

Resource Management Plan for The Ohio State Mansfield Campus

The Mansfield EcoLab:

Situated on 640 acres of mature and new growth forest and former farmland, dotted with vernal pools, pine plantations, and stream heads, and bisected by two utility rights-of-way, the Ohio State Mansfield EcoLab offers a unique setting for experiential education, hands-on research and robust community engagement around twenty-first century sustainability questions and practices. Cobbled together out of several farm properties in 1960, the academic core campus was built in the center of the large plot. Since then, almost all of the surrounding fields and pastures have succeeded to new growth forests, where they were not intentionally planted in non-native conifer or hybrid chestnut. The EcoLab is thus a fascinating and meaningful hybrid site whose various uses and long history are inscribed in its present conditions.

Our goal is to document and preserve this history while working to restore and maintain a healthy and diverse natural landscape that maintains as much of the contiguous forest and forest cover as possible. We also intend to document and use our planning and restoration efforts and management decisions as part of the educational, research, and community engagement with this site.

We strive for a paradigm that understands the earth and the environment, including humans, as an integrated whole. Our mission is to educate and train citizens and leaders, and to develop new knowledge and techniques that will maintain the landscape to satisfy the following objectives:

- Creating and supporting educational opportunities for K-12, undergraduate and graduate students, teachers and community members
- Supporting environmental and scientific programs of study at The Ohio State University;
- Promote informed decision-making through education, outreach, training programs and collaborations, under criteria of sustainability.

To guide decision-making about activities and uses of the Ohio State Mansfield's natural landscape, the EcoLab committee approved a Management Hierarchy. The priorities that the committee established are the following, in order from higher to lower:

(A) Restore and maintain the OSU-Mansfield landscape.

The Ohio State Mansfield natural landscape should be managed toward the long-term goal of restoring and maintaining the natural landscape on as many acres, in as contiguous a way as possible.

(B) Create conditions that allow the use of the OSU-Mansfield landscape as a classroom and laboratory.

This priority contributes to engaging in educational activities, training practices that optimize management needs, and support research conducive to the use and development of practices that minimize the impact of human use.

(C) Make the OSU-Mansfield landscape available to our community for use.

The OSU-Mansfield landscape could be available for recreational use by all community members.

It should be noted that, in case of conflicting landscape uses, the priority of a higher rank takes prevalence over the others. For example, when utilizing the landscape as a laboratory and classroom, increased access allowed to students in such a way that implies the risk of mis-use and abuse of the landscape, will conflict with the highest priority, and thus, the use of the land should be re-evaluated to comply with the hierarchy.

The main goals and objectives listed in the 2015 Resource Management Plan fall under one of these categories: management of invasive species, trails, forests, wildlife habitat, water resources, campus core, open land, restricted property/easement areas, historical sites, and management of resources. For each one of these categories, the Plan established short term (2-5 years) and long term (10-20 years) objectives.

Below we integrate the updated objectives of the 2015 Management Plan into the Management Priorities that the Ecolab Committee proposed and approved, to provide a framework that will make the tasks of the Committee more effective, to help in the development and implementation of a variety of activities and events that could greatly enrich and complement the already excellent programs offered at OSU-M, and to promote the synergistic interaction of teaching and research activities carried out by all the members of our campus community.

Objectives

The proposed objectives are listed below, grouped by category. Superscripts (A,B,C) in each objective indicate the priority (explained above) under which they belong.

1. *Invasive Species*

Non- native invasive species are one of the biggest threats to the long-term health of our forests. This includes, but is not limited to, plants, insects and disease vectors. The current level of infestation at the Mansfield campus is still at a manageable level.

Short Term Objectives:

- Develop a strategy to eradicate invasive species (mainly plants and insects) around and within the campus acreage, using accepted methods and labeled chemicals (reference OSU Extension fact sheets on the various species and their control methods).^{A, B}

Long Term Objectives:

- Continue to monitor and eradicate invasive species (mainly insects and plants) as and when needed.^{A, B}

2. *Trails*

To provide access to many of the unique natural resource areas of the campus (mature and young forested areas, vernal pools and wetlands, streams etc.) a master plan for a series of trails is needed. These trails will be used for environmental and natural resource education and recreation. The creation of side trails for research and demonstration areas should also be considered. Trails should be designed for low impact recreational activities and service access.

Short Term Objectives:

- Develop a protocol for Ecolab environmental education signage purposes and trail access, establish a clear trail maintenance strategy, and create a development plan for environmental education assets in the landscape.^{A, B, C}
- Develop “tree identification” trail to legacy forest and successional forest south of the Child Development Center.^{A, B, C}
- Develop “vernal pool” trail and board walk to vernal pool behind Conard Hall & Health Science at the rear of Parking Lot #10. (Identified as wood frog vernal pool on map).^{A, B, C}
- Develop “horseshoe vernal pool” research restricted access trail to significant vernal pool behind and north of Kee Hall. The SUSTAINS learning community from the Columbus campus mulched portions of the horseshoe trail in summer 2018. Currently partnering with Dr. Sue Rasche and her class of undergraduates from the School of Environment and Natural Resources to create interpretive sign content at half-dozen locations along this trail.^{A, B, C}
- Develop “wetlands and prairie” trail from Milliron Wetlands along Campus environmental entrance from Route 39.^{A, B, C}
- Develop “stream ravine overlook” trail along wooded riparian corridor behind Ovalwood Hall.^{A, B, C}

- Provide for bike and pedestrian access along the new Lexington-Springmill campus gateway entrance. Provide connectivity to existing Buckeye Village and Campus District Town Center development. ^{B, C}

Long Term Objectives:

- Develop plan for connecting Campus bike and walking trails with the Richland County Regional Bike Plan. ^C

3. Forests

There is a large variety of forest species of different ages mixed in the more than 600 acres of the campus land. For management purposes, this acreage is divided into plantations, mature forests, and young forests. All forest management activities must follow the *Best Management Guide for Logging Operations in Ohio (OSU Extension Bulletin 916)*, which keep forest operations within the legal guidelines of the Agriculture Pollution Abatement Law.

Short Term Objectives:

- Develop a clear understanding of this forest's history, identifying patterns in prior land use and their relationship to present forest landscape. ^{A, B, C}
- Establish permanent plots throughout the forested acreage to monitor forest health and to add and update the forest inventory that the SENR students started. Measurements have been taken since 2013. These permanent monitoring plots will follow the protocol set up by the U.S. Forest Service in their Forest Inventory and Analysis (FIA) program. ^{A, B}
- Resample same plots in 2019 to understand forest change post-ash dieoff and to validate initial data collection efforts. ^{A, B}
- Collect additional data and create a long-term plan for management demonstration areas along the gas line easement and along the Molyett Village bike path. ^{B, C}

Long Term Objectives:

- Work towards keeping the Mansfield forested acreage healthy and functional in the best capacity to meet the overall goals and objectives for the campus. ^{A, B, C}

3a. Plantations

These areas were planted to a variety of conifer species (and some hardwoods) over the course of a few years. They have never had any management applied to them and are starting to show this neglect.

Short Term Objectives:

- Provide a useful historical background on those sites to help us develop a more informed decision-making process. The individuals who decided to plant conifers on campus continue to be a part of our community. Before taking any further steps, a thorough documentation of those decisions is needed. ^A
- Several conifer plantations are starting to decline and in need of management. We need to harvest these plantations and create some early successional habitat, one stage that is missing in the campus habitat structure. ^{A, B}

Long Term Objectives:

- The remaining plantation will need to be monitored and decide on a course of action: thinning, natural reversion to a young hardwood stand, or re-plant into another stand of conifers.^A

3b. Mature Forests

These forested areas existed when the original farm was purchased by OSU to create the Mansfield campus. They include an area of trees that the SENR students dubbed the 'legacy forest', an area with extremely large trees that are around 140 years old.

Short Term Objectives:

- Document the details of the trees that exist in the 'legacy forest'.^A
- Designate areas as demonstration areas that can be used to educate private woodland owners in sound woodland management practices, and appropriate harvesting techniques (those recommended for upland central hardwoods). These cuts should be performed along trails that create access to these areas. (see OSU Extension fact sheet *Harvesting and Reproduction Methods for Ohio Forests, F-47-01*).^C
- Create passive interpretive signage to go along with these demonstration cuts so interested clientele can visit and explore the site on their own. This would include, but not be limited to, signs, brochures and electronic media.^{B, C}

Long Term Objectives:

- The existing "mature" forests can be seen in historical aerial photographs of the campus site prior to the consolidation of the various properties into the OSU Mansfield campus; a more careful study of these forest exceptions detailing their purposes in the agricultural landscapes and understanding better how they are a remnant of a previous land use model that shaped this entire region will provide excellent environmental education material for walking paths and websites, and to use in landowner education programs.^{B, C}

3c. Young Forests

These areas became forests after either livestock were removed from pasture areas or when row crop production ceased. Through natural succession these areas exist as young forest stands today.

Short Term Objectives:

- Reconstruct ownership and document prior land use to allow correlation with current successional forest types.
- Establish plots and set up a protocol for data collection and pictorial documentation of the progression as the plots age.^{A, B}
- Identify which stands can be used as management demonstration areas. Examples include, but are not limited to, different levels of thinning and crop tree management protocols and intermediate harvesting techniques. In 2018, a management practice demonstration area has been marked in the young forest stand along the Molyett to campus connection trail. This practice, focused on crop tree management, picks trees that best meet the goals

of the site and thin trees from out around them, so they have more room to grow. Trees were chosen to increase species diversity in the stand, benefit pollinators, produce maple syrup and perhaps even produce trees that could be harvested for timber in the future. Signage is being created to highlight objectives for the cut, and two treatment plots will be implemented in winter 2018-19. The crop trees were marked and tagged, and baseline pre-treatment data were collected on all crop trees and removal trees. Work on trees that need to be thinned out will be carried out the winter of 2018-2019, a timeframe that will allow crop trees to benefit as they go through the 2019 growing season. Post-treatment data will be collected by future ENR 4900.02 classes as well as by Ecolab interns. Objectives for the crop tree release include reallocation of tree growth to wildlife and pollinator friendly tree species, timber quality, and boosted maple sap yield for syrup production. ^{B, C}

- Create outreach materials for landowners and other interested parties. This includes but should not be limited to fact sheets and signage on site. ^C

Long Term Objectives:

- Continue with the appropriate intermediate harvest protocols until the trees in the stand either reach harvestable size or objectives for the site change (20+ years). ^B

4. Wildlife Habitat

There are many species of birds, mammals, amphibians, reptiles, and insects using the campus woodlands, open lands, and water resources as habitat. Additional inventory and assessment of key habitats (woody and herbaceous understory, early successional habitat, and riparian areas) and long-term monitoring of wildlife populations and subsequent responses to management is strongly recommended.

Short Term Objectives:

- Expand and repeat deer population density estimates and herbivory impact assessments (browse transects) to determine if population control is needed. ^{A, B}
- Establish at least three additional deer enclosures, one in mature forest and two in young forest. ^A
- Conduct a thorough biological inventory, with emphasis on woody understory and herbaceous plants, herps, and bats. ^{A, B}
- Conduct physical habitat assessment (soils, hydrology, bank-side erosion, etc.) of riparian zones associated with streams, vernal pools, and wetlands. ^A

Long Term Objectives:

- Develop and implement a long-term wildlife monitoring program and protocols to assess population responses to forest management and restoration, and ecological change (i.e. succession, human development, climate, etc.). ^{A, B}

5. Water Resources

5a. Streams

Short Term Objectives:

- Manage invasive species and remove stream woody debris (tree limbs and logs that can clog the drainage culverts) annually.^A
- Assess all six watersheds every five years for minor stream (approx. 8.5 km) ecosystem health.^A

Long Term Objectives:

- Sustain healthy woodland riparian corridors along the two largest streams. Provide supplemental woodland regeneration 100 feet either side of stream corridors.^A
- Manage 300 feet of stream and 200 feet of enhanced wooded-riparian corridor adjacent to Riedl Hall and Child Development Center in accordance with the Environmental Covenant.^A

5b. Wetland and Vernal Pools (ephemerals)

Short Term Objectives:

- Delineate hydrological protection and ecological sensitivity zones around vernal pools and wetlands and develop best management practices for conservation of these areas. So far, seven wetland sites were delineated in 2018. Ohio Rapid Assessment Method scores, measures of plant and macroinvertebrate diversity and water profile metrics were used to rank each wetland site on a spectrum from least to most disturbed. This project provides a consistent protocol to be implemented for future wetland monitoring in relation to development and other pressures (e.g., new entrance construction).^A

5c. Storm Water

Short Term Objectives

- Monitor and report annually the water quality of Milliron Wetlands and the health of the 46 acres of source uplands drainage.^A

Long Term Objectives

- Continue to use decentralized storm water management and design strategies to sustain or restore site hydrology to pre- development conditions. Apply EPA storm water management best practices to practical extent.^A
- Promote “green” storm water management and sustainability practices for increased development likely to occur along the western border of Campus. Coordinate with City of Mansfield, City of Ontario and Richland County Soil and Water Conservation that have regulatory jurisdiction immediately adjacent to Campus.^A

5d. Water Quality

Long Term Objectives:

- Develop and implement a long-term continuous monitoring program and protocols to track changes in hydrology and water quality associated with forest management and restoration, campus development, and ecological change (i.e. succession, climate, etc.).^A

6. Campus Core

Short Term Objectives:

- Improve way-finding signage.^{B, C}
- Develop campus core landscape philosophy and plan. Identify and implement specific ground maintenance practices, techniques and care activities.^{B, C}
- Work with the ODNR Division of Forestry Urban Forester to create a comprehensive long-term plan for the trees within the campus core.^{B, C}
- Map and protect campus core areas used for academic, research and demonstration.^{B, C}
- Work towards Tree Campus USA certification – an Arbor Day Foundation certification similar to the Tree City USA certification. Ohio currently has 13 Tree Campus USA certifications – including the Columbus and Wooster campus of Ohio State.^C

Long Term Objectives:

- Provide a sustainable natural landscape, balanced with operations and growth of the broader academic and student services mission and needs in the Campus Core. Coordinate with actions identified in the 2013 Mansfield Campus Framework Plan.^{A, B, C}
- Plan for connecting a walkable Campus with the walkable Campus District Town Center.^C
- Construct a Natural Resource Center facility to promote learning, research and partnerships. Reference OSU Mansfield Capital Needs Inventory (Project #12000420 – Mansfield Wetlands and Woodlands Laboratory).^{B, C}

7. Open Land

Short Term Objectives:

- Identify areas of opportunity for enhancement or development of native prairie and early successional and forest-open land edge habitats.^{B, C}

8. Restricted Property/Easement Areas/Underutilized Property

Short Term Objectives:

- Inspect property and easement lines annually.^A

Long Term Objectives:

- Map all easements and property restrictions.^A
- Maintain a 200 feet natural buffer along all Campus property limits. Encourage adjacent property owners and development projects to maintain 100 feet of “green space” with the campus.^A
- Promote and partner with First Energy Corporation and Ohio Gas the use of their respective transmission right-of-ways for research and demonstration purposes. For example, in 2015 we began the layout and design of the Monarch Right of Way

demonstration site with a grant of \$5000 from First Energy. The purpose of the demonstration area is to show a variety of seed mixes that landowners can use in their own landscapes. Many of the plants and planting mixes were donated (Davey Tree, Ohio Prairie Seed) with the intent of exposing interested landowners to a variety of options when thinking of planting their own pollinator plots. Many landowners have property that transect electric transmission lines. Encouraging landowners to plant one of these seed mixes in their right-of-way areas promotes pollinator habitat and reduces having vegetation under the powerlines that interferes with those lines. ^B

- Coordinate with their maintenance and service plans. ^C

9. Historical sites/areas

Short-term Objectives:

- Remove Ohio Standard Baseline foundations along planned Campus Entranceway/Gateway from Lexington-Springmill Roadway. Complete a Historical American Engineering Record (HAER). Apply for an Ohio Historical Marker. Reference: OSU Planning & Real Estate Ohio Standard Baseline Study of June 15, 2015. ^A

Long-term Objectives:

- Apply National Historic Preservation Act (NEPA) Section 106 consultation process on all planning and projects that affect cultural resources. ^A

10. Management

Short Term Objectives:

- Active day-to-day management of resource plan using existing campus organization. Provide training and additional resources. ^A
- Establish a Community Natural Resource Collaboration Committee to advise and promote natural resource management techniques and practices. ^A

Long Term Objectives:

- Hire a dedicated natural resource manager for regular operations and management of campus resources and for coordination with existing programs. Funds to support between one third and a half of this position were secured through a Connect and Collaborate grant, matched by our partner First Energy. ^A