



Benthic Barriers



THREATS ADDRESSED

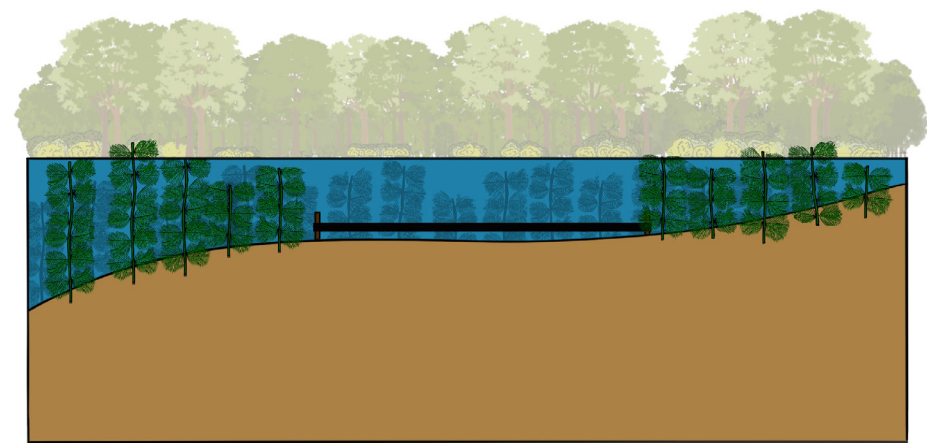
- Excess Nutrients
- Pollutant Inputs
- Algal Blooms
- Erosion
- Invasive/Nuisance Species

STRATEGY GOALS

- Protect
- Manage
- Rehabilitate

STRATEGY CO-BENEFITS

- Habitat
- Aesthetics
- Recreation
- Detrimental
- Neutral
- Neutral



- Permittable in Massachusetts**
Local planning process. List of potential permits available [here](#).
- Implemented on Cape Cod**
See examples of pond projects implemented on Cape Cod [here](#).
- Listed in 208 Plan Technologies Matrix**
Learn more about the nutrient management strategies in the Tech Matrix [here](#).
- Can be Performed at Homeowner Scale**
In small, private ponds. Local review and permitting may be required.
- Nature-based Solution**

DURATION OF BENEFITS

- Less than one month
- One season or year
- Multiple seasons or years

MAINTENANCE REQUIREMENTS

- Monthly
- Annually
- Infrequent

DESCRIPTION

A benthic barrier, or bottom cover, is a mat of variable composition placed on top of plants on the pond bottom. The barrier composition can be porous or non-porous synthetic materials, or sediment (also see “dredging - reverse-sediment layering”). The benthic barrier prevents plant growth by blocking light from penetrating to the bottom, physically disrupting growth, and allowing unfavorable chemical reactions to interfere with plant development. Barriers can be temporary or permanent and are usually applied in high-use areas - around boat docks or launches and swimming areas.

ADVANTAGES

- Useful on localized basis, limit to <10% of littoral zone
- Good for small areas near docks or beaches without affecting the rest of the waterbody
- Can be an effective management strategy, particularly when plant densities are low
- Non-toxic, and can be flexible and selective
- Can improve fish habitat by creating edge effects

CONSTRAINTS

- Difficult to install and maintain - need to inspect often
- May be damaged by boat anchors
- Must anchor barrier as gases from plant decomposition may cause the barrier to float up
- May kill everything under the barrier, not just target species
- May cause anoxia at sediment-water interface
- May inhibit fish spawning/feeding, and may be harmful to benthic community
- Upon barrier removal, area prone to recolonization by invasive species



IMPLEMENTATION

POTENTIAL ACTORS

- Towns:** Towns may propose the use of benthic barriers in town-managed ponds
- Pond Groups:** May propose or support benthic barriers in public or private ponds and provide a supportive role through education
- Private Landowners:** May propose or support benthic barriers
- Land Trusts:** May provide a supportive role through education

SITING REQUIREMENTS

- Ponds with nuisance or invasive aquatic species
- Often limited to areas of either intensive recreational activities or strong aesthetic concern

INFORMATION NEEDS

- Macrophyte survey (species composition and abundance)
- Mapping of infestation areas to be covered (area to be covered as % of littoral zone)
- Fish habitat survey



Credit: Red Lily Pond Association

IMPLEMENTATION EXAMPLES

The Red Lily Pond Project Association installed a "[*Lake Blanket*](#)" in Lake Elizabeth in Barnstable to prevent regrowth of plants where macrophytes had been cut and removed and in the area of a new dock.

RESOURCES

- The Massachusetts' Department of Conservation and Recreation's [*Lakes and Ponds Program*](#) provides related resources.

COST ESTIMATE

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Relative to other in-pond strategies

Varies depending on material used and maintenance required



ADDITIONAL FINANCIAL CONSIDERATIONS

Assessment: Planning, design, and permitting, including macrophyte survey

Implementation: Material, labor

Maintenance: Inspecting and patching or replacing material, as needed



POTENTIAL FUNDING SOURCES

- Community Preservation Act
- Capital Budget
- Grants
- Private Funding

Additional information regarding potential funding sources is available [*here*](#).