The Greater Santa Fe Fireshed Coalition

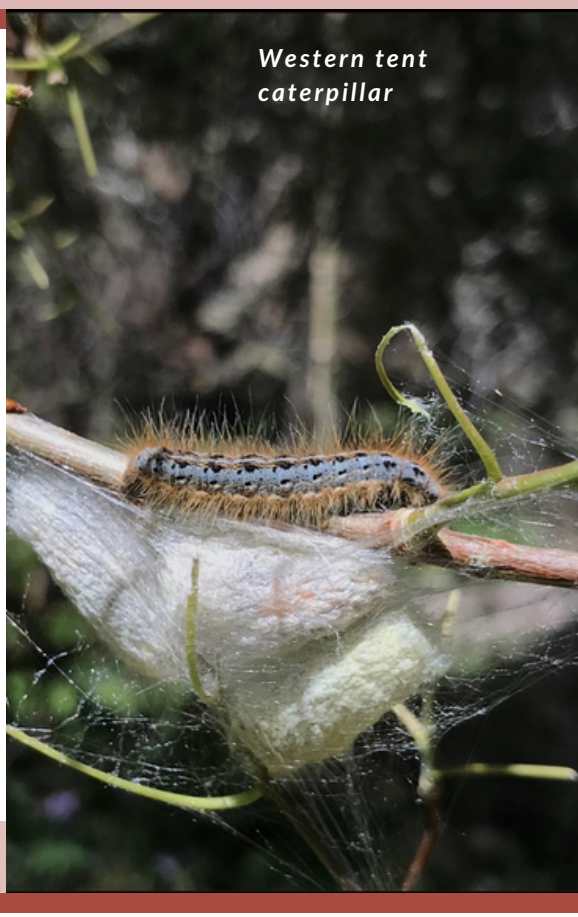
BRIEFING PAPERS forest health

santafefireshed.org

INSECT DEFOLIATION IN THE FIRESHED

ARE THOSE TREES DYING?

"Are those trees dying?" is a question forest health professionals hear quite often. To their credit, trees are more resilient than one would think. For example, many of the aspen in and around Aspen Vista on the Santa Fe National Forest have been completely defoliated by western tent caterpillar over the past several years. Fortunately, aspen can refoliate during the summer months following western tent caterpillar feeding. This allows the trees to gather resources before the autumn leaf fall. As a result, there has been little to no aspen mortality in the Aspen Vista area. Defoliation in conifers, however, is a different story. Conifers are unable to re-leaf following their initial flush of needles in the spring and, depending on the time of year, insect defoliation can have profound impacts on their health. Enter Janet's looper (*Nepytia janatae*), a native caterpillar that feeds on high-elevation conifers during the winter months. Loopers are moths in the geometrid family and are more commonly known as 'inchworms'. Janet's looper is a cryptic species and has rarely been observed in the wild; therefore, very little is known about the species.



Western tent caterpillar

WHICH MOTH IS IT?

- Defoliation outbreaks of geometrid moths in New Mexico has been attributed to the New Mexico fir looper, a cousin of Janet's Looper.
- New Mexico is the only state in which NM fir looper is known to occur.
- Outbreaks of New Mexico Fir Looper occurred in 1924, 1928, 1951, 1958, 1974, 1977, and 2002.
- Several consecutive years of heavy defoliation by New Mexico Fir Looper can result in high levels of tree mortality.

Janet's Looper was first described in 1967 by Fred Rindge, but its taxonomic status remains unclear, as there is considerable variation in caterpillar coloration and host feeding between Arizona and New Mexico. The first known outbreak of Janet's Looper in the southwest occurred in Arizona from 1996-1999 when over 10,000 acres of spruce and fir were severely defoliated. Interestingly, since the end of the outbreak in 1999, very few specimens of Janet's Looper have been collected in Arizona. The first Janet's Looper outbreak in New Mexico impacted over 10,000 acres on the Lincoln National Forest during the winters of 2005 and 2006. Because of the dramatic defoliation activity around the Village of Cloudcroft, NM, the Lincoln National Forest authorized aerial spraying of *Bacillus thuringiensis var. kurstaki* (Btk), a bacterium that targets and attacks moths and butterflies, in the National Forest lands surrounding Cloudcroft. The aerial application of Btk around Cloudcroft had noticeable effects on the outbreak population of Janet's looper in the area.

INSECT DEFOLIATION IN THE FIRESHED

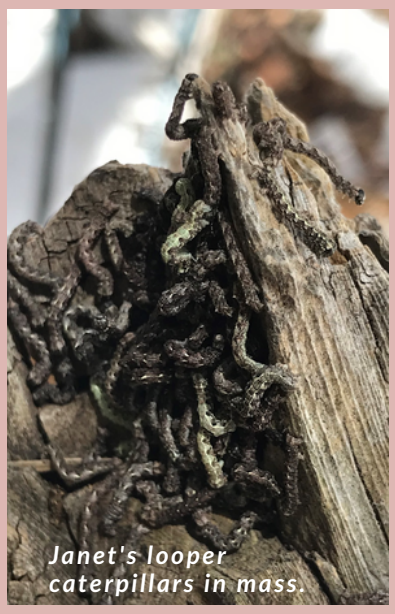
RED NEEDLES IN NM

The first Janet's looper defoliation activity (red tree crowns) on the Santa Fe National Forest (SFNF) was noticed along Hyde Park Road near the Big Tesuque Campground during the winter of 2017. Initially, the primary suspect was western spruce budworm (*Choristoneura freemani*), an insect that is active in the area. However, upon closer inspection, New Mexico State Forestry and US Forest Service, Forest Health personnel discovered an outbreak of Janet's Looper in the area. This was very surprising and only the second known outbreak of this species in New Mexico. To learn more about this species and determine the extent of defoliation damage, a special aerial detection survey was conducted in the spring of 2018 on the Santa Fe National Forest. It was determined that approximately 9,970 acres have been impacted on the Espanola and Pecos/Las Vegas Ranger Districts, and we are continuing to track this outbreak.

Janet's looper defoliation seen from Hyde Park Road

WHAT ARE THE IMPACTS OF JANET'S LOOPER ON TREE HEALTH?

Adult Janet's looper, male (right) and female (left)



Janet's looper caterpillars in mass.

The good news is, since Janet's looper is a winter-feeding insect, the conifer species being impacted (e.g. Douglas-fir, white fir and corkbark fir) can leaf-out normally in the spring, meaning the fresh new foliage is not being actively fed upon. However, that said, some of the trees are being completely defoliated by Janet's looper during the winter and these may succumb to mortality in the future, either from further Janet's looper feeding or from other forest insects. However, there is more good news; the Janet's looper outbreak on the Santa Fe National Forest will not last forever. It is expected that natural enemies of Janet's looper (parasitoids, viruses, birds, etc.) will naturally cause the outbreak populations to slowly decline until the entire population crashes, similar to the outbreak in Arizona.

This briefing paper was written by John Formby and Sherele Brooks, and was produced by the Forest Stewards Guild. It is based off of recent work from John Formby, Ph.D, New Mexico State Forestry, Forest Health Program Manager.

For more more information and to see all the briefing papers visit us at:

www.santafefireshed.org

The Greater Santa Fe Fireshed Coalition is a partnership of agencies, private organizations, and concerned citizens who are working to build resilient ecosystems, protect watersheds, and reduce wildfire risk to the forests and communities in and around Santa Fe.