DAVID CLEMENTS ECOLOGY LTD

GARW VALLEY CYCLE LINK, BRYNGARW COUNTRY PARK & GARW VALLEY RAILWAY, BRIDGEND, GLAMORGAN

SURVEYS FOR GREAT CRESTED NEWT & HAZEL DORMOUSE

November 2018

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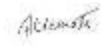
Prepared by:	Anne Clements BSc (Hons) CBiol MRSB		01/11/2018
Checked by:	David Clements BSc (Hons) CBiol MRSB MCIEEM FRES		02/11/2018
Version No./Stage	v.1.0 Final	**Amendments**: As issued, 2/11/2018	
Main Surveyors:	**Great crested newt** David Clements Anne Clements Jon Lee **Dormouse** Aislinn Harris	**Licence No.** NRW 77510:OTH:SA:2017 NRW 75734:OTH:SA:2017 NRW S085095/1 NRW 74241:OTH:SA:2016	

SUMMARY

This report sets out the results of surveys for great crested newt (GCN) and hazel dormouse at Bryngarw Country Park, near Brynmenyn, in the county borough of Bridgend, south Wales. A series of 11 ponds in total were assessed and surveyed for GCN both within the park itself and along the course of an adjacent section of the disused Garw Valley railway line. Survey for dormouse was also carried out concurrently in suitable habitats alongside the railway line. It is proposed to create a new cycle path link along the line of the disused railway.

There is an old record of GCN from within the country park which dates from 1996, although the exact details are unclear. The present surveys have not detected this species in any of the ponds surveyed, however.

There are no pre-existing records of dormouse from within a 1km of the site (although it does occur within the wider vicinity) and the present surveys found no evidence of this species.

On this basis there is no constraint in respect of these species, and no licence from NRW will be required.

Whilst the surveys have not detected either of the two target species it is noted that all of the ponds are assessed as being of 'average' suitability for this species ('poor' in the case of Pond 2). In addition, the surrounding terrestrial habitats appear broadly suitable for foraging, commuting, sheltering and/or overwintering by this species. It is also noted that the woodland and scrub habitats do not appear entirely unsuitable for occupation by hazel dormouse. It is therefore recommended that a precautionary approach should be taken in respect of the *possible* occurrence of either or both of these species, either at the time of the works or in the future, and should ideally be taken into account when designing and implementing the new cycle path scheme.

1.0 INTRODUCTION

1.1 This report has been prepared by David Clements Ecology Ltd (DCE) on the instructions of Sustrans Cymru. It sets out the results of surveys for great crested newt (GCN) and hazel dormouse at Bryngarw Country Park, near Brynmenyn, in the county borough of Bridgend, south Wales. A series of 11 ponds in total were assessed and surveyed for GCN both within the park itself and along the course of an adjacent section of the disused Garw Valley railway line. Survey for dormouse was also carried out concurrently in suitable habitats alongside the railway line. The site location and context are shown at Plan 1.

1.2 The country park measures approximately 48 hectares in extent and lies in a semi-rural setting at between about 70-130m AOD. The habitats of the park mainly comprise woodland, open amenity grasslands, meadowland (including some 'rhos pastures'), waterbodies, formal gardens and car-parks/amenity areas etc. The old railway line is located approximately 100 m to the east of the main park but can readily be accessed via a gate from the park. The section of railway adjacent to the park measures just over 1km in length and curves gently towards the settlement of Brynmenyn to the south, at around 53-75m AOD. The habitats along the railway line include woodland, wet woodland, scrub, bramble, grassland and tall ruderal vegetation. Several of the ponds investigated are located in woodland immediately to the east of the railway line.

1.3 Bryngarw country park and the adjacent railway line are situated approximately 2.7km north of the M4 motorway, and around 600m from the settlement of Brynmenyn to the south. The site is bounded by busy local roads to the west and east but is otherwise surrounded by open countryside.

1.4 It is proposed to create a new cycle path along the disused railway line, to link up with existing cycle paths within the country park. This is likely to include some clearance of scrub and vegetation and may also include some form of permanent lighting along the new cycle path. The present report assesses the value of the site with reference to great crested newt and dormouse, and the likely impact of the proposed development. It also makes recommendations regarding the mitigation of any potentially adverse biodiversity impacts to these protected species.

Protected Status of Species

1.5 Great crested newt (*Triturus cristatus*) is a 'European protected species' subject to strict statutory protection which covers not just the individual animals, but also any places which are used for shelter or protection. This protection arises from the species' listing on Schedule 4 of the *Conservation of Habitats & Species Regulations 2017* (the 'Habitats Regulations', SI 490) which implements the requirements of the EU *Council Directive on the Conservation of Natural Habitats & of Wild Flora and Fauna 1992* (the 'Habitats Directive', Directive No. 92/43/EEC). GCN is listed as a species of 'principal importance for nature conservation in Wales' under the Environment Act (Wales) 2016[1].

[1] In Wales the s.7 list of the EWA 2016 supersedes the s.42 list of the Natural Environment & Rural Communities Act 2006, which in turn replaced the 'Priority Species' lists of the UK Biodiversity Action Plan and its Welsh equivalent.

1.6 Hazel dormouse (*Muscardinus avellanarius*) is also a 'European protected species', afforded legal protection which is similar to that of GCN (see above). It is also a Section 7 listed species.

2.0 APPROACH AND METHODS

2.1 Survey Methodology

2.1.1 Survey methods were in accordance with published guidelines, principally those contained in English Nature (2001) for GCN and Bright *et al* (2006) for dormouse. The layout of the survey area is shown at Plans 1 and 2.

Great Crested Newt

2.1.2 The objectives of the surveys were initially to establish the presence or absence of the species in any of the ponds, and subsequently to determine the population status in any ponds where the species was suspected in order to allow a reliable assessment of the likely impacts of the proposed cycle path development. Presence/absence and population assessment surveys were carried out by means of bottle-trapping, lamping and egg-searching in each waterbody on a minimum of either four or six separate occasions respectively during the main period of adult mating and breeding activity (ie April to July). Survey sessions were at least one week apart and included at least two sessions before mid-May. The numbers derived from these surveys can then compared against the quantitative criteria provided by EN (2001) to derive an overall estimate of the total population size.

2.1.3 Bottle-traps comprise specially constructed plastic traps which are left in the water overnight (see eg, Griffiths & Langdon 1998). GCN and other amphibians enter the bottle-traps voluntarily and are detained until the traps are checked, whereupon all captives are released unharmed. Males, females, juveniles and young ('efts') are counted separately as far as possible.

2.1.4 'Lamping' (or 'torching') comprises a count of GCN by torchlight when they are visible within the water during the hours of darkness on four or six separate occasions during the breeding period. Males, females and juveniles are counted separately as far as possible, although this is not always reliable and becomes increasingly difficult as the season progresses, and the breeding colours of the males begin to disappear (referred to as going into 'eclipse').

2.1.5 Egg-searching comprises searching for the distinctive eggs of GCN laid on vegetation or floating debris etc and is carried out at the same time as the bottle-trapping.

2.1.6 Bottle-trapping was carried out in the lake (Pond 6) and the oriental garden ponds (Ponds 7-9) during the period 12 April – 5 July 2018. Trapping in the other ponds also commenced on 12 April 2018 but was curtailed later in the season when the ponds dried out, and no further bottle-trapping was possible. The traps were either long-lined from the banksides perimeter or staked directly to the bank, with each being set with an air-reservoir and checked at no greater than 12 hours later. A total of 68 traps were set out, being equally-spaced at approximately 3-4m intervals around the edges of the waterbodies.

2.1.7 The majority of the ponds were subject to surveys on four occasions only. Ponds 7-9 were subject to six sessions of trapping, however, following a potential sighting of GCN in Pond 7 during one of the lamping sessions (see under Results, below).

2.1.8 In addition to trapping and lamping etc, the ponds were each subject to a Habitat Suitability Index (HSI) assessment in accordance with Oldham (2000).

Hazel Dormouse

2.1.9 Suitable areas of woodland and scrub within a 25m buffer either side of the railway line were subject to a nest-tube survey for dormouse in accordance with the survey advice set out by Bright *et al* (2006). 54 dormouse tubes were set out in suitable and accessible locations on 24 April 2018. The tubes were then subsequently revisited and checked at monthly intervals between May and October inclusive, and any evidence of dormouse or any other resident species was recorded.

2.1.10 Checks were also made of any hazel (*Corylus avellana*) nuts which were found for any evidence of handling by dormouse.

2.2 Constraints to Survey

2.2.1 The summer of 2018 was marked by an extended period of very hot and dry weather between about May and August, which caused many waterbodies to dry-out early in the season. This curtailed the surveys for GCN in Ponds 1-5 and Ponds 10a-b by about early to mid-June. No bottle-trapping was possible at all in Pond 2 due to the shallowness of the water, and this pond dried-out very early in the season. These constraints were not considered likely to significantly affected the reliability of the surveys, however, as other species of amphibians were recorded in nearly all these locations, and pond drying is a natural feature of waterbodies used by breeding GCN.

2.3 Data Trawl

2.3.1 A data search was carried out by the client with the South East Wales Biodiversity Records Centre (SEWBReC) in February 2018 in order to obtain access to any existing ecological information which may be held for this site. SEWBReC is the main repository for biodiversity and wildlife records in the south-east Wales region. The National Dormouse Database (NDD) was also consulted for records by Sustrans Cymru.

2.3.2 There is an existing record of GCN from Bryngarw Country Park dating from 1998 (SEWBReC data), although precise details of the location are not available. There do not appear to be any records of dormouse within 1km of the site, but the records held by the National Dormouse Database includes one of a dormouse in woodland within 2km of the site in 2016.

3.0 SURVEY RESULTS

3.1 Great Crested Newt

Habitat Suitability Index (HIS) Results

3.1.1 The results of the HIS assessment are set out at Appendix 1. All of the ponds were assessed as being of 'average' suitability for GCN with the exception of Pond 2, which was assessed as 'poor'.

Bottle-trapping, Lamping & Egg-searching Results

3.2.2 The results of the aquatic surveys are set out at Appendix 2. GCN was not detected in any of the ponds under survey.

3.2.3 Weather conditions were warm or hot throughout the survey period, and minimum overnight air temperatures did not fall below about 9ºC. Daytime maxima varied between about 9ºC to 27ºC, with many days being in excess of 20ºC

3.2.4 During a lamping session at Pond 7 on 13 June 2017, a large black newt was briefly observed before disappearing under floating vegetation. This was suspected of being GCN and, as a result, this pond and the two others nearby were subject to additional survey sessions in an effort to determine the population status. Subsequent survey did not find any GCN but did yield a specimen of the non-native axolotl (*Ambystoma mexicanum*) in Pond 7, which is a large black Mexican newt species sometimes introduced into the wild in Britain from the pet trade. It is therefore considered most likely that the 'GCN' sighting made earlier in the season in this pond probably also referred to this species.

3.2.5 Other amphibians were recorded during the surveys. Palmate newt (*Lissotriton helveticus*) and common frog (*Rana temporaria*) were present as breeding species in several of the ponds, and adults of common toad (*Bufo bufo*) were also encountered occasionally. Palmate newt and common frog were particularly abundant in Ponds 8-9 within the Country Park.

3.2 Hazel Dormouse

Nest-tube Survey Results

3.2.1 The nest-tube survey results are set out in Table 1 below. No dormice were found.

Survey Date	Results	Temp/Weather conditions
23/05/2018	Nil	21C/11C – dry, warm & sunny
28/06/2018	Nil	27C/15C – warm, humid
23/07/2018	Nil	23C/18C – overcast & warm with sunny intervals
29/08/2018	Nil	19C/13C – cloudy with sunny intervals
07/09/2018	Nil	17C/8C – humid, scattered clouds with sunny intervals
29/10/2018	Nil	7C/0C – cool & clear

Nut-searching Results

3.2.2 Nut-searches carried out in the vicinity of the nest tubes did not find any which showed evidence of handling by dormouse, and indicated only the presence of grey squirrel, wood mouse and jay.

4.0 CONCLUSIONS & ASSESSMENT OF IMPACTS

4.1 It is proposed that the disused railway track which currently runs along the eastern edge of the country park will be upgraded to create a new cycle path which will link up with the other existing cycle paths which run through the park.

4.2 The existing section of railway line is about 1.05km long and 3.5m wide, and comprises metal tracks on limestone ballast. The route is becoming overgrown by bramble, scrub and tall ruderal vegetation. The proposed new cycle path will be hard-surfaced and between 2.5-3m wide, and may require lighting at night. It is anticipated that the development works will require a working width of 5m, with occasional turning areas. Access and storage areas are yet to be determined.

4.3 The proposed development would require the loss of some of the semi-natural habitats which are currently present alongside the railway track, mainly comprising a mixture of woodland, scrub, bramble and rank vegetation, the latter including invasive non-native species such as Japanese knotweed (*Fallopia japonica*) and Himalayan balsam (*Impatiens glandulifera*). It is possible that the size and/or hydrology of Ponds 2-5, and possibly also Pond 1, would potentially be altered as a result of the works.

4.4 Ponds 2-5 all lie immediately east alongside the railway and appear to comprise localised impoundments of surface water which runs down from the A4064, which lies parallel to the east in an elevated position. It appears that this run-off currently drains under the railway, and in some places along it, before draining westwards towards the river. Pond 1 lies immediately west of the route and may also receive run-off from the east, although this is not clear.

4.5 It is likely that any undeveloped habitats which are retained alongside the new cycle route would suffer at least some short-term disturbance as a result of the development. This would be likely to include some physical disturbance and increased noise and vibration etc. In the longer-term, the retained habitats would also be likely to suffer some increased disturbance, potentially including artificial lighting at night. These impacts could potentially be sufficient to displace birds, reptiles, amphibians and other fauna species of interest which currently occur on the site, at least temporarily.

4.6 There is an old record of GCN from within the country park which dates from 1996, although the exact details are unclear. The present surveys have not detected this species in any of the ponds surveyed, however.

4.7 There are no pre-existing records of dormouse from within a 1km of the site (although it does occur within the wider vicinity) and the present surveys found no evidence of this species.

4.8 On this basis there is no constraint in respect of these species, and no licence from NRW will be required.

Precautionary Approach

4.9 Whilst the surveys have not detected either of the two target species it is noted that all of the ponds are assessed as being of 'average' suitability for this species ('poor' in the case of Pond 2). In addition, the surrounding terrestrial habitats appear broadly suitable for foraging, commuting, sheltering and/or overwintering by this species. It is also noted that the woodland and scrub habitats do not appear entirely unsuitable for occupation by hazel dormouse. It is therefore recommended that a precautionary approach should be taken in respect of the *possible* occurrence of either or both of these species, either at the time of the works or in the future, and should ideally be taken into account when designing and implementing the new cycle path scheme.

Invasive Non-native Plants

4.10 It is noted that the disused railway line supports stands of Japanese knotweed and Himalayan balsam, both of which are listed on Schedule 9 of the amended Wildlife & Countryside Act 1981, which prohibits the deliberate or reckless spreading of these species in the wild. Appropriate measures should be taken during the development process to contain, and preferably eliminate, both these species from the site.

5.0 REFERENCES

Bright, P, Morris, P & Mitchell-Jones, A (2006) *The Dormouse Conservation Handbook* (2nd Edition). English Nature, Peterborough.

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

Griffiths, R A & Inns, H (1998) Surveying ***In:*** Gent, A & Gibson, S (Eds.) *Herpetofauna Workers' Manual*. Joint Nature Conservation Committee.

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

APPENDIX 1: HABITAT SUITABILITY INDEX RESULTS FOR GREAT CRESTED NEWT

Location	Pond Area	Pond Drying	Water Quality	Shade	Waterfowl	Fish	Local Ponds	Habitat	Barriers	Macrophytes	Flow	Elevation
A = 1 B = 0.5 C = 0.01	>800 = 0.8 500-800 = 1 100-500 = 0.5 <100 = 0.2	Never = 0.9 Rarely = 1 Late = 0.67 Early = 0.01	Good = 1.0 Mod. = 0.67 Poor = 0.33 Bad = 0.01	<60% = 1 60-80% = 0.8 80-100% = 0.4 100% = 0.2	Nil = 1 Occ. = 0.67 Freq. = 0.33 Abund = 0.01	Absent = 1 Poss = 0.67 Few = 0.33 Many - 0.01	5+ = 1 2-5 = 0.67 <2 = 0.33 Nil = 0.01	Good 1 Mod. 0.67 Poor 0.33 None 0.01	Nil = 1 Few = 0.67 Several = 0.33 Many = 0.01	<50% = 0.33 50-75% = 0.67 75-80% = 1 >80% = 0.01	None = 1 Still areas = 0.67 Moderate = 0.1 Fast Flow = 0.01	0-200m = 1 200-300m = 0.67 300-500m = 0.33 >500m = 0.1

HSI Score
<0.5 = Poor 0.5-0.59 = below ave 0.6-0.69 = average 0.7-0.79 = good >0.8 = excellent

Pond	Location	Pond Area	Pond Drying	Water Quality	Shade	Waterfowl	Fish	Local Ponds	Habitat	Barriers	Macrophytes	Flow	Elevation	Total HSI	HSI Score
1	0.5	0.2	1	0.67	0.4	1	0.67	1	0.67	0.67	0.33	1	1	0.63	Average
2	0.5	0.2	0.01	0.67	0.8	1	0.67	1	0.67	0.67	1	0.67	1	0.50	Poor
3	0.5	0.2	1	0.67	0.4	1	0.67	1	0.67	0.67	0.67	0.67	1	0.65	Average
4	0.5	0.2	0.67	0.67	0.4	1	0.67	1	0.67	0.67	1	0.67	1	0.65	Average
5	0.5	0.2	0.67	0.67	0.4	1	0.67	1	0.67	0.67	1	0.67	1	0.65	Average
6	0.5	0.8	0.9	0.67	1	0.33	0.67	1	0.67	0.67	0.33	0.67	1	0.67	Average
7	0.5	0.2	0.9	0.67	1	1	0.67	1	0.67	0.67	0.33	0.67	1	0.65	Average
8	0.5	0.2	0.9	0.67	1	1	0.67	1	0.67	0.67	0.33	0.67	1	0.65	Average
9	0.5	0.2	0.9	0.67	1	1	0.67	1	0.67	0.67	0.33	0.67	1	0.65	Average
10A	0.5	0.2	0.67	0.67	0.4	1	0.67	1	0.67	0.67	0.67	0.67	1	0.63	Average
10B	0.5	0.2	0.67	0.67	0.8	1	0.67	1	0.67	0.67	0.33	0.67	1	0.63	Average

APPENDIX 2: SURVEY RESULTS FOR GREAT CRESTED NEWT

POND 1 (woodland)	Date	12-13 Apr	13 Apr	24-25 Apr	4 May	12/6
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	**Dried out – no further survey possible**
Great crested newt	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Palmate	Male	-	-	2	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Smooth	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Common Frog	Adult	-	-	-	-	
	Tadpoles	-	-	-	-	
	Eggs	-	-	-	-	
Common toad	Adult	-	-	-	-	
	Tadpoles	-	-	-	-	
	Eggs	-	-	-	-	
Other species						
	No. bottles	**6**	**-**	**6**	-	
	Weather Conditions	Dry/still o/cast 14C	Dry, still, warm, 15C	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, still, after long period of hot weather

POND 2 (woodland)	Date	12-13 Apr	13 Apr	24-25 Apr	4 May	12/6
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	**Dried out – no further survey possible**
Great crested newt	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Palmate	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Smooth	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Common Frog	Adult	-	-	-	-	
	Tadpoles	-	-	-	-	
	Eggs	-	-	-	-	
Common toad	Adult	-	-	-	-	
	Tadpoles	-	-	-	-	
	Eggs	-	-	-	-	
Other species						
	No. bottles	**Too shallow**	**-**	**Too shallow**	-	
	Weather Conditions	Dry/still o/cast 14C	Dry, still, warm, 15C	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, still, after long period of hot weather

POND 3 (woodland)	Date	12-13 Apr	13 Apr	24-25 Apr	4 May	12/6
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	**Dried out – no further survey possible**
Great crested newt	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Palmate	Male	-	-	6	-	
	Female	-	-	2	-	
	Adult	-	-	-	7	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Smooth	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Common Frog	Adult	-	-	-	-	
	Tadpoles	-	-	-	-	
	Eggs	-	-	-	-	
Common toad	Adult	-	-	-	1	
	Tadpoles	-	-	-	-	
	Eggs	-	-	-	-	
Other species						
	No. bottles	**4**	**-**	**4**	-	
	Weather Conditions	Dry/still o/cast 14C	Dry, still, warm, 15C	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, still, after long period of hot weather

POND 4 (woodland)	Date	12-13 Apr	13 Apr	24-25 Apr	4 May	12/6
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	**Dried out – no further survey possible**
Great crested newt	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Palmate	Male	-	-	23	-	
	Female	-	-	8	-	
	Adult	-	-	-	7	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Smooth	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Common Frog	Adult	-	-	-	-	
	Tadpoles	-	-	-	-	
	Eggs	-	-	-	-	
Common toad	Adult	-	-	-	-	
	Tadpoles	-	-	-	-	
	Eggs	-	-	-	-	
Other species						
	No. bottles	**5**	**-**	**5**	-	
	Weather Conditions	Dry/still o/cast 14C	Dry, still, warm, 15C	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, still, after long period of hot weather

POND 5 (woodland)	Date	12-13 Apr	13 Apr	24-25 Apr	4 May	12/6
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	**Dried out – no further survey possible**
Great crested newt	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Palmate	Male	-	-	4	-	
	Female	-	-	-	-	
	Adult	-	-	-	2	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Smooth	Male	-	-	-	-	
	Female	-	-	-	-	
	Adult	-	-	-	-	
	Eft	-	-	-	-	
	Eggs	-	-	-	-	
Common Frog	Adult	-	-	-	-	
	Tadpoles	-	-	-	-	
	Eggs	-	-	-	-	
Common toad	Adult	-	-	-	-	
	Tadpoles	-	-	-	-	
	Eggs	-	-	-	-	
Other species						
	No. bottles	**5**	**-**	**5**	-	
	Weather Conditions	Dry/still o/cast 14C	Dry, still, warm, 15C	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, still, after long period of hot weather

POND 6 (Lake)	Date	12-13 Apr	13 Apr	24-25 Apr	4 May	13-14 Jun	14 Jun	20-21 Jun	21 Jun	25-26 Jun	26 Jun	4-5 Jul	4 Jul
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***
Great crested newt	Male	-	-	-	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-	-	-	-
	Adult	-	-	-	-	-	-	-	-	-	-	-	-
	Eft	-	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-	-
Palmate	Male	-	-	-	2	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-	-	-	-
	Adult	-	-	-	-	-	-	-	-	-	-	-	-
	Eft	-	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-	-
Smooth	Male	-	-	-	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-	-	-	-
	Adult	-	-	-	-	-	-	-	-	-	-	-	-
	Eft	-	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-	-
Common Frog	Adult	-	-	-	-	-	-	-	-	-	-	-	-
	Tadpoles	-	-	-	Frequent	Few	-	-	Few	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-	-
Common toad	Adult	-	-	-	-	1 juv	-	-	-	-	-	-	-
	Tadpoles	-	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-	-
Other species													
	No. bottles	**14**	**-**	**14**	-	**12**	**-**	**12**	**-**	**12**	**-**	**12**	**-**
	Weather Conditions	Dry/still o/cast 14C	Dry, still, warm, 15C	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, 14C	Warm, dry, 16C	Calm, 12C	Calm 12C	Calm, 20C	Calm, 19C	Calm, overcast, 16C	Calm, overcast, 19C

POND 7 (Oriental Gdn)	Date	12-13 Apr	13 Apr	24-25 Apr	4 May	13-14 Jun	14 Jun	20-21 Jun	21 Jun	25-26 Jun	26 Jun	4-5 Jul
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***
Great crested newt	Male	-	-	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-	-	-
	Adult	-	-	-	-	-	-	-	-	-	-	-
	Eft	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Palmate	Male	-	-	1	-	3	-	-	-	1	-	-
	Female	-	-	1	-	-	-	-	-	1	-	-
	Adult	-	-	-	-	-	-	-	3	-	-	-
	Eft	-	-	-	-	-	-	-	-	1	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Smooth	Male	-	-	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-	-	-
	Adult	-	-	-	-	-	-	-	-	-	-	-
	Eft	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Common Frog	Adult	-	-	-	-	-	-	-	-	-	-	-
	Tadpoles	-	-	-	Few	-	-	-	Few	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Common toad	Adult	-	-	-	-	-	-	-	-	-	-	-
	Tadpoles	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Other species	Axolotl				1?							1
	No. bottles	**8**	**-**	**8**	-	**8**	**-**	**8**	**-**	**8**	**-**	**8**
	Weather Conditions	Dry/still o/cast 14C	Dry, still, warm, 15C	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, 14C	Warm, dry, 16C	Calm, 12C	Calm 12C	Calm, 20C	Calm, 19C	Calm, overcast, 16C

POND 8 (Oriental Gdn)	Date	12-13 Apr	13 Apr	24-25 Apr	4 May	13-14 Jun	14 Jun	20-21 Jun	21 Jun	25-26 Jun	26 Jun	4-5 Jul
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***
Great crested newt	Male	-	-	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-	-	-
	Adult	-	-	-	-	-	-	-	-	-	-	-
	Eft	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Palmate	Male	15	-	4	-	3	-	-	-	-	-	-
	Female	3	-	1	-	2	-	-	-	1	-	-
	Adult	-	5	-	11	-	-	-	4	-	-	-
	Eft	-	-	-	-	-	2	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Smooth	Male	-	-	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-	-	-
	Adult	-	-	-	-	-	-	-	-	-	-	-
	Eft	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Common Frog	Adult	-	-	-	-	-	1 juv	-	-	-	1 juv	-
	Tadpoles	-	-	-	Few	-	Few	-	Few	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Common toad	Adult	-	-	-	-	-	-	-	-	-	-	-
	Tadpoles	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Other species												
	No. bottles	**8**	**-**	**8**	-	**8**	**-**	**8**	**-**	**7**	**-**	**7**
	Weather Conditions	Dry/still o/cast 14C	Dry, still, warm, 15C	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, 14C	Warm, dry, 16C	Calm, 12C	Calm 12C	Calm, 20C	Calm, 19C	Calm, overcast, 16C

POND 9 (Oriental Gdn)	Date	12-13 Apr	13 Apr	24-25 Apr	4 May	13-14 Jun	14 Jun	20-21 Jun	21 Jun	25-26 Jun	26 Jun	4-5 Jul
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***	***Lamping***	***Bottles***
Great crested newt	Male	-	-	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-	-	-
	Adult	-	-	-	-	-	-	-	-	-	-	-
	Eft	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Palmate	Male	9	-	7	-	10	5	-	-	4	-	-
	Female	4	4	6	-	7	1	-	-	2	-	-
	Adult	-	-	-	12	-	-	-	-	-	1	-
	Eft	-	-	-	-	2	1	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Smooth	Male	-	-	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-	-	-
	Adult	-	-	-	-	-	-	-	-	-	-	-
	Eft	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Common Frog	Adult	-	-	-	-	-	-	-	-	-	-	-
	Tadpoles	-	-	-	Freq	-	Few	-	Few	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Common toad	Adult	-	-	-	-	-	-	-	-	-	-	-
	Tadpoles	-	-	-	-	-	-	-	-	-	-	-
	Eggs	-	-	-	-	-	-	-	-	-	-	-
Other species												
	No. bottles	**8**	**-**	**8**	-	**8**	**-**	**8**	**-**	**8**	**-**	**8**
	Weather Conditions	Dry/still o/cast 14C	Dry, still, warm, 15C	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, 14C	Warm, dry, 16C	Calm, 12C	Calm 12C	Calm, 20C	Calm, 19C	Calm, overcast, 16C

POND 10a (Oriental Gdn)	Date	24-25 Apr	4 May	13-14 Jun	14 Jun	20 Jun
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	**Dried out – no further survey possible**
Great crested newt	Male	-	-	-	-	-
	Female	-	-	-	-	-
	Adult	-	-	-	-	-
	Eft	-	-	-	-	-
	Eggs	-	-	-	-	-
Palmate	Male	4	-	-	-	-
	Female	1	-	-	-	-
	Adult	-	2	-	-	-
	Eft	-	-	-	-	-
	Eggs	-	-	-	-	-
Smooth	Male	-	-	-	-	-
	Female	-	-	-	-	-
	Adult	-	-	-	-	-
	Eft	-	-	-	-	-
	Eggs	-	-	-	-	-
Common Frog	Adult	-	-	-	-	-
	Tadpoles	-	-	-	-	-
	Eggs	-	-	-	-	-
Common toad	Adult	-	-	-	-	-
	Tadpoles	-	-	-	-	-
	Eggs	-	-	-	-	-
Other species						
	No. bottles	**6**	-	**8**	**-**	**8**
	Weather Conditions	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, 14C	Warm, dry, 16C	Calm, 12C

POND 9 (Oriental Gdn)	Date	24-25 Apr	4 May	13-14 Jun	14 Jun	20 Jun
	Method	***Bottles***	***Lamping***	***Bottles***	***Lamping***	**Dried out – no further survey possible**
Great crested newt	Male	-	-	-	-	-
	Female	-	-	-	-	-
	Adult	-	-	-	-	-
	Eft	-	-	-	-	-
	Eggs	-	-	-	-	-
Palmate	Male	2	-	1	-	-
	Female	2	-	-	-	-
	Adult	-	2	-	-	-
	Eft	-	-	-	-	-
	Eggs	-	-	-	-	-
Smooth	Male	-	-	-	-	-
	Female	-	-	-	-	-
	Adult	-	-	-	-	-
	Eft	-	-	-	-	-
	Eggs	-	-	-	-	-
Common Frog	Adult	-	-	-	-	-
	Tadpoles	-	-	-	-	-
	Eggs	-	-	-	-	-
Common toad	Adult	-	-	-	-	-
	Tadpoles	-	-	-	-	-
	Eggs	-	-	-	-	-
Other species						
	No. bottles	**4**	-	**4**	**-**	**8**
	Weather Conditions	Dry/still o/cast 13C	Dry, still, humid 16C	Hot, sunny, 14C	Warm, dry, 16C	Calm, 12C