

Larch Beetle: The Big Picture

by Mimi Barzen and FH Staff

Another pest is here to bug us and our trees. Not any old tree will do however. It has to be a tamarack, but beyond that it isn't too picky. It refers to the larch beetle, a native bark beetle of Minnesota. Most folks have never heard of this insect, let alone seen the damage it can cause. The beetle can pack a wallop though.

In the early 1970's and 1980's, this tiny bug caused the loss of 593 million board feet of tamarack in eastern Canada. Around the same time, Alaska experienced mortality on more than eight million acres. To make matters worse, in some areas, 50 percent of the mortality occurred in just over two years.

Minnesota has not been isolated from this beetle. Notable outbreaks were documented as early as 1938 and again in the 1980's but nothing like in Canada or Alaska. But in 2000 and 2001, the population exploded in some locations, most noticeably in the Deer River, Cloquet, and Hibbing, Hill City and Aitkin Areas.

Larch beetles have been a part of the Minnesota landscape for decades, but the attacks have usually been associated with tamaracks predisposed to attack due to stress from drought, flooding, or defoliation. The size of the areas involved in an attack has usually been small. Mortality is usually confined to individual trees or small pockets of trees. In the last two years though, both the amount of mortality and the size of the areas affected has increased. Much of the mortality has still been confined to small pockets. However, some stands of 30 to 40 acres and larger have experienced over 75 percent mortality. Most attacks have occurred in northeastern Minnesota, but it is thought the mortality can be found throughout the natural range of tamarack in Minnesota.

What makes the larch beetle a bit more insidious is the fact that it's not discriminatory in its eating habits. Mortality has been found in stands ranging from 40 to 160 years in age; on lowland and upland sites; and in pure stands as well as mixed component stands. The damage is quite visible on the ground. As the beetles feast on the trees, woodpeckers feast on the beetles, leaving behind telltale signs that include mounds of bark chips at the base of trees and reddish or white boles, depending on how much bark a woodpecker flakes off as it searches for food. In late summer, needles of the affected trees begin to turn yellow, then brown, before falling off. The dieback begins at the bottom of the crown and works upward, leaving the green tops for last. This progression of mortality makes it difficult to see new damage from the air.

Larch beetle attacks have usually been associated with stressed trees. Although stress is likely a factor in some stands, it is thought the current pockets of mortality have more to do with the mild winter weather the past four years than with stress. Larch beetles normally overwinter as adults underneath the bark of host trees. In the spring, the adults emerge and fly to new host trees, laying



eggs. Most adults remain in the new host tree for the remainder of the summer. Those insects caught in the pupae or larval stages when winter sets in normally have a poor chance at survival. The mild winter conditions we've experienced since 1998 has increased the probability of non-adults successfully overwintering , thus creating higher populations in the spring, which cause higher than normal mortality.

A couple of stands that experienced high amounts of mortality in 2000 and 2001 were examined in March of 2002. Larch beetle populations appear to be much smaller in these stands than they were at this time last year. Cocoons of parasitic wasps were found in galleries under the bark and may be reducing populations of the larch beetle. Larch beetles will likely kill additional trees in these stands this summer but it appears that, at least in these stands, the population of beetles is declining.

There is really no way to predict the amount of additional damage the larch beetle will cause. However, when out checking stands, keep an eye on tamarack sites. Look for evidence of beetles and/or mortality. If beetle infestations are discovered, consider setting up a salvage sale. Since the market for tamarack is not very good, concentrate on salvaging older, larger diameter trees in purer stands. Utilize trees to at least a 4-inch top and if possible, whole tree skid and burn the slash the same year cutting takes place to decrease the emergence of adults the following spring.

Since some adults move to new host trees to overwinter rather than staying in the original host tree, consider adding a buffer strip to the sale approximately 1 chain wide. If the sale won't be harvested for a few years, the buffer may need to be increased to capture further dispersal of the beetles. If seed trees are left on the site, it is not likely that they will add significantly to the problem. However, most seed trees will likely be dead within a year of the harvest on sites where beetles are active. If seed has been dispersed, the seedlings will not be affected by the beetles.

Because aerial surveys are difficult at best in detecting pockets of mortality, it would help the forest health specialists if mortality information is passed on to the unit. The more information provided, the easier it will be to track and develop predictions for future infestations.