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## About the Scott Arboretum

The Scott Arboretum is a green oasis uniquely situated on the Swarthmore College campus. Over 300 acres create the College landscape and provide a display of the best ornamental plants recommended for Delaware Valley gardens.

Established in 1929 as a living memorial to Arthur Hoyt Scott, Class of 1895, through a bequest from his family, the Arboretum continues to thrive today. There are over 4,000 different kinds of plants grown on the campus, selected for their outstanding ornamental qualities, ease of maintenance, and resistance to disease. Major plant collections include: flowering cherries, crabapples, hollies, lilacs, magnolias, tree peonies, rhododendrons, hydrangeas, conifers, vines, summer flowering shrubs, viburnums, and witchhazels.

Maps and specialized brochures on plants growing on the campus are available at the Arboretum office, which also houses a horticultural reference library. The Arboretum grounds are open from dawn to dusk year-round. Admission is free. The Arboretum is supported in part by the Associates of the Scott Arboretum, a membership group. For additional information, call 610-328-8025 Monday to Friday, 8:30 - noon and 1:30 - 4:30.



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This brochure was written by Rebecca Robert in 2007, and updated by Rebecca Pineo in 2010. Cover photo of David Kemp Residence Hall green roof by Diane Mattis.

# Green Design

THE SCOTT ARBORETUM  
OF SWARTHMORE COLLEGE

## Green Design on Campus

The Scott Arboretum and Swarthmore College have collaborated to implement green design principles throughout the campus. In addition to reducing environmental impacts, the green design features provide opportunities to educate students, staff, and visitors about how the built environment affects natural ecosystems.

### Biostream

Installed in 1997, the Biostream is designed to collect storm water, slow it down, and let it soak into the soil while filtering out pollutants. By capturing most of the collected stormwater on site, the Biostream prevents it from pouring into underground storm drains that lead to Crum Creek.

Perennials and flowering shrubs are planted in and around the rock-filled drainage bed. Comprised mostly of natives that thrive naturally in wet areas, the plantings include *Eupatorium maculatum* (Joe Pye weed), *Itea virginica* 'Henry's Garnet' (Virginia sweetspire), and *Physostegia virginiana* (obedient plant).

The Biostream requires minimal maintenance. Fallen leaves are removed during autumn; planted areas are weeded periodically and cut back yearly.



*Amsonia hubrichtii* in Biostream

### Science Center

The college received LEED certification for the \$74 million state-of-the-art Science Center building, completed in 2005. LEED, which stands for Leadership in Energy and Environmental Design, is a set of voluntary national standards for developing high-performance, sustainable buildings.



Sitting area & infiltration beds

Stormwater is also captured by "infiltration beds," 2-foot-deep areas filled with porous planting mix and planted with *Sporobolus heterolepis* (prairie dropseed) for a lawn-like effect.

The landscape provides opportunities for outdoor teaching and promotes human-nature connections by integrating the campus with the Crum Woods. The Glade Garden, planted with native plants, improves pedestrian access to the forest trails. Pollinating insects and birds flock to the Pollinator Garden, where they can be observed closely for biology lessons.

Porous pavement was used for the walkways, allowing rainwater to soak down and recharge groundwater supplies.

## Green roofs

The Scott Arboretum has several green roofs: a 5,100-sq. ft. green roof above the third floor of Alice Paul Residence Hall; a 7,000-sq. ft. green roof covering 5 different levels of David Kemp Residence Hall, and a small green roof on a storage building at Papazian Hall.

Green roofs are vegetated roof tops, comprised of a waterproof synthetic membrane topped with growing media and plants. There are two types: 1) Extensive, with a thin growing media and herbaceous perennials that are well adapted to both moisture and drought, and 2) Intensive, with a thicker layer of growing media, planted with herbaceous perennials and sometimes shrubs and trees. Most of the green roofs on campus are extensive, featuring mostly sedums and other succulents, though Kemp Hall features some semi-intensive sections planted with grasses and perennials.

Compared to a flat black roof, green roofs reduce air conditioning expenses by moderating temperature extremes. They also manage stormwater, capturing and utilizing 50 to 90% of rainfall. While an average black roof may last 10 years, a green roof can last 30 years or more because it protects the roof membrane from ultraviolet light. Green roofs also attract wildlife such as birds and insects.



Sedums, like this *Sedum spurium* 'Schorbuser Blut', perform well in extensive green roof conditions

## Lawn Alternatives

Large lawns are beautiful, but the costs—fertilizers, pesticides, water consumption, and pollution caused by mowers—can be high. Reducing the size of the lawn can benefit the environment while saving time, energy, and expense.

The Scott Arboretum is trialing lawn alternatives that are ideal for woodland edges, under trees or in areas where turf is not practical or necessary. The trials feature several clumping sedges that are native to the eastern United States. They provide the appearance of a green expanse, but require minimal maintenance once established.



*Carex appalachica*

***Carex appalachica*** (Appalachian sedge) – Grassy leaves; fountain-like habit. North side of Beardsley Hall.

***Carex pensylvanica*** (Pennsylvania sedge) – Arching, slender, semi-evergreen leaves. North side of Benjamin West House.

***Carex platyphylla*** (silver sedge) – Broad blue-green leaves. North side of Beardsley Hall.

## Wister Education Center and Greenhouse

The Wister Education Center and Greenhouse, completed in 2009, is a multipurpose facility with a classroom and event space, horticultural exhibit areas, a greenhouse, and support areas for staff and volunteers. The building has been designed to minimize the environmental impact of the construction process as well as conserve energy and water throughout the life of the building. An application for Silver Level LEED certification is currently underway.

Water conservation and management plays a key role in the building and landscape design. An underground cistern will harvest rainwater to use for irrigation; a planned green roof on one section of the building will capture water from above. The proposed landscape includes "educational rain water gardens," which will contain and filter rainwater, allowing it to percolate into the soil. Inside, low-flow plumbing fixtures reduce water consumption.

Energy is conserved through an inventive heating and cooling system that uses an existing chilled water loop as both a heat sink and a heat source, depending on the season. Specialized skylights allow sunlight to brighten interior areas of the building. When artificial lighting is needed, it operates on a motion detector system. Overall, power to the Wister Center is largely generated by renewable energy facilities.

The building itself is constructed mostly of local, recycled, and renewable materials. Concrete was composed of 3% fly ash, a byproduct of coal-fired power plants; lumber was obtained from recycled or sustainably harvested sources. Some of the exterior shingles were made from dawn redwood trees (*Metasequoia glyptostroboides*) that had been removed during construction of new residence halls.



Wister Greenhouse, with dawn redwood shingles

The green design didn't stop with construction. Dedicated sorting and recycling areas ensure that waste generated on site will be disposed of in an environmentally-sensitive manner. Cleaning and maintenance of the building will utilize bio-friendly supplies. These measures, and the building as a whole, ensure a healthy working and learning environment for staff, students, volunteers, and visitors while minimizing impact on the environment.