

2022

HWA is spreading in Jameson Woods and Milliken Mills

Vanessa A-T

Loranger Memorial School

Lily S

Loranger Memorial School

Giana G

Loranger Memorial School

Marcus C

Loranger Memorial School

Jacob T

Loranger Memorial School

Follow this and additional works at: <https://findings.gmri.org/journal>

Recommended Citation

A-T, Vanessa; S, Lily; G, Giana; C, Marcus; and T, Jacob (2022) "HWA is spreading in Jameson Woods and Milliken Mills," *Findings from the Field*: Vol. 5, Article 3.

Available at: <https://findings.gmri.org/journal/vol5/iss1/3>

This Research Articles is brought to you for free and open access by Findings from the Field. It has been accepted for inclusion in Findings from the Field by an authorized editor of Findings from the Field.

HWA Is Spreading In Jameson Woods and Milliken Mills

Written by: Jacob T., Lily S., Giana G., Marcus C. and Vanessa A.T. :D
Loranger Memorial School
Old Orchard Beach Maine (OOB ME)

Abstract

Is Hemlock Woolly Adelgid spreading in Old Orchard Beach? This is important because our forests are mainly made of hemlock trees. We investigated two forests near our school, and searched 10 branches from 10 different trees for HWA in each forest. In Jameson Woods we found HWA on all 10 trees, and in Milliken Mills we found it on four trees. Based on the data we collected we can claim that HWA is spreading in OOB.

Introduction

We are investigating the spread of Hemlock Woolly Adelgid (HWA) in Jameson Woods and Milliken Mills of Old Orchard Beach (OOB). Hemlock Woolly Adelgid is an invasive insect species that attaches itself to Hemlock trees and takes the nutrients from them, killing the tree. Researching and investigating the spread of HWA in OOB is important to our town because our forests are made up of mainly hemlock trees. When these hemlock trees die, animals like deer, brook trout and others don't have shade from the sun or protection from snow in the winter. (Gary Fish, horticulturist, GMRI webinar)

Scientists already know that HWA spreads quickly. In North America, HWA are all females and don't need to mate, and they lay 600 eggs per year. (Colleen Teerling forest entomologist GMRI webinar) Previous students found HWA in Milliken Mills Woods, Ocean Park, and Jameson Woods. By investigating Jameson Woods and Milliken Mills this year, we are adding to the total amount of information on HWA in OOB. We'll send our information to GMRI's website to add to the map of where HWA is in Maine.

Our research question is, Is HWA spreading in OOB? We predict that it is spreading because we know they lay a lot of eggs per year. Also global temperature is increasing, and we know that the warmer it is, the more HWA can spread. They die in colder temperatures more often than they die when winters are warm. (Colleen Teerling)

Methods

To collect the HWA data we had to first go to the site where we were going to collect the data. Once we got there we had to find a hemlock tree. To know if we had a hemlock tree or not we were looking for; the markings of the bark had to go vertical (up and down), the underside of the needle had to have two white lines that looked like racing stripes, and the needle had to attach to the branch by a little tiny stem. We then shared our thinking with our partners or our teacher to make sure we agreed that we had a hemlock tree. We took photos of: the entire tree (or as much as we could), close up of the trunk, a clear photo of the underside of the needle, and a clear photo of the needle attachment to the branch. For this investigation we chose random hemlock trees to search. If people don't know how to identify HWA it will be tougher to avoid it to make sure not to spread it. One thing we noticed that some trees had more hwa then others and some hwa were more obvious or lower than others.

We went to Jameson Woods on 11/4/2021 11/8 11/10 11/16 11/17 and 11/19 we also went to Milliken Mills on 4/11/22 and 4/14/22 We identified and marked the trees after we searched 10 branches. For each branch we recorded what we found on a piece of paper. In summary we checked 10 branches on 10 random hemlock trees in each forest. We wanted to do 10 trees for more accurate data.

Branch (1m)	Hemlock woolly adelgid present? (Circle one):
1	Found / <u>Not Found</u> / Can't reach
2	Found / <u>Not Found</u> / Can't reach
3	Found / <u>Not Found</u> / Can't reach
4	Found / <u>Not Found</u> / Can't reach
5	Found / <u>Not Found</u> / Can't reach
6	Found / <u>Not Found</u> / Can't reach
7	Found / <u>Not Found</u> / Can't reach
8	Found / <u>Not Found</u> / Can't reach
9	Found / <u>Not Found</u> / Can't reach
10	Found / <u>Not Found</u> / Can't reach

only 1 dot

HEMLOCK WOOLLY ADELGID DATA SHEET WITH INSTRUCTIONS

Gulf of Maine Research Institute Ecosystem Investigation Network

11. Record whether hemlock woolly adelgid was found on the tree. Did you find hemlock woolly adelgid? (Circle one):
 Found Not found

Field Notes:

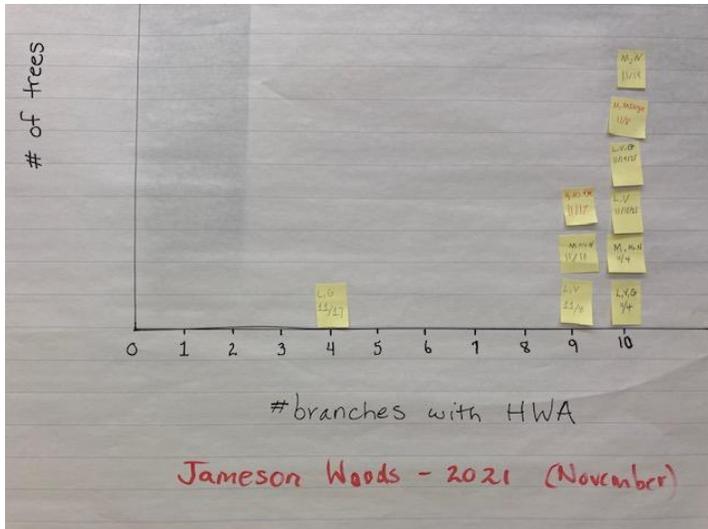
the only branch that had hwa had only 1 spot at intersection on trail

Checklist:

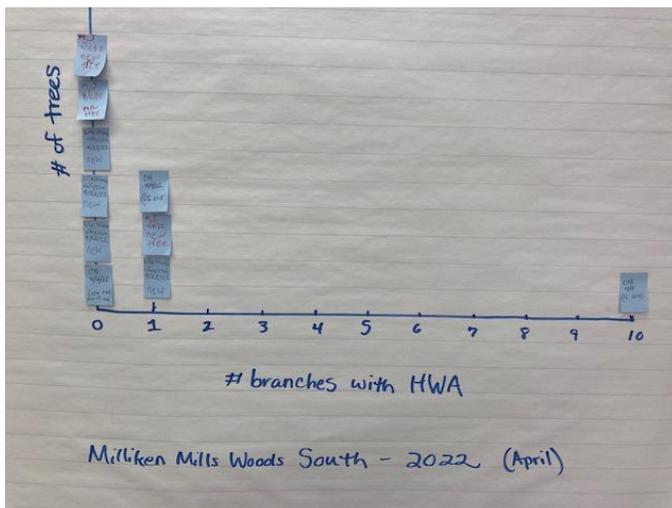
I certify that I: Checklist complete? (Circle one):
 Checked at least 10 branches, or as many as I could reach. Yes No
 completed peer review in the field Signature: Lily

We shared 3 pieces of evidence we used to identify hemlock woolly adelgid.
 Three clear photos of hemlock woolly adelgid taken.

Results



This graph shows the branches with HWA that we found in Jameson Woods in November 2021. Every tree we checked had HWA. The range was 6 branches (10-4) with HWA. The mean was 9.2 branches. The median or middle point of our data was 10 branches. The mode was 10 branches. Four could be an outlier because all the others were 9 or 10.



This is our data from Milliken Mills Woods in April 2022. The range is 10 branches per tree with HWA. The mean is 1.3 branches per tree with HWA. The median is 0. The mode is 0. The outlier is 10 because only one tree had more than 1 infected branch.

Conclusion

Our claim is that HWA is spreading in OOB. We can compare the data we collected with what we knew before to see the increase of HWA. In Jameson in 2018, students didn't check 10 trees and 10 branches. They just reported they found it on one branch of one tree. We checked 10 trees and 10 branches and found a heavy infestation in 2021. All trees had some, none had 0 and most had 9 or 10 infected branches. 92% of branches we checked were infected.

In Milliken Mills we checked a different area of the forest than students checked in 2018. (See their data in Resources.) We found that 6 of 10 trees we checked had no HWA, 3 trees had only 1 of 10 branches infested. Of those trees, 2 had a lot of HWA on the branch. So we think it's a minor infestation because 13% of branches had HWA. It's still going to spread because they will have babies and the babies will find homes on different hemlock trees. The infested trees were close to the trail so people could brush by and carry HWA. We took off the "mini branch" that had one spot of HWA, but the tree with 10 of 10 infected branches is still there, so HWA will keep spreading.

Our data isn't complete. We can only check so many trees out of the millions out there, so we only get a small amount of data in each area. However, our knowledge of HWA helps predict it's going to keep spreading unless we do something about it. For our upcoming investigation we are going to try releasing *Sasajiscymnus tsugae* (*S.tsugae*) to get rid of HWA. According to treesavers.com, "*S.tsugae* consumes all stages of HWA all year long! Their life cycle is 100% synchronized with HWA. This unique predator will consume, reproduce, disperse, and over-winter!" We'll continue to collect data and see if HWA levels will decrease on the two trees where we're releasing the *S.tsugae*.

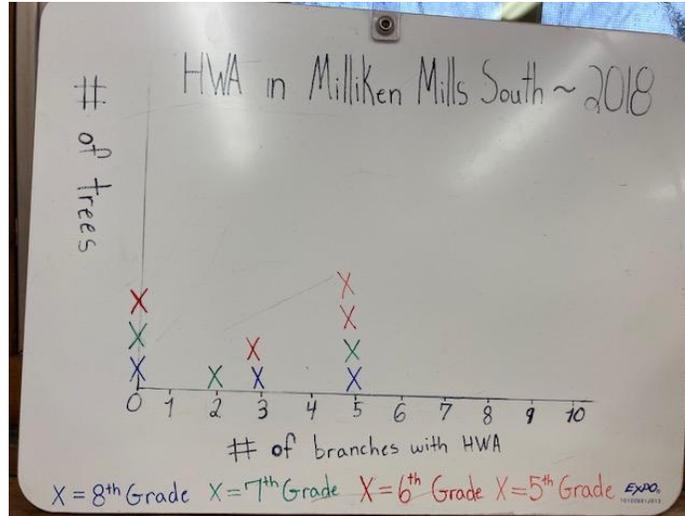
Sources

[HWA_Blitz_11092021.mp4](#)

[HWA Blitz 20211118.mp4](#)

<https://www.treesaverspa.com/>

Previous data



This is data from Milliken Mills in 2018. These trees are in a different part of the woods, behind the old animal shelter. Our teacher checked the 5th grade tree this year and found HWA on 10/10 branches.