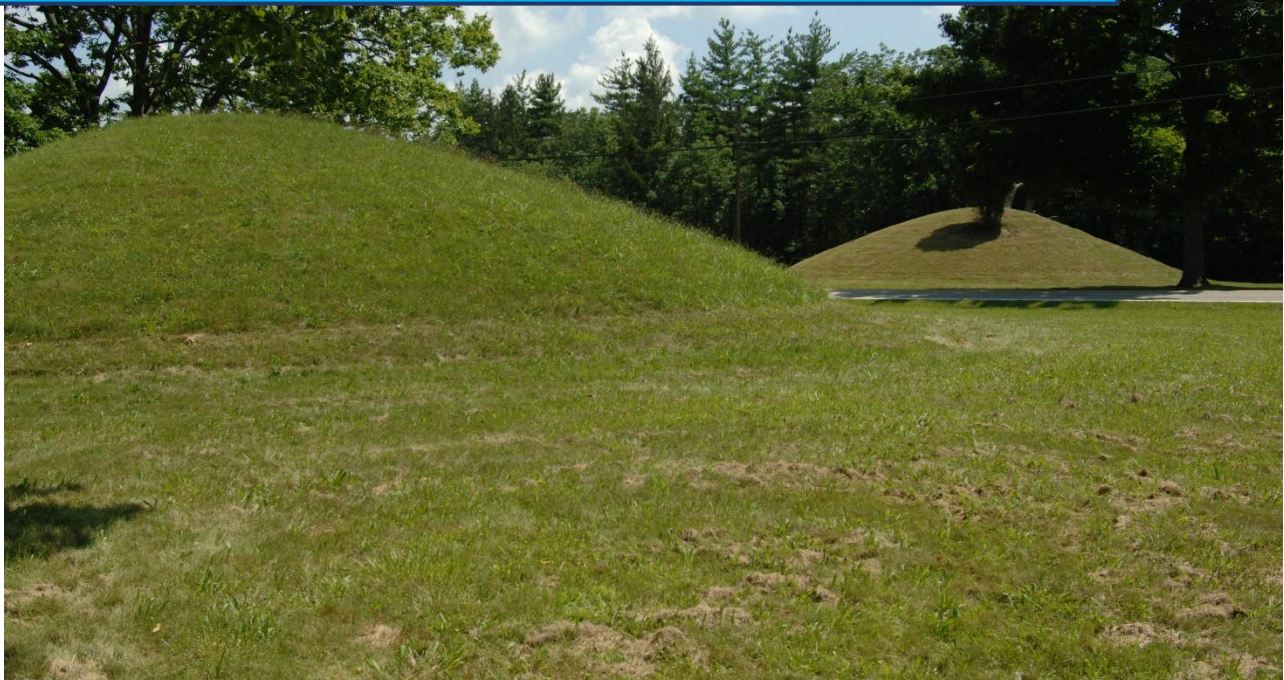


2023

Ohio History Connection Vegetation Management Plan for Indigenous American Indian Mounds and Earthworks



Archaeology Projects Department &
World Heritage Department
Ohio History Connection
10/10/2023

General Considerations

The Ohio History Connection, as per Section 149.30 of the Ohio Revised Code, is charged with the stewardship of over 60 culturally and/or naturally significant sites around the state. The directive states that the Ohio History Connection will create, supervise, operate, protect, maintain, and promote for public use a system of state memorials, which are wholly or partially owned by the state or wholly or partially owned by the Ohio History Connection (Section 149.30 A). Included in this current system are nine mound and earthwork sites built by the ancient ancestors of American Indians. These sites are sacred to American Indians as bridges between them and their ancestors and the histories they lost due to forced removal. As the current steward of these sites, it is the responsibility of the Ohio History Connection to preserve, protect, and maintain these sites to the best of our abilities. This includes following the guidance of American Indian Tribal Partners and current best practices in site management.

This document follows these principles in providing guidance on the vegetation management of the mounds and earthworks within this site system. It is based on other vegetation management policies created by American Indian tribes (in particular the Ho-Chunk's *Burial Mound and Preservation Plan*), the National Parks Service, other state institutions, and local historical societies (see the resources section for a full list). This document provides basic guidance and considerations that can be applied to most situations at mound and earthwork sites. Each situation, however, is different and should be assessed individually prior to any work with consideration to the site, location, current conditions, and potential risk of damage to the cultural resource. As in medicine, the fundamental principle is first, do no harm. If assistance is needed to make such an assessment, please contact the Sites Archaeologist and the Site Maintenance Supervisor at the Ohio History Connection prior to undertaking.

The following practices are to be enacted at all Ohio History Connection sites that contain mounds and earthworks. All preexisting violations of this policy may remain until it is economically and strategically feasible for the Facilities Management Division of Ohio History Connection, in consultation with Ohio History Connection's Tribal Partners, to reassess them. These structures may remain if removing or relocating them would cause more harm or damage to the cultural resources at the site. (For example, the walkway at Serpent Mound is within five feet of the earthwork, which is in violation of this policy; however, it may be decided that the walkway remain in place vs. moving it elsewhere on the site.)

Vegetation Management Guidelines

Each American Indian mound or earthwork site is unique. While their earthwork type, shape, and material may be the same, their natural setting, environment, climate, vegetation, modern development, archaeological history, management, tourism history, and past all differ. These differences result in the sites facing different challenges and issues in terms of vegetation management. Thus, each site needs its own vegetation management plan. This plan should be based on the standards provided in this document and approved by the Site Maintenance Supervisor and Sites Archaeologist at Ohio History Connection. The plan should be reviewed and approved decennially by the above parties. Additionally, the Director of American Indian Relations at Ohio History Connection should be notified or copied on any communications with Tribal Partners.

Vegetation

- Do not alter or modify the current vegetation unless it is adversely affecting the mound or earthwork. Some alterations may negatively impact the resource worse than the current vegetation.
 - Vegetation may be altered/modified to better represent tribal perspectives, such as to restore historic conditions, if requested by Ohio History Connection Tribal Partners and approved by the Facilities Management Division at Ohio History Connection.
- Native grasses known or presumed to have been present historically at the site should be used when reseeding a mound or earthwork as they are adapted to the local conditions.
 - Low or no-maintenance grasses are preferred.
 - Grasses with deeper, vertical root systems help to stabilize the mound and prevent erosion.
 - Taller native grasses (greater than 12" in height) may prevent raindrop erosion; however, they may hinder the monitoring of burrowing animals into the mound or earthwork. They also may have a negative impact on the visitor experience.
 - The Ohio Department of Natural Resources (ODNR) has recommended the following native grasses for use on mounds and earthworks: *Andropogon gerardii* (Big bluestem), *Sorghastrum nutans* (Indiangrass), and *Schizachyrium scoparium* (Little bluestem).
 - Other native grass types may be used if they follow the [Ohio History Connection Native Plant Policy](#) or are approved by our American Indian Tribal Partners.
- Preferred seeding methods are hand seeding, broadcasting, and hydroseeding.
- Reseed exposed soil on the mound or earthwork as soon as possible to prevent erosion.
- Only plant new trees after there has been a determination that there will be no adverse effect on the cultural resource and archaeological research is completed in the impacted areas. No new trees will be planted on mounds or earthworks, or within earthen enclosures. There should be at least a 15 ft. buffer between the mound or earthwork and new tree.

Vegetation Maintenance and Removal

Mowing

- Limit the frequency with which the mound or earthwork is mowed. It should not be mowed every time the surrounding grounds are mowed.
 - The frequency of mowing will be determined by factors such as controlling invasive species, limiting bioturbation, and limiting adverse effects on visitor experience.
 - If the cover is native warm-season grass, it is recommended to only mow the grass once a year in the spring as it promotes growth.
 - If the area is used by grassland birds for nesting, the first cutting should occur prior to May 31, and there should be at least a 65-day wait period prior to the second.
- Mow on a high setting to minimize ground disturbance.
 - Do not allow equipment blades to cut into the soil of the mound or earthwork.
- Mowing should only occur when the conditions are dry to prevent rutting. If rutting is noticed during cutting, stop work and continue only after the ground has become drier.
- Follow all [Occupational Safety & Health Administration \(OSHA\)](#) guidelines and regulations for mowing. Their suggestions for equipment options on various terrains are as follows:
 - On 0° to 15° slope, push, riding or tractor mowers can be used.
 - On 16° to 22° slope, push or tractor mowers can be used.
 - On 23° slope or greater, push mowers, string trimmers, or specialized equipment should be used. This specialized equipment can include riding or unmanned mowers intended for slope.
- If possible or when in doubt about OSHA regulations, use string trimmers, a hand mower, or machinery with low impact tires/tracks.
- Do not use chemical treatments as an easy alternative for hard to mow areas or around the base of trees. Use hand tools (i.e. shears, weed wacker, trimmer, etc.) to remove the vegetation in these areas. The use of chemical treatments should be limited.
- The use of grazing animals (i.e. goats, llamas, etc.) to maintain the grass on intact mounds or earthworks is not recommended based on the experience of doing so at Miamisburg Mound.¹

Prescribed Burns

- The feasibility of using prescribed burns to modify existing vegetation on a mound or earthwork is determined based on the potential impacts, which include the potential destruction of cultural resources, the effect on stumps, the effect on native grasses, the effect on invasive species, the possible negative effects on neighboring properties, increased erosion, etc. Do not use a prescribed burn unless the positive impacts greatly outweigh the negative.

¹ In the early 2000s, the Ohio History Connection used llamas to maintain the vegetation on Miamisburg Mound, and the negative effects far outweighed the positive. For example, the use of heavy animals (i.e. llamas) caused rapid changes to ground surfaces (i.e. rapid erosion) and destruction of surface features, the need for fencing around the mound to manage the animals, the animals camped out in one spot causing erosion, uneven grazing/over grazing of certain areas, and the need for even and high quality grass cover. Additionally, there were negative impacts to the relationship with the local community as many saw it as disrespectful to allow the animals on sacred American Indian burial grounds.

- Do not use prescribed burns on a mound, earthwork, or surrounding areas that have not already had a geophysical survey completed. Burning may make magnetic data indecipherable or distorted according to [Weinberger and Brady \(2010:16\)](#).
- Follow all Ohio laws and regulation concerning prescribed burns including permitting, written permission, timing (spring or fall), necessity of a “Burn Boss,” etc. See the Ohio [Department of Natural Resources Division of Fire’s](#) webpage for the required forms for practitioners of prescribed burns.
- Firebreaks for prescribed burns should be at least 10 ft. in width and created by mowing the vegetation in the area to two inches in height and wetting the area prior to the burn.

Chemical Treatments

- Limit the use of chemical treatments for vegetation control. Removal of invasive and unwanted vegetation by hand is preferred to chemical treatments; however, it is recognized that chemical treatments may be necessary in certain situations as determined by the Site Maintenance Supervisor at Ohio History Connection.
- Use selective spot-treatments vs. broadcast-spraying when possible.

Tree Removal

- The Federal Endangered Species Act mandates that tree clearing may only occur between October 1 and March 31 for federally funded projects to protect the Indiana bat (*Myotis sodalis*). The Ohio Department of Natural Resources highly suggests that this law is followed for other projects, especially in known habitats.
 - The [Migratory Bird Treaty Act](#) should also be followed.
- Assess the impacts that the existing trees on the mound or earthwork may have to the cultural resource, both positive and negative (i.e. erosional control, stability, potential windthrow damage, historic accuracy, interpretation [e.g. astronomical alignments], etc.), and the impacts of their removal to determine if the trees should be cleared.
 - The determination to remove trees on a large-scale (i.e. more than two large trees) should be documented in a written plan and approved by the Supervisor of Site Maintenance and the Sites Archaeologist at Ohio History Connection.
 - If it is determined that the trees should be removed, follow the Ho-Chunk (2007) phased removal plan.
 - Phase I: remove all potentially hazardous dead leaning trees, decayed trees, trees with excessive branch loss
 - Phase II: Remove all trees on mounds
 - Phase III: Remove all trees within five feet of mounds
 - Phase IV: Create a native tree grove or native grassland area
 - Note: all cutting is done when the ground is frozen [or dry] to minimize ground disturbance and no removal of stumps. Use herbicide on stumps.
- Tree removal and branch clean-up guidelines:
 - Avoid disturbing the soil with machinery or during the work.

- Remove trees when the ground is frozen or is dry enough to avoid machine rutting. Matting approved by the Sites Archaeologist may also be used to avoid machine rutting when the ground is wet.
- Do not drive machinery over the mound or earthwork.
- Do not stage vehicles or equipment on the mound or earthwork.
- Do not drop trees on or drag them across the mound or earthwork: directionally fell them away from the resource.
- Use soft-logging techniques if possible.
 - Soft-logging techniques are those that remove trees with minimal impact to the ground. They include removing limbs that may impale the ground, using a crane to remove large trees vs. felling them, piecemeal cutting and lowering of sections, etc.
- Grind stumps to ground level (not into the soil) and leave the remainder in place to decay.

“Emergency” Procedures for Tree Falls and Downed Branches

- First, ensure that any actions to remove the tree or limbs will not damage the ground, including machine ruts. If ground disturbance is possible, stop and contact the Supervisor of Site Maintenance and Sites Archaeologist at Ohio History Connection.
- If the tree fall or downed branch has damaged the mound or earthwork, inform the Sites Archaeologist at Ohio History Connection.
- If any damage occurs to the ground during removal, stop work and call the Sites Archaeologist at Ohio History Connection.
- If assistance is needed to remove the tree or branches, call the Supervisor of Site Maintenance at the Ohio History Connection.

Invasive Plant Removal

- A long-term removal plan with consistent follow-up should be developed prior to removal of invasive species on a mound or earthwork. This is vital to success.
 - The [EPA’s Integrated Pest Management \(IMP\) principles](#) should be used as a guide to create the plan.
- If removing with hand tools, do not dig or pull out the roots as it will damage the mound or earthwork.
- All invasive species physically removed must be bagged and removed from the site.

Bioturbation (damage caused by animals)

- Protect the mound or earthwork from the destructive actions of animals as much as possible. Once burrows are noticed, contact the Supervisor of Site Maintenance at Ohio History Connection so that a plan can be made to manage the issue following local laws and best practices for the specific animal(s) creating them.
 - The Supervisor of Site Maintenance will consult with the Sites Archaeologist and Ohio History Connection’s Tribal Partners if needed.

- Block up or repair burrow sites. If possible, document the location and repair. Use only the original displaced soil to fill burrows. If necessary, additional clean fill may be used.
- Use the monitoring sheets created by Historic Sites or the Survey 123 app to document the disturbance.

Mound Restoration

- Contact the Sites Archaeologist if the damage or erosion is extensive (i.e. greater than 0.5 meters or if artifacts/features are visible).
 - Small damaged areas can be repaired without consultation. Such damage includes animal burrows, bare patches, and tree throws.
- To repair small damaged areas on a mound or earthwork, follow these steps:
 - Record the nature, extent, and location of the damage.
 - Remove leaf litter in the damaged area.
 - Use hand tools to place new clean fill in the damaged area.
 - The new soil should be clean fill that is different in color and texture to the parent soil in the surrounding area.
 - Seed the repaired area with local native grasses or the current vegetation. Place a seed germination blanket until vegetation can regrow in the area.

Buffer

- There should be at least a 5 ft. buffer between a mound or earthwork and any structures or features, including signs, benches, fencing, trails, etc.
- A buffer of 15 ft. or greater is preferred.
- Groups or subgroups of mounds, such as the Twin Mounds at Fort Ancient, should be treated as one with the buffer outside the group's limits.

Trails

- No visitor pedestrian traffic should be permitted on the mound or earthwork.
- Staff pedestrian traffic on the mound or earthwork should be minimized.
- Do not drive vehicles on the mound or earthwork.
- If necessary, create a designated path around the mound or earthwork so that visitors do not create their own on the resource.
- If a pedestrian path is noticed on the mound or earthwork, reseed the area and place a moveable sign asking visitors to not walk on the mound or earthwork and explain why.
- Trails near the mound or earthwork should be carefully planned to avoid related cultural resources.
- Trails should be placed outside the buffer.

Related Fencing

- Protective fencing may be used as a vegetation management tool to prevent erosion and protect the resource if other methods have failed.

- If possible, fencing surrounding a mound or earthwork should be unobtrusive, such as a waist-high split rail fence. However, fencing that is more obstructive can be used if visitor caused damage to the resource warrants it.
- The fence should be outside the buffer.

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