HOPKINS MEMORIAL FOREST

The Year in Review

2015-2016

Drew Jones, HMF Manager

Williams College--Center for Environmental Studies

December 2016

Summary: Fiscal Year 2016

September 1, 2015 through August 31, 2016

This year continued to feature a full slate of activities at Hopkins Memorial Forest (HMF), Williams College's environmental field station. In research, Manuel Morales implemented the second (replicate) phase of his study begun the previous summer. Using two meadows in the Forest, Morales and four student assistants ran experiments designed to detect possible defensive responses in goldenrod hosts from increased herbivory driven by mutualistic associations.

Henry Art's research program was at full bore during this period as well. Two parallel studies were ongoing. One, the subject of an honors thesis by Nigel Bates '17, focuses on carbon cycling and sequestration in the 350-year-old Beinecke Stand. The second, spearheaded by William Hardesty-Dyke '16, used historical and spatial analysis techniques to decipher the history of livestock on the HMF landscape.

We implemented another round of mowing treatments on Joan Edwards' study of differential mowing regimes and their effects on late season wildflowers and pollinators in fields. In 2016 this study was the subject of a Biology honors thesis by Lane Davis '17. In addition, Edwards continued her study of population dynamics of garlic mustard at three sites in the Forest. David Dethier and Jay Racela continued their long-term meteorological and geochemical monitoring activities, and the Northern saw-whet owl banding station was again in full operation during fall 2015.

Hopkins Forest continued to be a focal point for College and regional educational programming. Williams College Biology and Environmental Studies classes made regular use of the Forest for field trips and study sites and Winter Study courses were also active there. Classes from other regional colleges, including Massachusetts College of Liberal Arts (MCLA), visited the Forest for academic activities as well.

This year we continued to expand our elementary education outreach programs. Working with the Williams Center for Learning in Action (CLIA), we hired six Williams student educators, who planned and hosted 17 curriculum-based programs for schools and youth centers during the academic year. Other schools, home school and scouting groups, and the public took part in educational offerings at the Forest as well. Student caretakers were again instrumental in helping us host a variety of public events, highlighted by the annual Fall Festival and Maplefest. As usual the forest was used extensively for recreation, special permit deer hunting, and maple syrup production.

With the help of a Williams graduate student in Art History, we upgraded the Rosenburg Center exhibit space. Elloit Krasnopoler researched and installed a new exhibit, which highlights the Forest's history. We continue to work with the federal Natural Resource Conservation Service (NRCS) on a second conservation plan that we agreed to in 2014. This plan will fund silvicultural thinning and prescribed burning. We had several consultations with NRCS officials to plan these treatments.

The Forest's infrastructure -- roads, trails, bridges and buildings -- held up well and required only routine maintenance during the past year.

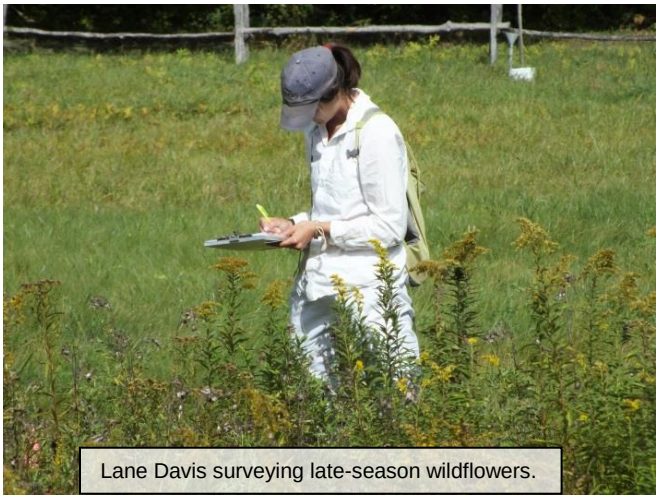
RESEARCH and MONITORING

Several scientific studies were underway during the past year.

Ant/Tree Hopper Mutualism
Manuel Morales and his crew of student research assistants (Table I) continued their investigation of an insect-based mutualism in goldenrod fields during the summer. The goal is to ascertain the effects of the ant (*Myrmica*) and tree hopper (*Publilia*) mutualism on the host goldenrods and how these plants might respond, perhaps through increased production of anti-herbivory chemicals, to different levels of mutualistically mitigated grazing. This summer's work built on the investigation of tropic cascading effects that was begun the previous summer with the aid of external grant funding. Morales' research team monitored experimental enclosures in the fields along Northwest Hill Road. They will continue to work to decipher any medium to long-term effects on the host plant quality and possible consequent changes in the vigor and density of herbivore populations.

Garlic Mustard (*Alliaria petiolata*) in Three Different-aged Stands
Early successional (near the Rosenburg Center), mid-successional (Red Oak Stand) and late-successional (Beineke Stand) sites have been the focus of Joan Edwards' garlic mustard study, which entered its 18th year. This ongoing investigation involves a complete annual survey of three sites in mid-July when we count all rosettes, reproductives and seeds in 0.5m x 0.5m permanent quadrats. This year's field surveys were conducted by Jonah Levy '18 and Jonathan MacDougall '17. So far results show that garlic mustard has had the most difficult time invading the mid-successional plot where there is a significant deposition of leaf litter every fall. The litter appears to kill most rosettes that were established earlier in the growing season. The late-successional stand has a persistent population of garlic mustard; invasion occurs there because the site is on a steep slope that is subject to regular disturbance by washouts. The early stand sustains the highest population of garlic mustard, but even there the population levels fluctuate due to catastrophic disturbance (e.g., major washouts when the plants were inundated with standing or fast moving water). Furthermore, the sites appear to cycle in unison with high population levels and low population levels co-occurring on the three plots. Garlic mustard is a biennial and its life history stages also appear to cycle in unison as high rosette years typically alternate with high reproductive years. This is most evident in the early-successional plot.

Mowing Patterns and their Impact on Flower Production and Pollinator Activity
Joan Edwards' study of the effects of differential mowing regimes on fall wildflowers and their pollinators continued this year. The goal of this study is to assess the impact of both the timing and frequency of mowing on floral production and pollinator activity. The sixteen plots are divided into four blocks with treatments in a full-factorial randomized block design. This year, according to the schedule, we implemented only the annual treatments (four plots were mowed in July with eight more slated for late October). During autumn 2015 students and faculty gathered data on the plots. Lane Davis 18, whose honors thesis work focuses on this study, provided the following update from this past summer:


Lane Davis surveying late-season wildflowers.

"I am working with Prof. Joan Edwards and Prof. David C. Smith to study the effects of mowing a field with different timing and frequency on late blooming flower species (mostly goldenrods) and their pollinators. We have set up 16 24m x 24m plots in the Hopkins Forest Weather Station field. Each plot is mown either in July every year, in July every other year, in October every year, or in October every other year. This summer, with the help of Jacques Guyot '18, I conducted weekly censuses of the flowering stems in a .25m x

25m strip in each plot in order to determine the timing of sexual reproduction (phenology) of different species. We are continuing this work in the fall in addition to creating maps of the goldenrod distribution and filming their inflorescences to gather data on their pollinators. I hope my thesis, in conjunction with Prof. Edwards' past research on this system, will help inform and inspire responsible land management practices that aim to support pollinators, which are declining globally."


Imaging Pollinators

In addition to the floristic surveys on the inner 144 square-meter sub-plots, we set up cameras, one per plot throughout the study site, to record visits of insect pollinators. They were each fixed on one prominent inflorescence of *Solidago rugosa* (wrinkle-leaved goldenrod), a plant that occurs in every plot. Each camera used a capture rate of one image every three seconds.

Long-term Vegetation and Land-use History Studies

During summer 2016, Professor Henry Art had two major studies underway in Hopkins Forest. These studies are described in Professor Art's words:

350 Years of Carbon Sequestration in an Old-Growth Forest

The Beinecke Stand in the Hopkins Memorial Forest represents one of the best examples of an old-growth woodlot in the region. Although during the 18th and early 19th centuries there may have been some limited tree cutting in this 12-acre site, the structure of this patch of forest indicates that the stand has never been intensively used by humans. The collection of quantitative data on this tract was started by the U.S. Forest Service in the 1930s and has been continued at 5-year intervals over the past several decades. Over the years the granularity of the data collection has expanded from censusing all trees in three ¼-acre permanent plots, to all trees in 66'-wide strips traversing the stand, to periodically measuring every tree in the stand.


Nigel Bates at work in the Beinecke Stand.

Robert "Nigel" Bates '17 is undertaking this project that involves the analysis of the patterns in carbon distribution and sequestration through analysis of forest population history, tree-ring patterns, mapping the spatial distributions of trees in the stand and measurement of organic matter concentrations in live vegetation, litter-fall, and soil components. He was assisted during the summer by Peter Lugthart '18 and Jack Page '18. The laboratory analyses of carbon contained in the soil and biological samples are being conducted in the Environmental Analysis Lab in the Morley Science Laboratory under the supervision of Jay Racela and with the Assistance of Erica Chang '18.

The History of Livestock in the Hopkins Memorial Forest Landscape

The Hopkins Memorial Forest was created when Mrs. Maria Theresa Burnham Hopkins gave the Buxton Farms to Williams College in 1934. The Buxton Farms was created by her husband, Amos Lawrence Hopkins between 1888 and his death in 1912, as he purchased over a dozen smaller farms in northwestern Williamstown. Over the past several summers Will Hardesty-Dyck '16 has been completing a compilation of a database of livestock that were held on farms on lands that now are the Hopkins Memorial Forest. The livestock data is from Williamstown tax records, agricultural census schedules, and other government

documents. The GPS locations of these farms have been determined in the field using historical survey records and field evidence such as hedgerows, stone walls, and property monuments. The data is then being entered into a Geographic Information System so that the spatial distribution of livestock through time (1850 to 1925) can be analyzed.

Table I. HMF Student Researchers—Summer 2016.

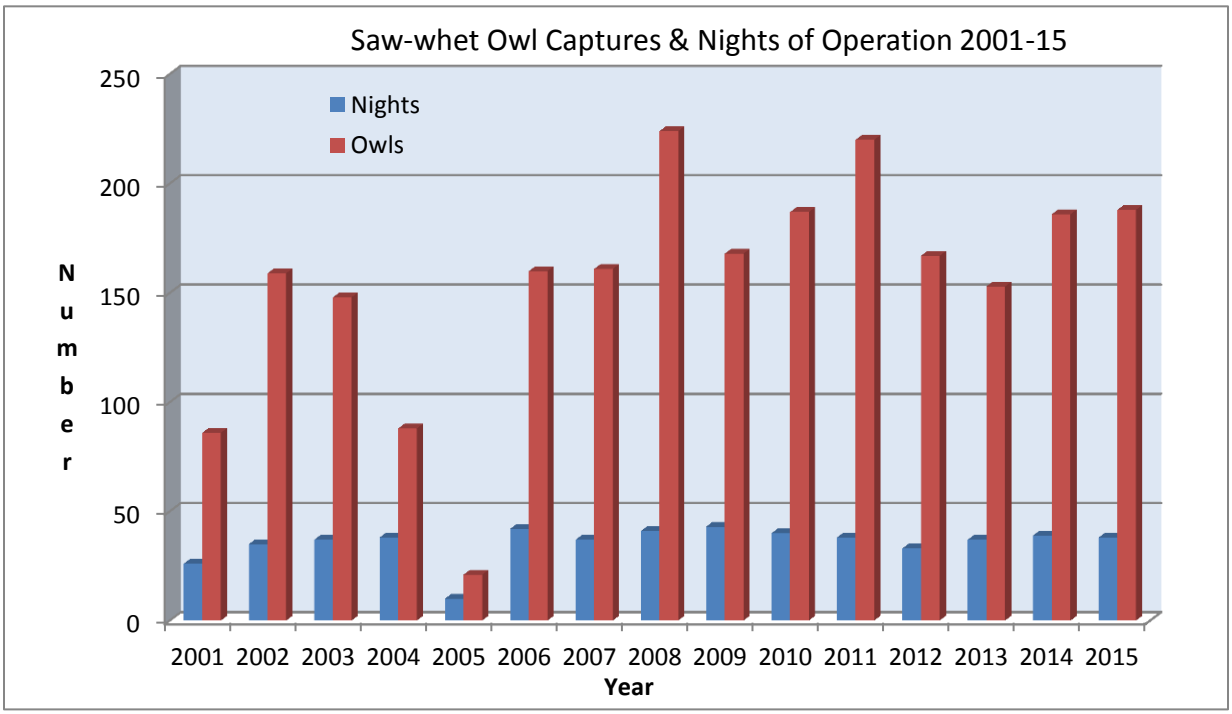
Student	Supervisor	Project
Lane Davis '17	Edwards	Asters/pollinators
Jacques Guyot '18	Edwards	Asters/pollinators
Jonah Levy '18	Edwards	Garlic Mustard
Jonathan MacDougall '17	Edwards	Garlic Mustard
William Hardesty-Dyke '16	Art	Livestock, Land-use History
Nigel Bates '17	Art	Old-growth, carbon dynamics
Jack Page '18	Art	Old-growth, carbon dynamics
Peter Lugthart '18	Art	Old-growth, carbon dynamics
Jake Foehl '19	Racela	Hydro/Meteorology; Lab assistant
Sean Dory '19	Racela	Hydro/Meteorology; Lab assistant
Mike Chen '18	Morales	Ant/leaf hopper mutualism
Tsaina Mahlen '17	Morales	Ant/leaf hopper mutualism
Diana Sanchez '17	Morales	Ant/leaf hopper mutualism
Sean Wang '18	Morales	Ant/leaf hopper mutualism

Northern Saw-whet Owl (NSWO) Migration Banding

With the collaboration of Dr. Ken Schmidt of Texas Tech University, the Northern saw-whet owl (*Aegolius acadicus*) banding station was active once again in autumn 2015. We used our customary single-tier array of four 12-meter nets (with an audio-lure) along a trail south of the Rosenburg Center to catch migrating owls. The station was open on dry, calm nights from dark until around midnight between October 1st and November 17th (a total of 38 nights). During this period we captured 188 individual saw-whet owls (Figure I) including nine recaptures of birds banded at other stations. The HMF station served as the basis for visits from Williams Biology classes as well as Environmental Science and Biology classes from MCLA, and Berkshire Community College. In total, the station attracted 263 registered visitors during the season.

Northern saw-whet owl

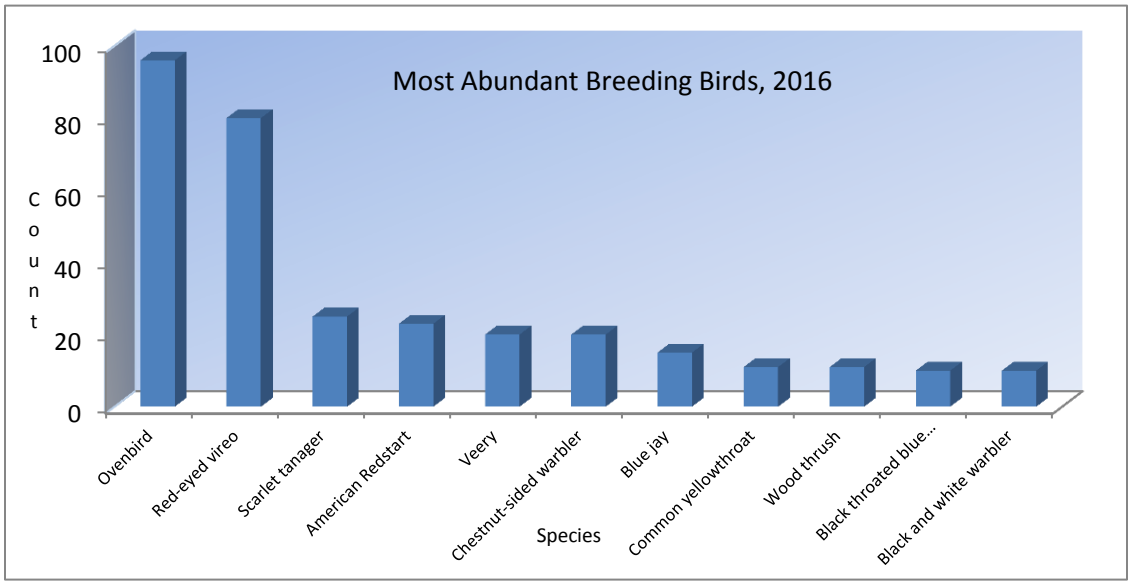
Figure I. Saw-whet Owl Banding Results.



Breeding Bird Point Surveys

In June 2016, I sampled singing males at the 44 breeding bird monitoring points around the Forest. The year's total of individuals (462) was fairly typical for this site but the distribution across the 46 species was somewhat less even than in recent years. Once again, the ovenbird and red-eyed vireo were the most abundant species; they were followed by the scarlet tanager, American redstart and veery. (Figure II). The ascendance of the scarlet tanager to the third position in the species rank is an interesting development and may portend subtle changes in the avian community as the forest ecosystem continues to mature relatively undisturbed. These points will continue to be surveyed on an annual basis.

Figure II. Most abundant bird species from point counts, June 2016.



Watershed/Meteorological Monitoring (Environmental Analysis Lab)

The Center for Environmental Studies' Environmental Analysis Lab--under the guidance of David Dethier (Geosciences) and Technical Assistant Jay Racela--continued to gather, analyze and archive meteorological, hydrological and biogeochemical data from the Forest. Four standard weather stations, one 50-meteorological (MET) tower and two stream gaging stations, all using digital data loggers, ran continuously throughout the year. Data from the main weather station are streamed to the campus information network and displayed (http://web.williams.edu/weather/) along with data from the Taconic Ridge 50-m MET tower and the Morley Science Labs photovoltaic array. We also continued the bi-weekly and monthly collection and laboratory analysis of rain and stream water, respectively, as part of ongoing forest geochemical research that focuses on acid deposition (1983-present) and how it and other pollutants are "processed" by the forest ecosystem.

Caro Atwood '16 with the sonar pond water sensor at the Environmental Center Pond D in January

During January and March 2016, Caroline Atwood '16 as part of her GEOS thesis installed two sonar water depth sensors designed and built by Jason Mativi (BSC Electronics Shop) at the Class of 1966 Environmental Center. One was installed in the middle of the large retaining pond (Pond D) and one at the smaller retaining pond (Pond A). These sensors allowed Caro to remotely monitor changes in water levels at the ponds and how they relate to overall water storage and usage at the Environmental Center and the effect on the Center's Living Building Challenge.

In mid-July 2016 HMF and lab personnel and volunteers dredged and weighed sediment in the weirs along the South Branch and Main Stem of Birch Brook. Sediment removed from the South Branch weir was about average (Figure III), reflecting average streamflow from the fall of 2015 through the summer of 2016, the absence of large events and possibly low sediment supply upstream.

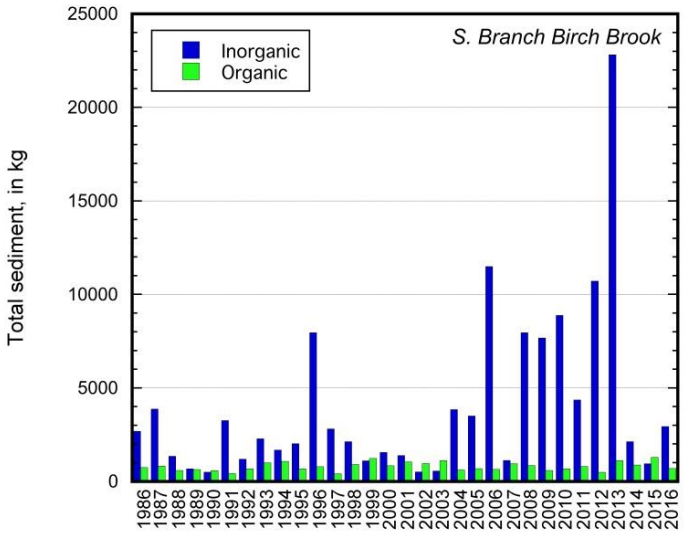
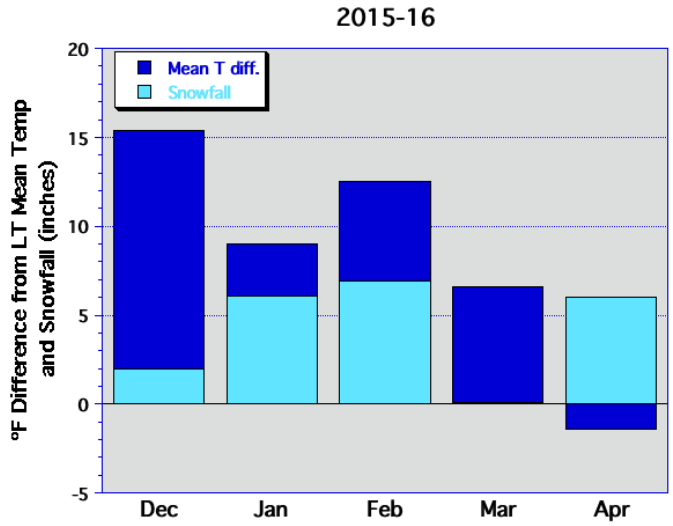


Figure III. Total inorganic and organic sediment transported at the South Branch Birch Brook gaging station annually.

Sean Dory '19 and Jake Foehl '19 worked as research assistants with Jay Racela during the past summer. In addition to their regular field and lab research duties, Sean and Jake collected various soils from the former Spruces mobile home park and evaluated these soils for the presence of chromium, lead, and arsenic as part of an investigation into whether the land could be used for gardening; they presented a poster illustrating their results.

Quite contrastingly from last year, the snowfall for the 2015-16 season was way below average, due to a much warmer than average winter (Figure IV).

Figure IV. Average monthly temperature departure and total monthly snowfall in HMF.



EDUCATION and OUTREACH

Undergraduate Classes

During the fall semester, BIOL/ENVI 203 -- *Ecology* (Smith) held about half of the course's lab sessions at the Forest. Again ENVI 102 -- *Introduction to Environmental Science* (Apotsos) used the Forest for several of its lab exercises in the spring; these included a general forest tour, soil sampling and tree biomass carbon estimation. BIOL 102--*The Organism* (multiple instructors) visited the Forest for laboratory exercises on amphibian breeding and plant development in the spring. BIOL 220—*Field Botany and Plant Natural History* (Edwards) made several visits to the Forest for field investigations as well as did Visiting Professor Betsy Kolbert's Environmental Studies class. The Forest also hosted field trips and lab sessions by Biology and Environmental Science classes from Massachusetts College of Liberal Arts and Berkshire Community College (Appendix I).

For a third consecutive year, HMF provided the venue for the Winter Study Course, BIOL 18 -- *Animal Tracking* with Dan Yacobellis. In addition, two other Winter Study courses (Photography and Agriculture) made guided visits to HMF during the 2016 January term.

Public Outreach

Community Events

Once again HMF hosted a variety of events for the public and College community:

- ***Fall Festival***— The Fall Festival was held on Sunday, September 27th and, on a warm, sunny afternoon, drew approximately 250 visitors to take part in the activities including traditional forest and harvest activities -- shake-splitting, cross-cut sawing, apple butter and cider production and live music. The event also featured guided tours of the canopy walkway and an active bee hive.

- ***Alumni Weekend (Fall)*** – As part of the campus wide campaign kickoff, we hosted a group of alumni for walks and a canopy walkway tour on Saturday, October 3rd.

- ***Hoosic River Walk*** – in conjunction with the Hoosic River Watershed Association, we offered a guided hike to the Wire Bridge Farm on November 14th. In spite of the fair weather conditions only one person participated.

- ***Animal Tracking—*** Dan Yacobellis, a naturalist from Grafton, NY, led the annual wildlife tracking workshop on February 20th. This annual program attracted approximately 15 participants.

- ***Maple Festival***— "Maplefest" was celebrated on Saturday, March 12th, drawing a good crowd of 283 on an unseasonably mild day. People came to see sugaring exhibits and demonstrations and to taste HMF produced syrup served over pancakes and 'on snow'.

- ***Amphibian & Reptile Program***– Tom Tyning of Berkshire Community College led an amphibian foray in Hopkins Forest on Saturday, April 23rd. A solid crowd of 35 people attended on a cool spring day.

- ***Alumni Day***— HMF again offered a variety of activities, including a bird walk, hike, canopy walkway, and children's activities during this year's Alumni Weekend (June 11th). However, inclement weather caused us to have to curtail some of the activities this year.

Local School Outreach

This was our third year partnering with the College's Center for Learning in Action (CLIA) to provide educational experiences for local elementary school classes at Hopkins Forest. Working with Jennifer Swoap, Molly Polk and Rene Sheik of CLIA, we hired designated student educators each semester to work on the development of place-based outdoor education curricula and host field trips from elementary schools from our region. In the fall, Laura Lee '17, Sophia Wilansky '18, and Rebecca McClemmets '17 filled this role, guiding fourth, fifth and sixth grade classes in curricular-based field activities in the Forest. There were a total of seven programs in the fall involving 360 children. In addition to elementary programs we assisted the Greylock High School's "Envirothon" team by hosting them for several "training" sessions at Hopkins Forest. This initiative was supported by CLIA and initiated by Jeffry Rubel '17.

In the spring, the crew was joined by Natalie DiNenno'18, Emma McEvoy '17, and Matias Korfmacher '19 and this team hosted a series of ten programs (345 kids total) for elementary school classes from throughout North Berkshire County. The spring educational programs highlighted themes of maple sugaring and biodiversity. During 2015-16 the student educators again were employed by the CLIA. We did provide some funds for transportation to one school that demonstrated the need for such assistance.

Summer 2016 saw a continuation of youth education programs as the summer caretakers hosted several visits from the Williamstown Children's Center.

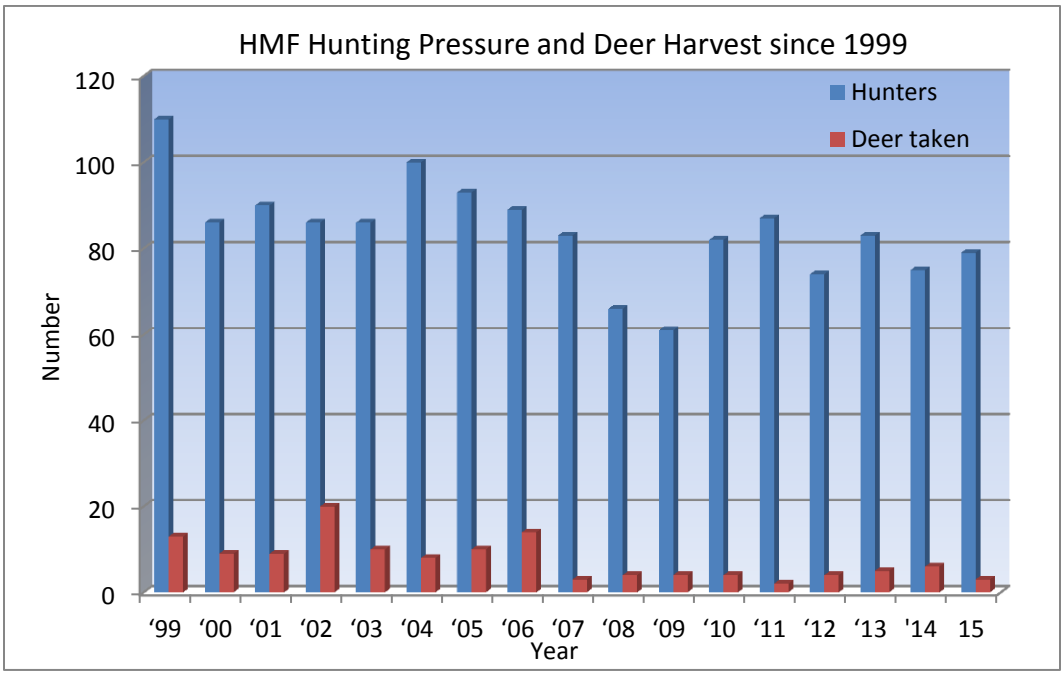
RECREATION

This past year numerous hikers, joggers, horse-back riders, skiers, and nature observers took to the trails of the Forest in their recreational pursuits. Apart from some isolated incidents of unauthorized all-terrain vehicle use on the property, there appear to have been few problems with public use of the Forest during the past year and the recreational infrastructure is holding up pretty well.

Williams Outing Club (WOC)
The Outing Club cabin accommodated overnighters regularly and it was integral to our hosting of the *Maplefest* event in March 2016. The Outing Club lean-to was used by students for First-year orientation activities. By contrast, the WOC ropes course has not been used recently and is in need of refurbishing before regular programming can resume.

Hunting
In autumn 2015, HMF again hosted its annual 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 due to potential conflicts with other users. Seventy-nine registered hunters harvested three deer during the twelve day season according to our unofficial sign-in (Figure V). This harvest total and efficiency was down from the previous year and back in line with the previous years going back to 2007. Williams College security officers were hired to provide surveillance during the busiest days of the hunt. Generally the season ran smoothly and no major problems were reported.

Figure V. HMF Deer Hunting Results.



MAPLE SYRUP PRODUCTION

In spite of a near record mild winter, the maple sugar production in HMF ran close to normal in terms of yearly averages of sap and syrup (Table II). It was a quite early and short season in 2016; however when the trees ran there were rather prodigious yields (with two runs exceeding 300 gallons!) of sap which, though not especially high in sugar concentration, translated into 35 gallons of finished syrup. Certainly yields would have been even higher had we not had to close down earlier than usual this season for staffing reasons.

HMF maple sugar house in action.

Table II. Hopkins Forest Maple Syrup Production 2000-2016.

Year	Beginning Tap Date	Taps	Sap gallons	Sap per tap	Boil hours	Syrup drawn off gallons	Bottled syrup gallons	Sap boiled per hr.	Wood burned (cords)
2000	22-Feb	130	1495	11.5	135	26	23	11.1	1.3
2001	23-Feb	125	2170	17.4	100	44.5	40	21.7	2.2
2002	18-Feb	125	2580	20.6	109	48	40	23.7	2.4
2003	4-Mar	135	1625	12.0	68	34	30	23.9	1.7
2004	27-Feb	130	2130	16.4	93	44	39	22.9	2.2
2005	28-Feb	125	1680	13.4	71.5	37	35	23.5	1.9
2006	15-Feb	139	2005	14.4	72	42	39	27.8	2.1
2007	28-Feb	127	1225	9.6	46	28	26	26.6	1.4
2008	25-Feb	125	2760	22.1	116.5	63	58	23.7	3.2
2009	25-Feb	125	1935	15.5	84	41	40	23.0	1.9
2010	25-Feb	125	840	6.7	32	16	15.5	26.3	0.8
2011	23-Feb	128	1685	13.2	69.8	35	33.0	24.2	1.8
2012	13-Feb	130	1615	12.4	64	30	30	25.2	2.0
2013	22-Feb	133	1845	13.9	69.4	42.5	42	26.6	2.1
2014	19-Feb	127	900	7.1	35	21	21	25.7	0.8
2015	9 March	125	1500	12.0	58.5	43.5	44.0	25.6	1.6
2016	19-Feb	125	1815	14.5	64.2	33	35	25.5	1.8
Mean	24-Feb	128	1753	13.6	76.5	37.2	34.7	23.8	1.8
Median	24-Feb	127	1685	13.4	76.8	37.0	35.0	24.2	1.9

As usual, during the sugaring season, we held our annual 'Maplefest' celebration, which attracted a solid crowd of community members and Williams students on a pleasant early-March day. The HMF sugaring operation was again a popular destination for local school groups which made several field trips to learn about the process.

LAND MANAGEMENT and CARETAKING

Forest Management--Vermont Parcel

None of the practices contracted with the Natural Resources Conservation Service (NRCS) were implemented during the past year, however we did conduct consultations and site visits with NRCS personnel and contractors in order to plan for the prescribed burn and timber stand improvement practices that are outlined in the contract. Burn contractors were not in favor of conducting prescribed burns on the remote dry ridge that was initially targeted for such a treatment. We are now considering scaling back the burn treatment and confining it to a slope on the southeastern part of the parcel. As of fall 2016, NRCS had extended the dates (Table III) of implementation by one year. We aim to be more actively engaged on the tract in 2017.

Table III. Summary of practices supported by the 2014 contract with the Natural Resources Conservation Service.

Practice	Purpose	Scope	Amount	Year	Progress
Forest Stand Improvement	Pre-commercial Thinning	35 acres	$8993	2015	Deferred
Prescribed Burning	Burn Management Plan	25 acres	$452	2015	Deferred
Prescribed Burning	Prescribed Burn Implementation	25 acres	$9522	2017	Deferred

Wire Bridge Farm
Joel Burrington of Pownal, Vermont continued to cultivate hay on the Wire Bridge Farm. No academic activities involving the farm took place during this period although the area continued to be used occasionally for recreation and wildlife viewing.

Roads/Trails
Once again the summer caretaking crew conducted routine maintenance throughout the trail system, with a focus on installing new waterbars on the Upper Loop Trail. In May 2016, the entry road to the Rosenburg Center was resurfaced and graded by a contractor hired by the College's Facilities Department. This crew also did some remediation work to the drainage channels and culverts along the north spur of the Lower loop trail. Indeed, one culvert had to be unplugged using a high pressure blast of water from a fire truck. Approximately 150 feet of the ditch was lined with rip-rap to reduce erosion and sedimentation of culvert pipes.

Caretaking
As in the past, HMF relied on student caretakers for a major part of its maintenance, upkeep and outreach activities (Table IV). Indeed, the fall and spring semesters had a regular crew of eight to twelve students, each working about three to six hours per week. The fall crew kept busy preparing for and hosting the Fall Festival and keeping up with trail maintenance and boundary posting. In the spring, much time was devoted to the maple sugaring season and hosting *Maplefest*.

Table IV. Student Caretakers academic year 2015-16.

Abigail Kelly '16	Madeline Grant '18
Christopher Wayland '16	Jackson Barber '18
Miguel Samayoa '17	Charles Harrison '18
Rebecca McClements '17	Matias Korfmacher '19
Nathan Leach '17	Kristen Bayrackdarian '19
Devin Helle '18	Tyra Wynn '19
Johah Levy '18	Jian Lu '19
Eliza Klein '18	Aaron Juang '19

A seasonal caretaking crew comprising Matias Korfmacher '19 and Aaron Juang '19 was employed for 10 weeks during the summer 2016. The crew worked on many of the regular summer tasks—mowing, gardening, grounds-keeping, trail and water-bar maintenance and controlling invasive vegetation. They also served as docents for our summer educational and outreach programs including the Alumni weekend. Our crew occasionally teamed up with the regional trail crew, composed of Daniel Gura, '09 and Jeremy Smith '19, who were sponsored by the Williams Outing Club and Williamstown Rural Lands Foundation. Our crew was involved in off-site projects including putting in the new trail network on Stone Hill and building a new footbridge on the Money Brook Trail.

In addition to student workers, we employed Debra Rogers-Gillig on a part-time basis during the summer to work in the Buxton Garden. Debra has been crucial to the rejuvenation and flourishing of the garden over the last several summers.

FACILITIES

Rosenburg Center/Moon Barn
During the summer of 2016 we hired Elliot Krasnopoler, a recent graduate of the Master of Art History Program to provide curatorial assistance with the museum collection and exhibit hall. Elliot designed and installed several new exhibits in the hall, using place-based historical information and some pieces from the Farm Museum collection.

Following on the 2015 re-purposing of the interior of the building, we had the outside of the building bolstered this year. This work involved replacing sills, posts and siding on the north and west sides of the building and rebuilding and painting the deck in the main entry area, and also laying a flagstone entry walkway and sod strips in the vicinity of the main entry. Replacement of exterior staircases on the south and east sides of the building in the upcoming year will complete this round of refurbishing the 110-year-old structure. Even amid all of these improvement activities, the Rosenburg Center served ably as a focal point for classes, lab set-ups, public events, workshops, and as an exhibit space for visitors.

The Moon Barn continued to be used as public exhibit space during special events such as the Fall Festival and school visits. Due to a shortage of outdoor storage structures, we continue to have to use this historic building in part for storage.

Canopy Walkway
This past year the canopy walkway was open for public visitation several times including during the Fall Festival and fall alumni event. In May 2016 the walkway was inspected by Canopy Construction Associates and they made some minor repairs, primarily to the decking. In the summer, the caretakers did a routine treatment of the wooden ladder with a preservative. A more thorough replacement of the joists on the smaller deck is slated for 2017.

Vehicles
The 2015 Toyota Tacoma 4x4 pick-up truck ran well during the last fiscal year and we had its undercarriage coated with a rust proofing treatment. Likewise, the John Deere 'Gator' utility vehicle continued to run reliably, requiring only routine maintenance.

ADMINISTRATIVE

Meetings/Affiliations
Mohawk Trail Woodland Consortium: Hank Art continued to sit on the steering committee of the Mohawk Trail Woodlands Consortium, a group representing a 20-town region charged with devising recommendations for a potential U.S. Forest Service conservation designation. He attended occasional meetings over the last year as the group worked to move toward a comprehensive regional plan.

Berkshire Community College: During 2016, I sat on an ad-hoc committee, which includes members from Berkshire Community College, Massachusetts College of Liberal Arts and several regional organizations. Its charge was to organize and plan the second annual "Natural History of the Berkshires" conference, which was held in fall 2016.

Williamstown Rural Lands Foundation (WRLF): I attended a community workshop at WRFL's Sheep Hill headquarters on December 10, 2015. This community event, sponsored by several state and local organizations, was oriented toward informing land-owners of funding opportunities and best management practices.

Berkshire Environmental Action Team (BEAT): I gave a presentation on the HMF saw-whet banding program at the monthly "Green Drinks" session in Pittsfield on February 16, 2016. This event, sponsored by BEAT, attracted a general audience of approximately 30 people.

HMF Users Committee
The Hopkins Forest Users Committee--charged with oversight and planning responsibilities for the Forest -- is composed of faculty and staff who have interests in research or teaching in the Forest (Table V). Under the direction of Chair Manuel Morales, the Committee conducted occasional meetings to discuss management and policy matters during the past year.

Table V. HMF Users Committee--2015-16.

Faculty	Department	Ex-officio	Affiliation
Manuel Morales, Chair	Biology	Ralph Bradburd	CES Director
Hank Art	Biology	Scott Lewis	WOC Director
Joan Edwards	Biology	Jay Racela	CES, Envi. Analysis Lab
David Smith	Biology	Drew Jones	HMF Manager
David Dethier	Geosciences		

FUTURE – What's in store for 2016-17?

In the coming year we will continue to facilitate and expand our educational and research activities at Hopkins Forest. This will include making the final touches on the exterior of the Rosenburg Center and continuing to improve the utility of the HMF website.

In research we will continue to support ongoing projects, notably the study of differential mowing regimes on late season wildflowers and pollinators. Of course we will continue to work with interested outside researchers to host non-Williams based studies as appropriate.

We aim to continue to bolster our elementary education programs by increasing the number of Williams student educators available to host elementary class visits during the academic year. Moreover, we intend to expand our outreach efforts to Environmental Science classes at Mount Greylock High School.

With the Users Committee's decision to proceed, we will move forward with the conservation practices set out in our contract with the Natural Resources Conservation Service. This entails going forward with a 35 acre timber stand improvement cut and drafting a plan for a prescribed burn to be completed in 2018.

APPENDIX

Appendix I – Outside Organizational Users of HMF 2015-16.

Organization	Location	Department/Program	Type of Use
Higher Education			
Berkshire Community College	Pittsfield	Environmental Science	Owl banding
Massachusetts College of Liberal Arts	North Adams	Biology, Environmental Science, Summer Program	Field trip; owl banding
Texas Tech University	Lubbock, TX	Biology	Owl Banding
Community Organizations			
Hoosic River Watershed Association	Williamstown	Monitoring/Outreach	Monitoring lab/members event; guided hike
Greylock High School	Williamstown	“Envirothon”	Field trips
Williamstown Children Center	Williamstown	general	Field trip
Massachusetts Audubon	Berkshires	General membership	Owl Banding
North Berkshire Audubon	Williamstown	general	Owl Banding