Shenandoah Chapter
Virginia Native Plant Society
January, 2008

Mission Statement:
We are a conservation organization dedicated to conserve Virginia's native plants and their ecosystems through education, advocacy and activities that promote appreciation, stewardship and appropriate use.

Next Meeting: January 10 2008 7:30: Speaker: Carol Lena Miller of the Virginia Wilderness Society will speak on the Virginia Mountain Treasures focusing on the proposed wilderness areas in our region.
Place: Plecker 128 Blue Ridge Community College

Coming Up: On February 14 Wendy Cass of the Shenandoah National Park will speak on the Shenandoah National Park Rock Outcrop Stewardship Program

VNPS Annual Workshop March 8, 2008
Join us March 8 at the University of Richmond for an all day symposium on Virginia's native orchids, where our lineup of speakers will focus on orchid ecology and distribution. Flyers will go out to members in January and registration will open at that time.

Douglas Gill, professor in the Biology Department at the University of Maryland has studied a single population of pink lady slipper orchids for over 30 years, and will talk about answers to some questions about the life cycle of this orchid, and new questions that have come from his research.

Speaking about his research about the fungal partners of orchids will be Dennis Whigham of the Smithsonian Environmental Research Center in Edgewater, Maryland.

Nancy Van Alstine of the Virginia Natural Heritage Program will share recent survey work looking for small whorled pogonia and Bentley's coralroot.

A noted photographer and contributor to the Flora of Virginia Project on the Orchidaceae, Hal Horwitz will take us on a photographic tour of the orchids of Virginia.

Announcement: The Frontier Culture Museum is accepting donations of native plants for a trail and pond-side planting. The pond has extensive limestone outcrops. I would like to have shrubs, ferns and herbaceous plants. We have already planted a gaggle of Turk's-cap lily bulbs and a Dunstan hybrid American Chestnut. We will pick up or donor can deliver. Contact me at 540 332 7850 or mark.gatewood@fcmv.virginia.gov

VNPS-Shenandoah Chapter Budget

2006-7

INCOME	Budgeted	Actual	Difference
Plant Sale	$650.00	$679.00	$29.00
State Dues	$725.00	$736.00	$11.00
Donations	$0.00	$484.00	$484.00
Book Sales (Fisher)	$0.00	$744.80	$744.80
Merchandise	$150.00	$144.00	-$6.00
TOTAL	$1,525.00	$2,787.80	$1,262.80

EXPENSE	Budgeted	Actual	Difference
Newsletter	$100.00	$97.00	-$3.00
Honoraria	$100.00	$75.00	-$25.00
Gifts	$950.00	$0.00	-$950.00
Publications	$50.00	$3,599.00	$3,549.00
Memorials	$25.00	$0.00	-$25.00
Plant Sale	$100.00	$25.00	-$75.00
Meeting Food/Room	$85.00	$140.19	$55.19
Ed. Projects	$0.00	$0.00	$0.00
Merchandise	$100.00	$111.00	$11.00
Other	$15.00	$4.79	-$10.21
TOTAL	$1,525.00	$4,051.98	$2,526.98

NET	$0.00	-$1,264.18	-$1,264.18

2007-8

INCOME	Budgeted
State Dues	$500.00
Donations	$50.00
Merchandise	$300.00
Plant Sale	$650.00
Other	$0.00
TOTAL	$1,500.00

EXPENSE	Budgeted
Newsletter	$100.00
Honoraria	$100.00
Gifts	$950.00
Publications	$50.00
Memorials	$25.00
Plant Sale	$100.00
Meeting Food/Room	$100.00
Ed. Projects	$0.00
Merchandise	$15.00
Other	$60.00
TOTAL	$1,500.00

Chapter Officers

President	vacant		
Vice President	Michael Seth	540-438-1301	sethmj@jmu.edu
Treasurer	Chuck Auckerman	540- 828-2065	ChuckAuckerman@aol.com
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Newsletter/ Website	Elaine Smith	540-298-0773	smithes6@juno.com
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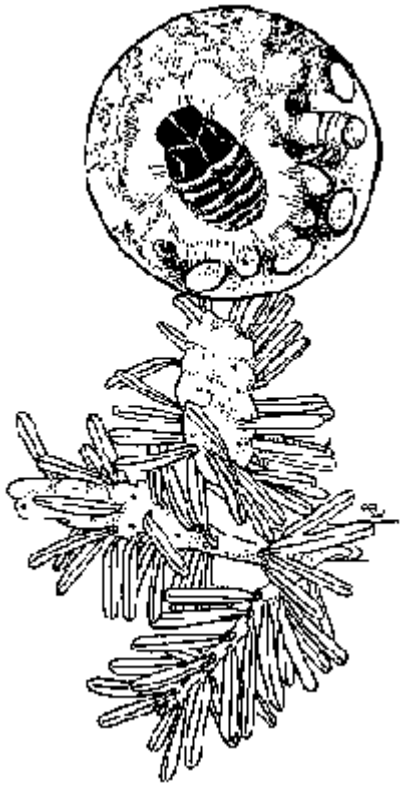
Conservation / Education	Chris Bowlen	540-289-6801	bowlenchris@comcast.net

Adelges tsugae –The Hemlock Woolly Adelgid



As we all know our Eastern Hemlock (*Tsuga Canadensis*) as well as the rare Carolina Hemlock (*Tsuga caroliniana*) is under attack by an invasive Asian insect the hemlock woolly adelgid. It is a tiny brown insect similar to an aphid. The adelgid's eggs are brownish orange and wrapped in a protective white substance secreted by the female. This white substance resembles a tuff of cotton or wool, hence the name. They usually hatch in April or May. After hatching from an egg, the woolly adelgid goes through a crawler stage. The reddish nymphs or crawlers attach themselves with their thread-like mouths to the base of the hemlock needles and suck sap. The nymphs go through four stages before becoming adults and also wrap themselves in white substance. The crawlers are so small that they are almost invisible to the naked eye. They can drift in the air from tree to tree or attach themselves to the legs and feathers of birds or to mammals. The purplish-brown adults emerge in early summer. They become dormant then resume feeding in October or November and feed all winter. The adult settles down among the needles of the host tree. It then inserts a bundle of mouthparts at the base of a needle, and spends the rest of its life sucking nutrients out of the tree.

The woolly adelgid goes through two generations a year and each female can lay between one hundred and three one eggs. Some adults sprout wings and fly. These are males looking for spruce trees. Apparently the American spruces lack the nutrients they need so they die. Unfortunately this die off of males has little effect on the reproduction of adelgids since the females can lay eggs without being fertilized by a male. The offspring are clones of their mother- genetically identical to her. The population of woolly adelgids in North Americas seems to consist mostly or even entirely of female clones. A single female can generate as many as ninety thousand copies of herself in a year.

When the adelgids cover the branches of a hemlock many of its needles fall off. The adelgid also injects a toxin into the tree that accelerates the loss of needles. The tree puts out a new crop of needles the following spring but the insects attach themselves to the new needles. The tree goes into shock, these new needles fall off and the tree eventually dies. It usually takes two to six years for an infected tree to die. Infected trees have a grayish-green appearance and can live in weakened state for years, but most die within four years. Hard winters and cold snaps can kill many adelgids and slow the infestation, mild winters can accelerate it. The existence of other insect pests such as the hemlock borer can contribute to the weakened condition of the tree.

The woolly adelgid was introduced in the Pacific Northwest in 1924. In the eastern U.S. it was first discovered in 1951 by an entomologist with the Virginia Department of Agriculture near Maymount Park in Richmond where it may have been introduced on imported Asian evergreens by Sallie Dooley, wife of a financier who established a Japanese garden in the early part of the century. When she died in 1925 her garden became Maymount Park. The wooly adelgids at first seemed to be confined to the Richmond area, but in 1988 they had spread to the Shenandoah National Park, very possibly carried by birds such as black-throated green warblers and solitary vireos. Migratory birds probably carried them north. By 1998 they were parasitizing trees in the Delaware Water Gap

National Recreation Area between Pennsylvania and New Jersey. In general, they have been spreading from the epicenter in central and northern Virginia at a rate of about twenty miles a year. They have been spreading more lowly southward, perhaps because migratory birds head south in the autumn when there were fewer crawlers. But in 2001 some adelgids were found In South Carolina; and in 2002 they were found on hemlocks in the remote Cataloochee Valley of the Great Smokies National Park, home to some to the tallest known eastern hemlocks. Recently the insect invaders have been found as far away as Michigan and New Hampshire.

Scientists at the University of Tennessee, funded in part by a private organization Friends of the Smokies, have started breeding a lady beetle from Japan to control the adelgids. Another beetle has been introduced from the Pacific Northwest and shown to have a healthy appetite for the adelgids. But it is not yet clear how effective either of these new beetles will be. An insecticide called Imidacloprid produced by Bayer has proven effective. It has the advantage of not spreading much in the soil and therefore is not considered a groundwater contaminate. It also degrades in sunlight quickly. But spraying causes too much collateral damage and injecting it is a costly, labor intensive process. Unfortunately funding for the U.S. Forest Service to fight this pest has been slow in coming. Although some eastern hemlocks can be saved, most in our area are already dead. In much of the central and southern Appalachians the eastern hemlock seems likely to disappear from the forest.

Sources: Richard Preston, "Death in the Forest," *The New Yorker*, (December 10, 2007); pp. 64-71; Hemlock Woolly Adelgid Action Team, *Save Our Hemlocks* Homepage; Pennsylvania Department of Conservancy, *Woolly Adelgid*.

WANTED: Newsletter articles.
Contact Elaine Smith if you want to include anything in YOUR newsletter.
Anything is welcome, even just a few lines!