

POLICY FOR BRIDGING ON MONHEGAN ASSOCIATES' TRAILS

(Authors: Daniel Bates, Rick Cameron, Frederick Faller, Richard Farrell, Rebecca FitzPatrick)

The intent of this policy is to follow the Monhegan Associates' Bylaws, the governing document for all Monhegan Associates activities. After this policy is adopted by the Trustees it will supersede all prior policies or statements specifically related to bridging on Monhegan Associates' trails.

Objective

The aim of the Monhegan Associates' Trails Committee is to preserve the natural state of Monhegan's wildlands, limiting human intervention where possible. To further that aim the Associates may choose, as described below, to construct bog bridges, corduroy bridges or place stepping stones on its trails. Bog bridges, corduroy bridges or stepping stones may be appropriate to cross wet areas where they are judged to be less intrusive than the damage that would be caused by hikers creating a wide, muddy area of trampled vegetation.

Definitions:

- **Bog Bridge** - a single bridge or series of short segments following a specific construction method outlined below that is used to allow hikers to traverse designated wet areas of the trails.
- **Corduroy Bridging** - an arrangement of small logs laid parallel with each other on wet ground, perpendicular to the direction of travel, as a walkable stepping surface in swampy trail sections.
- **Stepping Stone(s)** - a single stone or series of stones placed on the trail to facilitate the safe crossing of wetland areas by hikers and conforming to the guidelines outlined below.
- **Stepping Surface** - the exposed surface of a stone or wood where the footfall of visitors to the trails lands.

Implementation

Locations for *bog bridges, corduroy bridging or stepping stones*:

- The Trails Committee will evaluate the need for a new bog bridge, corduroy bridging or for stepping stones in wet areas according to the following criteria:
 - The proposed site is on an existing trail or one that is being rerouted. (see attached map in the Appendix)
 - The Committee judges that the proposed site cannot be crossed easily without stepping stones, a corduroy section, or a bog bridge and that their construction will avoid creating a wide, muddy area of trampled vegetation.
 - The Committee has studied the proposed site and finds that it is generally, or at least often, wet between June 1st and October 1st.
 - The Committee should demonstrate that the addition of a new bog bridge, corduroy bridging or stepping stones will protect the natural form and ecology of the area being crossed.

- The estimated cost of the addition must fall within the current budget for the year in which the addition or rework is proposed.
- The decision to add new stepping stones or corduroy bridging, or to construct a new bog bridge, must be made through a recommendation of the Trails Committee followed by a two-thirds affirmative vote by the Trustees. The expectation is that all recommendations for new bridging be presented to the Board of Trustees in advance of the August Annual Meeting so that the vote can take place at this meeting. The Trails Committee may construct, repair, or replace a bog bridge in locations where such a bridge already exists. (See map in the Appendix)
- The Trails Committee may replace with a bog bridge (or a combination of a bog bridge and stepping stones) existing plank or log bridges that were constructed by Monhegan Associates.
- *Bog Bridges* are only appropriate for wet areas that are too deep or too great a length to accommodate *stepping stones*.
- *Bog Bridges* are intended only to allow passage over wet areas and never for the bridging of ravines or other challenging sections of a trail.
- If the Trails Committee feels that the removal or expansion of an existing *bog bridge*, *corduroy bridge* or *stepping stones* is warranted due to changing conditions of any kind, it will bring such a recommendation to the trustees for approval.
- *Stepping stones* should only be added to the trail in areas where the depth of the wetlands earth is known to be shallow. Areas with an indefinite depth of soft dirt or mud will not support the stones. In general, stepping stones are not suited for crossing marshy and muddy areas, but are more useful for streams or rivulets where the bottom of the water areas are rocky or sandy.

Materials and Construction, Stepping Stones:

- Stepping stones should be made from natural stone found in the Monhegan Wildlands near the place where they are used.
- Stones should be selected that have a relatively flat stepping surface that is approximately one foot in area (one foot by one foot).
- Stones should be spaced no less than 20" nor more than 28" apart.
- Stones should be level and stable.

Materials and Construction, Corduroy Bridging:

- Corduroy bridging should be used on level stretches of very boggy trail where otherwise hikers would seek alternative paths and unnecessarily widen or branch out an otherwise usable trail.
- Small logs, neatly cut to a length suitable for the width of the path being maintained, and free of protruding limb stubs, are laid perpendicular to the direction of travel, without space between them, directly into the mud, and with their tops even and level for a stepping surface.
- All wood used for this purpose should be harvested from trees or large branches already on the ground from blow-downs or timber from trail-clearing activity.
- As a corduroy stretch of bridging decays or sinks further into mud, it may be layered upon with similar construction as need arises.
- In areas where a natural flow or seepage of water is expected to occur from one side of a trail to the other, a single log may be omitted from the construction to prevent a backing up of water.

Materials used to build Bog Bridges:

- All wood used should be unfinished, unstained and unpainted Northern White Cedar. (Note: White Cedar has been recommended because it can last for up to twenty years in wet conditions without succumbing to rot.)
- Boards should be rough cut and not be milled smooth. (this is important for foot traction on boards that may become wet or covered with algae.)
- Bridge Boards should be 4" thick and ordered at a length of 8' and should not be narrower than 8". (natural unfinished boards will vary slightly in width). Boards can be cut to shorter lengths if necessary (for instance, to accommodate turns in a trail).
- Bridge "Sills" should be 4"x 4" and be ordered in 3' lengths
- Construction lag screws used should be: Allen head Exterior Bronze Ceramic Coat 5/16 x 6 inches (example: Hillman brand item #: 47897), or equivalent fastenings.

How to build Bog Bridges:

(Descriptions of the materials and the construction of bog bridges are largely based on the recommendations and training conducted by trails consultant Lester Kenway).

- Two boards of equal width are placed side-by-side with a gap of no wider than 1" and are supported on both ends by 4x4 sills.
- Generally if a board is wider on one face, that face should be up. However, if the sides of the board differ in roughness, the rougher side of the board should be placed up. Attach boards to sills using construction lag screws. (see materials, above)
- At times, to attain a level bridge, sills may be "stacked" one atop another to accommodate lower trail bed areas and deep mud. Attach stacked sills to each other using construction lag screws.
- Sills are placed approximately 6" from the end of boards.
- The ends of the boards may be angled or shaped to facilitate placement of the bridge (e.g. to avoid rocks or roots) or to accommodate multiple link bridges that turn.
- In crossings where the length is greater than 8 feet and require more than a single *bog bridge* segment, the adjacent ends of the segments should not be separated from each other by more than 2 inches and fitted together to accommodate turns. The height difference between the adjacent ends of bridge segments should not exceed 1 inch.
- Bog bridges should be constructed so that they remain level and stable. They should not tilt more than 2 inches from side to side and should not tilt more than 6 inches, end to end.
- Overall design may be varied slightly to accommodate turns in the bridge and rocks or roots in the pathway.
- Bog bridges should never have railings
- Bog bridges should never be treated with paint, varnish, antifungal stains or sealants.

Appendix

Internal References

These internal references are among the Monhegan Associates' documents that have been consulted when writing this policy:

Certificate of Organization, Monhegan Associates Bylaws:

<http://monheganassociates.org/wp-content/uploads/2016/10/bylaws2008-complete.pdf>

2004 Forestry Management Plan:

<http://monheganassociates.org/wp-content/uploads/2016/10/monheganplan.pdf>

2016 Proposed Forestry Management Plan:

<https://drive.google.com/file/d/0B4W8M1JJHy9dU1FfcHk2TVdZbTk0azAzZ2kxNUdrSmEtbHI0/view?usp=sharing>

External References

These external references were among other documents that were considered when writing this policy:

Wetland Trail Design and Construction 2007: edition, USDA Forest Service Technology and Development Program Missoula, MT

<https://www.fs.fed.us/t-d/pubs/pdfpubs/pdf07232804/pdf07232804dpi72.pdf>

Rationale

It is the aim of Monhegan Associates to avoid human intervention whenever possible and limit the use of human-made features except where absolutely necessary on its trails in the wildlands. Stepping stones, corduroy bridging or bog bridges allow hikers to readily traverse extended wet areas on MAI trails without inadvertently widening trails or trampling plants. These structures allow users to observe the biology and structure of naturally wet areas without disturbing them. They appear to fall into the category of desirable artificial features as described in the opening paragraph of the Certificate of Organization at the end of the MAI Bylaws.

In the 2004 Stewardship plan, a mention is given in the trail maintenance section on page 14 to trail improvements:

Possible actions include bridging streams (or replacing decayed bridges), constructing boardwalks or "bog bridges", adding wood chips or gravel fill, or trail rerouting. A good resource for trail design and maintenance protocols, hardening methods, and structure specifications is the "Maine State Trails Manual", available from the Maine Department of Conservation in Augusta.

The committee felt that this reference lacked the clarity for implementation. These ideas were considered, but the ideas presented in this policy for traversing wetlands were chosen for the purpose of greater specificity, uniformity, simplicity and ecological soundness.

Similarly, the 2016 Proposed Forestry Management plan, acknowledged the need for maintenance of the bog bridges, references the need for them and records the improvements desired in certain locations, but remains vague on how to implement the suggested changes. This policy is crafted to add these specifics.

Monhegan Associates, Inc.

Existing Bridges on MAI Trails 2019

