Reversing the decline in butterflies and moths across Europe – the importance of particular farming practices and the implications for CAP reform.

By Simon Spencer and Sue Collins

February 2008

---

1. Purpose of Paper and Structure

1.1 This paper outlines the role butterflies and moths play in the farmed landscape and their dependence on particular farming systems. It attempts to identify the threats to Lepidoptera from continuing changes in agriculture and makes suggestions for changes to the CAP to help conserve this group. It is aimed as a discussion document for partners and colleagues both to provide a butterfly perspective to future partnership documents and to increase the awareness of the specific problems associated with butterflies and moths.

2. Introduction

2.1 Butterflies are particularly associated with open grassland[1] habitats where their larvae feed on herbs growing in grassland or on grasses. Many butterfly species use only single species of food plants and will only lay eggs on plants at the right stage of development and growing in the right habitat. A smaller number of species utilize trees and shrubs as their larval food plant but many of these are associated woodland edge rather than in dense forest. Most adult butterflies use flowering plants as nectar sources and actively use basking techniques in sunshine to warm up. Dense woodland contains very few butterflies, and those are mainly found in the canopy.

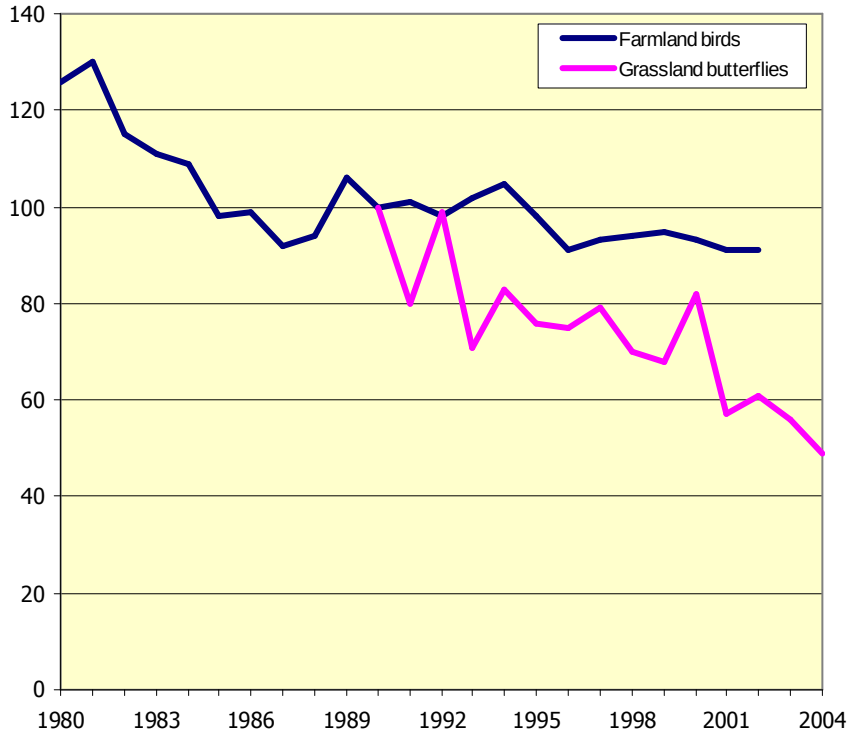
2.2 Moths usually avoid sunshine and fly at night and many of them feed as larvae on woody species where they are a very important source of food for birds. They too have nectar requirements but in general moths are less dependant than butterflies on open habitats.

2.3 The area of forest in Europe is increasing and, though many woodlands are unmanaged or under managed, species of Lepidoptera that feed on woody plants are under less threat than species of semi-natural grasslands. There are exceptions though and changes in woodland management have strongly affected many butterflies that require open space or woodland edge habitats e.g. *Lopinga achine* which feeds on grasses and *Euphydryas maturna*[2]*, Limenitis populi* which feed on tree species. Many European woodlands were grazed or are grazed and often in Southern Europe an open mosaic of woodland and lightly grazed pasture is very rich in butterflies. In this situation the butterflies are mainly associated with food plants growing in the grassland between the trees.

2.4 Many species of butterfly and moth are found in the open habitat of extensive grazed pasture, or other high nature value farmland, and here they are severely threatened by two processes. On the one hand agricultural intensification can rapidly destroy biodiversity. Butterflies are rapidly and adversely affected by cultivation of species rich grassland, increased use of fertilizer reducing floristic diversity and high stocking rates. On the other hand butterflies are soon lost from abandoned pasture as this reverts firstly to scrub and then to secondary woodland. Although some species initially respond positively to reduced grazing pressure, species richness declines as woody species dominate and the grassland is shaded out[3]. An example is the Hermit (*Chazara briseus*)[4] a butterfly species that is tolerant of heavy grazing which is in decline over much of southern Europe. This species is one of the first to be lost from abandoned grassland.

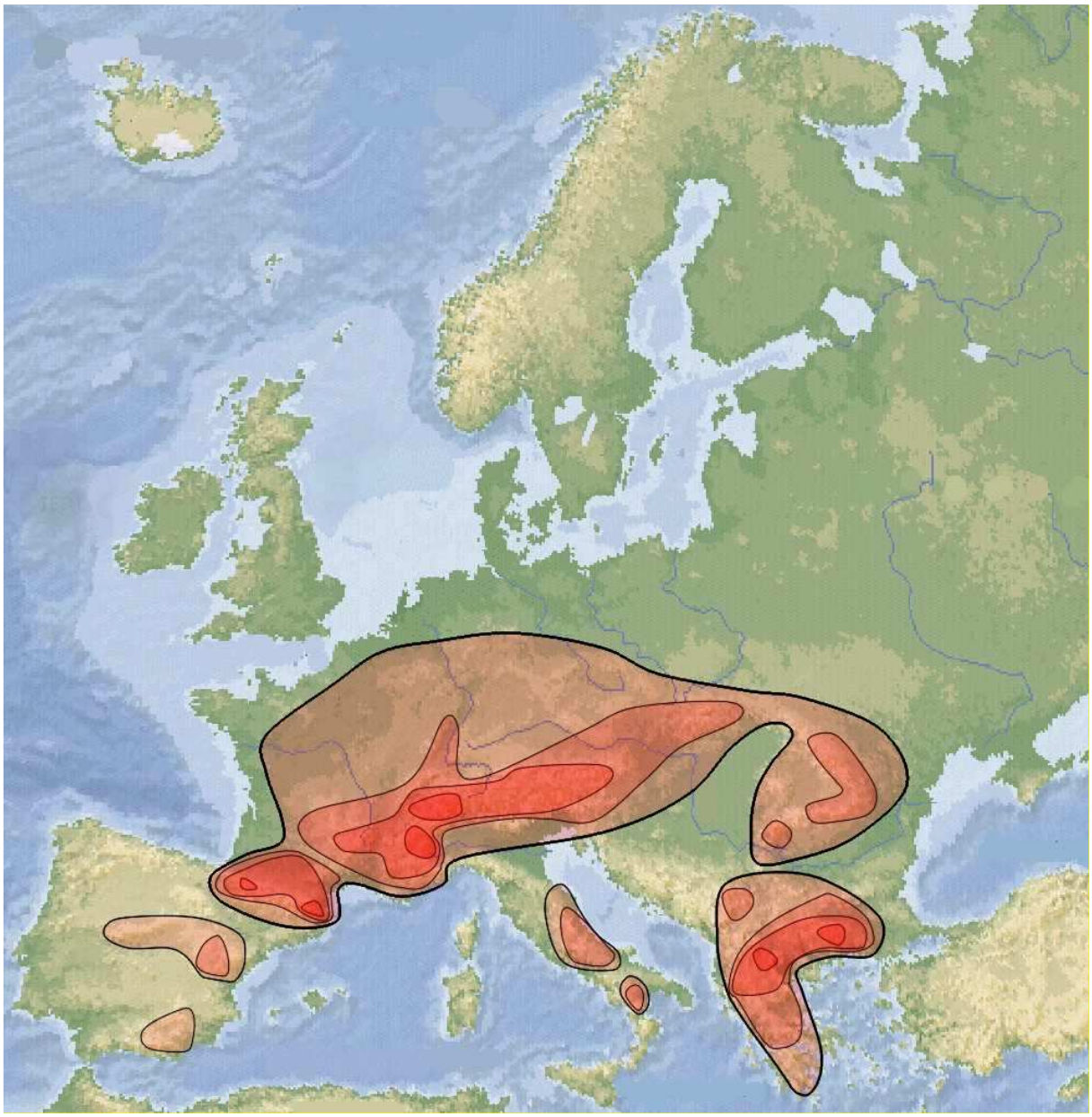
2.5 The processes of agricultural intensification have reached their most extreme in NW Europe. Within an intensive arable landscape, butterflies and moths are often only found in uncultivated patches, roadsides, ditch banks and set-aside. This is a major cause of the decline in birds as Lepidoptera caterpillars and other invertebrates sharing their habitats are a major food source for many species. There is growing evidence of widespread decline in abundance of many species of common Lepidoptera in Britain, which has the best historical data sets. The Rothamsted Research light trap data for moths is perhaps the most comprehensive. Britain has also led the way in the industrialisation of agriculture and overall moth numbers have declined by one-third in the last 35 years[5]. Very few butterflies are found in intensively farmed landscapes and most important sites for butterflies are now in the semi-natural fragments that remain. This is true of intensive arable land as well as intensive livestock farms.

2.6 There is now some good evidence that grassland butterflies are declining even more rapidly than farmland birds. Figure 1 shows trends of 17 characteristic grassland butterflies that have been pooled to produce a European grassland butterfly indicator. The decline has been almost 50% in the last 15 years compared to a decline of 9% decline in birds from the European farmland bird index.[6] (European Environment Agency, 2007; Swaay, 2007)



3. Helping to meet the needs of butterflies and months through sustainable management of the farmed landscape

3.1 There are more butterfly and moth species in southern Europe than in northern Europe, though all regions have their own specialist species (e.g.around a dozen species are confined to Arctic Scandinavia). Species diversity tends to increase in warmer climates and butterflies are no exception to this but habitat effects are also important. North eastern countries are richer than north western countries. Islands tend to have fewer species than the mainland and all island endemics are in the south. Species diversity also tends to be greater in countries with the highest altitudinal range and endemics have a strong bias to mountains.



Map of Butterfly Species Richness from Van Swaay[9] based on Kudrna[7]

Table of Butterfly Species by Country

Country	Number of Butterflies[7]	Number of RDB species[2]
Albania	129	14
Austria	207	28
Belgium	116	10
Bosnia	127	17
Bulgaria	200	15
Croatia	161	20
Cyprus	50	2
Czech Republic	154	20
Denmark	79	4
Eire	31	2
Estonia	115	14
Finland	112	17
France	259	26
Germany	162	25
Great Britain	63	4
Greece	234	16
Hungary	158	20
Italy	270	28
Latvia	114	14
Lithuania	112	14
Luxembourg	103	7
Macedonia	168	14
Netherlands	101	4
Norway	97	12
Poland	154	23
Portugal	139	6
Romania	186	25
Slovenia	169	24
Spain	239	16
Sweden	117	18
Switzerland	199	27
Yugoslavia	191	18

3.2 Many butterfly species are restricted to Alpine, Sub-alpine and Montane habitats (Appendix 1) with 25 of the 354 species of European butterfly confined to the Alps and a further 66 species confined to these habitats. Section 3a discusses the particular requirements of mountain habitats. Sections 3b and 3c discusses the remainder i.e. lowland habitats. Lowland butterflies are found most abundantly in semi-natural pasture and unimproved grasslands which are covered in 3b. Section 3c discusses the limited number of butterfly species of intensively farmed lowland habitats and their relationship with farming. Section 3d discusses butterflies of marginal habitats, especially wet grassland and bogs, and their relationship with farming. These habitats are a special case and the fragmented remnants outside Scandinavia contain butterfly species that are some of the most threatened in Europe.

3a. Butterflies of Alpine, Sub-alpine or Montane Habitats and their relationship with farming.

Characteristic Butterfly and moth species of mountains

3a.1 A very high proportion of the scarcer European butterflies and many Red Data Book[2] species are found in mountains particularly the Alps, Pyrenees and the mountains of the Balkan peninsular (Appendix 1)[7]. Because of interest from lepidopterists over the last two centuries this group is well studied and the distribution of species is well known. This distribution is a consequence of adaptation to climate change following the last glacial period 10,000 years ago. Some butterflies even have an arctic/alpine distribution occurring at high altitude in the Alps and at low altitude in northern Scandinavia. Some rare plants follow a similar pattern. These habitats are invariably utilized by man predominantly by grazing with domestic animals i.e. pastoralism. The patterns of seasonal grazing, often involving transhumance, have been largely unchanged since the early days of agriculture. Those butterfly species that could not adapt to coexist with man no doubt disappeared some centuries ago and current distribution patterns reflect a long period of adaptation.

Habitat needs of these species

3a.2 Alpine, Sub-alpine and Montane habitats have avoided the ubiquitous agricultural improvement of the lowlands being usually rocky and steep. Fertilizer use is still rare and until recently these mountain butterflies were doing considerably better than their lowland cousins. The species are adapted to a relatively short flower rich sward that is grazed by livestock only for a short period in summer and usually is covered with snow until late spring. Grazing patterns are usually very conservative with the same balance of livestock species being maintained over many years. The timing of grazing is also very constant from year to year. Sheep, goats and cattle are all used but goats particularly prevent scrub encroachment. The summer grazing livestock often winter a long way from the mountains. This was apparently also true of very early pastoralism. Excessive grazing or grazing too early in the season can often occur at the Alpine level i.e. above the tree line where the climate alone keeps the habitat open and this can be highly detrimental to butterflies. Butterfly species especially the genus *Erebia* tend to occupy relatively narrow niches within such a habitat and may be restricted to very small areas. At high altitude, floral diversity and variations in aspect and duration of snow cover combine with variations in grazing regimes to provide a complex diversity of habitats to which individual species have adapted.

3a.3 There is evidence that mountain butterflies are moving uphill in response to climate change[8]. The area of potentially suitable habitat is therefore decreasing and is likely to decrease further as climate change accelerates. Alpine glaciers are receding alarmingly.

Implications for farming practice in the mountains

3a.4 There are strong indications of rapid recent change in these practices in many of the mountainous areas of Europe which will have grave consequences for many of these endangered butterflies. An ageing population of pastoralists are rapidly abandoning their traditional pastures. The CAP is a major influence on the management of these areas.

3a.5 In the Alps and Pyrenees and other mountains land abandonment is becoming common with scrub invading the mountainsides and the sub alpine pastures. Eventually the valley hay meadows are ploughed for maize or, in Italy particularly,

planted with fruit trees or vines. Where the traditional pattern of agriculture still works it is often the cheese cooperative like Beaufort (Savoie) that keeps it profitable. Cheese is a high value product and has been one of the main sources of income for mountains. Often the rules of the Appellation Contrôlée on hay making and fertilizer use ensure an abundant and diverse population of butterflies and the summer grazing of the Sub-Alpine pasture keeps them open. The mass production of cheese from intensive dairy farms in northern Europe depresses the price of cheese. The system only works where people are prepared to pay a considerable premium for mountain cheese.

3a.6 Switzerland which is outside the EU provides an instructive lesson in rural development. Swiss farmers are the most subsidized in the world and it is strange in such a rich country to see the rake and pitch fork still in use. The Swiss are justifiably proud of their mountain cheeses with cheese makers milking cattle outside at over 2000m and selling direct to the public. They have a year round tourist industry of skiers in winter and walkers in summer that enjoy the Alpine flowers and butterflies. It is indeed very fortunate that so many rare butterflies are found in Switzerland as they have more strongly resisted the temptation to grow as much chemically fertilised grass as possible and seem quite prepared to subsidize their mountain pastoralists. However, even Swiss butterflies are declining and overgrazing, inappropriately timed grazing and overzealous cutting are widespread. Keeping the mountains open and grazed is important for the skiing industry and for preventing avalanches but these activities often are detrimental to wildlife. The Swiss also actively manage their forests and forest clearings are very rich in butterflies.

3a.7 Of the EU countries, the situation is worst in Greece and Italy, better in Spain than in France and still quite good in Austria where 50% of farms are in an Agri-environment scheme. National Parks like the Mercantour and the Ecrins in France make a very positive contribution to keeping traditional pastoralism going. There is still a surplus of sheep meat and beef produced in the wetter and more suitable countries of North West Europe notably the UK and Ireland. Meat exports have depressed prices elsewhere.

Implications for structure of incentives and rules of CAP regime

3a.8 Many populations of rare European butterflies are very dependent on maintaining traditional pastoralism in mountain areas of Europe. The key feature here is whether young people are prepared to continue with that way of life when other employment is more financially rewarding and much less work. It is very difficult for people not brought up to lead a pastoral way of life to take it up from scratch. The actual abandonment often has a twenty year time lag as the older generation will continue to farm though their children have moved away.

3a.9 A sustainable land management and rural development policy must ensure that there is sufficient incentive for young people to remain in farming. Europe has a huge responsibility for maintaining biodiversity in the mountains as these areas are very rich both for plant species and also for butterflies. They must be recognized as jewels of High Nature Value farmland and treated appropriately. Many of these areas are Natura 2000 sites[9]. The future CAP should play a key role in delivering on Natura 2000 sites through targeted agri-environment schemes and Natura 2000 payments.

3b Butterflies of extensive Lowland Semi-natural Habitats and their relationship with farming.

Characteristic Butterfly and moth species of Semi-natural Habitats

3b.1 Lowland semi-natural habitats are probably the richest for butterflies and support approximately 263 species. Most species are associated with grasslands with their food plants either grasses or herbs growing in grassland. Nectar sources for adults are also important in their ecology.

3b.2 Lowland butterflies tend to have a wider distribution than mountain species with their distribution tied to the availability of suitable habitat. Some species are highly localized such as those restricted to individual islands e.g. *Papilio hospiton,* a Corsican/Sardinian species of Swallowtail.

Habitat needs of these species

3b.3 Even in Northern Western Europe where agricultural intensification of almost all land has been most extreme, surviving pockets of semi-natural grassland can have a surprising variety and abundance of butterflies particularly on chalk and limestone soils. Though North Western European countries have fewer butterfly species than Southern European ones the contrast here between the best sites and surrounding improved pasture for both abundance and diversity is dramatic. These countries have usually lost many species since butterfly records were first made with for example 15 species being lost from Belgium. Habitat loss is the prime cause of these extinctions.

3b.4 Semi–natural habitat can still be found in North-West Europe where poor soil, steep slopes or accidents of history have spared them from agricultural improvement. Examples in the UK are commons and extensive pastures on Exmoor and Dartmoor or land owned by the Ministry of Defence. Fragmentation is a major problem with species rich semi natural grassland occurring as islands in a sea of improved pasture and intensive arable. Exchange of individuals and colonisation of suitable habitat are major problems facing butterflies in this situation.

3b.5 In Southern Europe butterfly biodiversity is higher and butterfly abundance can be dramatic. In the richer habitats i.e. hay meadows and lightly grazed grasslands with many herb species and abundant nectar sources, more than fifty species of butterfly can be counted in one day! Timing of hay cutting is particularly important and Agri-environment schemes need to take this into account and avoid imposing a standard cutting date. It is better to have a patchwork of different cutting dates with some cut twice, some cut very late, and some left uncut but grazed at the end of the season. There is evidence that the scarce *Colias myrmidone* was eliminated from parts of the Czech Republic by an Agri-environment Scheme promoting a uniform regime of two cuts a year [13]

3b.6 Grazing pressure is very critical in this situation with extensive light grazing of semi natural grasslands being beneficial and overgrazing highly detrimental. Timing of grazing is particularly important and Agri-environment schemes need to take this into account and again avoid a uniform solution.

Implications for farming practice in the Semi-natural Habitats

3b.7 In Southern Europe, semi-natural habitats that have avoided the ubiquitous agricultural improvement of the fertile lowlands are usually rocky and relatively

infertile. A combination of high summer temperatures and poor soil resulting from centuries of erosion has severely restricted the agricultural options of the human inhabitants. Apart from extensive grazing which was ubiquitous in the past, only olives and vines could provide any form of income with almonds and walnuts providing possible alternatives. These semi–natural, usually ungrazed, habitats can be fairly rich in butterflies especially except in fertile valley bottoms where mechanized agriculture is possible and absence of un-cropped space produce a more sterile environment.

3b.8 The traditional management of these semi-natural habitats is extensive grazing. In Southern Europe there are typically no fences and flocks of sheep or goats need to be accompanied by shepherds. Often this grazing is combined with transhumance to the mountains for the summer, so many of the comments made about mountain agriculture apply here. Cheese making is again important. In the Causse region in France, Roquefort production pays well per litre of sheep's milk and is the reason why pastoralism still survives there. Elsewhere in southern France the poorer land was abandoned years ago and recurrent fires are a major problem.

3b.9 Butterfly abundance and biodiversity in these semi-natural pastures of Southern Europe is very high. It is also highly threatened with land abandonment being the major issue.

3b.10 In Greece for example, largely as a result of decoupling, shepherded grazing has gone into steep decline[10]. Shepherds are still paid on a historic basis for the flocks they had and, though they are supposed to keep the land in good condition and retain half their flock, in practice they give up keeping sheep and goats. Most grazing is unfenced and communal and shepherds would leave the village in the morning, graze their flocks during the day and return to milk their sheep and goats in the afternoon. They produced the famous Feta cheese and Greek yoghurt.

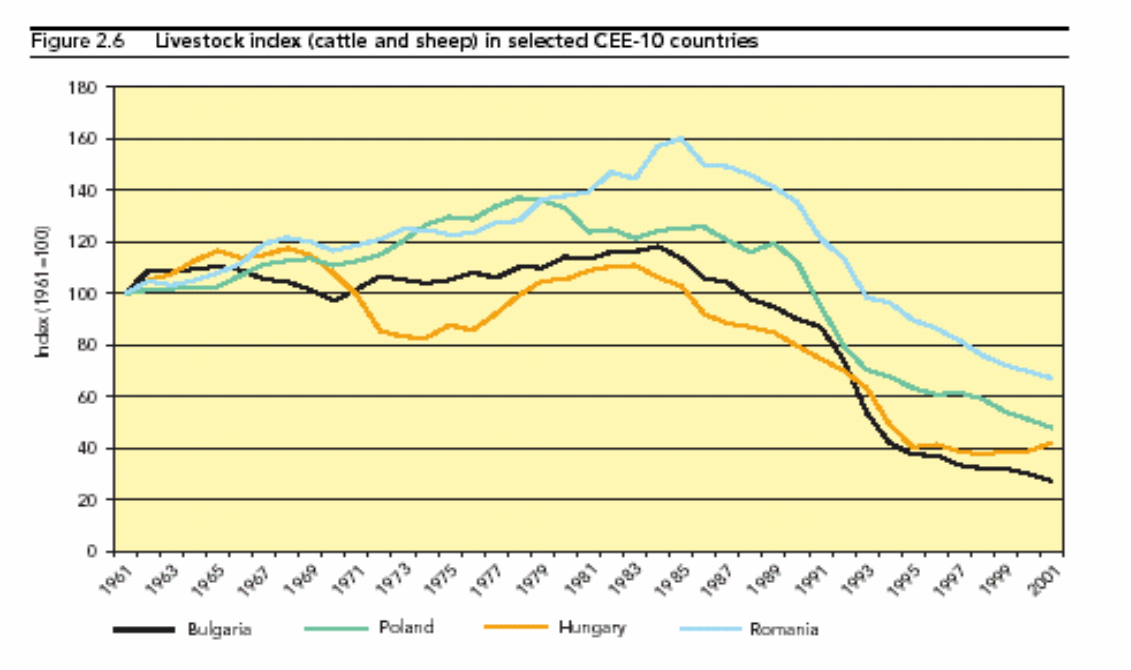
3b.11 Though some of the minority populations of Greece, notably the Vlachs, stuck to their traditional way of life, which normally included moving their flocks to the mountains from June to October, most Greek shepherds have got too old for the job. Their children wanted a better way of life and have opted for education and proper jobs. Albanian shepherds were employed in some cases but the overall profitability of extensive shepherded grazing is very low so wages were too low even for Albanians. Milk production in sheds using lucerne bought in from irrigated arable land was less costly in labour and to some extent masks the decline in extensive grazing. Fenced grazing that is normal in northern Europe is impractical without iron fence posts. Most of the land is communally owned and on many mountains the pastoralists have to coexist with forestry.

3b.12 Without grazing the open habitat which is often partially wooded closes in and scrub and young trees replace the grasslands. Butterfly biodiversity and abundance often gets a short lived boost from the lack of grazing but then butterflies retreat to the remaining open areas and are lost completely when the canopy closes. Another consequence of increased woody growth is that fires become more frequent and more intense, for example the cycle of fires in the Peloponnese during 2007. The outlook for such areas is bleak as soil erosion after fires impoverishes the soil and makes future grazing more difficult.

3b.13 Agricultural intensification was less extreme in the former Eastern bloc countries that have recently joined the EU such as Hungary, Romania and Slovenia. In these countries it is possible to find large areas of semi-natural grassland with a rich diversity and great abundance of butterflies. These usually occur on poor soils in the uplands and were fifty years ago subject to grazing by traditional peasant farmers.

The break up of collective farms and the return of land to their former owners has led to radical changes in Eastern Europe with livestock numbers decreasing rapidly.

In Central and Eastern European countries the accelerating pace of economic and social development has resulted in a swift improvement of infrastructure along with the rapid intensification of agricultural practices and the abandonment of traditional agriculture. This is leading to a rapid decline of biodiversity. In the last two decades at least 5 species of butterfly have become extinct or are at the brink of extinction in Romania, many others being under severe threat[11].



3b.14 Land abandonment in Slovenia goes back to the break up of Yugoslavia. Important areas such as Mount Nanos have probably been ungrazed since that time. Upland areas of Hungary have virtually no livestock and, though the land has been returned to the former owners after communism, they have difficulty finding a profitable use for it unless it is suitable for intensive maize or cereal production. It is vital to maintain the current level of financial support in these regions, which requires them to cut hay and prevents total abandonment. The latter would lead to rapid habitat deterioration and massive loss of butterflies.

Implications for structure of incentives and rules of CAP regime

3b.15 Low altitude semi-natural grassland should be maintained in a good condition by CAP support for pastoralism by designating them as areas of High Nature Value farmland. Landowners should be able to claim single farm payments on semi-natural grasslands without being in an Agri-environment scheme, provided these are grazed at least once a year, never fertilized and never ploughed or planted with vines or fruit trees. The situation is too urgent to require application and assessment for Agri-environment schemes. However, farmers receiving support for High Nature Value farmland should eventually be brought into such schemes.

3b.16 There are practical difficulties when there is common ownership of land but payments could be made to a 'commune' to ensure grassland is not abandoned. The commune could then employ a shepherd. Even in North and West Europe in countries bordering the Atlantic with year round grass pastoral systems, usually beef or sheep for meat, are completely uneconomic without support. Pastoral systems are under

even more threat in the drier and less productive parts of Southern Europe and are severely threatened in Eastern Europe (e.g. 25% of Estonia is abandoned)[12].

3b.17 A sustainable land management and rural development policy must ensure that there is sufficient incentive for young people to remain in farming and that areas of semi-natural pasture are not abandoned. Inappropriate re-afforestation schemes or biomass production should be resisted in areas of high butterfly diversity.

3b.18 Where appropriate Agri-environment schemes could provide further encouragement for biodiversity. For the most important sites Natura 2000 funding should be able fund appropriate management. However, Agri-environment schemes need to be designed carefully and need to be fliexible, as they can sometimes do more harm than good. For example, schemes with too rigid prescriptions are implicated in the extinction of some butterfly species eg *Colias myrmidone* in the Czech Republic [13]

3c Butterflies of intensive Lowland Habitats and their relationship with farming

Characteristic Butterfly and moth species of intensive lowland habitats and the habitat needs of these species.

3c.1 Few butterfly species are found in intensive lowland agricultural systems. If butterfly species are present they may be passing through or have come from remnants of suitable habitat nearby.

3c.2 The contrast with unimproved grassland or hay meadow can be dramatic. In semi-natural hay meadows in southern Europe sixty or more species of butterfly may be present in one meadow.

3c.3 The following species are associated with intensively farmed lowland regions: *Pieris rapae* and *Pieris brassicae,* crop pests*,* are found in arable brassica fields and disperse widely. *Maniola jurtina* and occasionally *Aphantopus hyperantus* can utilize pockets of semi-natural habitat. *Aglais urticae* and *Vanessa atalanta* are found as larvae on nettles in field margins or in grazed fields. *Coenonympha pamphilus* will survive on pockets of finer semi-natural grassland especially in the uplands. *Lycaena phlaeas* can be common on waste ground with docks. Migrant species such as *Colias croceus* or *Vanessa cardui* often cross arable fields and intensively grazed pasture and can utilize components within them. Woodland butterflies can occur in intensively managed farmland. *Pararge aegeria* is widespread in lowland woodland edge habitat and in some areas of the UK *Thecla betulae* will utilize blackthorn where the hedgerow management is not to extreme. *Satyrium w-album* will utilize *Ulmus* species growing as hedgerow trees.

3c.4 Similarly a restricted range of common moth species occupy field margins, waste ground, roadsides and within an intensive agricultural landscape. For example *Tyria jacobaeae* is found on ragwort *Senecio jacobaea* but even this species is declining.

Habitat needs of these species

3c.5 Heavily fertilized ryegrass pasture cut early for silage or otherwise heavily grazed cannot be utilized by even the commonest and most widely distributed species such as *Maniola jurtina*. If these are present then they have come from roadside verges, unploughed banks and the corners of fields where there is semi natural grassland and it remains uncut and ungrazed long enough for them to complete their life cycle.

3c.6 Again in arable farmland it is field margins, un-cropped areas such as ditches or roadside that provide habitat for the restricted range of species present. Set-aside

can provide habitat for some species such as *Aricia agestis* if it remains unploughed for a few years and is unsprayed for long enough.

Implications for farming practice in the intensive lowland habitats.

3c.7 If the EU has any commitment at all to preserving Biodiversity it cannot allow the same mistakes that have been made in North West Europe to be repeated in the accession countries of Eastern and Southern Europe.

Implications for structure of incentives and rules of CAP regime

3c.8 The wildlife value of seriously intensive agriculture, both livestock farming and arable, is so poor that members of wildlife organisations particularly would find it very difficult to see the public benefit of so much public money. With agricultural commodity prices rising, the public is rightly sceptical of the necessity of EU subsidies in these circumstances.

3c.9 Pillar 1 funding through single farm payments is a huge financial burden on the EU and underwrites an onslaught on biodiversity that has being getting worse over the last fifty years. Even 'Set-aside' with some marginal conservation benefits has now ceased. At the very least much stronger cross compliance should compel intensive lowland farmers to conserve or promote biodiversity on their farms or to be denied payment altogether. With wheat at £170 per ton, the public is rightly indignant. There are other interests, notably shooting, that would encourage landowners to put at least 5% of their land area into primarily conservation management. This should be the bare minimum for any Pillar 1 payments on lowland arable land or lowland improved pasture. Voluntary Agri-environment schemes where appropriate could encourage them further.

3c.10 These farms could now be 'competitive' without EU subsidies and as the public rightly expects 'public goods' for 'public money' CAP payments are no longer justified. The five figure cheques received annually by some farms have no public support and provide an ideal opportunity to pay for 'environmental goods' of one form or another.

3c.11 As biofuel production and biomass production worldwide reduce the global surpluses in commodity prices the need for public subsidies to these farmers is greatly reduced.

3d Butterflies of marginal Habitats especially wet grassland and bogs and their relationship with farming

Characteristic Butterfly and moth species of wet grassland and bogs

3d.1 Another smaller group of scarce butterflies is associated with wet grasslands and bogs at low altitude. These have been decimated by agricultural improvement over several centuries and are probably the most rapidly declining group of butterflies in Europe. Outside Scandinavia only highly fragmented and small remnant pockets remain of this habitat, often with some protected status. In Scandinavia it is an important and common habitat though rarely 'farmed'.

3d.2 Many such areas are threatened by lowering water tables or encroachment by woodland. Typical are the bogs of the southern Ardennes in Belgium which still have *Boloria eunomia, Boloria aquilonaris, Lycaena helle, Coenonympha tullia* etc in a country where 15 species of butterfly have become extinct already[14]. In France the Marais de Lavours reserve has the 5 species of *Maculinea* as well as *Coenonympha oedippus* and *L. dispar*. More threatened are the wet grassland areas of the Orseg National Park in Hungary with abundant *Maculinea telejus* and *M. nausithous*. Here the hay from sporadic hay making is used only as a source of fuel in power stations as there is no livestock to consume it. Some of the most threatened butterfly species are found in this habitat with *Coenonympha hero* a notable addition to the above list of species[1].

Habitat needs of these species

3d.3 The key component of the habitat needs of this group of butterflies is the need to ensure that the habitat remains open despite the absence of grazing by domesticated animals.

Implications for farming practice in the wet grassland and bogs

3d.4 Support should be given for maintenance of very low intensity seasonal grazing to keep the habitat open.

Implications for structure of incentives and rules of CAP regime

3d.5 EU Forestry policy should avoid planting conifers on these sites and should maintain the current water table.
Though the CAP has some influence on these habitats it is more important that funding is improved for the management of Natura 2000 sites to directly protect the most important habitats.

Summary of key issues for agriculture policy

4.1 Ensure that Pillar 1 support delivers public goods for public money and that high standards of environmental amelioration are built in to cross compliance mechanisms.

a) Provide adequate support for farmers particularly in areas of High Nature Value Farmland, especially in the mountains that delivers a sustainable land management and rural development policy. It is essential to halt land abandonment and to ensure existing farmers and in particular their children see a future for farming.

b) Ensure that support for High Nature Farmland preserves biodiversity for all species including butterflies and moths and resists the pressure to increase food production at the expense of everything else. The CAP must remove all incentives for farmers to plough up or bring into intensive management all remaining High Nature Value farmland. Designation of all European Prime Butterfly Areas as areas of High Nature Value Farming would be an important step in this process.

c) Provide Agri-environment schemes to help implement the above that are well suited to their purpose, take full account of the needs of the wildlife present.

d) Provide adequate financial support to ensure the proper management of Natura 2000 sites.

e) Ensure that re-afforestation and biomass production schemes are not targeted at High Nature Value farmland.

5. Conclusions –

5.1 The imminent review of the EU's budget offers an unprecedented opportunity to reform and modernise the Common Agricultural Policy (CAP). BCE believes that this opportunity must be taken to complete the move from a policy that has driven environmental degradation and biodiversity loss, to one that supports a sustainable and prosperous farming and land management sector across the EU.

5.2 The CAP was not designed to tackle the challenges agriculture and land management face in the 21st century: continuing biodiversity decline, water pollution and unsustainable abstraction, soil degradation, accelerating climate change and ever-increasing demand for food and energy. In spite of recent reforms that have reduced the negative impacts of the CAP, the environmental consequence of how Europe's land is managed continues to cause concern across the continent. Further reform is therefore necessary if the EU is to support sustainable agriculture and rural communities and meet its environmental goals and commitments. This document outlines BCE's vision for the future of the CAP and makes the following key recommendations:

1. **Establish a sustainable land management and rural development policy**
   Create a new sustainable land management and rural policy for Europe, building on the current Rural Development Regulation, but targeted at environmental sustainability, with support for land management, which delivers the social and environmental priorities of the European Union.

2. **Ensure that sufficient funding is dedicated to securing public goods**
   The principle of public money for public goods should be at the core of the CAP's successor and of all future spending on land management and rural development. Funding should be adequate for it to meet its goals and should be provided from the current direct subsidy pot.

3. **Deliver good management of Europe's protected areas**
   The Natura 2000 network is designed to protect Europe's species and their habitats, and is the EU's most far-reaching effort to halt biodiversity decline yet. The future CAP should play a key role in delivering good management on Natura 2000 sites through targeted agri-environment schemes and Natura 2000 payments.

4. **Support High Nature Value farmland**
   Put in place adequate EU policies and funding for the maintenance of High Nature Value farmland, the continued management of which is necessary for the survival of farmland butterflies and other biodiversity.

5. **Ensure environmental schemes deliver their objectives**
   Improve the quality of rural development and agri-environment schemes so that they deliver their environmental objectives.

6. **Put policies in place to adapt to and mitigate climate change**
   Create the policy framework to ensure that EU agriculture reduces its own greenhouse gas emissions and contributes to mitigation through sustainable bioenergy. Adaptation measures that ensure the future delivery of public goods, such as land management that helps wildlife adapt to climate change, should also be supported.

Appendix I

Butterflies restricted to Alpine, Sub-alpine and Montane habitats and occurring only in the Alps

Genus Species	English
Pyrgus warrenensis	Warren's Skipper
Pyrgus cacaliae	Dusky Grizzled Skipper
Parnassius phoebus	Small Apollo
Polyommatus eros	Eros Blue
Agrodiaetus humedasae	Piedmont Anomalous Blue
Boloria thore	Thore's Fritillary
Boloria pales	Shepherd's Fritillary
Melitaea asteria	Little Fritillary
Melitaea varia	Grisons Fritillary
Coenonympha gardetta	Alpine Heath
Coenonympha gardetta darwiniana	Darwin's Heath
Erebia eriphyle	Eriphyle Ringlet
Erebia claudina	White Speck Ringlet
Erebia flavofasciata	Yellow-Banded Ringlet
Erebia christi	Ratzer's Ringlet
Erebia pharte	Blind Ringlet
Erebia sudetica	Sudeten Ringlet
Erebia aethiopella	False Mnestra Ringlet
Erebia mnestra	Mnestra's Ringlet
Erebia tyndarus	Swiss Brassy Ringlet
Erebia nivalis	De Lesse's Brassy Ringlet
Erebia calcaria	Lorkovic's Brassy Ringlet
Erebia scipio	Larche Ringlet
Erebia meolans	Piedmont Ringlet
Oeneis glacialis	Alpine Grayling
TOTALS	**25 Species**

Butterflies restricted to Alpine, Sub-alpine and Montane habitats and occurring in the Alps and other Mountains

Genus Species	English
Pyrgus cirsii	Cinquefoil Skipper
Pyrgus bellieri	Foulquier's Grizzled Skipper
Euchloe simplonia	Mountain Dappled White
Pieris ergane	Mountain Small White
Pontia callidice	Peak White
Plebejus trappi	Alps Zephyr Blue
Agriades pyrenaicus	Gavarnie Blue
Agriades glandon	Glandon Blue
Albulina orbitulus	Alpine Blue
Boloria titania	Titania's Fritillary
Boloria napaea	Mountain Fritillary
Melitaea parthenoides	Meadow Fritillary
Melitaea aurelia	Nickerl's Fritillary
Melitaea britomartis	Assmann's Fritillary
Erebia manto	Yellow-spotted Ringlet
Erebia epiphron	Mountain Ringlet
Erebia melampus	Lesser Mountain Ringlet
Erebia aethiops	Scotch Argus
Erebia triaria	de Prunner's Ringlet
Erebia alberganus	Almond-eyed Ringled
Erebia pluto	Sooty Ringlet
Erebia gorge	Silky Ringlet
Erebia pronoe	Water Ringlet
Erebia stirius	Styrian Ringlet
Erebia styx	Stygian Ringlet
Erebia montana	Marbled Ringlet
Erebia neoridas	Autumn Ringlet
Erebia oeme	Bright-eyed Ringlet
Erebia pandrose	Dewy Ringlet
TOTALS	**30 Species**

Butterflies with a wider distribution in European Mountain Habitats

Genus Species	English
Parnassius apollo	Apollo
Elphinstonia charlonia	Greenish Black-tip
Elphinstonia penia	Eastern Greenish Black-tip
Pieris bryoniae	Mountain Green-veined White
Pieris balcana	Balkan Green-veined White
Colias phicomone	Mountain Clouded Yellow
Colias palaeno	Moorland Clouded Yellow
Colias libanotica	Greek Clouded Yellow
Colias caucasica	Balkan Clouded Yellow
Lycaena candens	Balkan Copper
Lycaena thetis	Fiery Copper
Plebejus pylaon	Eastern Zephyr Blue
Plebejus hespericus	Western Zephyr Blue
Plebejus optilete	Cranberry Blue
Agriades zulluchi	Zullich's Blue
Polyommatus eroides	False Eros Blue
Polyommatus menelaos	Taygetos Blue
Agrodiaetus fabressei	Oberthur's Anomalous Blue
Agrodiaetus violetae	Andalusian Anomalous Blue
Agrodiaetus virgilius	Forster's Furry Blue
Brenthis hecate	Twin-spot Fritillary
Boloria aquilonaris	Cranberry Fritillary
Boloria graeca	Balkan Fritillary
Esperarge climene	Lesser Lattice Brown
Coenonympha leander	Russian Heath
Erebia euryale	Large Ringlet
Erebia orientalis	Bulgarian Ringlet
Erebia rhodopensis	Nicholl's Ringlet
Erebia gorgone	Gavarnie Ringlet
Erebia ottomana	Ottoman Brassy Ringlet
Erebia cassioides	Common Brassy Ringlet
Erebia lefebvrei	Lefèbvre's Ringlet
Erebia zapateri	Zapater's Ringlet
Erebia melas	Black Ringlet
Erebia palarica	Chapman's Ringlet
Erebia sthennyo	False Dewy Ringlet
TOTALS	**36 Species**

References

[1] Swaay, C.A.M. & Warren, M.S. and Lois G., (2006) Biotope use and trends of European Butterflies J. Insect Conservation 10:189-209.

[2] Van Swaay, C.A.M. & Warren, M.S. (1999) Red Data Book of European butterflies (Rhopalocera). Nature and Environment, No. 99, Council of Europe Publishing, Strasbourg.

[3] Balmer O., Erhardt, A. (2000) Consequences of Succession on Extensively Grazed Grasslands for Central European Butterfly Communities: Rethinking Conservation Practices. Conservation Biology 14 (3), 746–757

[4] Dolek, M. and Geyer, A. (2002) Conserving biodiversity on calcareous grasslands in the Franconian Jura by grazing: a comprehensive approach. Biological Conservation 104, 351-360

[5] Fox, R., (2005) The State of Britain's Larger Moths. Butterfly Conservation, Wareham.

[6] Van Swaay, C.A.M. (2007) Workshop Development of the methodology for a European Butterfly Indicator. Report VS2007.006, De Vlinderstichting,Wageningen

[7] Kudrna, O. (2002) Distribution Atlas of European Butterflies. Oedippus, Schweinfurt.

[8] Wilson, R.J., Gutiérriez, J., Gutiérriez, J. and Monserrat, V.J. (2007) An elevational shift in butterfly species richness and composition accompanying recent climate change. Global Change Biology 13, 1873–1887.

[9] Van Swaay, C.A.M & Warren, M.S. eds (2003) Prime Butterfly Areas in Europe : Priority sites for conservation. National Reference Centre for Agriculture, Nature & Fisheries, The Netherlands

[10] Poux, X. et al. (2006) Study on environmental consequences of Sheep and Goat farming and of the Sheep and Goat premium system. DG environment.

[11] Schmidt, T. and Rakosy, L, (2007) Changes of traditional agrarian landscapes and their conservation implications: a case study of butterflies in Romania. *Diversity Distrib.*13, 855–862

[12] Rakstina N., Mulder H. and de Wilde H, (2004) Land abandonment and biodiversity, in relation to the 1st and 2nd pillars ofthe eu's common agricultural policy; outcome of an international seminar in sigulda, latvia, 7-8 October, 2004

[13] Konvicka, M. , Benes, J., Cizec, O., Kopecek, F., Konvicka, O., Vitaz, L. (2007) How too much care kills species: Grassland reserves, agri-environmental schemes and extinction of *Colias myrmidone* (Lepidoptera: Pieridae) from its former stronghold. J. Ins. Cons (in Press)

[14] Lafranchis, T. , (2000) Le Papillons de France, Belgique Et Lunxembourg et leurs chenilles. Parthenope.