

## **LANDSCAPE SCALE CONSERVATION OF BUTTERFLIES IN SUBALPINE HAY MEADOWS BY ROMANIAN SMALLHOLDERS**

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This presentation describes research undertaken in 2005 and 2006 in the village of Moeciu de Sus (county of Braşov) as part of an interdisciplinary doctorate (ecology and social anthropology). The purpose of this work was to research the links between meadow management practices and butterfly species and to place these findings within a wider understanding of the smallholding production system in the village.

Forty-six butterfly species were recorded on eight transects during the course of the two summers indicating the high nature value of meadow management practices. Excepting inputs of labour, meadows are managed at a low intensity (e.g. low levels of fertilization, grazing and maximum of two cuts of hay per summer). Correlations between the number of butterfly species that breed in the meadows and the intensity of meadow management revealed a significantly negative relationship.

Exploration of the butterfly data using multivariate statistical techniques further revealed why smallholding based livestock production in Moeciu de Sus acts to conserve a range of butterfly species associated with the hay meadow habitat. There are approximately 700 hectares of hay meadows worked by 230 or so households in this village. Each household's smallholding comprises several small meadows each managed in subtly different ways (e.g. timing of grazing, level of dunging, timing of mowing). In combination with variations in the natural environment, the idiosyncratic management of several hundred small meadows results in spatially heterogeneous vegetation between (and sometimes within) meadows. This provides the conditions in which a large number of butterfly host plants, many of which have differing ecological requirements, can exist.

Differences in the timing of the hay cut also introduce temporal heterogeneity into the vegetation of the meadow landscape. The presence of late cut meadows, uncut meadows and patches of more natural unmanaged vegetation counteracts the destructive impact of mowing on immature butterfly stages and the removal of breeding and feeding habitat for the adult stages of species that emerge relatively late in this location e.g. *Melanargia galathea*. The spatial and temporal heterogeneity introduced into the meadow habitat by smallholders could not be replicated by conservationists at an equivalent landscape scale.

Raising livestock on a smallholding is a necessity for the majority of the households in the village at the present time. This necessity is likely to lessen as opportunities for more stable and substantial incomes increase. The communal herding element of the production system is already threatened as shepherds leave the profession for less arduous livelihoods. The challenge remains to create incentives that will make low-intensity smallholding based production and shepherding a relevant and attractive component of livelihoods in mountain areas.