

### HEMLOCK HOSPICE VISITATION RULES

Harvard Forest is one of the most intensively studied research forests in North America. Throughout your walk, you will see evidence of active research, such as flagging tape and tree tags. Please help our research by not disturbing the equipment.

Visitors are asked to stay on the main *Hemlock Hospice* trail at all times. Do not stray from the interpretive trail into the woods. We are constantly managing hazardous trees along the trail, but many trees beyond the main path pose a serious personal safety hazard.

For your safety, do not touch, stand on, attempt to pick up, or otherwise interact with artwork or research equipment.

Guided *Hemlock Hospice* tours by David Buckley Borden and Harvard Forest staff are available for groups with fewer than 25 attendees. For pricing and availability visit <http://harvardforest.fas.harvard.edu/hemlock-hospice>

Please add to the [#hemlockhospice](#) digital trail on Instagram and Twitter.

### ABOUT HARVARD FOREST



The Harvard Forest is a department of the Faculty of Arts and Sciences (FAS) of Harvard University. The mission of the Harvard Forest is to develop and implement interdisciplinary research and education programs investigating the ways in which physical, biological and human systems interact to change our earth. The central focus on research and education has been unchanged since the Forest's founding in 1907. Learn more about the Forest at <http://harvardforest.fas.harvard.edu>.

### ABOUT DAVID BUCKLEY BORDEN

David Buckley Borden, a Harvard Forest Associate Fellow, is a Cambridge-based interdisciplinary artist and designer known for his creative practice of making ecological issues culturally relevant to the general public by means of accessible art and design. Borden was a 2016/2017 Charles Bullard Fellow at the Harvard Forest where he answered the question, "How can art and design foster cultural cohesion around environmental issues and help inform ecology-minded decision making?" Learn more about Borden and his work at <http://www.davidbuckleyborden.com>.

### ABOUT AARON M. ELLISON

Aaron M. Ellison is the Senior Research Fellow in Ecology in Harvard's Department of Organismic and Evolutionary Biology, Senior Ecologist at the Harvard Forest, and a semi-professional photographer and writer. He studies the disintegration and reassembly of ecosystems following natural and anthropogenic disturbances; thinks about the relationship between the Dao and the Intermediate Disturbance Hypothesis; and reflects on the critical and reactionary stance of Ecology relative to Modernism. On weekends, he works wood. Learn more about Aaron's work at <http://harvardforest.fas.harvard.edu/aaron-ellison>.

*Hemlock Hospice* is more than an art-science collaboration; it is also an educational initiative. Associated public lectures, workshops, and print and social media are available to promote reflection, critical thinking, and creativity among scientists, artists, educators, and the general public.

If you would like to join the conversation and help spread the word about how scientists, artists, and communities can work together to play an active role in preserving our environment, please reach out to David and Aaron, at [borden@fas.harvard.edu](mailto:borden@fas.harvard.edu) and [aellison@fas.harvard.edu](mailto:aellison@fas.harvard.edu) respectively. Learn more about *Hemlock Hospice* and related programs at <http://harvardforest.fas.harvard.edu/hemlock-hospice>



Harvard Forest, 324 N. Main St., Petersham, MA 01366

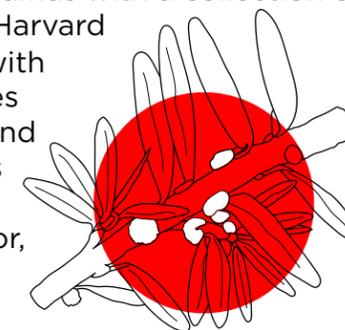
## HEMLOCK HOSPICE

October 8, 2017 to November 18, 2018

*Hemlock Hospice* is a year-long, art-based interpretive trail by David Buckley Borden, Aaron M. Ellison, and their team of interdisciplinary collaborators. This immersive site-specific science-communication project tells the story of the ongoing demise of the eastern hemlock tree at the hands (and mouth) of a tiny aphid-like insect, the hemlock wooly adelgid (HWA). While telling the story of the loss of eastern hemlock, the *Hemlock Hospice* trail addresses larger issues of climate change, human impact, and the future of New England forests.

*Hemlock Hospice* blends science, art, and design to [1] respect eastern hemlock and its ecological role as a foundation forest species; [2] promote an understanding of the adelgid; and [3] encourage empathetic conversations among all the sustainers of and caregivers for our forests—ecologists and artists, foresters and journalists, naturalists and citizens—while fostering social cohesion around ecological issues.

Please visit David Buckley Borden's companion exhibition, ***Forest, Interdisciplinary Science Communication*** at the Fisher Museum. Borden builds on the science communication tradition of the Fisher Museum's dioramas with a collection of projects made in collaboration with Harvard researchers. Borden, often working with visiting artists and designers, explores a varied approach to accessible art and design ranging from silkscreen prints to one-of-kind art objects. This free exhibition, curated by Penelope Taylor, runs through November 18, 2018.



### **1. Wayfinding Barrier No. 1 and X-Trail Closure**

Harvard Forest's yellow trail is now closed due to safety hazards from standing dead and dying eastern hemlock trees. Hemlock, with no natural resistance to the aphid-like HWA, succumbs as the insect feeds on the fluid and starches flowing through the tree's needles. Notice that the towering hemlocks at this closed trail head have significant canopy loss because of the HWA.

### **2. Hemlock Hospice Forest Lantern No. 1**

Welcome to *Hemlock Hospice*, an art-based interpretive trail exploring the loss of eastern hemlock trees across North America. A cure does not exist; hospice, or end-of-life care, is not about saving the trees, but managing their loss. Furthermore, Hemlock Hospice is not only for the dying trees, but also for us, the living. Hospice helps us to accept the loss of this species and to move forward in positive and constructive ways.

### **3. Insect Landing**

HWA landed in Virginia in 1951, a hitch-hiker on nursery stock imported from Japan. HWA arrived in this part of the Harvard Forest in 2009. The global economy has local ecological impact; international shipping practices have unintended consequences for forests here at home.

### **4. Double Assault**

Hemlock forests are rapidly dying because of a double assault: The effects of HWA are amplified by effects of global warming. Winter lows of -25°C (-13°F) historically prevented the HWA from migrating north, but as winter temperatures gradually rise, the insect spreads in tandem. It has been nearly a decade since it's been cold enough during the winter here in Petersham to stymie the HWA.

### **5. World's Most (In)effective Insect Trap**

We want to zap them, trap them, kill them all. But hard as we try, HWA cannot be managed on a landscape-scale. Single trees may be saved with a variety of insecticides, but there are too many hemlock trees in the forests of eastern North America to treat on a tree-by-tree basis.

### **6. Hospice Visitor Check-In and Safety Helmet Station**

We ask all visitors to sign in and sign out in the log books provided in the station box. Your cooperation will ensure accurate data collection and reporting for this science-communication initiative. We advise all visitors to wear the safety helmets (hardhats) provided. Please return hardhats here when you exit the exhibition.

### **7. HWA Tent**

Although we often impute intentionality or agency to HWA and other "invasive" species, HWA is just like any other animal. It simply lives to feed and breed. In many ways, the hemlock forest is just temporary housing and a food source for these short-lived insects. The state "patches" on the HWA tent represent the current extent of the HWA outbreak in eastern North America.

### **8. Lifeline of a Dying Hemlock**

Water brings life, and its lack brings death. Water flows up from the ground into the trees when the sun shines and the tree photosynthesizes. The two lifelines contrast a healthy hemlock (black line) with one whose veins (xylem) were cut (on day four) in an experiment to simulate the effects of HWA (red line). It was cloudy the day before this experiment began, so photosynthesis was low and little water flowed through either tree. The experiment was a success; the girdled tree died. But at what cost?

### **9. Memorial Woodshed**

How do we memorialize the loss of a single tree, an entire forest, and a unique New England ecosystem? In the spirit of the Harvard Forest dioramas, this woodshed memorial frames the loss of the hemlock ecosystem as the HWA renders the eastern hemlock tree functionally extinct. With the loss of this foundation tree species, we lose an integral component and driver of diversity in our forests.

### **10. Fast Forward Futures**

What's the future of this hemlock forest? Fast Forward Futures directs attention to the next successional phase of this forest; an impenetrable black birch thicket. This black birch thicket will eventually give way to a mixed deciduous forest of birch, oak, and maple.

### **11. Dendro Data Stick**

With the loss of this hemlock forest, not only do we lose the trees themselves, we lose the entire legacy of data—their "dendrochronology"—embedded within the tree rings of these long-lived trees.

### **12. Black Armband Ecology**

A black Harvard Forest tree band signifies that the wearer is in mourning and wishes to publicly commemorate a deceased family member, friend, or comrade.

### **13. Exchange Tree**

As hemlocks succumb to the HWA, they slowly decay. When the standing dead trees snap, the fallen logs are scattered akimbo on their leafless branches. Pause here to reflect on these fallen giants and leave a message for yourself, for the hemlock, for the HWA, for others, or for the future forest. Ribbons and pens can be found in the Data Logger box.

### **14. HWA-Brand Nurse Logs**

Because of the HWA, all the hemlocks within this forest will die, disintegrate, and fall to the ground within the next several decades. As the fallen logs lay prone on the earth, they will decay and provide rich growing conditions as "nurse logs" for future trees.

### **15. Wood Shoes**

Stand within the shoes of a dying tree and look out across this hemlock forest. Look closely and you'll see a forest in various states of life, death, and decay.

### **16. Bio Resource Plug**

As much hemlock has been lost to preemptive harvesting for biofuel chips, paper stock, and timber as has been killed by the HWA. But with the loss of eastern hemlock, we lose more than a natural resource. What are the alternative values of eastern hemlock?

### **17. Sixth Extinction Flag**

Eastern hemlock is one of many species being lost around the world as part of the ongoing sixth extinction. This massive loss of biodiversity is a man-made phenomenon in which we all play a role.

### **18. Hemlock Hospice Forest Lantern No. 2**

A simple forest lantern as a global warming warning and a humble prompt to consider the impact that decisions, both small and large, have on our environment.

*Please return hardhats to Safety Helmet Station (No. 6) when you leave the exhibition. Thank You.*

*Hemlock Hospice* is made possible by leading Harvard scientists, the Harvard Forest Woods Crew (Lucas Griffith, Oscar Lacwasan, Ronald May, Roland Meunier, Matt Robinson, and John Wisnewski,) and an A-team of creative professionals. Collaborating artists and designers include: Jackie Barry, Andy Bryce Bell, Jack Kohler Byers, Benjamin Carlson, Mike Demaggio, Brian Hall, Salvador Jiménez-Flores, Jared Laucks, Tim Lillis, CC McGregor, Salua Rivero, Penelope Taylor, Trifecta Editions (Helen Popinchalk & Morgan Grenier), and Lisa Q. Ward.

