

HMF Activities Report--Fiscal Year 2003

INTRODUCTION

The year 2002-03 was one of continued growth in the programming and infrastructure in the Hopkins Forest. A new study on hormone transport and orientation in poplars was initiated. Ongoing research projects continued--including those on ant/leaf hopper mutualism, garlic mustard growth dynamics, sugar maple genetics, and meteorological and geochemical monitoring. In addition, the Hopkins Forest again hosted a fall banding station for migrating northern saw-whet owls.

A major land clearing project was undertaken around the central weather station. The conversion of these three acres to field cover will bring the station into compliance with National Oceanic and Atmospheric Administration (NOAA) standards as well as provide additional field sites for experiments, demonstrations and class labs. The weather station was outfitted with a groundwater monitoring well that will allow researchers to model groundwater flow.

Educational programs continued at the Forest: three Biology classes held regular lab sessions; numerous programs were conducted for schools and the general public, and a newly revised map/brochure was issued. The canopy walkway was outfitted with a second access ladder to facilitate a free flow of movement across the unit. As usual, a crew of earnest student caretakers tended the facilities and grounds. The Forest hosted its normal array of public events including the annual Fall Festival, Maplefest and Alumni Day; in addition, a summer community picnic was hosted to commemorate the Town's 250th anniversary. After a year in the works, a series of all-weather interpretive signs was installed along the Lower Loop Trail.

In addition to continuing ongoing programs, in the upcoming year we aim to develop a plan for the use of the Vermont Tract. A timber cruise of the 365 acre Vermont tract was completed during the summer '03.

ACTIVITIES-RESEARCH and MONITORING Summer 2003 and Ongoing

Several scientific studies were underway during the past year (Table I).

Ant/Leaf Hopper Mutualism

This was the second year of a study on ant-leaf hopper (*Publilia*) mutualism by Manuel Morales of the Biology Department. This experiment utilized the south (existing) field on Northwest Hill Road--expanding the experimental area employed last year. Bill McDowell '04 worked on the study this year with Professor Morales. The recently established field is proceeding rapidly to goldenrod cover. It was mowed for the first time in the Fall of '03 and will be used as an experimental site in '04.

Garlic Mustard--Population Dynamics in Forested Ecosystems

Joan Edwards' study of the population dynamics of the invasive plant, garlic mustard (*Alliaria petiolata*), continued into 2002-03. Two students--Sam VanVolkenburg '05 and Jodian Pinkley '06--continued collecting data on established plots in three different areas in Hopkins Forest: the Beinecke Stand, the former mansion site and the red oak stand. This is the sixth year of Dr. Edwards' investigations of the mechanisms of garlic mustard's success in forests of different ages, its rate of invasion, and its effects on native flora.

Sugar Maple Decline

Flynn Boonstra, working with Hank Art, undertook thesis research on the vigor of sugar maples in the Hopkins Forest. She sampled sites along a vertical gradient from the Beinecke stand to the top of the Taconic Range where the saddle-prominent caterpillar devastated trees twenty years before. Her interest is in comparing the magnitude of decline in sugar maple at different locations in the forest.

Sugar Maple Genetics

This past year, Tom Baribault of the University of Vermont's Proctor Center continued to sample sugar content of the remaining trees in the sugar maple plantation that was established by the Forest Service in 1960. Dr. Baribault made two collections at the site--one in March and another in April. Baribault is now trying to identify parental trees, some of which are thought to be in the Hopkins Forest. There are two other known plantations with sibling trees of the one in HMF, one each in Vermont and Ohio. Dr. Baribault plans to continue sampling the sugar content of the trees in all three plantations in the coming year.

Wood Grain Development in Quaking Aspen

Professor Eric Kramer of Bard College at Simon's Rock initiated a study of transport of Indoleacetic acid (IAA) in quaking aspen (*Populus tremuloides*). Dr. Kramer's intent is to study the physiological

mechanisms by which trees generate new tissue in response to wounds. His pilot sampling of May 2003 will be expanded into a full study in 2004 for which he received a 2003 Department of Agriculture grant.

Deed Research

During the summer 2003 three students, Bethany Sales '04, Jen Lazar '04, and Dan Bahls '04, were employed to conduct research into deed histories of parcels now comprising the Hopkins Forest. With this information, Professor Art will be able to make and refine correlations between past land uses and current forest stand composition in HMF.

Northern Saw-whet Owl Migration Banding

Ken Schmidt and Drew Jones continued their Northern saw-whet owl (*Aegolius acadicus*) banding station in the Fall of '02. Mist-nets (a single-tier array of three 12 meter nets) were set up on a trail south of the Rosenburg Center; an audio lure was used to attract the migrating owls into the nets. The station was open on dry, calm nights from dark until around midnight between October 1st and November 16th (for a total of 35 net-nights). This expanded coverage (over the previous year), coupled with an improved sound system, resulted in the capture of 159 NWSOs and one Eastern screech owl. Three of the saw-whets were recaptures: two previously banded in Maryland and one from Pennsylvania. Students from BIOL/ENVI 203--Ecology took part in this endeavor as a part of a lab requirement for the class. With its establishment, this station is now the major one of its kind in interior New England, joining a network of several dozen that exist throughout the county. The station also served as a major drawing card for local birders--close to 150 people (including an Ecology class from Hampshire College) visited the station during its fall operation.

Hay-scented Fern Allelopathy

No field experiments for Hank Art's and David Richardson's study of the possible allelopathic mechanisms of hay-scented fern *Dennstaedtia punctilobula* were conducted in 2003.

Watershed/Meteorological Monitoring (Environmental Analysis Lab)

Once again, the Center for Environmental Studies' Environmental Analysis Lab--under the guidance of David Dethier and newly hired Technical Assistant Jay Racela--continued the process of analyzing meteorologic, 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. The main weather station is now electronically connected to the campus network and data downloads from that station are now automated in real time. In addition, historic data are now available through the web-page. During the past year, the new groundwater monitoring well was outfitted with electronic transducers, which will allow us to model groundwater dynamics and temperature at the site.

Permanent Plot Network

During 2002-03 work continued on the permanent plot database (see "Data Management").

Watershed/Meteorological Monitoring (Environmental Analysis Lab)

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Table I HMF STUDENT RESEARCHERS-Summer 2003

Student	Supervisor	Project	Funding
Flynn Boonstra '04	Hank Art	Sugar Maple Decline	Biology
Sam VanVolkenburg '05	Edwards	Garlic Mustard	Biology
Jodian Pinkley '06	Edwards	Garlic Mustard	Biology
Bill McDowell '04	Morales	Mutualism	Biology
Ross O. Smith '05	Morales	Mutualism	Biology
Betany Sales '04	Art	Historic Deed Research	CES

Jen Lazar '04	Art	Historic Deed Research	CES
Daniel Bahls '04	Art	Historic Deed Research	CES
Marina Mednik-Valksman '05	S. Brown	Weather/Stream monitoring. Lab assistant	CES
Ryan Gordon '05	S. Brown	Weather/Stream monitoring. Lab assistant	CES

Rare Species

No systematic inventorying of rare species was conducted during the year 2002-03. Nonetheless, a new population of glade fern (*Diplazium pycnocarpon*) was discovered on a remote hillside in the Vermont section of the forest. Rare species that have been monitored in the past include:

- Wild Gensing (*Panax quincifolia*)
- Appalachian Brook Crayfish (*Cambarus bartonii*)
- Northern Spring Salamander (*Gyrinophilus porphyriticus*)
- Glade fern (*Diplazium pycnocarpon*)

Breeding Bird Point Surveys

During June, Drew surveyed 40 points that had been established in 2001 throughout the Forest to monitor territorial breeding birds. These points will continue to be surveyed on a yearly basis.

Data Management

Databases

Jason Taylor of the Office of Informational Technology worked with HMF researchers to make data sets available to a mass audience. Both long term vegetation and hydrological/meteorological data sets can now be accessed and queried via an web-based user interface. The vegetation data is as yet only available on the campus intra-net, however, real-time and basic summary weather information is available to the public via the world wide web.

Geographic Information Systems

CES Research Associate Bill Fox continues to develop a database of HMF cover maps using Arcview GIS.

TEACHING

During the fall semester, BIOL/ENVI 203--Ecology, held several lab sections at the Forest; these sections were taught Manuel Morales. Dr. Morales integrated the saw-whet owl banding project into his course, having students visit the site on several occasions during the fall migration period.

During the spring, BIOL 302/ENVI 312--Communities and Ecosystems (Art), and BIOL/ENVI 220-Field Botany (Edwards) made use of the Forest for several lab/field sessions. Some students from these classes used the Forest for their independent research. In addition, the newly revamped ENVI 102--Introduction to Environmental Science (Thoman/Stoll/Morales), returned to the forest for several of its lab sessions.

During Winter Study 03, Drew Jones taught a course, The New England Forest, which made extensive use of the Rosenburg Center and Forest itself for class and field sessions. This course will be offered again in 2004.

RESOURCES/FACILITIES/CARETAKING

Rosenburg Center

Some new additions to the Rosenburg center included a spotting scope, VCR and metal detector. In addition, the dry lab was outfitted with re-conditioned lab tables and rearranged to make more efficient use of the space.

Interpretive Program

During 2002-03, Alicia Arealos, '05 working with Drew, other members of the HMF committee and the Office of Instructional Technology, completed the design work on a series of twelve interpretive signs for the lower loop trail. During late summer '03 these were produced into all weather panels by an out of state vendor and installed along the trail. We expect that these signs will help with the public education mission of the forest.

Weather Station Field

FY '03 saw the initiation of a job aimed at restoring some open field habitat to the Hopkins Forest. Money from carry forward accounts was used to finance the clearing, stumping and grating of three acres immediately surrounding the main weather station (Table VII). This job had two primary goals: 1) to bring the size of the field up to NOAA standards and; 2) to establish more open field cover for teaching,

demonstration and small experiments. The unusually wet summer of '03 caused long delays in this job--pushing it into the fall.

Farm Museum

Once again, the Moon Barn was used as exhibit space and was open during public events and peak visitation periods. The museum collection has become more serviceable since it was organized during the summer of 2001.

Canopy Walkway

This year, the canopy walkway was outfitted with an additional ladder to facilitate the flow of people across the unit; now users will be able to complete a circuit which will eliminate the need to wait at the top while others complete their ascent before going down. We hope this will improve the efficiency of group use of the unit. The walkway continues to be used three to four times per year for public and educational events.

Trails/Ski Track

During the fall of 2002, the upper loop trail was restored to improve drainage and reinforce the tread. This job, which was funded in part through a grant from DEM's Trails Program, greatly improved the quality of the trail for both hiking and winter use.

Roads

The entry road to the Rosenberg Center was resurfaced in the spring of 2003 with funding assistance from the Buildings and Grounds Department. Some hazard trees along Northwest Hill Road were removed during the summer of '03.

Land Acquisition/Boundaries

In the Summer '03, Manager Drew Jones was approached by a neighboring landowner about a possible land acquisition. This parcel which lies just off the northeastern corner of the forest, and is bound by the Hoosic River and Vermont boundary to the east and north, has a number of distinctive and potentially valuable features. A proposal to acquire the parcel was sent to the Helen Ouellette in late summer.

In FY 2002-03 the Manager started to plan to implement a statutory posting to protect the property from adverse possession claims from third parties. This procedure, which will require legal guidance and the employment of local law enforcement officials, will be carried out in the Fall '03.

Caretaking

As in the past, HMF relied for a major part of its maintenance, upkeep and outreach activities on the efforts of student caretakers (Tables II and III). The fall and spring semesters had a regular crew of eight to ten students, each working about 3 to 5 hours per week under the leadership of head caretaker, Ken Brown '04. 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. The crew was also involved with preparing for and hosting *Maplefest*.

Table II STUDENT CARETAKERS ACADEMIC YEAR 2003-04

Evan Chadwick '05	Angus Beal '03
Katie Ackerly '04	Nick Nelson '03
Ken Brown '05	Claire Samuel '04
Josh Earn '04	Kimmie Kemper '03
Galen Holt '04	Nathan Kolar '04
Christopher Eaton '05	Eve Biddle '04
Oliver Burton '06	Andra Hibbart '04

A summer caretaking crew--consisting of Nathan Kolar '05, Claire Samuel '04, and Ryan Gordon '04 (split time with Environmental Analysis Lab) with spot duty from Briana Halpin '04--labored throughout the summer. Beyond their regular tasks--mowing, gardening, trail and water-bar maintenance, maintaining the museum collection and the Rosenberg Center area--this year's team spent a significant amount of time

conducting a timber inventory of the 365 acre Vermont tract; the data from their labors will be used in developing a management plan for that area.

Table III

TOTAL CARETAKEING HOURS & OUTLAYS
ACADEMIC YEAR 2003-04

Fall 320.5
Spring 446.25
Total 766.75

PUBLIC

Public Outreach

Community Events

As in years past, HMF hosted several events for the public and college communities (APPENDIX I lists these and other Forest activities). Events 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 29th with approximately 345 people taking advantage of a fine fall afternoon to attend. Traditional forest and harvest activities--beam hewing, shake-splitting, cider and apple butter production--and live music were featured.
- **Fall Family Days** - This was the second year that events were planned for the fall family weekend with two guided hikes held on Saturday October 26th.
- **Maple Festival** - "Maplefest" was held on Saturday, March 15th. A solid turnout of 230 people came to see sugaring exhibits and demonstrations and to taste HMF produced syrup served over pancakes and 'on snow'.
- **Spring Field Day** - This annual event was scheduled for April 26th, but poor weather kept many people from attending the scheduled hikes and bird-walk.
- **Alumni Day** - HMF again offered a variety of activities including hikes, trips up the canopy walkway, ropes course and children's activities for this year's Alumni Weekend (June 14th). A solid crowd of approximately 100 attended this year's activities, taking advantage of a pleasant June day.
- **Community Picnic**- HMF hosted this one in a series of events commemorating Williamstown's 250th anniversary on August 23rd. The event was planned jointly by the Manager and a committee of local organizers. The day, which featured exhibits, local crafts people, videos, live music, food and children's activities, and a tree-planting, drew over four hundred people thanks, in part, to some brilliant summer weather.

Local Schools

As usual, HMF hosted a variety of school groups from around the area. Student naturalists and, in some cases, Drew served as guides or interpreters for these school groups. Stream-oriented and maple-sugaring activities continued to be especially popular

Publicity

The local press published articles announcing the hunting season and the community festivals the Forest, as well a public use issue: horse-back riding.

Recreational Use Issues

This year numerous hikers, horse-back riders, skiers and nature observers used the trails of the Forest for their recreational pursuits. Fortunately the year was a quiet one insofar as public use problems were concerned. Although, there were a few trespass problems and rules violations, matters generally remained under control. The enforcement of the prohibition of horses from the Hoosic River Trail has continued to draw the attention of certain forest neighbors and the local press (The Advocate, June 26, 2002). There have been discussions between the equestrian groups and the College and Forest Manager to try to allay concerns regarding this policy. A group visit to the trail that included senior staff members, HMF Users Committee members and a neighbor in June '03 seemed to help in this regard.

Other public recreational issues include:

- **Wheeled vehicles**- four wheelers and mountain bikes continue to be used sporadically on HMF trails, especially the Taconic Crest Trail and the Vermont trails where violators are generally hard to catch.
- **Hunters**- Hunting problems were minor during the 2002 season. Several deer stands were removed from the forest during the past year and the problem of occasional hunting trespass, especially in more remote areas persists.
- **Vermont Lands**- there continues to be evidence of minor trespass (four-wheelers) in this area, although no serious incidents (squatting, vandalism, vagrancy, etc.) were reported during the past year. There was a report of a trespasser who was alleged to be collecting firewood during the past summer.

Williams Outing Club

The Outing Club cabin saw a constant stream of use during the year 2002-03, hosting hostellers on approximately 30 nights. The cabin was also used during Maplefest 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. The low-ropes course has proven to be very popular; the Outing Club used the facility often (approximately 12 times with 300 total users) for community and college members during the past year. The WOC student naturalists were active in HMF during the past year. Led by Kimmie Kemper '03, the naturalists conducted a variety of hikes and bird-walks and co-sponsored some community events such as the animal tracking workshop in January.

Hunting

As in past years, HMF hosted a special permit hunt during the Massachusetts deer shotgun season. As usual, no hunting was permitted in 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 twenty deer (unofficial sign-in), mostly antler-less, during the twelve day season (APPENDIX II); the deer take was up markedly from the previous few years. Williams College security officers along with Williamstown Police officers were hired to provide security during the hunt. The season went smoothly with few problems reported.

As in the past, the HMF hunting program had to be subsidized from the Forest's operating budget (Table VI). As of now this loss appears to be necessary to maintain both the level of hunters and security needed to achieve our goals of managing the Forest's deer population.

Maple Syrup Season

The maple sugaring season was especially cold and production consequently lagged below the levels of the past two years. The tapping period began on March fourth and continued into mid-April, but flow was sporadic and the quality generally low. Nonetheless, during these six weeks caretakers collected over 1600 gallons (about 900 less than 2002) of sap from 135 trees, mostly along Northwest Hill Road (Table IV). This sap was boiled down into approximately 30 gallons of syrup that was ultimately bottled. During this season, we also hosted the "Maplefest" celebration and entertained several classes and numerous public visitors. During the past year, we again worked to improve the sugrbrush-removing aggressive shrubs and non-productive, suppressed saplings. These sanitizing efforts have been expanded to the row of sugar maples that grows along Northwest Hill Road and provides 75 percent of our annual sap.

Table IV SUMMARY OF SUGARING ACTIVITIES-2004

Trees tapped	135*
Tapping Period (days)	41
Tap Nights	5230
Gallons of Sap	1625
Days (sessions) Boiled	8
Hours	68
Gallons (approx.)	
	Raw Syrup Drawn Off 34
	Bottled 30.0
Caretaker hours	219.5**
Manager's hours	80**

*Most figures are approximate

**Not including before and after tapping period

MEETINGS/COORDINATION

Affiliations

Taconic Crest Trail Consortium: This consortium--which seeks to promote sustainable recreational use of that 35 mile trail and coordinate management and maintenance activities--was largely inactive during the past year, although trail maintenance efforts, both on that part of Hopkins Forest and other members, continued.

Hoosic River Watershed Association (HooRWA): Drew joined the board of this local non-profit organization. His involvement led to the hosting of a HooRWA sponsored workshop at the forest; this very successful program on amphibians, led by noted Herpetologist Tom Tynning, drew forty participants of all ages.

North Berkshire Audubon Chapter: HMF continued to host bird counts and walks sponsored by the North Berkshire Audubon Chapter, including the annual Christmas Bird Count

Conferences/Workshops

- Organization of Biological Field Stations--Annual Meeting: from September 19th to 21st at the Kellogg Biological Station, Kalamazoo, Michigan.
- Intercollegiate Sustainable Wood Products Group (ad-hoc)-Middlebury College, February 7th 2003.- Drew took part in this group of building planners and resource managers from Williams and Middlebury to investigate ways in which sustainable wood products have been incorporated into green building design at that college.
- Vermont Coverts-Woodlot Management Workshop, May 31st, Corinth, Vermont.

ADMINISTRATIVE

HMF Users Committee

The Hopkins Forest Users Committee is charged with deciding most of the management and planning issues that pertain to the Forest and its infrastructure. Most of its members--selected from among College faculty, staff and students--have vested research or teaching interests in the Forest (Table V). Under the direction of Dr. Joan Edwards, the committee met on five occasions to advise and assist the Forest Manager. The Users Committee will have a new Chair in the upcoming year as David Dethier replaces Joan Edwards who has served for the past five years.

In addition to serving in his "ex-officio" post on the HMF Users Committee, HMF Manager Drew Jones serves on the Advisory Committee for the Center for Environmental Studies. During the past fiscal year CES was involved in a ten year review that featured a visiting committee and retreat. Drew participated in these activities and met with members of the review committee. We aim to incorporate ideas generated from the CES review process into future forest planning.

Table V HMF USERS COMMITTEE--2002-03

Joan Edwards, Chair, Biology	Sandy Brown, CES-Environmental Analysis Lab
Hank Art, CES Director, Biology	JWillard Morgan, Interim Director-Williams Outing Club
David Smith, Biology	Drew Jones, HMF Manager
David Dethier, Geosciences	Angus Beal '03
Manuel Morales, Biology	Kenneth Brown '05

FUTURE

--What is in store for 2004-05?

Research Directions

In the coming year we look forward to the launching of Dr. Kramer's study on hormone transport in poplars as well as an expansion of the mutualism studies to the recently prepared field on Northwest Hill Road. Other research and monitoring initiatives--including the allelopathy, garlic mustard, maple genetics, Northern saw-whet owl, and weather and stream monitoring programs--will continue into the coming year. We aim to continue to work with the Office of Instructional Technology to and make the HMF databases accessible to the College community through web-based interfaces.

Teaching/Outreach

Manager Drew Jones will again teach a winter study course, ENVI 017--The New England Forest, which will use the Forest and the Rosenburg Center as its classroom. We also look forward to the continued use of the Forest by several Biology classes, ENVI 102, and perhaps others during this academic year.

We intend 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. To this end, we will be working through Kidspace to implement a Hughes grant designed to integrate nature and art education; eight class groups will have guided programs at the Forest in October 2003.

Facilities/Planning

We aim to continue to upgrade the computer facilities at the Rosenberg Center, including adding a lap-top to complement the existing set-up. As our supply of storage space has become sorely inadequate, we plan to add new warehousing facilities in the coming year.

This year we will start to develop a management plan for the 365 acres of recently consolidated land in Vermont; this will include enrolling the land into a Vermont Forest Stewardship Program that will reduce substantially our annual property tax levy. We will aim to integrate whatever management strategy we adopt into the educational mission of the Forest.