



United States
Department of
Agriculture

Forest
Service

Intermountain
Region

Forest Health Protection
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Subject: Tree Survival Plots in 1994 Wildfires, Payette NF

To: Forest Supervisor, Payette NF

During the week of August 24, 1998, Ralph Thier, Phil Mocertini and I revisited our fire survival plots in French Creek (Jenkins) and Pony Creek drainages. This letter briefly summarizes our preliminary findings. A final report will be issued following the 1999 measurements, the fifth and final year of the study.

During the planning phases of the salvage effort after the 1994 wildfires, we helped the forest develop damage criteria for "imminently dead trees." After a preliminary literature search, it was apparent that damage/mortality relationships in grand fir and spruce/fir habitat types have not been well studied. The criteria which we jointly developed were based upon information in the literature, the experiences of the people involved, and some of our previous work in dry Douglas-fir habitat types within the Lowman Wildfire. The criteria used to classify a tree as "likely to live" or "likely to die" included species, size (DBH), amount of crown volume killed and the circumference of the cambium killed. A dichotomous key was developed for each species and these keys are attached to this letter.

Because there is limited information dealing with tree survivorship in underburned grand fir and spruce/fir habitat types, the forest requested that we install some 5-year survival plots. The data from these plots will be used to refine our criteria to predict mortality of ponderosa pine, Douglas-fir, grand fir, subalpine fir, lodgepole pine and spruce within a 5-year post fire period. The following information is a preliminary summary of the tree survivorship data as of August 1998.

In French Creek we are following 121 grand fir trees and 82 Douglas-fir trees within an area which was underburned by the 1994 wildfire. As of 1998, 41 percent or 50 of the grand fir trees have died. Thirteen percent or 11 of the Douglas-fir trees have died. We plan to continue to monitor these trees through 1999.

✓ Fifty two percent of the grand fir trees predicted to die using our salvage criteria have died as of August 1998. We expect some additional mortality in 1999 but mortality rates are declining. Fir engraver beetle (*Scolytus ventralis*) has been active in these plots, particularly during the 1996 and 1997 season. Beetle activity declined in 1998.

Figure 1 attached to this letter, displays the actual survival curve for grand fir trees in our French Creek plots from 1995 through 1998 and a projected survival curve based upon our salvage criteria.

✓ Similarly 15 percent of the Douglas-fir trees in our French Creek plots which were predicted to die have died as of August 1998. Douglas-fir beetle (*Dendroctonus pseudotsugae*) was detected in the plot in 1997 when 6 newly attacked Douglas-fir trees, were detected. In 1998 only 2 newly attacked trees, which are still green, were detected. Presently it does not appear that the Douglas-fir beetle population is very aggressive. Figure 2 displays the actual survival curve for Douglas-fir trees in our French Creek plots from 1995 through 1998 and a projected survival curve based upon our salvage criteria.

In Pony Creek, we are following 174 Douglas-fir trees and 44 ponderosa pine trees. As of 1998, 36 percent or 63 of the Douglas-fir trees have died. Sixteen percent or 7 of the ponderosa pine trees have died.

✓ Forty six percent of the Douglas-fir trees predicted to die using our salvage criteria have died as of August 1998. Douglas-fir beetle has been very active in these plots. Forty two of the 63 Douglas-fir trees which died were infested with Douglas-fir beetle. The ratio of 1996 attacks to 1997 attacks was 30:12. An additional 5 trees are currently attacked and will die by our 1999 visit. It appears that the beetle pressure is declining.

Figure 3 displays the actual survival curves for Douglas-fir trees in our Pony Creek plots from 1995 through 1998 and a projected survival curve based upon our salvage criteria.



✓ Fifty seven percent of the ponderosa pine trees predicted to die using our salvage criteria have died as of August 1998. Bark beetles attacking ponderosa pine trees are not very active in these plots. Three ponderosa pine trees were attacked prior to 1998 and 2 ponderosa pine trees were attacked in 1998.

Figure 4 displays the actual survival curve for ponderosa pine trees in our Pony Creek plots from 1995 through 1998 and a projected survival curve based upon our salvage criteria.

By studying survivorship data from these plots, we hope to more accurately predict the levels of mortality which can be expected in an underburn situation.

Julie Weatherby

JULIE WEATHERBY
Forest Entomologist

Enclosures: (8)

cc: District Ranger, New Meadows RD
B.Giles, Payette SO
G.Eckert, Payette SO
D.Jones, New Meadows RD
W.Rehberg, New Meadows RD
J.Irish, New Meadows RD

52% GF
15% D-L

Frenck Creek

46% D-L

Pony Creek

57% PP