

# Killer

Norwood High School



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Ever since the hemlock woolly adelgid migrated to the Great Smoky Mountains, the ecosystem has been changing and the balance of species shifting. This parasitic relationship between transfers energy to the adelgid, weakening the tree and eventually killing it. The presence of this invasive species has dramatically changed the physical landscape of this region by reducing canopy cover and tree biodiversity. One conservation strategy is chemically treating hemlocks to help them resist adelgid infestation. Students who educate their communities about the impact of invasive species, like the hemlock woolly adelgid, can help others understand the importance of maintaining ecosystem stability.

## LIFE SCIENCE

4.LS2.4	Develop and use models to determine the effects of introducing a species to, or removing a species from, an ecosystem and how either one can damage the balance of an ecosystem.
4.LS2.5	Analyze and interpret data about changes (land characteristics, water distribution, temperature, food, and other organisms) in the environment and describe what mechanisms organisms can use to affect their ability to survive and reproduce.
6.LS2.2	Determine the impact of competitive, symbiotic, and predatory interactions in an ecosystem.
6.LS2.3	Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.
6.LS2.5	Analyze existing evidence about the effect of a specific invasive species on native populations in Tennessee and design a solution to mitigate its impact.
6.LS2.6	Research the ways in which an ecosystem has changed over time in response to changes in physical conditions, population balances, human interactions, and natural catastrophes.

6.LS4.1	Explain how changes in biodiversity would impact ecosystem stability and natural resources.
6.LS4.2	Design a possible solution for maintaining biodiversity of ecosystems while still providing necessary human resources without disrupting environmental equilibrium.

## EARTH & SPACE SCIENCE

4.ESS2.3	Provide examples to support the claim that organisms affect the physical characteristics of their regions.
4.ESS3.2	Create an argument, using evidence from research, that human activity (farming, mining, building) can affect the land and ocean in positive and/or negative ways.
6.ESS3.3	Assess the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.

## ENGINEERING, TECHNOLOGY & APPLICATIONS OF SCIENCE

6.ETS1.1	Evaluate design constraints on solutions for maintaining ecosystems and biodiversity.
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It's close to midnight  
And something woolly is lurking in the bark  
Up in the hemlocks  
You see a sight that almost stops your heart

You try and scream  
But terror takes the sound before you make it  
You start to freeze  
As something looks you right between the eyes  
You're paralyzed

Because it's a killer, kills hemlocks  
We're going to have to save them  
From the bug about to strike  
There is a treatment  
Killer beetles  
But it takes time and money  
To apply to all the trees

In the woods of Japan  
Born and raised  
On the hemlocks where  
I spent most of my days  
Introduced, adapting, breaking the rules  
Sucking some tree sap, all covered in wool  
When a couple of travelers took me to Virginia  
Hadn't been there before, now I'm up in you  
Got in one little hemlock, Tennessee got scared  
Pick up your insecticide and begin to prepare

Guess it's true from the deep woods of Japan  
Carried by travelers all the way to Maine  
And now they're posing a threat  
In Tennessee, on the hemlocks, sucking sap

We have to save the trees  
From something woolly  
Treatment is all we need  
For adelgids to leave