

THE PUU ANAHULU WILDFIRE MANAGEMENT STUDY: DEVELOPMENT OF ROADSIDE FUELS REDUCTION TECHNIQUES FOR LEEWARD HAWAI‘I

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ABSTRACT

Invasion of native lowland dry forests and shrublands on the island of Hawai‘i by fountaingrass (*Pennisetum setaceum*) has created a fine fuel bed capable of carrying surface fires at frequent, regular intervals. A corresponding expansion of the human population into arid leeward areas has resulted in an increase in roadside ignitions. These two factors are contributing to the conversion of native dry forest and shrubland to savanna and grassland, and have resulted in dramatic declines or extinction of >30 endemic plant and animal species. The new fire regime also increasingly threatens life and property throughout the northwest region of the island. In an effort to develop and refine roadside fuels management techniques that could break this cycle, we evaluated the effects of single applications of prescribed burning, cattle grazing, and aerially applied herbicide, applied alone and in combinations between January and May 2004. Fuel loading, vegetation response, and soil seedbank composition were monitored over a 1-y period. Prescribed burns were the first burns conducted on state land and entailed extensive cooperative planning and coordination by local state, county, and federal land management and civil service agencies. Burns caused an immediate reduction in fountaingrass fuel load. Cattle grazing was not effective in reducing fuel loading in this study due to low stocking rates applied. Aerially applied glyphosate herbicide effectively killed the grass and initiated a process of decomposition. Glyphosate treatments resulted in a release of the existing and predominantly nonnative soil seedbank. The combined burn \times graze \times glyphosate treatment resulted in the greatest increase in plant species richness (mean = 5).

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