

Effects of fire and firelines on active layer thickness and soil temperatures in interior Alaska

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Thaw depths and soil temperatures are compared for three adjacent sites in interior Alaska: an unburned stand of black spruce/feathermoss-*Cladonia* type; an adjacent stand, originally of the same type, burned in 1971; and a fireline between the two in which all of the vegetation and most of the organic layer was removed in 1971. Maximum thawing of the active layer in the unburned stand has ranged from 40 to 50 cm in the ten summers of the study. In the burned stand, the depth of thaw increased each year following the fire and reached a maximum thaw depth of 187 cm in 1980, about four times that of the original thaw depth. Thawing was deepest in the fireline and a maximum of 227 cm was reached in 1979. In 1980, the thaw depth was only 200 cm. This decrease has most likely resulted from the insulating effect of the re-establishment of the vegetation, especially a nearly continuous moss mat. Soil temperatures at 10 cm are given for each site for 1979 and show that during the summer months at that depth the temperatures were warmest in the fireline and coldest in the burned stand. Maximum, minimum, and average soil temperatures are compared for the three sites at depths to 200 cm and show that, at all depths, the yearly average temperatures are warmest in the fireline, intermediate in the burned stand, and coldest in the unburned stand.