

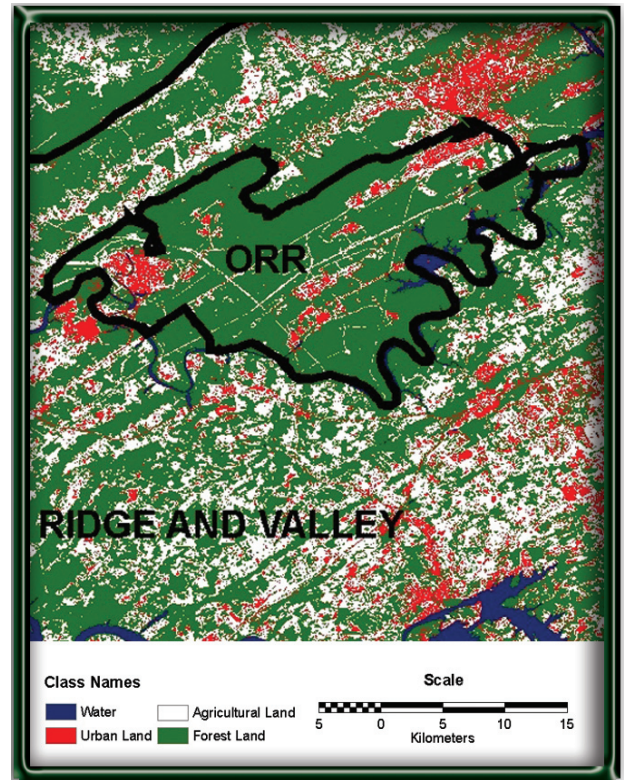
# Biodiversity of the Oak Ridge Reservation

The U. S. Department of Energy's (DOE's) Oak Ridge Reservation (ORR) contains a large number and variety of plants and animals, giving it a wealth of biodiversity. Since it was acquired by the federal government in 1942 for the Manhattan Project, the ORR has been protected from most development. This unplanned conservation has allowed the Reservation to mature into a unique ecological treasure.

The ORR now preserves many species and communities that have disappeared elsewhere in the Southern Ridge and Valley ecoregion of east Tennessee. In 1995 The Nature Conservancy ranked 81 ORR sites as having very high or high national significance for conservation. Some of these sites are designated National Environmental Research Park natural or reference areas, and many of them provide baseline information for long-term observations and monitoring.

Many rare plants and animals are found on the ORR, including 30 wildlife species and over 20 plant species. Ecologically rare communities include eastern red cedar (*Juniperus virginiana*) glades and barrens, forested river bluffs, bottom-land hardwood forests, northern hardwood forests, grasslands, wetlands, and old-growth forests.

Although globally rare, cedar glades and barrens are relatively common on the ORR where they occur as small, drought-prone openings in the forest. Forested river bluffs of the ORR are home to rare plant species such as Appalachian bugbane (*Cimicifuga rubifolia*) and spreading false foxglove (*Aureolaria patula*). An uncommon northern white cedar (*Thuja occidentalis*) woodland grows on steep cliffs overlooking the Melton Hill Reservoir.



In this map, based on a 2006 Landsat image, the ORR is clearly visible as an island of green in contrast to the sea of cleared, urbanized land surrounding it.



What may be the world's largest population of the state-endangered tall larkspur (*Delphinium exaltatum*) grows in this cedar barren on the ORR in the power line right of way and along the edge of the woods.



The ORR has almost 600 acres of wetlands, which are increasingly uncommon in the region. Wetlands and streams are important habitats for rare plants, amphibians, reptiles, and fish. Streams free of sediment from agriculture and construction are common on the ORR, providing habitat for rare fish species, such as the Tennessee dace (*Phoxinus tennesseensis*) and possibly the spotfin chub (*Cyprinella monacha*).

More than 340 wildlife species occur on the ORR. This includes over 200 species of birds, 34 types of mammals, 72 fish species, and 45 kinds of reptiles and amphibians. Wildlife is managed by the Tennessee Wildlife Resources Agency (TWRA). Restoration efforts for the once-rare wild turkey (*Meleagris gallopavo*) and the previously federally listed osprey (*Pandion haliaetus*) have been highly successful.

DOE has set aside several large areas on the ORR to preserve their biodiversity for the long term. In June 1999 the Secretary of Energy designated a 2,920-acre plot as the “Three Bend Scenic and Wildlife Management Refuge” to protect this area and its unique habitats and wildlife.



*Once listed in Tennessee as a “species in need of management,” the grasshopper sparrow (*Ammodramus savannarium*) nests in the open grassland areas of the Three Bend Scenic and Wildlife Management Refuge. It has benefited from TWRA’s native grassland management program. (ORNL photo)*



*Scientists have collected vegetation data on the Reservation for many years. Historic data can be compared to more recent information to determine changes in biodiversity over time. (ORNL photo)*

In April 2005 DOE and the state designated almost 3,000 acres of ORR land as the “Black Oak Ridge Conservation Easement.” This natural area, managed by TWRA in cooperation with the Tennessee Department of Environment and Conservation, contains the largest block of unfragmented forest on the ORR. It provides valuable rare forest interior—habitat that is home to uncommon wildlife and nesting and migratory birds.

Biodiversity provides a critical foundation for environmental research and education. In recognition of its importance, portions of the ORR were designated as a DOE National Environmental Research Park in 1980 and as an International Biosphere Reserve in 1989.

In recent years threats to the biodiversity of the ORR have increased. Development has continued in the area outside and adjacent to the ORR, bringing with it the need to address the potential for impacts to sensitive Reservation resources. Invasive plants and animals are also increasingly common and are impacting native species. As urban and agricultural development have expanded, the ecosystems native to the Ridge and Valley ecoregion have become more fragmented and less widespread. This makes their existence on the ORR increasingly important at local, regional, and national levels.

For more detailed information about natural habitats and biodiversity of the ORR, contact Pat Parr, the ORNL Natural Resources Manager, at 865-576-8123 or [parrpd@ornl.gov](mailto:parrpd@ornl.gov); or check the Research Park web site at [www.esd.ornl.gov/facilities/nerp](http://www.esd.ornl.gov/facilities/nerp).