



NDR Ecological Post- Construction Monitoring - Great Crested Newts

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1 Introduction

1.1 Background

Mott MacDonald was commissioned by Norfolk County Council to undertake great crested newt (GCN) *Triturus cristatus* surveys as part of the monitoring for a new distributor road between the A1067 Fakenham Road (Grid Reference TG 14176 15656) and the Postwick Hub Junction just off the A47 (Grid Reference TG 29287 09190) known as the Norwich Northern Distributor Road (NNDR).

1.2 Legislation

GCN are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitat and Species Regulations 2017 (as amended). They are also listed on Section 41 of the NERC Act 2006. In summary it is an offence to:

- Intentionally or deliberately kill, injure, disturb or capture a great crested newt; and
- damage, destroy or obstruct access to any structure used for breeding or resting.

2 Methodology

2.1 Surveys

The surveys were undertaken in accordance with the GCN mitigation guidelines (English Nature, 2001). Three methods of the four following methods were undertaken on the ponds in 2019 on each visit. The exact method was decided on a case by case basis depending on what was suitable for the conditions found on site and suitability of the technique.

These included:

- Bottle trapping: Bottle traps (two litre soft drink bottles with the end cut off and inverted into the main body) are installed around the pond margin and left overnight with an air bubble above the surface of the water;
- Egg search: Searching suitable live and dead submerged vegetation for great crested newt eggs;
- Torch survey: Use of a high powered Clulite torch at night to illuminate the pond and visually see any newts in the pond; and
- Netting: Use of a long-handled dip net and sweeping it through suitable vegetation to capture newts within the edges of the pond.

Each pond was visited a total of six times within the relevant survey period as required by the guidelines. A total of two surveyors were used on each survey with at least one of the surveyors holding a Class 1 GCN survey licence.

2.2 Limitations

The results are likely to underestimate the GCN population for the following reasons:

- GCN surveys are only predicted to record between 2% and 30% of the population;
- No access was available to Pond 37 for all surveys 2019 and only access for the first three visits to pond 47 was available in 2019. Therefore survey results for Pond 37 and the last three visits for Pond 47 are not included in this report;
- Turbid water and/or the progressive bloom of pond weed meant that torching surveys was limited in Ponds 5, 6, 42, 44, 45, 46 and 47;
- The vegetation cover of ponds 7 and NE limited torching surveys.
- Ponds 45 and 46 had areas of filamentous algae which restricted the survey effort;
- Ponds NW, NE, SW and SE which have been installed as mitigation have a plastic liner and therefore traditional bottle traps cannot be used and instead floating bottle traps were used during surveys. It is unknown if these are more or less effective than traditional bottle traps.

3 Results

3.1 Results up to 2018

The presence of GCN identified by Mott MacDonald in Ponds 5, 6 and 7 at “Dog Lane”, Pond 16 at “Quaker Farm” and Ponds 37, 42, 44, 45, 46, 47 and 48 at “Rackheath” between 2007 and 2018; are found in Appendix A.

Peak counts of GCN from 2007, 2009, 2012, 2013, 2016, 2017 and the previous 2018 monitoring are presented below:

Table 3.1: Previous results from 2007, 2009, 2012, 2013, 2016, 2017 and 2018.

Site name	Pond no.	Date	Peak count of GCN	Peak count per meta-population
Dog Lane	5	2018	68	2018 - 93
		2017	13	2017 - 14
		2016	27	2016 - 38
		2013	14	2013 - 26
		2012	8	2012 - 8 (only 1 of 3 ponds surveyed)
		2007	28	2007 - 35
	6	2018	22	
		2017	1	
		2016	1	
		2013	0	
		2007	1	
	7	2018	3	
		2017	0	
		2016	10	
		2013	12	
2007		6		
Quaker Farm	16	2018	27	2018 - 27
		2017	30	2017 - 30
		2016	28	2016 - 28
		2012	27	2012 - 27
		2009	5	2009 - 5
		2007	7	2007 - 7
Rackheath	37 ¹	2016	17	2018 - 102
		2012	17	2017 - 8
		2009	2	2016 - 68
		2007	38	2013 - 43
	42	2018	8	2012 - 51
		2017	0	2009 - 57
		2016	11	2007 - 45
		2013	19	
		2012	15	

¹ not included in 2017 and 2018 surveys due to access.

Site name	Pond no.	Date	Peak count of GCN	Peak count per meta-population
		2009	2	
		2007	5	
	44	2018	19	
		2017	0	
		2016	9	
		2013	9	
		2012	9	
		2009	6	
		2007	4	
	45	2018	18	
		2017	8	
		2016	4	
		2013	2	
		2012	0	
		2009	1	
		2007	5	
	46	2018	3	
		2017	0	
		2016	2	
		2013	1	
		2012	0	
	SW 2015	2018	5	
		2017	2	
		2016	12	
	SE 2015	2018	9	
		2017	3	
		2016	13	
	NW 2016	2018	9	
		2017	2	
	NE 2016	2018	11	
		2017	5	
	47 ²	2018	20	
		2013	19	
		2012	9	
		2009	24	
		2007	24	
	48 ³	2013	5	
		2012	1	
		2009	24	
		2007	1	

Owing to the works being undertaken to construct NDR, ongoing monitoring of the GCN population is required to ensure the population is not affected as part of the mitigation licence

² Not included in 2016 and 2017 surveys

³ Not included in 2016, 2017 and 2018 surveys

granted by Natural England. Pond 48 was lost as part of the works in early 2017 and so four ponds have been created. They are known as Ponds SW, SE, NW and NE based on their location within the Site.

3.2 2019 Survey Results

Table 3.2: Results from GCN surveys 2019

Site name	Pond no.	Date	Air temperature (°C)	Amphibians recorded through bottle trapping	Amphibians recorded through torching	Egg search	Sweep net	GCN peak count
Dog Lane	5	08/04/2019	11	3 male and 9 female GCN	29 male and 13 female GCN	No		42
		15/04/2019	7	3 male and 5 female GCN	1 female GCN	No		
		09/05/2019	10	1 male and 1 female GCN	Nothing found	No		
		13/05/2019	15	1 male GCN	Nothing found	No		
		29/05/2019	12	Nothing found	1 female GCN	No		
		10/06/2019	14	Nothing found	Nothing found	No	No	
	6	08/04/2019	11	Nothing found	Nothing found	No		1
		15/04/2019	7	Nothing found	Nothing found	No		
		09/05/2019	10	Nothing found	Nothing found	No		
		13/05/2019	15	Nothing found	Nothing found	No		
		29/05/2019	12	Nothing found	Nothing found	No		
		10/06/2019	14	1 male GCN	Nothing found	No	No	
	7	08/04/2019	11	Nothing found	Nothing found	Yes		4
		15/04/2019	7	4 female GCN; 1 female smooth newt	Nothing found	-		
		09/05/2019	10	1 male and 3 female GCN	Nothing found	-		
		13/05/2019	15	1 male GCN	Nothing found	No		
		29/05/2019	12	Nothing found	Nothing found	-		
		10/06/2019	14	1 male smooth newt	Nothing found	-	No	
Quaker Farm	16	08/04/2019	11	1 male and 1 female GCN	12 male and 3 female GCN; 1 male smooth newt	Yes		25
		15/04/2019	7	1 female GCN	5 male and 3 female GCN	-		
		09/05/2019	10	1 female GCN	18 male and 7 female GCN; 1 male smooth newt	-		
		13/05/2019	15	6 male and 2 female GCN	1 male and 9 female GCN	-		
		29/05/2019	12	1 male GCN	6 male and 4 female GCN	-		
		10/06/2019	14	5 male and 2 female GCN; 1 male smooth newt	2 male GCN	-	No	
Rackheath	NW	10/04/2019	7	Overnight temperatures below 5°C, no	Nothing found	Yes		5

Site name	Pond no.	Date	Air temperature (°C)	Amphibians recorded through bottle trapping	Amphibians recorded through torching	Egg search	Sweep net	GCN peak count
				bottle trapping undertaken				
		17/04/2019	8	2 male and 2 female GCN; 1 male smooth newt	1 male and 4 female GCN	-		
		08/05/2019	9	Nothing found	1 female smooth newt	-		
		14/05/2019	16	Nothing found	Nothing found	-		
		30/05/2019	15	Nothing found	1 female GCN; 1 male smooth newt	-		
		11/06/2019	13	Nothing found	Nothing found	-	1 GCN eft	
NE		10/04/2019	7	Overnight temperatures below 5°C, no bottle trapping undertaken	Nothing found	Yes		5
		17/04/2019	8	2 male and 3 female GCN	3 male and 1 female GCN	-		
		08/05/2019	9	3 male and 1 female GCN	1 female GCN	-		
		14/05/2019	16	1 male and 1 female GCN; 3 male smooth newt	Nothing found	-		
		30/05/2019	15	Nothing found	1 female GCN	-		
		11/06/2019	13	1 male and 1 female GCN	Nothing found	-	3 smooth newt eft	
SW		09/04/2019	8	Overnight temperatures below 5°C, no bottle trapping undertaken	6 male and 2 female GCN	Yes		8
		16/04/2019	7	4 male GCN	Nothing found	-		
		07/05/2019	9	Nothing found	Nothing found	-		
		15/05/2019	12	Nothing found	1 male GCN	-		
		29/05/2019	12	Nothing found	1 male GCN	-		
		10/06/2019	14	Nothing found	Nothing found	-	No	
SE		09/04/2019	8	Overnight temperatures below 5°C, no bottle trapping undertaken	Nothing found	Yes		0
		16/04/2019	7	2 male smooth newt	Nothing found	-		
		07/05/2019	9	Nothing found	Nothing found	-		
		15/05/2019	12	Nothing found	Nothing found	-		
		29/05/2019	12	2 male smooth newt	Nothing found	-		
		10/06/2019	14	1 male smooth newt	Nothing found	-	2 smooth newt eft	

Site name	Pond no.	Date	Air temperature (°C)	Amphibians recorded through bottle trapping	Amphibians recorded through torching	Egg search	Sweep net	GCN peak count
42		09/04/2019	8	Overnight temperatures below 5°C, no bottle trapping undertaken	Nothing found	Yes		5
		16/04/2019	7	4 male and 1 female GCN; 1 female smooth newt	2 female smooth newt	-		
		07/05/2019	9	2 male and 2 female GCN; 1 male smooth newt	Nothing found	-		
		14/05/2019	16	1 male GCN, 4 male 2 female smooth newt	Nothing found	-		
		30/05/2019	15	1 male and 1 female smooth newt	Nothing found	-		
		11/06/2019	13	Nothing found	Nothing found	-	No	
		10/04/2019	7	Overnight temperatures below 5°C, no bottle trapping undertaken	Nothing found	No		2
44		17/04/2019	8	Nothing found	1 male and 1 female smooth newt	No		
		08/05/2019	9	Nothing found	1 female GCN; 1 female smooth newt	No		
		15/05/2019	12	Nothing found	Nothing found	No		
		30/05/2019	15	Nothing found	2 female GCN; 1 male smooth newt	Yes		
		11/06/2019	13	Nothing found	1 female GCN	-	No	
		09/04/2019	8	Overnight temperatures below 5°C, no bottle trapping undertaken	1 male GCN	Yes		1
45		16/04/2019	7	1 male smooth newt	1 male GCN; 1 male and 2 female smooth newt	-		
		07/05/2019	9	Nothing found	1 male smooth newt	-		
		14/05/2019	16	Nothing found	Nothing found	-		
		30/05/2019	15	Nothing found	1 male GCN	-		
		11/06/2019	13	Nothing found	Nothing found	-	No	
		09/04/2019	8	Overnight temperatures below 5°C, no bottle trapping undertaken	1 female smooth newt	No		0
46		16/04/2019	7	Nothing found	2 male and 1 female smooth newt	No		
		07/05/2019	9	Pond dried up and too shallow to bottle	1 female smooth newt	No		

Site name	Pond no.	Date	Air temperature (°C)	Amphibians recorded through bottle trapping	Amphibians recorded through torching	Egg search	Sweep net	GCN peak count
		14/05/2019	16	Pond dried up	Pond dried up	No		
		30/05/2019	15	Pond dried up	Pond dried up	No		
		11/06/2019	13	Pond dried up	Pond dried up	No		
	47	10/04/2019	7	Overnight temperatures below 5°C, no bottle trapping undertaken	1 male and 4 female smooth newt	Yes		32
		17/04/2019	8	14 male and 18 female GCN; 1 male smooth newt	3 male and 1 female smooth newt	-		
		08/05/2019	9	Nothing found	3 male and 3 female GCN; 9 male and 6 female smooth newt	-		
		15/05/2019	12	No access	No access	-		
		30/05/2019	15	No access	No access	-		
		11/06/2019	13	No access	No access	-		

Table 3.3: Results from 2007 – 2018 combined

Site name	Pond no.	Date	Peak count of GCN	Peak count per meta-population
Dog Lane	5	2019	42	2019 – 47
		2018	68	2018 – 93
		2017	13	2017 – 14
		2016	27	2016 – 38
		2013	14	2012 – 8 (only 1 of 3 ponds surveyed)
		2012	8	2007 – 35
		2007	28	
	6	2019	1	
		2018	22	
		2017	1	
		2016	1	
		2013	0	
	7	2019	4	
2018		3		
2017		0		
2016		10		
2013		12		
Quaker Farm	16	2019	25	2019 – 25
		2018	27	2018 – 27
		2017	30	2017 – 30
		2016	28	2016 – 28
		2012	27	2012 – 27

Site name	Pond no.	Date	Peak count of GCN	Peak count per meta-population
		2009	5	2009 – 5
		2007	7	2007 – 7
Rackheath	37 ⁴	2016	17	2019 – 58
		2012	17	2018 – 102
		2009	2	2017 – 20
		2007	38	2016 – 68
	42	2019	5	2013 – 43
		2018	8	2012 – 51
		2017	0	2009 – 57
		2016	11	2007 – 45
		2013	19	
		2012	15	
		2009	2	
		2007	5	
	44	2019	2	
		2018	19	
		2017	0	
		2016	9	
		2013	9	
		2012	9	
		2009	6	
		2007	4	
	45	2019	1	
		2018	18	
		2017	8	
		2016	4	
		2013	2	
		2012	0	
		2009	1	
		2007	5	
	46	2019	0	
		2018	3	
		2017	0	
		2016	2	
		2013	1	
		2012	0	
	NW	2019	5	
		2018	9	
		2017	2	
	NE	2019	5	
		2018	11	
		2017	5	
	SW	2019	8	

⁴ not included in 2017, 2018 and 2019 surveys

Site name	Pond no.	Date	Peak count of GCN	Peak count per meta-population
		2018	5	
		2017	2	
		2016	12	
	SE	2019	0	
		2018	9	
		2017	3	
		2016	13	
	47 ⁵	2019	32	
		2018	20	
		2013	19	
		2012	9	
		2009	24	
		2007	24	
	48 ⁶	2013	5	
		2012	1	
		2009	24	
		2007	1	

⁵ Not included in 2016 and 2017 surveys

⁶ Not included in 2016, 2017, 2018 and 2019 surveys

4 Conclusions and Recommendations

The number of GCN recorded in 2019 within each meta-population was lower than in 2018 but higher than 2017 (except for Quaker Farm) and in previous years (except for the Rackheath meta-population in 2016).

A medium population was identified within the ponds at Rackheath (58 peak count), Dog Lane (47 peak count) and Quaker Farm (25 peak count).

2018 survey results of Dog lane and Rackheath were deemed to be anormally high peak count. The was believed to be attributed to a sustained warm weather period over the survey season, meaning more GCN surface for breeding and more visable when torching and more likely to be found in bottle traps. Along with a sustained cold period prior to the breeding season keeping GCN in hibernation longer, before moving at the same time to the breeding ponds and creating a larger detectable peak. Therefore, the results of the 2018 surveys are not a fair comparison to previous years and 2019 results.

The counts of GCN recorded in 2019 at Dog Lane and Rackheath observed increased numbers from the majority of previous years of surveys. The count of GCN recorded in 2019 at Quaker Farm were marginally lower in peak numbers than previous years. The 2019 survey season day and overnight temperatures were considered to be slightly lower than average for this time of year. It was anticipated that counts were predicted to be lower than previous years, however this was not observed signicantly and increases in meta-populations were identified.

Monitoring will continue in 2020 with all works in the vicinity now complete and newt fencing removed.

5 References

English Nature (2001) Great Crested Newt Mitigation Guidelines

Mott MacDonald (2013) Great Crested Newt Survey – Technical Appendix
(233906/BSE/NOR/08/B 5 November 2013)

Mott MacDonald (2016) Norwich Northern Distributor Road Great Crested Newt Monitoring
2016

Mott MacDonald (2017) Norwich Northern Distributor Road Great Crested Newt Monitoring
2017

Mott MacDonald (2018) Norwich Northern Distributor Road Great Crested Newt Monitoring
2018

A. Pond Locations and Numbers







