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Evaluating the potential of prescribed burning for the biodiversity conservation of European grasslands

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Abstract

Prescribed burning, the planned and controlled application of fire, is a well-established tool for biodiversity conservation in a plethora of habitats globally. In European grasslands that are threatened hotspots of biodiversity, prescribed burning management has the potential to address challenges related to several threats such as abandonment, climate change, or invasive species. However, its potential is seldom realized both in experimental and real-world conditions. We reviewed the European studies on prescribed burning in grasslands and evaluated the potential contributions of prescribed burning to the conservation of European grasslands (Valkó & Deák 2021). None of the reviewed studies applied natural-like fire regimes, but used either yearly burning of the same parcels for many years or tested the effect of a single prescribed fire event. Too frequent burning does not resemble natural fire regimes and does not allow the regeneration of the vegetation between burns, hence many of these studies found several negative effects of fire on biodiversity. Studies on single prescribed fires often had more promising results than those applying yearly burning, however the favourable short-term effects are less persistent than in case of a complex fire regime with well-suited fire return intervals. To increase the potential of prescribed burning in the management of European grasslands, we suggest adapting the fire regime concept in future studies to determine optimal PB regimes based on experimental approaches, paleo-data, and the disappearing traditional ecological knowledge.

Keywords: biodiversity conservation, European grasslands, grassland management, prescribed fire, review

References

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