WHY NOW IS A GOOD TIME
TO BE A BARK BEETLE IN COLORADO

-MOST OF COLORADO' S NATIVE FORESTS ARE CONIFEROUS

[Bark beetles are very host specific, and conifers support far more tree-killing bark beetles than do deciduous hosts. The reasons for this appear to be related to: 1) differing host responses to invasion (deciduous trees "fight back harder") and 2) differing nutrient quality in the phloem tissues of the two types of trees (the nutrient content in conifers is "worth the hassle" of overcoming pitch, perhaps).]

-IN GENERAL THE FORESTS ARE DENSE

["Natural disturbances", such as fire and beetle epidemics have been excluded or moderated to meet the needs of society. There has also been a reduction in cutting activity ("forest management") over the last several decades, which also contributes to the "thickness" of the forest. The longer natural processes are denied, the more likely they will occur at severe levels at a later time.]

-IN GENERAL THE FORESTS ARE OLD

[See discussion above under "Dense".] Bark beetles are responsible for an estimated 54% of natural deaths of overmature conifers. Most of the bark beetle species traditionally considered "pests" (members of the genus *Dendroctonus* in particular) attack trees greater than 8 inches in diameter at chest level. Given central Rocky Mountain growing conditions, such trees are usually at least 100-150 years old. Our spruce forests are even older, where the generation time of high-elevation forests may be on the order of 300 years or more.]

-IN GENERAL THE FORESTS ARE STRESSED

[Bark beetles are much more successful at killing trees predisposed to attack by stress. At present, the primary causes of tree stress are increased temperatures and reduced moisture levels, collectively called "drought". Evidence exists from southwestern U.S. weather stations that the growing season is lengthening (by as much as 55 days since 1940 at one New Mexico station), which in the case of certain multi-voltine bark beetles would allow an extra generation. The weather data also suggests winter events severe enough to regulate bark beetle populations (-20 degrees F or colder for durations of at least a few days) are occurring more frequently only during "the dead of winter" (December-February, as opposed to late fall or early spring), when bark beetles have altered their internal chemistry (compounds such as glycols that allow "supercooling") and are better able to withstand such events. Other factors include "people pressures" from development, recreational use, alteration of fire regimes, exotic species introductions, etc.].

Dave Leatherman, Colorado State Forest Service, Entomologist, March 2004