Optimizing Fuels Management for Wildfire Risk Reduction in Florida

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Abstract: Wildfires in the United States result in total damages and costs that are likely to exceed billions of dollars annually. Land managers and policy makers propose higher rates of prescribed burning and other kinds of vegetation management to reduce amounts of wildfire and the risks of catastrophic losses. A wildfire public welfare maximization function, using a wildfire production function estimated using a time series model of a panel of Florida counties, is employed to simulate the publicly optimal level of prescribed burning in an example county in Florida (Volusia). Evaluation of the production function reveals that prescribed fire is not associated with reduced catastrophic wildfire risks in Volusia County Florida, indicating a short-run elasticity of -0.16 and a long-run elasticity of wildfire with respect to prescribed fire of -0.07. Stochastic dominance is used to evaluate the optimal amount of prescribed fire most likely to maximize a measure of public welfare. Results of that analysis reveal that the optimal amount of annual prescribed fire is about 3 percent (9,000 acres/year) of the total forest area, which is very close to the actual average amount of prescribed burning (12,700 acres/year) between 1994-99.