

Jack pine budworm, (*Choristoneura pinus* Freeman) is an insect pest that can cause serious damage to jack pine by feeding on needles and pollen flowers. While it is similar in appearance and habit to the more familiar spruce budworm the jack pine budworm has been relatively inconspicuous for the last 25 years on the Forest Management License area until the summer of 2016.

In July of 2015 forestry and fire crews traveling by aircraft on Highway 6 north of Devils Lake noticed several patches of jack pine that had suddenly turned red and reported this to forest health specialists with Manitoba Conservation (Now Sustainable Development). Approximately 2,500 ha of mature jack pine had been heavily infested with jack pine budworm and the maturing larvae were feeding on the needles in the upper crown which quickly turned red when dead. Shortly after this time the larvae finished maturing, formed a pupae and 10 days later emerged as moths, spread out and laid eggs on more jack pine. When these eggs hatched later in the fall the tiny larvae hibernated over the winter in silken cocoons they spun under bark scales.

During the fall and winter of 2015/16 forestry staff from Manitoba Conservation and Tolko discussed strategies to harvest the damaged timber and the infected trees to reduce the spread of the budworm and attempt to slow or stop the outbreak. In the spring of 2016 Tolko sent two contractors from Wabowden and Cranberry Portage to salvage harvest in this area near Highway 6, about 70 km south of Tolko's Forest Management License Area. In July 2016 while the salvage operation was ongoing Sustainable Development staff began an extensive aerial survey of north western Manitoba looking for insect and disease outbreaks in the forest. These aerial flights, at lines spaced 20 km apart quickly identified the telltale red crowns of infected jack pine, this time extending from the outbreak north of Devil's Lake 150 km northward to the east end of Moose Lake. These surveys indicated that the size of the area infected had increased to 35,000 ha and there was a lot of area between the flight lines that had not been included in the survey. Less than two weeks later the provincial crews had completed intensive aerial surveys between the original flights. Now the infested area was thoroughly mapped and the size of the infected area was calculated to be 250,000 ha, containing enough wood to run the kraft paper mill for an estimated 37.5 years.

The implications of such a serious insect outbreak in the area are alarming for both Tolko and the provincial government. Due to the way jack pine budworm feed a widespread outbreak creates a serious potential for forest fires to spread and be difficult to control. While actual mortality of mature trees takes three years of heavy defoliation to occur, smaller trees in the understory can be killed earlier, and the buildup of dead needles on the ground and in the tree tops creates a 'ladder' for fire to easily climb to the crown. Jack pine budworm outbreaks are also associated with drought conditions that make this risk that much worse. Even short outbreaks can cause reduction in tree growth and volume loss and trees that are not killed may still be useful for pulp, but lose their sawlog potential. Outbreaks can last 2-4 years and may be ended by weather conditions, predators and parasites. Because the budworm initially feeds on the pollen cones the infestation can become so severe that the trees stop producing pollen which will then limit the spread.

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