

Hopkins Memorial Forest FY 2000-01 Activities Report

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INTRODUCTION—FY 2001

This year was a productive one at the Hopkins Forest: several professors and students were busy conducting research and environmental monitoring in the Forest, numerous class visits and lab sessions took place there, and the facilities got some important upgrades. In addition to current research, work was begun on a future study site for incoming biologist Professor Manuel Morales. Professor Morales studies the mutualistic relationships between ants and leaf hoppers in goldenrod communities. A 1.5 acre field along Northwest Hill Road was cleared and prepared for the establishment of experimental plots.

The Rosenberg Center was outfitted with computer ports for data and internet transmission; we will soon be procuring some desk-top machines to serve Rosenberg Center users. The physical space was organized with the help of a summer museum curator; the workshop was moved upstairs; and the office will be transformed into usable work space. In addition, new electrical and lighting fixtures

were installed in the Moon Barn, making this historic building more suitable for exhibits and educational events.

Maintenance activities proceeded with the help of talented semester and summer caretaking crews. An Americorps crew combined efforts with our staff to complete some major maintenance on the Taconic Crest Trail. As usual, the Hopkins Forest hosted several public events and workshops and played host to hundreds of weekly recreators, regardless of the season. Hunting and maple sugaring seasons went smoothly; indeed, syrup production (if not the deer harvest) was quite copious.

This year we aim to take on some significant planning tasks. These will include preparing for an outside panel review of the Forest program; developing a management plan for the Vermont property; and exploring the alternatives regarding the former plantations. We also aim to encourage an expansion of the research program and improve our dissemination of data and information from the Hopkins Forest to the general public.

ACTIVITIES—RESEARCH and MONITORING

Summer 2001 and ongoing

Several research projects—including ongoing studies as well as newly launched projects—were underway during the past year (Table I). In addition, we started preparing a site for new Biology Professor Dr. Manuel Morales to undertake his research on leaf hopper/ant symbiosis.

Garlic Mustard--Population Dynamics in Forested Ecosystems

Joan Edwards' study of the population dynamics of the invasive plant, garlic mustard (*Alliaria petiolata*), continued into 2000-01. Two students—Jackie Hom and Brendan Reid—continued collecting data on established plots in three different areas in Hopkins Forest. Dr. Edwards has started analyzing her data in earnest to gain insight into garlic mustard's success in forests of different ages, its rate of invasion, and its effects on native flora.

Use of leaf packs by Plecopterans in Birch Brook

Michelle Ruby '02 began the field stage of her thesis project on the use of leaf packs by stone fly (Plecoptera) nymphs in the Birch Brook system. The focus of her study was to determine if there is a differential rate of colonization of leaf packs containing leaves of different species of trees; the species being tested are sugar maple, American beech, Eastern hemlock, and Morrow's Honeysuckle. This study, guided by David C. Smith, will continue into the fall.

Hay-scented Fern Allelopathy

This was the second year of field experiments for Hank Art's and David Richardson's study of the possible allelopathic mechanisms of hay-scented fern *Dennstaedtia punctilobula*. Prosper Nwankpa '04 and Joel Schmid '03 worked on this study. The extracts were applied to a plot in front of the Rosenburg Center.

Sediment Transport and Deposition in the Birch Brook Watershed

Matt Jungers '03 continued the work of David Dethier and Will Ouimet '01 on sediment transport within the Birch Brook Watershed.

Deed Research

Two students, Mike Minnefor '02 and John Babcock '02 researched historic deeds for the area that is now covered by the Hopkins Forest. This information sheds light on former land uses and will be used by Hank Art in his studies on long term successional trends in the forest.

Archives

Two individuals, alumna Jaime Margalotti '99 and Elizabeth Healy '02 worked on the Hopkins Forest Archives under the supervision of Hank Art this summer. Their primary role was to digitize old documents and photographs so they would be accessible as computer databases.

Ant/Leaf Hopper Mutualism (future study)

With the arrival of Manuel Morales in the Biology Department, we began clearing a 1.5 acre opening for his studies of ant/leaf hopper mutualism in goldenrod (*Solidago altissima*) fields. In December 2000, the

field was cleared of all timber and the stumps were ground down. Several spring planting attempts were met with minimal success; we will, therefore, conduct further site preparations and plantings during the fall of 2001.

Table I HMF-BASED RESEARCH PROJECTS—Summer 2001

Student Supervisor Project Funding

Jackie Hom '03 Joan Edwards Garlic Mustard Biology

Brendan Reid '03 Edwards Garlic Mustard Biology

Matt Jungers '03 David Dethier Sediment transport in Birch Br. Watershed CES

Michelle Ruby '02 David C. Smith Use of leaf packs by Plecopterans Biology

Prosper Nwankpa '04 Art, David Richardson Allelopathy Chemistry

Joel Schmid '03 Art, David Richardson Allelopathy Chemistry

Mike Minnefor '02 Art Historic Deeds CES

John Babcock '02 Art Historic Deeds CES

Independent Research Projects--Classes

In the Spring '01, Michelle Ruby '02 conducted an experiment of aquatic macroinvertebrates in HMF as part of the requirements for BIOL 302--Communities and Ecosystems. Students from ENVI 102, Introduction to Environmental Science, conducted some research activities in the Hopkins Forest, although no details on their research were received by the manager.

Permanent Plot Network

The task of entering and compiling data from the last round of plot sampling in the middle 1990s continued during the past academic year. The entire permanent plot network was last sampled in the mid-1990s; sampling had previously occurred in the 1970s and during establishment of the grid in the 1930s. The next sampling cycle will begin around 2007.

Wathershed/Meteorological Monitoring (Environmental Analysis Lab)

Once again, the Center for Environmental Studies' Environmental Analysis Lab, under the guidance of David Dethier and Sandy Brown, continued the process of analyzing meteorological, hydrologic and biogeochemical parameters within the Forest. Four weather stations and two stream gauging stations were monitored continuously throughout the year with the aid of digital data loggers and solar-powered batteries.

During this period the Omnidata weather station instrumentation was upgraded to Campbell Scientific components. In spite of some initial difficulties in installing the new instruments, all stations were operating smoothly as of this writing. In addition, we were able to upgrade two of the four stream stage height loggers from Omnidata instruments to Campbell Scientific units. We are now using exclusively CSI technology at the stream gauges as well as the weather stations.

We have plans to use a local phone/cable line to view data from Station 1 in real time in the Rosenburg Center, the Morley Sciences Laboratory, and/or the Science Library. The Environmental Analysis Lab looks forward to the future with many upgrades to come and increased availability of our data.

On July 25th, 2001 the weirs were dredged and the sediment load weighed by HMF and lab personnel. Formerly, there was a gauging weir along the North Fork of Birch Brook, but this station is no longer in service. Chrissy Fletcher '02, Raphael Rosen '01 and Eleanor Shoreman of Vanderbilt University were hired under CES funding to assist Sandy Brown in running the lab during the past summer.

Biodiversity

Crooked-stem Aster (*Aster prenenthooides*)

Joan Edwards and Drew have been monitoring a population of the rare (Massachusetts species of Special Concern) crooked-stemmed aster near the Hoosic River section of the Forest. One large and several potential populations have been documented. The next step is to delineate and better document the distribution of this species within the Forest. This would be an appropriate independent project for a student.

Crayfish (*Cambarus bartonii*)

A volunteer from Williamstown, Charlotte Stinger, surveyed populations of the Appalachian Brook Crayfish, *Cambarus bartonii* during the summer of '01. Ms. Stinger used visual observation surveying as well as minnow traps to identify populations of this Species of Special Concern in Massachusetts in Ford Glen Brook and the Main Branch and North Branch of Birch Brook. It appears that this species may be widely distributed throughout the streams of the Forest, however, future work will be needed delineate and describe these populations.

Breeding Bird Point Surveys

During June, Drew established and surveyed 40 points along trails throughout the Forest to monitor breeding birds. These points will be located with a GPS receiver and will continue to be surveyed on a yearly basis.

Data Management

Geographic Information Systems

Bill Fox, a CES Research Associate, continues to develop a database of HMF cover maps using Arcview GIS. Bill is working with Henry Art to spatially analyze the changing forest landscape in the HMF.

Grants

David Dethier--representing the interdepartmental GPS committee--applied for a grant from the

National Science Foundation (NSF) in the Spring of 2001. This grant would have increased the capacity of the College (and therefore the Forest) to acquire and process and spatial data; unfortunately, it was not funded.

Drew has applied for a small grant from the Massachusetts Trials Program to enable reconstruction of the Upper Loop Trail. If funded, this work would be conducted in summer 2002.

TEACHING

During the fall semester, BIOL 203--Ecology, held weekly lab sections at the Forest; these sections were taught by Visiting Biology Professor, Kenneth Schmidt.

During the spring, BIOL 302--Communities and Ecosystems (Schmidt), and ENVI 102-- Introduction to Environmental Science used the facilities for their labs. ENVI 102--taught by the team of Hank Art, David DeSimone, and Birgit Koehler--used the Forest for many of its four-hour lab sessions, undertaking some major activities (such as digging soil pits) as part of their laboratory activities.

Other classes, such as ENVI 101--Humans in the Landscape (Kai Lee), made visits to the Forest as well.

FACILITIES/CARETAKING

Rosenburg Center

During the summer of 2001, the Rosenburg Center was equipped with internet data ports for computer facilities. The Center is now linked to the campus networks and the World Wide Web through a DSL line and cable modem (Adelphia). This upgrade will greatly increase the utility of the center as a satellite lab--allowing the flow of electronic information freely between the main campus and the field station. We have begun the process of procuring desk-top computers to serve the data management needs of HMF Users.

The Rosenburg Center's Lab held regular lab sessions again this year, although, with Field Botany not offered, use was a bit lower than the previous year. We intend to acquire a new refrigerator to replace the one from the 60s that now graces the lab. In addition, Drew has continued to expand a collection of field guides and reference books that are currently housed in the dry lab. These guides are available for students to use in and around the Hopkins Forest and must be checked-out through Drew.

Farm Museum

This year Sara Andrews was hired to work as a curator of the Farm Museum collection. In her role, Sara brought the cataloguing of the collection up to date, organized the storage area, maintained the artifacts that required care and worked on several summer exhibits. As a result of her work, we now have a current electronic database of all the museum holdings.

The electrical system in the Moon Barn was repaired and new lighting fixtures with individual switches and dimmers were installed, making the barn more suitable for hosting exhibits.

Canopy walkway

The canopy walkway was inspected once again in 2001. At the advice of inspector Bart Boricious, the walkway platforms and ladder were treated with paint or weatherizers. Some follow-up

maintenance will be performed in the coming year.

Trails/Ski Track

The ski trail was improved with the addition of another small foot bridge over a tributary of the South Branch of Birch Brook. The ski trail was groomed from early January until the end of March this year and served the public and the Williams nordic team. The next phase for the trail will involve some reconstructive work. As mentioned, we have applied for financial assistance from the DEM's trails program for this project. Americorps has also expressed an interest in helping with this work next year.

The summer of 2001 also saw the improvement of parts of the Taconic Crest Trail with the assistance of an Americorps Crew. The work included the feeder trails from the Petersburg Pass parking area. Erosion control structures were placed in the most degraded stretches of the trail between these feeder trails and the Vermont border. This trail work took a week to complete using the Americorps crew and HMF summer caretakers.

Roads

The road connecting the Rosenburg Center to Northwest Hill Road was grated in June 2001. A more thorough resurfacing of the road has been proposed for the Spring of 2002.

Boundaries

The disputed parcel near Northwest Hill was awarded to HMF in a deal that gave 1/3 acre of road frontage along Northwest Hill Road to another party. In addition to the disputed 23 acres, the College was awarded another 80 acres of land between the crest of Northwest Hill and the Vermont/Massachusetts border. This land was posted in the fall, but has not yet been marked. In addition, we continued to post and mark the rest of the Forest's border. Currently, the entire west and south boundary lines have been completed.

A 110-acre tract of land in Vermont (the Black/Thornton parcel)--which was until now jointly held by the College and the Thornton family--is in the process of being divided. It is likely that this division will result in the College retaining 55 acres in the southwestern section of the tract and the co-owner taking an identical amount to the northeast

Caretaking

As in the past, HMF relied for a major part of its management, upkeep and outreach activities on the efforts of student caretakers (Table II). The fall and spring semesters had a regular crew of five to nine students, each generally working 2 to 5 hours per week. Michelle Ruby '02 served ably as the head caretaker throughout the year, keeping crews organized and apprised of their work assignments. Generally, caretaker hours decreased substantially during the last six weeks of both semesters and during Winter Study.

The fall crew kept busy working in the Buxton Garden; preparing for and hosting the Fall Festival; marking and posting boundaries; preparing for hunting season; and doing general property maintenance. In the spring, the major effort was the maple sugaring campaign; some time was spent preparing equipment and splitting wood before the season and in cleaning up afterwards. Caretakers were also involved with preparing for and hosting the two spring events, Sap-to-Syrup, and Spring

Field Day; some students also assisted with school programs.

Table II. STUDENT CARETAKERS ACADEMIC YEAR 2000-01

Michelle Ruby '02 Emily Brocks '01
 Bill Sacks '03 David Cooperman '02 (spring)
 Elena Traister '01 Julia Goren '01 (spring)
 Maya Kapoor '01 Matt Jungers '03 (spring)
 Kristin Wilmer '03 Melissa Purdy '02
 Nina Trautman '03 Elizabeth Wood '00 (fall)
 Bethany Sayles '03 (fall)

A summer caretaking crew, consisting of Briana Halpin '04 and Paige McClanahan '04, worked full time for 10 weeks. The acquisition of a new DR Field 46 inch mower helped them keep up with the mowing tasks. In addition to their regular tasks—mowing, gardening, trail and water-bar maintenance, weatherizing the canopy walkway, maintaining the museum collection and the Rosenberg Center area—this year's crew spent about 10 percent of its time tending the 'Forest Garden' at Kellogg House. An additional worker, Abi Griffith '01, was hired on an hourly basis last summer to assist with exhibits and curatorial duties. Abi also did the artistic design and work for a kiosk that was installed at Petersburg Pass near the southwestern entrance of the Forest.

Total caretaking hours during the academic year 2000-01:
 fall--269.5; spring--324.75; total--621.25.

PUBLIC

Recreational Use Issues

Several areas of HMF continue to be vulnerable to abuse and trespass by the public. Some of the major use/abuse issues during the period included:

- ? Dogs--generally, the situation with dogs has improved. Although there continue to be some people who insist on letting their dogs off their leashes, especially during the winter ski season, compliance with the leash rule seems to be on the increase.
- ? Four wheelers--these continue to be used on HMF trails, especially the Taconic Crest Trail; they are generally hard to catch.
- ? Horses--use of the lower trails by horse riders is still a problem. The Bonnie Lea Farm has been using these trails and posting signs in the area. Members of the Users Committee plan to meet with the owners in the Fall of '01 to discuss this situation.
- ? Hunters--some still trespass in the Northwest Hill area during the shotgun season. In addition, some hunters brought four wheelers across the Forest borders during the past season; Drew and David Boyer met with these individuals to clarify our ARV policy after the season.
- ? Vermont Tracts--no serious trespass (squatting, vandalism, vagrancy) problems were reported during the past year; however, evidence of four-wheeler trespass was noted during the summer. The imminent partitioning of this tract may change enforcement strategies in this area.

Public Outreach

Community Events

As in years past, HMF hosted several events for the public and college communities. They were

generally well attended and well received by visitors. The following events were held the past year:

? Fall Festival—the Fall Festival was held on Sunday, September 24 with approximately 100 people attending on a dank fall afternoon. Traditional forest and harvest activities, as well as presentations of HMF-based research, were featured.

? Maple Festival—“Sap-to-Syrup” was held on a chilly but clear Saturday afternoon (March 10th). The cold, wintry weather (7 inches of snow fell the night before) might have contributed to a the modest turnout of approximately 90 people who came to see sugaring exhibits, demonstrations, and taste HMF produced syrup served over pancakes and ice cream.

? Spring Field Day, which coincided with Parents Weekend, was held on April 28th. This event included hikes, bird-walks, and canopy walkway visits on a seasonable spring day. Attendance in these events was around 125.

? Alumni Day—HMF assumed a more prominent role in this year’s Alumni Weekend (June 9th), offering several hikes, trips up the canopy walkway and childrens’ activities. The opening of the ropes course helped push visitation to the event to near 200 on what turned out to be a very pleasant late spring day.

Local Schools

As usual, HMF hosted a variety of school groups from around the area. (Appendix III—list of HMF activities). Some visited in conjunction with special events that were occurring in the Forest (maple sugaring), while others chose their own occasions to visit. Student naturalists and, in some cases, Drew served as guides or interpreters for these school groups. Stream-oriented activities proved to be especially popular with several groups.

In the winter, the Rosenberg Center played host to a Project Wild workshop. This training session--aimed at those interested in environmental education--drew about 12 Williams students in addition to several staff members. It was moderated by a certified Project Wild facilitator. Due to the popularity of this program, we will aim to host future such workshops at the Forest.

Publicity

The local press published articles announcing the hunting season and the community festivals.

Williams Outing Club

The Outing Club cabin saw a constant stream of use during the year 2000-01, hosting revelers on approximately 30 nights. The cabin was also used during the Maple Sugar Festival in March.

The Outing Club lean-to was used sparingly by the Williams Community; use by unauthorized persons was not noted this year, although the remoteness of the facility prevents us from monitoring it closely. In the spring of 2001, the Williams Outing Club constructed a low-ropes course in the southeastern corner of Hopkins Forest. This facility--designed for guided group dynamics activities--has already been used on a number of occasions by the Outing Club.

Student Naturalists

The student naturalists were active in HMF during the past year. Led by Sarah Nichols, the naturalists conducted a variety of hikes and bird-walks and co-sponsored some community events such as the Maple Sugar Festival

SPECIAL PROGRAMS

Hunting

As in past years, HMF hosted a special permit hunt in the Massachusetts sections of the Forest during the Massachusetts deer shotgun season. As usual, no hunting was permitted in the Vermont, New York or east of Northwest Hill Road, nor was archery hunting allowed. Eighty-six hunters from throughout Massachusetts and several other states registered (unofficial sign-in) nine deer, mostly antler-less, during the twelve day season. These figures continue an apparent negative trend in the HMF deer harvest over the last 25 years (the cause of which is uncertain). Williams College security along with Williamstown police officers were hired to provide security during the hunt and the season proceeded without incident.

As in past years, the HMF hunting program cost upwards of \$1500.00 from the Forest's operating budget (Table V). The decline in hunters (about 25 fewer than '99) may force us to re-evaluate the HMF hunting program and its future. Certainly, we will be watching the '01 season closely.

Maple Syrup Season

The spring of '01 broke late and the sap didn't start flowing in earnest until the second half of spring break. Several students were around, however, to assist with the collection and processing of the sap during this period, and we were able to produce substantially more syrup than the previous year with fewer evaporator hours; work on the evaporator and its smoke-stack seemed to significantly enhance efficiency. The tapping period lasted from February 23rd until the last buckets were removed on April 11th. During these seven weeks, caretakers collected over 2000 gallons of sap from 125 trees, mostly along Northwest Hill Road (Table III). This sap was boiled down into approximately 40 gallons of syrup that was ultimately bottled. During this season, we also hosted the "Sap-to-Syrup" celebration and entertained several classes and numerous public visitors.

Table II I. SUMMARY OF SUGARING ACTIVITIES—2000

Trees tapped	125*
Tapping Period (days)	43
Tap Nights	5375
Gallons of Sap	2170
Days (sessions) Boiled	9
Hours	100
Gallons (approx.)	
Raw Syrup Drawn Off	44.5.
Bottled	40.0
Caretaker hours	199**
Manager's hours	120**

*Most figures are approximate

**Not including before and after tapping period

MEETINGS/COORDINATION

Affiliations

Taconic Crest Trail Consortium: Drew has been working with the Taconic Crest Trail Consortium and attending regular meetings of that organization which seeks to promote sustainable recreational use of that 35 mile trail and coordinate management and maintenance activities. The Rosenberg

Center has provided a regular venue for the bi-monthly meetings of the Consortium whose members represent a number of non-profit groups and agencies from New York and Massachusetts.

Hoosic River Watershed Association (HooRWA)--Drew has been working with the Hoosic River Watershed Association's bio-monitoring program. The Rosenberg Center has played host to several lab training and sample processing sessions; Williams students have attended some of these sessions. In addition, Drew participated in the HooRWA's Artists and Scientists program, visiting, on several occasions, a school in Clarksburg, MA.

North Berkshire Audubon Chapter--HMF continued to host bird counts and walks sponsored by the North Berkshire Audubon Society, including the Annual Christmas Bird and Century counts, during which teams were assembled to survey parts of the Forest.

Conferences

Drew attended the following conferences on management and ecological issues in the past year:

- ? Appalachian Trail Monitoring Consortium, Hanover, NH, October 26, 2000.
- ? Northeast Environmental Studies Consortium, Annual Meeting, Williamstown, MA, November 10-11, 2000
- ? MASS Vernal Pools for Educators Workshop, Princeton, MA, March 17, 2001. Discussion of vernal pool ecology and research in NE.
- ? Organization of Biological Field Stations--Annual Meeting: Oklahoma, September 20-23, 2001.

ADMINISTRATIVE

HMF Users Committee

The Hopkins Forest Users Committee is the group charged with deciding most of the management and planning issues pertaining to the Forest and its infrastructure. Most of these members--selected from among College faculty, staff and students--have vested research or teaching interests in the Forest (Table IV). The Committee, under the direction of Dr. Joan Edwards, met each month and provided valuable insight and support to the Forest Manager. In addition to serving in his "ex-officio" post on the HMF Users Committee, HMF Manager Drew Jones also served on two other Williams College interdepartmental working groups: the Center for Environmental Studies Advisory Committee and the Geographic Information Systems Committee.

Table IV. HMF USERS COMMITTEE--2000-01

Joan Edwards, Chair, Biology
 Hank Art, Biology, CES Director
 David Smith, Biology
 Jay Thoman, Chemistry
 David Dethier, Geosciences
 David DeSimone, Geosciences
 Sandy Brown, CES—Environmental Analysis Lab
 Scott Lewis, Director—Williams Outing Club
 Drew Jones, HMF Manager
 Sarah Nichols '03
 Kristin Bohnhorst '03/Bill Sacks '03

FUTURE

--What's in store for 2001-02?

Research Directions: A major focus in the upcoming year will be to finish site preparations and establish goldenrod (*Solidago altissima/canadensis*) in the field on Northwest Hill Road. Some leveling and harrowing activities will be conducted during the fall of '01. Planting of seed will be conducted as early as Fall 2001, with vegetative stock being introduced to the site in Spring 2002. It is expected that introduction of experimental insect colonies will be underway by Summer 2003, if not before. In addition, Dr. Morales will be piloting some experiments on over-wintering of *Publilia* leaf hoppers in the soil; this study will be conducted in the "Grasshopper Field".

In the Fall of 2001, Ken Schmidt and Drew will be setting up a saw-whet owl banding station in the Forest. This station will aim to sample southward migrating owls, and data will be contributed to a national database. Students and the college community will be encouraged to take part in this endeavor.

We are considering options for converting some of the old, declining hybrid poplar plantations in the southeast corner of HMF into useful teaching and demonstration areas. One proposal is to "turn back" one area every few years to establish a "portfolio" of forest stands of different seral stages.

Planning

During the upcoming year, we aim to invite a team of professionals to review the Hopkins Forest Program and give advice for strengthening it. The review and subsequent planning process will likely carry over into FY 2002-03. The envisioned review team would be comprised of five faculty and field station directors from other academic and private institutions. They would spend two days in Williamstown, visiting the facility and meeting with Drew and other members of the HMF Users Committee and taking part in panel discussions. We would then forge their recommendations into a planning document.

Timber Management

This year we will start to develop a management plan for the 300 acres of forested land in Vermont. This area is currently not being used in teaching and research activities, yet is costing the College substantially in local taxes; thus, we plan to enroll it in the Vermont Forest Stewardship Program. We are also looking into possibly forming other partnerships: the Massachusetts Woodlands Cooperative would be one prospective partner.

Outreach: We aim to continue reaching out to the community by having the Forest as an arena for student naturalists to gain experience in teaching and outreach through contact with local public schools and community groups.

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