

Great Crested Newt Survey Report

Parc Solar Traffwl, Anglesey

Prepared on behalf of Low Carbon

by

Wychwood Biodiversity Limited



Report Date	Version	Author	Approved
September 2020	1	C Halliday GradCIEEM	Dr G Parker MCIEEM

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Executive Summary

This report presents the results of a survey for great crested newts (*Triturus cristatus*) at Traffwll proposed solar park in Anglesey, North Wales. Thirty ponds were identified within 500m of the proposed site. Habitat Suitability Index calculations were made for all ponds where this was possible. Great crested newt (gcn) eDNA surveys were carried out for 19 of these ponds. In addition, one manual survey (egg search, torch search and bottle trap) was conducted on each of seven ponds located either within the site boundary or directly adjacent.

eDNA surveys found great crested newt presence in Pond 11, located 130m south-east of Plot 1 at its closest point. None of the other ponds were found to contain gcn eDNA and it is concluded that the gcn using pond 11 might not move northwards from the pond, possibly due to a lack of connecting refuge vegetation. Small numbers of palmate newts and small newt eggs (palmate or smooth) were found within two ponds adjacent to the site, as well as common frogs.

The development poses only a negligible danger to terrestrial gcn and no EPS mitigation license or mitigation will be required. However, as gcn are present within 250m of two plots of the proposal site, a construction method statement will need to be adhered to, ensuring legal compliance and ensuring that a favourable conservation status is not compromised.

Enhancements will need to be included in the LEMP to benefit gcn and other amphibians, in line with the NPPF 2019. Enhancements should include building hibernacula and log piles, as well as reducing the intensity of vegetation management around ponds, and between ponds and stone walls / hedgerows / woodland.

1. Introduction

Great crested newt surveys were undertaken in May 2019 in relation to an application for planning permission for a solar park on plots of land near to Llyn Traffwll in West Anglesey (Central grid reference SH 326 769). A total of seven plots of land have been considered in connection with this proposal.

1.1 Species Legislation

The great crested newt *Triturus cristatus*, is ‘fully protected’ by law in the UK. All elements of Section 9 of the Wildlife and Countryside Act (1981) apply, as does Regulation 39 of the Habitats Regulations (2010). The Act and Regulations include provisions making it an offence to:

- Deliberately or intentionally kill, injure or take;
- Intentionally or recklessly damage or destroy and breeding site or place used for shelter or protection;
- Intentionally or recklessly obstruct access to a place used for shelter or protection;
- Deliberately or recklessly disturb an animal while occupying a structure or place which it uses for that purpose;
- Deliberately take or destroy eggs; and
- Keep, transport, sell or exchange. It is an offence to possess or control any live or dead specimen or anything derived from such an animal.

The provisions of both the Wildlife and Countryside Act (1981) and the Habitat Regulations (2010) apply to all life stages of the protected species; eggs, juveniles and adults.

1.2 Local Status

Great crested newts are included in Anglesey’s Local Biodiversity Action Plan: Working for the Wealth of Wildlife I¹. Anglesey is thought to be a stronghold for gcn in Wales, with populations isolated from the mainland. Gcn are at risk from unsuitable habitat conditions including introductions of predatory fish and absence of suitable land foraging area; deterioration and infilling of field ponds; development; and possible loss of genetic variation in small isolated colonies.

Known populations of gcn exist in the west, northeast and southeast of Anglesey.

2. Methodology

A data search was requested from the North Wales Environmental Information Service – COFNOD – for protected species within 2km of the site boundary.

A desktop search was carried out using aerial images and Ordnance Survey maps to find ponds present within 500m of the site boundary.

Each pond was assessed for its suitability to be used by great crested newts during their breeding cycle, using the standard Habitat Suitability Index. The index takes into account ten factors of importance: Location, Pond area, Permanence, Water quality, Shade, Waterfowl, Fish, Pond count, Terrestrial habitat and Macrophytes.

On-site surveys were undertaken by a licensed surveyor Clare Halliday (NRW survey license number S086406/1) and assistant Laura Delves named on the license. Ponds that were accessible, and contained water, were sampled using the standard methodology for eDNA analysis, taking 20 samples from each water body, between the 24th and 27th May 2019. Where ponds were interconnected, an even sample was taken from different parts of the interconnected water body. Samples were kept cool after collection and were sent to Surescreen Scientifics for analysis on the earliest possible date.

Seven ponds that were either present within the site boundaries or directly adjacent to the site were additionally surveyed once using standard manual methodology, to support the results from the eDNA surveys. At least three of the following methods were used on each pond: egg search, torch search, net survey and bottle trap. All surveys were carried out by licensed surveyor Clare Halliday (NRW GCN license number S086406/1), assisted by Laura Delves, a named assistant on the license. Surveys were conducted between the 23rd and 28th May 2019.

Additional egg searches were carried out on all ponds where there was suitable vegetation.

3. Limitations

Whilst every effort has been made to provide accurate information and advice based upon the results of surveys undertaken in line with scientific guidance, within the limits of the resources available, there remain limitations in survey work of this nature. These include the possibility that ecological features were missed due to their absence at the time of the survey, or the year of survey and absence during surveys does not rule out the possibility of their being present at other times.

Limitations of this survey work included lack of access to some ponds due to the site's sensitivity as a nesting site for the rare Marsh harrier, prevailing weather conditions that may have caused ponds to be more or less full than in other years and Covid-19 restrictions preventing any further survey work from taking place in 2020.

4. Results

The data search from COFNOD returned 178 records of great crested newts within 2km of the site boundary, recorded between 1998 and 2017.

The desktop and site scoping searches identified 26 ponds within 500m of the site boundary and site survey identified an additional four ponds, making a total of 30 ponds that were assessed. Seven of the ponds were situated within or adjacent to the site. The locations of the ponds are shown in **Appendix 1**.

Site survey in May 2019 found that four of the ponds were closely connected with ponds already sampled (Ponds 6, 9, 10 and 25), four ponds were dry (12, 13, 14 and 22) and three ponds could not be accessed due to their being situated close to where a pair of Marsh Harriers were nesting (Ponds 16, 17 and 18), to avoid disturbing these rare birds.

Twenty ponds were assessed using the Habitat Suitability Index. The HSI assessment found the following results: 1 pond was of “below average” suitability, 3 ponds were “average”, 13 ponds were “good”, and 3 were “excellent”.

A total of 19 ponds were sampled for eDNA analysis. These were selected based on their HSI suitability (“average” or above) and whether they contained water at the time of survey. Seven ponds were manually surveyed once (Ponds 3, 4, 19, 20, 21, 27 and 33) and these were selected based on their close proximity to the site. The results of the Habitat Suitability Index survey, eDNA surveys and manual surveys are shown in Appendix 2. The full report from Suresceen Scientifics is shown in Appendix 3.

The eDNA survey found GCN presence in Pond 11 only. This pond lies just south of the site, 130m from the nearest site boundary of Plot 1. All other ponds tested negative for GCN eDNA.

Manual surveys did not find any GCN eggs on vegetation within any of the seven ponds surveyed. The surveys found one female palmate newt in Pond 19, which was caught in a bottle trap, and found small newt eggs on vegetation in Pond 3. Common frogs and tadpoles were also found. These surveys concluded that amphibians are present in the local area in low numbers.

5. Conclusions

The survey work found a lack of presence of breeding great crested newts within the proposed development site or within 100 metres of the site boundary. The one pond with confirmed gcn presence lies 130 metres from Plot 1 and 230 metres from Plot 3. Gcn do not appear to move northwards from the known breeding pond, as their DNA was absent from suitable waterbodies (Ponds 5 and 6) to the north of the small road that divides it from the proposal site. This may be due to a lack of appropriate refuge vegetation north of the road making it unattractive to gcn.

The surveys also found that although other amphibian species (palmate newt and common frog) are present within water bodies in the locality, they appear to be present here only in low numbers. This suggests that the habitat in this location is not currently suitable to support large numbers of amphibians.

There is a negligible chance that gcn would be impacted by the proposed development and so no mitigation will be required during construction or post-development. However, as gcn are present within 250m of two plot boundaries, and other amphibian species have been recorded in the locality, measures will be adopted throughout the construction phase to minimise disturbance to these species.

This construction method statement details RAMs and should be followed for the installation of the solar panels and associated minor works within the site, which may affect terrestrial habitat. Minor or short term destructive or disturbance works (e.g. cable laying or ground mountings) will also follow this Method Statement to ensure legal compliance and to ensure the favourable conservation status of the species is not compromised.

The following measures will be adopted throughout the construction period of the proposed development:

- An Ecological Clerk of Works will be employed on a fulltime call on/call off advisory basis where necessary.
- A toolbox talk to site operatives will be undertaken prior to any works commencing on site.
- A licensed ecologist will be present on site during all construction works involving habitat removal within a 250m radius of ponds. The licensed ecologist will search the grassland habitat prior to any form of digging, excavation or final vegetation clearance (below 6 inches) being started.
- Site operatives will maintain a watching brief and inform the Ecological Clerk of Works should a great crested newt be found.
- All construction activities will be excluded from within at least 2m of the hedgerow corridors (across the site) during the construction phase.
- Taller vegetation within working areas is to be trimmed and cut back to approximately 6 inches above ground level to remove cover at least 1 week prior to the start of works.
- Should any trenches and excavations be required, an escape route for animals that enter the trench must be provided, especially if left open overnight. Ramps should be no greater than 45 degrees in angle. Ideally, any holes should be covered.
- All excavations left open overnight or longer should be checked for animals prior to the continuation of works or infilling.
- Back filling should be completed immediately after any excavations, ideally back filling as an on-going process to the work in hand.
- Any excavated material stored overnight should be searched prior to being used as infill.
- The proposed timing of the works should coincide with the majority of great crested newt being within ponds (March – June) or during the hibernation period (with the exception of disturbance to features that may offer shelter for overwinter amphibians). This will reduce the likely presence of great crested within this unfavourable terrestrial habitat.
- If a great crested newt is found, work must stop immediately and contact should be made with the Ecological Clerk of Works, who will liaise with Natural Resources Wales.

As gcn and other amphibians are known to be present in the local area, the Landscape and Ecological Management Plan (LEMP) for the development should include provision for these species in line with the National Planning Policy Framework (NPPF) 2019, which requires plans to “promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity”. Such provisions should include a combination of the following:

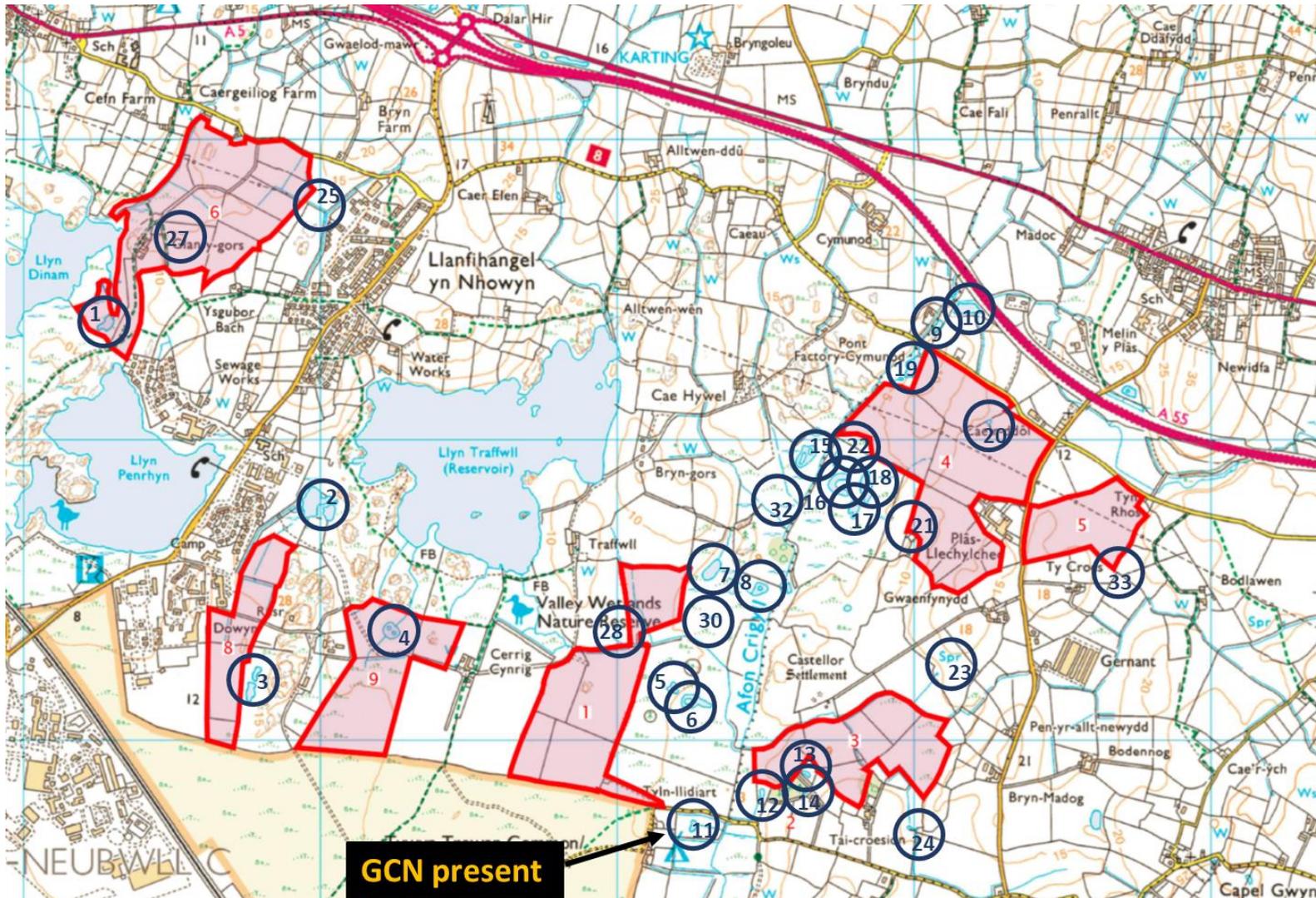
- Build hibernacula using local materials. Hibernacula should be created by digging a 0.5-1m deep hole of 1-2 metres diameter and filling with logs, stones, rubble, twigs and other natural materials found locally, then re-covering with the removed turf ensuring gaps and holes are left remaining into the hibernaculum. Hibernacula should be built near to ponds, in areas safe from potential disturbance including vehicle movements and mowing.
- Build log piles near ponds, hedgerows and woodlands, away from potential disturbance.
- Create new ponds that are suitable for amphibians, with features such as shallowly sloping, wavy edges and locally sourced vegetation, in areas away from potential disturbance.

- Increase the quality of terrestrial habitats for amphibians by reducing the intensity of management of vegetation around ponds and between ponds and suitable hibernacula, including stone walls, hedgerows and trees.

6. References

- i. Isle of Anglesey County Council webpage (2020). What are we doing to help biodiversity? Pdfs available from <https://www.anglesey.gov.uk/en/Residents/Countryside/Biodiversity/What-are-we-doing-to-help-biodiversity-on-Anglesey.aspx>
- ii. 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(4), 143-155.)

Appendix 1. Pond locations



Appendix 2. Results of the great crested newt surveys

Pond #	HSI score	HSI band	eDNA Sample date	GCN present?	Manual survey date	Manual survey results	Pond description
1	0.78	good	24/05/2019	No			Marshy area with deeper sections adjacent to Lake Penrhyn
2	0.73	good	24/05/2019	No			Large, deep pond with macrophytes at the edges and shrubby areas adjacent. Only half was accessible.
3	0.70	good	24/05/2019	No	25/05/2019	2 small newt eggs; none seen in torch survey, none caught in bottle traps	Shallow pond with some small trees, in a horse-grazed field.
4	0.81	excellent	24/05/2019	No	25/05/2019	No eggs; none seen in torch survey; none caught in bottle traps	Marshy pond filled with bull-rushes and some shrubby vegetation, with a drain running through from Llyn Traffwll.
5	0.74	good	28/05/2019	No			A complex of connected shallow ponds within a field, grazed by horses.
6	Same as Pond 5						Same complex of ponds as Pond 5
7	0.81	excellent	25/05/2019	No			Large, marshy pond with rushes, near woodland
8	0.73	good	25/05/2019	No			Complex of muddy ponds in a partly marshy field.
9	Included within Pond 19			n/a			
10	Included within Pond 19			n/a			
11	0.79	good	27/05/2019	Yes			Mid-size pond, deep in places, shaded by trees and close to wildflower grassland to the south.
12	Pond dry			n/a			Dry depression within a small woodland.
13	Pond dry			n/a			Dry depression within a small woodland.
14	Pond dry			n/a			Dry depression within a small woodland.
15	0.77	good	25/05/2019	No			Large, deep pond surrounded by bullrushes, within a marshy field.
16	Assessment not possible due to nesting Marsh Harrier			n/a			One of a collection of marshy ponds with eels present
17	Assessment not possible due to nesting Marsh Harrier			n/a			One of a collection of marshy ponds with eels present

18	Assessment not possible due to nesting Marsh Harrier			n/a			One of a collection of marshy ponds with eels present
19	0.76	good	24/05/2019	No	23/05/2019	No eggs; no newts seen in torch survey; 1 female palmate caught in bottle trap + frog tadpoles.	Man-made pond, deep, connected to ponds both north and south. Waterfowl using it regularly.
20	0.66	average	24/05/2019	No	23/05/2019	No eggs; no newts seen in torch survey; no newts caught in bottle traps	Small pond next to hedgerow, used by sheep to drink from.
21	0.75	good	25/05/2019	No	27/05/2019	No eggs; no newts seen in torch survey; no newts caught in bottle traps	Small pond in corner of field next to woodland. Plenty of vegetation.
22	0.69	average	Not sampled - dry/muddy				Large muddy area with large number of rushes.
23	0.67	average	27/05/2019	No			Spring near hedgerow, used by cattle to drink from
24	0.76	good	25/05/2019	No			Shallow pond at the end of a drain, used by horses to drink from
25	Part of the network of drains - sampled as part of Pond 27						
27	0.72	good	24/05/2019	No	23/05/2019	No eggs; no newts seen in torch survey (many small fish); no newts caught in bottle traps	Shallow pond containing fish, part of a network of drains running through Plot 6 and connected to Llyn Dinam.
28	0.79	good	25/05/2019	No			Wide drain.
30	0.81	excellent	25/05/2019	No			Collection of ponds in a circular formation within a field
32	0.75	good	25/05/2019	No			Large pond within a marshy field.
33	0.53	below average	27/05/2019	No	27/05/2019	No eggs; no newts seen in torch survey (small fish present); no newts caught in bottle traps. 1 common frog.	Small damp, vegetated area in the corner of the field, connected to drain running along hedgerow.

Appendix 3. Surescreen Scientifics eDNA report



Folio No: E5397
 Report No: 1
 Order No: TR01 10% discount on analysis
 Client: WYCHWOOD BIODIVERSITY
 Contact: Clare Halliday, Guy Parker
 Contact Details: clare@wychwoodbiodiversity.co.uk,
 guy@wychwoodbiodiversity.co.uk
 Date: 10/06/2019

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

Date sample received at Laboratory: 06/06/2019
 Date Reported: 10/06/2019
 Matters Affecting Results: None

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
2742	Pond 11, Traffwll	SH 3375 2570	Pass	Pass	Pass	Positive	1
2743	Pond 24, Traffwll	SH 3398 7570	Pass	Pass	Pass	Negative	0
2746	Pond 23, Traffwll	SH 3408 7622	Pass	Pass	Pass	Negative	0
2749	Pond 8, Traffwll	SH 3347 7649	Pass	Pass	Pass	Negative	0
2751	Pond 21, Traffwll	SH 3399 7669	Pass	Pass	Pass	Negative	0
2752	Pond 7, Traffwll	SH 3330 7656	Pass	Pass	Pass	Negative	0
2753	Pond 30, Traffwll	SH 3334 7642	Pass	Pass	Pass	Negative	0

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2755	Pond 33, Traffwll	SH 3467 7658	Pass	Pass	Pass	Negative	0
2756	Pond 15, Traffwll	SH 3363 7694	Pass	Pass	Pass	Negative	0
2757	Pond 32, Traffwll	SH 3376 5282	Pass	Pass	Pass	Negative	0
2758	Pond 2, Traffwll	SH 3176 9877	Pass	Pass	Pass	Negative	0
2759	Pond 28, Traffwll	SH 3301 7630	Pass	Pass	Pass	Negative	0
2760	Pond 20, Traffwll	SH 3425 7705	Pass	Pass	Pass	Negative	0
2761	Pond 19, Traffwll	SH 3377 9823	Pass	Pass	Pass	Negative	0
2762	Pond 5, Traffwll	SH 3320 7615	Pass	Pass	Pass	Negative	0
2763	Pond 1, Traffwll	SH 3177 2738	Pass	Pass	Pass	Negative	0
2764	Pond 4, Traffwll	SH 3224 7636	Pass	Pass	Pass	Negative	0
2765	Pond 27, Traffwll	SH 3157 7780	Pass	Pass	Pass	Negative	0
2766	Pond 3, Traffwll	SH 3177 7619	Pass	Pass	Pass	Negative	0

SUMMARY

When Great Crested Newts (GCN); *Triturus cristatus* inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (eDNA) traces to confirm GCN habitation, or establish GCN absence.

The water samples detailed below were submitted for eDNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

RESULTS INTERPRETATION

Lab Sample No.- When a kit is made it is given a unique sample number. When the pond samples have been taken and the kit has been received back in to the laboratory, this sample number is tracked throughout the laboratory.

Site Name- Information on the pond.

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O/S Reference - Location/co-ordinates of pond.

SIC- Sample Integrity Check. Refers to quality of packaging, absence of tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to results errors. Inspection upon receipt of sample at the laboratory. To check if the Sample is of adequate integrity when received. Pass or Fail.

DC- Degradation Check. Analysis of the spiked DNA marker to see if there has been degradation of the kit since made in the laboratory to sampling to analysis. Pass or Fail.

IC- Inhibition Check- PCR inhibitors can cause false results. Inhibitors are analysed to check the quality of the result. Every effort is made to clean the sample pre-analysis however some inhibitors cannot be extracted. An unacceptable inhibition check will cause an indeterminate sample and must be sampled again.

Result- NEGATIVE means that GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as no evidence of GCN presence. POSITIVE means that GCN eDNA was found at or above the threshold level and the presence of GCN at this location at the time of sampling or in the recent past is confirmed. Positive or Negative.

Positive Replicates- To generate the results all of the tubes from each pond are combined to produce one eDNA extract. Then twelve separate analyses are undertaken. If one or more of these analyses are positive the pond is declared positive for the presence of GCN. It may be assumed that small fractions of positive analyses suggest low level presence but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive.

METHODOLOGY

The laboratory testing adheres to strict guidelines laid down in WC1067 Analytical and Methodological Development for Improved Surveillance of The Great Crested Newt, Version 1.1

The analysis is conducted in two phases. The sample first goes through an extraction process where all six tubes are pooled together to acquire as much eDNA as possible. The pooled sample is then tested via real time PCR (also called q-PCR). This process amplifies select part of DNA allowing it to be detected and measured in 'real time' as the analytical process develops. qPCR combines PCR amplification and detection into a single step. This eliminates the need to detect products using gel electrophoresis. With qPCR, fluorescent dyes specific to the target sequence are used to label PCR products during thermal cycling. The accumulation of fluorescent signals during the exponential phase of the reaction is measured for fast and objective data analysis. The point at which amplification begins (the Ct value) is an indicator of the quality of the sample. True positive controls, negatives and blanks as well as spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared so they act as additional quality control measures.

The primers used in this process are specific to a part of mitochondrial DNA only found in GCN ensuring no DNA from other species present in the water is amplified. The unique sequence appropriate for GCN analysis is quoted in DEFRA WC 1067 and means there should be no detection of closely related species. We have tested our system exhaustively to ensure this is the case in our laboratory. We can offer eDNA analysis for most other species including other newts.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. Kits are manufactured by SureScreen Scientifics to strict quality procedures in a separate building and with separate staff, adopting best practice from WC1067 and WC1067 Appendix 5. Kits contain a 'spiked' DNA marker used as a quality control tracer (SureScreen patent pending) to ensure any DNA contained in the sampled water has not deteriorated in transit. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd also participate in Natural England's proficiency testing scheme and we also carry out inter-laboratory

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checks on accuracy of results as part of our quality procedures.

Reported by: Sarah Evans

Approved by: Chris Troth

End Of Report

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