

**Northern Ireland Species Action Plan**  
**Marsh Fritillary**  
***Euphydryas aurinia***  
**March 2005**

**1. Current Status**

- 1.1** In Ireland the Marsh Fritillary *Euphydryas aurinia* is a univoltine (single-brooded) butterfly throughout its range, with adults flying in May and June. Males emerge first and usually mate very soon after the females emerge. The first large batch of eggs is laid near to the emergence site on the leaves of Devil's-bit Scabious *Succisa pratensis*, the almost exclusive food plant in Britain and Ireland and the only known food plant in Northern Ireland. After a few weeks the caterpillars hatch and feed within a communal web on the leaves of the foodplant. They overwinter in their fourth instar in a web spun close to the ground (Nelson, 2000). Post-diapause larvae emerge in late winter and early spring to bask communally, thereby raising their body temperature (Porter, 1982). They begin dispersal in their fifth instar and are solitary by their sixth and final instar. They pupate in late April, close to the ground beneath dead leaves or on plant stems, emerging as adults three to four weeks later.
- 1.2** In Britain and Ireland the marsh fritillary occurs in two main biotopes: dry calcicolous grasslands and damp, neutral or acidophilous grasslands (Nelson, 2000).
- 1.3** Marsh Fritillary populations seem to function at a landscape scale, they are prone to local extinctions which are partly caused by hymenopteran parasitoids or influenced by changing management or site condition. These local extinctions can be balanced by its ability to colonise sites, but only within a range of about 10 km. In the UK it seems to have survived only in regions where numerous habitat patches still exist (Asher *et al.*, 2001).
- 1.4** The UK is a major European stronghold of the species. However, in Britain its range has declined by more than 60% over the last 150 years, and colonies are estimated to be disappearing at a rate of over 10% per decade. It is now extinct over most of eastern England and eastern Scotland (Warren, 1994).
- 1.5** A review of its UK status was given in Warren (1994). In 1990, there were 432 definite colonies in the UK of which 58 were in Northern Ireland. Distribution maps for 1995-99 were published in Asher *et al.* (2001).
- 1.6** A survey was carried out in 1999 by the Department of Zoology, Ulster Museum (UM) for the Environment and Heritage Service (EHS) (Nelson, 2000). The aim of the survey was to assist in the identification of Special Areas of Conservation (SACs). The survey was affected by poor weather conditions during the adult flight period. Eight definite colonies of marsh fritillary were confirmed by web counts. The colonies, in Co Down, Co. Armagh, Co Antrim and Co. Fermanagh, were found on mires and wet grasslands (6 sites), in dune heath (1 site) and dune grassland (1 site)

(Nelson, 2000). East Down was identified as a key area for the species in Northern Ireland. The survey identified the need for further survey work to be carried out in some poorly covered regions and considered previously published estimates of populations to be too high. A ninth colony has subsequently been confirmed in Co. Antrim.

- 1.7** The apparent rate of decline is magnified by the 1990 estimate of 58 colonies in Northern Ireland. This estimate is now considered to be too high but better data are lacking (Nelson, 2000). One possible problem is the interpretation of sporadic sightings of the butterfly outside known breeding areas.
- 1.8** In the Republic of Ireland, between 1995 and 2002 the marsh fritillary was recorded from 85, 10km squares (Fox & Asher, 2003).
- 1.9** Statutory site designation plays an important part in the conservation of marsh fritillary. In 1992, the EC adopted the *Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora*, known as the ‘Habitats Directive’. The Directive requires member states to designate and manage Special Areas of Conservation (SACs) for selected habitats (listed in Annex I of the Directive) and species (listed in Annex II). Marsh fritillary is listed in Annex II of the Directive. Five candidate SACs in Northern Ireland include marsh fritillary as a selection feature.
- 1.10** As marsh fritillary is a threatened European species it is also protected under Appendix 2 of the Berne Convention. It is also listed in Schedule 1 Part I the Wildlife (NI) Order 1985.
- 1.11** In 2000, the Northern Ireland Biodiversity Group (NIBG) produced its recommendations to Government (NIBG, 2000). These were largely accepted by the Northern Ireland Executive in 2002, with the publication of the *Northern Ireland Biodiversity Strategy* (DOE, 2002). As part of this process, a revised list of Northern Ireland priority species was published in March 2004. This list includes marsh fritillary.
- 1.12** The *Regional Development Strategy 2025* (DRD, 2001) provides a framework for sustainable development in Northern Ireland that will include the full integration of the conservation of biological diversity and the Northern Ireland Biodiversity Strategy.
- 1.13** At a local planning level, policies to protect and enhance biodiversity are being included as part of new Development Plans. Sites of Local Nature Conservation Importance (SLNCIs) are being identified for consideration by Planning Service for inclusion in Development Plans. Where such sites are confirmed in adopted plans, specific planning policies will be applied to development proposals on those sites. The SLNCI network will include a number of calcareous grassland sites of substantive native conservation interest, which are not designated as ASSIs or NNRs.

## **2. Current Factors Causing Loss or Decline**

- 2.1** Threats to this species in Northern Ireland are generally poorly understood, but the following factors are thought to have a negative affect on marsh fritillary populations:
- 2.1.1** Habitat deterioration - loss and reduced quality of breeding habitat as a result of agricultural improvement.
- 2.1.2** Habitat fragmentation - fragmentation of habitat, leading to small/isolated colonies vulnerable to extinction through chance events, natural population fluctuations, and genetic decline.
- 2.1.3** Grazing - lack of grazing and and/or overgrazing can result in the deterioration/loss of marsh fritillary habitat.

## **3. Current action**

- 3.1** Research is currently being carried out by Queen's University of Belfast (QUB) on behalf of Environment and Heritage Service (EHS) focusing on marsh fritillary host plant characteristics, parasitic wasps and genetic structure.
- 3.2** Survey and monitoring work is being carried out by the National Trust (NT) on Murlough National Nature Reserve, by the Ulster Wildlife Trust (UWT) at Inishargy Bog and by EHS at Montiaghs Moss.
- 3.3** In February 2003 the Northern Ireland Marsh Fritillary Action Group (MFAG) was formed made up of Butterfly Conservation, World Wide Fund for Nature, UM, EHS, UWT, NT, and Department of Agriculture and Rural Development (DARD). A conservation strategy is being drawn up.
- 3.4** Seven of the eight colonies recorded in 1999 are in Areas of Special Scientific Interest (ASSIs) and the eighth colony is a UWT Nature Reserve managed for the species. Six of these eight sites are included in the UK list of candidate Special Areas of Conservation (cSACs). A 9<sup>th</sup> colony has subsequently been confirmed in Co. Antrim.
- 3.5** DARD, through its Countryside Management Branch (CMB), has developed a series of agri-environment schemes including the Environmentally Sensitive Areas (ESA) Scheme (revised in 2000) and the Countryside Management Scheme (CMS). A further revision to both the ESA and CMS is awaiting EU approval of a modification to the current Northern Ireland Rural Development Programme (2000-2006). Their objective is to protect and enhance semi-natural habitats and species by encouraging more sensitive management practices. Both these schemes have similar management provisions, are voluntary and apply to the whole farm. These schemes provide a mechanism for delivering some of the targets listed in action plans for many species and habitats, targeting areas of as little as 0.1 ha of semi-natural habitat in order to maintain or improve their present conservation value. Around 230,000 ha of farmland is currently in agri-environment schemes in Northern Ireland, approaching a quarter of the total agricultural land in the Province.

- 3.6** The designation of ESAs commenced in 1988 and today there are five ESAs in Northern Ireland. DARD has determined a number of priority habitats which, if they occur on the farm, must be brought under agreement and managed according to relevant prescriptions determined by DARD.
- 3.7** The Habitat Improvement Scheme (HIS) aims to help farmers protect, enhance and establish habitats which are considered to have major conservation value. This is achieved by taking land out of agricultural production or by entering into a 10 year agreement which involves extensive grazing based on non-application of fertilizers and pesticides to the land. No new applications for the HIS are being accepted as the scheme closed in mid-1999. The scheme has been replaced by the Countryside Management Scheme (CMS).
- 3.8** The CMS, launched in 1999, was developed with the primary aim to maintain and enhance biodiversity and is open to all farmers and landowners outside ESAs. Where funding is limited, entry into the scheme is competitive, being based on who can offer the greatest environmental benefits.
- 3.9** The Management of Sensitive Sites scheme (MOSS) was launched in 2002 by EHS. It is a voluntary scheme designed to ensure the positive management of the site features, such as calcareous grassland within ASSIs. Under the scheme, landowners can receive payment for carrying out conservation work within the framework of a written agreement. MOSS covers issues such as agricultural improvement, grazing and control of invasive scrub species. One-off payments for works such as fencing and scrub clearance to assist grazing can be made.
- 3.10** The UK Woodland Assurance Standard (UKWAS Steering Group, 2000), a voluntary certification standard, requires that valuable semi-natural habitats are being treated in a manner that does not lead to further loss of biodiversity. Forest Service is certified against this standard and is undertaking a survey of its lands to identify valuable semi-natural habitats which include grasslands.
- 3.11** *The Environmental Impact Assessment (Forestry) Regulations (Northern Ireland) 2000* require anyone who wishes to carry out a project including afforestation, deforestation, forest road works or forest quarry works that is likely to have significant effects on the environment to obtain consent for the work from the Department of Agriculture and Rural Development.
- 3.12** Forest Service acquisition policy is outlined in *Afforestation – the DANI Statement on Environmental Policy* (DANI, 1993). It states that there should be a presumption against afforestation of botanically rich sites, which have undergone little disturbance for many years.

#### **4. Action Plan Targets**

- 4.1** Maintain population range at 4 occupied counties.
- 4.2** Maintain current populations at 9 sites.
- 4.3** By 2015, increase the number of populations to 12 sites.

## **5 Proposed Actions with Lead Agencies**

### **5.1 Policy and legislation**

- 5.1.1 By 2006, ensure that important marsh fritillary sites are recognised and, where appropriate, site protection policies are included in statutory and non-statutory plans e.g. Development Plans and other strategic plans including Local Biodiversity Action Plans (LBAPS).  
(ACTION: Planning Service, EHS, DARD, District Councils, Forest Service, Water Service)
- 5.1.2 By 2007, ensure that agri-environment scheme prescriptions relevant/appropriate to marsh fritillary are contributing to maintaining and enhancing the population across Northern Ireland.  
(ACTION: DARD, EHS)
- 5.1.3 By 2007, target positive management through MOSS, agri-environment schemes, the LBAP process and grant aid for biodiversity to secure favourable management on marsh fritillary sites.  
(ACTION: EHS, DARD, Forest Service)

### **5.2 Site safeguard and management**

- 5.2.1 By 2006, produce conservation objectives for all statutory designated marsh fritillary site including cSACs, ASSIs and NNRs.  
(ACTION: EHS)
- 5.2.2 By 2006, develop agreed methods for describing and assessing favourable condition for marsh fritillary habitats.  
(ACTION: EHS)
- 5.2.3 By 2007, ensure habitat on existing sites is in favourable condition for marsh fritillary.  
(ACTION: EHS)
- 5.2.4 By 2007, review the coverage of marsh fritillary sites within the cSAC, ASSI and NNR series and notify further sites as necessary to fill significant gaps.  
(ACTION: EHS)
- 5.2.5 Coordinate actions with ROI bodies on cross-border sites.  
(ACTION: EHS)

### **5.3 Species management and protection**

- 5.3.1 By 2008, where feasible, ensure that all potential marsh fritillary habitat within a 10K radius of existing sites is managed to benefit the species.  
(ACTION: EHS, DARD)

#### **5.4 Advisory**

- 5.4.1 By 2005, produce management guidelines and optimum habitat requirements for marsh fritillary.  
(ACTION: EHS)
- 5.4.2 By 2006, provide advice to land owners with marsh fritillary on their land about suitable management requirements of the species.  
(ACTION: DARD, EHS)
- 5.4.3 By 2006, ensure that information on marsh fritillary in Northern Ireland is available to all those who could play a role in its conservation and recovery.  
(ACTION: EHS, DARD)
- 5.4.4. By 2007, through agri-environment schemes and LBAPs, promote positive management on suitable historic and potential sites to bring habitat into optimum condition for marsh fritillary.  
(ACTION: DARD, EHS)

#### **5.5 International**

- 5.5.1 Further develop links with the Republic of Ireland and other European and international organisations and programmes such as the European Environment Agency and the European Centre for Nature Conservation, to promote the exchange of information and experience in research, management techniques, education and conservation strategies.  
(ACTION: EHS)

#### **5.6 Future research and monitoring**

- 5.6.1 Regularly monitor all known colonies by web count.  
(ACTION: EHS)
- 5.6.2 Regularly monitor habitat on existing sites.  
(ACTION: EHS)
- 5.6.3 By 2006, identify potential marsh fritillary sites within 10 km of existing sites.  
(ACTION: EHS)
- 5.6.4 By 2007, survey habitat extent and condition and marsh fritillary status on historic and potential sites.  
(ACTION: EHS)
- 5.6.5 By 2008 carry out research into the biology, ecology, genetics and population dynamics of the marsh fritillary.  
(ACTION: EHS)
- 5.6.6 By 2007, determine the roles of host plant suitability, vegetation structure and larval parasitism in driving population change.  
(ACTION: EHS)

## 5.7 Communication and publicity

- 5.7.1 By 2006, produce publicity leaflets to highlight the conservation issues surrounding the marsh fritillary.  
(ACTION: EHS, DARD)
- 5.7.2 By 2007, promote greater awareness of the marsh fritillary amongst landowners, managers and the general public to achieve its conservation and recovery.  
(ACTION: All Government Departments)

## 5.8 Links with other action plans

- 5.8.1 It is likely that the implementation of this plan will also benefit the Northern Ireland populations of the following UK priority species:
- skylark *Alauda arvensis*
  - reed bunting *Emberiza schoeniclus*
  - linnet *Carduelis cannabina*
  - argent and sable *Rheumaptera hastata*
  - narrow-bordered bee hawk-moth *Hemaris tityus*
- 5.8.2 This plan should be considered in conjunction with the following UK and Northern Ireland Habitat Action Plans:-
- Purple moor grass and rush pastures
  - Lowland meadows
  - Lowland raised bog
  - Blanket bog
  - Fens
  - Coastal sand dunes

## 6 Costings

- 6.1 A table showing the global costs for this and other SAPs is available on the EHS web page. ([www.ehsni.gov.uk](http://www.ehsni.gov.uk))

## 7 References

- Asher, J. Warren, M. Fox, R. Harding, P. Jeffcoate, G. Jeffcoate, S. (2001). The Millennium Atlas of Butterflies in Britain and Ireland.
- Nelson, B. (2000). The distribution, Status and Habitat Preferences of the Marsh Fritillary, *Euphydryas aurinia* in Northern Ireland. A Report to the Environment and Heritage Service
- Porter, K. (1982) Basking Behaviour in Larvae of the Butterfly *Eurodryas aurinia*. *Oikos* 38 p308-312.
- Warren, M.S. (1994). The UK status and suspected metapopulation structure of a threatened European butterfly, the Marsh Fritillary, *Eurodryas aurinia*. *Biological Conservation* 67: 239-249

**List of Useful Acronyms**

ASSI	Area of Special Scientific Interest
BAP	Biodiversity Action Plan
CEDaR	Centre for Environmental Data and Recording
CMD	Countryside Management Division
CMS	Countryside Management Scheme
DARD	Department of Agricultural and Rural Development
DCAL	Department of Culture, Arts and Leisure
DETI	Department of Enterprise, Trade and Industry
DOE	Department of the Environment
DRD	Department for Regional Development
EHS	Environment and Heritage Service
ESA	Environmentally Sensitive Area
ESCRs	Earth Science Conservation Review Site
HAP	Habitat Action Plan
JNCC	Joint Nature Conservation Committee
MAGNI	The National Museums and Galleries of Northern Ireland
NESA	New Environmentally Sensitive Area
NIBG	Northern Ireland Biodiversity Group
NICS	Northern Ireland Countryside Survey
NNR	National Nature Reserve
PPS	Planning Policy Statement
RA	Rivers Agency
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SLNCI	Sites of Local Nature Conservation Importance
SoCC	Species of Conservation Concern
SPA	Special Protection Area
WFD	Water Framework Directive
WWT	Wildfowl and Wetlands Trust
UWT	Ulster Wildlife Trust