Cyfoeth Naturiol Cymru
Natural Resources Wales

## The use of environmental DNA test for Great crested newt licensing purposes

The Department for Environment Food & Rural Affairs (DEFRA) has recently published the results of an investigation into the use of environmental DNA (eDNA) to detect the presence of Great crested newt (GCN) in water bodies together with a technical advice note setting out the field and laboratory methodology DEFRA Science and Research Project WC1067.
http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18650&FromSearch=Y&Publisher=1&SearchText=wc1067&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description

On the basis of this study Natural Resources Wales (NRW) will now accept eDNA test results as evidence of presence or absence of GCN for licence

Key Findings of the report (this is not comprehensive so please read the 'final report' and 'technical advice note'):

- eDNA can have a better rate of GCN detection (99%) than a combination of conventional survey techniques ((95%);
- It will detect GCN presence or absence within a water body up to 7 – 21 days after newts utilising it;
- It requires 1 day time visit to each water body but the visit must be targeted when GCN are likely to be present in water bodies in the area (which may change on a yearly basis depending on local / regional conditions); and
- The study is based only on a single year and the 'final report' states samples were taken from late April to late June. (Note for 2014 NRW will accept samples taken between 15th April to 30th June – see below).

**For GCN licence applications** we anticipate this technique will be useful for developments/projects with a **long lead in time** where it can be used for early stage assessments and screening to determine the water bodies that require population size class assessment surveys, and for temporary and low impact cases which may require presence or absence surveys only. This is because it can take several weeks for results to be available from the analytical process.

When using this technique to support a licence application you should be aware that:

1. Use of eDNA is just another survey technique – it is not a mandatory requirement. We will accept this new technique to determine GCN presence or absence if samples are undertaken in strict accordance with the published technical advice note and they are collected by a suitably trained and experienced licensed GCN surveyor. (Note that a survey licence is not

required to take the water samples, but for licence applications we will require evidence and confirmation that experienced, licensed GCN surveyor/s collected the samples to support the proposals in the method statement).

2. Applicants wishing to submit eDNA test results as evidence of presence or absence of GCN, must declare that:

   a. They have strictly followed the technical advice note;

   b. Only licensed GCN surveyors (provide names and references) have taken the samples to support their licence application; and

   c. Present the field and laboratory results as part of their application, by including a separate WORD document with the application clearly setting out

      i. The referenced water bodies which were tested,

      ii. Dates that samples were taken, and

      iii. The results (presence or absence) in tabular form - which must also be reflected on the survey maps/figures submitted (see point 3).

3. Method statements must also include on the relevant survey figure/s water bodies sampled and surveyed, clearly indicating water body references and results (presence or absence).

4. During 2014 we are only accepting eDNA results from samples collected following the onset of suitable weather conditions for surveying GCN between the 15th April and 30 June.

5. This technique will not provide population size class assessments.

6. Should a population size class assessment be required for the proposed development/project then the applicant will require 6 survey visits using conventional survey methods, in accordance with current recommendations within the "*Great Crested Newt Mitigation Guidelines, 2001*".

7. Our *Information to be provided in a European Protected Species Licence application form* document will be adapted in due course, but untill then this advice on what we will typically expect if an applicant wishes to use this technique is to be followed. Should population size class estimates be required then the survey section of the method statement must be completed as usual.

8. Applicants must ensure they retain or have access to the records set out in the technical advice note, and used to support the licence application, for at least 12 months following the first licence return (date of which will be set out in any licence granted).

9. eDNA can also be used for post development monitoring surveys if presence or absence only surveying is required under licence.

The study undertaken did not include an analysis of potential suppliers or likely level of demand. Therefore should you wish to use this test you will need to make an informed **risk based judgement** about whether to use this test or conventional surveys to detect presence and absence of GCN. In particular applicants should be aware of:

- Factors affecting false negatives when collecting water samples – the need for training and recognising there will be difficult or less suitable sites for this technique.
- Factors causing false positives within handling and laboratory analysis – the results were obtained using a high specification laboratory. There is a risk that other laboratory layouts might generate different results. When commissioning laboratory analysis users should satisfy themselves that they can achieve a satisfactory level of performance.
- The study is based on a single years results and expert judgement should be applied to ensure samples are collected at the optimum time, when GCN are active, bearing in mind geographical location and conditions early in the year.
- Whether their project timetable allows sufficient time to undertake the required number of population size class assessment surveys (i.e. the conventional 6 surveys between March-June). If an eDNA test shows presence of GCN and as such a population assessment is required for the proposed development and impacts. This will require careful forward planning.
- The study looked at one type of eDNA test – quantitative Polymerase Chain Reaction (qPCR). We anticipate that variations in the technique from those studied and new techniques will emerge if industry finds this test useful. Industry will need to demonstrate equivalence for alternative tests.

**For the immediate future we will therefore only accept eDNA evidence using the specific qPCR test set out in the technical advice note.**

We will monitor how much uptake there is of this technique and seek feedback from industry on their experience.