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:

S1058 - Large blue butterfly (*Maculinea arion*)

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.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK (England information only)**
1.2 Species code	**1058**
1.3 Species scientific name	**Maculinea arion**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Large blue butterfly

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2013-2017
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

The principal contractor working for Butterfly Conservation has been working on large blue for many years and has all the relevant information required for this highly sensitive species.
https://www.ceh.ac.uk/large-blue-butterfly
https://butterfly-conservation.org/4494/expanding-the-large-blue-landscape-in-the-polden-hills.html

5. Range

5.1 Surface area (km²)

700

5.2 Short-term trend Period

2013-2018

5.3 Short-term trend Direction

Increasing (+)

5.4 Short-term trend Magnitude

a) Minimum

b) Maximum

5.5 Short-term trend Method used

Based mainly on extrapolation from a limited amount of data

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)

b) Operator

Approximately equal to (≈)

c) Unknown

d) Method

The FRR is the same as in 2013 and is approximately equal

	to the current range. An FRR operator has been used because it has not been possible to calculate the exact FRR. The FRR value is considered to be sufficient to maintain a viable population and is no less that when the Habitats Directive came into force in the UK. For further details see the 2019 Article 17 UK Approach document.
5.11 Change and reason for change in surface area of range	Genuine change Use of different method The change is mainly due to: Genuine change
5.12 Additional information	The current Range surface area calculation does not represent the real range surface area. That is considered to be at least the range in 2013 - approximately equal to 800 km2. Change in availability of underpinning mapping data compared to 2013 has resulted in an apparent decrease in range area. Expert opinion considers the trend to be increasing. The increase in range has been due to a further successful re-introduction over the reporting period, as well as natural spread from existing colonies to adjacent areas with suitable habitat. The species now occurs in 33 colonies. For further information see the 2019 Article 17 UK Approach document.

6. Population

6.1 Year or period	2013-2017	
6.2 Population size (in reporting unit)	a) Unit	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	28
6.3 Type of estimate	Best estimate	
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	number of colonies (colonies)
	b) Minimum	
	c) Maximum	
	d) Best single value	33
6.5 Type of estimate	Best estimate	
6.6 Population size Method used	Complete survey or a statistically robust estimate	
6.7 Short-term trend Period	2013-2017	
6.8 Short-term trend Direction	Increasing (+)	
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	1995-2017	
6.12 Long-term trend Direction	Increasing (+)	

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6.13 Long-term trend Magnitude	a) Minimum b) Maximum c) Confidence interval	
6.14 Long-term trend Method used	Complete survey or a statistically robust estimate	
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size b) Operator c) Unknown	20 with unit number of colonies (colonies)
	d) Method	The FRP is the same as in 2013 and 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 details see the 2019 Article 17 UK Approach document.
6.16 Change and reason for change in population size	Genuine change The change is mainly due to:	Genuine change
6.17 Additional information	The current population is above the FRP and is increasing. Overall, numbers have increased due to better habitat management, and more suitable weather conditions over the reporting period. For further details see the 2019 Article 17 UK Approach document.	

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)?	Yes
	b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)?	
7.2 Sufficiency of area and quality of occupied habitat Method used	Complete survey or a statistically robust estimate	
7.3 Short-term trend Period	2013-2017	
7.4 Short-term trend Direction	Increasing (+)	
7.5 Short-term trend Method used	Complete survey or a statistically robust estimate	
7.6 Long-term trend Period	1995-2017	
7.7 Long-term trend Direction	Increasing (+)	
7.8 Long-term trend Method used		
7.9 Additional information	The habitat for the species has steadily increased as the reintroduction programme continues and more sites are brought into suitable condition. Area of habitat is sufficiently large and increasing and habitat quality is suitable for the long-term survival of the species. For further details see the 2019 Article 17 UK Approach document.	

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Abandonment of grassland management (e.g. cessation of	M

grazing or mowing) (A06)	
Intensive grazing or overgrazing by livestock (A09)	M
Extensive grazing or undergrazing by livestock (A10)	M

Threat	Ranking
Abandonment of grassland management (e.g. cessation of grazing or mowing) (A06)	M
Intensive grazing or overgrazing by livestock (A09)	M
Extensive grazing or undergrazing by livestock (A10)	M

8.2 Sources of information

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: Expand the current range of the species (related to 'Range')

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

Maintain existing extensive agricultural practices and agricultural landscape features (CA03)
Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures (CA04)
Adapt mowing, grazing and other equivalent agricultural activities (CA05)

9.6 Additional information

10. Future prospects

10.1 Future prospects of parameters

a) Range Good

b) Population Good

c) Habitat of the species Good

10.2 Additional information

Future trend of Range is Positive - increasing <=1% (one percent or less) per year on average; Future trend of Population is Very Positive - increasing >1% (more than one percent) per year on average; and Future trend of Habitat for the species is Positive - slight/moderate improvement. There are no pressures and the main threats to the species are not significant; the species will remain viable on the long-term. The main reason for a predicted postitive (rather than very positive) future trend for Range is due the known impacts of the extension of habitat management at the current sites, rather than any impact due to potential future reintroductions. The main reason for population increase (10.1. b i) being very positive is the excellent response of the species to better habitat management on many of the sites over the reporting period. For further

information on how future trends inform the Future Prospects conclusion see the 2019 Article 17 UK Approach document.

11. Conclusions

11.1. Range	Favourable (FV)
11.2. Population	Favourable (FV)
11.3. Habitat for the species	Favourable (FV)
11.4. Future prospects	Favourable (FV)
11.5 Overall assessment of Conservation Status	Favourable (FV)
11.6 Overall trend in Conservation Status	Improving (+)
11.7 Change and reasons for change in conservation status and conservation status trend	a) Overall assessment of conservation status Genuine change The change is mainly due to: Genuine change b) Overall trend in conservation status No change The change is mainly due to:
11.8 Additional information	Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is increasing and (ii) the current Range surface area is approximately equal to the Favourable Reference Range. Conclusion on Population reached because: (i) the short-term trend direction in Population size is increasing and (ii) the current Population size is not less than the Favourable Reference Population. Conclusion on Habitat for the species reached because: (i) the area of occupied habitat is sufficiently large and (ii) the habitat quality is suitable for the long-term survival of the species; and (iii) the short-term trend in area of habitat is increasing. Conclusion on Future prospects reached because: (i) the Future prospects for Range are good; (ii) the Future prospects for Population are good; and (iii) the Future prospects for Habitat for the species are good. Overall assessment of Conservation Status is Favourable because all of the conclusions are Favourable. Overall trend in Conservation Status is based on the combination of the short-term trends for Range - improving, Population - improving, and Habitat for the species - improving. Overall assessment of conservation status has changed between 2013 and 2019 because population and habitat for the species have changed from Unfavourable-inadequate to Favourable. Overall trend in Conservation Status has not changed since 2013

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

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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 b) Minimum c) Maximum d) Best single value
12.2 Type of estimate	
12.3 Population size inside the network Method used	
12.4 Short-term trend of population size within the network Direction	
12.5 Short-term trend of population size within the network Method used	
12.6 Additional information	

13. Complementary information

13.1 Justification of % thresholds for trends	
13.2 Trans-boundary assessment	
13.3 Other relevant Information	There have been more translocations of this species since the last reporting round in 2013, and a few natural colonisations. The FRP (of 20 colonies) has been met or exceeded in each of the years of this reporting round and so the Conservation Status can now be considered as Favourable.

Explanatory Notes

Species name: Maculinea arion (1058)

Field label	Note
2.1 Sensitive species	This species is listed as a sensitive species as it is highly vulnerable to disturbance by nature enthusiasts who wish to see and photograph it, and also to collectors. There are two sites which have been made public and are well managed with regards to visitors and every effort is made to keep all the other sites low key and out of the public domain as far as possible.

Species name: Maculinea arion (1058) Region code: ATL

Field label	Note
5.12 Additional information	The increase in range has been due to a further successful re-introduction over the reporting period, as well as natural spread from existing colonies to adajent areas with suitable habitat.
6.17 Additional information	Overall, number have increased on the main sites, with data provided by egg counts as the main population estimate. This is due to better habitat management, and also better weather over the reporting period. A new introduction was made in 2017.
7.9 Additional information	The habitat for the species has steadily increased as the reintroduction programme continues and more sites are brought into suitable condition.
10.2 Additional information	The main reason for increase in range (10.1. a i) being moderate is the extension of habitat management at the current sites. There are two more introductions planned and if they take place and succeed, this could be changed to very positive - but this is an unknown at present. The main reason for population increase (10.1. b i) being very positive is the excellent response of the butterfly to better habitat management on many of the sites over the reporting period. Good weather over the reporting period also helped, although of course this is a temporary phenomenom and can not be guaranteed in any year.