DECISION NOTICE
AND
FINDING OF NO SIGNIFICANT IMPACT

For

The Conservation of Native Eastern Hemlock (*Tsuga canadensis)*
By Suppression of Hemlock Woolly Adelgid Infestations
On
The Chattahoochee National Forest
USDA Forest Service

Banks, Dawson, Fannin, Gilmer, Habersham, Lumpkin, Murray, Rabun,
Stephens, Towns, Union and White Counties, Georgia

August, 2005

1. INTRODUCTION

This Decision Notice (DN) and Finding of No Significant Impact (FONSI) documents my decision to take action to conserve the genetic diversity of native eastern hemlock *(Tsuga canadensis)* by suppressing infestations of the non-native pest hemlock woolly adelgid (HWA) across the Chattahoochee National Forest in Georgia. Delaying action would result in losing a time-limited opportunity to make a stand against this pest.

I have reviewed the Environmental Assessment (EA) for the conservation of native eastern hemlock by suppression of hemlock woolly adelgid infestations. I have considered the comments received during the 30-day notice and comment period. I have given serious thought to whether or not treatments should occur in Wilderness. I have weighed the potential risks and benefits from the proposed action and alternatives.

2.0 DECISION

It is my decision to implement Alternative 4 of the EA.

Alternative 4 gives first priority for treatment to; (1) the genetic conservation network, (2) known occurrences of PETS and locally rare species, and (3) the foreground area along the AT within the mapped treatment area at Three Forks on the Toccoa Ranger District. Remaining locations have second priority.

The specific actions and mitigations of Alternative 4 are described below:

ACTIONS

1. **Releases of Predator Beetles That Eat HWA to Establish Long-Term Adelgid Population Control**

   Approximately 140 separate land areas, each with a significant component of hemlock tree cover, will be potential locations for releases of any one or a combination of the predator beetles *Sasajiscymnus tsugae, Laricobius nigrinus, Scymnus sinuanodulus* and *Scymnus ningshanensis.* Each year new infestations within these locations will be prioritized for beetle releases. The objective at each identified potential release location will be to release beetles at newly-infested sites that still have trees healthy enough to respond.

See Appendix C of the EA for a tabular listing of basis attributes of each location; also maps showing where they occur within the Blue Ridge Mountains landscape.

The potential release locations were primarily selected to meet the requirements of a hemlock genetic conservation network designed to represent community diversity within the distribution of known hemlock stands. Locations that will form the conservation network were selected from a list of outstanding hemlock occurrences including Natural Heritage sites, Special Interest Areas identified in the Chattahoochee-Oconee land management plan, and additional hemlock or mixed tree species composition communities identified through scoping as having important ecological and/or cultural values. In a few instances hemlock communities not recognized as ecologically or culturally important were added to the network to fill a gap in the design.

The number of beetles released at a location will vary by species according to established release protocols developed by Forest Health Protection (USDA Forest Service) and university researchers who study the insects. Current protocols call for several hundred to several thousand beetles to be released at any one release site.

Specific hemlocks at each mapped location will be evaluated for suitability as beetle release trees. Suitable trees will be those that are; (1) infested with HWA to the degree that evidence of adelgids can be seen at most leaflet nodes, and (2) the trees themselves, as well as nearby trees, shall still be healthy enough to be putting on new growth. The objective is to find an infestation with enough HWA so the beetles can successfully feed and reproduce, and where other similarly infested hemlocks are nearby so it is possible for the beetles to disperse.

2. Chemical Treatment for Maintaining Genetic Reserves

A subset of all mapped locations is 'genetic conservation areas' criticial to maintaining genetic exchange throughout the Georgia range. Within these, up to three groups of approximately 60 trees each will be selected to receive chemical insecticide treatment. This treatment is to ensure that genetically diverse hemlocks remain alive until biocontrol takes effect on the landscape. Specific group locations, shapes, and trees to be treated will be determined site-specifically at the time of treatment. For these groups of trees the systemic insecticide imidicloprid (Merit) will be injected into the soil at the base of the tree ("soil injection"), except for trees unsuitable for soil injection due to their proximity to water or highly permeable (sandy or gravelly) soils. For these, imidacloprid will be injected directly into the trunk of the tree ("stem injection") or they will not be treated.

Effective imidacloprid treatment lasts a minimum of two years for soil injection and a minimum of one year for stem injection. Treatments will be repeated after effectiveness declines if evidence of re-infestation is present. Treatment will cease when effective biocontrol agents become established or the HWA threat is otherwise diminished, based on annual situation reports from Forest Health Protection.

Clearance process prior to application of soil injected imidacloprid.

Before soil injecting, the following steps will be taken:

(1) Soil will be sampled to determine the presence of sandy or gravelly (highly permeable) soils. The presence of highly permeable soils will disqualify the site for soil injection.

(2) The area will be scouted for the presence of any surface water or waterbodies (springs, creeks, ponds, bogs, etc.). Any tree with a direct crown or visible root connection to surface water will be eliminated from soil injection treatment.

The clearance process will be documented for each chemical treatment site.

Special Measures Applicable to Wilderness

Special measures apply to both predator beetle release and insecticide treatments in Wilderness to ensure the least possible impacts to Wilderness character, wildness and naturalness.

- No mechanized devices will be used to access Wilderness sites.
- Monitoring in Wilderness shall;
    - be timed to avoid periods of high visitor use,
    - not leave behind any evidence of the activity, and
    - not employ any motorized transport or equipment.
- At the end of five years a report will be completed and presented to the Regional Forester for review. The report will provide the basis for continuing treatments in Wilderness beyond five years and will address the following;
    - the status of the HWA infestations,
    - record of treatments,
    - monitoring results including any impacts to Wilderness values of treatments,
    - progress toward the goals of the suppression activities, and
    - whether beetle release and insecticide continue to be the minimum

effective tool (treatment).

Special Measure Applicable to Aquatic Threatened, Endangered and Sensitive Species

Insecticide will not be applied within mapped treatment locations where aquatic T & E species are known to occur anywhere within the stream reaches included within that mapped area.

To protect the brook floater mussel, an aquatic animal on the Regional Forester's sensitive species list, do not use insecticide within the Chattooga Wild and Scenic River corridor from Hwy 28 south to Tugaloo Lake.

To protect a crayfish on the Regional Forester's sensitive species list, do not use insecticide in the watershed of Soapstone Creek, a tributary to the upper Hiwassee River, that flows alongside Highway 180.

MONITORING

This project directly relates to several Forest Plan monitoring questions regarding status and trends of; (1) aquatic habitat, (2) forest health, (3) wilderness character, (4) scenery, (5) recreation settings, and (6) riparian area, wetland and floodplain functions and values.

I am requiring monitoring for this project in order to:

- Assure Forest Plan objectives are being met;
- Assure objectives of the project are being accomplished;
- Respond to public and agency concerns regarding the use of the insecticide imidacloprid;
- Insure activities in wilderness are kept to the minimum needed to be effective; and
- Provide the information needed to adapt the decision to new information and changed conditions.

I have also decided not to require a detailed sampling design and data collection protocol as a pre-requisite to making this decision. I do this for the sake of timely action and to create the management environment to engage Forest Service research and co-operators by having locations and a decision on treatment. I also did not want to create a situation in which adapting a monitoring plan would require an amendment or revision of this decision and invoke the associated timeframes under NEPA that could significantly delay treatments. Finally, monitoring efforts should have a high degree of consistency among Southern Appalachian Forests to get maximum benefit from the data and to avoid expensive duplication of effort.

Monitoring for this project will fall into five categories:

1. For water quality: insecticide treatment site clearance process effectiveness
2. For biocontrol: predator beetle establishment, dispersal and effectiveness
3. For insecticide application: treatment effectiveness through time
4. For information environment: need for change to adapt decision
5. For Wilderness: appropriateness of continuing treatment beyond five years

Field monitoring for water quality and biological control will be done together to the extent practicable for efficiency.

Water Quality Monitoring

A subset of sites selected for imidacloprid treatment will have water samples collected from a nearby stream or streams. Certified laboratories will analyze the samples to detect any measurable presence of imidacloprid. Mitigations will be revised as needed based on these results. In selecting the subset of sites for monitoring, the following situations will be emphasized: 1) wilderness; 2) streams with southern strain brook trout; and, 3) representation of the ecological variability of hemlock occurrence.

Biocontrol Monitoring

A subset of beetle release sites in proximity to insecticide treated locations will be selected to be re-visited after approximately six months and one year to determine the following:

1. Are the predator beetles established? This is determined by identifying the presence of all life stages of the insect, indicating successful reproduction in the wild.

2. Are the predator beetles effectively reducing HWA populations? This may be determined by evaluating the level of infestation, by looking for new growth on the trees, or other appropriate method.

3. Are the predator beetles dispersing to other hemlocks? This may be determined by collecting beetles at trees of various distances from the release trees.

In selecting the subset of sites for biocontrol monitoring, emphasize monitoring in Wilderness areas.

Imidacloprid Treatment Monitoring

Water quality monitoring sites will also be monitored to evaluate the effectiveness of the imidacloprid, as evidenced by the absence of adelgids and the presence of new growth on the treated hemlocks.

Information Environment

Implementation of this decision will be taking place for several years to come. In that time knowledge about the adelgid, available tools, monitoring techniques, as well as social interest and involvement are likely to change significantly. A tremendous amount of research is currently being done that could rapidly change the knowledge environment. The public recognizes this and has urged me to be flexible and adapt my response quickly. I agree that it is important for this decision be carried out in an adaptive way; that is, as changes come I must consider the effect of those changes to meeting the stated purpose and need.

3.0 REASONS FOR MY DECISION

Release of predator beetles combined with treatment of selected trees with the insecticide imidacloprid offers the greatest likelihood of successful suppression of HWA in the long term compared to either alone, while maintaining hemlock genetic diversity and hemlock community diversity at a level that can sustain the species.

Native predators have not demonstrated any ability to suppress the HWA to levels that equate to reduced hemlock mortality. In part this is due to non-synchronous life-cycles: that is, the predators aren't around to eat at the time the HWA is available as a food source. Certain non-native predator beetles from China and Japan – where HWA is native – and from the Pacific Northwest have shown they can greatly reduce HWA populations on release trees. They can overwinter and disperse to other hemlock trees. With a concerted effort, there is a good opportunity to establish reproducing populations in the wild in the hemlock forests of the Chattahoochee National Forest. The HWA infestation is only a few years old, widespread mortality of hemlocks has not yet occurred, and many infested trees are still healthy and capable of recovering from the effects of infestation. Large numbers of the predator beetles are only now becoming available for release. For these reasons, this may be the only opportunity to take a stand against this invader.

Treating individual trees with the insecticide imidacloprid, either injected into the soil at the base of the tree or injected into the trunk of the tree, offers a highly effective way to virtually eliminate HWA from the treated trees, and studies have shown the trees recover once the adelgid is gone. While the long term hope for hemlock rests with biological control, I must ensure genetically diverse populations remain alive long enough for the biological controls to become firmly established. The insecticide treatments can do this. At the same time, I recognize the reservations some people have regarding the use of pesticides of any kind in the Chattahoochee National Forest. Such use must be done with great care and with strict adherence to the required safety precautions. In the case of the HWA,

the imminent loss of the hemlock species poses huge environmental risks, as discussed in the EA, whereas the risks posed by the specified use of imidacloprid are small in comparison. Since the imidacloprid is carried to the application site in sealed containers and then injected under the duff layer of the soil or into the trunk of the tree, there should be no occasion for a forest visitor to come into contact with it.

I have considered the tradeoffs associated with actively suppressing HWA in Wilderness areas. Large-scale ecological changes caused by unnatural influences – such as the non-native Hemlock Woolly Adelgid – present difficult choices for managers. A decision to act or not act will have consequences for the natural or wild conditions of Wilderness. Human intervention to suppress HWA is 'trammeling' of the wilderness resource. While some people recognized this, they also urged me not to exclude Wilderness from treatment, even though it involves non-native insects and a synthetic chemical. In this particular instance a valid argument is made that this unnatural loss of hemlocks is more than loss of individual trees or even an individual species in Wilderness. It goes beyond that to affect the very character of the Wilderness itself. The hemlock populations and associated plant communities in the Wildernesses of north Georgia are a distinct visual attribute contributing to Wilderness character. They are ecologically, culturally and historically important.

From the information presented in the EA, I have determined that treating the hemlocks in these Wilderness areas is necessary both for the integrity of each affected Wilderness and for the success of the conservation design.

The next question that must be answered in regard to Wilderness is specification of the minimum effective tool. In this case effectiveness has two aspects: (1) establishing predator beetle populations, and (2) keeping enough hemlocks alive and in good condition until this happens. It is apparent from the EA that the predator beetles will likely take years to establish themselves at levels sufficient for reducing hemlock mortality. If enough hemlocks are not kept alive in the interim it won't matter if the predators become established. Using insecticide against the HWA is the only way to be sure of keeping at least some trees alive; that is, an estimated number needed to maintain genetic diversity. Therefore using the combination of predator beetle release and imidacloprid is the minimum effective tool (treatment).

Soil injection of imidacloprid has proven itself to be a reliable, successful treatment method with very minimal non-target impacts. There shall be no obvious evidence of its use for visitors to see. With stem injection an argument can be made that there are even less non-target impacts than with soil injection. To date however, stem injection has proven less reliable and must be repeated more frequently. It has potentially more impact to visitors' experience since it can take hours (or even days) for the tree to take up the material from the injector, the injection itself wounds the tree, and the injection site is often visually obvious

since the injector tip is left in place and sap will ooze out of the tree and stain the bark. One argument in favor of stem injection is that new technology is improving stem injection and in the next year or two it may be a better option than today.

My decision is to allow both soil injection and stem injection in Wilderness. As presented in Chapter 2 of the EA, soil injection is the first choice except in areas with highly permeable or rocky soils, or with water present. In these latter cases stem injection is appropriate. However, the choice of application method may change in favor of stem injection if the technology improves sufficiently. If and when stem injection methodology becomes more reliable and can be made less visually obvious, it will be the method of choice in Wilderness due to less possibility of non-target impacts. Regardless, the five-year evaluation report should address this methodology question to ensure we are using the most appropriate methods for treatment in Wilderness.

The five-year evaluation report will be used to help determine whether or not the project should continue in Wilderness, and to revisit the question of the minimum effective tool (treatment).

4.0 PUBLIC INVOLVEMENT AND COMMENTS

In February 2005 a scoping letter was distributed to 1,040 individuals and organizations on the Chattahoochee-Oconee National Forest mailing list. The letter asked responders to nominate hemlock areas to be conserved within specific criteria. It did not include a lot of specific mitigation measures. Approximately 50 responses were received. Most responses expressed overwhelming support for the project, including both beetle release and use of insecticide. Support included treatment in Wilderness. Several of those commenting wanted us to make monitoring a strong part of the overall program.

<u>The five significant issues identified and responses to each are as follows:</u>

1. Insecticide treatment near predatory beetle release sites may cause mortality of beetles when they disperse. Small hemlock conservation areas were earmarked for insecticide only. Locations within each alternative were re-considered for expansion to allow for buffering distance between insecticide treated areas and beetle release using a 125-acre estimated dispersal area for beetles. A buffering provision was addressed where insecticide and beetle release are co-located.

2. Insecticide treatments need monitoring to detect possible contamination of water. Water quality monitoring was added for a sample of insecticide treated sites.

3. More than just the largest and tallest hemlocks should be included in protection. A specific mitigation to also treat some of the smaller hemlock with insecticide was included.

4. Predator beetle release should be emphasized over insecticide use as being more nearly natural and effective. A new alternative (alternative 3) was created that would not use insecticide.

5. Release of non-native species or insecticide use in Wilderness is 'trammeling' of the wilderness resource. A new alternative (alternative 5) was created that would not treat designated Wilderness.

In June 2005 a 30-day Notice and Comment period began on the proposed action. A draft of the EA was available. Seven commenters responded to the draft. All responses were supportive of both insecticide and beetle release, including within designated Wilderness. Additional areas were nominated. These were considered and four were added to the EA. Comments were also received repeating several of the non-significant issues brought up during scoping.

5.0 ALTERNATIVES CONSIDERED

A total of seven alternatives were considered; five alternatives were analyzed in detail. Alternative 4 as described in section 2.0 in the EA is the alternative selected for implementation. Alternatives 1, 2, 3 and 5 are briefly described below, along with my rationale for not selecting them. The two alternatives considered but eliminated from detailed study are also described.

Alternative 1 – No Action: This alternative proposed no forest-wide activities to meet the objectives outlined in Chapter 1: (1) To reduce hemlock mortality from HWA by establishing reproducing populations of predator beetles that feed on HWA, (2) To maintain reproducing populations of Eastern Hemlock throughout the historical geographic and elevational range across the Forests, and (3) To ensure survival of certain ecologically and culturally important groups of hemlock.

Rationale for Not Selecting This Alternative: The No-Action Alternative does not meet the purpose and need for the proposal and does not meet any of the objectives listed above.

Alternative 2 – Proposed Action: This is the alternative as presented to the public at the time of scoping. It met the purpose and need for the action.

Rationale for Not Selecting This Alternative: Alternative 2 was superseded with better information received during scoping.

Alternative 3 – Modified proposed action but beetles only: This alternative includes areas nominated by the public though scoping and mitigation measures from the North Carolina HWA EA and decision. Alternative 3 would include releases of predator beetles that eat HWA to establish long-term population control as in Alternative 2. However, neither imidacloprid nor any other chemical

would be used to maintain the genetic reserve trees described in the conservation design. This alternative relied strictly on beetle release for suppressing the adelgid.

> **Rationale for Not Selecting This Alternative:** Clearly, beetle releases alone would not ensure hemlock survival at the current time. The predator beetles would take years to build their populations to levels sufficient to adequately suppress HWA populations to levels low enough to reduce hemlock mortality. There is little risk associated with the particular insecticide and the particular application methods proposed for use in Alternatives 2, 4 or 5. Comparatively, the risks to the ecosystem associated with the loss of hemlocks are potentially huge, as described in the EA. Alternatives with insecticide provides much greater certainty of success than Alternative 3.

Alternative 4 – Modified proposed action: This alternative includes the same mitigations and locations as Alternative 3 plus the addition of four locations. It includes both insecticide and predator beetle treatments.

Alternative 5 – Modified proposed action but no Wilderness: This alternative is similar to Alternative 3 except that no Wilderness areas would receive any HWA suppression activities.

> **Rationale for Not Selecting This Alternative:** This alternative would not meet the purpose and need of genetic conservation of the existing hemlock population in Georgia by providing for pollen exchange throughout the Georgia portion of the hemlock range. In addition, the public also found this alternative unacceptable to them.

Alternatives Considered But Not Evaluated In Detail

> **Treatment by Spraying Insecticidal Soaps and Horticultural Oils:** Insecticidal soaps and horticultural oils can be sprayed on hemlocks when the objective is immediate knock down of an insect pest. If complete coverage is achieved, these agents act by smothering all invertebrates on the tree at the time of treatment. There is no residual effect, so HWA could reinfest the tree immediately. With this method there is an increased risk of applicator contamination and increased concern with drift, since the product is sprayed. This treatment method is appropriate for smaller, more accessible trees that could be treated frequently. It would not be appropriate for treating large or inaccessible trees. It would not meet the project objective of keeping HWA suppressed for months or years, as would be necessary to ensure tree survival.
>
> **Use of a predator native to the Southeastern US:** No effective native predator on HWA is currently known. Though research is on-going for native control agents, we cannot delay in the hope they would be available

in time. This alternative is therefore infeasible and cannot be considered in detail at this time.

6.0 FINDING OF NO SIGNIFICANT IMPACT

I have determined that Alternative 4 is not a major federal action having a significant impact on the quality of the human environment. Therefore, an environmental impact statement will not be prepared. I have considered both context and intensity in my determination, based on environmental analysis documented in the Environmental Assessment.

CONTEXT

- The actions of this decision and resulting physical and biological effects are limited to the locations as described in the EA and are therefore local in nature. The activities are limited to a small portion of the landscape and occur in forest types common to the locations in which they occur.

INTENSITY

- Both beneficial and adverse impacts are considered. There will be no significant effects as a result of the action (EA Chapter III). Any potential adverse effects are extremely limited.

The actions will have minimal effects on the public health and safety (EA Chapter III, pp 93-98). Insecticide to be used has been approved by the US Enviornmental Protection Agency for the described uses.

The actions will not have any detrimental effects on any unique characteristics of the geographic area such as park lands, historical and cultural resources, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas. It may have positive effects in maintaining ecologically or culturally important areas in their current condition (EA Chapter III).

Based on public involvement and analysis, the effects on the quality of the human environment are not highly controversial (EA pp 11 - 14).

The actions do not involve highly uncertain, unique, or unknown environmental risks to the human environment (EA throughout Chapter III). Both beetle releases and treatment of hemlocks with imidacloprid have been conducted before by Forest Service employees and treatment protocols are well established. These methods have also been used by other land management agencies, private landowners, and researchers in the Southern Appalachians.

The actions will not set a precedent for future actions with significant effects. They not do represent a decision in principle about a future proposal. Activities such as these have been conducted in the past: the non-native gypsy moth has been treated extensively using various suppression activities including in wilderness; predator beetle releases have occurred in the past on both public and private lands, including release in wilderness; imidacloprid treatment for suppression of HWA has occurred previously on the Chattahoochee and other public and private lands.

The cumulative effects of the proposed actions have been analyzed and no significant effects are anticipated (EA pp. 25, 29, 40, 53, 58-59, 69-70, 74-75, 78-79, 86, 92, 97-98).

This action does not adversely affect cultural resources listed or eligible for listing in the National Register of Historic Places and will not cause loss or destruction of significant scientific, cultural, or historical resources (EA pg. 92).

Release of predator beetles and treating individual hemlock trees with systemic insecticide will have no effect on proposed, candidate, threatened or endangered terrestrial or aquatic species listed by the US Fish and Wildlife Service under the Endangered Species Act. The release of predator beetles and use of systemic insecticides will have beneficial impacts to all Regional Forester's Sensitive terrestrial species located within treated hemlock locations by reducing hemlock mortality and therefore reducing habitat alteration stresses for these species in hemlock stands. Impacts to aquatic species on the Regional Forester's Sensitive list have been avoided by prohibiting insecticide use in their immediate vicinity.

This action does not threaten to lead to violation of federal, state, or local laws imposed for the protection of the environment. This will be ensured by carrying out the proposed action in a way that is consistent with the standards, general direction, and management requirements established in the Forest Plan and this Decision Notice.

7.0 FINDINGS REQUIRED BY LAWS AND REGULATIONS

1. The selected alternative is consistent with the Forest Plan for the Chattahoochee-Oconee National Forest as required by the National Forest Management Act (NFMA) 1976, 16 USC 1604(1).

    - It is consistent with the Forest goal to *'Manage forest ecosystems to maintain or restore composition, structure, and function within desired ranges of variability.'* This project directly supports maintaining eastern hemlock and their associated communities of species.

    - It is consistent with the various management area desired conditions and Plan direction for pest management.

2. The selected alternative is consistent with Forest Service Manual and Handbook direction regarding the use of pesticides.

3. The actions of this project will meet all requirements of the Endangered Species Act and all agreements with the State Natural Heritage Program, in that the impacts to Threatened, Endangered, and Sensitive species or critical habitat for these species are insignificant and will not affect population viability of any of these species.

4. The project is reasonable and feasible.

5. There are no significant irreversible or irretrievable resource commitments.

8.0 ADMINISTRATIVE REVIEW or APPEAL RIGHTS

This decision is not subject to appeal pursuant to 36 CFR 215.12 (e) (1). Notice of the proposed action was published. An opportunity to comment on the EA was provided. Comments received were only supportive of the actions proposed, including HWA suppression in Wilderness. Many of those responding in scoping and in later comments on the EA urged us to act quickly.

9.0 CONTACT INFORMATION

For additional information concerning technical aspects of this decision, contact Ron Stephens, Chattahoochee National Forest HWA Suppression Project Leader at: USDA Forest Service, 1755 Cleveland Highway, Gainesville, GA 30501; or by phone at 770/297-3000.

For additional information on the Forest Service planning process as it relates to this decision, contact John Petrick, Forest Planner, at the previous address or phone number.

10.0 IMPLEMENTATION

Implementation of this decision may begin immediately after publication of a legal notice in *The Gainesville Times.*

RESPONSIBLE OFFICIAL

/s/ Thomas A. Peterson August 24, 2005

(for)
Charles L. Myers **Date**
Regional Forester, Southern Region, USDA Forest Service