Plate 13 – Track north through site.

Plate 14 – Dense buddleia on both sides of track.

Plate15 – Collapsed structure.

Plate 16 – Track towards northwest corner of site.

Plate 17 – Japanese knotweed under treatment.

Plate 18 – West side of north island, viewed from Japanese knotweed eradication site.

Plate 19 – Japanese knotweed regrowth.

Plate 20 – Tall ruderals on track in north part of site.

Plate 21 –Tall herbs/ruderals on north edge of site.

Plate 22 – Unsafe wooden footbridge to north island.

Plate 23 – Lake to northeast of site.

Plate 24 – Broadwater Sailing Club track entrance.

Plate 25 – Giant knotweed infestation.

Plate 26 – Giant knotweed leaf.

Plate 27- North-south track on east edge of site.

Plate 28 – Floating pennywort on River Colne.

Plate 29 – Native black poplar lower stems.

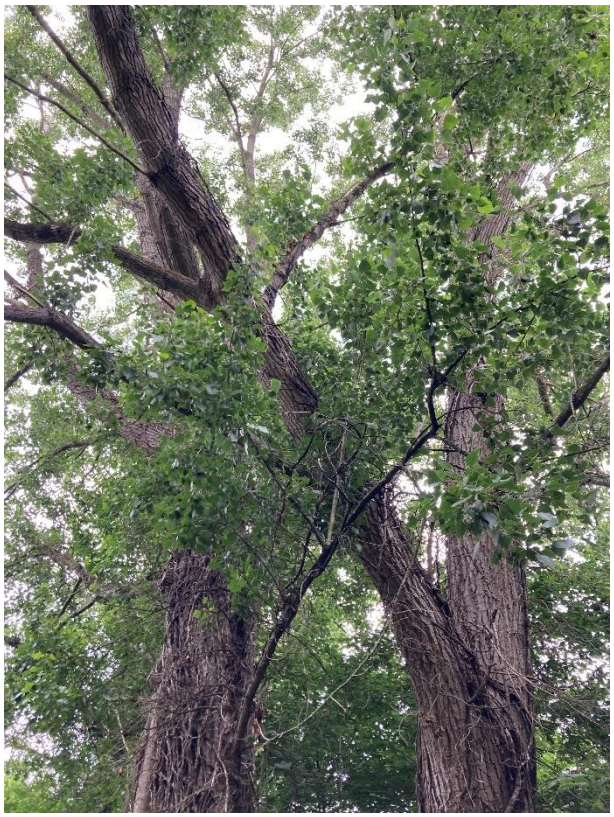


Plate 30 – Native black poplar upper stems.

18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Telephone: +44 (0)330 223 1074
www.rskbiocensus.com

Richard Densham
Mace Limited
155 Moorgate
London
EC2M 6XB

16 June 2022

Our reference: 2483631 T1 Broadwater Lake GCN Survey Results Rev00

Dear Richard,

Broadwater Lake – Great Crested Newt HSI and eDNA Surveys

This letter provides the results of the great crested newt (GCN) habitat suitability index (HSI) assessments and environmental DNA (eDNA) analysis of the water bodies located on an area of land in close proximity to Broadwater Lake, Uxbridge (OS grid reference: TQ 0471 8921; Figure 1), hereafter referred to as 'the site'. A preliminary ecological appraisal (PEA) conducted in 2021 by CGO Ecology Ltd identified an area of standing water in the eastern part of the site. This was the primary target for further survey, with a site walkover also conducted to identify any additional bodies of water that should be subject to further survey.

Methods

Any water bodies encountered during the site walkover were subjected to HSI assessment to determine suitability for GCN. Any habitat deemed suitable was then sampled for eDNA analysis. The survey was undertaken on 20 April 2022 by Sophie Elliot with assistance from Joe Pepper. Sophie holds a licence to survey for GCN (2017-30376-CLS-CLS) and has been trained to carry out eDNA and HSI surveys.

HSI Assessment

Following methods set out in ARG (2010), how suitable a pond might be for GCN was scored using a habitat suitability index (HSI) developed by Oldham et al. (2000); this uses a scale on which 0 indicates unsuitable habitat and 1 represents optimal habitat. The score is derived from information on ten factors that affect GCN. By convention these are called suitability indices (SIs) and coded as SI 1 to SI 10 in the order given below:

- geographic location;
- surface area;
- hydrology (drying);
- water quality;
- shade;
- presence of water fowl;
- presence of fish;

- number of adjacent water features;
- terrestrial habitat; and
- macrophyte cover.

BDS data and field survey results are used in combination with graphs in Oldham et al. (2000) to score each SI individually on a scale from 0.01 to 1, and an overall HSI score for the pond is calculated using the following formula:

HSI = (SI1 × SI2 × SI3 × SI4 × SI5 × SI6 × SI7 × SI8 × SI9 × SI10)1/10.

The suitability of a pond for GCN can then be categorised on the basis of its HSI score following a convention established by Brady (unpublished) as follows:

- poor - HSI <0.5
- below average - HSI 0.5 – 0.59
- average - HSI 0.6 – 0.69
- good - HSI 0.7 – 0.79
- excellent - HSI > 0.8

An HSI score measures the suitability of a pond for GCN, but cannot indicate whether or not they are actually there. If they are, it may be that the higher the HSI score the larger the population of GCN and vice versa, but this will not always hold true.

eDNA analysis

Ponds with a HSI score of below average or above were then subject to eDNA analysis. Ponds scoring poor suitability were deemed unlikely to support GCN and therefore were not subject to further testing. eDNA methodology investigates whether Great Crested Newts have been in a pond by analysing the water for their DNA (which can be shed in skin secretions, excrement etc). Using kits from approved suppliers, 20 samples were taken from the ponds adhering to strict protocols (Biggs et al. 2014) approved by Natural England, which - among other things - ensure that samples do not get cross-contaminated. Sampling took place at the recommended time, i.e. between mid-April and June (the actual sampling date was the 20 April 2022). Subject to safety of access, sample spacing was regular, except in so far as it targeted aquatic vegetation that might be used for egg-laying. The 20 samples from the pond were finally collected into a single sample bag and gently homogenized, after which 6 sub-samples were preserved in an ethanol-based preservative, and sent to the ADAS laboratory for analysis.

Limitations

The primary standing water body (waterbody 1) was heavily overgrown with vegetation, with banks that were too steep to safely access the water's edge. However, the results of the HSI assessment at this pond did not require eDNA analysis, meaning that the impact of this constraint is negligible.

Results

Four bodies of water with potential for GCN were found on site, including the enclosed area of standing water described in the PEA (CGO Ecology, 2021). Sampling protocols were followed successfully throughout. Three of these water bodies (waterbodies 1,2,4) were found to have 'poor' suitability (HSI<0.5), and as such were not analysed further. Waterbody 3, an extension of the main lake in the north-west corner of the site, was judged to be of 'below average' suitability (HSI 0.52), but still eligible for eDNA analysis.

The eDNA analysis of waterbody 3 returned a negative result, meaning that no great crested newt DNA was present in the pond at the time of sampling. GCN DNA degrades in water from 7 to 21 days. See *Appendix 2* for full eDNA analysis results.

Evaluation and Conclusions

The eDNA results show that GCNs are not currently present onsite and are therefore unlikely to be present within the working area. No further surveys are recommended for GCN on site and no licence is required. GCN and their habitat (both terrestrial and aquatic) are protected by law, therefore in the event that GCN are found on site during works then work should stop and an ecologist should be consulted.

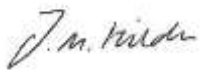
If you have any questions about the contents of this letter, I can be contacted by email on Joe.Pepper@rskbiocensus.com or by phone on 07587 039248.

Yours sincerely,

Joe Pepper, Assistant Ecologist

On behalf of RSK Biocensus

Technical review by



James Hildreth
Associate Director

Figures

Figure 1 – Site location

Figure 2 – Pond locations

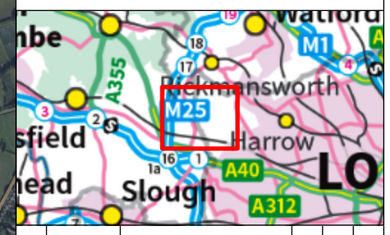
501500 502000 502500 503000 503500 504000 504500 505000 505500 506000 506500 507000 507500

192000 191500 191000 190500 190000 189500 189000 188500 188000 187500 187000

West Hyde Lane
M25
Chalfont Lane
A412
West Hyde
Denham Way
Tilehouse Lane
Slade Oak Lane
Denham Manor Nursing Home
Denham Aerodrome
Denham Golf Club
Amersham Road
A413
Redhill
Oxford Road
Denham
Denham Green
South Harefield
Buckinghamshire Golf Club
Taylors Meadow
Harefield Hospital
The Harefield Academy
Northwood Road
Park Lane
Harefield Infant School
Harefield
Preston Park
Breakspear Road North
Ducks Hill Road
BMI Bishops Wood Hospital
Bishops Wood Country Park
Michael Sobell Hospice
Bayhurst Wood Country Park
Harvil Road
Breakspear Road South
Uxbridge Golf

Legend:

Site Boundary



Rev	Date	Description	Drn	Chk	App
00	18/05/2022	2483631	WF	RH	AA

Broadwater Lake

RSK biocensus
EXPERTS IN ECOLOGY

TITLE: Figure 1:

Site Location Plan

0 250 500 750
Metres
SCALE: 1:20,000 @ A3

N W E S

REV 00

Document Path: C:\OneDrive\RSK Group\RSK Biocensus - 2483631 - Broadwater Lake Ecological Mitigation\06 GIS\03 - APRX\2483631 - Broadwater Lake - Fig 1 - Site Location.aprx

Contains Ordnance Survey data © Crown copyright and database right 2022
World Imagery (Clarity): This work is licensed under the Esri Master License Agreement.View Summary | View Terms of UseExport: This layer is not intended to be used to export tiles for offline. Data Collection and Editing: This layer may be used in various ArcGIS apps to support data collection and editing, with the results used internally or shared with others, as described for these use cases.
World Imagery: Maxar, Microsoft
Hybrid Reference Layer: Esri UK, Esri, HERE, Garmin, GeoTechnologies, Inc, METI/NASA, USGS
OS Open Rasters: Contains OS data © Crown Copyright and database right 2020