Wrangling Water on the Homestead

And Other Landscape Choices for a Changing Climate

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• Warming temperatures
• Extended periods of drought

Scituate Reservoir, Scituate, MA - photo by Qainat Kahn for WBUR
Cause & Effects of a Disrupted Climate

- Increased storm intensity
- Frequent flooding

"Global Wierding"
Cause & Effects of a Disrupted Climate

- Sea Level Rise
- Erosion
- Higher groundwater

Mitigation & Adaptation

- **Mitigate** – take steps to reduce the problem (greenhouse gas emissions)

- **Adapt** – make adjustments in behavior, practice and design to deal with changes in our environment, for resiliency
Cumulative Impact

“Every garden matters, every landscape counts.”

— Grow Native Massachusetts
Plant More Trees

Energy Saving

- Cool (temps) up to 10°F by shading our homes and streets and releasing water vapor
- Reduce your household’s heating and cooling by up to 25%, saving between $100 and $250 in annual energy costs

Carbon storage

- In one year, an acre of mature trees absorbs the amount of CO2 produced by a car driven 26,000 miles.

Treebenefits.com

http://treebenefits.com/calculator/
Other values of TREES
• Air quality
• Water quality
• Soil porosity & flood control
• Soil stabilization
• Wildlife habitat
• Reduce Urban Crime
• Community Project
• Increase in property value & quality of life

PLANT TREES
Preserve Trees

“A tree is beautiful, but what’s more, it has a right to life; like water, the sun and the stars, it is essential. Life on earth is inconceivable without trees.” Anton Chekhov
Conserve Water & Harvest Rain

Use less water from the tap; use rainwater for your plants
- Rain barrel; capture roof runoff
- Rain barrel water collection system
- Cistern
- Solar pump / watering can
Reduce ~ Recycle ~ Re-purpose
Keep nutrients on site

• Leave the leaves
• Compost for your vegetable garden & high nutrient loving plants
• If you have lawn, make it organic and mulch mow
Native Species – the true proven winners

- Well-adapted
- Require less water
- Require no soil amendments
- Support local ecology
Design Considerations

**Plant** deciduous trees to the south and west to keep your house cool in the summer and let the sun warm your home in the winter, reducing energy use. (U.S. Department of Energy)

**Plant** to shade air conditioners – they’ll use less electricity. A unit operating in the shade uses as much as 10% less electricity than the same one operating in the sun. (U.S. Department of Energy)

**Plant** a windbreak to the north and south – leave wild areas

**Plant** for the future – anticipate loss of trees to disease, storms, natural plant succession
Moderate Temperatures

• Use “Cool Pavement” on driveways – light colors, grass strip, shell
• Minimize heat-holding stonework
Reduce Energy Usage & Input

• Go chemical-free
• Choose native plants – soil amendments are *not necessary*
• “Right plant, right place” for success
• Fill in with plants – *edit, don’t weed*
• Outdoor lighting – if it’s *really* needed
  - Energy-saving applications
  - Photo-sensors; Motion sensors
  - Point *down*
Minimize Lawn

Lawn Alternatives

- Wild Strawberry – _Fragaria virginiana_
- Appalachian Barren Strawberry - _Geum fragarioides_
- Pennsylvania Sedge – _Carex pensylvanica_
- Golden Groundsel – _Packera obovata_
- Bearberry - _Arctostaphylos uva-ursi_
- American Ginger – _Asarum canadense_
- Hay Scented Fern - _Dennstaedtia punctilobula_
- Prairie Dropseed - _Sporobolus heterolepis_
- Purple Lovegrass - _Eragrostis spectabilis_
- Foam Flower – _Tiarella cordifolia_
Meadows
Wood Mulch Mania

Decorative Landscapes Inc.
Landscape Rejuvenation Project

BEFORE

Mulch Volcano
Maintenance Methods – reduce energy input & usage

One new gas-powered lawn mower produces as much air pollution emissions in one hour of operation as 11 new cars being driven for one hour. (from EPA)

OR

Replace gasoline-powered with electric and handheld equipment for “Quiet Communities”

QuietCommunities.org
More Plants!  More Plants!
Diversity is the spice of life!

Biodiversity in our ecosystems offers stability and resiliency. Same for our landscapes.
At the end of summer, bumble bee queens burrow just below the soil to wait out winter. Give them the extra protection they need.

Caterpillars of fritillary butterflies overwinter in fall leaves - so please

Photo by Rich Hatfield

Photo by John Flannery / Flickr
What is stormwater?

- Rainwater
- Melted snow and ice
Why do we need to manage it?
STORMWATER DEMONSTRATION

Here are four containers of different substrates of about the same volume:

- BARE SOIL
- STONE
- LAWN
- MEADOW

Each container has two pipes. One pipe directs the water that runs over the surface of the substrate. The other pipe directs what passes through the substrate.

Containers collect the water from these pipes. You can observe how much of the water runs over and through each substrate and how tall the moisture is in each container.

Pour water onto the upper edge of the container and watch the water flow through each pipe.
Nature Does It Best
Roots
A Rain Garden

- A shallow depression, planted with deep-rooted native plants
- Captures stormwater
- Right plant, right place
How does a rain garden work?

**Gutters & Down Spouts**
Assist with directing rain water from your roof to your rain garden.

**Native Plants**
Native plants are adapted to local conditions and are easy to maintain once established. Plus, they attract birds, butterflies and other pollinators.

**Deep Roots**
Plants with a deep root system encourage infiltration and help absorb nutrients.

**Berm**
A berm holds water in the garden during heavy rains.
APCC’s Rain Garden
Welcome to Our Rain Garden!

What is a Rain Garden?
A rain garden is a shallow depression that is planted with deep-rooted native plants.

APCC’s Rain Garden is open to the public.
Permeable Surfaces:
- Porous Pave
- Perk-crete
- Permeable Pavers
Summary: Landscape Choices

- Stormwater control onsite
- Native Species, plant for diversity
- Create shade
- Preserve wild areas
- Minimize maintenance
- Conserve water
- Reduce input
- Work with nature
- Relax & Enjoy
Thank you
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