

**European Community Directive  
on the Conservation of Natural Habitats  
and of Wild Fauna and Flora  
(92/43/EEC)**

Supporting documentation for the  
Third Report by the United Kingdom under  
Article 17

on the implementation of the Directive  
from January 2007 to December 2012  
Conservation status assessment for

Species:

S1034 - Medicinal leech (*Hirudo medicinalis*)

**IMPORTANT NOTE – PLEASE READ**

- The country-level reporting information contained in this document is a contribution to the Article 17 UK report for the habitat/species concerned.
- It has been provided by **Natural Resources Wales** and refers only to the state of the habitat/species in **Wales** - it does not constitute an assessment for the whole of the UK.
- The Article 17 UK Approach document provides details on how this information has been used and, combined with information supplied by other Statutory Nature Conservation Bodies
- The format of the document is closely aligned to that set out by the European Commission for Member State reporting – as a result, some of the fields are not applicable at a country-level and have deliberately been left blank – in addition, the content of most fields is constrained by the EC reporting categories.

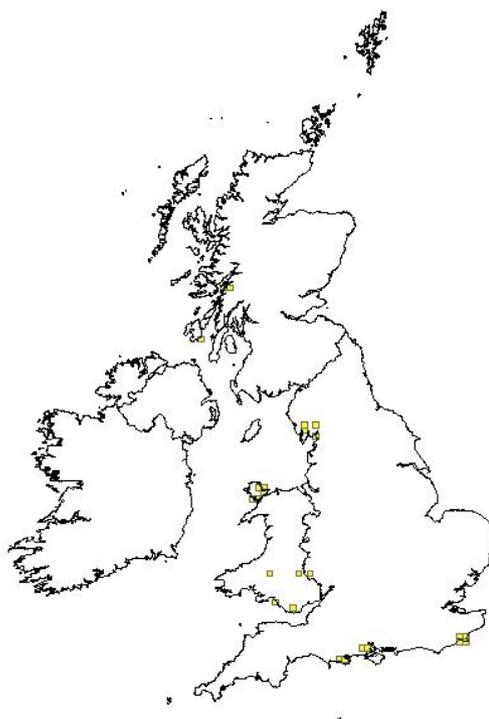
As of 1 April 2013, the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales became Natural Resources Wales/Cyfoeth Naturiol Cymru

## Reporting format on the 'main results of the surveillance under Article 11' for Annex II, IV & V species

<i>Field name</i>	<i>Brief explanations</i>	
<b>0.2 Species</b>	<b>0.2.1 Species code</b>	<b>S1034</b>
	<b>0.2.2 Species scientific name</b>	<b><i>Hirudo medicinalis</i></b>
	<b>0.2.3 Alternative species scientific name</b> Optional	
	<b>0.2.4 Common name</b> Optional	<b>Medicinal Leech</b>

### 1.1 Maps

<b>1.1.1 Distribution map</b>		<b>Sensitive</b>	<b>False</b>
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<b>1.1.2 Method used - map</b>	<b>Estimate based on partial data with some extrapolation and/or modelling</b>
	No complete survey in current reporting period, with records collected in an ad hoc manner.
<b>1.1.3 Year or period</b>	<b>1998-2012</b>
	There has not been a comprehensive survey in either the 2001-2006 or the 2007-2012 reporting periods. A strategic survey was undertaken in 1998 (Lloyd, 1998) and, as the results of this survey are likely to reflect the current status and distribution, a period of 1998-2012 has been used.

<b>1.1.4 Additional distribution map</b>	<b>False</b>
<b>1.1.5 Range map</b>	

<b>2.1 Biogeographical region &amp; marine regions</b>	<b>ATL</b>
<b>2.2 Published sources</b>	<p>"Ausden, M., Banks, B., Donnison, E., Howe, M., Nixon, A., Phillips, D., Wicks, D. &amp; Wynne, C. 2002. The status, conservation and use of the medicinal leech. <i>British Wildlife</i>, 13: 229-238.</p> <p>Jones, A.C.L. &amp; Kettle, B.S. 1999. Medicinal leech Survey of Anglesey (Ynys Mon) 1999. Volumes 1 and 2. Unpublished report. North Wales Wildlife Trust.</p> <p>Lloyd, D. 1998. The medicinal leech <i>Hirudo medicinalis</i> in Wales. CCW Contract Science. 311. North Wales Wildlife Trust/Countryside Council for Wales.</p> <p>Taylor, R. 2012. Monitoring medicinal leech <i>Hirudo medicinalis</i> at Cynffig/Kenfig SSSI and Pysgodlyn Mawr SSSI. CCW Regional Report. CCW/WW/12/1. Countryside Council for Wales."</p>

<b>2.3 Range</b>	
<b>2.3.1 Surface area Range</b>	Because of the very localised nature of medicinal leech populations in Wales, this measure equates to that for the Habitat Area estimate which is calculated as 0.551 square km (see 2.5.1).
<b>2.3.2 Method used Surface area of Range</b>	<p><b>Estimate based on partial data with some extrapolation and/or modelling</b></p> <p>There has been no complete survey in the current reporting period, with records collected in an ad hoc manner during this period.</p> <p>The figure encompasses all currently-occupied sites. Whilst the measurement of isolated water bodies is straightforward, the calculation of area on the Anglesey fen sites is based on the inclusion of suitable ditches and flooded fen rather than the fen in its entirety. The figure represents a minimum surface area range as it does not include a measure of the area of historic sites (there are four - Pen y Parc Reservoir, Marloes Mere, Llangorse Lake and Trecastle).</p>
<b>2.3.3 Short-term trend Period</b>	The period used is from 1998-2012 to take into account the most comprehensive survey of medicinal leech in Wales (Lloyd, 1998). Since then records have been collected in either a geographically-focussed area (Jones & Kettle, 1999) or in an ad hoc manner.
<b>2.3.4 Short term trend</b>	

<b>Trend direction</b>	The short-term trend in Wales is one of stability, with apparent losses being historic. Ad hoc recording and the difficulty of confirming presence/absence can obscure patterns e.g. there was a gap of verified records at Kenfig Pool of 15 years from 1996 to 2011 (Taylor, 2012), despite regular albeit untargeted searches and several unconfirmed records during this period.	
<b>2.3.5 Short-term trend Magnitude</b>	<b>a) Minimum</b>	
	see 2.3.4	
	<b>b) Maximum</b>	
see 2.3.4		
<b>2.3.6 Long-term trend Period</b>	Given the ad hoc nature of records for medicinal leech, all Welsh records have been used to determine long-term trend direction, including records dating back to the early 1900s.	
<b>2.3.7 Long-term trend Trend direction</b>	The long-term trend is for a very gradual decline, with apparent historic losses at Llangorse Lake (SO12), Marloes Mere (SM70), Pen y Parc reservoir (SH57) and Trecastell (SN82) where medicinal leech was last recorded in 1937 at Llangorse Lake, 1900 at Marloes Mere, 1956 at Pen y Parc, and with a historic but undated record from Trecastell.	
<b>2.3.8 Long-term trend Magnitude</b>  Optional	<b>a) Minimum</b>	
	see 2.3.7	
	<b>b) Maximum</b>	
see 2.3.7		
<b>2.3.9 Favourable reference range</b>	<b>a) Value in km<sup>2</sup></b>	
	<b>b) Operator for FRR</b>	
	<b>c) FRR is unknown (indicated by "true")</b>	<b>False</b>
<b>d) Method used to set FRR</b>		
<b>2.3.10 Reason for change</b> Is the difference between the	<b>a) Genuine change?</b>	<b>False</b>

reported value in 2.3.1 and the previous reporting round mainly due to...	There has been no change in range over the two reporting rounds. Apparent losses are historic. Although medicinal leech was not found during a targeted search of Pysgodlyn Mawr (ST07) in 2011, having been first recorded here in 1998, a lack of records does not indicate absence (cf recording at Kenfig Pool in 2.3.4).	
	<b>b) Improved knowledge/more accurate data?</b>	<b>False</b>
	<b>c) Use of different method (e.g. "Range tool")?</b>	<b>False</b>

<b>2.4 Population</b>		
<b>2.4.1 Population size estimation</b> (using individuals or agreed exceptions where possible)	<b>a) Unit</b>	
	<b>b) Minimum</b>	
<b>2.4.2 Population size estimation</b> (using population unit other than individuals) Optional ( <i>if 2.4.1 filled in</i> )	<b>a) Unit</b>	<b>number of map 1x1 km grid cells</b>
	1km square has been used to determine population because of the difficulty of determining an appropriate measure on extensive grazing marshes in England. In Wales, there are 12 1km squares with post-1998 records and an additional 4 with pre-1998, somewhat historic, records.	
	1km square is not the most appropriate measure of population size in Wales as this provides an over-estimate of the number of populations e.g. rather than two populations at both Cors Goch and Rhos y Gad (both have records for 2 x 1km squares), there is just one population at each site. Anglesey also supports population/site clusters which probably act as single metapopulations e.g. at Newborough (4 x 1km squares, with records from 5 small water bodies) and the Anglesey fens (5 x 1km squares, with records from 3 fens).	
	In terms of 10km squares, xxtant Welsh populations occur in 8 10km squares, with historic records from a further 3 10km squares.	
	<b>b) Minimum</b>	<b>12</b>
	The Minimum value of 12 is set at the number of post-1998 occupied 1km squares.  With ad hoc records, it is difficult to determine minimum and maximum population sizes. However, a survey of occupied and potential water bodies (Lloyd, 1998) located the medicinal leech at two new sites but failed to find medicinal leech at 30 sites without previous records,	

	suggesting that few new populations will be found.	
	<b>c) Maximum</b>	<b>16</b>
	The Maximum value of 16 is set at the number of 1km squares known to have been occupied by medicinal leech.	
	With ad hoc records, it is difficult to determine minimum and maximum population sizes. However, a survey of occupied and potential water bodies (Lloyd, 1998) located the medicinal leech at two new sites but failed to find medicinal leech at 30 sites without previous records, suggesting that few new populations will be found.	
<b>2.4.3 Additional information on population estimates / conversion</b> Optional	<b>a) Definition of "locality"</b>	
	<b>b) Method to convert data</b>	
	<b>c) Problems encountered to provide population size estimation</b>	
<b>2.4.4 Year or period</b>	<b>1998-2012</b>	
	There has not been a comprehensive survey in either the 2001-2006 or the 2007-2012 reporting periods. A strategic survey was undertaken in 1998 (Lloyd, 1998) and, as the results of this survey are likely to reflect the current status and distribution, a period of 1998-2012 has been used.	
<b>2.4.5 Method used Population size</b>	<b>Estimate based on partial data with some extrapolation and/or modelling</b>	
	Most populations have relatively recent ad hoc records confirming presence and it is reasonable to assume that they remain extant in all 12 1km squares. The only exception is the population at Pygodlyn Mawr where leeches were not found in 2011 (Taylor, 2012).	
<b>2.4.6 Short-term trend Period</b>	<b>1998-2012</b>	
	There has not been a comprehensive survey in either the 2001-2006 or the 2007-2012 reporting periods. A strategic survey was undertaken in 1998 (Lloyd, 1998) and, as the results of this survey are likely to reflect the current status and distribution, a period of 1998-2012 has been used.	
<b>2.4.7 Short-term trend Trend direction</b>	<b>stable</b>	
	Most populations have relatively recent ad hoc records confirming presence and it is reasonable to assume that they remain extant in all 12 1km squares. The only exception is the population at Pygodlyn Mawr where leeches were not found in 2011 (Taylor, 2012).	
<b>2.4.8 Short-term trend Magnitude</b>	<b>a) Minimum</b>	
	There does not appear to have been any change over the current reporting period.	

	<b>b) Maximum</b>	
	There does not appear to have been any change over the current reporting period.	
	<b>c) Confidence interval</b>	
<b>2.4.9 Short-term trend Method used</b>	<b>Estimate based on partial data with some extrapolation and/or modelling</b>	
	There has not been a comprehensive survey in either the 2001-2006 or the 2007-2012 reporting periods. A strategic survey was undertaken in 1998 (Lloyd, 1998) and the results of this survey are likely to reflect the current status and distribution.	
<b>2.4.10 Long-term trend – Period</b>		
	Given the ad hoc nature of records for medicinal leech, all Welsh records have been used to determine long-term trend direction, including records dating back to the early 1900s.	
<b>2.4.11 Long-term trend Trend direction</b>	<b>decrease</b>	
	The long-term trend is for a very gradual decline, with apparent historic losses at Llangorse Lake (SO12), Marloes Mere (SM70), Pen y Parc reservoir (SH57) and Trecastell (SN82) where medicinal leech was last recorded in 1937 at Llangorse Lake, 1900 at Marloes Mere, 1956 at Pen y Parc, and with a historic but undated record from Trecastell.	
<b>2.4.12 Long-term trend Magnitude</b>	<b>a) Minimum</b>	
Optional	see 2.4.11	
	<b>b) Maximum</b>	
	see 2.4.11	
	<b>c) Confidence interval</b>	
<b>2.4.13 Long term trend Method used</b>	<b>2</b>	
	Given the ad hoc nature of records for medicinal leech, all Welsh records have been used to determine long-term trend direction, including records dating back to the early 1900s.	
<b>2.4.14 Favourable reference population</b>	<b>a) Number of individuals/agreed exceptions/other units</b>	

	<b>b) Operator</b>	
	<b>c) FRP is unknown indicated by "true"</b>	<b>False</b>
	<b>d) Method used to set FRP</b>	
<b>2.4.15 Reason for change</b> Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:	<b>a) Genuine change?</b>	<b>False</b>
	There has been no change in population size over the two reporting rounds. Apparent losses are historic. Although medicinal leech was not found during a targeted search of Pysgodlyn Mawr (ST07) in 2011, having been first recorded here in 1998, a lack of records does not indicate absence (cf recording at Kenfig Pool in 2.3.4).	
	<b>b) Improved knowledge/more accurate data?</b>	<b>False</b>
	<b>c) Use of different method (e.g. "Range tool")?</b>	<b>False</b>

<b>2.5 Habitat for the species</b>	
<b>2.5.1 Area estimation</b>	<b>0.551</b> The figure encompasses all currently-occupied sites. Whilst the measurement of isolated water bodies is straightforward, the calculation of area on the Anglesey fen sites is based on the inclusion of suitable ditches and flooded fen rather than the fen in its entirety. The figure represents a minimum surface area range as it does not include a measure of the area of historic sites (there are four - Pen y Parc Reservoir, Marloes Mere, Llangorse Lake and Trecastle).  There is thought to be a sufficient amount of habitat in the UK to support a viable population of the species.
<b>2.5.2 Year or period</b>	<b>2007-2012</b> The measure is a contemporary calculation using Ordnance Survey and aerial imagery on GIS.
<b>2.5.3 Method used Habitat for the species</b>	<b>Estimate based on partial data with some extrapolation and/or modelling</b> The figure encompasses all currently-occupied sites. Whilst the

	measurement of isolated water bodies is straightforward, the calculation of area on the Anglesey fen sites is based on the inclusion of suitable ditches and flooded fen rather than the fen in its entirety. The figure represents a minimum surface area range as it does not include a measure of the area of historic sites (there are four - Pen y Parc Reservoir, Marloes Mere, Llangorse Lake and Trecastle).	
<b>2.5.4 Quality of the habitat</b>	<b>a) Habitat quality</b>	<b>Good</b>
	All current populations occur within protected sites - SSSIs, SACs and National Nature Reserves. On the majority of these sites, water quality management is a major concern and medicinal leech will benefit as a result. Whilst sites within Newborough Forest may not be managed for water quality per se, ongoing management is sympathetic for medicinal leech.	
	<b>b) Assessment method</b>	<b>All current populations occur within protected sites - SSSIs, SACs and National Nature Reserves. On the majority of these sites, water quality management is a major concern and medicinal leech will benefit as a result. Whilst sites within Newborough Forest may not be managed for water quality per se, ongoing management is sympathetic for medicinal leech.</b>
<b>2.5.5 Short-term trend Period</b>	<b>1998-2012</b>	
	There has not been a comprehensive survey in either the 2001-2006 or the 2007-2012 reporting periods. A strategic survey was undertaken in 1998 (Lloyd, 1998) and, as the results of this survey are likely to reflect the current status and distribution, a period of 1998-2012 has been used.	
<b>2.5.6 Short-term trend Trend direction</b>	<b>stable</b>	
	All current populations occur within protected sites - SSSIs, SACs and National Nature Reserves. On the majority of these sites, water quality management is a major concern and medicinal leech will benefit as a result. Whilst sites within Newborough Forest may not be managed for water quality per se, ongoing management is sympathetic for medicinal leech.	
<b>2.5.7 Long-term trend Period</b>	<b>1989-2012</b>	
	Given the ad hoc nature of records for medicinal leech, all Welsh records have been used to determine long-term trend direction, including records dating back to the early 1900s.	
<b>2.5.8 Long-term trend Trend direction</b>	<b>stable</b>	
	If trend is over 24 year period, then long-term habitat trend is stable. Medicinal leech has suffered losses but these losses are historical.	
<b>2.5.9 Area of suitable habitat for the species</b>	<b>a) Value in km<sup>2</sup></b>	<b>2.063</b>
	This calculation is based purely on adding a measure for habitat area of sites historically occupied by medicinal leech (1.512 square km) to the area currently occupied (0.551 square km). Note that comparing the two figures is somewhat misleading as Llangorse Lake dominates the statistic (1.403 square km). There may be many other suitable water bodies for medicinal leech, although this was not borne out by the 1998 survey (Lloyd, 1998), but an incomplete ecological knowledge of the	

	species' requirements and a distribution partly caused by human activities (Ausden et al., 2002) hampers further elucidation.	
	<b>b) Absence of data indicated as '0'</b>	
<b>2.5.10 Reason for change</b> Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	<b>a) Genuine change?</b>	<b>False</b>
	The habitat area occupied by medicinal leech within the two reporting periods is considered to be stable.	
	<b>b) Improved knowledge/more accurate data?</b>	<b>False</b>
	<b>c) Use of different method (e.g. "Range tool")?</b>	<b>False</b>

<b>2.6 Main pressures</b>		
<b>a) Pressure</b>	<b>b) Ranking</b>	<b>c) Pollution qualifier</b>
	H = high importance M = medium importance L = low importance	
F01: Marine and Freshwater Aquaculture	H	
F02: Fishing and harvesting aquatic resources	H	
J02: human induced changes in hydraulic conditions	H	
A07: use of biocides, hormones and chemicals	M	O
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	M	X
H02: Pollution to groundwater (point sources and diffuse sources)	M	X
I01: invasive non-native species	M	

Note that the impact of A07, F01, F02, H01, H02 and J02 should be reduced on protected sites (SSSIs, NNRs, SACs).

J02 - Pond or ditch loss as a consequence of agricultural drainage.

H01 & H02 - Pollution from agricultural chemicals such as nitrates and phosphates.

I02 - Colonisation of water bodies by killer shrimp, signal crayfish and other non-native aquatic species.

F01 & F02 - Stocking of water bodies with fish. This may have resulted in the loss of medicinal leech at Pysgodlyn Mawr, although further searches are required to confirm a genuine absence.

A07 - Pollution from wormers including avermectins.

<b>2.6.1 Method used – Pressures</b>	<b>mainly based on expert judgement and other data</b>
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<b>2.7 Threats</b>		
<b>a) Threat</b>	<b>b) Ranking</b>	<b>c) Pollution qualifier</b>
	H = high importance M = medium importance L = low importance	
F01: Marine and Freshwater Aquaculture	H	
F02: Fishing and harvesting aquatic resources	H	
J02: human induced changes in hydraulic conditions	H	
A07: use of biocides, hormones and chemicals	M	O
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	M	X
H02: Pollution to groundwater (point sources and diffuse sources)	M	X
I01: invasive non-native species	M	
M01: Changes in abiotic conditions	M	

Note that the impact of A07, F01, F02, H01, H02 and J02 should be reduced on protected sites (SSSIs, NNRs, SACs).

J02 - Pond or ditch loss as a consequence of agricultural drainage.

H01 & H02 - Pollution from agricultural chemicals such as nitrates and phosphates.

I02 - Colonisation of water bodies by killer shrimp, signal crayfish and other non-native aquatic species.

F01 & F02 - Stocking of water bodies with fish. This may have resulted in the loss of medicinal leech at Pysgodlyn Mawr, although further searches are required to confirm a genuine absence.

A07 - Pollution from wormers including avermectins.

M01 - Water bodies could be vulnerable to drying up as a consequence of climate change.

**2.7.1 Method used – Threats**

**expert opinion**

There has been no modelling of the threats to medicinal leech sites or populations.

**2.8 Complementary information**

**2.8.1 Justification of % thresholds for trends**

**2.8.2 Other relevant information**

**All 12 current populations (as defined by 1 km squares) of medicinal leech in Wales occur within protected sites (SSSIs, NNRs, SACs). All populations are also a Qualifying feature of the relevant SSSI whereby CCW is obliged to manage the site to maintain the population in favourable condition.**

**The impact of the identified pressures and threats on medicinal leech populations should be somewhat reduced when compared to the wider countryside.**

**2.8.3 Trans-boundary assessment**

**2.9 Conclusions (*assessment of conservation status at end of reporting period*)**

Please refer to the United Kingdom assessment for this species.

**3 Natura 2000 coverage & conservation measures - Annex II species (*only applies to species listed under Annex II of the Directive*)**

**3.1 Population**

**3.1.1 Population size**

Estimation of population size included in the SAC network

**a) Unit**

**b) Minimum**

	<b>c) Maximum</b>
<b>3.1.2 Method used</b>	
<b>3.1.3 Trend of population size within the network (short-term trend)</b>	

<b>3.2 Conservation measures</b>															
Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.															
<b>3.2.1 Measure</b>	<b>3.2.2 Type</b>					<b>3.2.3 Ranking</b> H = high importance M = medium importance L = low importance	<b>3.2.4 Location</b> where the measure is PRIMARILY applied			<b>3.2.5 Broad evaluation of the measure</b>					
	a) Legal/statutory	b) Administrative	c) Contractual	d) Recurrent	e) One-off		a) Inside	b) Outside	c) Both inside & outside	a) Maintain	b) Enhance	c) Long term	d) No effect	e) Unknown	f) Not evaluated

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