VEGETATION MANAGEMENT

Vegetation Harvesting

STRATEGY SCALE

THREATS ADDRESSED

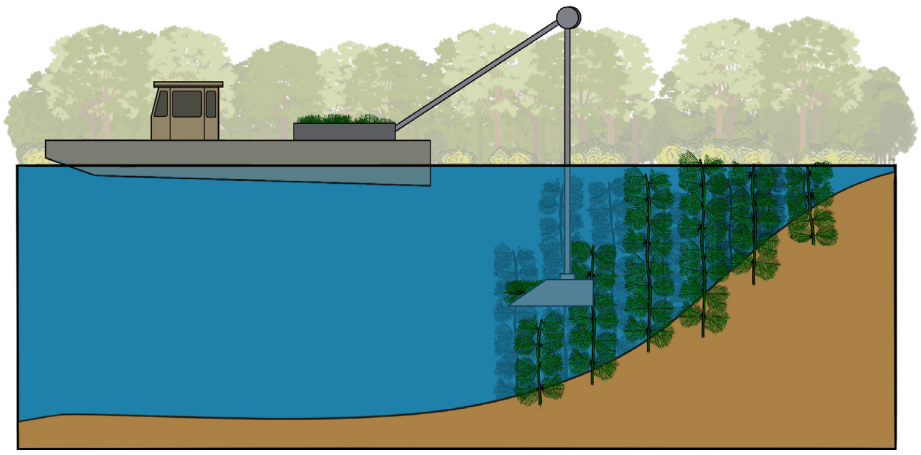
- ✓ Excess Nutrients
- ✓ Pollutant Inputs
- ✗ Algal Blooms
- ✗ Erosion
- ✓ Invasive/Nuisance Species

STRATEGY GOALS

Protect	Manage	Rehabilitate
○	✓	✓

STRATEGY CO-BENEFITS

Habitat	Aesthetics	Recreation
✗ *Detrimental*	✓ *Improve*	✓ *Improve*



- ✓ **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

Vegetation harvesting is used to remove nuisance or invasive aquatic plants from a pond by hand or mechanical methods, including hand harvesting, diver harvesting, mechanical harvesting, rotovating, or hydro-raking. Hand harvesting is the most labor intensive and is most effective when used in concert with whole-lake control strategies, or as a follow-up to prevent re-establishment of large beds of weeds. Scuba divers will be required for hand harvesting large plant beds, or for plants growing in water greater than a few feet deep. Mechanical harvesting uses machines to remove the upper portion of rooted aquatic plants, cutting and transporting the vegetation to shore. Rotovating uses a rototilling machine to cut aquatic plants and their roots from the sediment and remove them from the lake. Hydro-raking uses a mechanical rake to collect and remove plants by the root. Collected plants may be placed on shore for composting or other disposal. Harvesting also removes nutrients stored in the plant structure.

ADVANTAGES

- Effective, flexible, inexpensive, non-toxic, and selective rapid-response tool
- When done properly, harvesting should not significantly disturb the substrate
- Harvesting at the sediment level may disrupt plants and provide greater longevity of results or shift to more desirable species
- It is one of the few large-scale options for controlling weeds in lakes where herbicides are not allowed, drawdown and dredging are heavily regulated, and other options are too costly

CONSTRAINTS

- Hand and diver harvesting are labor intensive and not practical for large areas or plants with extensive root systems
- Heavy machinery, potentially high cost, and slow results, may contribute to public dissatisfaction
- All methods may need to be performed several times per year and over several years, depending on the density, growth rates, and types of vegetation
- May cause fragmentation of plants, turbidity and bottom disturbance; therefore, provisions must be made to minimize turbidity and to remove the floating cut plants before they disperse

Vegetation Harvesting

CAPE COD COMMISSION

IMPLEMENTATION

POTENTIAL ACTORS

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

SITING REQUIREMENTS

- Ponds with nuisance or invasive aquatic plants
- All ponds (littoral zone) for hand-harvesting
- Machine methods can be used in larger and deeper ponds, but depth may be a limiting factor
- Vegetation drying site, preferably near the pond so water can drain back in
- Vegetation disposal sites, preferably away from the shore to minimize re-infestation of the lake - town composting may be a good option if available

INFORMATION NEEDS

- Macrophyte survey (species composition and abundance)
- Mapping of infestation areas to be harvested
- Fragment control plan, harvesting plan, and monitoring plan
- Fish habitat survey
- Drying and disposal sites identified


Credit: Brewster Ponds Coalition

IMPLEMENTATION EXAMPLES

Vegetation harvesting has been implemented at several ponds on Cape Cod, including Walkers Pond and Elbow Pond in Brewster, Mystic Pond in Barnstable, and Schoolhouse/ Ministers Pond in Eastham. At *Elbow Pond in Brewster*, the Town's harvesting barge was used to remove macrophytes with the goal of removing phosphorus from the sediment and water column.

RESOURCES

- The Massachusetts' Department of Conservation and Recreation's *Lakes and Ponds Program* provides related resources.

COST ESTIMATE

$-$$$$

Relative to other in-pond strategies

Varies depending on technique used, equipment needed, extent of infestation, and effort required

ADDITIONAL FINANCIAL CONSIDERATIONS

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

Implementation: Harvesting equipment, labor

Maintenance: Monitoring and additional harvesting efforts, as needed

POTENTIAL FUNDING SOURCES

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

Additional information regarding potential funding sources is available ***here***.