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Deep Roots. Many Stories.

THE NC ARBORETUM FUELS ECONOMIC DEVELOPMENT THROUGH SUSTAINABLE INNOVATION

The North Carolina Arboretum is grounded in the rich natural heritage of the Southern Appalachians and the knowledge that plants play a vital role in our history and the Earth's future. From our Cherokee roots and early settlers in this region to our present-day lives, plants have always played an important role in the culture and economy of Western North Carolina.

The North Carolina Arboretum was established by the NC General Assembly in 1986 to help the state capitalize on this plant heritage in a positive, authentic way and to benefit the citizens of Western North Carolina and the state. Visitors to the Arboretum experience its mission – cultivating connections between people and plants – through engaging opportunities amid 65 acres of cultivated gardens, 10 miles of forested hiking and biking trails, Segway™ tours, innovative outdoor and indoor exhibits, and one of the finest, most unique bonsai collections in the United States.

Located at milepost 393 along the scenic Blue Ridge Parkway, The North Carolina Arboretum helps support the Blue Ridge Parkway through tourism, economic development, and plant stewardship. The Arboretum also strengthens the local, state and global community through positive economic impact, community growth, sustained quality of life and conveying the relevance of plants to our world. This is accomplished in several ways.

Economic Development

Recently named among one of the top 25 visited destinations in North Carolina with more than 220,000 visitors in 2008, The North Carolina Arboretum serves as an economic development catalyst in many ways, including tourism, research, education, and sustainable stewardship.

Education

The North Carolina Arboretum provides engaging education opportunities through exhibits and interpretation as well as adult and youth programs that foster deep connections with nature and increase awareness about how plants are important to our world.

Plant and Climate Research

The North Carolina Arboretum's role as an innovator in plant and climate research is evident through the connections it has fostered and the support it has received over the years. Gov. Beverly Perdue and Congressman Heath Shuler visited the Arboretum in March 2009 and held a press conference to acknowledge the Bent Creek Institute, part of The North Carolina Arboretum, for its work in natural biotechnology and integrative medicine.

The Bent Creek Institute conducts innovative research to discover, develop and validate natural medicines and integrative strategies for human health and wellness. The organization works to translate research innovations into sustainable models that have a positive economic impact on state revenues and employment. The organization's unique approach to research and production of intellectual property strives to:

- Result in pharmaceutical and nutraceutical product development

- Provide a foundation for the design of profitable business models for natural product growers and manufacturers statewide
- Serve as an international repository and clearing house for the study, protection and careful commercial use of Western North Carolina's native plants
- Develop new tools to help understand the health benefits of natural medicine as well as complementary and alternative medicine
- Provide validation for alternative and complementary medicine via clinical trial design and development
- Create unique research opportunities for post-doctoral researchers as well as graduate, undergraduate and K-12 students
- Uncover knowledge to drive informed ecological public policy protecting WNC's unique biodiversity.

Unlocking the secrets of WNC's vast biodiversity through documented, peer-reviewed science will not only provide results for use in alternative and complementary medical treatment of human disease, but will tap into international natural products commerce, a global industry assessed at \$200 billion growing annually at 14 percent.

Science that demonstrates the efficacy of WNC herbal medicines can be used to brand regional growers' products, support higher raw and finished product price points, establish ancillary processing, manufacturing, marketing and distribution businesses and launch WNC as an international location for natural product innovation.

The ground-breaking work of the Bent Creek Institute and its partners, combined with WNC's biodiversity, history and existing culture of natural product and alternative therapies suggests a statewide strategy to position WNC as the location for federal research, regulatory and certification programs.

The North Carolina Arboretum has also been instrumental in climate change research as a partner in the Centers for Environmental and Climatic Interaction. The organization is a non-profit partnership among government, academia and industry that provides trusted climate change information and analysis to policymakers, business leaders and the public.

As people everywhere focus on climate change and what it means for communities and the planet, Western North Carolina is a leader in climate data and decision-making tools. Asheville is home to the National Climatic Data Center, the National Environmental Modeling and Analysis Center at the University of North Carolina Asheville, the Renaissance Computing Institute at UNC Asheville, the U.S. Forest Service's Southern Research Station, and the Air Force Combat Climatology Center.

The Centers for Environmental and Climatic Interaction is poised to orchestrate and grow Asheville's diverse climate services community so it becomes a national resource for trusted climate change information, innovative formal and informal education, natural resource impact analysis, and assistance with climate change management and decision-making. The partnership is supported by the Asheville Hub, a community leadership organization that serves as a catalyst to spur collaboration and strategies that will leverage Asheville's and Buncombe County's strengths in technology, creativity, rejuvenation, land and agriculture, manufacturing and enterprise.

SUSTAINABLE STEWARDSHIP IS KEY TO THE NORTH CAROLINA ARBORETUM'S SUCCESS

"Sustainability" is more than just a word or future goal at The North Carolina Arboretum: it's a daily, living activity that all staff members work toward as a model for environmental stewardship.

Visitors can explore the Arboretum's daily dedication to stewardship at exhibit areas and buildings that provide educational interpretative panels about sustainable practices.

The Operations Center, which houses the Arboretum's landscape and maintenance staff as well as repair and maintenance shops, is one example of a building that serves as both a work area and an exhibit unto itself. The center is the first of 15 state constructed facilities included in the NC Office of Energy's pilot program following "High Performance Building Guidelines" that requires the facility to meet criteria for innovative design, energy efficiency, and environmentally responsible practices.

Innovative components of the Operations Center include:

- ☞ A cistern for collection of rainwater runoff reduces the demand on new water usage.
- ☞ A "green roof" cools the building in the summer and mitigates harmful effects of stormwater runoff. As plants grow, they filter and slow rainwater before it hits the ground and washes away topsoil.
- ☞ Solar panels on the roof preheat water before it goes into the water heater, reducing heating costs. They also power a charging station for electric vehicles. The Arboretum currently has two electric vehicles and plans to add more alternative fuel vehicles in the future.
- ☞ North facing, operable, clerestory windows in both office and workshop areas provide natural airflow, called the chimney effect, reducing the need for cooling. They also provide light inside, reducing artificial lighting use.
- ☞ The workshop area has natural air circulation rather than air-conditioning. "Air curtains" at interior doorways produce a blast of air, providing extra insulation and protecting interior air quality.
- ☞ A geothermal heat pump cycles water through a series of nine, 380-foot-deep underground wells keeping the water for the building's heating and cooling system close to a constant temperature of 55 degrees. This saves money throughout the year by eliminating the need to cool or raise water temperature greatly.
- ☞ An oil-water separator filters pollutants from water used to wash vehicles and equipment before the water is recycled for irrigation.
- ☞ Lights controlled by photo sensors and timers lessen the usage time.
- ☞ Water conservation methods such as two waterless urinals each save 40,000 gallons of water annually.

The Baker Exhibit Center, which opened in fall 2007, was designed by Woolpert, Inc. from Charlotte and incorporated high-performance guidelines for public facilities. These guidelines resulted in efficient, cost-effective, and environmentally sound design.

Many conservation principles were implemented during site preparation and construction. Construction debris was sorted and hauled to recycling centers, reducing waste and fuel usage. Geothermal wells provide water of a consistent temperature, which reduces the cost of heating and cooling. Paints, carpets, products and finishes were chosen for their low gas-emitting qualities and sustainability. A broad roof overhang shades upper-level windows to reduce solar-heat gain. And daylight views throughout the building reduce the need for artificial lighting.

Located in the front driveway and drop-off area at the Baker Exhibit Center, the **Rain Garden** captures water from the Baker Exhibit Center events lawn and from portions of the building and parking area. The events lawn, located at a higher elevation outside the garden level doors, was designed as a primary treatment area with water infiltrating through turf and into perforated pipes that drain into the rain garden. Down below, in the rain garden, storm water receives a second treatment as the water is slowed, cooled, and treated with natural processes in the plants and soil. Education and direct interpretation of this highly visible site is accomplished through workshops, conferences, tours and signage.

Daily practices by staff members and volunteers have also played a key part in the Arboretum's success as a model for stewardship. Thanks to those, efforts, the Arboretum:

- ☞ Reduced petroleum usage by 14% in 2007-2008 in part by utilizing alternative fuel vehicles such as biodiesel vehicles and electric golf carts.
- ☞ Reduces waste through a recycling program throughout the property, including use of biodegradable paper products in the Savory Thyme Café.
- ☞ Supports the local arts economy and the region's rich cultural heritage by carrying works from local artisans.
- ☞ Contributes to the local food economy by using fresh ingredients from local farmers in The Savory Thyme Café.

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