Northwest Territories Forest Health Report 2013

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The Government of the Northwest Territories' department of Environment and Natural Resources (ENR) delivers forest health monitoring across the NWT. Annual aerial forest health surveys concentrate in areas identified as high risk, i.e. along major rivers and waterways. In 2013 aerial surveys encompassed over 4000 km of flight routes.

Overall, 141,268 hectares of the NWT were mapped as being affected by Spruce Budworm (*Choristoneura freemani*), Aspen Aerpentine Leafminer (*Phyllocnistis populiella*), Willow Blotch leafminer (*Micrurapteryx salicifoliella*), and the new addition to NWT – False Hemlock Looper (*Nepytia canosaria*).

Spruce budworm

Spruce budworm remains at relatively low levels since 2004 at 55,000 ha across the NWT in 2013, a 12% decrease (approximately 8,000 ha) from 2012. The majority of spruce budworm defoliation occurred in the Sahtu Region (64° 30'N to 66° 30'N) where the activity of this pest continues to be severe at or near the Arctic Circle (Fig.1). Another severely impacted area was mapped along Slave River in the South Slave Region (Fig. 2).

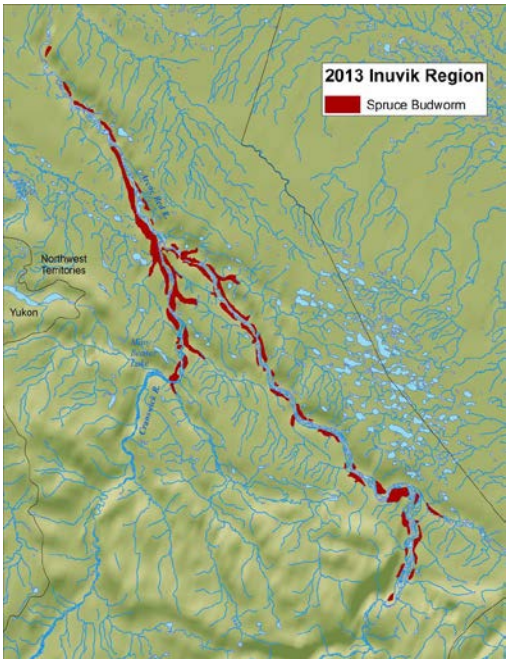

Figure 1. Areas along Arctic Red River near the Arctic Circle in Inuvik Region affected by Spruce Budworm (moderate to severe defoliation).

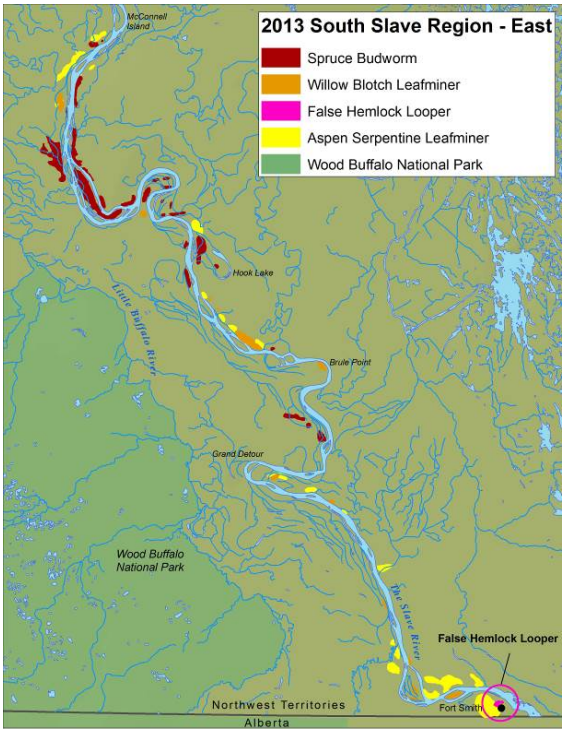

Figure 2. Areas along Slave River in the South Slave Region of the NWT affected by Spruce Budworm. Also shown are areas affected by Aspen Serpentine Leafminer, Willow Blotch Leafminer, and False Hemlock Looper (town of Fort Smith).

Aspen Serpentine Leafminer

Activity of Aspen Serpentine Leafminer appears to fluctuate from year to year with significant decrease of 50% in affected areas across the NWT compared to the previous year. Overall, 81,000 ha were moderately and severely affected in 2013, mostly in Deh Cho Region. The northern most areas affected by this pest were mapped in the Sahtu Region near Tulita.

Willow Blotch Leafminer

Willow Blotch Leafminer is one of the prevalent pests in the NWT; however, only 5148 ha of affected areas were observed in 2013 which was a 90% decrease compared to the previous year. The most affected areas were in the South Slave Region along the Slave River with small isolated patches in northern regions.

False Hemlock Looper

False Hemlock Looper is a new addition to pest activity in the southern NWT. It caused moderate defoliation of 120 ha of white spruce and jack pine in the town of Fort Smith.

ENR will continue to monitor the area in following years to verify potential establishment or expansion of this pest in the southern NWT.

Mountain Pine Beetle

Mountain Pine Beetle (MPB) was officially confirmed in the southern NWT in 2012 at three pheromone baiting locations along SW NWT border. Overwinter survival was noted in March 2013, albeit at low levels. Infested trees were sanitized in May 2013 and no baiting occurred later in the year.

MPB Pest Risk Analysis for NWT - Summary

Background

Given the eruptive nature of this bark beetle and its capability to spread in novel habitats, the NWT government views MPB as a potential threat to the forests and the people of NWT, and has started undertaking proactive measures to better understand this threat. One of these measures was the "Mountain Pine Beetle Risk Analysis for Northwest Territories Pine Forests" completed by JCH Forest Pest Management in 2013.

A pest risk analysis provides an overall risk rating for all of the inventoried pine stands of NWT by assessing the establishment and spread potential as well as the environmental, economic and sociocultural impacts. Risk assessment uses science based approaches to characterize the risk, and acknowledges uncertainties and gaps. Uncertainties are result of missing, inconsistent, or insufficient information. Identification of these uncertainties helps prioritize research needs.

Objectives of the Risk Analysis

1) Assess the likelihood of MPB invading NWT and the potential consequences to economic and environmental values, both in the short-term (2020) and long-term (2070);
2) Evaluate the potential response options that NWT government should consider to minimize both short- and long-term consequences;
3) Identify what additional information would provide a better understanding of the risk to NWT forests.

The level of risk for NWT pine forests

Overall risk as it pertains to likelihood of introduction, establishment, and spread potential of MPB in the NWT pine forests has been rated as low in the short term and medium in a long term. Similarly, impacts have been assessed as low in the short and

medium in a long term. The highest impacts in the short term were assessed to be on pine forests that are considered prime boreal woodland caribou habitat, and in the long term also on caribou habitat as well as community protection.

Climate warming is considered a key factor that will contribute to potential expansion of MPB in the NWT. Favorable weather conditions for several consecutive years are predicted to help synchronize populations and promote populations characterized by one year cycle (univoltine populations). In addition, higher brood productivity (even twice as many offspring) in so called naïve pine habitats is expected to further contribute to potentially eruptive activity of MPB. However, the return to average climatic conditions with cold snaps of long enough duration may reduce or eliminate populations.

Current climatic suitability models indicate that the cycle of endemic – incipient – brief eruptive behavior is expected to occur through the next 50 years and may be the signature of MPB in NWT unless new models indicate otherwise.

Key considerations for NWT government to minimize potential impact of MPB

1. Support research in the biology and epidemiology of MPB in novel forests (pine habitats that have not had a history experiencing MPB), particularly in jack pine forests.
2. Delineate management zones to differentiate between values (i.e. communities and boreal woodland caribou).
3. Provide aerial and ground overview survey training to staff.
4. Define the optimum tree-fading time period in northern forests for the purposes of aerial surveys.
5. Reduce uncertainties by conducting ground assessments of populations in easily accessible infestations.
6. Address remaining uncertainties as time and funding permits.

Acknowledgments

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