Crested Newt (*Triturus cristatus*) and other Amphibians Survey.

Survey carried out by;

Ecoloserve Ltd.

Sergeants House
36 Edderthorpe Lane
Darfield
Barnsley.
S73 9AT
Tel. 01226 751105
Email ecoloserve@btinternet.com

Client;

Darfield Community Association

36A Snape Hill Road
Darfield
Barnsley.
S73 9JU
Email. glendasheppard@darfield.info.

In association with;

Environment Agency

Fisheries, Recreation & Biodiversity
Phoenix House
Leeds
LS11 8PG
Email. jerome.masters@environment-agency.gov.uk

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Contents	Page
1.0 Introduction	3
2.0 Brief Site Description	4
3.0 Methodology	5
4.0 Results	6
5.0 Conclusion	7
6.0 References	8
7.0 Appendices	9

Prepared By	Date
Chris Needham BSc. (Hons) MSc. MIEEM [redacted]	May – June 2008 16th June 2008

1.0 Introduction

Ecoloserve Ltd. was commissioned by the Darfield Community Association in association with the Environment Agency to carry out a survey at Darfield Bridge, Barnsley.

The purpose of the survey was to assess whether great crested newts and other amphibians were present at a pond at Darfield Bridge.

Natural England - Great Crested Newt Licence Number; 20081069.

2.0 Brief Site Description

The pond at Darfield Bridge is approximately 8km east south east of Barnsley Town Centre at Grid Reference SE 421 046.
Access to the pond and associated marsh is from the A635 Doncaster Road along the track that leads upstream along the left hand side of the river from the river bridge (see Appendices, Diagram 1). The pond is approximately 170m long and 40m wide, however because of reeds the area of open water is much smaller than this.

The initial impressions of the pond and marsh is of a small but valuable wildlife refuge that could easily be classified as a local nature reserve.
A number of birds were seen during the survey including kingfishers (*Alcedo atthis*) carrying food for young, heron (*Ardea cinerea*), gadwall (*Anas strepera*), young mallards (*Anas platyrhynchos*) and young moorhens (*Gallinula chloropus*).

Large areas of the river bank are dominated by cow parsley (*Anthriscus sylvestris*) and in the field surrounding the pond there is a carpet of creeping buttercup (*Ranunculus repens*) and celery-leaved buttercup (*Ranunculus sceleratus*). Closer to the water area there are patches of reed grass (*Phalaris arundinacea*), greater reedmace (*Typha latifolia*), soft rush (*Juncus effusus*) and water plantain (*Alisma plantago-aquatica*). The surface of the pond is mostly covered with algae and common water-starwort (*Callitriche stagnalis*).
There are some impressive large mature trees oak (*Quercus* spp.), sycamore (*Acer pseudoplatanus*) and white willow (*Salix alba*) along the northern boundary of the pond.
All in all the whole area provides a very attractive setting (see Appendices, Photographs 1 to 4).

3.0 Methodology

Special attention was given to the presence or absence of great crested newts (*Triturus cristatus*). This particular species is fully protected under Schedule 5 of the wildlife and countryside Act 1981. The legislation protects these amphibians and their place of shelter. This protection extends to 500 metres from any breeding pond. The survey was carried out on four visits as per Natural England guidelines regarding this species.

Bottle trapping

This method involves setting bottle traps (made from 2-litre plastic bottles) around the water body margin, and leaving the traps set overnight. There were 80 bottle traps per survey used during this survey. Some studies indicate that bottle trapping is the most reliable method for detecting the presence of great crested newts and other amphibians, and it is especially useful for surveying turbid or weedy ponds. Bottle traps can be placed at the side of the pond while standing at the ponds edge. Where the water is shallow (30cm and less) the surveyor can place the bottles in the water while standing at the waters edge.

Egg search

This method involves searching both live and dead submerged vegetation for amphibians eggs. This is often a very effective method for detecting great crested newt presence. Vegetation in shallow (30cm and less) areas of the pond are examined.

Netting

Using a long-handled dip-net, amphibians can be captured by sampling the area around the pond edge. A perimeter walk around (parts of) the edge of the pond is carried out during every survey date to detect any adults and tadpoles (larvae).

Torch Survey

Searching the shoreline of a water body using a 1 million candlepower torch at dusk is an effecting way of detecting adult amphibians.

Restrictions on the Survey

The whole area is very pleasant and as a result attracts many people walking along the river bank. Consequently there was vigilance at all times to avoid any unwanted attention from individuals that may disturb bottle traps left over night in the pond.

4.0 Results

Pond	Great Crested Newts	Other Amphibians
Survey 1 Date 20th – 21st May 2008	None found	Male smooth newt 1 Toad tadpole 8
Survey 2 Date 26th – 27th May 2008	None found	Toad tadpole 3
Survey 3 Date 1st – 2nd June 2008	None found	None found
Survey 4 Date 4th – 5th June 2008	None found	Toad tadpole 2

Table 1.
The table of results from the survey dates.

	Date (2008)	Temperature (centigrade)	Precipitation
Survey 1	20th May Evening	12	Nil.
	21st May Morning	9	Nil.
Survey 2	26th May Evening	13	Nil.
	27th May Morning	9	Showers
Survey 3	1st June Evening	11	Showers
	2nd June Morning	10	Nil.
Survey 4	4th June Evening	15	Nil.
	5th June Morning	11	Nil.

Table 2.
Weather conditions during the survey.

5.0 Conclusion

Special attention was given to the presence or absence of great crested newts (*Triturus cristatus*). This species is fully protected under Schedule 5 of the wildlife and countryside Act 1981. The legislation protects these amphibians and their place of shelter. This protection extends to 500 metres from any breeding pond. If great crested newts were found in the pond other areas such as those nearby and adjacent to the river Dearne would have been included in the area of their protection. Before any removal of top soil or the destruction of any suitable habitat a license from Natural England and mitigation measures would have been needed. This would have affected any proposed development in the area, for example, any development at the side of the river, such as construction of fishing platforms and access tracks. However, evidence of breeding great crested newts were NOT found during the survey. Therefore a license is NOT required and the development can proceed with regard to this species.

The site is a terrific area and from the outset the pond looked suitable for great crested newts and other amphibians. As the results show, this is obviously not the case. Only one smooth newt and thirteen toad tadpoles were caught while using 80 bottle traps on each survey date. This amounts to a very low return considering that the pond looks so suitable for amphibians. Also, and surprisingly, very few aquatic invertebrates were found. It can only be assumed that these results are a consequence of last years (2007) heavy flooding in this particular area. The flooding seems to have washed the pond clear of much of its amphibian and invertebrate life. Only three-spined stickleback (*Gasterosteus aculeatus*) were found to be present in reasonable numbers.

Further to this, there is a considerable amount of fine silt to a depth of about 20cm on the bed of the pond. Also, parts of the eastern section of the pond smells of raw sewage when disturbed, for example while wading through the pond. Again the silt and raw sewage can only be attributed to the actions of the flood water washing these into the pond. The result of pollution can be seen in the algae on the water surface see Appendices, Photograph 6.
Even though the area seems to have suffered from these floods the area is still scenically attractive and has some value for other forms of wildlife and therefore if possible should be maintained in its present form.

6.0 References

English Nature. (2001) *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

Langton T, Beckett C, Foster J. (2001) *Great Crested Newt Conservation Handbook*. Froglife.

7.0 Appendices

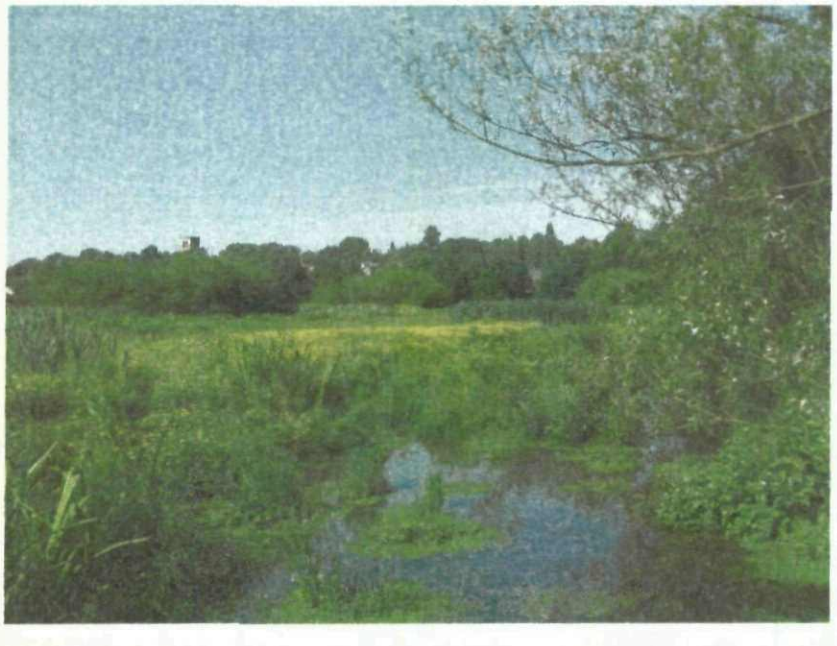
A) Photographs.

B) Diagram 1.

A) Photographs.



Photograph 1.
The pond and associated marsh is in an attractive setting with Darfield Church standing on the hillside.



Photograph 2.
The whole area is reminiscent of a nature reserve.



Photograph 3.
A carpet of buttercups surround the pond.



Photograph 4.
Impressive large mature trees grow along the northern edge of the pond.



Photograph 5.
Algae and large mats of common water-starwort (*Callitriche stagnalis*) cover the water surface.



Photograph 6.
There is a smell of raw sewage in the eastern parts of the pond. The quality of water in these sections of the pond look heavily polluted and dominated by algae.

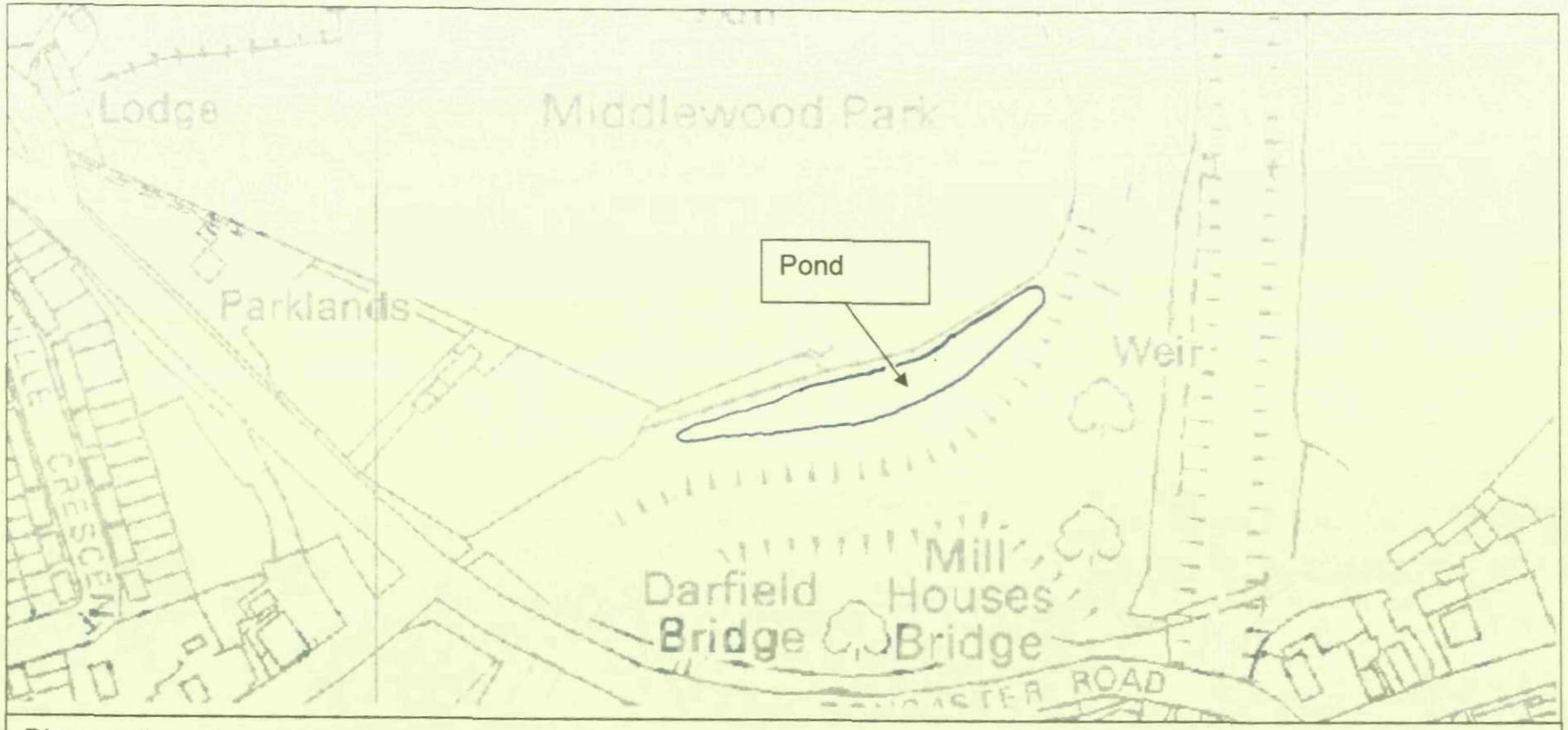


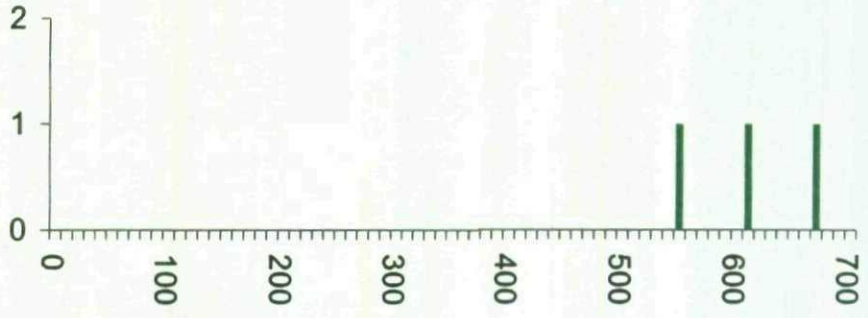
Diagram 1.
Pond at Darfield Bridge

APPENDIX 4:

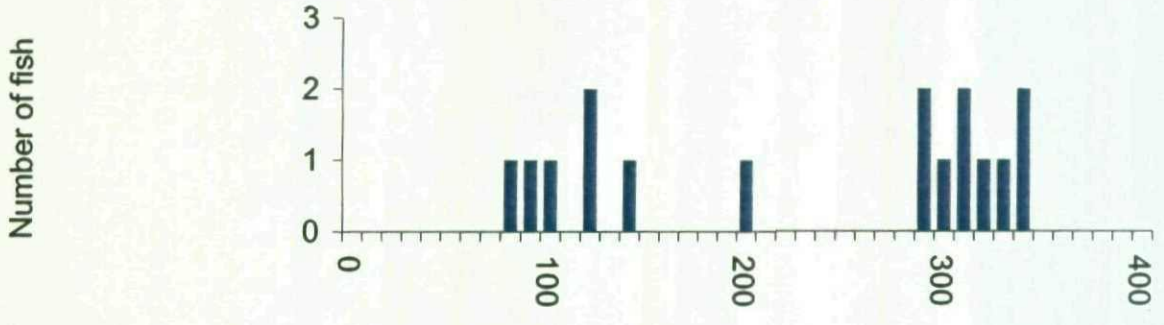
Numbers and lengths of fish of each species caught i) upstream and ii) downstream of Darfield weir during an electrofishing survey of the River Dearne at Darfield on 20 June 2008.

i) The numbers of fish of each size for all species caught upstream of Darfield weir on 20 June 2008.

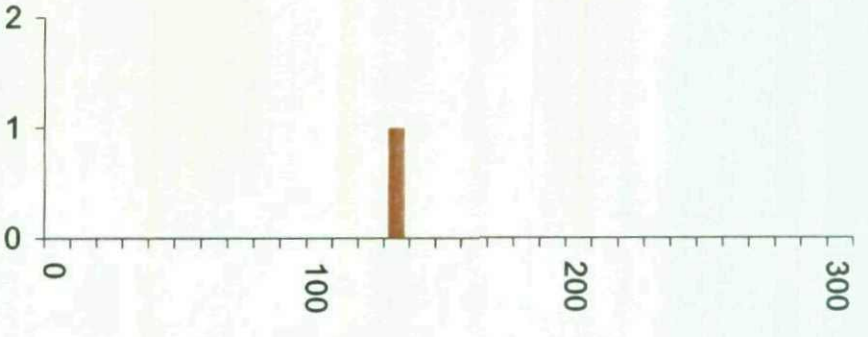
a) barbel



b) chub

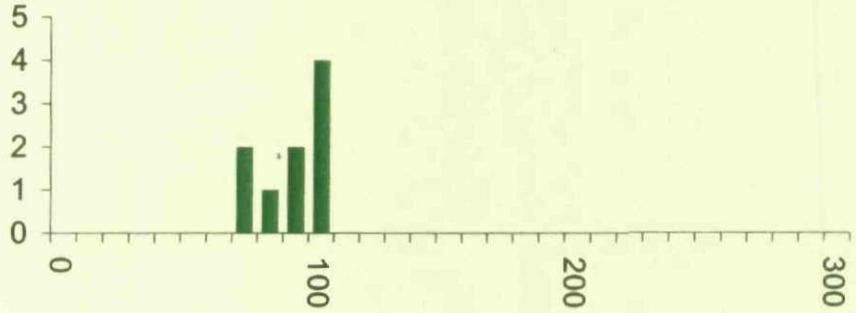


c) dace

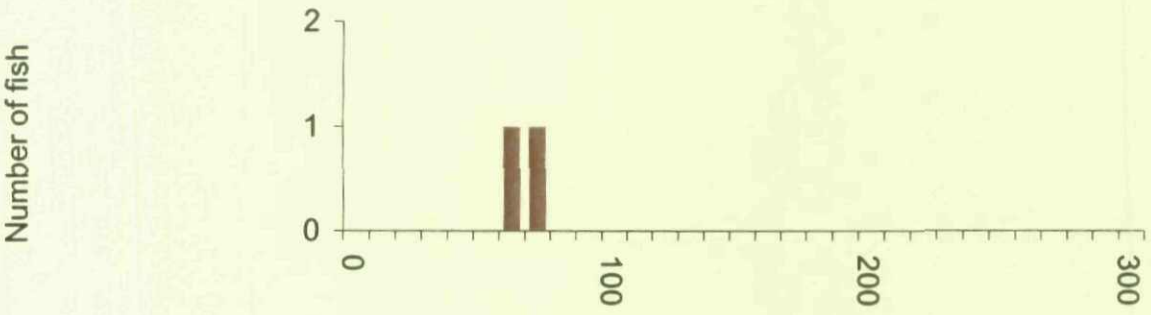


i) Continued

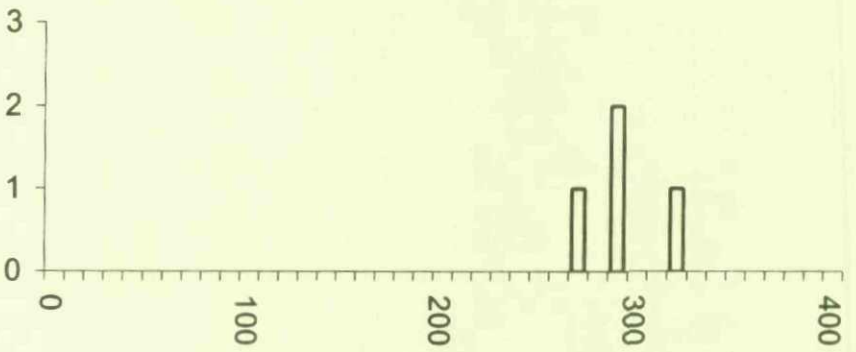
d) gudgeon



e) minnow

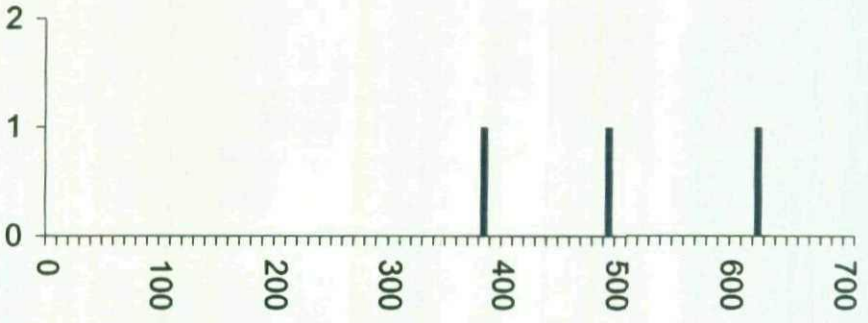


f) perch

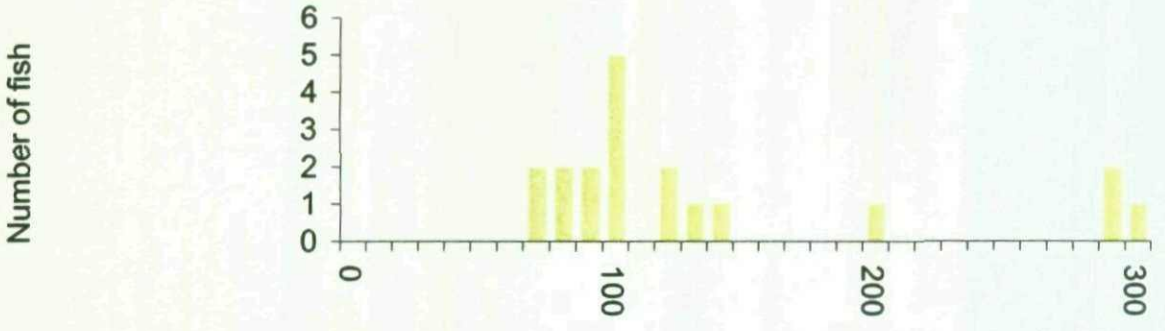


i) Continued

g) pike

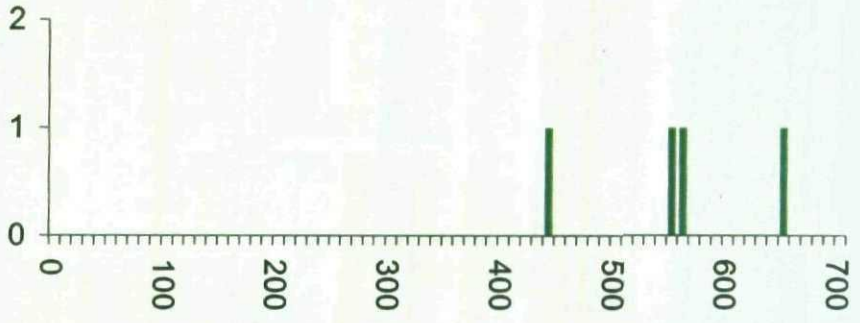


h) roach

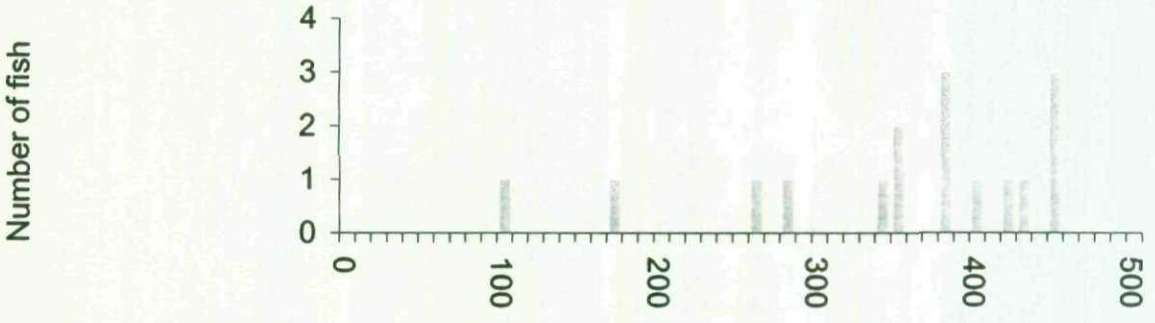


ii) The numbers of fish of each size for all species caught downstream of Darfield weir on 20 June 2008.

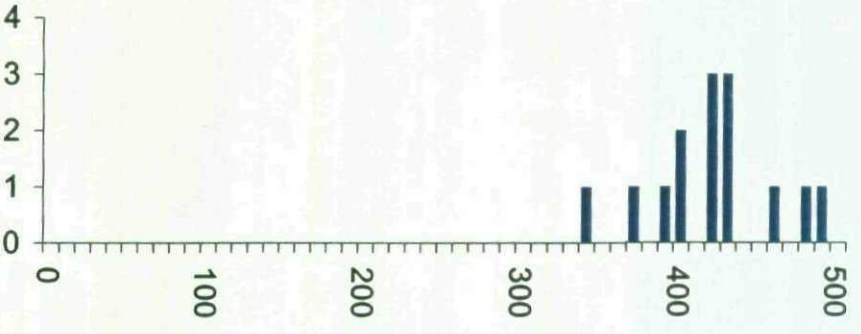
a) barbel



b) bream

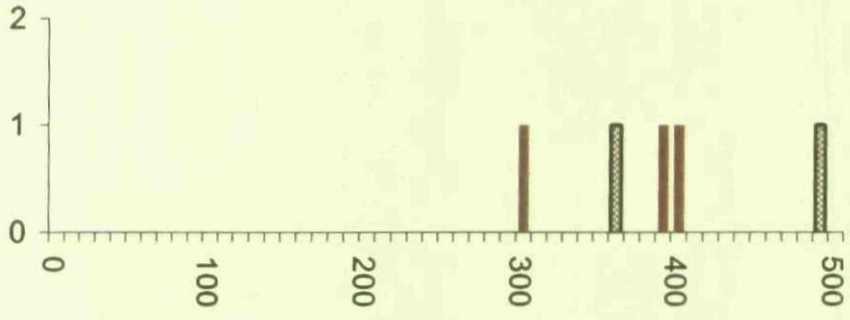


c) chub

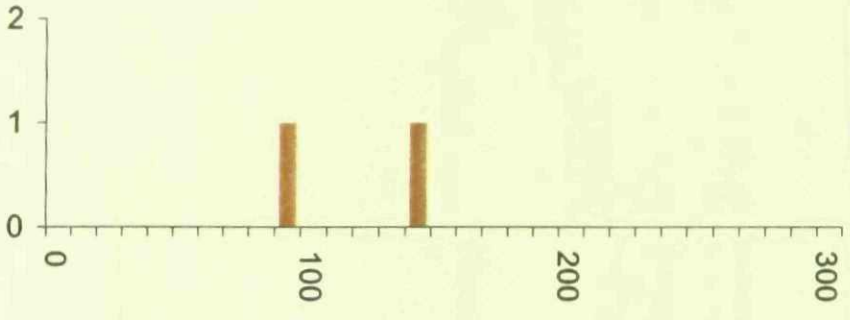


ii) Continued

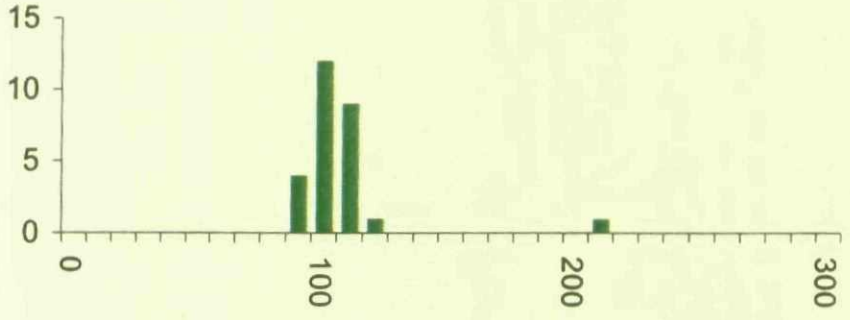
d) common carp (solid bars) and mirror carp (chequed bars)



e) dace



f) gudgeon

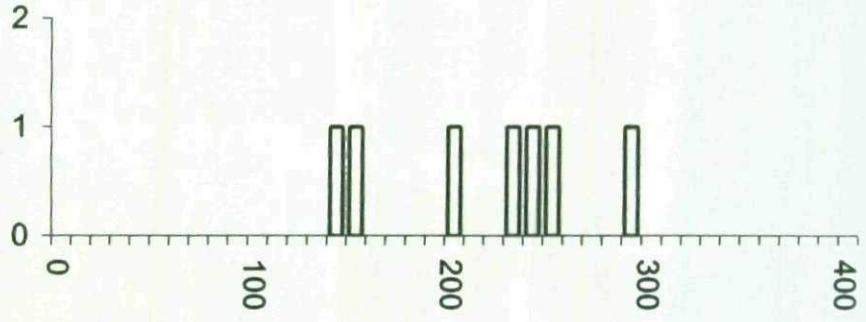


Number of fish

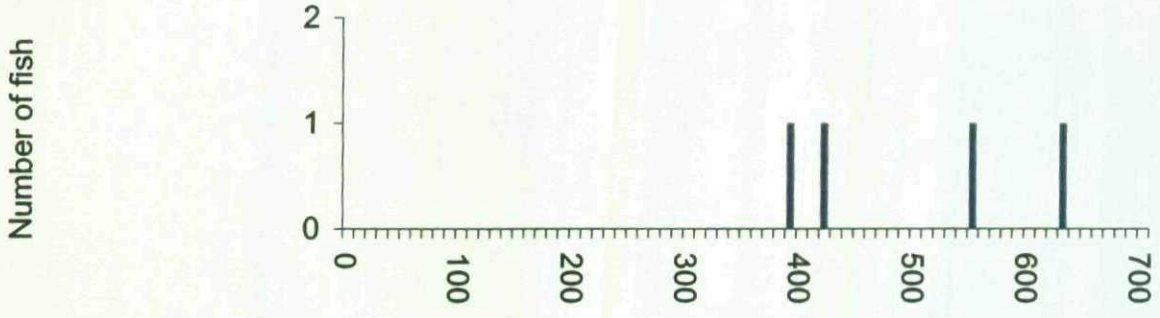
Length mm

ii) Continued

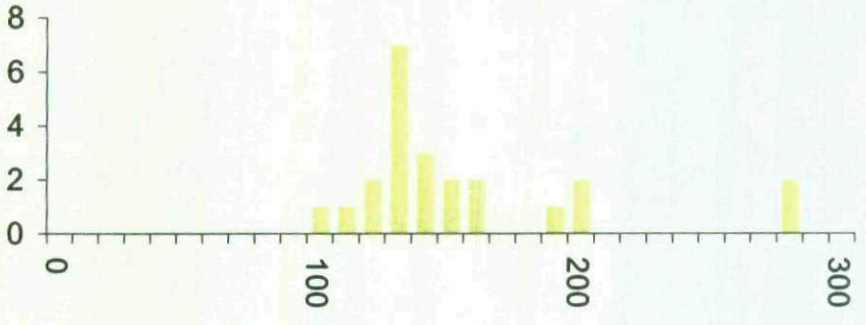
g) perch



h) pike



i) roach



Length mm

ii) Continued

j) tench

