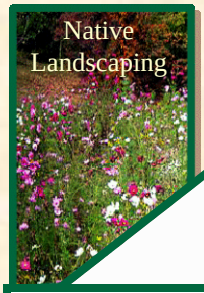
Integrated Sustainable Landscaping at the Oak Ridge National Laboratory

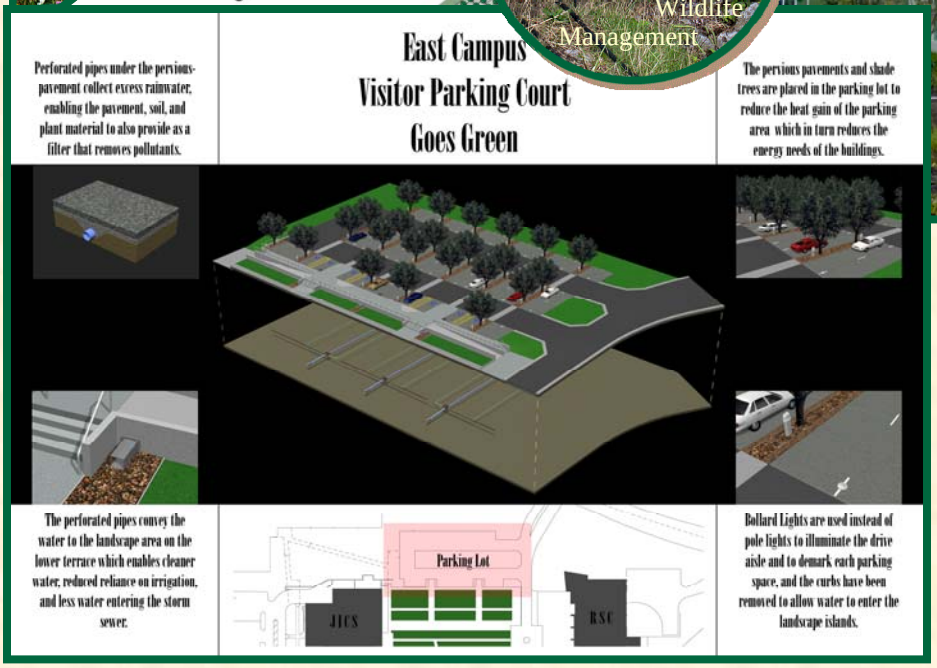

Water Feature

The Oak Ridge National Laboratory (ORNL) recognized that it had an industrial / ad hoc landscape and developed a "Master Plan" to transform ORNL into a true research campus. ORNL also is committed to implementing a sustainable campus "from the ground up" and in March 2003 published the *Oak Ridge National Laboratory Conceptual Landscape Plan and Design Guidelines*. To ensure that this master landscape plan met all of the current and future sustainable needs of the lab, it defines specific goals and objectives as well as focusing on key areas. This holistic technique also ties elements of the campus together and establishes a cohesive identity. This master plan provides a foundation and template that the lab then follows as it transforms its landscaping through the appropriate use of plant species with an emphasis on native plants, planting and seeding techniques, planting and seeding schedules, landscape management principles, and landscape lighting principles. This holistic effort also includes the planned elimination of invasive, non-native plants and expands beyond ORNL to all of the Oak Ridge Reservation.


Native Landscaping


Pond Cleanup and Wildlife Management


Use of Native Plants in Landscaping



Successful implementation of this plan at ORNL has:

- Supported LEED certification of several buildings
- Reduced natural resources use including water harvesting, solar heating, recycled-content and durable materials
- Enhanced impact on the environment including "night-sky friendly" lighting, improved water quality in pond, long-term vision and diverse habitats and plantings, native plantings [15 acres at ORNL and 270 acres across the Oak Ridge Reservation (ORR)], removal of invasive plants (130 acres at ORNL and 370 acres across the ORR), and minimal maintenance/adapted native plant landscaping requiring little or no fertilization
- Long-term sustainable environment at the Laboratory including arrival terrace with native plantings at Visitor Center, varied landscaping, increased landscaping and management techniques to discourage nuisance wildlife, ADA-compliant exterior gathering spaces, and integration of art and science.

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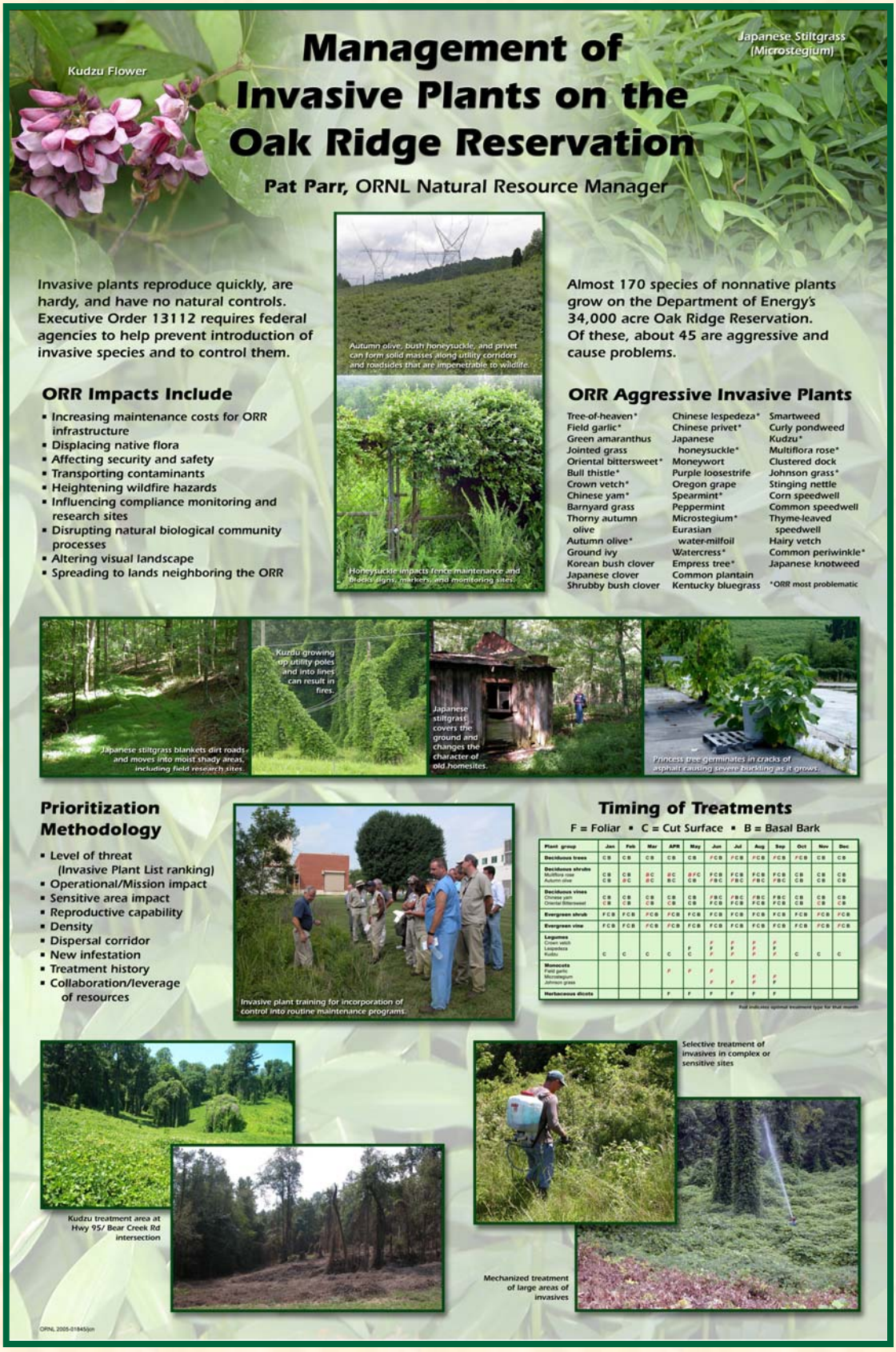

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Integrated Sustainable Landscaping at the Oak Ridge National Laboratory (continued)

The sustainable landscaping philosophy is applied to older areas as well as to new and upgraded construction. operations as well. Facilities & Operations (F&O), Environmental Sciences Division (ESD), and Water Quality Programs staff members teamed up to restore native vegetation in riparian zones. Workers from F&O installed bluebird houses on posts in the riparian zone along White Oak Creek in late April 2007. The areas between the birdhouses and the creek are “no mow zones,” where native bushes and trees will be encouraged in these zones and future seasonal inspections will be done to eliminate invasive plants. Until 1992 workers mowed down to the creek with weed-eaters. Since then mowing has generally been to the tops of the banks. The addition of the birdhouses will effectively extend the “no mow zone” and give native plants a chance to grow.

During the fall of 2006, the ESD staff made a major effort to remove invasive species such as privet, honeysuckle, Johnson grass, multi-flora rose, and Chinese yam from riparian zones and along roadways. Eliminating the foreign plants cleared the way for native growth. Right now, most of the plants between the birdhouses and the creek banks are grasses, but that should change. Grass is not the goal, it is trees and bushes. About 500 native bushes and trees have been planted near White Oak Creek. These native trees and shrubs include button bush, elderberry, silky dogwood, spice bush, white dogwood, red maple, red oak, river birch, sycamore and redbud. Long term this will allow these native trees and bushes to seed and grow in the riparian zone and will have a better chance of survival since they started naturally and will not be mowed down once they become saplings.

Once the bushes and trees start to thrive, that is the first step to long-term sustainability. The transitional bushy, grassy areas provide bank stability through their roots, increase soil permeability, and help to trap and break down contaminants in storm water runoff as it moves toward surface water. The sinuosity of natural streams is critical to stream dynamics requiring room to migrate within the floodplain. This area will also provide the terrestrial habitat adjacent to the stream to provide insects and nutrients that are the food for the stream organisms, and trees will provide shade to keep the temperature in the stream low. Surface water quality and shallow ground water quality will gradually improve as these changes take place. All of these benefits will one day be realized due to continuing efforts including this effort.

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