Fritillary Marking Project in Wyre Forest 1987

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This article is a copy of a report written for the Nature Conservancy Council (NCC) in September 1987 titled 'Preliminary Report on the Fritillary Butterflies Marking Project Wyre Forest N.N.R. 1987' by John Bingham.

1. Introduction

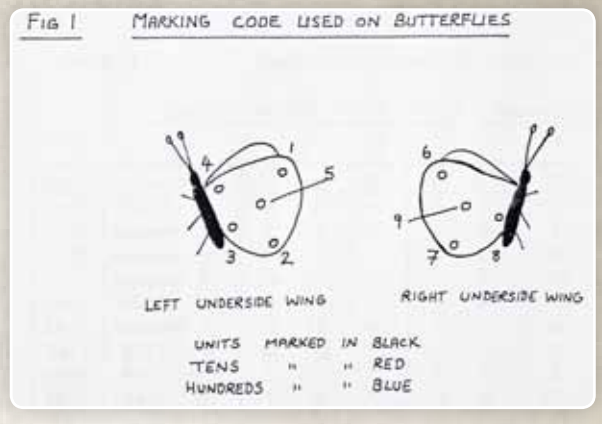
Work on fritillary butterfly populations was undertaken as part of a 19 week Summer Warden - Estate Worker contract for the Nature Conservancy Council (NCC) based in the Wyre Forest National Nature Reserve (NNR) Hereford and Worcester. Principally the contract was to provide cover for the absence of the Senior Warden, John Robinson, who was involved with the setting-up and manning of NCC displays at agricultural shows during the summer period.

Only a limited amount of time was available to spend working on butterflies. Unfortunately the appalling weather during spring and early summer reduced further the amount of time. Many marking sessions were curtailed by unfavourable weather.

Four species of fritillary butterfly are present within the NNR, all of which are contracting their distribution within the British Isles (Heath et al 1984). They are Pearl-bordered, *Boloria euphrosyne*, Small Pearl-bordered, *Boloria selene*, High Brown, *Argynnis adippe* and Silver-washed *Argynnis paphia*. On the 7th May a site meeting was held with Dr. Jeremy Thomas of the Institute of Terrestrial Ecology and Mike Williams representing the British Butterfly Conservation Society. Several of the meadows along Dowles Brook were visited to look at some of the various finer points of habitat requirement for the fritillary butterflies. On the following day Dr. Thomas returned to discuss marking technique and recording methods.

2. Method

Following the advice from Dr. Thomas a mark and recapture programme was undertaken for every species of fritillary on the NNR. The marking of



individual butterflies involved using a system of dots on the undersides of the wings. Three colour codes were used which allowed up to 999 butterflies of each species to be given an individual coded number (Figure 1). Nylon tipped marker pens were used, the brand of Staedler Lumocolor 318 permanent AV, with a fine point 'F', proved very effective in black, red and blue colours. In practice it was found blue was the least clear colour, it could possibly be confused with black. Yellow pens are available and may prove to be clearer, these were out of stock by the local supplier. A fairly coarse mesh net allows markings with greater ease. In general, with experience gained, this technique of marking was very successful, a minor problem encountered was the more excessive wing damage on *A. paphia* due to their nectaring on *Rubus fruticosus*. This was anticipated and partly overcome by marking slightly away from the wing edges, some recaptures were so damaged, markings could not be clearly read, more so towards the latter end of the flight period.

Various sites in the forest were designated as marking areas, such as meadows or section of the disused railway line. The boundaries were artificial not physical, chosen where a reasonable abundance of butterflies were known to occur (Map 1). One aim of the project was to discover if any movement occurred between the two main butterfly areas within the forest, the Dowles


Small Pearl-bordered Fritillary John Bingham


Pearl-bordered Fritillary John Bingham


Silver-washed Fritillary John Bingham


High Brown Fritillary Neville Wilde

Brook system of small unimproved meadows and the Lodgehill Farm meadows and disused railway line. Both run through the forest parallel to each other, in an east-west direction for about 4 kilometres only separated by 0.3 to 0.5 kilometres. However, this divide is a north facing wooded valley slope, with an average difference in height of 30 metres. It may act as a physical barrier, especially to the two smaller fritillaries. They may exist in compact sedentary colonies in isolation unless open corridors exist, such as rides or coppice clearing.

It was also intended to be able to obtain some population estimates for each area and species, secondary to marking projects any direct observation of egg-laying females was considered of value. Only limited information of exact habitat requirements exist for the forest. Casual observation of distribution throughout the whole Wyre Forest for each species was made (Map 2 and Map 3).

3. Results

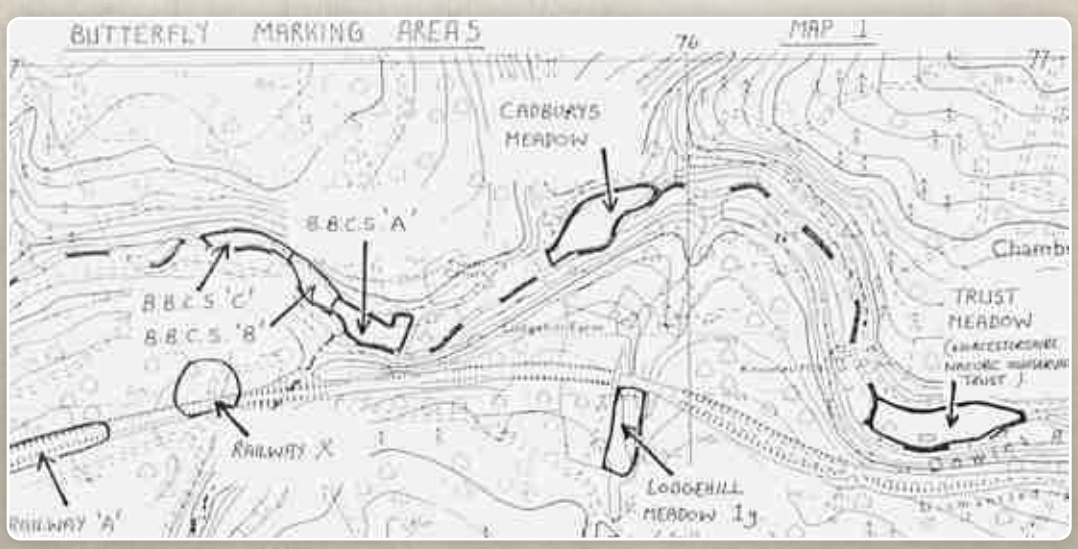
3.1 Population and movements

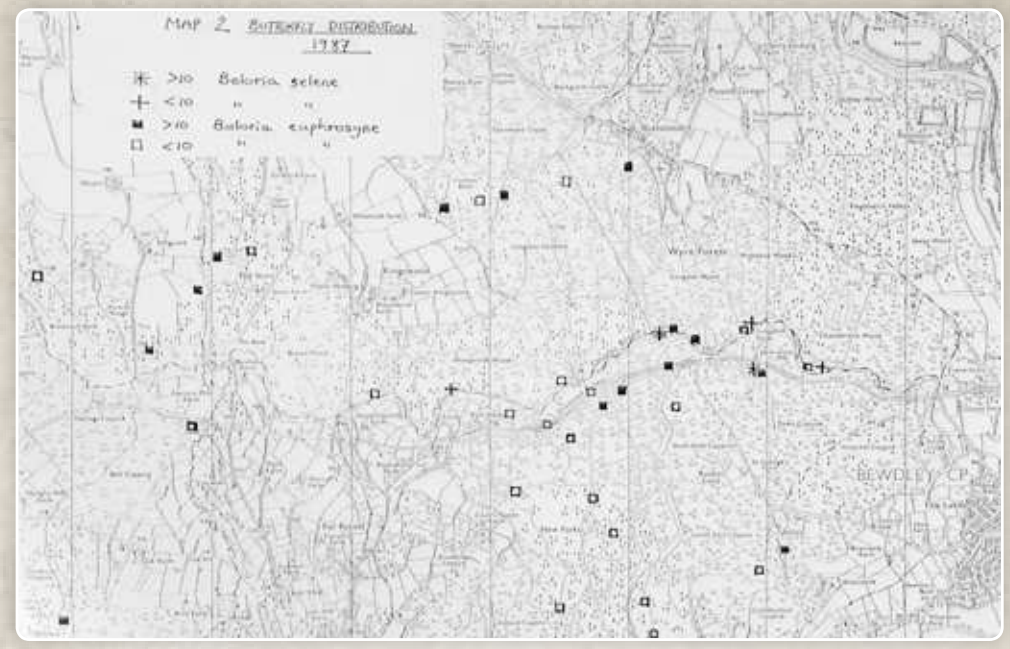
Observations were kept in a field notebook which has been passed on to Dr. J. Thomas, to allow a more detailed analysis of population numbers than possible by basic techniques. A copy has been retained for the NCC, initially sent to Chief Warden, John Bacon at Attingham Park, Shrewsbury. Preliminary results of population are included in this report.

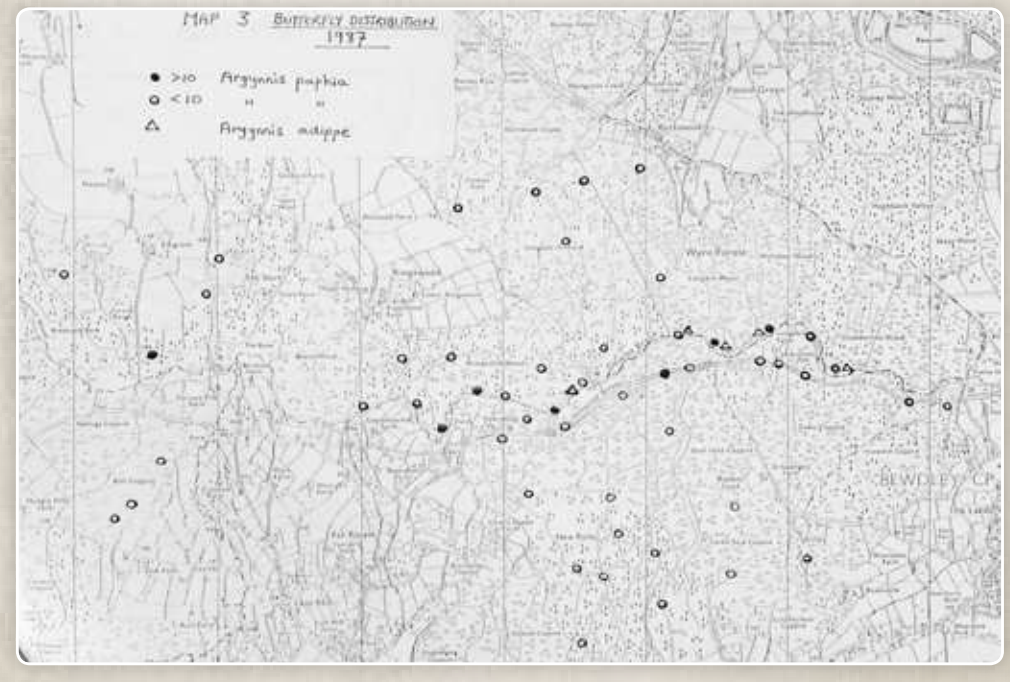
A summary of the results obtained for each species is given in Table 1. Recaptures of individual butterflies and movements is given in Table 2 and Map 4 and 5. Information on behavioural activities is given in Table 3.

3.2 Egg laying

Egg laying was observed in two species *B. euphrosyne* and *A. paphia*. Two observations of *B. euphrosyne* were similar habitat types. The first on the 10th June at 11.15am on a floristically rich ride on Forestry Commission land at Wimperhill. The ride runs in a north-south direction managed by late autumn mowing and deer/rabbit grazing. Eggs were oviposited singly on *Viola riviniana* leaves although eggs could not always be found, possibly they were dropped onto dead leaves on the ground. Preference was given to the north side (south facing) of a small damp ditch crossing the ride in east-west direction, where *Viola* was more







abundant. About 10 eggs were laid amongst the grassy turf, about 3cms. in height. At the second site egg laying as noted on the 22nd June at 3.55pm. along the east side of the meadow 1.g. at Lodgehill Farm. The site was a bank running north-south (west facing), on the woodland edge which had recently been cleared of a patch of large oak trees, whose overhanging branches had shaded the meadow edge. *Viola* was not numerous but bare ground occurred; ground vegetation was still responding to the increased light. Only six eggs were laid, one was placed on the underside of a *Viola* leaf, the rest on the upperside. Numerous butterflies frequented the cleared woodland where a layer of bracken *Pteridium aquilinum* was developing with sparse ground flora with scattered *Viola* sp. Unfortunately no ovipositing was observed under the *Pteridium* layer.

Female *A. paphia* were often seen in shady oak woodland gliding amongst the trees, often near to nectar areas. Ovipositing was observed along the disused railway line on the 22nd and 29th July around midday. On both occasions the sites used were small patches of scrubby trees some 5 to 10 cms. in diameter running for 6 to 8 metres along the length of the railway. Open nectaring sites were adjacent with *Rubus fruticosus* and *P. aquilinum* and various grasses. Eggs

Wyre Forest Study Group

TABLE 1 MARK AND RECAPTURE RESULTS

PEARL-BORDERED FRITILLARY *Boloria euphrosyne*

DATE	LOCATION	1	2	3	R^S	R^D	T^D	T^C	T^M
26-5	BBCS. B	20	2	0	0	0	24	24	22
27-5	BBCS. C	58	9	0	4	0	76	100	85
10-6	RAILWAY X	12	3	0	0	1	18	118	99
16-6	RAILWAY X	9	0	-	0	1	9	127	107
16-6	TRUST M	1	0	-	0	0	1	128	108
18-6	RAILWAY X	10	1	0	2	0	12	140	116
22-6	LODGEHILL 1g	7	0	-	0	0	7	147	123
24-6	LODGEHILL 1g	4	1	0	1	0	6	153	127
24-6	BBCS. C	9	1	0	0	0	11	164	137
24-6	LODGEHILL 1g	4	0	-	1	0	4	168	140

SMALL PEARL-BORDERED FRITILLARY *Boloria selene*

DATE	LOCATION	1	2	3	R^S	R^D	T^D	T^C	T^M
16-6	TRUST M	1	0	-	0	0	1	1	1
22-6	LODGEHILL 1g	11	1	0	0	0	13	14	13
24-6	LODGEHILL 1g	14	0	-	3	0	14	28	24
24-6	BBCS. C	3	0	-	0	0	3	31	27
24-6	LODGEHILL 1g	9	3	0	6	0	15	46	33
26-6	BBCS C	5	0	-	0	0	5	51	38
29-6	LODGEHILL 1g	6	0	-	1	0	6	57	43
29-6	BBCS C	1	0	-	0	1	1	58	43
30-6	LODGEHILL 1g	9	2	0	9	0	13	71	45
2-7	LODGEHILL 1g	9	4	0	13	1	27	98	54
6-7	CADBURY M	1	0	0	0	1	1	99	54

HIGH BROWN FRITILLARY *Argynnis adippe*

DATE	LOCATION	1	2	3	R^S	R^D	T^D	T^C	T^M
27-7	CADBURY M	1	0	-	0	0	1	1	1
28-7	CADBURY M	1	0	-	0	0	1	2	2
31-7	TRUST M	1	0	-	0	1	1	3	2

SILVER-WASHED FRITILLARY *Argynnis paphia*

DATE	LOCATION	1	2	3	R^S	R^D	T^D	T^C	T^M
6-7	BBCS. C	3	0	-	0	0	3	3	3
13-7	RAILWAY X	2	0	-	0	0	2	5	5
16-7	RAILWAY A	20	0	-	0	0	20	25	25
17-7	RAILWAY A	30	0	-	0	0	30	55	55
17-7	BBCS C	9	0	-	0	0	9	64	64
23-7	RAILWAY A	17	2	0	2	0	21	85	81
24-7	BBCS A	15	0	-	1	0	15	100	95
25-7	BBCS A	7	1	0	0	0	9	109	103
26-7	BBCS C	13	0	-	2	0	13	122	114
27-7	BBCS C	12	0	-	4	1	12	134	121
27-7	RAILWAY A	9	0	-	1	0	9	143	129
27-7	TRUST M	15	0	-	0	1	15	158	143
27-7	CADBURY M	30	0	-	0	2	30	188	171
28-7	CADBURY M	23	2	0	5	1	27	215	190
29-7	RAILWAY A	37	6	2	6	1	55	270	228
31-7	CADBURY M	34	1	0	4	7	36	306	251
31-7	BBCS. A	5	0	-	1	1	5	311	254
31-7	RAILWAY LH	3	0	-	0	0	3	314	257
31-7	TRUST M	6	1	0	2	1	8	322	261
5-8	TRUST M	4	0	-	0	0	4	326	265
5-8	CADBURY M	18	0	-	2	3	18	344	278
5-8	RAILWAY A	28	2	0	3	2	32	376	304

1 = Number of individuals that were caught once in the marking session
2 = " " " " " " twice " " " "
3 = " " " " " " three times " " "
R^S = Number of marked individuals recaptured in the same area
R^D = " " " " " from a different area
T^D = Total number of individuals caught in marking session
T^C = " " " catches made to date
T^M = " " of marked individuals to date

TABLE 2 SUMMARY OF MOVEMENT RECAPTURES

PEARL-BORDERED

No. SEX	SITE MARKED	DATE TIME	SITE RECAPTURED	DATE TIME
85 ♂	BBCS. C		RAILWAY X	
PEARL-BORDERED				
24 ♀	BBCS C		LODGEHILL 1g	
32 ♂	LODGEHILL 1g		BBCS. C	
45 ♀	LODGEHILL 1g		CADBURY M	
HIGH BROWN				
1	CADBURY M	27-7	TRUST M	31-7
SILVER WASHED				
19 ♀	RAILWAY A		TRUST M	
49 ♂	RAILWAY A		BBCS. C	
54 ♂	RAILWAY A		CADBURY M *	
56 ♂	BBCS C		RAILWAY A •	
60 ♂	BBCS C		CADBURY M	
91 ♂	BBCS A		CADBURY M	
94 ♀	BBCS A		CADBURY M	
95 ♂	BBCS A		CADBURY M	
98 ♂	BBCS A		CADBURY M	
103 ♂	BBCS A		CADBURY M	
112 ♀	BBCS C		CADBURY M	
118 ♂	BBCS C		CADBURY M	
132 ♀	TRUST M		CADBURY M	
133 ♀	TRUST M		CADBURY M	
134 ♂	TRUST M		CADBURY M	
136 ♀	TRUST M		BBCS A	
157 ♂	CADBURY M		RAILWAY A	

* Recaptured twice then moved to TRUST M on.
• Recaptured twice

TABLE 3 PERCENTAGE BEHAVIOUR TIME OF BUTTERFLIES AT TIME OF CAPTURE

BEHAVIOUR	SPECIES			
NECTARING ON: % of TOTAL	PEARL-BORDERED	SMALL P-B.	HIGH BROWN	SILVER-WASHED
Ajuga reptans	50			
Allium ursinum	10			
Bellis perennis	3			
Betonica officinalis		4		3
Centaurea nigra			100	20
Cirsium palustre				2·5
Conopodium majus	1·5			
Endymion non-scriptus	7			
Filipendula ulmaria				<1
Galium saxatile	3	12·5		
Glechoma hederacea	1·5			
Hypochaeris radicata	1·5	4		
Lotus corniculatus	9	50		
Pilosella officinarum	4·5	8		
Potentilla erecta	1·5	4		
Prunella vulgaris		8		
Ranunculus acris	1·5			
Rubus fruticosus		4		73
Veronica officinalis	6	4		
WATER — MUD				<1
TOTAL % NECTAR TIME	40	24		80
AT REST	22·5	20		7·5
COURTSHIP-MATING	5	6		4
FLIGHT	29	49·5		8

were placed in scattered groups on both *Salix*, *Betula* and *Quercus* species about 2 to 3 cms. above the ground. The ground flora was typically sparse, 50% bare ground or leaf litter with a varied selection of woodland herbs growing weakly, which always included *Viola* and tufts of *Brachypodium sylvaticum* often occurred. One butterfly was seen to lay on the upturned roots of a small fallen oak; disturbed soil below contained only one, rather drawn looking, *Viola* plant. No ovipositing was noted under *P. aquilinum* despite *Viola* sp. which in places were more common than elsewhere. All the ovipositing activity occurred near *Rubus* glades on the north side of the railway cutting.

4. Discussion

4.1 Weather conditions

Regrettably 1987 must have had one of the poorest spring/summers for many years. No exact meteorological information was available for this report, something that would be extremely useful for any future work on insect population. However, it appears that average temperatures were lower than normal, rainfall slightly higher and more importantly, sunshine hours down by perhaps 50%. In terms of the project work, most of the time was spent on marking in order to achieve a sufficient sample size to be able to obtain information on populations and movements. Warm sunny days were infrequent and rarely occurred in the same week. The 27th May was a particularly fine day when it was possible in two hours, with assistance from Michael Taylor, the NCC Estate Worker, to mark 63 *B. euphrosyne*. If this level of marking could have been maintained, a much more comprehensive data could have resulted.

4.2 BOLORIA EUPHROSYNE

4.2.1 Population

Marking commenced on the 26th May and finished on the 24th June. 140 individuals were marked in 3 principal areas. Preliminary estimates show that strong colonies occur. The British Butterfly Conservation Society (BBCS) meadow had an early emergence between the 26/27 May in the order of 350 butterflies. (1 set of data). The area on the railway line was estimated to have 142 butterflies at mid-flight period, 10/18th June (2 sets of data). Lowest population estimates came from Lodgehill Farm meadow 1.g. towards the end of the flight period with only 35 individuals.

Casual observations suggest that several strong colonies exist in the order of 300 plus over the forest (Map 2) many other areas with smaller populations appear frequent along ride systems and glades, particularly within the Forestry Commission land. Forestry rides are not always managed in keeping with butterfly conservation, therefore some of these populations may be vulnerable. Determination of the sex of individuals was not without problems, considerable variation occurred sometimes contradictory, some errors cannot be excluded. Maximum longevity was recorded for No. 85 with 21 days.

4.2.2 Movement recoveries

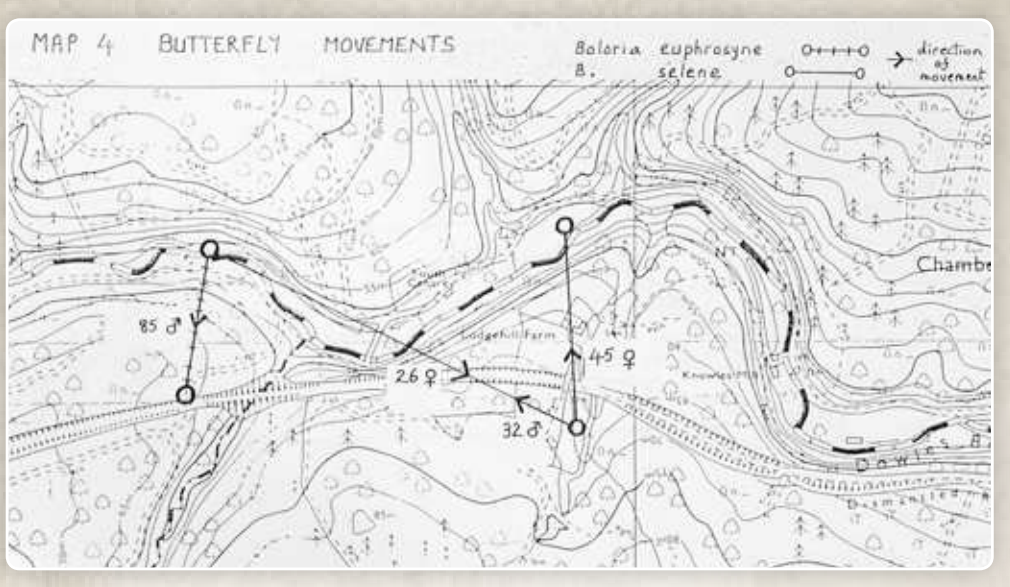
Based on limited information it appears that *B. euphrosyne* is a sedentary species in the forest. Only one individual was recovered in a different area from that originally marked. No. 85 was marked in the BBCS 'C' meadow on the 27th May and recaptured on the railway line on the 10th June, a distance of 0.25 kilometres. With a total population that could amount to 1,000 individuals within one kilometre of Lodgehill Farm a sample of 140 must be considered low to draw any positive conclusions from. It should be possible to mark 2 to 3 times this number of butterflies given seasonal weather, and then obtain a clear picture of movements. (Map 4).

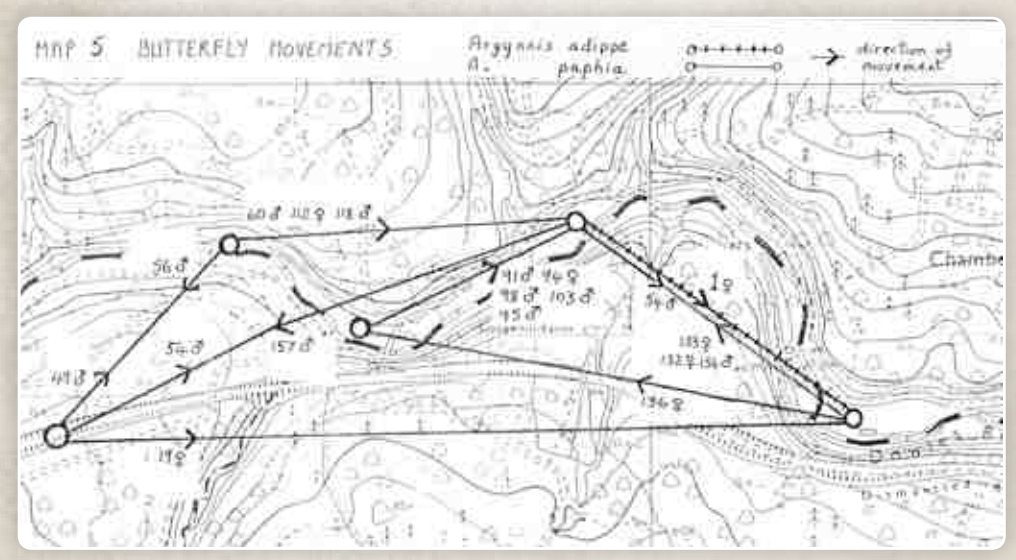
4.2.3 Habitat

A percentage summary of behaviour is given in Table 3. As far as nectaring sites are concerned in the forest at least *Ajuga reptans* is the principal source. This species of plant tends to be limited to damper clay or alluvial soils and may act as an indicator to *B. euphrosyne* sites or even exert a control to siting of colonies providing the larval foodplant occurs nearby.

Viola tends to prefer the more basic damper soils and will often occur in association with *A. reptans*. This has already been suggested for Wyre Forest (Williams 1982). The second most used nectar source was *Allium ursinum* a species confined in the forest to streamside alluvial soils. *B. euphrosyne* sites on drier habitats make use of a greater diversity of nectar sources, *Endymion non-scriptus* and *Veronica officinalis* in woodland areas with *Lotus corniculatus* and *Pilosella officinarum* included on meadow sites. Colonies on meadows without *A. reptans* appear to have weaker populations. Egg laying sites, see 3.2. With the lack of coppice plots of suitable type the butterfly has somewhat atypical habitats within the forest, as noted by Oates (1986). The BBCS meadow population occurs on an area of secondary woodland cum glade that was coppiced in a fashion about 7 years ago (?), regrowth has been retarded by deer browsing. So this strong colony represents a more typical habitat for the species.

4.3 BOLORIA SELENE





4.3.1 Population

Marking commenced on the 16th June and finished on the 6th July with 54 individuals marked in two principal areas. Population estimates were made for one site, the south-east meadow at Lodgehill Farm, compartment 1.g. Information for other sites was too limited. At Lodgehill 1.g. the population around peak emergence was 50, (3 sets of data), this site was considered to be one of the strongest and nearest to visit, useful with the erratic weather conditions. In general the season's emergence was weak and more contracted throughout the forest than latterly (pers. com. M. Williams BBCS). Only limited fieldwork on distribution was undertaken, however, this species was found to be markedly less common and colonies more discreet than *B. euphrosyne*. In contrast to literature it does not appear to be more tolerant of shade or require damper sites than *B. euphrosyne* within the forest (Thomas 1986). Sex determination of individuals was difficult and this data is unreliable. Five individuals had the maximum longevity of 12 days *B. selene* would appear to have a limited flight period of less than four weeks, whilst *B. euphrosyne* is at least 6 weeks.

4.3.2. Movement recoveries

Three recaptures displayed movement, Nos. 32, 26 and 45, see Table 2 and Map 4, all were within 0.5 kilometres distance but crossed over closed canopy woodland and north sided valley. Although occurring in discreet colonies the butterfly appears more mobile throughout the area, and has a greater ability to colonise near areas than *B. euphrosyne* despite the lower population. It appeared to spend a greater proportion of time in flight, as indicated in Table 3, supporting its more mobile trend.

4.3.3. Habitat

Some considerable overlap in habitat occurs with both small fritillaries. *B. selene* is more characteristic

of open damp meadows and glades than woodland, more typical of the west of Britain. However, it is not predominant within the forest, contrary to what might be expected due to the geographic position of Wyre Forest, on the north-west/south-east biogeographic divide of Britain. (Heath et al 1984). The situation is similar to areas in the south-east with *B. euphrosyne* predominant. No ovipositing was observed. Nectar sources reflect the intensive marking carried out on the meadow area of Lodgehill Farm, therefore woodland species are poorly represented. (Table 1). *Lotus corniculatus* accounts for 50% of the records. With only one site studied it would be unwise to generalise, a comparison woodland site needs to be observed for this contradictory butterfly.

4.4 ARGYNNIS ADIPPE

4.4.1 Population and movement recoveries

Regrettably the data gathered on this important species is negligible. Only two individuals were marked, although some 20 were observed. Emergence peaked around the 5/6th July, most butterflies seen in the following week. They were active, flying rapidly across meadows in the Dowles valley at a height of between 3 to 4 metres above the ground. Project work however was most limited during July due to the absence of the NCC Warden. The butterflies flight period was limited only lasting some three weeks, density throughout was low, none were noticed away from the Dowles meadows. Both individuals were marked in Cadbury's meadow on the 27th and 28th July, remarkably the first one was recaptured in the Trust meadow on the 31st July a distance of 0.5 kilometres. Either this is considered a lucky recovery or an indication that *A. adippe* has a low population within the forest, perhaps in the 50 to 100 range.

4.4.2. Habitat

Centaurea nigra is the favourite nectar source with *Cirsium* sp. second. No ovipositing was observed. The distribution remains similar to that given by Oates (1986) but with an extension further west along the Dowles valley where conifers have been removed recently. (Map 3).

4.5 AGYNNIS PAPHIA

4.5.1 Population

Marking commenced on the 6th July and finished on the 5th August although the flight period extended into late August, but by then many butterflies were badly damaged. A total of 304 individuals were marked in three principal areas. The colony at the railway line 'A' site was particularly strong with some 1,000 individuals (2 sets of data) and appeared to be the stronghold for the railway line. The Dowles meadow colonies were less discreet, populations were more variable.

The BBCS meadow totally around 100, Cadbury's meadow 400 (4 sets of data). Whilst 1987 was not a particularly good year for the species it is the most abundant and wide ranging butterfly (Map 3). The recent removal of conifer along Dowles Brook near Wimperhill Wood has created a series of open glades where a third large colony appears to have developed amounting to 500 plus (?). Sexual dimorphism in this species made sex determination accurate.

4.5.2. Movement recoveries

A total of 17 movement recaptures were made and these are summarised in Table 2 and Map 5. Movements along the Dowles valley responded to the best nectaring site at Cadbury's meadow. Three butterflies moved from BBCS 'C', five from BBCS 'A', three from the Trust and one from the railway 'A' all into Cadbury's. There were only two movements out of this meadow to the Trust meadow and railway line. More limited movement occurred between the railway line and Dowles, only three individuals moved off the railway line down to Dowles with two records from Dowles to railway. Butterfly no. 54 was the most mobile, marked at the railway on the 17th July it was recaptured on the 31st in Cadbury's and then in the Trust meadow on the 31st some 5 hours later. *A. paphia* wanders up to 1.5 kilometres, the maximum distance this project could prove, this may well prove to be a normal range of a colony. The Dowles meadows all appear to be interlinked to form a reasonable discreet colony with the railway as a separate colony, and limited interchange between the two areas.

4.5.3. Habitat

Nectaring behaviour at the time of capture accounted for 80% of the butterflies time when it could have been active, this agrees with casual observations made. This species apparently requires more nectar (or nectaring time) than the smaller fritillaries. Two distinct nectar sources are used depending on the habitat frequented. On the railway line *Rubus fruticosus* accounts for over 90% of the nectar source which must control some influence over the siting of colonies. Once the *Rubus fruticosus* finishes flowering, either a new nectar source is found elsewhere or the colony must suffer some mortality. Egg laying was observed as noted in 3.2.

5. CONCLUSION

The study of the fritillaries should be viewed as an introduction to understanding the habitat

requirements and population within the Wyre Forest, not as a conclusive study. Work on *Argynnis adippe* only highlights the problems with low density limited populations, further intensive studies would be required to produce any meaningful results. Its continued survival in the Wyre Forest appears to be under threat. At present, with the removal of conifers along the Dowles Brook valley by the Forestry Commission, may provide a stop-gap, if only temporary.

In general the other three fritillaries are under less imminent danger, although *Boloria selene* has undergone a decline in recent years. No doubt all three (or four) species would respond to a similar management programme. I agree totally with Oates (1986), when he suggests that *A. adippe* is occurring in an atypical situation. This also applies to a lesser extent to all of the fritillaries.

The meadows are offering atypical sites which, over the years, especially since the cessation of a woodland coppicing system, have become important for butterflies. We appear to be in the situation that the meadows are seen as being the habitat for fritillaries. This view is false and has led to an over estimation of the meadows value for fritillary butterflies. Certainly for the present the meadow system is providing an alternative habitat, without which fritillary numbers would be lower. But they are not themselves good breeding sites, the peripheral zone of hedgerow and scrub offers more potential, a mimic of conditions similar to coppicing. This may help to explain why one short area of railway line contained a higher population of *A. paphia* than the extended system of meadows. Meadows do offer a variety and rich source of nectar plants.

Management of these small meadows is at present being undertaken by mowing. This is a new management strategy, several meadows were until recently rotationally grazed with horses at low stocking rates. Others were only deer grazed. Historically grazing was the principal management, linked to variety of small-holding enterprises, no doubt extremely diverse. In terms of butterfly conservation mowing is regarded as a poor alternative to grazing, but is a relatively cheap option to maintain a botanically good sward. (BUTT 1986).

In Wyre problems exist with a mowing strategy.

1. It destroys anthills which are a particular feature of many meadows and offer diversity in flora and microclimatic conditions.
2. Only one part of any meadow should be cut, the size of most meadows limits choice; topographic conditions could make parts selective for butterflies and localise colonies.
3. Meadow topography and access makes using machinery difficult or impossible, damage to turf is inevitable.
4. Hay needs to be cut late to allow for nectar sources, in the sheltered damp meadows, hay will not dry, its disposal becomes a problem.
5. Cutting is likely to reduce any *Viola* populations, reducing any development of weak *P. aquilinum* or scrub invasion which helps encourage *Viola* by shading and reducing competition from other plants.

Horse grazing, although not without problems has recently produced diverse butterfly rich habitats within the forest. The patchiness of low grazing on meadows allows the development of scrub, which in turn provides oviposting sites. At the same time nectar sources are maintained. Exact levels of stock and the seasonal grazing strategies would need careful monitoring to start with, but some information is already known, or could be obtained from local landowners. Mowing could be still carried out on more suitable sites, such as compartment 16 at Lodgehill Farm which does not present the same problems as the Dowles meadow system.

The railways cuttings exhibit a similar habitat to the coppice cycle when scrub is removed, hence the development of ovipositing sites more freely. A hurried survey along the railway from Dry Mill Lane to Park House showed there to be only five areas where conditions appeared to be suitable for fritillaries, possibly amounting to 10% of the total length. An open patchwork of *Rubus fruticosus* to attract and provide nectar for a colony with small clumps of weak scrub/young trees was typical. In general much of the railway contains over mature scrubby trees in some cases closing the canopy, overhanging mature trees especially on the south ride were seriously shading large sections. On some sections of the railway *A. paphia* was absent, considered to be a direct result of long shady banks. If managed as a linear coppice, the number of colonies present could be increased as a factor of three or four.

Without doubt an active system of coppicing near to the Dowles Brook or Railway Line would most benefit the butterfly population and produce the dynamic woodland management lacking in the oakwoods of Wyre. To achieve this, deer fencing would be essential to eliminate the damage seen elsewhere. Vigorous regrowth of stools would be required to suppress rank vegetation and allow *Viola* development. Such an area would need to chosen with care to ensure suitable

substrate; some areas of the forest are more akin to heathland. Such an area should develop a patchwork of age structure, with clearfell plots rotating across the coppice wood linked with a system or rides and glades to maintain small pockets of butterflies.

Further work is needed to discover the status of *A. adippe* and the distribution and population of *B. selene*. The response of *B. euphrosyne* and *A. paphia* to recent work on Forestry Commission land along Dowles may be worth investigating. Also movements over greater distances, especially with *A. paphia* to discover how discrete colonies are, and whether larger blocks of high forest act as barriers to movement.


High Brown Fritillaries John Bingham

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Bird Surveys in Wyre 2013

STEVE DAVIES

Steve Davies undertook the following bird surveys in and around the Wyre Forest during 2013.

BTO Waterways Breeding Bird Survey (WBBS)

Dowles Brook from River Severn to Old Ford. (Of interest were 2 Dipper nests found, fledged Mandarin, one territory for Lesser Spotted Woodpecker, and numerous Wood Warbler territories)

BTO Breeding Bird Survey (BBS)

SO7074 - Fletcher's Coppice/Fortune's Green
SO7374 - Doghanging Coppice/Far Forest
(Pied Flycatcher and Wood Warbler singing)
SO7472 - Bliss Gate
SO7475 - New Parks
Mammals were recorded during BBS visits.

BTO Winter Thrushes Survey

SO7178 - Meaton Lane


Male Siskin Rosemary Winnall