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## Hemlock Woolly Adelgid

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# Hemlock Woolly Adelgid

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Abstract:

Hemlock woolly adelgid has spread rapidly since 2003. It is an invasive forest insect from Japan and we need to protect our forests and treat it so it doesn't spread. Hemlock trees help the ecosystems and provide a good source of food and shelters in the winter for many animals. There has been many studies on it and we did one. We did not find any which is a very good thing.

Hemlocks are coniferous which means that they have needles year round. You can identify a hemlock tree because the bark is brownish and cracks when the tree gets older. The branches have 1.5 cm long green needles that have two white stripes and they are attached to the branch at the part called the "peg". Animals like deer, moose, grouse, and porcupines also use hemlock trees for shelter in the winter and in some cases a source of food in cold climates. A lot of bird species also use the trees for a big canopy from the weather. In the spring you can see flowers on the trees and they look like little green cones. It is very easy to mix up a hemlock with a balsam fir but you can tell the difference because the hemlock needles are attached to the stem but the firs are not.

Hemlock woolly adelgid is an insect pest that uses hemlock trees as food. The insects use mouths that are like straws to make a hole into the twig of a hemlock tree. Hemlock woolly adelgid is an invasive forest insect from Japan and it is very harmful towards hemlocks in the Eastern United States. The insect first got discovered in the U.S in Richmond Virginia in 1951. The first spread in Maine was in 2003 when they naturally spread north from New Hampshire. Hemlock woolly adelgid continued to naturally spread up Maine's coast. Climate change is affecting the spread of Hemlock Woolly Adelgid because the eggs get laid and fall and hatch in spring and normally the cold winters we have in the North East kill the eggs. Now that our winters are getting warmer due to global warming, not as many eggs are dying off through winter so the spread is a lot worse in the spring. As climate change continues the winters will get a lot warmer and someday maybe the eggs will never die in winter so the spread will be uncontrollable.

When we went outside our groups first had to find a hemlock tree. After we found the tree we had to get the teacher's approval and then we moved onto finding the exact latitude and longitude of the tree. We then took pictures of the tree for data. The data was collected on March 31st at 8:50am. The tree was then carefully checked over on ten branches for hemlock wooly adelgid. All of the groups found no hemlock wooly adelgid over all the trees. I think that we found no hemlock wooly adelgid because the spread has not come in as far inland as we are in maine. The invasive insects have mostly spread up Maine's coast and up into Canada. One day I think we will have the adelgid in Bethel but that will not be for awhile.

Since 2003 Hemlock Woolly Adelgid has spread rapidly across Maine's coast line. The Hemlock Woolly Adelgid had its first natural spread in Maine in 2003. Then in 2010 it spread past Biddeford which it never had done before and it spread all the way up to Bristol. Then in 2016 it spread inland to Sebago Lake in the town of Raymond and Standish. All of the hemlock wooly adelgid that have spread in Maine since 2003 spread naturally on its own. I think the hemlock wooly adelgid will spread more because it has already spread all the way up Maine's coast and when it is all invested it will look for more space to go and that is inland. In 5 years, I think that it will spread more inland, only about a mile and in 20 years it will be all the way up by us in Bethel. In 100 years I think that the hemlock wooly adelgid will be all over Maine and spread further north to Canada or inland to the great lakes. If it spreads this far the ecosystems will really change because animals will run out of food. Like deer for example, rely on the hemlock trees as food and if they don't get the food they will die and the coyotes will not be able to eat the deer so they will die as well.

In conclusion hemlock wooly adelgid has spread rapidly since 2003. It is an invasive forest insect from Japan and we need to protect our forests and treat it so it doesn't spread. Hemlock trees help the ecosystems and provide a good source of food and shelters in the winter for many animals. There has been many studies on it and we did one but did not find any which is a very good thing. I want to continue to see healthy hemlock trees and I think you do too so let's control the spread of hemlock wooly adelgid.

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