

Interaction of the Squires Fire with the Buncom Bowl woodland/chaparral fuel-reduction project, Applegate Valley, Southwest Oregon.

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ABSTRACT

The Buncom Bowl fuel-reduction project in the Applegate Valley of Southwest Oregon was burnt by the Squires fire (2002) before project completion. Prior plant community mapping, permanent transects, and established photo-points together with post-fire surveys provide an opportunity to view fire interaction with treated and untreated woodland and chaparral stands. Few oak stems and canopies remained alive the following spring in any of the stand conditions (handcut-piled-and-burned (HPB); handcut-and-piled only (HP), mechanically masticated (SB) and untreated), though vigorous sprouting from stem bases and roots was evident throughout the study area. Few oak patches survived either inside treated areas (HP and HPB) or untreated areas within the fire perimeter. Live trees outside of the treated areas were associated with gullies and ridge tops. Surviving individual oaks in (HPB) treated areas appeared scorched on the underside of branches, indicating that combustion of the herbaceous understory and duff layer produced enough heat to damage trees. Many oak trees in the HPB treated area appeared girdled at the base consequent to duff consumption by fire. Fuel-reduction prescriptions called for thinning manzanita to a specified interspace. Many of the remaining manzanita died from environmental stress following thinning prior to the fire. The rest were killed by the fire regardless of treatment, with many completely consumed by fire at the base. No madrone canopies survived the fire, though most individuals showed heavy basal sprouting. Seedlings of madrone and manzanita were evident throughout the study area the following spring. Vegetation response in an adjacent mechanically masticated and burnt area indicate that higher soil temperatures consequent to heavy surface fuels may have impacted the soil seedbank within the mechanically treated area. In general the strong response by resprouters, fire-dependent seedbank generated shrubs and geophytes (bulb plants), and the reappearance of shrubs and forbs not previously evident in the study area are characteristic of chaparral vegetation and its relationship to wildfire.

OBJECTIVE

Reduce fuel & restore historic vegetation composition and structure

Pre-fire stand structure included large Oregon white oaks surrounded by a younger cohort of oak saplings and manzanita estimated to be 120 years old.

METHODS

Handcut, pile, and burning

Shrubs and hardwoods were cut to a 20 – 30 foot stem spacing. The cut material was piled prior to winter/spring burning. While the piles in the above photo were burned prior to the Squires fire, piles in other areas remained intact at the time of the wildfire. An adjacent untreated area provided an opportunity to compare untreated and burnt with the two above-defined treatments (hand cut, and piled, with one treatment having piles burnt prior to the wildfire, and the other not). Seeding with sterile wheatgrass provided an opportunity to compare seeded and unseeded treatments within the burnt area.



Top-kill of oak and madrone



Photo (A) shows hand-cut piles, and a glimpse of pretreatment structure and fuel-loading. These piles were burned prior to the wildfire. (B) shows that herbaceous understory and duff left after the fuel-reduction treatment were sufficient to cause top-kill of trees during the wildfire. Fire consumption of duff and litter was apparently enough to girdle many oaks and madrones (C). Note that these observations are for an area that showed extreme fire-behavior.

Understory Response



Widespread flowering by blue dicks (*Dichelostemma congestum*). Other geophytes included cats ears (*B. Calochortus*) and *Triteilus* (*C*). Showy phlox (*D. Phlox speciosa*) was a common half-shrub. Common annuals included miners lettuce, tarweed, and clevers.

CONCLUSIONS

- Vegetation response to fire shows characteristics of chaparral
- Duff and litter remaining after fuel-reduction appears enough to girdle many oak and madrone trees
- The manipulation of fuels (creation of piles, treated versus untreated areas) influences the seedbank and consequent cover by the herbaceous community
- Patches of oak with live above-ground parts are distributed across fuel-reduction and untreated areas following the fire
- The above-defined patches of live trees with resprouting of top-killed trees results in a multi-aged stand