

Arlington Conservation News

Spring 2016

Arlington Conservation Commission



Mount Gilboa Conservation Land

The Mt. Gilboa Conservation area at 10.7 acres is the largest piece of conservation land in Arlington. Mount Gilboa is a tall, rocky hill rising above the Reservoir and covered with a mixed oak and pine forest. There are many trails in the surrounding woods that are used regularly for walking and bird watching. There are also several rocky overlooks that give views of Arlington and the Boston skyline. Primary entrance points can be found at the top of Crescent Hill Avenue, off Alpine Street, and between Orient Avenue and Summit Street (marked "E" on the map). There are also numerous other paths that connect with the local neighborhood and wind through rocky outcrops.

A future project under consideration is the creation of a vista park at the top of the hill with handicap parking and ADA accessible paths.



Conservation Projects & Events

Upcoming Event

- ◆ Meadowbrook Park CleanUp
- ◆ April 9, 2016
- ◆ 9 a.m. - noon

Mystic Riverfront Restoration

The Arlington Conservation Commission, with help from the Town Engineer, applied for a state Department of Environmental Protection (DEP) grant to restore the Mystic River waterfront near where an oil tank truck overturned in May 2015.

Community volunteers, including students from the Hardy School, would help plant a native ecosystem at the shoreline location while the Town would remove a broken concrete headwall and install paths and benches for the community to enjoy the riverfront view.

The Town will also install an upstream pre-treatment system for this location, if DEP awards the grant. The combination of the two projects will provide sustainable restoration of the riverbank and improve local water quality. DEP is expected to announce the grant recipients in late spring 2016.

Spy Pond Shoreline

The Commission has applied for Community Preservation Act funds to study possible designs to stabilize the Spy Pond shoreline along town-owned parcels. The project would preserve shoreline habitat and improve water quality.

Helping Monarchs Thrive in Arlington



*Monarch feeding on Coneflower nectar
Arlington*

Monarch butterflies are an important pollinator but their populations are at risk. Here are several ways to help them thrive.

Save or Plant Milkweed!

Arlington's native milkweed is **swamp milkweed**. Planting or encouraging milkweed growth helps monarch butterflies survive.

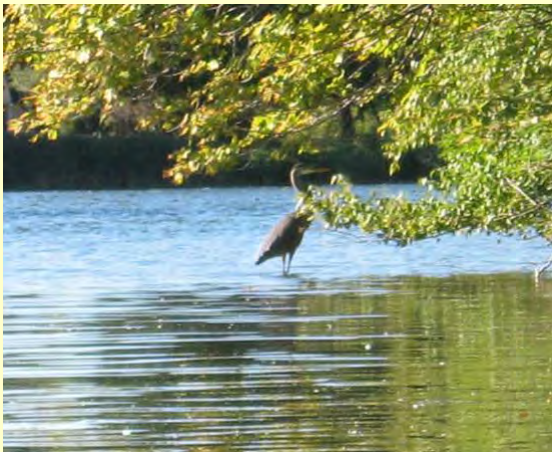
1. Monarch caterpillars survive almost solely on milkweed leaves. In addition, butterflies may drink the flowers' nectar.
2. Milkweed leaves contain substances that are toxic to Monarchs' predators. The more leaves caterpillars can eat, the less likely they'll be eaten as adult butterflies.

Planting native flowering plants, such as Coneflowers (*Echinacea*) that adult Monarch butterflies can use for nectar will also encourage them to thrive here.



Native Pink Swamp Milkweed also grows well in container gardens

Elizabeth Island Path Improvements



*Great Blue Heron at Elizabeth Island
Arlington*

The Arlington Land Trust has coordinated work to install water bars and erosion controls on the footpaths of Elizabeth Island. Now, when visitors come to the island, they can enjoy the newly stabilized paths to view wildlife.

Say farewell to Craddock Locks

Removal of a major flow restriction on the Lower Mystic River in Medford will help out Arlington when it floods.

This lock structure was built to help control tidal waters before the Amelia Earhart dam was in place. Now it only serves to hold back the upstream flood water. The obsolete structure is being removed in the center of Medford while a temporary bridge is in place.

Phytotechnologies to Clean Up Contamination

So, you've had the soil tested and it's not good news. Can plants help remediate your site's contaminants? Cost-effective phytotechnology (phytoremediation) plantings can be effective in mitigating on-site pollutants, but these interactions are complicated, sometimes taking decades for remediation, and many times plant-based remediation strategies are not a good fit for environmental cleanup. When do they work and when don't they? There is a lot of confusion around what phytotechnology can and cannot accomplish. However, with careful research and planning, integrating this relatively new technology into design work can result in huge financial and environmental benefits.

Definition

Phytotechnology is the use of vegetation and their associated microbes to remediate, contain, or prevent contaminants in soils, sediments, and groundwater. The term 'phytoremediation,' where plants are used to remediate sites that are already polluted, is often used interchangeably with 'phytotechnology,' but is only one subset of the field. 'Phytotechnology' is a much broader term that includes techniques such as pre-emptive installation of vegetation to mitigate ecological problems before they actually occur, as well as stabilization of pollutants on site, beyond just contaminant removal. Green roofs, constructed wetlands, bioswales, bioenergy crop cultivation, and phytoremediation plantings are all forms of 'phytotechnology,' a term which encompasses all uses of plants to meet environmental and technological goals.

History of the Field

The field of phytotechnology in the U.S. was named and formally established in the 1980s. In the 1990s a large number of phytotechnology greenhouse and lab experiments were published, showing a potential for plant based clean-up approaches to a broad range of pollutants in groundwater and soils

across many site contexts. Quite a few plants found to 'hyper accumulate' metals were discovered during the same time period, and speculation arose that these plants could be grown and then harvested to remove metals from contaminated sites (White and Newman, 2011). Field sites were planted, and the performance for metals remediation was mixed; failures outnumbered successes mostly because implementation occurred before the science was substantiated in the laboratory (White and Newman, 2011). For example, uptake and remediation of lead by sunflowers was hailed as an exemplary remediation tool without the biology and mechanisms being fully understood. When actually applied on contaminated sites, it was found that many metals remediation plantings were unsuccessful when applied at field scale. In the late 1990s and 2000s, the credibility of the field was seriously questioned, and confusion about what is possible still exists today.

However, while many metals remediation projects were failing to perform in the research projects of the 1990s, many phytotechnology projects to mitigate organic contaminants such as fuel and solvent spills were having significant success. Poplars were being successfully used to stop plumes of dry cleaning solvents, and trees were planted in buffers to mitigate gas and oil spills at stations and refineries. Plants were also playing a role in filtering pollutants from stormwater in bioswales and constructed wetlands. So where does the science stand now?

The Basics

The first two steps in deciding if phytotechnology systems may be applicable for contaminants at a given site is to 1) identify which of two categories the targeted pollutant falls into, either organic or inorganic and then further identify the exact contaminant and 2) identify where the pollutant exists, in soil, air or water, and at what depth? Phytotechnology treatment techniques are incredibly contaminant and media specific and ALWAYS require the assistance of a phytotechnology specialist.

This article first appeared in September 15, 2015 in **Plant Science, Restoration**

By Kate Kennen.

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Arlington Land Stewards Protect Conservation Lands

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Scout Billy Davey of Arlington completed these stairs in 2015 on a steep portion of the path at Window on the Mystic, Arlington Conservation Land

Arlington has approximately 30 acres of Conservation Land. This land is in over twenty parcels scattered throughout the town. But who takes care of this land? The resources of Town government are limited.

Under these conditions, involvement on the part of Town residents is essential to care for this land. The Arlington Conservation Commission (ACC) sponsors the Arlington Conservation Land Stewards (ACLS) group to provide support and guidance for citizen volunteers to take an active role in the protection of public land.

If **interested** please contact the Conservation Administrator, Cori Beckwith at cbeckwith@town.arlington.ma.us.

Or call the Conservation Office at 781-316-3012

Phytotechnology (continued from page 3)

A broad overview is provided below to develop an understanding of opportunities to consider when phytotechnology could be considered for a particular project.

Organic pollutants are mostly man-made compounds that contaminate sites from fuel and solvent spills, explosives, and agricultural pesticide and herbicide use (Pilon Smits, 2005). Since these pollutants are various compounds of oxygen, carbon and nitrogen, if phytotechnology is an applicable

solution, many can be degraded, breaking them down into smaller, less toxic components that plants and microorganisms can process (ITRC, 2009). Phytotechnology systems for the treatment of organics can be an ideal remediation option, where the pollutant is degraded and disappears, and there is no need to harvest the plants.

Other Conservation Questions?

Please contact the Conservation Administrator, Cori Beckwith, at cbeckwith@town.arlington.ma.us.

Or call the Conservation Office at 781-316-3012
Located in Town Hall, Arlington, MA