IMPACTS OF ALIEN ANNUALS ON MANAGEMENT OF ANTELOPE BITTERBRUSH AND BIG SAGEBRUSH COMMUNITIES

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ABSTRACT

Cheatgrass (*Bromus tectorum*) and other alien grasses have invaded and now occupy extensive areas in big sagebrush (*Artemisia tridentata*) and mountain brush communities of the Intermountain region. These winter-annual grasses complete growth in early summer, producing highly flammable fuel which has increased fire frequency and altered the composition of native communities. Annual weed species persist and spread with more frequent fires, but fire response differs among populations of shrub species. Some antelope bitterbrush (*Purshia tridentata*) populations are fire tolerant and resprout following burning, while others are unable to survive a single fire event. Distribution of resprouting antelope bitterbrush ecotypes within the Intermountain region has been mapped and correlated with site conditions and plant characteristics. Fire tolerance appears to be a genetic attribute correlated to introgression with closely related *Purshia* taxa. Most subspecies and ecotypes of big sagebrush do not resprout following burning. Their recovery is dependent upon natural seeding. However, cheatgrass fires have increased in frequency to the extent that destruction of seed-bearing plants and depletion of seed banks preclude recovery without reduction of weedy competition and artificial seeding. Wildfires ignited within cheatgrass-dominated shrublands are now spreading to adjacent forested communities, seriously impacting forest management and fire ecology. Management of remaining shrub communities must consider control and invasive features of annual weeds, and recruitment attributes of native shrub species and ecotypes.

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TEN-YEAR RESULTS OF CONTROLLED BURNING IN A PONDEROSA PINE-BUNCHGRASS SAVANNA

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ABSTRACT

Near Kamloops in the British Columbia interior, a series of small plots were control-burned during the summer of 1977 after detailed botanical assay. Fire parameters were recorded, and soil and vegetation responses to burning were measured in detail for 3 years after the fires. Ten years later measurements were repeated. Results indicate that most effects of the fires were only temporary—an increase in N content of grasses, reduction in fine fuels, and slight shifts in soil chemistry. Undesirable sagebrush and rabbitbrush plants were eradicated. We concluded that light surface fires enhance grazing quality and cause no environmental harm.

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