

**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:

**S1065 - Marsh fritillary butterfly (*Euphydryas aurinia*)**

**SCOTLAND**

## **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 (Scotland information only)
1.2 Species code	1065
1.3 Species scientific name	Euphydryas aurinia
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Marsh fritillary butterfly

### 2. Maps

2.1 Sensitive species	No
2.2 Year or period	2000-2017
2.3 Distribution map	Yes
2.4 Distribution map Method used	Based mainly on extrapolation from a limited amount of data
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?	<table> <tr> <td>a) regulations regarding access to property</td><td>No</td></tr> <tr> <td>b) temporary or local prohibition of the taking of specimens in the wild and exploitation</td><td>No</td></tr> <tr> <td>c) regulation of the periods and/or methods of taking specimens</td><td>No</td></tr> <tr> <td>d) application of hunting and fishing rules which take account of the conservation of such populations</td><td>No</td></tr> <tr> <td>e) establishment of a system of licences for taking specimens or of quotas</td><td>No</td></tr> <tr> <td>f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens</td><td>No</td></tr> <tr> <td>g) breeding in captivity of animal species as well as artificial propagation of plant species</td><td>No</td></tr> <tr> <td>h) other measures</td><td>No</td></tr> </table>	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

Marsh Fritillary Site Review 2018: Butterfly Conservation Scotland report to SNH. Unpublished document.

Natura Plans for Scotland, Feature Assessment Paper. Unpublished document.

SAC Feature Assessment Datasheet. SNH internal document.

Brereton, T.M., Botham, M.S., Middlebrook, I., Randle, Z., Noble D. & Roy, D.B. 2017. United Kingdom Butterfly Monitoring Scheme report for 2016. Centre for Ecology & Hydrology & Butterfly Conservation.

Biodiversity Action Reporting System (BARS) data - <http://ukbars.defra.gov.uk/archive/plans/targets.asp?HAP=&SAP=%7B1C1352D3%2D0BCA%2D4BE0%2DB2B0%2DE1E5AF28930B%7D&M=1>

Butterfly Conservation trend analysis - [www.ukbms.org/docs/reports/2011/UKBMS summary tables 2011.pdf](http://www.ukbms.org/docs/reports/2011/UKBMS_summary_tables_2011.pdf).

Butterflies for the New Millennium webpage - [http://butterfly-conservation.org/text/64/butterfly\\_distribution.html](http://butterfly-conservation.org/text/64/butterfly_distribution.html).

Littlewood, N.A. & Stockan, J.A. 2012. Surveillance of priority terrestrial invertebrates in Scotland. SNH report.

UK Butterfly Monitoring Scheme data for Marsh Fritillary - [www.ukbms.org/SpeciesFactsheets.aspx?speciesId=50](http://www.ukbms.org/SpeciesFactsheets.aspx?speciesId=50)

Botham, M.S., Ash, D., Aspey, N., Bourn, N.A.D., Bulman, C.R., Roy, D.B., Swain, J., Zannese, A. & Pywell, R.F. 2011. The effects of habitat fragmentation on niche requirements of the marsh fritillary, *Euphydryas aurinia*, (Rottemburg, 1775) on calcareous grasslands in southern UK. *Journal of Insect Conservation* 15: 269-277.

Buglife - Invertebrate records from sites that are mainly across Scotland (dr1363) - Records provided by Invertebrate records from sites that are mainly across Scotland, accessed through NBN Atlas website.

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Highland Biological Recording Group (dp7) - Records provided by Highland Biological Recording Group, accessed through NBN Atlas website.

Caledonian Conservation (dp4) - Records provided by Caledonian Conservation, accessed through NBN Atlas website.

Butterfly Conservation (dr481) - Butterfly distribution data from the Butterflies for the New Millennium recording scheme, courtesy of Butterfly Conservation and the Biological Records Centre.

NBN Atlas website at <http://www.nbnatlas.org> Accessed 27 June 2018.

Biological Records Centre (dp77) - Records provided by Biological Records Centre, accessed through NBN Atlas website.

Buglife (dp1) - Records provided by Buglife, accessed through NBN Atlas website.

Butterfly Conservation (dp71) - Records provided by Butterfly Conservation, accessed through NBN Atlas website.

Scottish Natural Heritage (dp9) - Records provided by Scottish Natural Heritage, accessed through NBN Atlas website.

UK Butterfly Monitoring Scheme (UKBMS) (dr1206) - Records provided by UK Butterfly Monitoring Scheme (UKBMS), accessed through NBN Atlas website.

HBRG Insects Dataset (dr965) - Records provided by HBRG Insects Dataset, accessed through NBN Atlas website.

Lorn Natural History Group (dp59) - Records provided by Lorn Natural History Group, accessed through NBN Atlas website.

Wider Countryside Butterfly Scheme (WCBS) (dr1383) - Records provided by Wider Countryside Butterfly Scheme (WCBS), accessed through NBN Atlas website.

MIDAS - Management Information on Designated Areas in Scotland (SNH)

van Swaay, C., Wynhoff, I., Verovnik, R., Wiemers, M., Lopez Munguira, M., Maes, D., Sasic, M., Verstrael, T., Warren, M. & Settele, J. 2010. *Euphydryas aurinia*. The IUCN Red List of Threatened Species 2010: e.T174182A7024283

Hula, V., M. Konvicka, A. Pavlicko & Z. Fric. 2004. Marsh fritillary (*Euphydryas aurinia*) in the Czech Republic: monitoring, metapopulation structure, and conservation of an endangered butterfly. *Entomologica Fennica* 15:231-241.

Schtickzelle, N., J. Choutt, P. Goffart, V. Fichet & M. Baguette. 2005. Metapopulation dynamics and conservation of the marsh fritillary butterfly: population viability analysis and management options for a critically endangered species in Western Europe. *Biological Conservation* 126:569-581.

The UK Butterfly Monitoring Scheme (UKBMS) - <http://www.ukbms.org/speciesfactsheets.aspx?speciesId=50>

Zimmermann, K. et al. 2011. Demography of adults of the Marsh fritillary butterfly, *Euphydryas aurinia* (Lepidoptera: Nymphalidae) in the Czech Republic: Patterns across sites and seasons. *Eur. J. Entomol.* 108: 243-254.

LNHG Biological Records Dataset (dr819) - Records provided by LNHG Biological Records Dataset, accessed through NBN Atlas website.

Site Condition Monitoring of Marsh Fritillary on designated sites in west Scotland 2014-15 (dr850) - Records provided by Site Condition Monitoring of Marsh Fritillary on designated sites in west Scotland 2014-15, accessed through NBN Atlas website.

SNH Invertebrate Site Condition Monitoring 2013/14: Lismore Lochs SSSI (dr356) - Records provided by Caledonian Conservation Ltd, accessed through NBN Atlas website.

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

## 5. Range

5.1 Surface area (km <sup>2</sup> )	
5.2 Short-term trend Period	
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	
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 (km <sup>2</sup> ) b) Operator c) Unknown d) Method
5.11 Change and reason for change in surface area of range	No change The change is mainly due to:
5.12 Additional information	

## 6. Population

6.1 Year or period	2000-2017
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 413
6.3 Type of estimate	Best estimate
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	Based mainly on extrapolation from a limited amount of data
6.7 Short-term trend Period	2007-2017
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	Based mainly on extrapolation from a limited amount of data

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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

6.15 Favourable reference population (using the unit in 6.2 or 6.4)

- a) Population size
- b) Operator
- c) Unknown
- d) Method

6.16 Change and reason for change in population size

No information on nature of change  
The change is mainly due to:

6.17 Additional information

## 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)? Yes

7.2 Sufficiency of area and quality of occupied habitat Method used

Based mainly on expert opinion with very limited data

7.3 Short-term trend Period

2007-2017

7.4 Short-term trend Direction

Stable (0)

7.5 Short-term trend Method used

Based mainly on expert opinion with very limited data

7.6 Long-term trend Period

7.7 Long-term trend Direction

7.8 Long-term trend Method used

7.9 Additional information

## 8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Intensive grazing or overgrazing by livestock (A09)	M
Extensive grazing or undergrazing by livestock (A10)	M
Threat	Ranking
Intensive grazing or overgrazing by livestock (A09)	H
Extensive grazing or undergrazing by livestock (A10)	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

Maintain the current range, population and/or habitat for the species

### 9.3 Location of the measures taken

Both inside and outside Natura 2000

### 9.4 Response to the measures

Short-term results (within the current reporting period, 2013-2018)

### 9.5 List of main conservation measures

Maintain existing extensive agricultural practices and agricultural landscape features (CA03)

Prevent conversion of (semi-) natural habitats into forests and of (semi-)natural forests into intensive forest plantation (CB01)

## 9.6 Additional information

## 10. Future prospects

### 10.1 Future prospects of parameters

- a) Range
- b) Population
- c) Habitat of the species

### 10.2 Additional information

## 11. Conclusions

### 11.1. Range

### 11.2. Population

### 11.3. Habitat for the species

### 11.4. Future prospects

### 11.5 Overall assessment of Conservation Status

### 11.6 Overall trend in Conservation Status

### 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

No change

The change is mainly due to:

### 11.8 Additional information



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

## 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 map 1x1 km grid cells (grids1x1)  
b) Minimum  
c) Maximum  
d) Best single value    203

12.2 Type of estimate

Best estimate

12.3 Population size inside the network Method used

Based mainly on extrapolation from a limited amount of data

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

Based mainly on extrapolation from a limited amount of data

12.6 Additional information

## 13. Complementary information

13.1 Justification of % thresholds for trends

13.2 Trans-boundary assessment

13.3 Other relevant Information

## Distribution Map

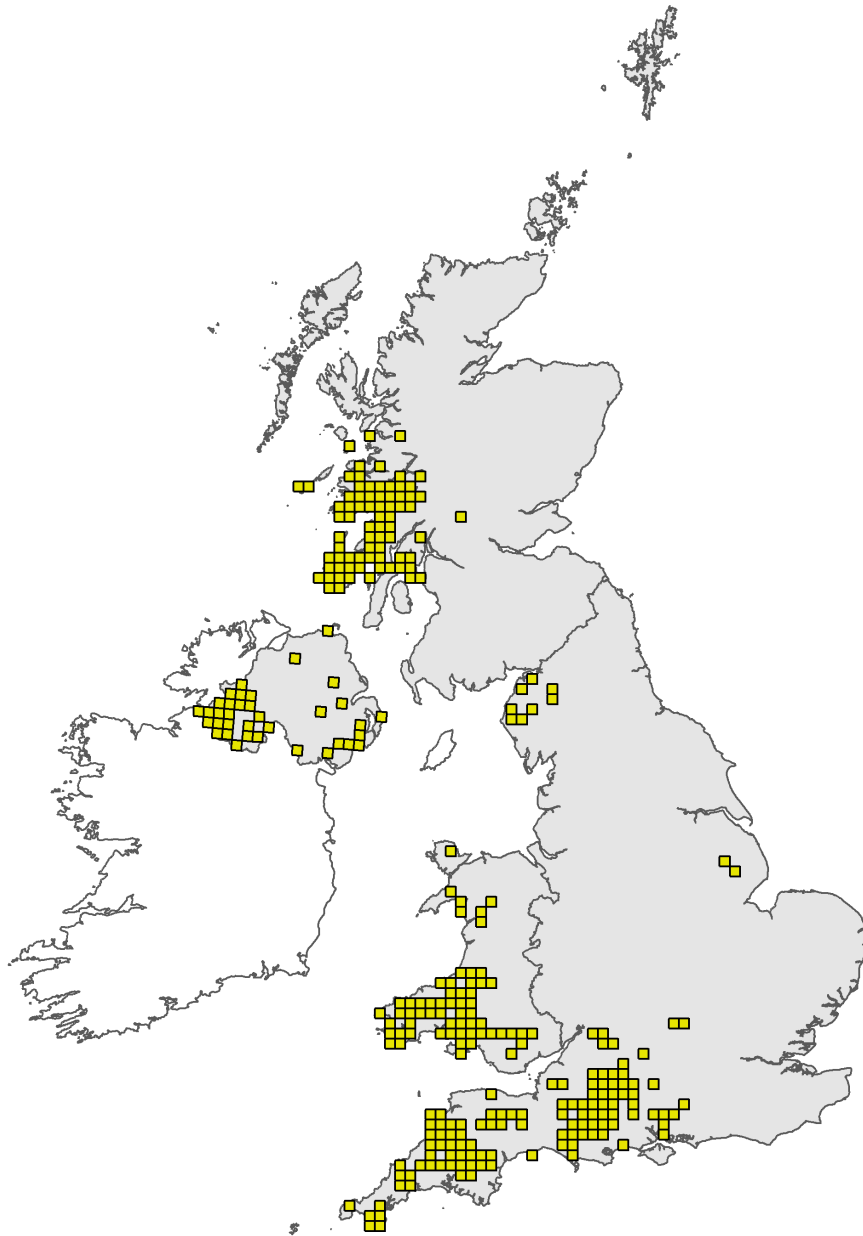


Figure 1: UK distribution map for S1065 - Marsh fritillary butterfly (*Euphydryas aurinia*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

## Range Map

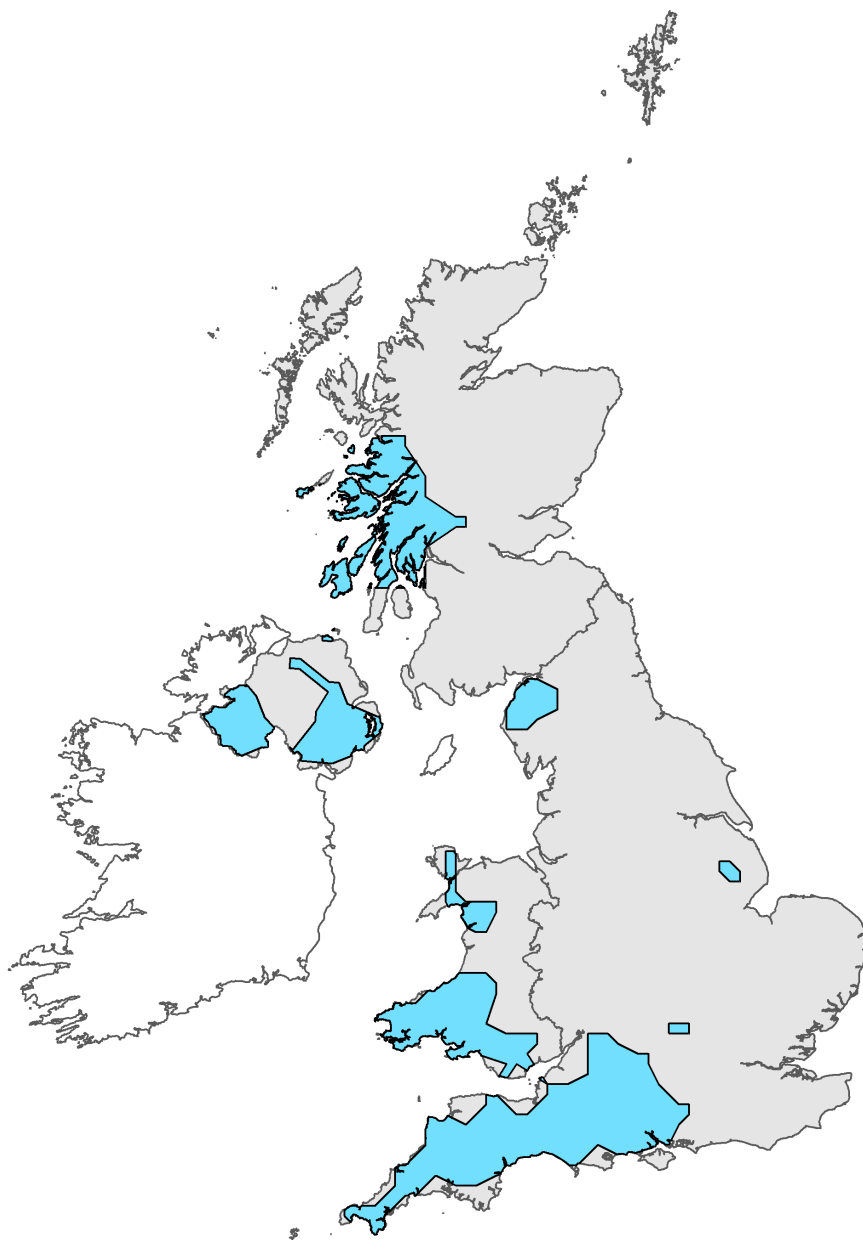


Figure 2: UK range map for S1065 - Marsh fritillary butterfly (*Euphydryas aurinia*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 20km. For further details see the 2019 Article 17 UK Approach document.

# Explanatory Notes

**Species name: Euphydryas aurinia (1065) Region code: ATL**

Field label	Note
6.17 Additional information	There are substantial variations among years within single populations and among multiple populations in a single year (Zimmermann et al. 2011). In some cases, rates of population turnover are so great that small, fragmented habitats may not be viable in the long term (Hula et al. 2004, Schtickzelle et al. 2005). Numbers of this protected species have increased, though not significantly, on monitored sites in the UK. The trend in abundance at Scottish transect sites for which data has been received within the last five years is stable (The UK Butterfly Monitoring Scheme).
11.4 Future prospects	Although this species shows a decline in part of its European range, it is not believed to face major threats at the European scale (van Swaay et al. 2010)
13.3 Other relevant information	The major threats to the marsh fritillary populations are habitat loss from land development and agricultural improvement, afforestation, changes in grazing regime, increasing fragmentation and isolation of habitats. However, demographic and genetic studies suggest the species has a metapopulation structure, with local populations linked by migration and subject to large fluctuations and high turnover. Therefore individual populations patches have a high incidence of local extinction and colonization (Botham 2011, Brereton et al. 2017).