LANDSCAPING
at OAK RIDGE NATIONAL LABORATORY

Oak Ridge National Laboratory (ORNL) is the largest and most diverse energy research and development institution within the Department of Energy. ORNL's landscaping plan specifies that species native to the Oak Ridge Reservation (ORR) or the Valley and Ridge biological province of East Tennessee in which ORNL is located are the preferred choice for new plantings. It also advocates using ecological approaches to protect and enhance the lab's environment.

Ecological landscaping uses sustainable practices to improve habitat, protect water quality, and enhance native wildlife. Using local plant species in an appropriate community design instead of typical ornamentals highlights the lab's uniqueness, strengthens its relationship with its natural surroundings, and demonstrates its dedication to conserving and showcasing the environment.

People often expect plants to conform to their image of the "perfect" tree or flowering shrub and to show conformity that is not exhibited in nature. ORNL's outdoor environment demonstrates how a less controlled landscape provides equal beauty and an experience that allows the user to notice small changes and variations.

Rain gardens, such as this one along First Creek, reduce stream bank erosion and flooding by slowing stormwater runoff. They also improve water quality, help to recharge local groundwater supplies, provide nesting sites and habitat for songbirds and other wildlife, and bring beauty and visual interest to the landscape. (ORNL photo)

Landscape management

Landscapes are living entities that are in a constant state of flux—growing, changing with the seasons, and responding to even subtle changes in the environment. Plants in the wild survive without human help. Unfortunately, the developed environment provides numerous stresses for plants, requiring more management.

ORNL's landscaping plan includes a clear set of management principles covering watering, pruning, fertilizing, pest management, and lawn care. Prescribed burns, for example, provide more benefit to native grass communities than periodic mowing and are more cost effective. Following these principles ensures that the landscape meets or exceeds the expectations outlined in the plan.

Many native plants used in ORNL landscaping delight viewers with their beautiful flowers, including (from left) oakleaf hydrangea (Hydrangea quercifolia), *purple coneflower* (Echinacea purpurea), *Virginia sweetspire* (Itea virginica), *butterfly weed* (Asclepias tuberosa), *and dwarf fothergilla* (Fothergilla gardenii). *(Photos by P. D. Parr)*

Native plants provide interest throughout the year: (from left) flowering dogwood (Cornus florida) *and blackgum* (Nyssa sylvatica) *for their colorful fruits, river oats* (Chasmanthium latifolium) *for its showy seed heads, equisetum (also known as horsetail)* (Equisetum hyemale) *for its bright green stems, and cinnamon fern* (Osmunda cinnamomea) *for its interesting leaves and fertile fronds. (Photos by P. D. Parr)*

Why native plants?

Native trees, shrubs, grasses, and wildflowers as well as nonnative tall fescue all have a place at ORNL. When deciding which to use, it is important to understand each one's benefits and liabilities.

Native plants are better adapted to local environmental conditions than their exotic counterparts, thus requiring less maintenance once established. Using native landscaping is not only aesthetically appealing, but name tags near plants also educate laboratory staff and guests by helping them identify the regional vegetation.

Native grasses interspersed with wildflowers provide more visual interest than traditional lawn grasses as they change throughout the year. Their deep root systems also provide excellent erosion control and increase soil fertility. Because they grow to between 3 and 8 feet in height, they are unsuitable for use in areas where pedestrians gather, sit, play sports, or undertake other activities. **Hybrid fescues** can be maintained at a height of 2 to 3 inches and can withstand pedestrian foot traffic. Because they require significantly more maintenance and resources than native grasses and wildflowers, their use at ORNL is being greatly reduced.

Success stories

The ecological, watershed approach to landscaping, a major focal point of ORNL's Sustainable Campus Initiative, has resulted in major benefits.

ORNL research has led to improved landscape-management techniques that have been successfully implemented—rain gardens handle stormwater runoff, wetland plantings provide wildlife habitat in detention basins, vegetation buffers enhance riparian areas, aquatic plantings improve the East Campus Pond, and newly established native grass communities highlight the local setting.

As part of a new construction project, for example, a detention pond was built to help control sediment runoff. Native plants were used as cover vegetation instead of a non-native fescue grass mix. In addition to requiring less maintenance, native plants provide habitat for native animals and filter sediment and contaminant runoff more efficiently.

For more detailed information on landscaping at ORNL, contact Pat Parr, the ORNL natural resources manager, at 865-576-8123 or parrpd@ornl.gov or check ORNL's landscaping website at http://www.ornl.gov/adm/fo/nr/lm/.

A pond constructed at the east end of the lab is being transformed into a natural setting to showcase native plants and animals—birds, butterflies, dragonflies, and other wildlife—and provide a place for a pleasant walk. American lotus (Nelumbo lutea)*, a native aquatic plant that was difficult to find at local nurseries, was propagated at ORNL for use in pond restoration. Experiments with ways to protect newly planted vegetation from predation determined that fence cages are effective. Once the plantings become established, the cages are removed. (Photo by M. G. Ryon)*

Compiled by Martha S. Salk *March 2011* *ORNL 2011-G00334/es*
Publishing/design by ORNL Creative Media at Oak Ridge National Laboratory,
managed by UT-Battelle, LLC, for the U.S. Department of Energy under contract DE-AC05-00OR22725.