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Post-fire grazing considerations

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There are a variety of objectives for prescribed fire in addition to preventing catastrophic fire, including improving forage quality and quantity; reducing shrub or tree density and dominance in order to promote herbaceous forage or maintain a specific habitat type; and preventing successional advance.

One challenge for both prescribed and wild fires is vegetation recovery after the fire. Recovery is highly dependent on the vigor of the plant community before the fire, moisture during the spring immediately following the burn, and competition from undesirable plants that may establish in the first growing season post-burn. On many Washington rangelands and forests, when and how to resume livestock grazing is one issue to be considered, given the quantity and value of forage involved.

Post-fire management goals should begin with soil conservation and consider water quality. Soil conservation will almost always include re-establishment and promotion of grasses, the plant type most necessary for holding down soil. The resumption of grazing should be considered in light of the goal of grass establishment and soil conservation. What is the role of livestock in post-fire recovery and management?

Dense, leafy bunchgrasses such as Idaho fescue are more susceptible to heat transfer to the root crown and more severe damage than stemmy bunchgrasses like wheatgrasses. These species, therefore, will need extra care for establishment. Research has shown that seed production on most bunchgrasses is higher in the growing season following the fire. This is a potentially useful response but it is also important to ask whether that seed established. The primary challenges to seed germination and establishment are spring moisture, competition from undesirable plants (usually annual grasses and weedy forbs), and soil coverage.

1. We have little control over moisture. Litter helps insulate the soil and prevent excess evaporation, but the condition of soil surface litter is largely dependent on the nature of the fire.

2. Competition we can direct somewhat. There are a few effective methods for controlling annual grasses and forbs. One method is early spring grazing before the bunchgrasses have invested heavily in vegetative growth and while annuals have decent forage value and are palatable. Another is to jump-start competition from desirable perennials. Research on cheatgrass, crested wheatgrass and bottlebrush squirreltail has shown these species effectively suppress cheatgrass if planted in the fall or spring immediately after the fire.

3. This brings us to considering how to encourage the perennials that we wish to occupy the site and the third, but most important, limiting factor in seed establishment – soil coverage. Native bunchgrasses require some soil on top of the seed, i.e., they will not usually germinate if sitting on top

of the soil, where they are subject to heat & freezing damage, predation, and desiccation. One solution, advocated for years in the rest-rotation grazing system, is to graze the bunchgrasses in the fall after seeds have set and use hoof action to push the seeds into the soil. Conventional wisdom is to wait 2-3 growing seasons post-fire before initiating livestock grazing, but this timeframe is given based on the assumption that it will take that long for grasses that are dependent on seed reproduction to "recover" such that they can withstand grazing pressure during the period of most rapid growth. However, jointed bunchgrasses are most susceptible to damage during the phase of internode elongation, usually in late spring and early summer, when the meristems (located at the nodes) are elevated above the plant crown and thereafter susceptible to removal by grazing animals. When the growing points meristems) are removed, the tiller dies. Moderate levels of utilization after seeds are mature will have minimal impact on plant health, provided residual is 4-6" on bunchgrasses, but can be the primary mechanism for facilitating seed-to-soil contact and significantly higher seed recruitment. Fall (or winter) grazing of perennial bunchgrasses has the potential to speed up recovery.

Grazing is a tool for vegetation management. Just as a hammer can drive nails or tear things apart, the application or misapplication of grazing management can advance rangeland/forest health or set it back. Grazing may be appropriate and beneficial soon after a fire – the key is to have defined goals, a good plan, and monitor the effects.