



Harper Adams
University College
Shropshire

**NEWT SURVEY OF
HARPER ADAMS UNIVERSITY
COLLEGE PONDS**

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Contents

CHAPTER 1: INTRODUCTION	3
1.1 Background	3
1.2 Objectives of the Survey	5
1.3 Legislation	5
1.4 The Survey Methodology	7
CHAPTER 2: THE PONDS	
2.1 Ornamental Pond	8
2.1.1 Survey Results	9
2.1.2 Evaluation and Recommendations	10
2.2 Animals' Unit Pond	13
2.2.1 Survey Results	14
2.2.2 Evaluation and Recommendations	15
2.3 Off-Road Track Keyhole Pond	16
2.3.1 Survey Results	17
2.3.2 Evaluation and Recommendations	17
2.4 Off-Road Track Tank Pond	19
2.4.1 Survey Results	19
2.4.2 Evaluation and Recommendations	20
2.5 Marlpit Leasow Pond	21
2.5.1 Survey Results	21
2.5.2 Evaluation and Recommendations	22
2.6 Newpool Plantation Pond	23
2.6.1 Survey Results	24
2.6.2 Evaluation and Recommendations	24
2.7 Upper Wood Leasow Pond	25
2.7.1 Survey Results	26
2.7.2 Evaluation and Recommendations	26
CHAPTER 3: NEWT HABITAT ENHANCEMENT & AGRI-ENVIRONMENT SCHEMES	27
CHAPTER 4: RECENT UK SURVEY INFORMATION	28
CHAPTER 5: METAPOPULATIONS	28
CHAPTER 6: SUMMARY	29

1. INTRODUCTION

1.1 Background

On the Harper Adams University College (HAUC) 343 hectare site, there are seven ponds which provide suitable habitat conditions for newts to breed. Some ponds are in the College-managed grounds whilst others are sited within the College commercial farm area or the Engineering Department off-road track.

The two species of newt found previously at HAUC are the great crested newt (*Triturus cristatus*) and the smooth or common newt (*Lissotriton vulgaris* formerly *Triturus vulgaris*).

The purpose of the surveys was to provide some baseline data on presence and absence of species and, where possible, some indication of population levels. It is anticipated that this information will be used by teaching staff and for student research projects in the future. Since individual great crested newts can be identified by their distinctive belly patterns, recording of these annually will indicate longevity of individuals and possible movement of newts between ponds on the site.



All surveys were carried out by the authors, who both have Natural England great crested newt survey licences and monitoring followed Natural England guidelines.¹ They were assisted by student volunteers on some occasions in order to comply with Health and Safety procedures.

In May/June 2008, Ecological Consultant Will Watson was commissioned by the College to undertake a survey of the ponds in order to determine any mitigation necessary for the new proposed Regional Food Academy.

The survey monitored species in four ponds within the 500m Natural England guidelines for mitigation of protected newt species. The report² concluded that no EPS licence was

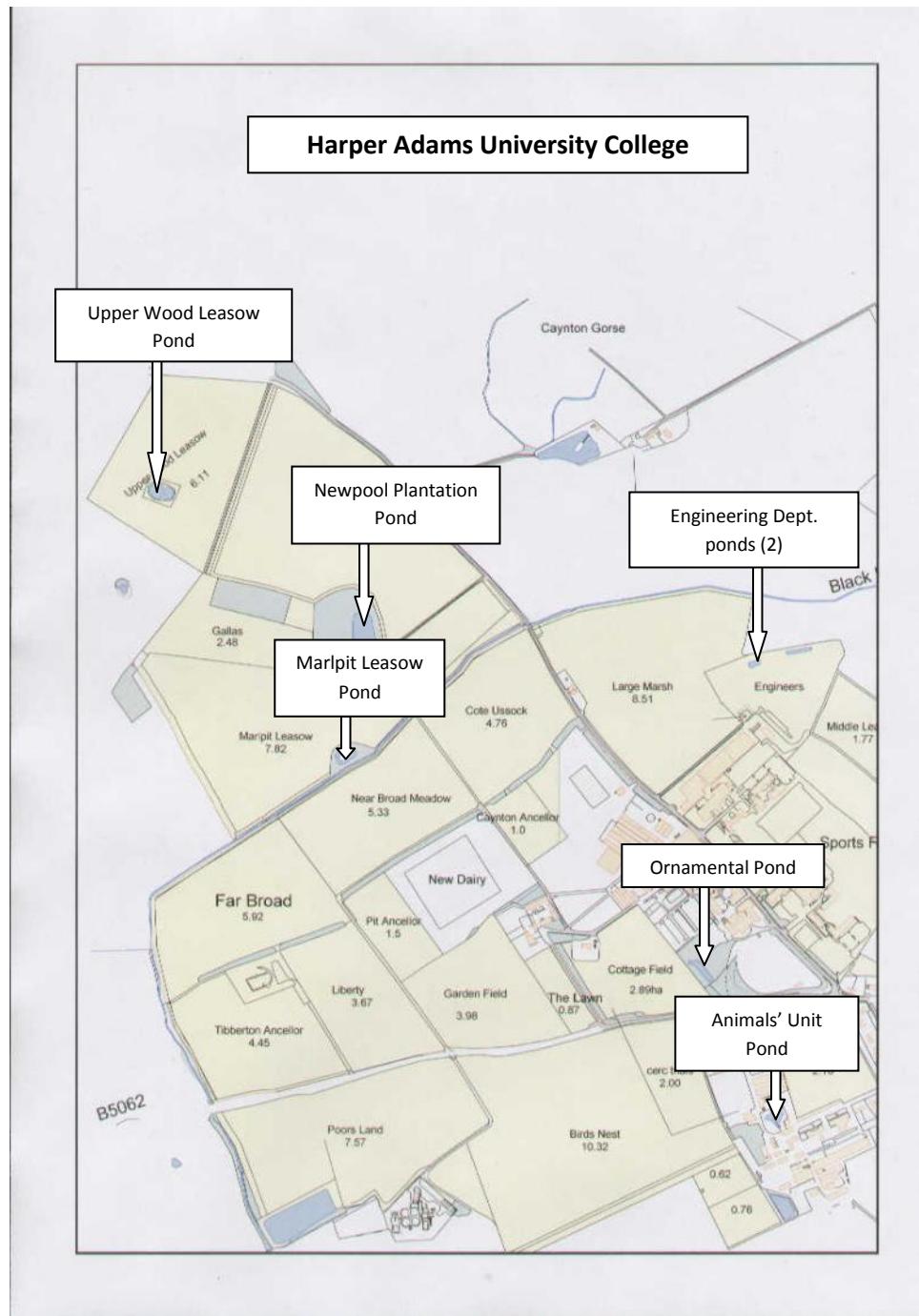
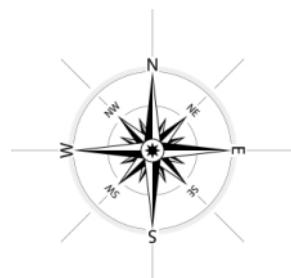
¹ Natural England 2001: great crested newt mitigation guidelines.

² Great Crested Newt Report May 2009: Will Watson, Consulting Ecologists. WRCW/1610/01. Copy available from HAUC estates dept

necessary and that some recommendations were given when the building work commenced in order to protect any great crested newts that may appear on the site.

This survey has considered all seven pond areas at HAUC and as it is known that newts may travel up to 1 km, it is therefore possible that under suitable conditions, there may be considerable movement between the sites via both natural and man-made wildlife corridors.

Map showing the site location of the ponds surveyed.



1.2 Objectives of the Survey

1. To identify the species of newt present and the sexes of individuals on each pond.
2. To indicate a quantitative assessment of great crested newt species found.
3. To investigate, through egg and larval searches, whether the ponds showed evidence of the newts breeding.
4. To undertake full Habitat Suitability Indices (HSI) assessment of each pond.
5. To provide recommendations for improvement or enhancement of the habitats surveyed for amphibian species.
6. To collate all data in a report which can be accessed by staff and students on site.

1.3 Legislation

Great crested newts (GCN) are protected under the following legislation.

- Annexes II and IV of the EC Habitats Directive;
- Appendix II of the Bern Convention;
- Schedule 2 of the Conservation (Natural Habitats, etc.) Regulations, 1994, (Regulation 38) and Schedule 5 of the Wildlife and Countryside Act 1981;
- The Countryside and Rights of Way Act 2000 (CROW 2000) and the NERC Act 2006.

The national status of the great crested newt is classified as 'vulnerable' and the UK, particularly the Midlands (mainly Cheshire) region, is regarded as a stronghold of the species. Information on this Biodiversity Action Plan (BAP) species and its status nationally is given in the UK Biodiversity Action plan website³.

Relevant legislation from Schedule 5 of the Wildlife & Countryside Act 1981⁴, Section 9, is as follows.

- Section 9(1) of the Act makes it an offence to *intentionally* kill, injure or take great crested newts.

³ UK Biodiversity Action Plan available on <http://www.ukbap.org.uk/UKPlans.aspx?ID=619>

⁴ Wildlife and Countryside Act available on <http://www.jncc.gov.uk/page-1377>

- Section 9(2) makes it an offence to possess or control a live or dead great crested newt or any part or thing derived from them.
- Section 9(4) makes it an offence to *intentionally* damage, destroy, obstruct access to, any structure or place which great crested newts use for shelter or protection. It is also an offence to *intentionally* disturb them while occupying a structure or place which it uses for that purpose.
- Section 9(5) makes it an offence to sell, offer or expose for sale, or possess or transport for the purpose of sale, any live or dead great crested newt or any part or thing derived from them. It is also an offence to publish or cause to be published any advertisement likely to be understood as conveying that great crested newts, or parts or derived things of them are bought, sold or are intended to be.
- Section 9 applies to all stages in the life cycle of newts.

Their inclusion in Schedule 2 of the Conservation (Natural Habitats etc) Regulations 1994 affords great crested newts extra protection by also making it an offence under Regulation 39(1) to *deliberately* capture, kill or disturb great crested newts or to *deliberately* take or destroy their eggs, or damage or destroy a breeding site or resting place. Regulation 39(2) makes it an offence to keep, or transport, or exchange great crested newts or any part or thing derived from them. Paragraphs 39(1) and 39(2) apply to all stages of their life cycle.

This level of legal protection allows areas to be designated as Sites of Special Scientific Interest (SSSI) and/or Special Areas of Conservation (SAC) for the presence of great crested newts. These designations bring legal restrictions to the management and operations that can occur in such sites, to help conserve the great crested newt and the specific habitats it requires.

1.4 The Survey Methodology

The methods used for surveying the ponds at Harper Adams University College follow the guidance given in the Great Crested Newt Mitigation Guidelines (Natural England 2001) and the Great Crested Newt Conservation Handbook (Froglife 2001).

The techniques selected for the survey were:

- bottle trapping;
- egg searching;
- netting (off-road track ponds only)—this was avoided on most of the ponds to prevent habitat disturbance and damage.

Surveys were undertaken between March and June on the aquatic habitats when temperatures were above the recommended survey minimum of 5°C.

All the newts which were caught were identified for the species and sex. All great crested newt adults were photographed to record the belly patterns⁵. The belly patterns are unique to individuals and provide a basis to identify recaptured adults and to monitor longevity and future movements in the populations around the site.

The number of traps used varied depending on the site. Additionally, trap numbers were increased on the Ornamental Pond to match the previous bottle trap survey methods. The large number of ponds and the requirement for six survey days on ponds near to the College buildings (Ornamental Pond and Off-Road Track ponds) plus any ponds where great crested newt were present (Marlpit Leasow Pond) meant that there were limited staff and material resources to undertake the full six day surveys for all ponds. It is anticipated that, in the future, with greater student involvement as part of protected species teaching, more surveys over a longer period of assessment days will be possible. Although the purpose of this survey was not to assess population for the process of any possible mitigation, it did provide not only a qualitative assessment of species presence but also, in some cases, a quantitative assessment as well.

⁵ Photographs of belly patterns from the 2009 survey can be found in Appendix 1

In total, 33 survey days were undertaken with over 620 bottle traps being set over the seven pond sites assessed between April and June 2009.

Habitat Suitability Indices [HSI] (Oldham et al 2000⁶) were also assessed for each of the ponds. A copy of the HSI checklist is given in Appendix 2. Whilst the HSI indicates the suitability of a habitat for presence of great crested newt, it is very dependent on the experience of the assessor and the timing of the assessment. The degree of shade and presence of macrophytes will vary seasonally and also across each year of surveys.

For the assessment of the field ponds score (SI_8), the number of ponds within 1km of the survey ponds are counted using Natural England's mapping tool MAGIC⁷. For ponds such as the Animals' Unit Pond on the south of the site, it is likely that there are numerous garden ponds in the village of Edgmond that fall within the 1km radius of this pond and therefore the HSI_8 score is likely to be the maximum of 1.0

2.0 THE PONDS

2.1 Ornamental Pond

Photograph showing the Ornamental Pond from the north-west bank

The Ornamental Pond lies to the south west of the site and is situated at the base of a slope below the College bowling green. There is an area of open managed grassland nearby and a small wooded copse to the north of the site.

The margins primarily consist of the yellow flag iris (*Iris pseudacorus*). There were no in-pond macrophytes.

There is considerable shading from ornamental weeping willows (*Salix × sepulcralis*) on the south west side of the pond and during April there was a significant increase in duck weed



⁶ Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. 2000. Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). *Herpetological Journal*, 10, 143 - 155

⁷ Appendix 3: Map showing ponds within 1km of the survey ponds for the HSI assessment

(*Lemna minor*) which covered 80% of the pond surface over the survey period. The surrounding hedgerow to the south west, along Cottage Field, and north of the pond, along the car park, the grassy margins and presence of stone walls provide excellent refuga and wildlife corridors for movement of newts around the site.

2.1.1 Ornamental Pond: Survey results

Full grid reference: 371205, 320202

Width: 10m

Length: 80m

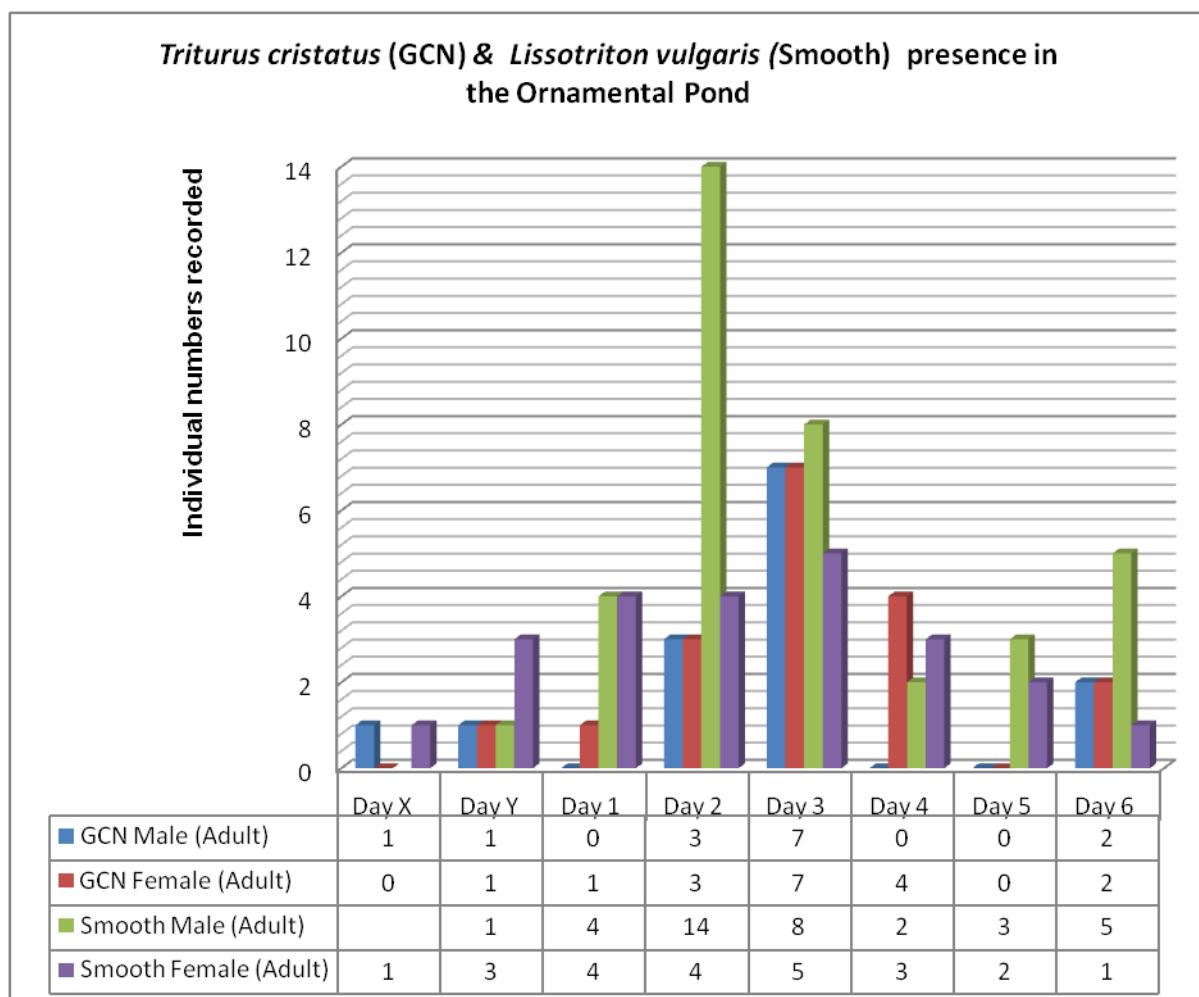
Area: 800m²

HSI score: 0.81: **Excellent** suitability for great crested newts.

Survey Dates:

Day X	Day Y	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
23/04/09	24/04/09	29/04/009	30/04/09	01/05/09	12/05/09	09/06/09	10/06/09

Figure 1. Ornamental Pond 2009



2.1.2 Evaluation and Recommendations

In total, there was a peak count of 14 great crested newts and 18 smooth newt adults were found during the survey period. This compares with a peak count of 64 individuals caught on 31/05/08. The population of both species is classed as **medium** (numbers 10 to 100). The difference in population levels between this survey and the previous year's may reflect a natural change in the population but may also be due to weather conditions and timing of the newts' presence in the pond for breeding. There is no evidence of any habitat decline or introduction of large predatory species such as fish or increased waterfowl that would account for the lower numbers. Warm weather and an early spring in April may have attracted the newts into the pond for breeding at an earlier point and, therefore, it is possible that they could have been underrepresented in the later survey results.

Male Great Crested Newt



Three egg strips, which consist of strips of thin black plastic bag attached to a cane, were placed in the pond at the start of the survey period. After only two days there was a large number of both great crested and smooth newt eggs present, showing good evidence of a breeding population. However, large numbers of eggs do not necessarily indicate that the population is increasing, since predation by fish, waterfowl and invertebrates such as the great diving beetle (*Dytiscus marginalis*) can affect recruitment. Both the adults and larval stages of the diving beetle are predatory of newt eggs and larvae. (Newt larvae are also known as efts or newtpoles.) Many diving beetles were caught during the survey period. It is also known that due to a chromosome abnormality, 50% of great crested newt eggs die within a week or two at early tail-bud development in the egg (Herpetological Conservation Trust 2001). It is therefore not necessary to actually count the eggs found during the survey, but is sufficient, under the Natural England guidelines, to record presence or absence.

Bottle trapping also indicated the presence of large populations of invertebrate food for the amphibians, including lesser water boatman (*Corixa spp*), water lice (*Asellus spp*) and very

large numbers of water fleas (*Daphnia spp*), which can form a major part of the diet for both adults and juvenile newts.

Recommendations to protect and enhance the newt populations on the Ornamental Pond area are as follows.

1. Avoid cutting the long grass near the pond as newts will be moving into this refuge area after breeding.
2. In autumn construct hibernacula as shown in the example below and/or place piles of logs and clean stones in sheltered areas near the woodland copse and hedge boundaries. This will provide a safe, frost-free, overwintering refuge for all amphibians and reptiles.

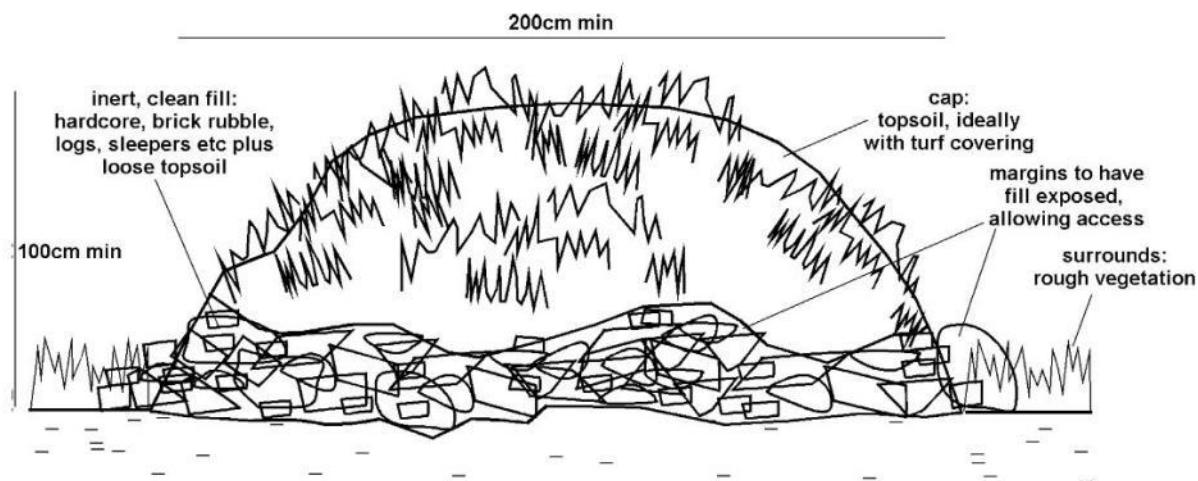


Diagram showing construction of hibernaculum

Adapted from the Great Crested Newt Mitigation Guidelines (Natural England 2001 page 42)

3. Manage the overgrown ornamental weeping willows to allow more light into the south side of the pond, which will allow the pond to warm up more quickly in spring.
4. Consider introducing some pond emergent/marginal macrophytes for egg-laying substrate such as water mint (*Mentha aquatica*) and water forget-me-not (*Myosotis scorpioides*). Also include aquatic plants such as curled pondweed (*Potamogeton crispus*) and broad-leaved pondweed (*Potamogeton natans*).
5. Monitor the water quality to avoid fertiliser nutrients from the bowling green enriching the water and causing the over abundance of duck weed which shades out

the pond for many months. Great crested newts also require open pond margins to undertake display and courtship rituals for breeding and, therefore, it is important that open areas of shallow water are maintained.

6. Consider creating a number of small shallow additional ponds behind the hedge in the adjacent field 'Cottage Field'. It could be possible to utilise the Higher Level Stewardship Scheme (HLS) if an application is made. This will provide a habitat for dispersal and will keep newts from moving towards the buildings and areas of future development. The presence of a cluster of small ponds is also important in order to maintain metapopulations which reduce species vulnerability to habitat change caused by factors such as climate change (see Section 5).

The Herpetological Conservation Trust (HCT) verify that the four main considerations for great crested newt terrestrial habitat are:

- permanent areas of refuge habitat for shelter;
- day time refuges from weather and predators;
- foraging opportunities;
- dispersal opportunities.

Whilst no terrestrial surveys were undertaken for this study, the suitability of terrestrial habitat has been assessed for the Habitat Suitability Index classification. It is anticipated that future surveys of the HAUC site will include terrestrial searches under refuga and the use of pitfall traps.

2.2 Animals' Unit Pond



Photographs showing the Animals' Unit Pond and the current work to remove some of the hybrid poplar trees on the north side of the pond

The Animals' Unit Pond is situated on the south side of the campus over the B5062 road which bisects the College site. The area to the north of the pond is currently being developed to construct a countryside courses' Outdoor Centre building for storage of



equipment, with indoor and outdoor teaching facilities. The pond has suffered from shading from overgrown hybrid poplars (*Populus x Canadensis*), some of which have been recently felled to allow light in and to prevent future problems with management of the site because of the position of the new building.

Chin pattern of a Smooth Newt

Further felling of the remaining poplars is planned over the next 10 year period.

There is little in-pond vegetation for egg-laying and most eggs were observed laid in the overhanging grass margins to the pond. There is an abundance of hibernation cover for the newts provided by the former poultry sheds. These afford excellent overwintering refuga, however, there is little long tussocky grass or shrub vegetation directly adjacent to the pond to provide nearby refuga or transit area for the newts when they become terrestrial.

There is no evidence of any significant fish populations, although it is likely that some stickleback (*Gasterosteus spp*) may be present. Waterfowl (such as moorhen) were observed but not in any large numbers.

2.2.1 Survey results for the Animals' Unit Pond 2009

Full grid reference: 371329, 31993

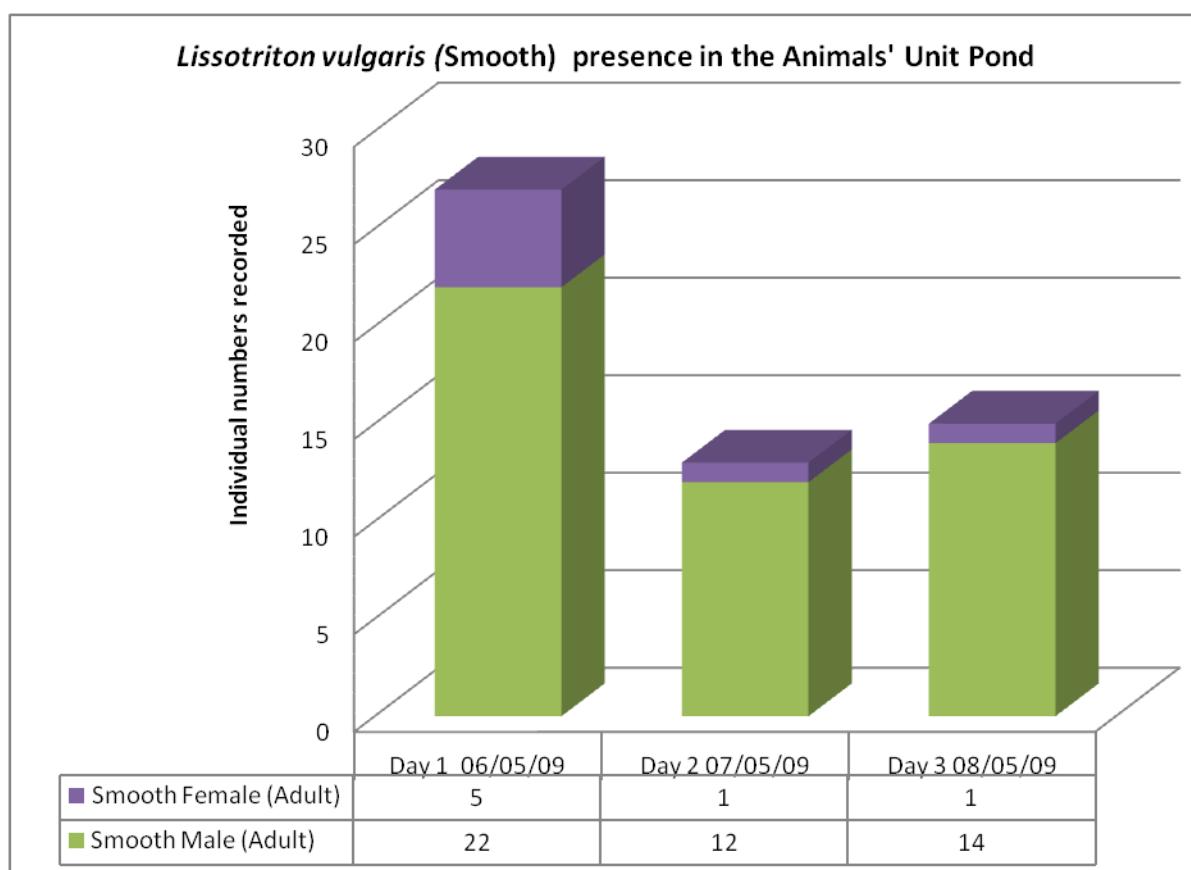
Width: 36m

Length: 40m

Area: 1000m²

HSI score: 0.77: **Good** suitability for great crested newts.

Figure 2. Animals' Unit Pond 2009



2.2.2 Evaluation and Recommendations

The survey results show only the presence of smooth newts on the Animals' Unit Pond. The largest capture of 27 individuals shows a **medium** population and a site in which great crested newts can thrive.

The level of aquatic invertebrates in this pond is markedly lower and, therefore, indicates a lower level of food available for both adult newts and larvae. The poorer surrounding terrestrial area to the pond will also provide a less suitable foraging area for the newts when they are on land.

Several recommendations for this site have already been given in a BREEAM report by William Watson (Consulting Ecologists) to Harper Adams University College Estates Department. Many of the suggestions proposed for this site are similar to those for the Ornamental Pond, although there was the possible recommendation that some areas of the bank should be re-profiled to improve access by amphibians. The work to remove some of the large trees has already been implemented by the Grounds Department.

Recommendations to protect and enhance the newt populations on the Animals' Unit Pond area are as follows.

1. Provide hibernacula as detailed in section 2.1.2.
2. As there are no in-pond or emergent vegetation in the pond, consider introducing some pond emergent or marginal macrophytes for egg-laying substrate such as water mint (*Mentha aquatica*) and water forget-me-not (*Myosotis scorpioides*). Aquatic plants such as curled pondweed (*Potamogeton crispus*) and broad-leaved pondweed (*Potamogeton natans*) could also be introduced.
3. Create a natural long tussocky grass terrestrial meadow habitat using occasional shrubs e.g. butterfly bush (*Buddleia* spp) which would enhance the habitat value for many species on this site. Other species to consider planting include guelder rose (*Viburnum opulus*), and the dwarf variety (*V. compactum*). These have white flowers, which are attract insects, followed by a profusion of red berries. Juniper (*Juniperus communis*), supports spiders and other insects and also provides a well-protected nest site for birds. As this area is planned as an additional teaching area

for the new countryside courses' Outdoor Centre, the enhanced habitat will also improve the aesthetics of the site as well as the biodiversity and habitat value. It is also proposed that bat and birds boxes will be included on this site.

4. Monitor the water quality. There may be issues regarding the water quality from drains leading into this site, some of which come from the nearby poultry sheds. Whilst there seems to be a healthy newt population currently, development of the surrounding area for building may compromise the water quality and drainage on this site. The installation of a 'green roof' on the new countryside building is forming part of a PhD research project in the Crops Department and therefore ongoing survey work on the water quality from water coming off the roof in to the surrounding ground will be monitored.

Great crested newts are unlikely to disperse from the site across the road from the Ornamental Pond but may move into the Animals' Unit Pond from surrounding garden ponds in Edgmond village to the south of the site, where great crested newts are known to be present.

2.3 Off-Road Track Keyhole Pond

The Off-Road Track Keyhole Pond is an undisturbed keyhole-shaped pond situated in the Engineering Department.

It is a very good pond for wildlife and during the survey period, many dragonfly and damselfly adults were observed as well as larvae catches in the bottle traps. No fish were observed and there was little intrusion by waterfowl (mainly mallard).



**Photograph showing the
Off-Road Track Keyhole
Pond**

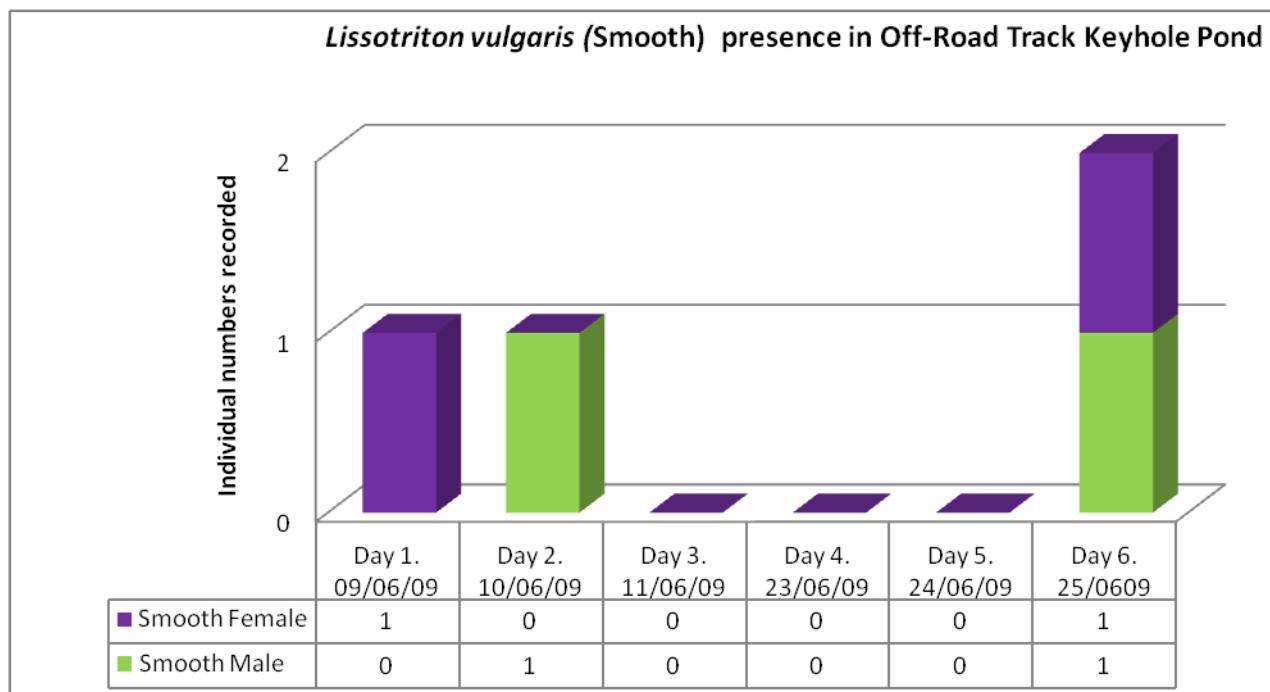
2.3.1 Survey results for the Off-Road Track Keyhole Pond 2009

Full grid reference: 371281, 320657
Width: 12m
Length: 20m
Area: 200m²
HSI score: 0.78. **Good** suitability for great crested newts



Photograph showing a smooth newt larva caught in the Off-Road Track Keyhole Pond

Figure 3. Off-Road Track Keyhole Pond 2009



2.3.2 Evaluation and Recommendations

Only smooth newts were recorded on the Off-Road Track Keyhole Pond in 2009, with netting showing the presence of larvae, although no eggs were found. In the previous survey in 2008, only one immature great crested newt was found on this site.

The population of smooth newts is classed as **small** as only two adults were caught. However, due to the shallow nature of the pond (less than 1 m in depth), the concrete slabs on the base, which will heat up quickly in spring, and the sunny aspect with no shading on

the pond, an earlier breeding period on this site may have occurred. The surveys undertaken in mid and late June, may have missed the larger numbers of adults breeding in the pond and the presence of eggs. The evidence of well-developed newt larvae clearly indicates a good breeding population and the survey data may have underrepresented the population levels.

On the whole, the terrestrial and aquatic habitats on this site are ideal to sustain newt populations. The surrounding vegetation and areas of broken concrete provide good quality areas both for feeding and refuga. There are also in-pond macrophytes to provide egg-laying substrates including extensive areas of broad-leaved pondweed (*Potamogeton natans*). Yellow flag iris (*Iris pseudacorus*) is also present on the pond margins which can provide more egg-laying material when the leaves touch the water.

The pond water quality appeared excellent with the presence of large numbers of dragonfly larvae as biotic indicators, showing a high quality aquatic environment. However, as predators of newt eggs and larvae, they may also be the cause of a lower than expected adult population and annual recruitment in the pond.

Recommendations to protect and enhance the newt populations on the Off-Road Track Keyhole Pond area are as follows.

1. Increase the number of ponds in the area to increase the breeding potential. Whilst the pond is not significantly limiting to breeding success, providing more small ponds surrounding this pond will enhance the habitat value for all amphibians.
2. Monitor dragonfly populations since the larvae are major predators of both newt eggs and larvae and may limit reproductive success.
3. Introduce shrubs and some trees to the north side of the pond to provide a more shaded habitat structure adjacent to the pond.
4. Avoid any vehicular access to this particular pond, not only to circumvent newt disturbance but also to minimise disturbance to dragonfly activity in the pond.
5. Introduce log piles as hibernacula around the pond to further enhance the areas provided by the concrete slabs.

6. Consider surveys earlier in the season to monitor the presence of larger numbers of smooth and great crested newts which may actually be present on the site and not recorded.

2.4 Off-Road Track Tank Pond

The Off-Road Track Tank Pond is a long linear man-made, concrete-sided pool through which off-road vehicles drive as part of the Engineering Department off-road track.

The lining of the tank consists of concrete slabs which have large gaps in between, providing excellent refuga for newts. The movement of vehicles through the tank has deposited large amounts of fine silt and clay from the tyres into the tank, which makes the water very turbid. There is some broad-leaved pondweed (*Potamogeton natans*) present near the margins of the pond.

Photograph below showing the Off-Road Track Tank Pond

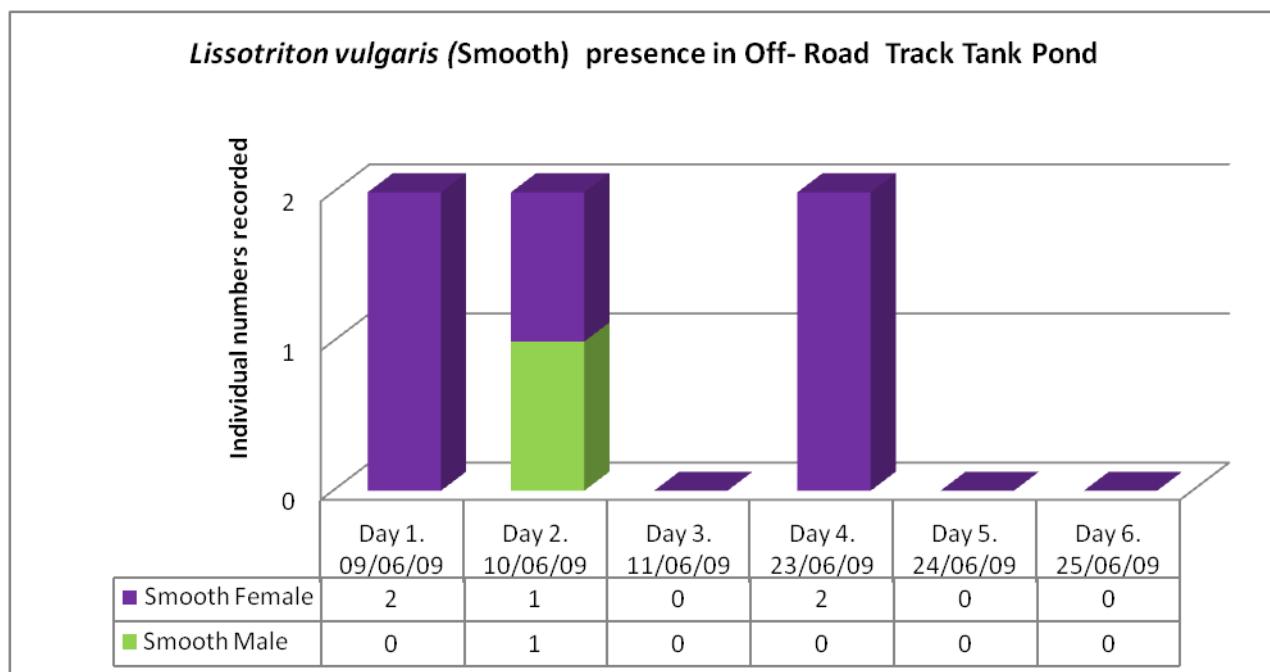


Photograph (right) showing the concrete slabs which provide excellent refuga for newts

2.4.1 Survey results for the Off-Road Track Tank Pond 2009

Full grid reference:	371292, 320666
Width:	8m
Length:	90m
Area:	720m ²
HSI score:	0.71. Good suitability for great crested newts

Figure 4. Off-Road Track Tank Pond 2009



2.4.2 Evaluation and Recommendations

The limiting factors to this site are the water quality and lack of aquatic invertebrates for food. There was also limited aquatic macrophyte vegetation in the margins of the tank so there was little substrate for egg-laying and breeding. Whilst the pond is being used to drive vehicles through, the turbid water quality will make display behaviour and breeding difficult. Despite this, a **small** (less than 10) population of individuals has survived showing that this tank can support smooth newts and has the potential, with an HSI of 0.71, to, therefore, also support a great crested newt population. With the adjacent Off-Road Track Keyhole Pond less than 30 m away, it is more likely that breeding newts will select the better conditions to breed in that pond.

Recommendations to protect and enhance the newt populations on the Off-Road Track Tank Pond area are as follows.

1. Limit vehicular access to the off-road track to a minimum number of days and concentrate activity/training on these days. Also avoid activity during the breeding season (March to June) if at all possible.

2. Enhance the surrounding tank area with shrubs and trees to provide shelter for terrestrial newts. Planting of any aquatic vegetation will be impractical due to the disturbance.
3. Consider, as in the previous recommendation (2.3.2(1)), creating numerous small ponds further back on the track, where there is no vehicular access and allow the newts to disperse into these areas for breeding and foraging.
4. If any great crested newts are identified in either the Off-Road Track Tank Pond or terrestrial habitats then off-road access by vehicles **must cease** to comply with the species protected status.

2.5 Marlpit Leasow Pond

Marlpit Leasow Pond lies at the edge of Marlpit Leasow field and on the southern side has an overflow pipe which drains into Black Brook. This is a drainage channel carrying water for the east towards the west through the College farmland.

The pond is located on a secluded site and is protected from the field by buffer strips provided by a large hedge and a wide grassy pond margin. The pond has several large trees surrounding the site and there is abundance of marginal and in-pond vegetation, primarily yellow flag iris (*Iris pseudacorus*) near the margins and marsh marigold (*Caltha palustris*), as shown in the photograph above. The water quality is good and there are both fish and waterfowl present in small numbers on this site.

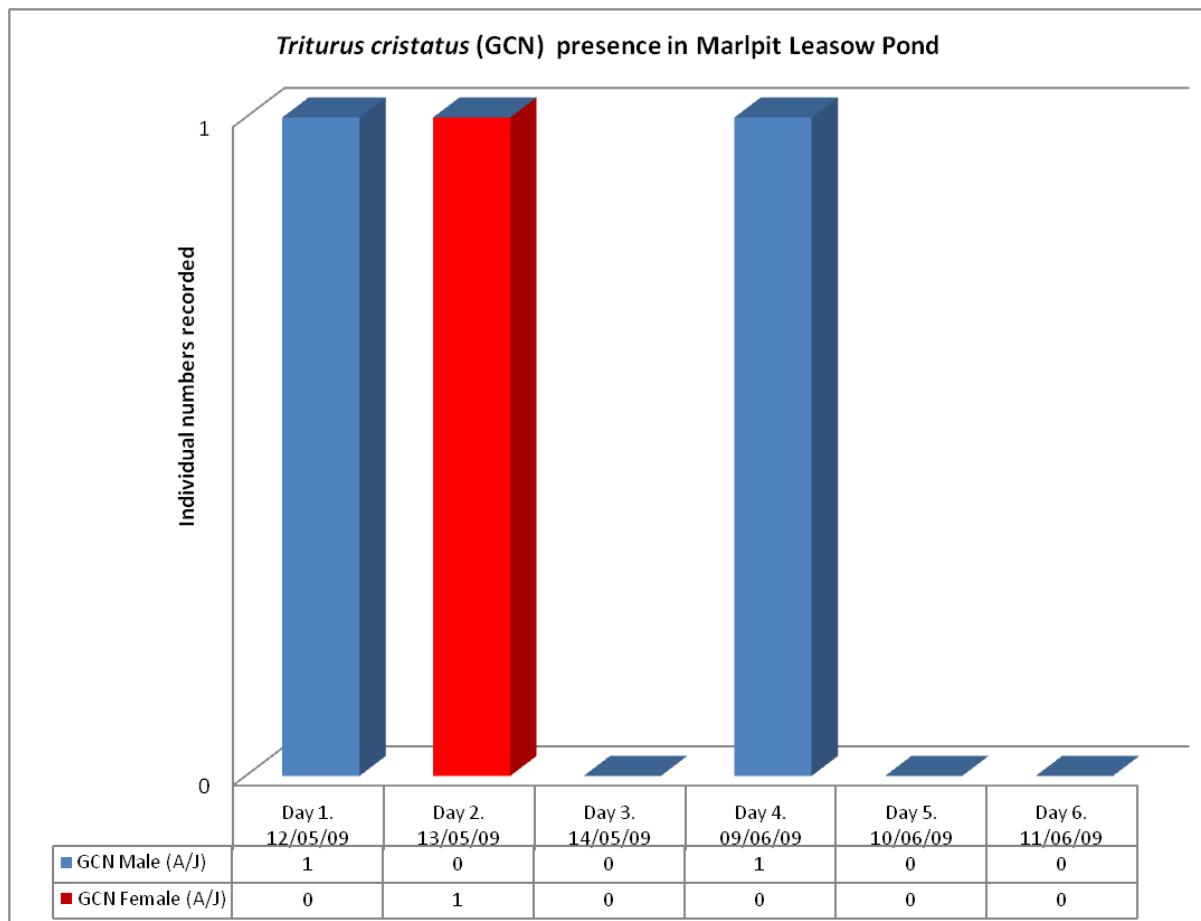
Photograph below showing Marlpit Leasow Pond



2.5.1 Survey results for Marlpit Leasow Pond 2009

Full grid reference:	370560, 320592
Width:	20m
Length:	20m
Area:	400m ²
HSI score:	0.84 : Excellent suitability for great crested newts.

Figure 5. Marlpit Leasow Pond 2009



2.5.2 Evaluation and Recommendations

The survey of Marlpit Leasow Pond showed the presence of great crested newt with only two males and one female being caught (**small** population). There was evidence of newt eggs which were found on iris leaves on the north side of the pond. The surveys were undertaken in poor weather conditions and this may have caused lower than expected results for a site that should show a much higher population. The population may have been low due to predation by fish and waterfowl and it is interesting to note that great crested newts were not found in the previous survey on this site. Therefore, the results may indicate an establishing population on this pond.

Recommendations to protect and enhance the newt populations in Marlpit Leasow Pond are as follows.

1. On the whole, the site is very good but overgrowth of the surrounding terrestrial vegetation, mainly the nettles, may need some cutting back as the site is difficult to access in many areas, both for the newts and for the surveyors. Overgrowth of the trees by the pond may also need to be managed to allow more light into the pond.
2. Marlpit Leasow Pond is close to the new College dairy development to the southwest of the pond site. Movement of newts from the pond, particularly via the overflow pipe and downstream along the brook during periods of heavy rainfall may allow establishment of newt populations in the wet areas of the dairy unit. It is, therefore, recommended that the dairy area is surveyed in future to see if newts have moved onto the site. It is also recommended that, if resources allow, Marlpit Leasow Pond should be surveyed earlier in the season, to gain a better insight into the population numbers.

2.6 Newpool Plantation Pond

Newpool Plantation Pond is a former wet woodland (fen carr). The trees have been removed and some of the site has been dredged to create a shallow pond area. Some of the former tree stumps are still visible when the water level is low.

The site is dominated by reeds (*Phragmites australis*) and some bulrush or reedmace (*Typha latifolia*). The College have managed the site



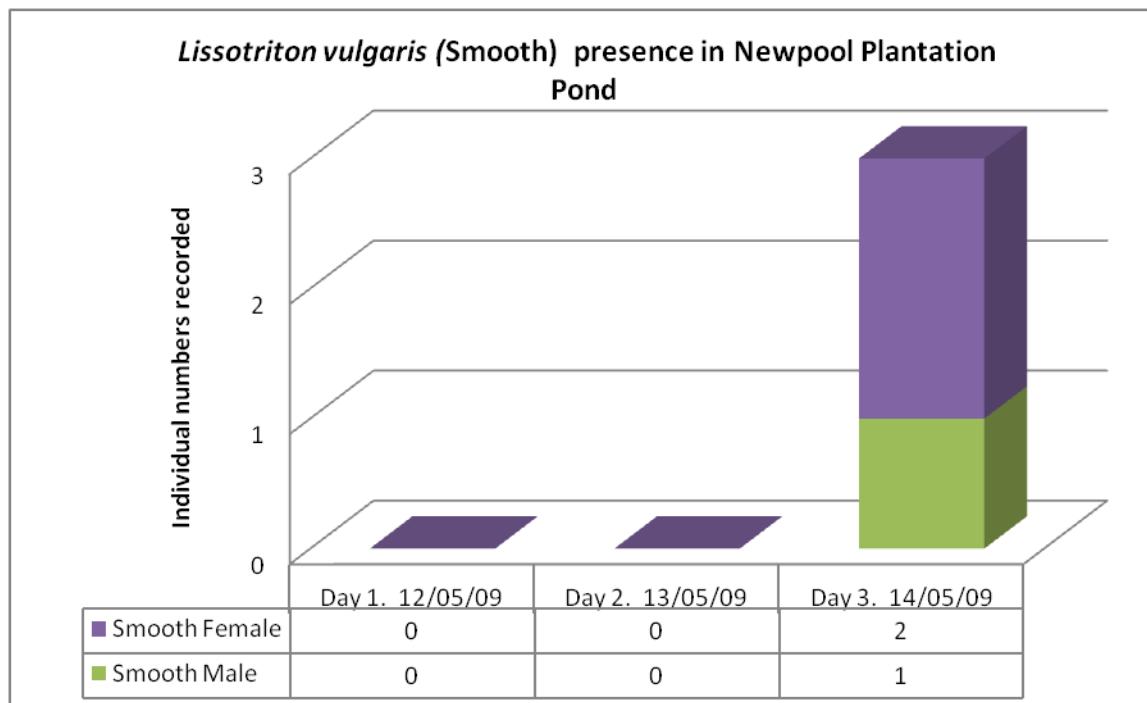
and placed a bird hide on the western edge of the pond and a boarded access platform on the eastern edge. The water quality is good and there are a wide range of waterfowl on the site but no evidence of fish. Invertebrate populations are variable depending on the water

level. Encroachment of willow and alder trees have caused considerable shading to the site and the spread of the reeds, if left, will reduce the standing open water in which amphibians can breed.

2.6.1 Survey results for the Newpool Plantation Pond 2009

Full grid reference: 370549, 320592
Width: 45m
Length: 45m
Area: 1800m²
HSI score: 077: **Good** suitability for great crested newts

Figure 6. Newpool Plantation Pond 2009



2.6.2 Evaluation and Recommendations

Only a small population of smooth newt (3) was found during surveying, which may indicate a low population due to predation or possibly due to the time of survey. Newt eggs were observed and it may be prudent to use netting amongst the reeds for future surveys of this site. Great crested newt eggs were identified on this site in the previous survey and it is likely that this species is still present and may have accounted for translocation of the species in the Marlpit Leasow Pond this year.

Recommendations to protect and enhance the newt populations in Newpool Plantation Pond are as follows.

1. Develop a management plan for control of the reeds in order to maintain an open water habitat for breeding amphibians.
2. Consider management of the overhanging trees which shade large sections of the pond and are also clogging the pond with leaf litter.
3. Fell some of the trees to create some glade habitats and open up the area for improved habitat structure for a range of species.
4. Create areas with log piles to provide refuga and hibernacula for amphibians and reptiles on the site.

2.7 Upper Wood Leasow Pond

Upper Wood Leasow Pond lies at the northern edge of the Harper Adams University College estate. It is an in-field pond at the base of a slope and currently the field is used for silage and therefore the pond receives fertiliser runoff from the field.

The pond is surrounded by mature trees and has no marginal or in-pond vegetation. There are several fallen trees across the pond and access to the water is difficult.



During the survey period, the pond was shallow (less than 1m in depth), stagnant and full of leaves.

2.7.1 Survey results for the Upper Wood Leasow Pond 2009

Full grid reference: 370226, 321063
Width: 10m
Length: 8m
Area: 80m²
HSI score: 0.61: **Average** suitability for great crested newts

No adult or juvenile newts of either species were found over the three survey dates of 9th to 11th June 2009

2.7.2 Evaluation and Recommendations

No eggs were seen and the lack of a suitable substrate would have made breeding in the pond difficult. There was no evidence of any invertebrates during the survey period and, as the water was stagnant, it provided an unsuitable environment in which most invertebrate organisms could thrive.

Recommendations to protect and enhance the newt populations in Upper Wood Leasow Pond are as follows.

1. Management of the trees on site is necessary in order to improve the light levels and water quality. Whilst the HSI may indicate an average habitat suitability, it is evident from the lack of invertebrate fauna that there are low oxygen levels in this pond and that the site requires some urgent management. It is suggested that one fallen tree should remain as this provides a perch for wildfowl and a variation in the habitat structure. Other fallen trees need to be removed and some of the larger trees cut back to allow light in.
2. Consideration to the accumulation of leaf litter in the pond may be prudent. Removal of this, with an excavator in the autumn period when the trees are managed, would benefit the pond site.
3. The addition of aquatic plants, as mentioned previously in this report, would improve the pond structure, increase oxygen levels and enhance the water quality.
4. The provision of a wide buffer strip up the slope of the pond would help reduce fertiliser runoff onto the pond site.

3.0 NEWT HABITAT ENHANCEMENT AND AGRI-ENVIRONMENT SCHEMES

The Agricultural land holding on the University College site is partly in an agreement with the former Countryside Stewardship Scheme (CSS) and is also in the current Entry Level Stewardship Scheme (ELS). It is understood that the farm manager is currently applying for entry into the Higher Level Scheme (HLS). The presence of a European protected species on site should be emphasised in the HLS application as well as the importance of enhancing the amphibian habitat in the areas of the estate which were identified in this report.

The Herpetological Conservation Trust (HCT) in the Species Action Plan for the great crested newt (2009)⁸ identifies a section on Wider Action—'Agri-Environment: Declines in this species are linked to changes in agricultural practices. Hence, the reversal of this situation and restoration of great crested newt populations lies within wider measures, notably targeted agri-environment strategies that will protect and restore breeding ponds and enhance terrestrial habitat. A landscape scale approach needs to be taken so that the benefits of such schemes are maximised and the viability of the targeted populations are maintained' (HCT 2009).

Three of the ponds surveyed, namely, Newpool Plantation Pond, Marlpit Leasow Pond and Upper Wood Leasow Pond are all located within the agricultural holding of the College. A useful reference source is the HCT (2007) leaflet on Environment Stewardship⁹ 'How great crested newts can gain stewardship points for your farm'.

Newt habitat can be used to gain the points required for the environment funding available to farmers from this Defra scheme and the presence of a protected species such as the great crested newt can allow farmers to apply for funding from the HLS. The additional funds available would help finance some of the pond restoration required on site (such as Upper Wood Leasow Pond) and also the creation of new sites. Examples of these include the proposed cluster ponds adjacent to the Ornamental Pond, where additional areas are needed for newt dispersal and to keep the newts away from building development on site.

⁸ **HCT 2009:** Great Crested Newt Species Action Plan. Available from http://www.herpconstrust.org.uk/downloads/HCT_GCN_%20Action_plan_June09.pdf

⁹ **HCT 2007:** Environment Stewardship 'How great crested newts can gain stewardship points for your farm'. Available from http://www.herpconstrust.org.uk/downloads/HCTnewt_leaflet.pdf

It may be necessary in the future to consider mitigation fencing in these areas near to College building works.

4.0 RECENT UK SURVEY INFORMATION

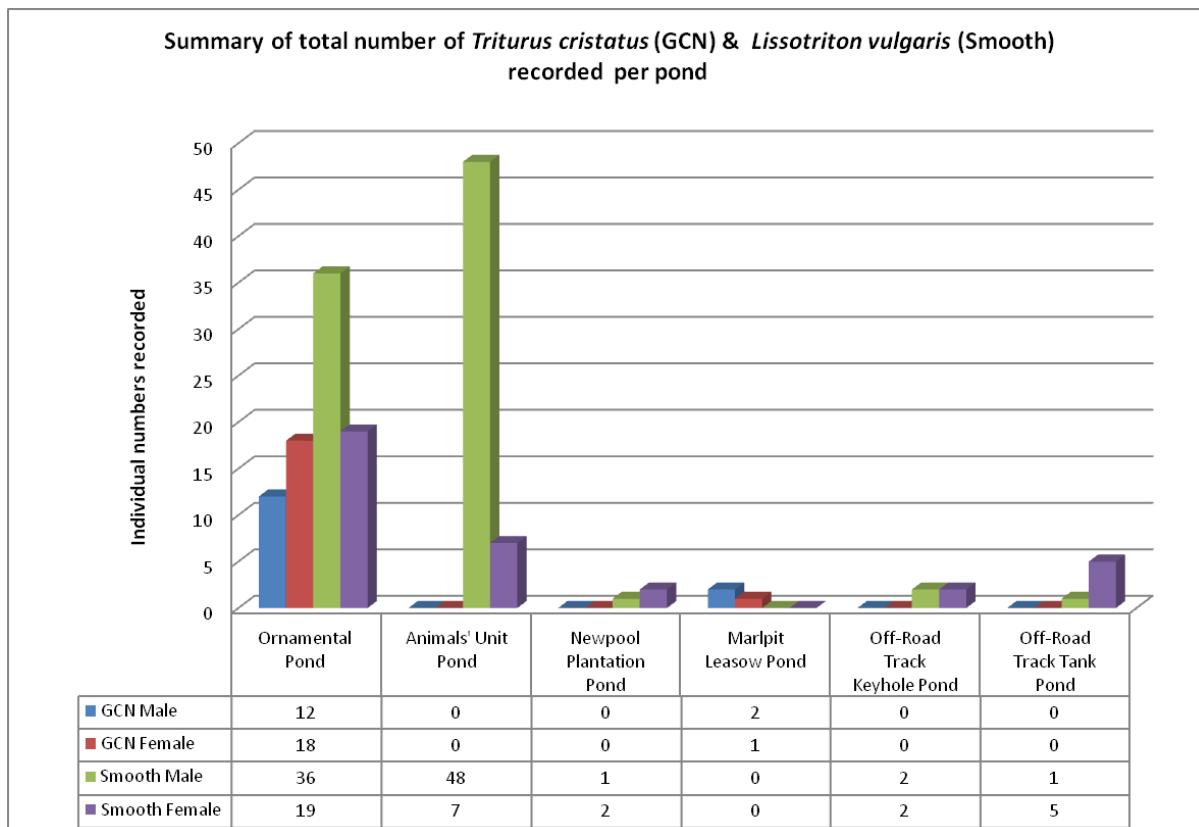
This year (June 09)⁸ a Great Crested Newt Species Action Plan has been updated by the Herpetological Conservation Trust (HCT). It examines the current status of newts and their habitat as well as outlining government targets for this protected species. The report details Action Plan/Species Action Plan (SAP) Management, Policy and Legislation, Species and Habitat Management, Advisory and Communications, and Research and Monitoring. This document provides a useful baseline for the evaluation and recommendations for newt habitat protection and enhancement on the Harper Adams University College site.

5.0 METAPOPULATIONS

When considering newt populations and the viability of habitats on a site, it is important to consider metapopulations. A metapopulation is a group of associated populations. Newts which live and breed around a cluster of ponds form a metapopulation. In this situation, newts can move between ponds and are less vulnerable to habitat changes in the area. On the Harper Adams University College site, there is the potential problem that there are no clusters of ponds on the estate.

6.0 SUMMARY

Figure 7. All ponds 2009



- Great crested newts have been identified on two ponds at Harper Adams University College. These are the Ornamental Pond and Marlpit Leasow Pond. One population is classified as **medium** (Ornamental Pond), the other **small** (Marlpit Leasow Pond).
- Populations of smooth newts have been found on all ponds except Upper Wood Leasow Pond and Marlpit Leasow Pond.
- Breeding of newts was evident on all ponds except the Off-Road Track Tank Pond in the Engineering Department and Upper Wood Leasow Pond.
- Habitat Suitability Indices (HSI) showed that two of the seven ponds which were surveyed were 'excellent', four ponds were 'good' and one pond was 'average' for habitat suitability. This indicates that **all areas** have the potential to contain this protected species.

- Populations of newts which are recorded are variable and may fluctuate naturally annually, depending on the timing and weather conditions during surveys. Annual monitoring of newt populations (both aquatic and terrestrial) is essential to ascertain the status of both great crested newts and smooth newts and their movements around the site.
- Recommendations for each of the pond sites are given, as well as suggestions for habitat improvement from the Herpetological Conservation Trust (HCT) and Natural England's mitigation guidelines.

This report will be made available to staff and students at Harper Adams University College, both through the library and via the virtual learning environment (VLE or intranet).

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Appendix I. Individual identification

Female GCNs (*Triturus cristatus*) in Ornamental Pond HAUC

(Example: **OPF_01** = Ornamental Pond Female number 1)

Individual ID Ornamental Pond	Individual ID Ornamental Pond	Individual ID Ornamental Pond
OPF_01	OPF_07	OPF_13
OPF_02	OPF_08	OPF_14
OPF_03	OPF_09	OPF_15
OPF_04	OPF_10	OPF_16
OPF_05	OPF_11	OPF_17
PF_06	OPF_12	OPF_18



Male GCNs (*Triturus cristatus*) in Ornamental Pond HAUC

(Example: **OPM_01** = Ornamental Pond Male number 1)

Individual ID Ornamental Pond	Individual ID Ornamental Pond	Individual ID Ornamental Pond
OPM_01	OPM_02	OPM_03
OPM_04	OPM_05	OPM_06
OPM_07	OPM_08	OPM_09
OPM_10	OPM_11	OPM_12

Female GCNs (*Triturus cristatus*) in Marlpit Leasow Pond HAUC

Individual ID Marlpit Leasow Pond
 MPLF_01

Male GCNs (*Triturus cristatus*) in Marlpit Leasow Pond HAUC

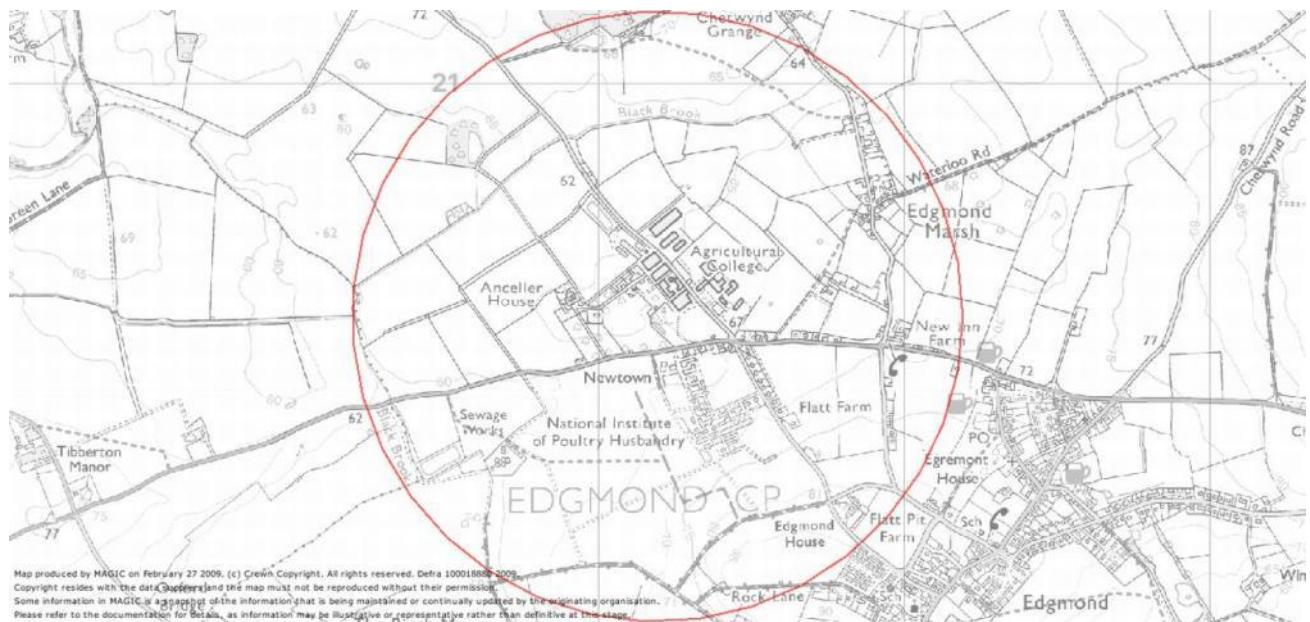
Individual ID Ornamental Pond
 MPLM_01

Appendix 2:

Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. 2000. Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). *Herpetological Journal*, 10, 143 - 155

Appendix 3:

Example of the 1km radius drawn around the Ornamental Pond to calculate the field pond score for assessing SI₈ on the Habitat Suitability Indices (HSI)



Appendix 4:

HCT 2007: Environment Stewardship 'How great crested newts can gain stewardship points for your farm'.

Available from http://www.herpconstrust.org.uk/downloads/HCTnewt_leaflet.pdf