



Amphibian and Reptile Conservation
RESEARCH REPORT 15/02

Integrated Great Crested Newt Status Surveillance for Wales

Part 1 Report (March 2015)

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CONTENTS

	Page
Contents	3
List of Tables and Figures	3
Summary	4
Introduction	5
Methods	6
Results	7
Discussion and Recommendations	13
References	16

LIST OF TABLES AND FIGURES

	Page
Table 1. Great crested newt “presence known” surveillance sites in Wales.	7
Table 2. Great crested newt “presence unknown” surveillance sites in Wales.	8
Table 3. Existing great crested newt status data from “presence known” surveillance sites.	9
Table 4. Integrated status assessment of great crested newts in Wales.	12
Figure 1. Example comparison of great crested newt population (count) data from long-term monitoring carried out at two Welsh SACs.	15

SUMMARY

Wales provides country level status information on great crested newts as part of the UK's reporting to the EU. Because of recent research in Wales, surveillance of great crested newts in Wales can be enhanced and integrated with other status estimators to provide high-quality, long-term information on status and trends which are compatible with other existing and expected schemes.

Great crested newt "presence known" (including Welsh SACs) and "presence unknown" surveillance sites were identified from within the species' Welsh range. Existing data were collated and combined with data from NARRS surveys and modelled status metrics to produce a suite of measures amounting to an assessment of great crest newt status in Wales. The species is currently assessed as "stable" in terms of range in Wales, with monitored populations considered to be "increasing" on balance. More detailed assessment will be possible with the accumulation of comparative data.

1. INTRODUCTION

The 1992 EU Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) provides strict protection for some 1,000 species of special concern at European level, including the great crested newt (*Triturus cristatus*). Under Annex IV of the Habitats Directive, EU Member States are required to report every six years on the status of species covered (Article 17 reporting). Such reporting is carried out at UK level but Wales (and England and Scotland) are required to provide data at country level to contribute to each report.

Surveillance of great crested newts across GB requires enhancement in order to elaborate the species' status and population trends, and to contribute to the UK's article 17 reporting obligations. It is anticipated that some long-term needs in this respect will be met by GB-level agency initiatives; however, the Welsh Government (WG) and Countryside Council for Wales (CCW)/Natural Resources Wales (NRW) have funded work over the past several years (e.g. Arnell & Wilkinson, 2011a; 2011b; 2013a; 2013b; Fletcher *et al.*, 2014; French *et al.*, 2014) which will allow Wales to more easily arrive at a suite of status metrics for great crested newts (at Wales level) than currently possible for other GB jurisdictions.

Wales' metrics should be produced in such a way as to incorporate and integrate approaches, enhance understanding of great crested newt status and trends at Wales level, and be compatible with initiatives at both Wales and GB levels anticipated to come on-line beyond 2015, such as *PondNet*. These in turn are also intended to contribute to the UK's Article 17 report. Wales is not, however, presently reliant on anticipated GB-level schemes to assess great crested newt status at country level.

The aims of the present report are to:

- A. Identify eight sites (including Wales' great crested newt SACs) with great crested newt "presence known" to contribute to long-term monitoring of the species' status in Wales.
- B. Identify an additional eight sites (based on 1 x 1 km squares) within the Welsh range of great crested newts with "presence unknown" to contribute to long-term monitoring of the species' status in Wales.
- C. Collate and present existing data (to 2014) from sites identified in A.

- D. Integrate these data with data from other initiatives and previous reports to create a suite of metrics leading to the description of status of great crested newts in Wales.

2. METHODS

- A. Locations of Welsh SACs (five) were obtained from http://jncc.defra.gov.uk/ProtectedSites/ACselection/SAC_list.asp?Country=W. SAC subsites included in existing long-term monitoring and for which data have been collated were identified from North East Wales Amphibian and Reptile Network (NEWARN) data. An additional three “presence known” sites were identified in consultation with WG and NRW staff.
- B. Eight “presence unknown” surveillance sites (1X1 km BNG squares) were selected at random from within the known range of great crested newts in Wales (see French *et al.*, 2014). Selection was constrained to squares containing 4 or more ponds in suitable habitat (Oldham *et al.*, 2000) and which had no known records of great crested newt presence. Selection was stratified to reflect regional differences in the density of Welsh great crested newt populations: one square from Anglesey; four from North East Wales; one from Powys and two from South Wales.
- C. Data from monitoring of “presence known” sites were collated from existing status assessments made by NEWARN, additional (2014) survey data where available, and from data supplied by South East Wales Biological Records Centre (SEWBRc) under data exchange agreement with ARC.
- D. Data from C were tabulated and integrated with great crested newt data from the first cycle of random survey squares of the National Amphibian and Reptile Recording Scheme (NARRS; Wilkinson & Arnell, 2013) “NARRS1 squares” (2007 – 2012), as well as modelled data on great crested newt status (French *et al.*, 2014), to create a suite of repeatable metrics that describe the species’ status in Wales. Data from “presence unknown” sites are not yet available.

3. RESULTS

Locations of great crested newt “presence known” and “presence unknown” surveillance sites are presented in Tables 1 and 2, respectively.

Table 1. Great crested newt “presence known” surveillance sites in Wales.

Site Name	Site Status	SAC Subsites Included in Long-term Monitoring	Local Authority	Indicative Grid Reference
Newborough/ Glantraeth	SAC	Newborough	Anglesey	SH4166
Mynydd Helgain (Halkyn)	SAC	Pen-yr-Henblas	Flintshire	SJ1972
Deeside and Buckley Newt Sites	SAC	Maes y Grug Brookhill	Flintshire	SJ2666 SJ2865
Johnstown Newt Sites	SAC	Hafod R1 Hafod R2	Wrexham	SJ3046 SJ3045
St. Asaph Business Park	compensation site	-	Denbighshire	SJ0174
Granllyn	SAC	-	Powys	SJ2211
RAF St. Athan	compensation site	-	Vale of Glamorgan	ST0168
Ffos y Fran	land reclamation site	-	Merthyr Tydfil	SO0806

Table 2. Great crested newt “presence unknown” surveillance sites in Wales.

Site Name	Local Authority	Site Status	Grid Reference	Approx. Number of Ponds in Square
Henllys Golf Club	Anglesey	presence unknown	SH6077	9
Bodfari Road	Denbighshire	presence unknown	SJ0670	5
Nant-Lewis-Alyn	Denbighshire	presence unknown	SJ0967	8
Llanfynydd	Flintshire	presence unknown	SJ2856	5
Pentre	Wrexham	presence unknown	SJ3141	14
Brithdir	Powys	presence unknown	SJ1902	4
Duke of York Road	Monmouthshire	presence unknown	SO5312	4+
Marcroes	Vale of Glamorgan	presence unknown	SS9269	4

Surveillance and status data from the eight great crested newt “presence known” sites (10 survey units including subsites) is shown in Table 3. Data from additional subsites can also be made available and will be incorporated into the Part 2 report.

Table 3. Existing great crested newt status data from “presence known” surveillance sites.

Site	Start Year	Most Recent Data	Current Number of Ponds	Historic Number of Ponds	Current Occupied Ponds	Historic Occupied Ponds	Most Recent Max GCN Count	Historic Max GCN Count	Recent Population Trend (period)	Long Term Population Trend (all data)	Current Status: Population Trajectory	Reasons for Status (see note #, below)
Newborough	1999	2013	7	8	4	7	53	256	Decrease (2009-2013)	Increase (1999-2013)	UNFAVOURABLE: UNKNOWN	#1
Pen-yr-Henblas (Halkyn)	1994	2013	--	11	3	?	125	225	Fluctuation (2009-2013)	Decrease (1994-2013)	UNFAVOURABLE: DECREASING	#2
Maes y Grug (D&B)	1991	2014	22	21	10	2	31	242	Decrease (2010-2014)	Decrease (1991-2013)	UNFAVOURABLE: DECREASING	#3
Brookhill (D&B)	1995	2014	22	22	20	22	210	609	Increase (2011-2014)	Slight Decrease (1995-2014)	UNFAVOURABLE: INCREASING	#4
Hafod R1 (JNS)	1997	2014	20	16	13	?	249	374	Increase (2010-2014)	Slight Decrease (1997-2014)	FAVOURABLE: INCREASING	#5
Hafod R2 (JNS)	1992	2014	12	8	10	8	262	262	Increase (2010-2014)	Increase (1992-2014)	FAVOURABLE: INCREASING	#6
St. Asaph Business Park	1993	2014	--	--	21	--	53	221	Decrease (2010-2014)	Increase (1993-2014)	FAVOURABLE: INCREASING	#7
Granllyn	1999	2014	2	2	2	2	146	112	Increase (2009-2013)	Slight Increase (1999-2014)	UNFAVOURABLE: INCREASING	#8
RAF St. Athan*	2003	2007	?	?	?	?	36	36	Unknown since 2007	Unknown	UNKNOWN: UNKNOWN	#9
Ffos y Fran*	2007	2007	?	?	?	?	19	19	Unknown since 2007	Unknown	UNKNOWN: UNKNOWN	#9

* Data kindly supplied by SWEBReC

Reasons for Status Assignments (see Table 3, above)

#1. Newborough

RED: Status Unfavourable due to lack of management. Population trajectory unclear due to missing data points and fluctuations, though the recent trend is a decrease.

#2. Pen-yr-Henblas (Halkyn)

RED: Status Unfavourable due to the presence of *Crassula* and possible negative influence of surrounding land use. Population displays substantial fluctuations in maximum counts since surveillance began though the long term trend is a steady decrease.

#3. Maes y Grug (Deeside & Buckley Newt Sites)

RED: Status Unfavourable due to long term decline in maximum counts. No other information available at present.

#4. Brookhill (Deeside & Buckley Newt Sites)

AMBER: Status Unfavourable due to the presence of *Crassula* and lack of management. Maximum counts indicate recent population increase.

#5. Hafod R1 (Johnstown Newt Sites)

GREEN: Population recovering and ongoing favourable management present.

#6. Hafod R2 (Johnstown Newt Sites)

GREEN: Population recovering and ongoing favourable management present. Recent sharp increase in maximum counts.

#7. St. Asaph Business Park

GREEN: This compensation site is in favourable condition and the population shows a long term increase. The site is still subject to pond loss/creation as the Business Park is further developed. Current data on numbers of ponds, pond occupancy etc. is required to improve assessment of this site long-term.

#8. Granllyn

AMBER: Status Unfavourable due to degree of vegetation cover, fish and duck presence. Pond creation a priority at this site. SAC management plan is under review. Recent increase in maximum counts.

#9. RAF St. Athan and Ffos y Fran

UNKNOWN: These sites are not currently known to have been subject to long-term surveillance (or the data is not yet available from SEWBReC), however both sites have been subject to recent works. Further investigation (and hopefully survey) will be carried out during spring and summer 2015.

The above status assignments combined with other status metrics are summarized in Table 4. Overall Status Assignment is calculated by scoring: RED = -1; AMBER = 0; GREEN = +1; Overall Population Trajectory is calculated by scoring Unknown or Decreasing = -1; Stable = 0; Increasing = +1.

Background rates are derived from surveys of randomly-assigned squares (i.e. with no *a priori* knowledge of species present). Derivation of model metrics is described fully by French *et al.* (2014). Habitat quality measure (number of high quality ponds across Wales) is the proportion of occupied ponds projected to have a Habitat Suitability Index (HSI) score of >0.7 (from Wilkinson & Arnell, 2013 and French *et al.*, 2014). See Oldham *et al.* (2000) for details of the HSI.

Table 4. Integrated status assessment of great crested newts in Wales.

Element	Detail	Metric	Value	
Integrated Surveillance “Presence Known” Sites	Newborough	Status Assignment	Unfavourable: Unknown	
	Pen-yr-Henblas	Status Assignment	Unfavourable: Decreasing	
	Maes y Grug (D&B)	Status Assignment	Unfavourable: Decreasing	
	Brookhill (D&B)	Status Assignment	Unfavourable: Increasing	
	Hafod R1 (JNS)	Status Assignment	Favourable: Increasing	
	Hafod R2 (JNS)	Status Assignment	Favourable: Increasing	
	St. Asaph Business Park	Status Assignment	Favourable: Increasing	
	Granllyn	Status Assignment	Unfavourable: Increasing	
	Overall Status Assignment			0 (Stable)
	Overall Population Trajectory (from maximum counts)			2 (Increase)
	RAF St. Athan*	Status Assignment	Unknown: Unknown	
	Ffos y Fran*	Status Assignment	Unknown: Unknown	
NARRS1 Surveys	NARRS Wales & Central Region	Background occupancy rate	15%	
		Background mean HSI	0.57	
Spatial Status Modelling	Welsh Range		7,312 km²	
	Number of Welsh populations (modelled)		3,271 occupied ponds	
	Habitat for the species in Wales (modelled)		2,217 km²	
	Habitat quality measure for Wales (from models and NARRS1 survey data)		810 high quality ponds	

* Not included in overall assessments due to lack of contemporary data.

4. DISCUSSION AND RECOMMENDATIONS

This report represents the first attempt to present an integrated suite of repeatable metrics, derived from multiple approaches to surveillance and status assessment, to fulfil Wales' component of the UK's Article 17 reporting obligations to the EU. Anticipated schemes, such as *PondNet*, will use *the number of occupied survey squares* as a repeatable metric, noting that all ponds in a square will be surveyed in turn until great crested newts are detected. This is in contrast to the NARRS1 approach, in which only the south-westernmost pond in a square is surveyed, thus generating overall (or background) occupancy rates for each amphibian species. Table 4 integrates these approaches, adding also an assessment of short- and long-term population trends (based on maximum counts). This approach is compatible with NARRS2, a development of NARRS1 in which survey squares are revisited annually in order to obtain population/trend information.

Assessment of great crested newt status in Wales may therefore be described by:

- Change in landscape-level (background) pond occupancy rate. (From NARRS1.)
- Change in “survey site” occupancy rate, using “presence known” and “presence unknown” sites/squares to account for the possibility of both losses and gains in populations. This approach will be compatible with *PondNet* data, once available, and thence with UK-level status assessments for the EU. Integrated status assessment for great crested newts will double the number of surveillance squares intended for Wales. (From existing surveillance of SACS and newly-identified surveillance sites.)
- Changes in Conservation Status metrics (as used for determination of Favourable Conservation Status – FCS – for EU Article 17 reporting). (From repeatable modelling methods.)
- Changes in demography and population trajectory that will not be recorded by anticipated schemes restricted to presence/absence assessment only. (From existing surveillance, newly-identified surveillance sites and additional NARRS2-compatible data when available.)

The distinct advantage to integrated surveillance approaches including demographic (count) information is the potential to detect country-level or regional declines based on idiopathic or esoteric factors that will not be recorded merely by surveys for presence/absence (i.e. with both NARRS1 and *PondNet*). Each type of metric therefore makes a different contribution to the Wales-wide surveillance of great crested newts that no single measure is capable of

achieving. The relative value of including NARRS data will increase over time as data from the second (and future) survey cycles becomes available. The current NARRS cycle covers the period 2013 – 2018, compatible with the same period covered by the current EU Article 17 reporting round.

A second Report developing this integrated approach is due in late summer 2015. In order to build on the present data and ensure the approach remains fit for purpose going forward, a number of recommendations are made:

- Linkage with the Wales Reptile and Amphibian Surveillance Strategy (WRASS)
- HSI scores should be routinely recorded, on an annual basis, as part of existing SAC and other monitoring (at all subsites).
- Surveillance of “presence unknown” sites identified in this report (Table 2) should commence in 2015 and be added to future status assessment suites. This may be achieved at least partly by existing (NARRS, ARG and other) volunteers.
- Further SAC subsites should be added to long-term datasets, and those data recorded consistently, to increase the body of available data describing status. This can, however, be an ongoing *post hoc* process.
- Data structures (possibly including a standard on-line form etc.) should be erected in order to promote consistency (e.g. use of the NARRS2 methodology that includes HSI recording).
- The number of both NARRS1 and NARRS2 squares in Wales should be increased, again to increase the body of consistent data but also to enable comparisons of changes in background and site-specific occupancy rates and HSI scores.
- Data from *PondNet* (being rolled out in Wales 2015 – 2017) should be added to future assessment suites once available.
- Data from gully pot incidental killings at sites such as Stryt Las ar Hafod should be incorporated into status assessments long term as an assessment of negative population influences.
- The feasibility of incorporating derogation/mitigation data into the status assessment suite should be explored. This would generate long-term data at limited cost to the exchequer. It therefore represents one of the most sustainable approaches to implementing long term surveillance
- More detailed exploration should be made of population fluctuations and trends at long-term monitoring sites: whether, for example, population peaks and troughs occur in the same years and with the same periodicity at different sites. Some of

these data are already available and will be discussed in the Part 2 report (see Fig. 1 for examples).

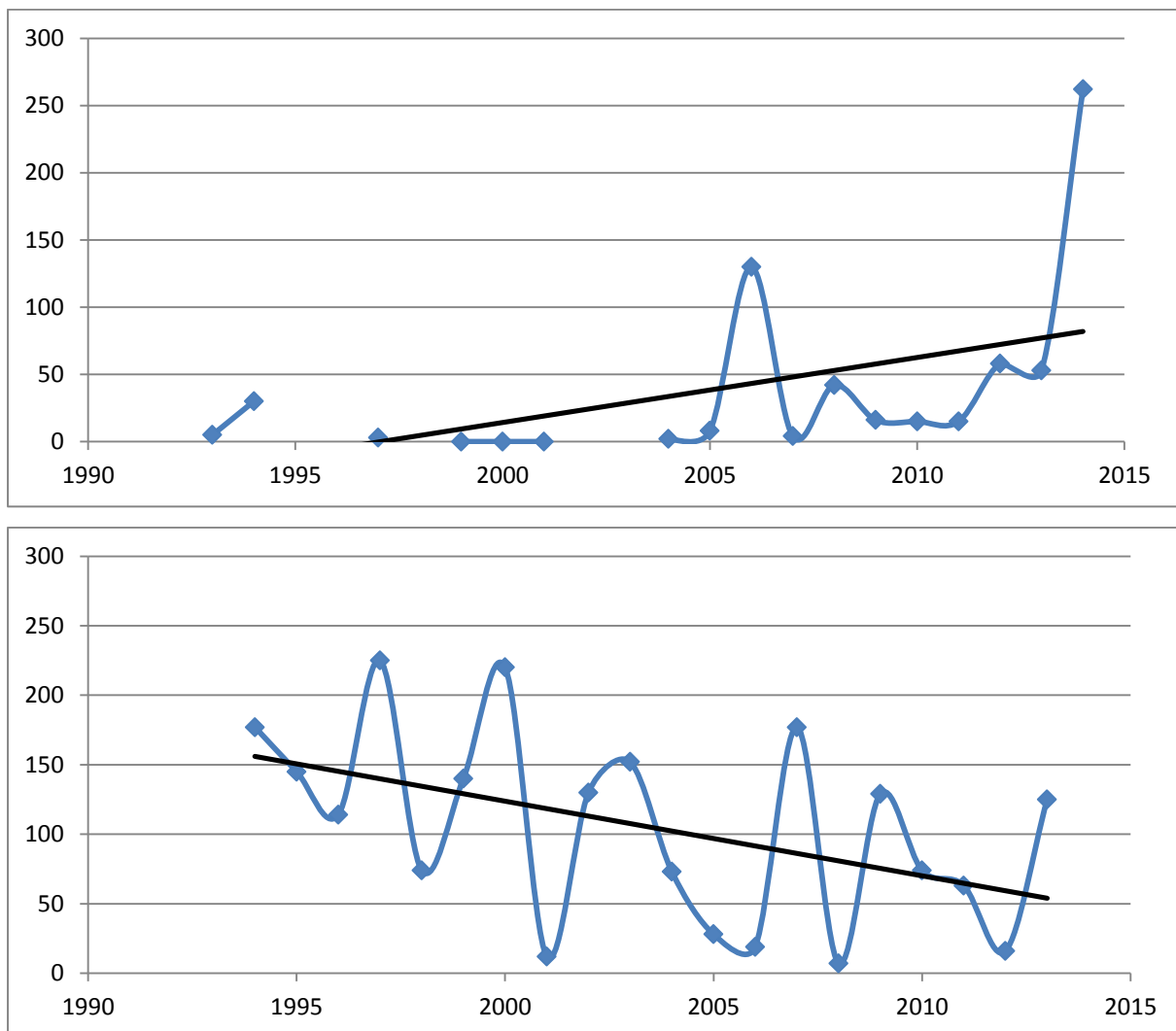


Figure 1. Example comparison of great crested newt population (count) data from long-term monitoring carried out at two Welsh SACs, Hafod R2 (above) and Pen-yr-Henblas (below). Long-term trends are shown by black lines. The period for which most data are available (2004-2014) show little similarity in count fluctuations and the long-term population trajectories differ, but both sites show an increase in counts 2013-2014.

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