

**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:

S1831 - Floating water-plantain (*Luronium natans*)

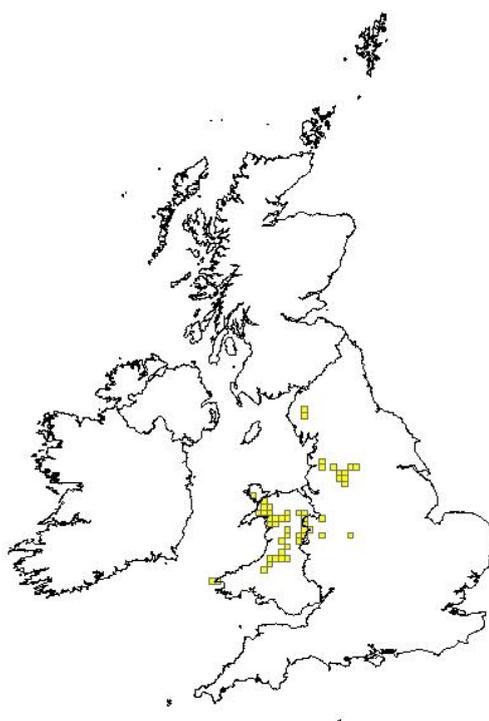
IMPORTANT NOTE – PLEASE READ

- 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 England** and refers only to the state of the habitat/species in **England** - 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.

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>	
0.2 Species	0.2.1 Species code	S1831
	0.2.2 Species scientific name	<i>Luronium natans</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	Floating Water-plantain

1.1 Maps		
1.1.1 Distribution map		Sensitive False



1.1.2 Method used - map	Estimate based on partial data with some extrapolation and/or modelling
	There was no systematic survey for this species across its range during the period 2007-12 so a few presumably extant sites are not mapped. By including extra records from 2005-06 the result gives what is believed to be a good representation of the current range, despite incomplete coverage of all hectads. Populations in the New Forest and the Norfolk Broads are considered likely to have been introduced.
1.1.3 Year or period	2005-2007
	2007-12 is the preferred period for reporting, but by including a few

	additional records from 2005-6 for this species the resulting map is believed to more accurately reflect the current distribution.
1.1.4 Additional distribution map	False
1.1.5 Range map	

2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>"ANDERSON, B. & LEIGH, S., 2010. Rochdale Canal Review 2009/2010. British Waterways unpublished report</p> <p>Anon. (2009). CSM reports for Derwent Water and Bassenthwaite Lake. NE internal documents.</p> <p>CARVALHO, L. & MOSS, B. 1998. Lake SSSIs subject to eutrophication – an environmental audit. English Nature Freshwater Series, No. 3</p> <p>Clarke S., (2009) A SUMMARY OF THREE DIFFERENT APPROACHES TO THE TREATMENT OF THE NON-NATIVE INVASIVE SPECIES CRASSULA HELMSII AT PROTECTED SITES. Abstracts/Proceedings of 41st Robson Meeting. Aquatic Plant Management Group.</p> <p>HATTON, J., 2009. Interim Report on the Effects of Exposure Tolerance on <i>Luronium natans</i> (L.) Raf. Report prepared for British Waterways and Natural England by Univeristy of Bolton.</p> <p>LANSDOWN, R. V. & WADE, P. M., 2000. Ecology of the Floating Water-plantain. Conserving Natura 2000 Rivers Ecology Series No. 9. English Nature, Peterborough.</p> <p>Online Atlas of the British Flora. <i>Luronium natans</i> (Floating Water-plantain) http://www.brc.ac.uk/plantatlas/index.php?q=node/1</p> <p>JACKSON, D.L. & McLEOD, C.R. (Eds.) 2002. Handbook on the UK status of EC Habitats Directive interest features: provisional data on the UK distribution and extent of Annex I habitats and the UK distribution and population size of Annex II species. Revised 2002 JNCC Report No. 312</p> <p>JOHN, C., 2008. CANNOCK EXTENSION SSSI/SAC STATUS 2007. British Waterways unpublished report</p> <p>JOHN, C., 2010. TRANSLOCATION OF LURONIUM NATANS. British Waterways unpublished report</p> <p>LOCKTON, A.J. (1 October 2012). Species account: <i>Luronium natans</i>. Botanical Society of the British Isles, www.bsbi.org.uk.</p>

	<p>NIELSON, U. N., RIIS, T. & BRIX, H., 2006. Short communication - The importance of vegetative and sexual dispersal of <i>Luronium natans</i>. <i>Aquatic Botany</i> 84: 165–170.</p> <p>PRESTON, C.D., PEARMAN, D.A. & DINES, T.D. 2002. New Atlas of the British & Irish Flora. Oxford University Press.</p> <p>STEWART, A., PEARMAN, D.A. & PRESTON, C.D. 1994. Scarce Plants in Britain. Peterborough: Joint Nature Conservation Committee"</p>

2.3 Range					
2.3.1 Surface area Range					
2.3.2 Method used Surface area of Range	<p>Estimate based on partial data with some extrapolation and/or modelling</p> <p>There was no systematic survey for this species across its range during the period 2007-12 so a few presumably extant sites are not mapped. Including extra records from 2005-06 gives what is believed to be a good representation of the current range, despite incomplete coverage of all hectads. Populations in the New Forest and the Norfolk Broads are considered likely to have been introduced and are not included.</p>				
2.3.3 Short-term trend Period	2001-2012				
2.3.4 Short term trend Trend direction	stable				
2.3.5 Short-term trend Magnitude	<table border="1" style="width: 100%;"> <tr> <td style="background-color: #d3d3d3;">a) Minimum</td> <td></td> </tr> <tr> <td style="background-color: #d3d3d3;">b) Maximum</td> <td></td> </tr> </table>	a) Minimum		b) Maximum	
a) Minimum					
b) Maximum					
2.3.6 Long-term trend Period	<p>1989-2012</p> <p>For the 2007 reporting round the range estimate was calculated using records from Preston et al. (2002). The most recent date class from this dataset is 1987-1999. Records from this time period were considered by species specialists to provide the best representation of range at the time. More recent data is likely to be slightly less complete, as there was not the same level of targeted recording and mapping effort.</p>				
2.3.7 Long-term trend Trend direction	<p>decrease</p> <p>In 2007 it was reported that there had been a long-term and continuing decline in the number of localities, which was difficult to quantify due to significant under-recording in the past, when the form occurring in upland lakes was poorly understood. The most significant trend was</p>				

	reported to be the loss of lowland sites, mainly in Wales, but including the West Midlands.	
2.3.8 Long-term trend Magnitude Optional	a) Minimum	
	b) Maximum	
2.3.9 Favourable reference range	a) Value in km²	10195
	The same figure as was used FOR THE UK in 2007. The method used to determine the favourable reference range was set out in 'Assessing Conservation Status: UK Approach'.	
	b) Operator for FRR	
	c) FRR is unknown (indicated by "true")	False
	d) Method used to set FRR	
2.3.10 Reason for change Is the difference between the reported value in 2.3.1 and the previous reporting round mainly due to...	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

2.4 Population		
2.4.1 Population size estimation (using individuals or agreed exceptions where possible)	a) Unit	
	b) Minimum	

	c) Maximum	
2.4.2 Population size estimation (using population unit other than individuals) Optional (<i>if 2.4.1 filled in</i>)	a) Unit	number of localities
	b) Minimum	14
	The NBN database does not name sites but only gives grid references, making it impractical to extract numbers of localities from it, given that some are linear features of considerable length (notably canals). The BSBI database does name sites for most records and this source has been used, with two additional localities reported by Chris John (Canals and Rivers Trust), to provide this figure. These come from a minimum of 15 localities, as defined.	
	c) Maximum	17
	The NBN database does not name sites but only gives grid references, making it impractical to extract numbers of localities from it, given that some are linear features of considerable length (notably canals). The BSBI database does name sites for most records and this has been used to provide this figure, with two additional localities reported by Chris John (Canals and Rivers Trust), making 17. A minority of BSBI records are also only given to hectad or tetrad level, without a site name, hence a degree of uncertainty over the number of localities. It has not been recorded at Brown Moss since 2006, though it has been looked for, and this might therefore represent a loss (though its absence might be temporary as it can reappear on sites after an absence of several years). This site is included as one of the total of 17 localities. Populations in the New Forest and the Norfolk Broads are considered likely to have been introduced and are not included.	
2.4.3 Additional information on population estimates / conversion Optional	a) Definition of "locality"	This count of localities considers sites within a single canal as representing a single locality. Larger water bodies are counted separately. Series of pools within a complex site are counted as a single locality.
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	
2.4.4 Year or period	2005-2012	
	There was no systematic survey for this species across its range during the period 2007-12 so a few presumably extant sites are not mapped. By including extra records from 2005-06 the result gives what is believed to be a good representation of the current range, despite incomplete coverage of all hectads. Populations in the New Forest and the Norfolk Broads are considered likely to have been introduced and	

	are not included.						
2.4.5 Method used Population size	Estimate based on partial data with some extrapolation and/or modelling Although a wider date range (2005-2012) has been used to give a better representation of the current range and number of localities, the lack of complete targeted survey of all localities means a few sites that still probably hold populations have not been reported during the period.						
2.4.6 Short-term trend Period	2001-2012						
2.4.7 Short-term trend Trend direction	stable 17 English localities is the same as were reported in 2007, but it has not been recorded at Brown Moss since 2006, though it has been looked for, and this might therefore represents a loss (though its absence might be temporary as it can reappear on sites after an absence of several years). If the current number of localities is taken as 16 (i.e. excluding Brown Moss) then it is apparently continuing to decline, though the lack of comprehensive survey means it is perhaps more likely to be stable.						
2.4.8 Short-term trend Magnitude	<table border="1"> <tr> <td>a) Minimum</td> <td></td> </tr> <tr> <td>b) Maximum</td> <td></td> </tr> <tr> <td>c) Confidence interval</td> <td></td> </tr> </table>	a) Minimum		b) Maximum		c) Confidence interval	
a) Minimum							
b) Maximum							
c) Confidence interval							
2.4.9 Short-term trend Method used	Estimate based on partial data with some extrapolation and/or modelling						
2.4.10 Long-term trend – Period	1989-2012						
2.4.11 Long-term trend Trend direction	decrease Prior to 2007 there was a long-term decline in the number of localities, however this was difficult to quantify due to significant under-recording in the past, when the form occurring in upland lakes was poorly understood. The most significant trend was the loss of lowland sites, in England most marked in the West Midlands. Populations fluctuate greatly in size, often increasing when water levels drop to expose the bottom of the water body. They also fluctuate from year to year, and at many sites records of <i>Luronium natans</i> have been infrequent, suggesting that only small populations occur, in some cases possibly as transitory colonists of the habitat. Populations tend to be						

	more stable at natural sites than artificial ones, but approximately a quarter of recent (post-1980) records are from canals and similar artificial habitats. The long term decline of <i>L. natans</i> in its natural habitats (i.e. heath pools, lakes and meres) is particularly marked in the lowlands (Jackson and McLeod 2002).	
2.4.12 Long-term trend Magnitude Optional	a) Minimum	
	b) Maximum	
	c) Confidence interval	
2.4.13 Long term trend Method used	2	
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	
	b) Operator	
	c) FRP is unknown indicated by "true"	False
	d) Method used to set FRP	
2.4.15 Reason for change Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g.	False

	"Range tool"?)	

2.5 Habitat for the species		
2.5.1 Area estimation	Unknown: <i>Luronium</i> occurs in a range of freshwater habitats – oligotrophic and mesotrophic lakes, slow flowing rivers and associated floodplain pools and small pools in heathland. There are also large populations in a number of disused or recently restored canals. Upland oligotrophic lakes must be considered the most secure habitat but may be subject to acidification pressures and other catchment difficulties. The habitat area is very hard to estimate since many, apparently suitable 'Littorelletean' sites in upland north and west Britain remain unoccupied whilst lowland sites are isolated and rare. <i>Luronium</i> is a very locally abundant species, usually restricted to pools, rivers and lakes of <1 km ² in extent and in a few larger sites of less than 5 km ² (rarely <10 km ²). The catchment (and perhaps, then, 'functional habitat') for these sites frequently, however, exceeds 10 km ² per site and could be several times the area of actual occupancy, if <i>Luronium</i> functioned as a series of metapopulations and was actively moving into new habitat.	
	It is unknown whether the amount of habitat in the UK is sufficient to support a viable population of the species.	
2.5.2 Year or period		
2.5.3 Method used Habitat for the species	Absent data	
2.5.4 Quality of the habitat	a) Habitat quality	Moderate
	b) Assessment method	Populations in upland lakes appear to be reasonably secure at present but increasing pressures on other habitats are likely to threaten some populations and lead to reduction in range (particularly lowland populations). There are particular challenges associated with tackling nutrient enrichment of freshwater habitats especially where agricultural diffuse sources are significant. Although prospects for <i>Luronium</i> are "good" in the core upland areas (species expected to survive and prosper), they are considered "poor" in the lowland fringe (species likely to struggle unless conditions change). Populations in canals have received more protection recently and several are now in either favourable or recovering condition. For this reason the UK assessment is reported as Moderate.

2.5.5 Short-term trend Period	2001-2012	
2.5.6 Short-term trend Trend direction	unknown	
2.5.7 Long-term trend Period	1989-2012	
2.5.8 Long-term trend Trend direction	unknown	
2.5.9 Area of suitable habitat for the species	a) Value in km²	
	b) Absence of data indicated as '0'	
2.5.10 Reason for change Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

2.6 Main pressures		
a) Pressure	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
G01: Outdoor sports and leisure activities, recreational activities	H	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	H	
H04.02:	M	
I01: invasive non-native species	M	
J02.03:	M	

Its habitat in rivers has been greatly reduced by channel-straightening, dredging and pollution, especially in lowland situations. Excessive boat traffic on canals can be damaging, though abandonment of canals would

be equally damaging. The other habitats are all susceptible to nutrient enrichment as a result of point and diffuse pollution sources (e.g. Carvalho and Moss, 1998). The invasive non-native *Crassula helmsii* found to be frequent in recent ISA for Bassenthwaite Lake and Derwent Water (both part of a SAC) and is also still present at Brown Moss SAC despite an attempt to eradicate it (though its impact on *Luronium* at Brown Moss is unknown).

2.6.1 Method used – Pressures	mainly based on expert judgement and other data
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2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
G01: Outdoor sports and leisure activities, recreational activities	H	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	H	
H04.02:	M	
I01: invasive non-native species	M	
J02.05:	L	

Its habitat in rivers has been greatly reduced by channel-straightening, dredging and pollution, especially in lowland situations. Excessive boat traffic on canals can be damaging, though abandonment of canals would be equally damaging. The other habitats are all susceptible to nutrient enrichment or acidification as a result of point and diffuse pollution sources (e.g. Carvalho and Moss, 1998). The invasive non-native *Crassula helmsii* was found to be frequent in the most recent ISA for Bassenthwaite Lake and Derwent Water (both part of a SAC) and is also still present at Brown Moss SAC, despite an attempt to eradicate it there.

2.7.1 Method used – Threats	expert opinion
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2.8 Complementary information	
2.8.1 Justification of % thresholds for trends	
2.8.2 Other relevant information	
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

number of localities

b) Minimum

2

c) Maximum

4

3.1.2 Method used

Complete survey/Complete survey or a statistically robust estimate

Data from ISA (CSM methodology) on the four English SACs where *Luronium* is a feature: Brown Moss (unfavourable recovering, but *Luronium* last seen in 2006); Cannock Extension Canal (one unit favourable; one unfavourable recovering); River Derwent and Bassenthwaite Lake (the two lakes with populations of the plant, Bassenthwaite Lake and Derwent Water, are both unfavourable because of presence of *Crassula helmsii*, though *Luronium* is still frequent at both sites); and Rochdale Canal (unfavourable recovering). At Brown Moss, the population is relatively small, and appears to behave as a metapopulation, colonising the various pools according to their suitability.

**3.1.3 Trend of population size within the network
(short-term trend)**

stable

3.2 Conservation measures

Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.

3.2.1 Measure	3.2.2 Type					3.2.3 Ranking H = high importance M = medium importance L = low importance	3.2.4 Location where the measure is PRIMARILY applied			3.2.5 Broad evaluation of the measure					
	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
4.1: Restoring/improving water quality	Y	Y				H			Y		Y				
6.1: Establish protected areas/sites	Y					H	Y			Y					
6.3: Legal protection of habitats and species	Y					L			Y	Y					
7.4: Specific single species or species group management measures			Y	Y	Y	H			Y		Y				

SACs designated for this species are: Brown Moss; Cannock Extension Canal; River Derwent and Bassenthwaite Lake (which includes two of the plant's 17 'localities': Derwent Water and Bassenthwaite Lake); and Rochdale Canal. *Luronium* is a notified feature of Chasewater and the Southern Staffordshire Coalfield Heaths SSSI. It is protected under the Wildlife and Countryside Act 1981 (Schedule 8) - plants which are protected from intentional picking, uprooting or destruction (Section 13 1a); selling, offering for sale, possessing or transporting for the purpose of sale (live or dead, part or derivative) (Section 13 2a); advertising (any of these) for buying or selling (Section 13 2b). Source: Source: Wildlife and Countryside Act Schedules 1,5 and 8 (protected birds, animals and plants). Threats of this kind are believed to be limited. Specific conservation work on the plant at various sites includes: investigation of propagation techniques (now successful - CRT) and augmentation exercises to re-introduce plants to some canal sites; treatment to attempt removal of *Crassula helmsii* at Brown Moss led to *Luronium* reappearing in 2006 - *Crassula* subsequently re-colonised but work provided anecdotal evidence on resilience (Clarke, 2009); CRT project to improve habitat and translocate *Luronium* on the Wyrley and Essington and Cannock Extension canal (a boat counter was also installed on the Cannock Extension Canal); CRT secured funding for a similar project on the Huddersfield Narrow Canal; CRT worked with Chester Zoo to raise awareness of this species and to develop a *Luronium* nursery; CRT worked with Chester Zoo and Oldham Countryside service to re-introduce plants to Daisy Nook Country Park, from which they had recently been lost; CRT augmented existing populations on the Rochdale Canal; CRT monitored Brunclough Reservoir, the subject of a recent translocation project (under a development licence).

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