Ecological, Economic, and Social Dimensions of Using Summer Fire to Restore Ecosystems in the Southern Plains of the US

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North American prairies evolved under episodic wildfires, including extreme fires that occurred mainly during the summer. Together with overgrazing, exclusion of fire from these ecosystems has contributed to the conversion of many grasslands and savannas to woody shrublands and an associate decline in biodiversity. A key issue for cost-effectively restoring the health of Southern Plains ecosystems is the reintroduction of periodic extreme fires. However, long-term promotion of anti-fire sentiments and lack of rigorous studies about the ecological, economic and social implications of applying extreme fires have led to public resistance to the use of extreme fire and the NRCS's reluctance to endorse its use. Few studies have simultaneously addressed the ecological and socio-economic dimensions of applying specific rangeland restoration practices. Our study was designed to address four objectives in three ecosystems in Texas, The Rolling Plains, the Edwards plateau and the South Texas Plains. The first three objectives are: (1) Quantify the ecological impact of extreme fires; (2) Evaluate the economic efficiency of using extreme fire as a rangeland restoration tool; and (3) Evaluate landowner perspectives regarding the application of prescribed fire in general and extreme fire in particular. We present preliminary findings pertaining to these objectives. Extreme fire appears to be very effective in reducing woody plant density, especially non-coppicing species, while revitalizing perennial herbaceous plant cover; extreme fire is economically superior to other woody plant reduction methods; and membership of prescribed burning associations appears to substantially increase landowner willingness to apply prescribed fire, including extreme fires.

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