

S-22.3

Mountain hay meadows: assessing the loss of surfaces and ecosystem services in Iberian areas

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Hay meadows, agro-ecosystems established and maintained by human secular actions of extensive management, are disappearing all over Europe, especially in mountain areas where they represent key High Nature Value Farming systems for biodiversity and ecosystem services. In recent times, also mesophile hay meadows in South-West Europe, an European priority habitat registering a poor conservation status, have lost significant part of their area. This disappearance is due to abandonment, intensification or urbanisation, driven by changes in land management and rural socio-demographic decline.

This study is aimed at assessing the loss of mountain hay meadows in the North of the Iberian Peninsula and its consequences for ecosystem services, focusing on selected pilot areas currently protected as Natura 2000 sites. A diachronic analysis of these habitats was carried out through detailed land use mapping for three different periods, from the 1960s to the present, representing areas covered by hay meadows over time. Once identified, land use changes during the time under consideration have been quantified and analysed, as well as the drivers responsible for those changes. The conceptual framework of the Millenium Ecosystem Assessment was then applied to identify and discuss the most relevant consequences of change on ecosystem services.

Results showed that, over the last 60 years, some study areas have lost up to 68% of hay meadows progressively, although at a higher rate in the latest years. A relationship between abandonment and slope and distance to inhabited areas has been also observed. Findings suggest that the observed abandonment process may lead to a loss of biodiversity (domesticated species) and impacts in the supply of strategic ecosystem services such as genetic resources, safe and healthy food products, traditional knowledge or fire risk protection. Interactions between hay meadows loss, ecosystem services, demographic processes and agricultural structural changes are finally discussed.

S-22.4 Hekkala

S-23 -Cost-effectiveness of ecological restoration based on ecosystem service

S-23.1

Cost-effectiveness of different restoration approaches - an example from LIFE to alvars project

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Estonia has experienced a major loss of alvar grasslands (6280* Nordic alvar and precambrian calcareous flatrocks) in the past 40 years due to abandonment, forestation and inadequate grazing regime. Main threat to these valuable diverse calcareous grasslands is overgrowing with junipers and pine trees after grazing has ceased. This has caused the loss of nearly 85% of the alvar habitat in Estonia.

LIFE to alvars project is targeting the key areas of alvar habitat in Western Estonia aiming to restore 2500 hectares of alvars and re-establishing grazing in the restored areas.

To obtain maximum benefits for biodiversity and ensure spontaneous colonisation of target species, landscape-scale species dispersal was considered when selecting sites for restoration. Landscape-scale restoration allowed to save from species re-introduction efforts and also ensured the development of self-sustainable, viable habitats. Main challenge of the project was to match the large areas needed to restore (2500) with allocated funds and period. To achieve the most cost-effective restoration, it was decided to use the forestry and agricultural machinery instead of previously used hand-held machinery. However, as there was little or no previous experience in alvar restoration using such heavy machinery, and this also met strong resistance from local people at the beginning, who preferred less invasive, but very laborious restoration by hand. Four different types of machinery were successfully tested and are now used in alvar grassland restoration process. In 3,5 years 80% of the targeted area has already been restored. As the work is quicker, less expensive and with better quality compared to the restoration done by hand, the method has now also gained support of local people. We provide overview of costs of different tested restoration methods and discuss the practices that we consider the most effective regarding biodiversity and restoration cost.

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