College of New Caledonia
CNC
Research Forest

# Spruce Beetle Monitoring:
# A Cumulative Summary of Three Years of Beetle Monitoring (2017-2019)

## Project Summary and Preliminary Findings

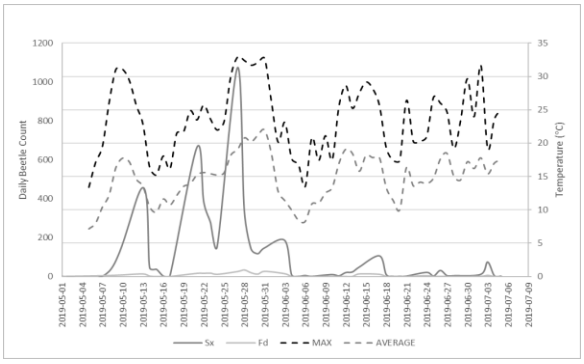
Lindgren funnel trap installed at the 100 FSR site in 2019. Uschenko (2019)

**OBJECTIVES**: Implemented in 2017 using the Natural Resources Canada (NRCan) protocol, the College of New Caledonia's (CNC) Research Forest has undergone regular spruce beetle trapping to further understand the impact of spruce beetles, identify potential relationships between air temperature and beetle flight, and to facilitate and substantiate hauling/milling guidelines established by the B.C. Government.

**METHODS**: Paired Lindgren funnel traps, equipped with Hobo® Onset temperature loggers, Synergy Standard Enhanced Lures for the Rocky Mountains and marine antifreeze to kill and preserve beetles, were installed in CNC Units E/F (2017), CNC Unit G (2018), Fisher Lake/100 FSR (2019), and Winton Global Logyard (2017-19) located within the Bear Lake area. All traps were installed in early-mid April, with weekly collections occurring until mid September. All traps were removed in early October. Due to the strong affinity of Douglas-fir beetles to spruce beetle lures, analysis encompasses both native bark beetle species. Beetles were sorted and identified by NRCan staff (2017) and by Research Forest staff (2018/19).

**RESULTS**: Findings from this project are as follows:

- → Notable fluctuations in spruce beetle capture, with 9,417 beetles captured in 2017, 21,082 captured in 2018 and 7,915 captured in 2019. In both 2018 and 2019, between 56-57% of beetles were obtained at the Winton Global Logyard, while in 2017, approximately 98.27% was captured at this site. Note: A significant reduction in spruce log decks at the Logyard occurred in mid June 2019, potentially influencing capture rate among beetles. A decrease in Douglas-fir beetles was observed, with 1,400 captured (majority from forested sites) in 2017, 485 captured (majority from forested sites) in 2018 and 441 captured (majority from the logyard) in 2019.
- → Assessment of flight regarding 90% of the captured population indicates initial flights occur in mid-May, when daily temperatures exceed 15℃ for 2-3 days (both species). High variation of final flights was noted, typically concluding by mid-July. In general, flights among beetles (Spruce, Douglas-fir) at the Winton Global Logyard occurred 1-2 weeks earlier than bush sites (high sun exposure and warmer air temperatures)
- → Maximum daily temperature was identified as the critical indicator to predict beetle flight; temperatures must exceed 15℃. Strong association among beetle flight at 20℃ was also noted, if preceded by multiple days with temperatures above 15℃.
- → Data obtained since 2017 substantiates the provincial hauling and milling guidelines, restricting operations when temperatures exceed 16℃ and suspending all activity when temperatures exceed 25℃




Comparison of daily maximum and average temperatures to spruce and Douglas-fir beetle capture at the Winton-Global Logyard during the 2019 monitoring season