Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A

2019-2024

Conservation status assessment for the species:

S1065 - Marsh fritillary butterfly

(***Euphydryas aurinia***)

Wales

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Important note - Please read

- The information in this document represents the Wales Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A, for the period 2019-2024.
- It is based on supporting information provided by Natural Resources Wales, which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Maps showing the distribution and range of the species are included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country reports.
- 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; and/or (iii) the field was not relevant to this species (section 12 National Site Network coverage for Annex II species).
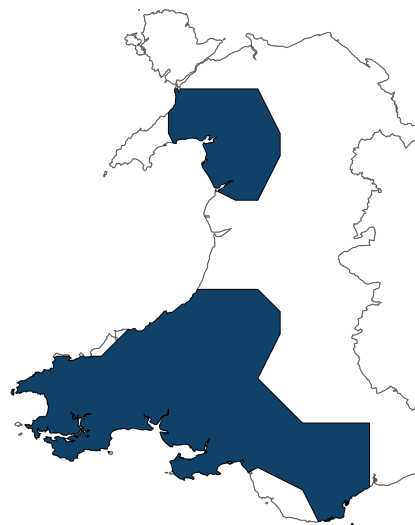
Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the JNCC website.

Assessment Summary: Marsh fritillary butterfly
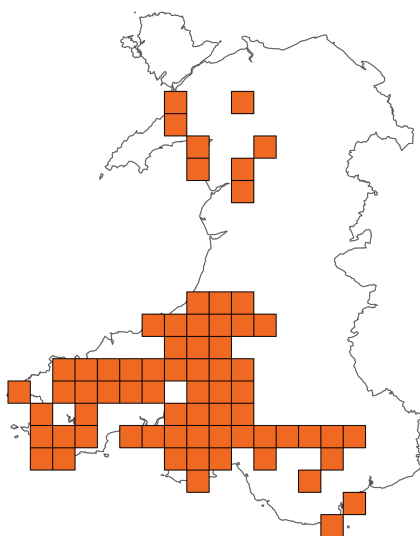
Distribution Map	Range Map

Figure 1: Wales distribution and 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 10km grid square distribution map is based on available species records within the current reporting period.

Table 1: Table summarising the conservation status for S1065 - Marsh fritillary butterfly (*Euphydryas aurinia*). Overall conservation status for species is based on assessments of range, population, habitat for the species, and future prospects.

Overall Conservation Status (see section 11)

Unfavourable-bad (U2)

Breakdown of Overall Conservation Status

Range (see section 5)	**Unfavourable-bad (U2)**
Population (see section 6)	**Unfavourable-bad (U2)**
Habitat for the species (see section 7)	**Unfavourable-bad (U2)**
Future prospects (see section 10)	**Unfavourable-bad (U2)**

List of Sections

National Level

1. General information

1.1 Country	Wales
1.2 Species code	S1065
1.3 Species scientific name	*Euphydryas aurinia*
1.4 Alternative species scientific name	
1.5 Common name	Marsh fritillary butterfly
Annex(es)	II

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2010-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Based mainly on extrapolation from a limited amount of data

2.5 Additional information

No additional information

3. Information related to Annex V Species

3.1 Is the species taken in the wild / exploited?

3.2 What measures have been taken?

a) Regulations regarding access to property

b) Temporary or local prohibition on the taking of specimens in the wild and exploitation

c) Regulation of the periods and/or methods of taking specimens

d) Application of hunting and fishing rules which take account of the conservation of such populations

e) Establishment of a system of licences for taking specimens or of quotas

f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens

g) Breeding in captivity of animal species as well as artificial propagation of plant species

Other measures

Other measures description

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

a) Unit

Table 2: Quantity taken from the wild during the reporting period (see 3.3a for units). For species with defined hunting seasons, Season 1 refers to 2018/2019 (autumn 2018 to spring 2019), and Season 6 to 2023/2024. For species without hunting seasons, data are reported by calendar year: Year 1 is 2019, and Year 6 is 2024.

	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
b) Minimum	-	-	-	-	-	-
c) Maximum	-	-	-	-	-	-
d) Unknown	-	-	-	-	-	-

3.4: Hunting bag or quantity taken in the wild; Method used

3.5: Additional information

No additional information

Biogeographical Level

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs   ATL

4.2 Sources of information

See section 14 References

5. Range

5.1 Surface area (km²)	9,409.11
5.2 Short-term trend; Period	2013-2024
5.3 Short-term trend; Direction	Decreasing
5.4 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	Decreasing 0 - 12%
d) Unknown	No
e) Type of estimate	
f) Rate of decrease	Decreasing <=1% (one percent or less) per year on average
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	
c) Rate of decrease	

5.9 Long-term trend; Method used

5.10 Favourable Reference Range (FRR)

a) Area (km²)

b) Pre-defined increment	Current range is between 11% and 50% smaller than the FRR
c) Unknown	No
d) Method used	Expert opinion
e) Quality of information	

5.11 Change and reason for change in surface area of range

a) Change	Yes
b) Genuine change	Yes
c) Improved knowledge or more accurate data	No
d) Different method	No
e) No information	No
f) Other reason	No
g) Main reason	Genuine change

5.12 Additional information

No additional information

6. Population

6.1 Year or period	2010-2024

6.2 Population size (in reporting unit)

a) Unit	number of map 1x1 km grid cells
b) Minimum	
c) Maximum	

d) Best single value	377
6.3 Type of estimate	Best estimate
6.4 Quality of extrapolation to reporting unit	moderate

6.5 Additional population size (using population unit other than reporting unit)

a) Unit	
b) Minimum	
c) Maximum	
d) Best single value	
e) 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	2010-2024
6.8 Short-term trend; Direction	Decreasing
6.9 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	Decreasing 26 - 50%
d) Unknown	No
e) Type of estimate	Pre-defined range
f) Rate of decrease	Decreasing >1% (more than one percent) per year on average
6.10 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data
6.11 Long-term trend; Period	1990-2024
6.12 Long-term trend; Direction	Decreasing

6.13 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	Decreasing >1% (more than one percent) per year on average
6.14 Long-term trend; Method used	Based mainly on extrapolation from a limited amount of data

6.15 Favourable Reference Population (FRP)

ai) Population size	
aii) Unit	
b) Pre-defined increment	Current population is between 5% and 25% smaller than the FRP
c) Unknown	No
d) Method used	Expert opinion
e) Quality of information	

6.16 Change and reason for change in population size

a) Change	Yes
b) Genuine change	Yes
c) Improved knowledge or more accurate data	No
d) Different method	No
e) No information	No
f) Other reason	No
g) Main reason	Genuine change

6.17 Additional information

No additional information

6.18 Age structure, mortality and reproduction deviation   Unknown

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat (for long-term survival)

a) Is area of occupied habitat sufficient?	No
b) Is quality of occupied habitat sufficient?	No
c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality?	No

7.2 Sufficiency of area and quality of occupied habitat; Method used

a) Sufficiency of area of occupied habitat; Method used	Based mainly on extrapolation from a limited amount of data
b) Sufficiency of quality of occupied habitat; Method used	Based mainly on extrapolation from a limited amount of data
7.3 Short-term trend; Period	2010-2024
7.4 Short-term trend; Direction	Decreasing
7.5 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data
7.6 Long-term trend; Period	
7.7 Long-term trend; Direction	
7.8 Long-term trend; Method used	

7.9 Additional information

No additional information

8. Main pressures

8.1 Characterisation of pressures

Table 3: Pressures affecting the species, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
PA05: Abandonment of management/use of grasslands and other agricultural and agroforestry systems (e.g. cessation of grazing, mowing or traditional farming)	Ongoing and likely to be in the future	High (H)
PA07: Intensive grazing or overgrazing by livestock	Ongoing and likely to be in the future	High (H)
PA08: Extensive grazing or undergrazing by livestock	Ongoing and likely to be in the future	High (H)
PA22: Drainage for use as agricultural land	Ongoing and likely to be in the future	High (H)
PB01: Conversion to forest from other land uses, or afforestation (excluding drainage)	Ongoing and likely to be in the future	Medium (M)
PB24: Drainage for forestry	Ongoing and likely to be in the future	Medium (M)
PE01: Roads, paths, railroads and related infrastructure	Ongoing and likely to be in the future	Medium (M)
PF01: Conversion from other land uses to built-up areas	Ongoing and likely to be in the future	Medium (M)
PH01: Military, paramilitary or police exercises and operations on land and freshwater	Ongoing and likely to be in the future	Medium (M)
PH03: Abandonment of terrestrial military or similar exercises (loss of open habitats)	Ongoing and likely to be in the future	Medium (M)
PJ01: Temperature changes and extremes due to climate change	Ongoing and likely to be in the future	Medium (M)
PJ03: Changes in precipitation regimes due to climate change	Ongoing and likely to be in the future	Medium (M)

| PJ10: Change of habitat location, size, and / or quality due to climate change | Ongoing and likely to be in the future | Medium (M) |
| PM07: Natural processes without direct or indirect influence from human activities or climate change | Ongoing and likely to be in the future | High (H) |

8.2 Sources of information

See section 14 References

8.3 Additional information

No 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 National Site Network
9.4 Response to measures	Medium-term results (within the next two reporting periods, 2025–2036)

9.5 List of main conservation measures

Table 4: Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/ immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
MA01: Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land	Medium (M)
MA03: Maintain existing extensive agricultural practices and agricultural landscape features	Medium (M)

MA04: Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures	High (H)
MA05: Adapt mowing, grazing and other equivalent agricultural activities (e.g. burning)	High (H)
MA06: Stop mowing, grazing and other equivalent agricultural activities e.g. burning (incl. restore or improve habitats)	High (H)
MA13: Manage agricultural drainage and water abstraction (incl. the restoration of drained or hydrologically altered habitats)	Medium (M)
MB01: Prevent conversion of (semi-) natural habitats into forests and of (semi-) natural forests into intensive forest plantation	Medium (M)
MB14: Manage drainage and water abstraction for forestry (inc. restoration of drained or hydrologically altered habitats)	Medium (M)
ME01: Reduce impact of transport operation and infrastructure	Medium (M)
MF01: Managing the impacts of converting land for construction and development of infrastructure	Medium (M)
MM01: Management of habitats (others than agriculture and forest) to slow, stop or reverse natural processes that occur without direct or indirect influence from human activities or climate change	Medium (M)
MS01: Reinforce populations of species from the directives	Medium (M)
MS02: Reintroduce species from the directives	Medium (M)
MS03: Restoration of habitat of species from the directives	High (H)

9.6 Additional information

No additional information

10. Future prospects

10.1a Future trends of parameters

ai) Range   Negative - decreasing <=1% (one percent or less) per year on average

bi) Population	Very Negative - decreasing >1% (more than one percent) per year on average
ci) Habitat for the species	Very negative - important deterioration

10.1b Future prospects of parameters

aii) Range	Bad
bii) Population	Bad
cii) Habitat for the species	Bad

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Unfavourable-bad (U2)
11.2 Population	Unfavourable-bad (U2)
11.3 Habitat for the species	Unfavourable-bad (U2)
11.4 Future prospects	Unfavourable-bad (U2)
11.5 Overall assessment of Conservation Status	Unfavourable-bad (U2)
11.6 Overall trend in Conservation Status	Deteriorating

11.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.8 Additional information

No additional information

12. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network

a) Unit	number of map 1x1 km grid cells
b) Minimum	
c) Maximum	
d) Best single value	59
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	Decreasing
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 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction	Decreasing
12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used	Based mainly on extrapolation from a limited amount of data

12.8 Additional information

No additional information

13. Complementary information

13.1 Justification of percentage thresholds for trends

No justification information

13.2 Trans-boundary assessment

No trans-boundary assessment information

13.2 Other relevant information

No other relevant information

14. References

Biogeographical and marine regions

4.2 Sources of information

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Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
5.11: Change and reason for change in surface area of range	At a Wales level, there was been an overall long-term decline between 1993 and 2017 (Tordoff & Williams, 2018). The UK BMS data for Wales (up to 2017) shows a 71% decline since 1990, but a 607% increase since 2007 (based on a sample of 26 sites). More recently (up to 2022), an abundance decline by 61% is shown since 1990 with a 10-year trend of -46% (UK BMS, 2022). Fox et al. (2023) report an improved distributional trend of 8% over the 1994 to 2019 period, with a 10-year trend of 3%, but with a -61% abundance change over the 25 year period and a ten-year trend of -26%. Fowles (2013) states that although "comprehensive surveys have not been undertaken recently, the marsh fritillary has been recorded from 52 10km squares in Wales since 2007. 49 squares were recorded in the period 2001-2006 (there has been increased survey effort recently) so the range can be considered as stable in Wales, even though individual populations within these squares are continuing to go extinct." In the previous reporting round, Howe (2019) highlighted that it was recorded in 60 10km squares from 2010-2017 suggesting that the range continues to be stable, despite the long-term declines between 1993 and 2017 reported by Tordoff & Williams (2018) and the extinction or effective loss of individual populations and metapopulations. However, with single and vulnerable populations in VC35 and VC52, and small population numbers in VC48 and VC49, the range status could change dramatically in the future. Since then, the population of Cors Erddreiniog SSSI (Corsydd Môn SCA) has been lost – it was last recorded in 2020 – and thus extirpated on Anglesey, marking a

	significant range reduction. It has also been lost from north Ceredigion (Williams, 2018) and metapopulations are declining or have been lost in Pembrokeshire (Jon Hudson Ecological Consultancy, 2021a). These losses negate the slight increase in distribution in Wales reported by Fox et al. (2023).
6.2: Population size	It has been recorded from 377 x 1 km squares in 72 hectads over this period (Best single value). Monad and hectad counts over this period are from data supplied by Butterfly Conservation and the Welsh LERCs.
6.8: Short-term trend; Direction	At a Wales level, there was been an overall long-term decline between 1993 and 2017 (Tordoff & Williams, 2018). The UK BMS data for Wales (up to 2017) shows a 71% decline since 1990, but a 607% increase since 2007 (based on a sample of 26 sites). More recently (up to 2022), an abundance decline by 61% is shown since 1990 with a 10-year trend of -46% (UK BMS, 2022). Fox et al. (2023) report an improved distributional trend of 8% over the 1994 to 2019 period, with a 10-year trend of 3%, but with a -61% abundance change over the 25 year period and a ten-year trend of -26%. Tordoff & Williams (2018) report 'a small but positive net change [of populations] in the past five years" but also highlight a decreasing trend in larval web counts since 2013. Since 2010, the marsh fritillary has been recorded from 377 monads in 72 hectads. This compares with 287 monads in 60 hectads from 2010 to 2017 (Howe, 2019). It is unclear if this increase is due to population expansion or improved recording, although adult dispersal and natural colonisation has been witnessed over the last five years due to warm, dry weather during the adult flight period. Over the same period, the butterfly has become extinct on Cors Erddreiniog and thus Anglesey, lost from north Ceredigion (Williams, 2018) and is in a parlous state at most sites in

Pembrokeshire (Jon Hudson Ecological Consultancy, 2021a).

Howe (2019) reported that there "has been some recovery over the last ten years, in part due to conservation efforts, but the recovery is fragile and from a very low base and is tempered by population declines and losses on key sites including SACs and SSSIs".

During the 2007-12 Article 17 reporting round, ten of the thirteen SAC populations were classed as Unfavourable with just two (Corsydd Eifionydd; Preseli) as Favourable and one (Corsydd Môn) not assessed. All were classed as Unfavourable in the last reporting round and this is likely to still be the case. Indeed, the population has since been lost on Corsydd Môn (Cors Erddreiniog) and thus lost from Anglesey. Most of the populations on the suite of Welsh SSSI are likely to be Unfavourable as most sites are too small and fragmented to support viable (meta)populations.

6.12: Long-term trend; Direction	Tordoff & Williams (2018) confirm a long-term decline between 1993 and 2017. Fox et al. (2023) report an improved distributional trend of 8% over the 1994 to 2019 period, with a 10-year trend of 3%, but with a -61% abundance change over the 25 year period and a ten-year trend of -26%.
7.1: Sufficiency of area and quality of occupied habitat	Functioning as metapopulations, the butterfly requires between 76 and 104ha of suitable habitat within a defined landscape for its long-term survival. The current NRW Marsh Fritillary landscape model considers 50ha of Good and Suitable Condition habitat, of which 10ha is in Good Condition, within a 2km radius as an appropriate target for achieving Favourable Condition.

Fowles (2013) states that "Up to 2011 18.98 square kilometres of suitable breeding habitat have been mapped (Fowles & Smith 2006). The landscape surrounding 111 post 1990 populations has been surveyed, representing 55.2% of the recorded colonies. The figure above has been

obtained by assuming a similar proportion of habitat for the unsurveyed locations, although this may be an over-estimate as there is a higher proportion of small, isolated populations in the remainder." The landscapes of additional colonies were mapped during the 2012-18 reporting round e.g Amman Valley, Castlemartin Range (80ha of Good, Suitable & Potential habitat), Cors Erddreiniog (60ha), Gweunydd Blaencleddau (28ha), or re-mapped (Aberbargoed Grasslands [7.36ha]). Additional landscape mapping has occurred in the current reporting round including Rhos Glyn-yr-helyg (21ha), North Swansea (35ha), Pant Glas (47ha), Ambleston-Puncheston (72ha but little in Good Condition) and the Upper Cynon Valley.

Fowles (2013) states that "11.81% of the land surveyed up to 2012 that was classed as suitable habitat for marsh fritillaries was found to be in Good Condition. In the 2006 analysis of land surveyed for habitat quality (Fowles & Smith 2006), 33% of the habitat area not in Good Condition was found to be inappropriately or excessively managed, and 67% was suffering from neglect. Neglect leads to vegetation succession and after 15 or so years without management breeding patches succumb to scrub invasion."

Up to 2011, 3.39 square kilometres of potential habitat that is too rank to support marsh fritillaries has been mapped (Fowles & Smith 2006). The concept of habitat 'thought to be suitable but from which species may be absent' isn't really appropriate for this species as metapopulation dynamics imply that such habitat patches are part of a functioning landscape. For this reason suitable but unoccupied habitat has been included in the value given for 2.5.1 (area of habitat for the species) and the value reported here applies only to patches that are no longer suitable because of neglect, but which could become occupied if appropriate management was restored."

7.4: Short-term trend; Direction	Whilst there is some variability with each marsh fritillary landscape, with a few supporting strong populations and

	large areas of suitable habitat (e.g. Castlemartin Range), most populations are small and in fragmented habitats with insufficient or declining habitat condition. Twelve of the 13 SACs are likely to have populations in unfavourable condition, with the population on Corsydd Môn seemingly extinct.
8.1: Characterisation of pressures	Inappropriate grazing management (PA05, PA06, PA07 & PA08) and drainage for agriculture (PA22) are key threats faced by marsh fritillaries in Wales. In the 2006 analysis of land surveyed for habitat quality (Fowles & Smith 2006), 33% of the habitat area not in Good Condition was found to be inappropriately or excessively managed and 67% was suffering from neglect. Neglect leads to vegetation succession and after 15 or so years without management breeding patches succumb to scrub invasion. Many Welsh populations occur in urbanised areas of south Wales that are under great demand for residential and industrial development and associated road infrastructure (PE01 & PF01). Planning applications are continually submitted for new developments and whilst every effort it made to ensure the best outcome for marsh fritillaries with suitable mitigation where relevant, inevitably there is increasing fragmentation of the occupied landscapes. Fragmentation is the hidden pressure/threat underpinning the landscape changes identified above, as many Welsh populations are isolated and opportunities for successful colonisation of adjacent patches are limited. Research has indicated (Bulman et al., 2007) that most Welshpopulations occur within landscapes that contain insufficient habitat to ensure long-term viability and the prediction is that perhaps 4 or 5 large metapopulations might survive in the medium to long-term period if landscapes are not restored. The other issues listed here reflect the continuing significance of existing pressures as there is no indication currently that the impact of these pressures will reduce. Ongoing climate threats which impact upon the drying out

	of wet grassland (PJ01 & PJ03) and cause changes in habitat size and quality (PJ10) are likely to become increasingly problematic.
9.5: List of main conservation measures	The main conservation measure implemented to enhance FCS for the marsh fritillary in Wales is the instigation of landscape scale projects to address inappropriate grazing management, threats from drainage for agricultural purposes and habitat loss. Previously, this has included the employment of a Project Officer for Mynydd Mawr SAC in Carmarthenshire (Sazer, 2010) and the establishment of targeted projects at Tonyrefail and Harlech. At site level, many marsh fritillary populations are the subject of management agreements to address unsympathetic grazing levels. The marsh fritillary is protected under Schedule 5 of the Wildlife & Countryside Act and its inclusion on Section 7 of the Environment (Wales) Act ensures that Local Authorities have a duty to take into account its requirements when considering planning issues. Unprotected sites continue to be considered for notification as Sites of Special Scientific Interest, with Cae Cwrtbrynbeirdd SSSI and Malthouse Farm and Little Hills Grasslands SSSI designated during the current reporting period. Additional populations on existing SSSIs have been recognised as qualifying SSSI features e.g. Llwyn-iarth SSSI. NRW and Local Authorities continue to contribute to an exercise to map the location of habitat patches in order to protect populations and inform planning decisions. This has led to better outcomes for the marsh fritillary in places such as Church Village, the Heads of the Valleys and Cross Hands where new road developments have threatened populations. Pembrokeshire Coast National Park has commissioned a review of metapopulations within the county and undertaken landscape mapping of a key metapopulation. Projects to re-introduce and reinforce populations have

	been undertaken e.g. at Llantrisant Common (Parry & Matthews, 2024), with an unauthorised introduction to Lavernock Point. However, the focus should be on maintaining key metapopulations by maximising the amount of good and suitable habitat within the landscape and encouraging natural dispersal, and restoring fragmented landscapes across Wales.
10.1: Future trends and prospects of parameters	See 10.2
11.1: Range	Conclusion on Range reached because:(i) the short-term trend direction in Range surface area is decreasing by 1% per year or less; and (ii) the current Range surface area is more than 10% below the Favourable Reference Range.
11.2: Population	Conclusion on Population reached because:(i) the short-term trend direction in Population size is decreasing by more than 1% per year; (ii) the current Population size is not more than 25% below the Favourable Reference Population and iii) reproduction, mortality and age structure does not have data available.
11.3: Habitat for the species	Conclusion on Habitat for the species reached because: (i) the area of occupied habitat is not sufficiently large for long-term survival of the species (ii) the quality of occupied habitat is not suitable for the long-term survival of the species; and iii) there is a not a sufficiently large area of occupied and unoccupied habitat of suitable quality for long term survival (iv) the short-term trend in area of habitat is decreasing; and v) expert opinion determines that the habitat quality of occupied and unoccupied habitat is bad; and vi) expert opinion determines that the habitat area is clearly insufficient.
11.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are bad; (ii) the Future prospects for Population are bad; and (iii) the Future prospects for Habitat for the species are bad.

11.5: Overall assessment of Conservation Status	Overall assessment of Conservation Status is Unfavourable-bad because all of the conclusions are Unfavourable-bad.
12.1: Population size inside the pSCIs, SCIs and SACs network	Since 2010, the marsh fritillary has been recorded from 261 1km squares in 60 hectads within the SAC series, and 59 1km squares from 17 hectads in the twelve SACs where it is a feature. It was last recorded. There have been no records on Glaswelltiroedd Cefn Cribwr SAC since 2007 and it was last recorded in Corsydd Môn in 2020. Fowles (2013) reported that "Although marsh fritillaries have been reported from just twenty-three 1km squares on the sixteen SACs with populations at the time of designation during the reporting period …., this is likely to be an under-estimate. 38 1km squares on the designated SACs were occupied by marsh fritillaries in the period 2001-06 and although populations have been lost from some 1km squares in the intervening years, it is also the case that some squares have not been revisited (or data has not been submitted) that would still be expected to support populations. The true figure is probably in the region of 28-30 squares."
12.4: Short-term trend of the population size within the network; Direction	During the 2007-12 Article 17 reporting round, ten of the thirteen SAC populations were classed as Unfavourable with just two (Corsydd Eifionydd; Preseli) as Favourable and one (Corsydd Môn) not assessed. All were classed as Unfavourable in the last reporting round and this is likely to still be the case. Indeed, the population has since been lost on Corsydd Môn (last seen on Cors Erddreiniog in 2020) and thus lost from Anglesey. Most of the populations on the suite of Welsh SSSI are likely to be Unfavourable as most sites are too small and fragmented to support viable (meta)populations.
6.15: Favourable Reference Population (FRP)	The UK-level FRV for population was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive

reports and reflects the full rationale used for the 2019 Article 17 reporting. Following expert review, a Wales-level FRV was derived based on population trend and abundance data specific to Wales, rather than adopting the UK-level value.

The revised FRV has been set as populations in all SACs are unfavourable in the last three reporting rounds, so no improvements as only deterioration and an extinction.

5.10: Favourable Reference Range (FRR)	The UK-level FRV for range was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019 Article 17 reporting. Following expert review, a Wales-level FRV was derived based on distribution and trend evidence specific to Wales, rather than adopting the UK-level value. The revised FRV has been set as in Wales the current range is over 10% less than the FRR. Due to historic (20-30 years ago) losses in the east of it's range and recent loss on Anglesey.