

# PLACE

Spring 2010



Brookline GreenSpace Alliance is a non-profit membership organization dedicated to the enhancement of open space in Brookline by supporting citizens in caring for their green spaces.

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## How Open Space Mitigates Climate Change

Deborah Rivers, AIA LEED AP

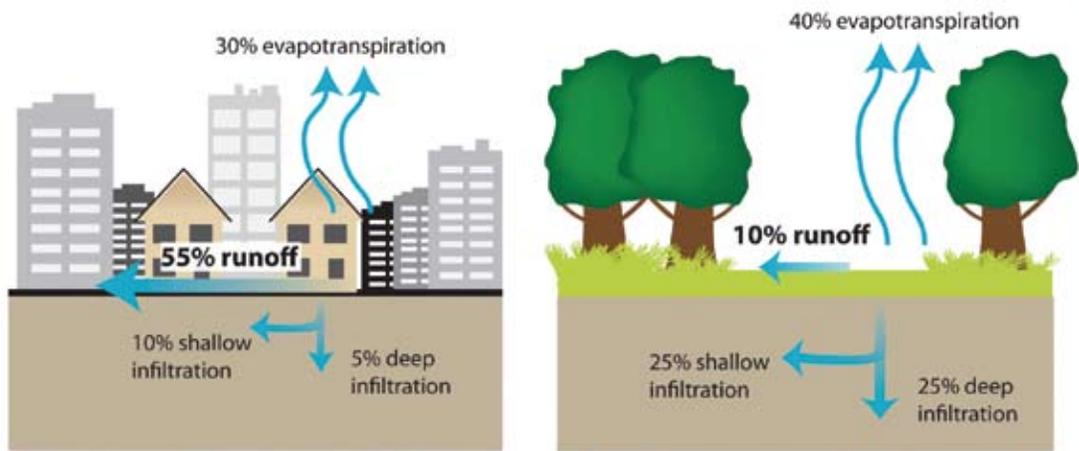
Over the past decade, we have become increasingly aware of climate change resulting from human activities. This year Brookline is observing Brookline 2010: A Community Climate Challenge. As we work to reduce our carbon footprint by making energy improvements in our homes, driving less and walking or bicycling more, we should be aware that Brookline has another valuable asset to help meet the challenge. Our parks and tree-lined streets are important elements in the mitigation of climate change. Landscaped open space helps alleviate the effects of urban heat islands by helping clean and cool the air, and providing more effective stormwater management.



A heat island is created when large areas of heat-absorbing surfaces such as streets, sidewalks, parking lots, and buildings found in urban environments, retain and radiate solar heat energy. As this warmer moist air rises, cloud condensation may occur resulting in more frequent thunderstorms. Because of the largely impervious paving present in urban areas, there is an increased likelihood of urban flooding. Warmer temperatures caused by heat island effect also exacerbate air pollution because smog is produced faster at higher temperatures. Higher temperatures lead to increased cooling demand, leading to increased emissions, perpetuating the cycle.

*continued on page 4*

### Impervious Surfaces and Reduced Evapotranspiration



Highly developed urban areas (left), which are characterized by 75%-100% impervious surfaces, have less surface moisture available for evapotranspiration than natural ground cover, which has less than 10% impervious cover (right). This characteristic contributes to higher surface and air temperatures in urban areas.

Modified from the Federal Interagency Stream Restoration Working Group

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## BGSA Annual Meeting

"Zoning Tools that can protect Open Space" was the title of Marcia Rasmussen's lecture at the BGSA annual meeting April 5th. Rasmussen, the Director of the Planning Division for Concord, discussed three successful case studies. Concord is a semi-rural town feeling the pressures of increased land value and development. The community has expressed a strong desire to maintain open space, especially farm land. Passing the Community Preservation Act (CPA) has provided funding to help reach this goal. But land preservation in Concord goes beyond the financial aspect. The core of the open space preservation program is a cooperative and often pro-active process between town and land owner. The Planning Division has acted as facilitator in bringing together the elements, both financial and zoning, that have allowed Concord to preserve open space and family farms. Land under a

conservation restriction in Concord is retained in perpetuity for one or more of these uses: agriculture, recreation, park land, conservation.

Two other factors have influenced Concord's open space preservation successes. First, the zoning bylaw requires a minimum of 25% open space in all new developments. The second factor is that money is set aside each year in the Capital Improvements Plan (CIP) for future land acquisitions. When farmland or property with open space value is put up for sale, the town may have the right of first refusal. By setting aside funds each year, money is available when land comes on the market. Such a proactive approach in planning can be a model for Brookline.

As Rasmussen said, "Where's there's a will, there's a way." The key to duplicating Concord's successes is a townwide consensus that open space preservation is vital to creating a good quality of life for all citizens.

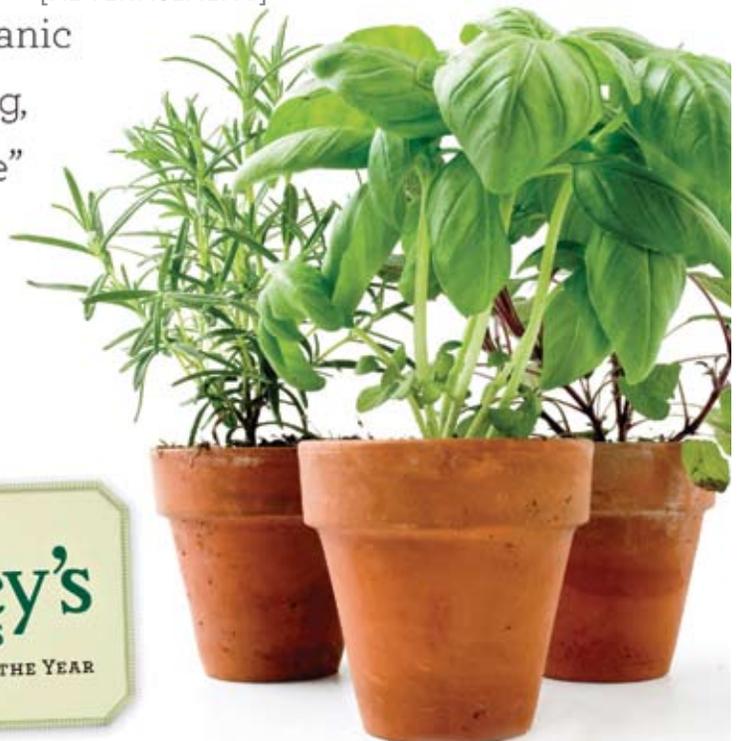


Award recipients at the annual meeting. At left: Gail Fenton receiving the Environmental Leadership Award from president Arlene Mattison for volunteer work in BGSA's Environmental Learning Project. At right: Janice Kahn and Tony Andreadis received the Green Umbrella Award for Chestnut Hill Village Alliance's efforts to improve Route 9 in Chestnut Hill.



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## Open Space Planning: A Look Back at the Past 5 Years

A town's Open Space Plan provides a framework for goals and planning for a five year period. This document, required by the Commonwealth in order to be eligible for certain funding and grants from the state, is a valuable tool in understanding current conditions and assessing progress or needs. Brookline GreenSpace Alliance is co-chairing, with the Conservation Commission, the Town committee delegated the task of drafting for Selectmen's approval the next Open Space Plan.

As Brookline is nearing the end of the 5 year cycle, it is a time for reflection and goal-setting for the future. Here is a short list of some of the successes and ongoing progress that can be traced back to the Open Space Plan 2005 and the related planning documents, the Parks and Recreation Master Plan and the Comprehensive Plan:

- Acquisition of the State-owned portion of the Fisher Hill Reservoir which will result in a positive net gain to the Town-owned public open space in Brookline
- Development of a former town landfill into Skyline Park, which adds public open space and playing field
- Application of the Beacon Street Master Plan to guide the Beacon Street Transportation Improvements Project to provide a better pedestrian and bike-friendly greenway between open spaces
- Progress on the Carlton Street Footbridge restoration which will provide an additional improved pedestrian access point into our open space system
- Adoption of policies which discourage use of invasive plant materials and that encourage planting of native species
- Creation of a Town Conservation Restriction Policy which streamlines the process for the Town to accept conservation restrictions and can help protect private parcels that would otherwise be developed, to instead be protected by forward-looking stewards of the environment
- Completion of renovations of Dane Park and Harry Downes Field
- Increase in the budget for street tree pruning and replacement

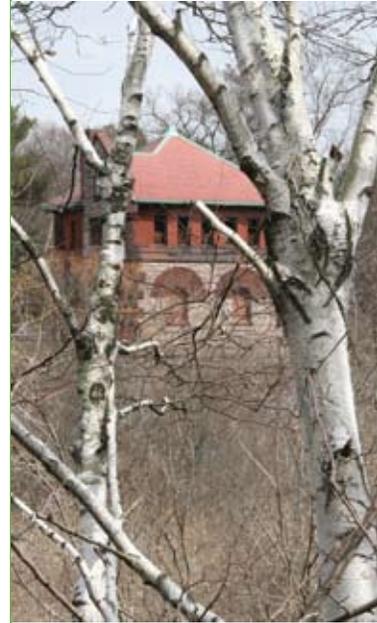
- Passage of a Town Wetlands By-Law which increases the purview of the Conservation Commission to 150 feet around wetlands, further protecting our waterways and nature sanctuaries

As we move into tighter and tighter financial times, a strong Plan becomes that much more vital. Setting out easily understandable goals that the entire community can embrace makes it easier to make the case for open space improvements and to ensure more buy-in by elected officials. It is important to recognize that investments and improvements will be for naught if we do not maintain them, and provisions need to be made in future budgets for protecting the investments made in our open spaces. While the Division of Parks and Open Space budget has remained a somewhat constant percentage of the total Town budget from 2002 to the present, at a minimum of 1.35%, the fiscal 2011 budget shows a decrease to 1.29% of the total. Hopefully, this is not a trend downward, but it does represent a loss of critical positions in the management and maintenance of our open spaces and green infrastructure.

And even more concerning is that while open space is a major contributor to the health of our environment and community, Brookline's reality is that over 50% of our undeveloped land is privately owned. There is the looming threat that as money gets tighter, the many private owners of large unprotected open spaces will reconsider their previous informal commitments to keep these spaces undeveloped and cash in those resources. Brookline does not currently have a proactive land acquisition mechanism. Challenges certainly lie ahead.

We hope that you take a moment to reflect on the achievements of the past half-decade. Then join us in facing the coming challenges to protecting our natural areas, and participate in the planning process currently underway.

*Editor's Note: BGSA also co-chaired the Brookline Open Space Plan 2005 and has been working since then with the Division of Parks and Open Space, the Park and Recreation Commission and Conservation Commission to ensure that as many as possible of the goals set forth in the 2005 Plan are reached.*



Fisher Hill Reservoir

# Climate Change (continued from page 1)

Increased incidences of heat-related illnesses and mortality in American and European cities have been reported over the past decade as average temperatures rise. As the planet continues to become more urban, the importance of our urban oases will grow.



Aerial view of the Longwood Medical area and Back Bay. As density increases, a heat island is created.

Built-up areas warm up more quickly, reach higher temperatures during the daytime and retain the heat longer over night than surrounding non-urban areas. By contrast, rural areas and open spaces within the urban environment have fewer paved surfaces to retain the heat.

Vegetation, especially trees, cool the air through evaporation from plant leaves (evapo-transpiration). This creates an urban breeze cycle as lighter warm air rises, spreads out, cools, and sinks over non-urban areas causing lower atmospheric pressure over the urban area and higher pressure over the non-urban areas. The pressure differential generates winds that blow from the higher pressure non-urban areas into the lower pressure urban areas. This effect is replicated on a smaller scale near larger urban parks creating a “park breeze”, mitigating the heat island effect. More structured open space, such as plazas, if properly designed, can work in a similar way. Keys to making these urban spaces work are light colored paving, shading of paving by trees or structures such as trellises, and use of permeable paving which allows for evapo-transpiration. Trees and other vegetation help to remove various pollutants from the air, remove and store carbon, and help reduce greenhouse gas emissions by reducing cooling energy demand. Green (vegetated) roofs are another way to mitigate heat island effect within the urban environment. If properly planted, they can become habitat for birds, butterflies, and other fauna. If they are made accessible, they can also serve as urban oases for people.

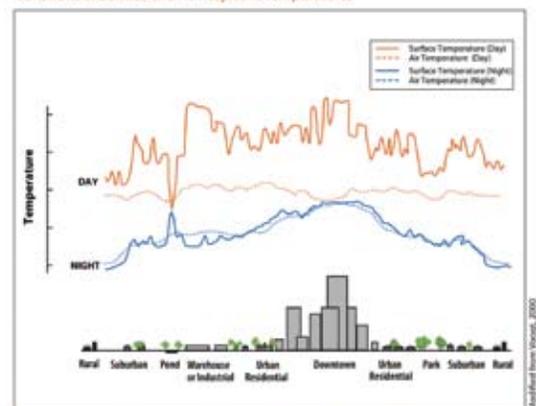
Climate change is beginning to affect rainfall patterns. In New England we have seen more storms with heavy rainfall. Highly developed urban areas are not as effective at handling stormwater

as rural areas or urban green space. Because of the increased amount of impervious pavement, about 55% of storm water falling on urban areas runs off into street drains and streams. This is compared to 10% runoff in rural areas or urban greenspaces. In addition, heat is transferred from pavement or rooftop surfaces to stormwater raising its temperature as it is released into streams, rivers, ponds and lakes. Such rapid temperature changes can be stressful to aquatic ecosystems.

From 1998 – 2003, through the Environmental Protection Agency’s Urban Heat Pilot Project, some cities developed ways to increase green space and tree cover. For example, Chicago Public Schools in collaboration with the Chicago Park District created 70 campus parks, providing students and neighborhood residents with planted areas, recreational opportunities, and the potential cooling effect of parks. Seattle has a Green Factor policy which mandates 30% landscape coverage for projects of more than four residential units, commercial properties over 4,000 s.f., or parking lots with more than 20 spaces. In Salt Lake City, a three-acre Alpine meadow was created on the roof of a new conference center. This urban oasis features a waterfall, grasses, and wildflowers reflecting the native landscape of Utah.

In Brookline, we have a great existing network of parks and open spaces that serve as a valuable asset in the mitigation of climate change. The Emerald Necklace is a good example of this, not only providing increased tree and vegetative cover

Variations of Surface and Atmospheric Temperatures



Surface and atmospheric temperatures vary over different land use areas. Surface temperatures vary more than air temperatures during the day, but they both are fairly similar at night. The dip and spike in surface temperatures over the pond show how water maintains a fairly constant temperature day and night, due to its high heat capacity.

\* Note: The temperatures displayed above do not represent absolute temperature values or any one particular measured heat island. Temperatures will fluctuate based on factors such as seasons, weather conditions, sun intensity, and ground cover.

and habitat for local fauna, but also in the handling of stormwater for which the Muddy River was originally designed. Sanctuaries like Hall's Pond and Lost Pond are important in this respect as well. Neighborhood parks extend these benefits throughout town. Our parks and open spaces provide areas of respite and recreation within walking/bicycling distance of our homes or places of work, reducing the need to drive somewhere out of Town to enjoy these benefits. Not only do our parks enhance our quality of life, they provide an important buffer to the negative impacts of climate change. So as a part of making efforts to reduce our collective carbon footprint, let's renew our commitment to protect and enhance our parks and open spaces.

For more information on the role of open space in stormwater management, see the article on the Muddy River in the Fall issue of PLACE, available on the publications page at [www.brooklinegreenspace.org](http://www.brooklinegreenspace.org)

## References

Environmental Protection Agency, "Basics Compendium Heat Islands", "Reducing Heat Urban Islands Compendium of Strategies: Trees and Vegetation", "Reducing Heat Urban Islands Compendium of Strategies: Green Roofs", "Reducing Heat



Wetlands hold water after heavy storms. The water from this one, near Skyline Park, will drain slowly into nearby brooks, preventing rapid runoff and flooding.

Urban Islands Compendium of Strategies: Cool Pavements" <http://www.epa.gov/heatisland/about/index.htm> [www.epa.gov/heatisland/about/index.htm](http://www.epa.gov/heatisland/about/index.htm)

"How Cities Use Parks for Climate Change Management", Joseph A. MacDonald, AICP, Program Development Senior Associate, American Planning Association; <http://www.planning.org/cityparks/briefingpapers/climatechange.htm> [www.planning.org/cityparks/briefingpapers/climatechange.htm](http://www.planning.org/cityparks/briefingpapers/climatechange.htm)

U.S. Department of Agriculture, Forest Service Pamphlet #R1-92-100, cited in "Benefits of Trees in Urban Areas", Colorado Tree Coalition, <http://www.coloradotrees.org> [www.coloradotrees.org](http://www.coloradotrees.org)

## Tree Care from Generation to Generation

Few spots in Brookline evoke a greater sense of history and of a primeval forest than Longwood Mall. This 2.4 acre preserve is home to 36 European Beech trees (*Fagus sylvatica*). Charles Sprague Sargent, founder of the Arnold Arboretum, described these as "the finest exotic trees which have been planted in greater Boston and probably the finest grove of European Beech in the United States". Today this special open space's European beech trees range from 4 to 72" in diameter. 30 are in good to excellent condition, 4 are in fair condition and 2 in poor condition--the two largest are in decline.

The Longwood Mall, located off Kent Street, was once part of the estate of David Sears, one of the wealthiest landowners in Boston in the early 19th century. Sears bought low-lying land in this area after construction of the Mill Dam Road from Boston in 1821 made the area more accessible. In anticipation of residential development by the late 1830s, he laid out several squares: Mason, Knyvet, and Winthrop Squares, and the Longwood Mall. He is reported to have planted 14,000 trees, including the beech trees on the Mall, imported from Europe and planted in the 1840s. Brookline is indebted to Sears who built homes for six of his children here but never lived here himself.

The Sears family donated these four squares to the Town in 1902. Since then the Park Department and the Town Arborist have shared responsibility for oversight of the condition of Sears' trees. These trees have historic, environmental, and emotional significance to their abutters and visitors. As the trees have aged and become victim of modern conditions, they have been removed and replaced if possible. Friends of the Longwood Mall have established a trust fund for donations to ensure the continuation of the tradition of European Beech trees on the Longwood Mall.



# A Day in the Life of Brookline Park Ranger Meri Daves

Rachel Flood Page, Brookline High School Graduate '04 and Brookline Park lover

As the spring comes, the time has come for everything to feel a little bit brighter, a lot greener and (at last!) much warmer. Brookline residents emerge from hibernation and turn toward their fair weather haunts, the tree-lined paths of the town's parks. There seems to be no one who enjoys the spring more than Brookline's very own Park Ranger, Meri Daves, while spending the majority of her days outdoors as the caretaker of our green spaces.

On a warm March morning, Meri meets with Andy Bressi, the Operations Manager of the Parks and Open Space Division

and a representative from Wheelock College at Riverway Park. Wheelock has volunteered a group of their alumni to clean up a considerable area along the Muddy River, and both Meri and Andy were cheerful at the prospect of new paint on the benches, the raking of debris and the removal of trash that gets trapped along the bank, fencing or thick vegetation.

After sorting out the tasks for the volunteers, Meri goes patrolling. She states that she usually visits about 5-10 parks a day, out of

the forty plus parks the town maintains. Her route on this day began at the new Skyline Park with a synthetic turf field and a fantastic view, continued to Amory Park and Halls Pond Sanctuary where the turtles have emerged, then to Devotion Park and Larz Anderson. She brought a trash bag along to each location to collect debris she found in the

parks. Last year she was obliged to remove over 1,000 infractions of the regulation on picking up after one's dog.

Meri must also attend to the town's policies regarding off-leash dogs. In several of the parks, Meri, with a cheerful smile on her face, approached dog owners to remind them of the rules.

"There is always more to it, most people want to do the right thing," she responded, when asked about her constantly friendly and positive

rapport with everyone she greeted, including those not abiding by park regulations. As it turns out, most of the people she approached were unaware they were doing anything wrong and were grateful for the information she provided them. She emphasized the point that one of the most important parts of her job is to constantly keep people educated about the parks. In her interactions with visitors, it was apparent that this was not solely limited to informing them of park hours and leash laws.

While raking the wood-based safety surfacing into soft piles around the Larz Anderson playground,

Meri had an animated conversation with a five year-old boy about the nut gathering habits of squirrels.



Meri and the ranger van.



Enforcing the green dog rules.



Scooping debris and discussing park maintenance.

“This happens all of the time,” she said with an amused grin on her face, after the boy had wandered off to more adventurous pursuits, “kids are always curious about me and aren’t afraid to ask questions. Sometimes they even offer to help!” She also uses graffiti wipes to remove any “tags” on the park furniture or restroom; notes any needed repair on the equipment, field or planted areas; and documents all of her findings in order to create workorders back at the office.

Meri’s day ended at Larz Anderson with a Maple-Sugaring program for a Heath After School group, run jointly with Brookline’s Environmental Educator, Christine Dean. The kids were taught how to identify a sugar maple tree, tap the tree to collect the sap, and boil the sap down into sweet



Cleaning park graffiti.

In addition to patrolling, Meri devotes some of her time sharing her extensive knowledge about the environment with participants in Brookline’s environmental education programs. She keeps herself busy by conducting tours for children and adults through Brookline’s sanctuaries or running nature crafts tables at park events like Music at Emerson Park.

In one day, Meri received several compliments from parks users and coworkers praising the job she does and her invaluable addition to Brookline. After her yearly report to the Park and Recreation Commission, attendees to the meeting commented on her ‘contagious level of enthusiasm’ and the importance of having a familiar and friendly public face for the Commission.

“People are starting to know me and what I’m doing,” Meri said, “when people recognize me, they help me out.” So the next time you wander through the paths of Larz Anderson, navigate through the Canada Geese in Olmsted Park or traipse the boardwalks at Hall’s Pond Sanctuary, keep an eye out for Brookline’s intrepid Park Ranger. Say hello and show her the robin’s egg shell you found or introduce her to your dog; she’ll be delighted. And of course, don’t forget to pick up your trash!



Assigning cleanup tasks to young environmentalists.

syrup. Their lesson was completed with fresh Larz Anderson maple syrup over vanilla ice cream, a much-appreciated treat for all involved.



Supervising a park cleanup.



Consulting on equipment with park users.

## Enjoy Your Green Locally!

Our cover article highlights the role our open spaces play in reducing global warming. Citizens seeking ways to lessen their negative impact on the environment can add appreciation of local green spaces to other carbon cutting strategies such as limiting water consumption, eating locally produced food, changing to CFL light bulbs, insulating homes, limiting car trips, and using less and recycling more. From a “what is good for the environment” point of view, as well as for sheer pleasure, using local parks and open spaces makes sense.

If you are looking for a green space near your home, go to [www.brooklinegreenspace.org](http://www.brooklinegreenspace.org) and click the link to the Resources page. On the left is a link to the Town Open Space map. Links on the right side of the page provide brochures for Brookline’s three nature sanctuaries, as well as other literature describing open spaces in town.

Open spaces large and small are accessible by walking, cycling and public transportation. Want a nearby place to picnic? How about the meadow at the top of Larz Anderson Park? Or try a shady woodland walk in Amory Woods. The Emerald Necklace parks along the Muddy River are lovely for a stroll. Smaller, neighborhood parks are scattered throughout town. Each offers a different green space experience. The park on the top of Corey Hill offers a wide view of Cambridge and the Charles River. Griggs Park, between Washington and Beacon Streets is a refreshing green oasis.

Whatever your taste in green spaces, make the 40<sup>th</sup> anniversary celebration of Earth Day an all year event. BGSA hopes you will join with us to lobby for, volunteer in, and enjoy the nature in our own community. Contact us at 617.277.4777 or check the calendar page of our website for volunteer opportunities.

### Yes! I want to support the local environment.

As a member of the Alliance you'll receive our publication **PLACE**, periodic e-mail alerts to keep you informed of meetings and issues affecting local open space, notice of walks, talks, tours and educational forums as well as an invitation to our spring garden event.

#### Stay Connected

Visit [www.brooklinegreenspace.org](http://www.brooklinegreenspace.org) to learn about open space issues and upcoming events. Sign up for email updates at [info@brooklinegreenspace.org](mailto:info@brooklinegreenspace.org)

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