Red Alder Site Rehabilitation through Prescribed Fire
FRDA Project 2.6

FRDA Research Project 2.6 was conceived as a detailed, multidisciplinary study of nine silvicultural systems potentially useful for converting coastal alluvial hardwood (red alder) stands to conifers. Two of the proposed treatments involved burning six, 1.0 ha slash-and-burn plots in 2200 sph, 16-year-old red alder at Salvis. Previous unsuccessful attempts had been made by researchers and the Kalum Forest District to burn slash from similar young alder stands on the North Coast. Therefore, part of project 2.6 was to determine whether these early seral, hardwood brushfields could be burned at all.

A preliminary trial of the treatment was made at Naadleah Creek during the summer of 1986 following a 1985 slash-and-burn failure at Salvis. Alder on the flat, 6.5 ha Naadleah site were allowed to leaf out, were felled in June and burned to lower and concentrate the fuels. The opening was burned on August 7, 1986 using helicopter light-up and central ignition. Conditions at the time of burning were air temperature of 22.7 deg. C, relative humidity of 44%, FFM of 84, DMC of 32 and DC above 400. Observed fire behaviour included easy ignition, rapid spread and moderately easy control of the convection burn. The keys to the project's success were relatively high DMC and DC, and burning the felled stems. Bucked, concentrated slash burned while nearby, unburned and elevated tree slash did not ignite.

After the Naadleah success, the six 1.0 ha plots at FRDA 2.6 were felled and burned in June, 1987. On August 5, 1987 an attempt was made to burn two of the plots. Conditions at time of burning were air temperature of 20.8 deg. C, relative humidity of 65%, FFM of 84, DMC of 11 and DC of 275. Following helicopter light-up, the plots burned but not vigorously, and the burns did not convect. Light-up of the remaining four plots was delayed until August 10, at which time air temperature was 24.6 deg. C, relative humidity was 49%, FFM was 88, DMC was 19 and DC was 308. An identical ignition pattern produced acceptable burns in these remaining four, 1.0 ha plots which convected.

After the research plots burned, the Kalum staff decided to ignite the nearby 13 ha, slash-and-burn project which had failed to burn in 1985. This had been walked with a D-7 cat in the spring of 1987 to prepare the site for chemical site preparation. The cat crushed the unburned stems and aligned the slash to create access trails. Despite an abundance of green shrubs, and the previous unsuccessful burning attempt, the 13 ha site was successfully burned on August 10, 1987, two years after the stems were felled.

Based on the results of the Salvis, the Naadleah and two other similar slashburns in B.C., it can be tentatively concluded that in mixed hardwood-conifer fuel types in coastal B.C., fuel consumption of > 40% can be achieved by burning when the DC exceeds 300. Furthermore, for situations similar to Salvis, burning at approximately DC=310 and DMC=20 can double fuel consumption compared to burning at DC=280 and DMC=10.

In summary, red alderbacklog sites on flat, alluvial sites can be successfully burned if they are slashed and bucked to lower and concentrate the fuel bed. Prescribed fire can be used to remove the accumulated biomass without resorting to heavy machinery, and the treatment provides greatly improved access for planting and vegetation management work. The prescribed burns were not difficult to control; although guards were used, the unfelled red alder did not carry the fire beyond plot boundaries. Control of understory vegetation such as thimbleberry, red elderberry, and salmonberry will be moderate at best, however, because of the low severity of the burns.

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