AN ANTENNAL SENSILLA SURVEY OF THE BROWN SPRUCE LONGHORN BEETLE

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The brown spruce longhorn beetle (BSLB), Tetropium fuscum (F.), is an invasive species that was introduced to Canada from Europe. The beetle was first discovered in Point Pleasant Park in Halifax, Nova Scotia in 1999. The first specimens were actually collected in 1990, but misidentified as a native species. In its native habitat, the BSLB usually only infests dead and dying trees, whereas in its new environment in Nova Scotia it has begun infesting apparently healthy trees, primarily red spruce. A multi-agency governmental task force was set up to combat the spread of the BSLB in N.S. Research to date has focused on the development of pheromone-based monitoring and mating disruption, though an increased understanding of this species’ sensory physiology and morphology is required. With that in mind, the purpose of this survey was to gather information about the distribution of three different types of antennal sensilla. Sensilla are hair-like sensory organs that project from the cuticle on many different parts of an insect’s body. Three types will be examined: mechanoreceptors, olfactory receptors, and contact chemoreceptors. Heads of several beetles were removed and mounted on aluminum stubs. These were then examined using a scanning electron microscope and micrographs were taken from different angles to ensure a 360º view. The images were then examined using image-processing software to add colour-coded dots to the different types of sensilla as they were counted. This was purely a morphologically based survey, although preliminary transmission electron microscopy has been performed for future study.

Colin MacKay graduated from Fredericton High School in New Brunswick in 2006. Colin is currently completing his Honours thesis in his fourth year of Biology at Acadia. He is also a Biology Co-op student and has completed three work terms, two with the Canadian Forest Service, and one with the Nova Scotia Department of Natural Resources. Colin was named to the Dean’s List and also received the William Laird Archibald Scholarship in June 2008. Upon completing his final semester, Colin plans to continue his studies at Acadia in their Masters of Science program.