

Title: Harnessing citizen scientists to study spruce budworm regional dynamics

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Abstract

Insect outbreaks can cover vast geographic areas, making it onerous to cost effectively monitor populations to address management and ecological research questions at a landscape scale. Citizen science – engaging the general public to assist with data collection – has been serving as a useful approach to address this challenge for the spruce budworm (*Choristoneura fumiferana* Clemens), a major pest of spruce and fir throughout Canada and the northeastern United States (Pureswaran et al. 2016). In this talk, I will discuss “Budworm Tracker”, which is a contributory citizen science program that was developed to help monitor and collect budworm moths throughout its northeastern range. In essence, the program outsources pheromone trap ‘kits’ to volunteers who periodically check and collect moths from their traps throughout the budworm flight period, then return the data and moths to us by mail (all free-of-charge to the volunteer).

In 2015, the first year of the program, we had nearly 250 volunteers spread throughout the region with 27,388 budworm moths collected and a nearly 89% return rate on traps sent out. The program expanded in 2016 to just over 390 volunteers with 15,464 moths collected and a ~76% return rate (to date).

The data collected through this program are being used to address a variety of ecological, sociological, and management research questions. For instance, the moth flight phenology data has provided insight into the regional dispersal patterns of moths and how outbreaks unfold over the landscape. The collected moths are being analyzed to help better understand landscape genetics of budworm and to what extent populations mix at regional scales as outbreaks develop (e.g., see James et al. 2015). In addition, demographic and ‘volunteer compliance’ information collected on the volunteers is being used in conjunction with surveys to better understand how to build better citizen science networks. It is also worth noting that the Budworm Tracker program is central to public engagement and education efforts in Atlantic Canada where there is an ongoing area-wide pest management program being developed for spruce budworm. Although this program was designed for budworm, this template could be easily adapted for many of the numerous insect pests for which there is an established trapping method.

References

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