

Effects of spruce budworm insecticides on the fitness of specialist North American wood-warblers

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Eastern spruce budworm (*Choristoneura fumiferana*; hereafter SBW) outbreaks have occurred in eastern Canada periodically for millennia – and most forests in New Brunswick are susceptible to SBW. Atlantic Canada uses the Early Intervention Strategy (EIS) that optimizes use of *Bacillus thuringiensis* var. *kurstaki* (Btk) and tebufenozide, which specifically target Lepidoptera, as control agents against SBW. Certain warbler species have been found to benefit from increases in SBW (hereafter, “budworm-linked warblers”) and show population increases when SBW populations are rising, likely due to the food abundance that SBW outbreaks provide. The relationship between SBW and Lepidopteran-based diets in birds has been well studied, though mostly during outbreaks when SBW populations are high. However, little research has been carried out for relatively low-density populations and of the studies available almost none has assessed potential effects of insecticide treatments on food availability and associated bird fitness. In general, EIS research in NB has largely focused on the relationship between treatments and parasitoid abundance and impact, but there is no published research examining whether EIS treatments influence the fitness of avian populations in treated areas. The goal of my study is to reduce the knowledge gap by investigating more specifically the dietary differences (to the species level) and determining whether such changes alter reproduction success and survival of three warbler species known to be strongly SBW-linked: Bay-Breasted Warblers (*Setophaga castanea*), Tennessee Warblers (*Leiothlypis peregrina*), and Cape May Warblers (*S. tigrina*).

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