

## HMF Activities Report--Fiscal Year 2004

### INTRODUCTION

A major highlight of the year 2003-04 was the addition of a new parcel to the forest; the 73 acre Wire Bridge Farm was purchased from John Tietgens in the late summer of '04. This parcel will allow us to expand the types of research and demonstrations available at the forest. In research, the study on hormone transport and orientation in poplars by Eric Kramer was initiated in earnest. Ongoing research projects continued--including those on ant/leaf hopper mutualism, garlic mustard growth dynamics, sugar maple genetics, and meteorological and geochemical monitoring. The Hopkins Forest once again hosted a fall banding station for migrating northern saw-whet owls. In addition, preliminary planning for a possible anemometer on top of the Taconic Crest was begun.

In the summer '04, the clearing of three acres around the central weather station was completed and the site was subsequently seeded to a cover crop. This field expansion 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 in the coming year.

Educational programs continued at the Forest: two Biology classes held regular lab sessions and numerous programs were conducted for schools and the general public. For the second straight year Drew Jones taught a winter study course at the Forest. As usual, a crew of student caretakers tended the facilities and grounds. The Forest hosted its normal array of public events including the annual Fall Festival, Maplefest, Alumni Day and Fall and Spring Family Days.

In addition to research and educational activities, we began planning for the management of timber on the 365 acre Vermont Parcel. During the past year, the timber resources were inventoried, foresters were consulted and initial planning was begun. We also began an association with the Massachusetts Woodlands Cooperative whereby we will coordinate timber management activities and educational initiatives in the future.

### ACTIVITIES-RESEARCH and MONITORING Summer 2004 and Ongoing

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

#### Ant/Leaf Hopper Mutualism

This was the third year of a study on ant-leaf hopper (*Publilia*) mutualism by Manuel Morales of the Biology Department. This experiment utilized both the fields along Northwest Hill Road--expanding the experimental area employed last year. Lisetta Shah '06 and Ellen Crocker '06 worked on the study this year with Professor Morales, the focus of which was to investigate density effects on *Publilia* populations.

#### Garlic Mustard--Population Dynamics in Forested Ecosystems

Joan Edwards' study of the population dynamics of the invasive garlic mustard plant (*Alliaria petiolata*) continued into 2003-04. Alejandro Acosta '06 provided most of the field assistance with this study, collecting data on established plots in three different areas of Hopkins Forest: the Beinecke Stand, the former mansion site and the red oak stand. Kenneth Brown '05, who was coincidentally researching exotic species invasions in Williamstown, also provided assistance on this study. This is the eighth 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.

#### Eastern Hemlock Decline

Michael Gallagher '06 and Jazmine Smith '05, working with Hank Art, undertook baseline research on the distribution, density, age structure and community composition of the major hemlock stands in Williamstown, including several in Hopkins Forest. These data may provide a useful baseline against which to gauge the effects of possible woolly adelgid invasions in the coming years; such invasions have yet to be documented in Williamstown but have had already been noted in southern Massachusetts and may be moving north. Smith will incorporate some of this research into her honors thesis.

#### 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 during the late winter/early spring. 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 was followed up by a full sampling in summer of 2004. This investigation will continue for several more years.

#### 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 '03. Mist-nets (a single-tier array of three 12 meter nets) were set up on a trail south of the Rosenberg 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). During this period 148 saw-whets, including several recaptures from other stations, were recorded. Students from BIOL/ENVI 203--Ecology took part in this endeavor as a part of a lab requirement for the class. The HMF station continues to be one of the major ones of its kind in New England and is associated with a network of more than 50 other stations throughout the county. The station also served as a major drawing card for local birders: close to 150 people (including students and instructors from Berkshire Community 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 2004.

#### 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. On July 22, 2004, the weirs along the South Branch and Main Stem of Birch Brook were dredged and the sediment load weighed by HMF and lab personnel and volunteers. Karl Johansson '05 and Jane McCamant '05 were hired with CES funding to assist Jay Racela in running the lab during the past summer.

Table I HMF STUDENT RESEARCHERS-Summer 2004

<u>Student</u>	<u>Supervisor</u>	<u>Project</u>	<u>Funding</u>
Michael Gallagher '06	Hank Art	Eastern Hemlock	Biology
Jazmine Smith '05	Hank Art	Eastern Hemlock	Biology
Alejandro Acosta '06	Edwards	Garlic Mustard	Biology
Kenneth Brown '05	Edwards	Garlic Mustard/Invasive Species Dist.	Biology
Ellen Crocker '06	Morales	Mutualism	Biology
Lisetta Shah '06	Morales	Mutualism	Biology
Karl Johansson '05	J. Racela	Weather/Stream monitoring. Lab assistant	CES
Jane McCamant '05	J. Racela	Weather/Stream monitoring. Lab assistant	CES

#### **Rare Species**

Several plant conservation volunteers from the New England Wildflower Society visited HMF to inventory the Crooked-stem Aster (*Symphiotrichum prenanthoides*) population in the Hoosic River floodplain. The volunteers found known populations to be robust and, in addition, found several more small pockets of the aster. Other 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**

Jason Taylor of the Office of Informational Technology continued to work with HMF researchers to make data sets available to a mass audience. Both long term vegetation and hydrologic/meteorologic data sets can now be accessed and queried via a 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.

### TEACHING

During the fall semester, BIOL/ENVI 203--Ecology, held many lab sessions at the Forest; labs were taught by Henry Art and HMF Manager Drew Jones, who were filling in for Professor Morales, who was on partial leave. Dr. Morales integrated the saw-whet owl banding project into his course, having students visit the site during the fall migration period.

During the spring, BIOL 302/ENVI 312--Communities and Ecosystems (Visiting Professor Doug Gill), made use of the Forest for several lab/field sessions. Some students from this class used the Forest for their independent research. In addition, ENVI 102--Introduction to Environmental Science (Thoman/Stoll/Art), used the forest for several of its lab sessions.

During Winter Study 04, Drew Jones again taught ENVI 017, The New England Forest, which made extensive use of the Rosenberg Center and Forest for class and field sessions.

### RESOURCES/FACILITIES/CARETAKING

#### Land Acquisition

In August '04, 73 acres of the 'Wire Bridge Farm' were added to Hopkins Forest. This parcel was acquired from John Tietgens with an option to purchase the remaining 37 acres continuing for five years. The final purchase culminated what had amounted to many hours of negotiations and discussions with the seller and the College Administration. This land--with its thermal spring, wetlands, riparian forest and bottomland fields--will greatly increase the opportunities for research and learning on non-forested landscapes within HMF. The HMF Users Committee will start making plans for research, teaching and zoning activities on this parcel.

#### Timber Management--Vermont Parcel

During the past year we began preparations to enter the 365 acre Vermont Parcel into a timber management program. The timber on this parcel was inventoried by student workers in the summer of 2003 and the data have been compiled and some basic analysis done. During the Summer 2004 an application was filed with the Vermont Use Value Appraisal Program to enroll the land in this program, which offers tax relief in exchange for adhering to a state approved timber management plan. The plan is currently being drafted and will be submitted to the state during the Fall 04. This plan will likely call for the removal of some timber from the parcel in the next ten to 15 years.

We aim to have all timber management activities on the parcel serve the educational and conservation mission of Hopkins Forest. To this end, we have begun a relationship with the Massachusetts Woodlands Cooperative (MWC), an association of woodland owners in western Massachusetts that aims to make environmentally sustainable forestry more widespread in the region. The cooperative works to improve markets for non-traditional wood products, and pools resources to reduce the cost of management to small private landowners. Just as importantly, the cooperative enables landowners to have their land certified under a group process; this ensures that products from certified properties have been grown under environmentally favorable conditions. The MCW also holds education and public outreach as central to its mission. We aim to complete the process of joining the Massachusetts Woodlands Cooperative and become involved with its activities in the coming months.

#### Rosenburg Center

The Rosenberg Center was used again for a winter study class, lab set-ups, public events, workshops, and as an exhibit space for visitors. No major renovations were made during the past year.

#### Interpretive Signs

September 2003 saw the establishment of twelve interpretive signs along the Lower Loop Trail in Hopkins

Forest. These signs were designed by Alicia Arevelos '05 and produced professionally during the previous year.

Weather Station Field

FY '04 saw the completion of the expanded weather station field in the Hopkins Forest. This job, oft delayed during 2003 due to wet conditions, added several acres of open field habitat to the area immediately surrounding the main weather station. This newly created field, sown to an annual cover crop in Summer '04, now comprises approximately four acres, bringing the weather station into compliance with NOAA standards. It will also provide additional early successional habitat for teaching, demonstration and small experiments.

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, with its newly installed second ladder, saw more public use. Several schools and other groups, in addition to Williams affiliated groups, used the facility. A fee structure has been established to help defray the cost, in administration and student labor, of using the walkway. As in years past, the facility passed a thorough safety inspection in the spring.

Trails/Ski Track

As in past years, the Upper and Lower Loop trails were groomed for cross-country skiing; use of the trails was heavy during the cold, snowy winter of '03/'04.

Roads

The entry road to the Rosenburg Center was resurfaced in the spring of 2004 with funding assistance from the Buildings and Grounds Department.

**Caretaking**

During the Fall of '03, Tom Merrill was hired to pick up some of Drew's caretaking responsibilities as approximately 25 percent of Drew's time during the semester was diverted to lab instruction for BIOL 203. Merrill served ably, doing mostly on-the-ground caretaking and management as well as working with student crews. Funds to pay Merrill were transferred from other college accounts and did not affect the HMF budget.

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

Katie Nicoll '05	Kate Majzoub '06
Katie Ackerly '04	Robert Quay '04
Josh Earn '04	Michael Gallagher '06
Galen Holt '04	Emily Gustafson '04
Peter Holland '05	Parker Shorey '06
Oliver Burton '06	Willa Brown '06
Ken Brown '05	Ben Brown '06
Rachel Samuelson '04	Anne Newcomer '04
Elizabeth Macek '07	Chloe Turner '05
Alexa Holleran '05	Matthew Summers '07

A summer caretaking crew--consisting of Aaron Reibel '06 and Daniel McKenna Foster '07, with spot duty from several others--labored throughout the summer. The crew was engaged in many of the regular summer tasks--mowing, gardening, equipment maintenance, trail and water-bar maintenance, maintaining the museum collection--in addition to preparing the newly cleared field.

Table III

TOTAL CARETAKING HOURS & OUTLAYS  
ACADEMIC YEAR 2003-04  
Fall 352.25  
Spring 432.50  
Total 784.75

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 28th. However with steady rain falling throughout the day, very few people attended. Traditional forest and harvest activities--beam hewing, shake-splitting, cider and apple butter production--and live music were to be featured; however many were curtailed due to the elements.
- **Fall Family Days** - This was the fourth year that events were planned for the fall family weekend with two guided hikes held on Saturday October 25th, one on the Taconic Crest Trail and the other on the Lower Loop.
- **Maple Festival** - "Maplefest" was held on Saturday, March 13th. A solid turnout of 200 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 held on April 24th. It featured hikes and trips up the canopy walkway--approximately 65 people attended the various events.
- **Alumni Day** - HMF again offered a variety of activities, including hikes, trips up the canopy walkway, and children's activities, during this year's Alumni Weekend (June 12th). As usual a good crowd of over 100 took advantage of a pleasant June day to partake of the activities.

#### Local Schools

As in years past, 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, as well as forest explorations, continued to be especially popular. Of special interest was a partnership with the Massachusetts Museum of Contemporary Art's Kidspace Program. This initiative, funded through a Hughes grant administered by Williams College, resulted in 10 visits to HMF from fourth grade classes from North Adams schools. Williams students led the elementary students on explorations and activities in the Forest.

#### Home Schools

During the spring of 2004 Drew collaborated with an affiliation of regional home school families in an initiative to certify the vernal pools in HMF. The group made approximately eight visits to the forest from April through June. The students learned vernal pool biology and natural history and, in turn, lent their efforts to acquiring and documenting the data necessary to certify these most significant habitats. We plan to continue to include home school groups in future outreach activities.

#### Publicity

The local press published articles announcing the hunting season and community events in the Forest, as well as running a front page (North Adams Transcript) piece on the acquisition of the Tietgens Parcel (APPENDIX II).

### 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.

This year we implemented a conditional agreement to permit horseback riding on the Hoosic River Trail (APPENDIX III). Local riders and a commercial stable were notified of this new policy, which allows riding on this trail between July first and October fifteenth, given suitable weather and trail conditions. The trail will be monitored for three seasons for wear and tear, erosion, and damage to surrounding flora. If these effects are deemed minimal at the end of that period, riding will continue to be permitted on a conditional basis.

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 minimal during the 2003 season.
- **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 2003-04, accommodating hostellers on approximately 25 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 250 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 Don Mitchell '06, the naturalists conducted a variety of hikes and bird-walks and co-sponsored some community events such as the winter animal tracking workshop.

## **SPECIAL PROGRAMS**

### **Hunting**

As in past years, HMF hosted a special permit deer hunt during the Massachusetts 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 10 deer (unofficial sign-in), mostly antlerless, during the twelve day season. 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 was subsidized by the Forest's operating budget (Table VI). As of now this expense 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 in a safe and effective manner.

### **Maple Sugaring**

The maple sugaring season was rather brief but bountiful this year, with production approximating levels of the past few years. The tapping period began on February 27th and continued through the end of March. Sap production was especially high at the end of the season pushing the seasonal total to 2130 gallons, which was boiled down to approximately 39 gallons of bottled syrup (Table IV). The season ended with a 'bang' as the old evaporator finally gave out (due to rust) during the final boil. A new evaporator has been purchased and will be in place for the 2005 sugaring season.

During the sugaring season, we again hosted the 'Maplefest' celebration and entertained numerous public visitors. During the past year, we began to improve the 'hedge row', the lines of sugar maple trees that are tapped along Northwest Hill Road. This was accomplished by removing aggressive (mostly non-native) shrubs and non-productive, suppressed saplings from between the maple trees.

Table IV SUMMARY OF SUGARING ACTIVITIES-2004

Trees tapped	130*	
Tapping Period (days)	33	
Tap Nights	4065	
Gallons of Sap	2130	
Days (sessions) Boiled	11	
Hours	93	
Gallons (approx.)		
	Raw Syrup Drawn Off	44
	Bottled	39

Caretaker hours 190.5\*\*  
 Manager's hours 110\*\*

\*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--had one meeting during the past year. However, trail maintenance activities were ongoing, both on the part of Hopkins Forest and other members.

Hoosic River Watershed Association (HooRWA): Drew continued his activities as a Member of the Board of Directors of this local non-profit organization. His involvement led to the hosting of a second HooRWA co-sponsored workshop at the forest; this very successful program on reptiles and amphibians, led by noted Herpetologist Tom Tynning, drew 55 participants of all ages.

Bird Clubs: HMF continued to collaborate with the North Berkshire Audubon Chapter on bird counts and bird walks. In addition, the Forest has become a destination for members of the Hoffman Bird Club during the fall owl banding season.

Clark Art Gallery: During this period, Drew collaborated with staff of the Clark Art Gallery on public activities in conjunction with the Museum's 'Sugaring Off' exhibit. Drew provided insight into planning their public sugaring event and led a guided hike of their property in April.

**Conferences/Workshops**

Drew attended the following conferences during the past year: ?New England Wildflower Society-Invasive Plant Forum, Framingham, Massachusetts, September 19th 2003. ?Hoffman Bird Club Meeting, Pittsfield, Massachusetts, April 5th 2004-Drew presented NSWOB banding work to group of 40. ?Northeast Partners in Amphibian and Reptile Conservation Meeting, Pittsfield, Massachusetts, August 16-17 2004.

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 David Dethier (who replaced Joan Edwards in 2003), the committee met on several occasions to advise and assist the Forest Manager.

Table V HMF USERS COMMITTEE--2003-04

David Dethier, Chair, Geosciences	
Hank Art, CES Director, Biology	Jay Racela, CES, Environmental Analysis Lab
David Smith, Biology	Scott Lewis Director, Williams Outing Club
Joan Edwards, Biology	Drew Jones, HMF Manager
Manuel Morales, Biology	Kenneth Brown '05

FUTURE

**--What is in store for 2004-05?**

In the coming year we will be working on the implementation of several new research and management initiatives. These include:

- Planning and possibly installing a wind tower.
- Planning for use of the newly acquired Tietgens Parcel.

- Establishing research or demonstration plots on the newly enlarged weather station field; moving the anemometer tower and other gauges may also be a priority in the coming year.
- Preparing a timber management plan for the Vermont Parcel, thereby finishing the process of enrolling in the Vermont Use Value Appraisal Program.
- Continuing to strengthen our affiliation with the Massachusetts Woodlands Cooperative.

Of course we aim to continue and broaden the research program in the Forest in the coming year. All of the major studies will be active once again, including Dr. Kramer's study on hormone transport in poplars, Dr. Morales' mutualism studies, the allelopathy, garlic mustard and maple genetics studies. The Northern saw-whet owl banding and weather and stream monitoring programs will also continue into the coming year. In addition, we aim to continue to work with the Office of Instructional Technology to make the HMF databases accessible to the College community through web-based interfaces.

#### Teaching/Outreach

We 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 have the Forest continue as an arena for student naturalists to gain experience in teaching and outreach through contact with local public schools and community groups.