

**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:

S1902 - Lady's-slipper orchid (*Cypripedium calceolus*)

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	S1902
	0.2.2 Species scientific name	<i>Cypripedium calceolus</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	Lady's-slipper Orchid

1.1 Maps		
1.1.1 Distribution map		Sensitive True



1.1.2 Method used - map	Complete survey/Complete survey or a statistically robust estimate There is still only a single wild site, as well as a number of introduction sites which are not currently considered part of the distribution for reasons explained in section 2.
1.1.3 Year or period	2007-2012
1.1.4 Additional distribution map	False

1.1.5 Range map	

2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>"Cowan, R. S., Kahandawala, I. M. & Michael F. Fay, M. F., 2012. Parentage of a plant of <i>Cypripedium calceolus</i> at the wild site in Yorkshire. Unpublished report for Natural England.</p> <p>Cypripedium calceolus introduction sites summary 2003-2011. Natural England report for and on behalf of the Cypripedium Committee.</p> <p>Fay MF, Bone R, Cook P, Kahandawala I, Greensmith J, Harris S, Pedersen HÆ, Ingrouille MJ, Lexer C. 2009. Genetic diversity in <i>Cypripedium calceolus</i> (Orchidaceae) with a focus on northwestern Europe, as revealed by plastid DNA length polymorphisms. <i>Annals of Botany</i> 104: 517–525.</p> <p>Kahandawala IM. 2009. Genome size evolution and conservation genetics in <i>Cypripedium</i> (Orchidaceae). PhD thesis, Birkbeck, University of London.</p> <p>Pedersen HÆ, Rasmussen HN, Kahandawala IM, Fay MF. 2012. Genetic diversity, compatibility patterns and seed quality in isolated populations of <i>Cypripedium calceolus</i> (Orchidaceae). <i>Conservation Genetics</i> 13: 89-98.</p> <p>Ramsay MM, Stewart J. 1998. Re-establishment of the lady's slipper orchid (<i>Cypripedium calceolus</i> L.) in Britain. <i>Botanical Journal of the Linnean Society</i> 126: 173–181."</p>

2.3 Range	
2.3.1 Surface area Range	
2.3.2 Method used Surface area of Range	<p>Complete survey/Complete survey or a statistically robust estimate</p> <p>The single native site of this great rarity is closely monitored each year. Sites of reintroductions and introductions are also monitored annually, but are not yet considered to be part of the species' range. Only once plants are fully established will they be included in range and population calculations. Establishment requires that they are successfully reproducing. The quality of data is therefore considered good.</p>
2.3.3 Short-term trend Period	2001-2012
2.3.4 Short term trend	stable

Trend direction		
2.3.5 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
2.3.6 Long-term trend Period	1989-2012	
	The trend has in fact remained stable for a longer period than this. The range has been as current since the 1930s.	
2.3.7 Long-term trend Trend direction	stable	
2.3.8 Long-term trend Magnitude Optional	a) Minimum	
	b) Maximum	
2.3.9 Favourable reference range	a) Value in km²	
	b) Operator for FRR	
	c) FRR is unknown (indicated by "true")	False
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	number of individuals
	b) Minimum	2
	c) Maximum	2
2.4.2 Population size estimation (using population unit other than individuals) Optional (<i>if 2.4.1 filled in</i>)	a) Unit	
	b) Minimum	
	c) Maximum	
2.4.3 Additional information on population estimates / conversion Optional	a) Definition of "locality"	
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	
2.4.4 Year or period	2007-2012	
		Annual counts from 2007-11 are currently available.
2.4.5 Method used Population size		Complete survey/Complete survey or a statistically robust estimate
2.4.6 Short-term trend Period	2001-2012	
2.4.7 Short-term trend Trend direction	increase	
		Since the Directive came into force the population has remained stable at one individual. Recently a second wild plant has been found. This should be treated in strict confidence, as theft of plants is still a major

	concern for this species and the risk of this is likely to be increased if it becomes more widely known that another wild plant is now present. There is an ongoing re-introduction programme, but these are not considered to count towards the trend since the populations are not yet established.	
2.4.8 Short-term trend Magnitude	a) Minimum	100
	b) Maximum	100
	c) Confidence interval	
2.4.9 Short-term trend Method used	Complete survey/Complete survey or a statistically robust estimate	
2.4.10 Long-term trend – Period	1989-2012	
2.4.11 Long-term trend Trend direction	increase	
2.4.12 Long-term trend Magnitude Optional	a) Minimum	100
	b) Maximum	100
	c) Confidence interval	
2.4.13 Long term trend Method used	3	
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	2000

	<p>The current trend has been long term stability with a recent small increase. This is due to intensive conservation care, without which the plant would almost certainly have become extinct. The single remaining individual was thought not capable of natural reproduction, but the appearance of second individual indicates this is not correct. The long standing plant will eventually die, thus leading to near extinction, unless a larger population is achieved. If all proposed reintroductions were successful, there would be 16 sites with a minimum of 100 plants at each. However, this only just takes the species out of IUCN Vulnerable category. This could be viewed as the minimum 'target' population, but to be stated as 'favourable', based on expert opinion, a buffer of ~50 additional plants per site would give ~2000 plants scattered throughout the favourable reference range and the outlier sites. This is a realistic value and is biologically meaningful, as there would be sufficient plants to ensure the main pollinator bee genus <i>Andrena</i> can image <i>Cypripedium</i> as a pollen source.</p>	
	b) Operator	
	c) FRP is unknown indicated by "true"	False
	d) Method used to set FRP	
2.4.15 Reason for change	a) Genuine change?	True
Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:	<p>The stable trend and very recent increase has only been possible due to very intensive conservation management and wardening. Without this direct human influence the plant is very likely to have become extinct.</p>	
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

2.5 Habitat for the species

2.5.1 Area estimation

There is insufficient information to map and calculate this area.

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	Unknown
	Although habitat requirements are understood at a coarse scale, the fungal associations or how fungal distribution might impact the species are not fully understood.	
	b) Assessment method	
2.5.5 Short-term trend Period		
2.5.6 Short-term trend Trend direction	unknown Given that specialists have a relatively limited understanding of this species' habitat, it is not appropriate to comment on trends at this time.	
2.5.7 Long-term trend Period		
2.5.8 Long-term trend Trend direction		
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	

F04.01:	H	
A04.01:	M	
G02.09:	M	
K04.04:	M	

Historic declines in population have been almost entirely due to digging up and collection by unscrupulous gardeners and plant collectors. It has also suffered from trampling by visitors, and lack of natural pollinators. Over-grazing in limestone pastures and on pavement areas has also been a negative factor. However, the maintenance of one individual since the 1930s and the recent small increase in numbers has been largely due to careful management and close surveillance.

2.6.1 Method used – Pressures

mainly based on expert judgement and other data

Historic declines in population have been almost entirely due to digging up and collection by unscrupulous gardeners and plant collectors. It has also suffered from trampling by visitors, and lack of natural pollinators. Over-grazing in limestone pastures and on pavement areas has also been a negative factor. Data on the effects of pollinator scarcity and grazing is less robust than that on theft of plants from the wild.

2.7 Threats

a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
F04.01:	H	
G02.09:	M	
K04.04:	M	
A04.01:	L	

Threats remain. Digging up and collection by unscrupulous gardeners and plant collectors remains the major concern. Trampling by visitors is also still a major concern especially at the native site. Lack of natural pollinators is likely to be an ongoing problem. Over-grazing in limestone pastures and on pavement areas has also been a negative factor that should be ameliorated by agri-environment schemes. Data on the effects of pollinator scarcity and grazing is less robust than that on theft of plants from the wild.

2.7.1 Method used – Threats

expert opinion

Historic declines in population have been almost entirely due to digging up and collection by unscrupulous gardeners and plant collectors. It has also suffered from trampling by visitors, and lack of natural pollinators. Over-grazing in limestone pastures and on pavement areas has also been a negative factor, generally ameliorated recently by agri-environment schemes. Data on the effects of pollinator scarcity and grazing is less robust than that on theft of plants from the wild.

2.8 Complementary information

2.8.1 Justification of % thresholds for trends	
2.8.2 Other relevant information	
	<p>Theft and disturbance to all plants and in particular to those at the surviving wild site are still the main threats. The remaining locality with original plants is not disclosed publicly.</p> <p>The 10km square that contains the plant is more widely known e.g. published in the New Atlas, so there is no reason not to map it. NE Feb 13</p>
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 <u>in the SAC network</u>	a) Unit	number of individuals
	The wild plants are in a SAC. Its designation for this species is not made public.	
	b) Minimum	2
	c) Maximum	2
3.1.2 Method used	Complete survey/Complete survey or a statistically robust estimate	
3.1.3 Trend of population size within the network (short-term trend)	increase	

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
2.1: Maintaining grasslands and other open habitats	Y	Y				M			Y			Y			
3.1: Restoring/improving forest habitats	Y	Y	Y			M			Y			Y			
6.1: Establish protected areas/sites	Y					H	Y			Y					
6.3: Legal protection of habitats and species	Y					H			Y	Y					
7.4: Specific single species or species group management measures			Y		Y	H			Y		Y				
8.0: Other measures			Y			H			Y		Y				

In the UK, *C. calceolus* is protected under Schedule 4 of the Conservation (Natural Habitats, etc.) Regulations 1994 and Schedule 8 of the Wildlife and Countryside Act 1981, as amended. Work is ongoing to re-introduce this species into 16 additional locations. However, it will take many years/decades (and is therefore beyond the timeframe for assessing future prospects) and other

resources to establish a viable population in the UK because there is such a small current resource. Genetic stock is also an issue. Work has been done on producing plants both from self-plants (using the pollen from plants in the wild) and also using pollen from other plants that are known to be of native origin: the more distantly related plants are, the stronger the offspring have been found to be (I Taylor, pers. comm.). For these reasons, expert opinion is that future prospects cannot confidently be reported as 'good' (defined by the Commission as "species is expected to survive and prosper"), at least within the next 12 years. However, once re-introduced plants have become established, prospects are expected to improve.