

## **A baseline study of breeding bird populations in Eastern Hemlock stands at the onset of Hemlock Woolly Adelgid infestation in Nova Scotia**

John F. Kearney<sup>1</sup>, The Listening Together Project<sup>2</sup>

<sup>1</sup>*John F. Kearney & Associates, Beaver River, NS*

<sup>2</sup>*The Listening Together Project, Beaver River, NS*

After the discovery of the invasive Hemlock Woolly Adelgid (HWA) in southwestern Nova Scotia in 2017, expert birders, with the sponsorship of the Nova Scotia Bird Society, began a baseline study of breeding birds in hemlock stands in 2019. From 2019 to 2022, birders conducted 92 point counts and deployed 21 autonomous recording units from Shelburne County in the south of the province to Cape Breton County in the north. Pre-HWA studies in the eastern United States and Nova Scotia showed that the hemlock avian community consisted of four hemlock specialists: the Blackburnian Warbler, the Black-throated Green Warbler, the Blue-headed Vireo, and the Acadian Flycatcher. Nova Scotia is outside the breeding range of the Acadian Flycatcher, and there is evidence that the Bay-breasted Warbler took over the flycatcher's niche. Avian studies in the United States also show that the forest degradation caused by HWA led to the decline of hemlock specialists and an increase in bird species which prefer deciduous and mixed forest habitats. The point count results in the current study indicate that deciduous and mixed forest bird species had already taken over as the dominant species in hemlock stands before HWA infestation. These species are the Ovenbird, Red-eyed Vireo, and Northern Parula. Analysis of the acoustic data is still in progress and will likely provide further clarification of the pre-infestation avian population.

Keywords: Eastern Hemlock, Hemlock bird specialists, Hemlock Woolly Adelgid, invasive species