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

Fourth Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2013 to December 2018

Supporting documentation for the
conservation status assessment for the species:

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

ENGLAND

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this species is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species) and/or (iv) the field was only relevant at UK-level (sections 9 Future prospects and 10 Conclusions).
- For technical reasons, the country-level future trends for Range, Population and Habitat for the species are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

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NATIONAL LEVEL

1. General information

1.1 Member State	**UK (England information only)**
1.2 Species code	**1902**
1.3 Species scientific name	**Cypripedium calceolus**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Lady's-slipper orchid

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2018-
2.3 Distribution map	No
2.4 Distribution map Method used	Complete survey or a statistically robust estimate
2.5 Additional maps	No

3. Information related to Annex V Species (Art. 14)

3.1 Is the species taken in the wild/exploited?	No	
3.2 Which of the measures in Art. 14 have been taken?	a) regulations regarding access to property	No
	b) temporary or local prohibition of the taking of specimens in the wild and exploitation	No
	c) regulation of the periods and/or methods of taking specimens	No
	d) application of hunting and fishing rules which take account of the conservation of such populations	No
	e) establishment of a system of licences for taking specimens or of quotas	No
	f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens	No
	g) breeding in captivity of animal species as well as artificial propagation of plant species	No
	h) other measures	No

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3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

b) Statistics/ quantity taken	Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period					
	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
Min. (raw, ie. not rounded)						
Max. (raw, ie. not rounded)						
Unknown	No	No	No	No	No	No

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Atlantic (ATL)

4.2 Sources of information

KULL, T. 1999. Cypripedium calceolus L.: Biological Flora of the British Isles no. 208. Journal of Ecology 875, 913-924
WIGGINGTON, M. J. 1999. British Red Data Books: 1 Vascular Plants (3rd ed.) Joint Nature Conservation Committee
RAMSEY, M. M. & STEWART, J. 1998. Re-establishment of the lady's-slipper orchid Cypripedium calceolus L.. in Britain. Botanical Journal of the Linnean Society.

5. Range

5.1 Surface area (km²) 100

5.2 Short-term trend Period 2013-2018

5.3 Short-term trend Direction Stable (0)

5.4 Short-term trend Magnitude a) Minimum b) Maximum

5.5 Short-term trend Method used Complete survey or a statistically robust estimate

5.6 Long-term trend Period

5.7 Long-term trend Direction

5.8 Long-term trend Magnitude a) Minimum b) Maximum

5.9 Long-term trend Method used

5.10 Favourable reference range a) Area (km²) 3500

b) Operator

	c) Unknown	
	d) Method	The favourable reference value is the same as in 2013. The value represents a range similar to the historic range and is considered to be large enough to support a viable population and no lower than the range estimate when the Habitats Directive came into force in the UK. For further details please see the 2019 Article 17 UK Approach document.
5.11 Change and reason for change in surface area of range	Improved knowledge/more accurate data	
	The change is mainly due to:	Improved knowledge/more accurate data
5.12 Additional information	The current range is more than 10% below the FRR and is not sufficient to support a viable population and so the range conclusion is Unfavourable-bad. For further information see the 2019 Article 17 UK Approach document.	

6. Population

6.1 Year or period	2018	
6.2 Population size (in reporting unit)	a) Unit	number of individuals (i)
	b) Minimum	
	c) Maximum	
	d) Best single value	2
6.3 Type of estimate	Minimum	
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	
	b) Minimum	
	c) Maximum	
	d) Best single value	
6.5 Type of estimate		
6.6 Population size Method used	Complete survey or a statistically robust estimate	
6.7 Short-term trend Period	2007-2018	
6.8 Short-term trend Direction	Stable (0)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.10 Short-term trend Method used	Complete survey or a statistically robust estimate	
6.11 Long-term trend Period		
6.12 Long-term trend Direction		
6.13 Long-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.14 Long-term trend Method used		

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6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size	2000 with unit number of individuals (i)
	b) Operator	
	c) Unknown	
	d) Method	The FRP is the same as in 2013. The value is considered to be large enough to support a viable population and no less than when the Habitats Directive came into force in the UK. For further information see the 2019 Article 17 UK Approach document.
6.16 Change and reason for change in population size	Improved knowledge/more accurate data	
	The change is mainly due to:	Improved knowledge/more accurate data
6.17 Additional information	The current population is more than 25% below the FRP and not considered to represent a viable population. The parameter conclusion is therefore Unfavourable-bad.	

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (to maintain the species at FCS)?	Unknown
	b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)?	Unknown
7.2 Sufficiency of area and quality of occupied habitat Method used	Insufficient or no data available	
7.3 Short-term trend Period	2007-2018	
7.4 Short-term trend Direction	Unknown (x)	
7.5 Short-term trend Method used	Insufficient or no data available	
7.6 Long-term trend Period		
7.7 Long-term trend Direction		
7.8 Long-term trend Method used		
7.9 Additional information	The area of occupied habitat appears sufficient, being lightly-grazed limestone grassland with some tree cover. However, as it has not been possible to determine whether the fungal associates essential for germination are present, the extent of suitable habitat for germination is unknown, and therefore the sufficiency in habitat quality remains unknown.	

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Illegal harvesting, collecting and taking (G11)	H

Threat	Ranking
Illegal harvesting, collecting and taking (G11)	H

8.2 Sources of information

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8.3 Additional information

9. Conservation measures

9.1 Status of measures	a) Are measures needed?	Yes
	b) Indicate the status of measures	Measures identified and taken
9.2 Main purpose of the measures taken		Increase the population size and/or improve population dynamics (improve reproduction success, reduce mortality, improve age/sex structure) (related to 'Population')
9.3 Location of the measures taken		Both inside and outside Natura 2000
9.4 Response to the measures		Medium-term results (within the next two reporting periods, 2019-2030)

9.5 List of main conservation measures

Control/eradication of illegal killing, fishing and harvesting (CG04)

Reinforce populations of species from the directives (CS01)

9.6 Additional information

An experimental re-introduction programme has been underway across the former range of the species for over 20 years. The measures have a dual restoration purpose of increasing the population and extending the range.

10. Future prospects

10.1 Future prospects of parameters	a) Range	Poor
	b) Population	Poor
	c) Habitat of the species	Unknown
10.2 Additional information		Future trend in range is very positive - increasing >1% (more than one percent) per year on average, future trend in population is very positive - increasing >1% (more than one percent) per year on average and future trend in habitat for the species is unknown. Two of the parameters, range and population are assessed as having positive trends as a result of the re-introduction programme. However, the future prospects are poor because the current conservation status for both parameters is Unfavourable-bad.

11. Conclusions

11.1. Range	Unfavourable - Bad (U2)
11.2. Population	Unfavourable - Bad (U2)
11.3. Habitat for the species	Unknown (XX)
11.4. Future prospects	Unfavourable - Inadequate (U1)
11.5 Overall assessment of Conservation Status	Unfavourable - Bad (U2)
11.6 Overall trend in Conservation Status	Stable (=)

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11.7 Change and reasons for change in conservation status and conservation status trend

a) Overall assessment of conservation status

No change

The change is mainly due to:

b) Overall trend in conservation status

Use of different method

The change is mainly due to: Use of different method

11.8 Additional information

Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is stable; and (ii) the current Range surface area is more than 10% below the Favourable Reference Range.

Conclusion on Population reached because: (i) the short-term trend direction in Population size is stable; and (ii) the current Population size is more than 25% below the Favourable Reference Population.

Conclusion on Habitat for the species reached because: (i) the area of occupied and unoccupied habitat is unknown and (ii) the habitat quality is unknown for the long-term survival of the species; and (iii) the short-term trend in area of habitat is unknown.

Conclusion on Future prospects reached because: (i) the Future prospects for Range are poor; (ii) the Future prospects for Population are poor; and (iii) the Future prospects for Habitat for the species are Unknown.

Overall assessment of Conservation Status is Unfavourable-bad because one or more of the conclusions are Unfavourable-bad.

Overall trend in Conservation Status is based on the combination of the short-term trends for Range – stable, Population – stable, and Habitat for the species – unknown.

Overall conservation status has not changed since 2013.

Overall trend in Conservation Status has changed from Improving in 2013 to Stable in 2019 because Population trend has changed from Improving to Stable and because the Future prospects trend was Improving in 2013 but is not required for the 2019 reporting round.

12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)

a) Unit number of individuals (i)

b) Minimum

c) Maximum

d) Best single value 2

12.2 Type of estimate

Minimum

12.3 Population size inside the network Method used

Complete survey or a statistically robust estimate

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12.4 Short-term trend of population size within the network Direction	Stable (0)
12.5 Short-term trend of population size within the network Method used	Complete survey or a statistically robust estimate
12.6 Additional information	

13. Complementary information

13.1 Justification of % thresholds for trends	
13.2 Trans-boundary assessment	
13.3 Other relevant Information	The re-introduction programme for this species in the UK is on the brink of producing regenerating seedlings across the whole former range of the species. Many re-introduced plants are now flowering, natural pollination has been observed at several sites, seed pods have formed and seed dispersed naturally. Germination rates are low and survival is poor but the expectation is to see multiple new plants appearing over the next few years across a wide range.

Explanatory Notes

Species name: Cypripedium calceolus (1902)

Field label	Note
2.1 Sensitive species	It is one of the most sensitive vascular plant species in the UK flora and has been targeted by thieves or vandals on a number of ocassions.
2.2 Year or Period	The species is monitored annually and no losses have occurred in recent times so the latest annual assessment covers distribution for the full reporting period.
2.3 Distribution map	2018 data submitted for mapping.
2.4 Distribution map; Method used	A very closely monitored species with annual assessment since 1930. These are the 2018 data.

Species name: Cypripedium calceolus (1902) Region code: ATL

Field label	Note
5.10 Favourable reference range	This is the FRV set in the 2007 report and represents a range similar to the historic English range.
6.8 Short term trend; Direction	The short-term trend is given as stable
6.15 Favourable reference population	This is the FRV set in the 2007 report and represents a population which is thought to be the minimum viable.
7.1 Sufficiency of area and quality of occupied habitat	At the gross level the area of occupied habitat appears sufficient - it is lightly-grazed limestone grassland with some tree cover. At several experimental re-introduction sites it has been found that mycorrhizal conditions are suitable for mature plants to pick-up fungal associates (Fay & Gebauer: 2017). However, to date it has been impossible to determine if this is the case for fungal associates essential for germination. The extent of suitable habitat for germination is unknown and therefore the sufficiency in habitat quality remains unknown.
8.1 Characterisation of pressures/ threats	Illegal collection and trampling as a consequence of photography remain the only identified pressure and both are significant ongoing threats. Details of visitor pressure are included in the site reports.
9.1 Status of measures	An experimental re-introduction programme has been underway across the former range of the species for over 20 years. Survival rates are low amongst transplants but recent work (Fay & Gebauer 2017) has shown that transplants are capable of picking up mycorrhizal associates which are proven to be assisting in plant nutrition. It remains to be determined if germination-critical fungal associates are present at any re-introduction sites.
9.2 Main purpose of the measures taken	The measures actually have a dual purpose with increasing (restoring) the population and extending (also actually restoring) the range being of equal importance.
9.3 Location of the measures taken	22 sites have been used in the re-introduction programme to date of which approximately 19 are currently occupied by re-introduced plants. 16 (73%) of the sites used and 14 (74%) of those currently occupied are within Natura 2000
9.4 Response to the measures	Flowering has occurred at 12 of the re-introduction sites and natural pollination has occurred at some of these. However, to date, only one seedling has appeared and that was lost over the winter dormancy. However, the number of plants thriving together with the evidence of mycorrhizal partnerships being formed suggests that natural recruitment at several sites should be evident in the relatively near future.

9.5 List of main conservation measures	Conservation measures seek to address the only identified threat (visitor pressure - especially collecting) and also the two parameters which fall very far short of FRV, namely range and population. The former is addressed through facilitating visitor experiences at open days and controlled access re-introduction sites whilst the latter is addressed through an ongoing re-introduction programme.
10.1 Future prospects of parameters	Flowering has occurred at 12 of the re-introduction sites and natural pollination has occurred at some of these. However, to date, only one seedling has appeared and that was lost over the winter dormancy. However, the number of plants thriving together with the evidence of mycorrhizal partnerships being formed suggests that natural recruitment at several sites should be evident in the relatively near future.
11.1 Range	The current range is <<10% below
11.2 Population	The current population is 0.1% of the FRV, there is no natural recruitment and both plants are believed to be many decades old (possibly 100 years+)
11.3 Habitat for the species	Habitat requirements are not clear at present - outstanding issues include the importance of tree cover, the presence of germination-critical fungal associates and the identification of ideal attributes of sites for successful reproduction (aspect, rainfall, drainage etc).
11.4 Future prospects	Two of the parameters are assessed as having good prospects (range and population) as a result of the re-introduction programme but the habitat remains sufficiently unclear to assess this parameter.
11.5 Overall assessment of Conservation Status	Two of the parameters are bad (current range and population)
11.6 Overall trend in Conservation Status	Two parameters (range and population) are stable. Habitat for the species is unknown.
11.7 Change and reasons for change in conservation status and conservation status trend	Conservation Status remains Bad but Trend has gone from Improving to Stable due to the realistation that critical details of habitat requirements remain unknown - especially the identity and distribution of germination-critical fungal associates and certain gross aspects of the habitat such as openness and aspect.
12.1 Population size inside the pSCIs, SCIs and SACs network	Fully within SAC coverage
12.2 Type of estimate	Detailed, frequent monitoring takes place.
12.3 Population size inside the network; Method used	Full SAC coverage and frequent, detailed monitoring.