

**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:

S1065 - Marsh fritillary butterfly (*Euphydryas aurinia*)

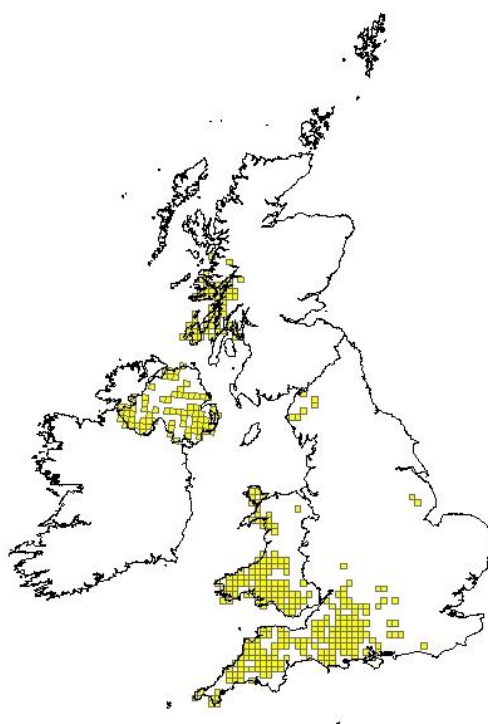
IMPORTANT NOTE – PLEASE READ

- 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 **Scottish Natural Heritage** and refers only to the state of the habitat/species in **Scotland** - 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	S1065
	0.2.2 Species scientific name	<i>Euphydryas aurinia</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	Marsh fritillary butterfly

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
1.1.3 Year or period	1981-2012
	Data used in Scotland were from Butterfly Conservation and other recording groups for the years 1990 - 2012, providing a good representation of the distribution of Marsh Fritillary in Scotland. The Invertebrate Site Register on the NBN should not be used due to reliability issues. SNH do not have any other MF data that would make these data more complete. This is a good representation of the

	distribution of MF in Scotland. Butterfly Conservation data and other data from other recording groups on the NBN (Not Invertebrate Site Register) - the BC data range from 1981 - 2012 - they hold most reliable body of data and we should keep with these dates
1.1.4 Additional distribution map	False
1.1.5 Range map	

2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>"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</p> <p>Butterfly Conservation trend analysis - www.ukbms.org/docs/reports/2011/UKBMS%20summary%20tables%202011.pdf.</p> <p>Butterflies for the New Millennium webpage - http://butterfly-conservation.org/text/64/butterfly_distribution.html.</p> <p>Fox, R., Brereton, T.M., Asher, J., Botham, M.S., Middlebrook, I., Roy, D.B. & Warren, M.S. (2011) The State of the UK's Butterflies 2011. Butterfly Conservation and the Centre for Ecology & Hydrology, Wareham, Dorset.</p> <p>Lewis, O. & Hurford, C. (1997) Assessing the status of the marsh fritillary butterfly (<i>Eurodryas aurinia</i>): An example from Glamorgan. <i>Journal of Insect Conservation</i>, 1, 159-166.</p> <p>Littlewood, N.A. & Stockan, J.A. (2012). Surveillance of priority terrestrial invertebrates in Scotland. SNH unpublished report.</p> <p>Ravenscroft, N.A.M. & McKay, C.R. (2007) The distribution and abundance of the Marsh Fritillary on Islay, 2007. Report from Wildside Ecology to Butterfly Conservation Scotland, Stirling.</p> <p>UK Butterfly Monitoring Scheme data for Marsh Fritillary - www.ukbms.org/SpeciesFactsheets.aspx?speciesId=50#</p> <p>NBN distribution data:</p> <p>Records for Fife Nature Records Centre</p> <p>HBRG Insects Dataset</p> <p>Welsh Invertebrate Database (WID)</p> <p>Butterfly distributions for Great Britain for the period 1690-2004 from Butterfly Conservation and the Biological Records Centre</p> <p>Butterfly distributions for Great Britain for the period 2005-2009 from Butterfly Conservation and the Biological Records Centre</p> <p>Butterfly distribution (provisional) records for the UK for the period 2010 from Butterfly Conservation and the Biological Records Centre"</p>

	<p>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</p> <p>Butterfly Conservation trend analysis - www.ukbms.org/docs/reports/2011/UKBMS%20summary%20tables%202011.pdf.</p> <p>Butterflies for the New Millennium webpage - http://butterfly-conservation.org/text/64/butterfly_distribution.html.</p> <p>Fox, R., Brereton, T.M., Asher, J., Botham, M.S., Middlebrook, I., Roy, D.B. & Warren, M.S. (2011) The State of the UK's Butterflies 2011. Butterfly Conservation and the Centre for Ecology & Hydrology, Wareham, Dorset.</p> <p>Lewis, O. & Hurford, C. (1997) Assessing the status of the marsh fritillary butterfly (<i>Eurodryas aurinia</i>): An example from Glamorgan. <i>Journal of Insect Conservation</i>, 1, 159-166.</p> <p>Littlewood, N.A. & Stockan, J.A. (2012). Surveillance of priority terrestrial invertebrates in Scotland. SNH unpublished report.</p> <p>Ravenscroft, N.A.M. & McKay, C.R. (2007) The distribution and abundance of the Marsh Fritillary on Islay, 2007. Report from Wildside Ecology to Butterfly Conservation Scotland, Stirling.</p> <p>UK Butterfly Monitoring Scheme data for Marsh Fritillary - www.ukbms.org/SpeciesFactsheets.aspx?speciesId=50#</p> <p>NBN distribution data:</p> <p>Records for Fife Nature Records Centre HBRG Insects Dataset Welsh Invertebrate Database (WID) Butterfly distributions for Great Britain for the period 1690-2004 from Butterfly Conservation and the Biological Records Centre Butterfly distributions for Great Britain for the period 2005-2009 from Butterfly Conservation and the Biological Records Centre Butterfly distribution (provisional) records for the UK for the period 2010 from Butterfly Conservation and the Biological Records Centre</p>
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2.3 Range	
2.3.1 Surface area Range	
2.3.2 Method used Surface area of Range	Estimate based on partial data with some extrapolation and/or modelling The dates used were to keep in line with the BC data for Marsh fritillary from 1981 - 2012
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	a) Minimum

	b) Maximum	
	<p>expert opinion and www.ukbms.org/SpeciesFactsheets.aspx?speciesId=50#</p> <p>Using the previous distribution maps compared to current known distribution, expert opinion and the collated information found on the UKBMS webpage, the distribution does not seem to have changed much in the short term in Scotland. This is expert opinion based on the collated information from UKBMS www.ukbms.org/SpeciesFactsheets.aspx?speciesId=50#.</p>	
2.3.6 Long-term trend Period		
2.3.7 Long-term trend Trend direction		
2.3.8 Long-term trend Magnitude	a) Minimum	
Optional		
	b) Maximum	
	This is the comparison of the Scotland trend = stable with the 2007 UK trend = declining. It is thought this is due to improved and more accurate data.	
2.3.9 Favourable reference range	a) Value in km²	
	FRV - Range = 60883km ² (FRV Range Scotland = 9201 km ²). No problems with the FR Range. The limitation for Scotland is that there are many gaps in the distribution maps; but this is the best available data so we find this value acceptable.	
	b) Operator for FRR	
	c) FRR is unknown (indicated by "true")	False
	d) Method used to set FRR	
2.3.10 Reason for change	a) Genuine change?	True
Is the difference between the		

reported value in 2.3.1 and the previous reporting round mainly due to...		
	b) Improved knowledge/more accurate data?	True
	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 map 1x1 km grid cells
	b) Minimum	97
	c) Maximum	97
2.4.3 Additional information on population estimates / conversion Optional	a) Definition of "locality"	http://bd.eionet.europa.eu/activities/Natura_2000/Folder_Reference_Portal/list_of_exceptions.pdf
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	
2.4.4 Year or period	2005-2005	
2.4.5 Method used Population size	Estimate based on partial data with some extrapolation and/or modelling	
	http://ukbars.defra.gov.uk/archive/plans/targets.asp?HAP=&SAP=%7B1C1352D3%2D0BCA%2D4BE0%2DB2B0%2DE1E5AF28930B%7D&M=1 This data is from the BARS spreadsheet. It is from 2005 and refers to	

	occupied 1 km squares.	
2.4.6 Short-term trend Period	2001-2012	
2.4.7 Short-term trend Trend direction	stable	
2.4.8 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
2.4.9 Short-term trend Method used	<p>Estimate based on partial data with some extrapolation and/or modelling</p> <p>The trend for Scotland is based on expert opinion and Butterfly Conservation's trend analysis for the UK www.ukbms.org/docs/reports/2011/UKBMS%20summary%20tables%202011.pdf. The 10-year trend (2001-2011) shows a UK population trend of +42%, however, this increase is not significant. Littlewood & Stockan (2012) say that large fluctuations in population size, in addition to colonisations and extinctions within metapopulations introduces a large amount of uncertainty in trends for this species.</p>	
2.4.10 Long-term trend – Period		
2.4.11 Long-term trend Trend direction		
2.4.12 Long-term trend Magnitude Optional	a) Minimum	
	b) Maximum	
	c) Confidence interval	

2.4.13 Long term trend Method used		
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	
	FRV - population = 410 occupied 1 km squares (62 occupied 1 km squ in Scotland). This is a JNCC approach and in the lack of a better option, SNH are following JNCC's suggestion.	
	b) Operator	
	c) FRP is unknown indicated by "true"	False
	d) Method used to set FRP	FRV - population = 410 occupied 1 km squares (62 occupied 1 km squ in Scotland). This is a JNCC approach and in the lack of a better option, SNH are following JNCC's suggestion.
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. "Range tool")?	False

2.5 Habitat for the species		
2.5.1 Area estimation	50	
2.5.2 Year or period	2000-2000	
2.5.3 Method used Habitat for the species	Estimate based on expert opinion with no or minimal sampling	
2.5.4 Quality of the habitat	a) Habitat quality	Moderate
	2007 UK estimate	

	Expert opinion from previous reporting and site condition monitoring data. SNH do not have a broad habitat map for Scotland yet, so we cannot do any mapping according to broad habitat preference.	
	b) Assessment method	Expert opinion and Site Condition Monitoring data
	Expert opinion and Site Condition Monitoring data	
	Expert opinion and Site Condition Monitoring data	
2.5.5 Short-term trend Period	2001-2012	
2.5.6 Short-term trend Trend direction	stable	
	Butterfly Conservation trend analysis - UKBMS trend analysis, Ravenscroft & Mackay 2007) and expert opinion. Because we do not have an updated estimate of the amount of habitat for this species we cannot say for sure what the trend is. However, an expert opinion is that in Scotland, the habitat has remained stable in the short term (2001-2012) (Ravenscroft & Mackay 2007)	
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	a) Genuine change?	False
Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	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	

A04: grazing	H	
B02: Forest and Plantation management & use	M	
I02: problematic native species	M	
J03: Other ecosystem modifications	M	

2.6.1 Method used – Pressures	mainly based on expert judgement and other data SCM database and Expert opinion (Littlewood & Stockan 2012; Athayde Tonhasca) These data were from the SCM database but also expert opinion.
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2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
A04: grazing	H	
B02: Forest and Plantation management & use	M	
I02: problematic native species	M	
J03: Other ecosystem modifications	M	

2.7.1 Method used – Threats	expert opinion Expert opinion (Littlewood & Stockan 2012; Athayde Tonhasca) and using the pressures as a guide
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2.8 Complementary information	
2.8.1 Justification of % thresholds for trends	
2.8.2 Other relevant information	Euphydryas aurinia is essentially a grassland species in the UK, found in a range of habitats in which its larval food plant, <i>Succisa pratensis</i>, occurs. Most colonies are found in damp acidic or dry calcareous grasslands and semi-natural dry grasslands and scrubland on calcareous substrates. Populations may occur occasionally on wet heath, bog margins and woodland clearings. Populations can show great fluctuations in size from year to

	<p>year with larvae occasionally reaching great densities. The population fluctuations appear to be driven by parasitoids, and can cause extinction of small isolated colonies.</p> <p>Euphydryas aurinia is essentially a grassland species in the UK, found in a range of habitats in which its larval food plant, <i>Succisa pratensis</i>, occurs. Most colonies are found in damp acidic or dry calcareous grasslands and semi-natural dry grasslands and scrubland on calcareous substrates. Populations may occur occasionally on wet heath, bog margins and woodland clearings.</p> <p>Populations can show great fluctuations in size from year to year with larvae occasionally reaching great densities. The population fluctuations appear to be driven by parasitoids, and can cause extinction of small isolated colonies.</p> <p>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</p> <p>Butterfly Conservation trend analysis - www.ukbms.org/docs/reports/2011/UKBMS%20summary%20tables%202011.pdf.</p> <p>Butterflies for the New Millennium webpage - http://butterfly-conservation.org/text/64/butterfly_distribution.html.</p> <p>Fox, R., Brereton, T.M., Asher, J., Botham, M.S., Middlebrook, I., Roy, D.B. & Warren, M.S. (2011) The State of the UK's Butterflies 2011. Butterfly Conservation and the Centre for Ecology & Hydrology, Wareham, Dorset.</p> <p>Lewis, O. & Hurford, C. (1997) Assessing the status of the marsh fritillary butterfly (<i>Eurodryas aurinia</i>): An example from Glamorgan. <i>Journal of Insect Conservation</i>, 1, 159-166.</p> <p>Littlewood, N.A. & Stockan, J.A. (2012). Surveillance of priority terrestrial invertebrates in Scotland. SNH unpublished report.</p> <p>Ravenscroft, N.A.M. & McKay, C.R. (2007) The distribution and abundance of the Marsh Fritillary on Islay, 2007. Report from Wildside Ecology to Butterfly Conservation Scotland, Stirling.</p> <p>UK Butterfly Monitoring Scheme data for Marsh Fritillary - www.ukbms.org/SpeciesFactsheets.aspx?speciesId=50#</p> <p>NBN distribution data:</p> <p>Records for Fife Nature Records Centre</p> <p>HBRG Insects Dataset</p> <p>Welsh Invertebrate Database (WID)</p> <p>Butterfly distributions for Great Britain for the period 1690-2004 from Butterfly Conservation and the Biological Records Centre</p> <p>Butterfly distributions for Great Britain for the period 2005-2009 from</p>
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	Butterfly Conservation and the Biological Records Centre Butterfly distribution (provisional) records for the UK for the period 2010 from Butterfly Conservation and the Biological Records Centre
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	a) Unit	number of subadults
Estimation of population size included in the SAC network	The population estimate is larval web counts, not 1-km squares. SNH collect site condition monitoring data for this species on a field compartment scale, with undigitised map data, therefore it would be difficult to convert the web counts to occupied 1-km squares. The trend is probably positive according to the web counts from SCM; these data have not been analysed statistically and the large fluctuations in this species population make trend analysis difficult to interpret. However, overall the figures from the most recent assessments have generally been higher than the previous assessment. Suitable management is being implemented where appropriate.	
	b) Minimum	
	c) Maximum	
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			H			Y	Y	Y				
6.4: Manage landscape features		Y		Y		M			Y	Y	Y				

SCM data

SNH found it difficult to map our case type to the EU conservation measures. Our case types were:

Grazing lease

Land acquisition

Land lease

RDC Rural Priorities Contract

SSSi agreement.

We felt that much of this related to maintaining grasslands and other open space and manage landscape features.