

MARSH FRITILLARY MONITORING

Marsh Fritillary populations are best monitored during the adult flight period and when larval webs are evident in late summer. Timed counts or transects should be used to monitor the adults, however this can be difficult for many Marsh Fritillary populations due to weather conditions during the flight period in some parts of the species' range. Therefore, larval web counts are often easier, and an equally reliable method for monitoring. Furthermore, they can be carried out over a wider range of weather conditions and give additional information such as the precise location of breeding areas.

This guidance note describes how to carry out a Marsh Fritillary web count to UK Butterfly Monitoring Scheme (UKBMS) specifications. It is vital that **all** of the required information is recorded during a larval web count if it is to be used in the UKBMS to analyse trends at National, Regional and site levels.

RECORDING BASICS

When to record: The best period to survey is when the webs are most conspicuous; on dry, sunny days when the larvae are active and ideally during **mid to late August or early September** but this will depend on the season, habitat and location. Counts can be done into mid/late September but often by then the larvae will have entered hibernation or heavy rain causes the webs to disintegrate. This is particularly the case for chalk grassland sites in the south of England where counts should ideally be completed before the end of August. Further north and in Wales, Scotland and Ireland they can be done throughout September (or early October in exceptionally late years). Avoid carrying out surveys in heavy rain or on days preceded by heavy rain as a number of the webs will have been damaged and would be less conspicuous.

Preliminaries: Prepare a large scale map of your target site (1:10 000 or enlarge 1:25 000) to take with you. The site may be a distinct ownership, habitat, management unit or combination.

Before you start to record, and particularly if this is a new site that you are surveying, briefly walk the site to identify its natural boundary and the area of suitable habitat – these may be different. Suitable habitat is identified by the presence of the larval food plant Devil's-bit Scabious (*Succisa pratensis*) growing within an appropriate sward height – ie. from 5-15cm in chalk grassland to up to 25 cm in wet grassland. This is easy to spot in late summer as the purple/blue flowers can be seen very easily but still look out for the basal leaves as on grazed sites the flower heads may have been eaten. Check whether suitable habitat is distributed across the whole site or patchy distributed or if there are very distinct patches surrounded by unsuitable habitat.

The size of the site and the way that the habitat is distributed across the site will influence the method that you choose and most importantly, the method used to analyse the results.

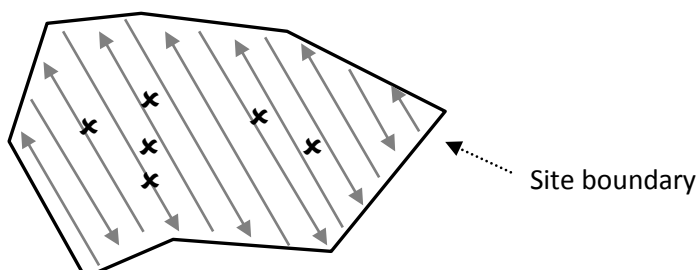
HOW TO DO THE COUNT

Method One – Complete Area Search for Small Sites

This method is usually only chosen if the site is small (ca1ha or less) and it is possible to search **all** the host plants. Search the whole area of suitable habitat systematically and record the number of occupied larval webs that you see. The best way to achieve this is to walk parallel lines 2m apart, searching for larval webs in an area 1m either side of the lines, until the entire area had been searched. As a guide, an area of just 0.5ha would require a total of 2.5km to be walked for a complete area search.

Mark the location of occupied webs (individual or dense aggregations) found, with a cross on your map (*). Crosses may represent individual webs or aggregations if density is high. Make sure you record the area of search accurately on the map and estimate the size of the area covered (you can always check this using a map later). The total number of larval webs found is your final result; do not multiply this figure up as your search was a complete search of all suitable areas.

As for all methods, it is not necessary to count individual larvae or webs with no larvae present (unless vacated webs are the only record for the site). If in doubt stop and look closely at a proportion of the webs, sometimes they appear to have larvae when only shed larval skins are present which could seriously overestimate the population. Please do not disturb webs. In highly variable or dense swards, it may be necessary to narrow the transect width to 1m (0.5 m either side) to ensure that all occupied webs present are detected.

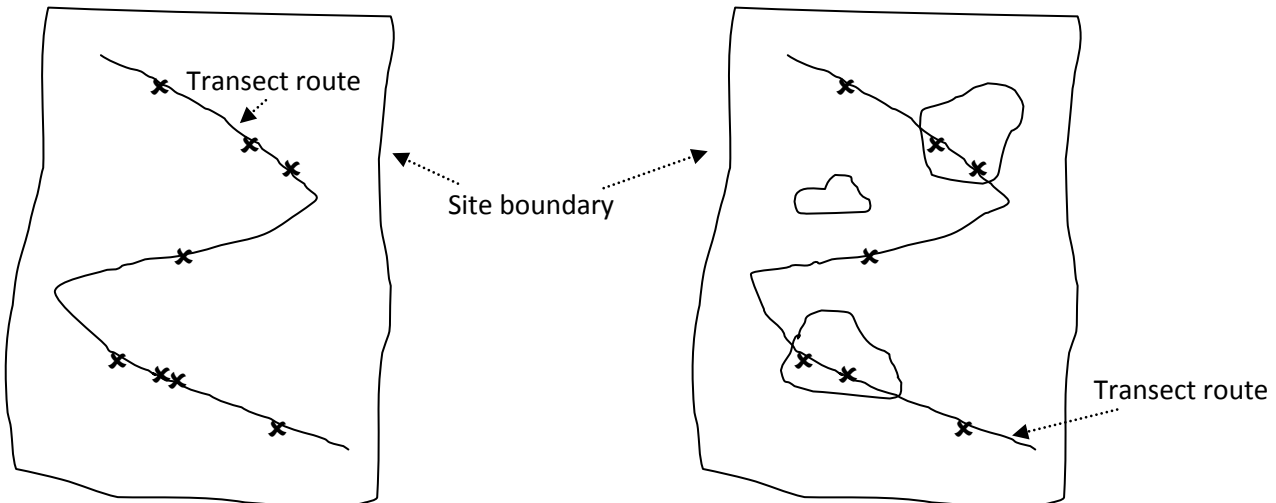


Method Two – Sample Transect Search

This is likely to be the main method used and is suitable for larger sites (>1ha) where breeding habitat is scattered across the whole site. It may be that suitable breeding habitat is found throughout (diagram a) or, more commonly, where there are denser patches in some areas (diagram b) with Devil's-bit Scabious patchily distributed elsewhere.

Diagram a – suitable habitat is found across the whole site
 site ✕ = location of web

Diagram b – suitable habitat is patchily distributed across the whole site with some very dense clumps of host plant (shown)



This method **samples** both example sites by taking a systematic transect route across the whole site recording any occupied webs 1m either side (i.e. a 2 metre band across the site). This width has been chosen because the majority of nests will be visible, at this distance, and the count will be accurate. In dense swards, it may be necessary to narrow the transect width to 1m. Routes can be zigzag in pattern (as shown above) or areas of evenly spaced parallel lines. Mark the route you have taken on your map and record the length in metres. The route should cover at least 100m per hectare depending on the size of your site, which is just 2% of the total area. The larger the area sampled, the more precise the abundance estimate is likely to be. Quick counts of large sites are likely to be unreliable. **Do not preferentially target areas with dense Devil's-bit Scabious** but take a path which covers a representative sample of the total area of suitable habitat. This is important as the total number of larval webs found in the area of search will then be multiplied by the total area of suitable habitat to give an estimate of the number of larval webs found across the whole site.

Worked example:
 Site area is **1.7ha** (110m by 170m) and the transect length is 200m
 Area sampled is **0.04ha** ((200mx2m)/10,000=0.04ha)
 Webs found = **8**
 Population estimate = **340** (8 x 1.7 / 0.04) (webs x total area / area sampled)

Method Three – Transect Search Within Discrete Habitat Patches

This method is not recommended, unless it has been used previously on a site, where it can be used for the sake of continuity. The method is based on the sample transect search but, rather than sampling the whole site, only patches of good quality habitat are searched. In this case, as the population estimate will not be based on the whole site, it is very important to accurately estimate the area of the good quality patches and the transect lengths. All new recorders should use either Method 1 or 2.

WHAT TO RECORD ON

Larval Web counts should be recorded on an Nf3: Marsh Fritillary Larval Web Monitoring Form available from Butterfly Conservation. The form allows for a large site to be broken down into several fields or sub-sites where this is more practical for monitoring. In this case, an estimated population size should be calculated for each sub-site and then added together for the whole site. A worked example of this form is shown below. The form also allows capture of basic habitat data (optional).

ELECTRONIC SUBMISSION OF DATA

The UKBMS are currently developing a system for online data entry at www.ukbms.org/mydata/.

CONTACT FOR FURTHER INFORMATION

Butterfly Conservation, Manor Yard, East Lulworth, Dorset, BH20 5QP.

transect@butterfly-conservation.org

☎ 01929 400209

Marsh Fritillary Larval web monitoring form (fictitious example)
Site Details

Site name:	Aurinia Moor	Transect width (circle one of these):	2m or 1m
County:	Borsetshire	Principal Habitat:	Neutral grassland/fen meadow
Vice County:	South Borsetshire	Secondary Habitat:	
Central Grid Ref: (e.g. SN215502)	AB123456		
Recorder name & contact details:	Andrew Recorder, Butterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset, BH20 5QP. 01929 400209		
Site owner/contact for access:	Butterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset, BH20 5QP. 01929 400209		

Survey Details

Please Indicate Method Used (1=complete search, 2=sample transect, 3=search patches only):						2
Date of visit	Field/Sub-Site ref (if applicable)	Number of occupied webs found	Length of transect (m)	Area sampled (ha)	Area of suitable habitat (ha)	Population size/estimated pop. size
2/09/10	1	4	910	0.18	3	67
2/09/10	2	11	760	0.15	3	220
2/09/10	3	1	265	0.05	1	20
2/09/10	4	5	420	0.08	2.5	156
2/09/10	5	6	560	0.11	3.5	191
TOTAL		27			13	654

Nb. To calculate the area sampled (ha), multiply the transect length by transect width (2m) then divide by 10,000. To calculate the estimated population size, multiply the number of webs found by area of suitable habitat (ha) then divide by the area sampled (ha).

Habitat Quality Observations (optional)

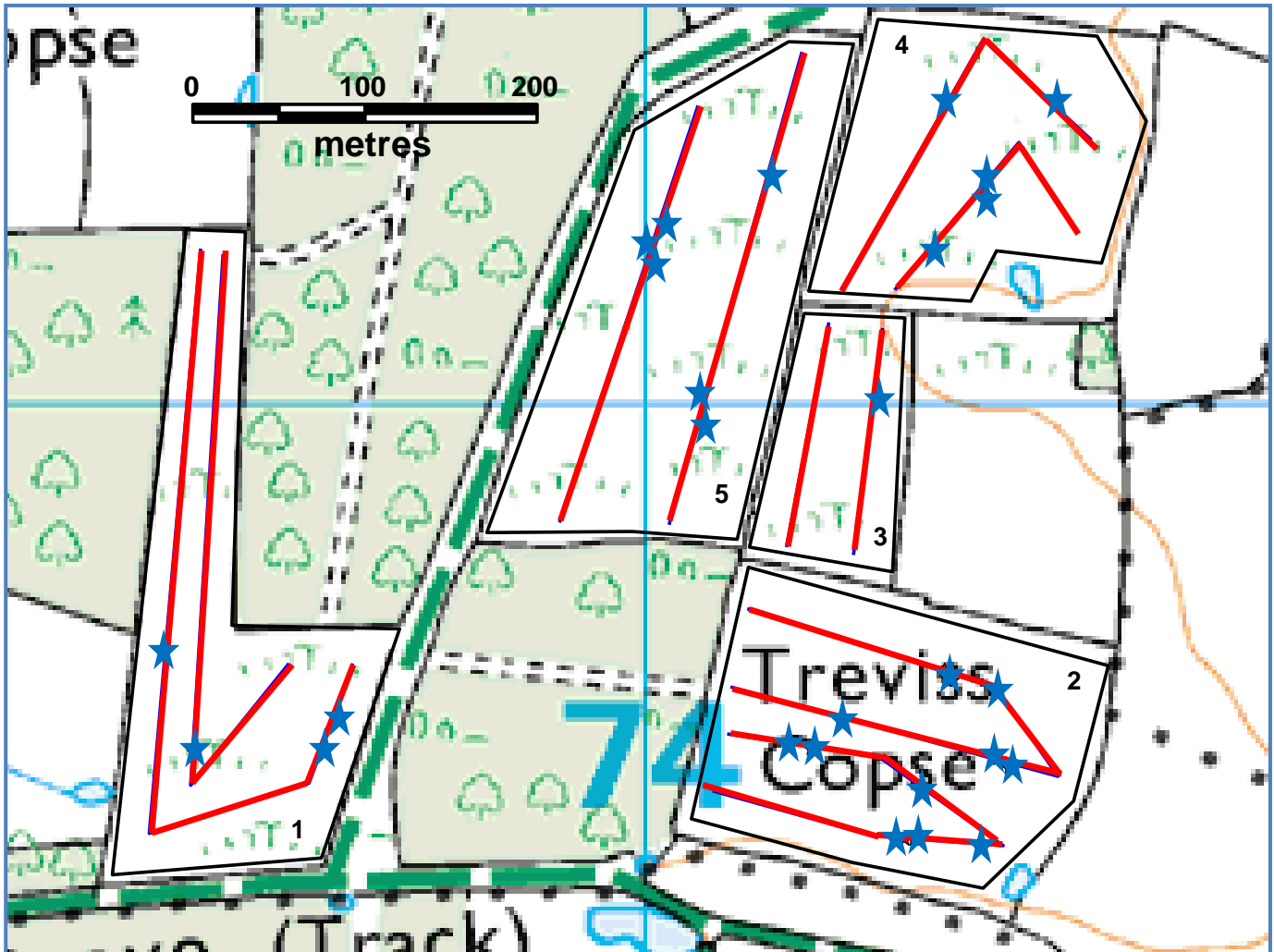
Key Habitat Feature	Observations (please tick)				
	Widespread & abundant	Frequent (in low density all across the site)	Patchy (locally abundant)	Patchy Sparse	Rare
Devil's-bit Scabious		✓			
Scrub			✓		
Rushes					✓
Other (state)					

Habitat Management Observations (optional)

Please tick relevant site management information:							
Vegetation Height	Grazing		Burning		Cut/mown		Unmanaged
Uniform short (<8cm)		Cattle		Whole area		Most of area	
Variable (8-25cm)	✓	Ponies		Half		Half	Unknown
Tussocky (>25cm)		Sheep		Patches		Strips	✓
Other habitat/management observations:							
Some deer grazing							

Site Map

Copy of OS map at 1:10 000 or equivalent showing scale, 1km gridlines and boundary of suitable/or occupied habitat marked. Mark the transect route and indicate the location of occupied larval webs (x).



© Crown copyright. All rights reserved Natural England 100046223 (2010)

Are there previous records of Marsh Fritillary adults or larvae at this site?
 (Please include dates, numbers of adults or larvae recorded and recorder if not previously submitted)

Yes, site monitored annually for >10yrs, records held at Manor Yard