

Wetlands of the Oak Ridge Reservation

A “wetland” is a general term for vegetated habitat that contains water for some period of time each year. Marshes, bogs, swamps, flooded bottomlands, prairie potholes, wet meadows, spring or seep areas, and many pond and lake edges—all such areas are wetlands. Almost 600 acres of land at nearly 90 locations across the U.S. Department of Energy’s Oak Ridge Reservation (ORR) are classified as wetlands. Considered a vital part of the ORR, these important habitats must be preserved and protected to keep the reservation’s entire ecosystem healthy.

Valuable Habitats. Wetlands provide important ecological functions and are thus a highly valuable resource. Many unique species, including many endangered plants and animals, depend on them for their survival. In addition, wetlands help reduce runoff of sediments and nutrients into nearby streams, control flooding, and improve water quality. The wetlands of the ORR fulfill all these functions, and they contribute especially to the reservation’s biological diversity. The many plant species found in ORR wetlands include some listed as rare by the state of Tennessee. About half of the rare plants found on the reservation occur in wetland areas.



The Hembree Marsh is part of the Bear Creek/McNew Hollow Floodplain, a Research Park Natural Area on the Oak Ridge Reservation. (Photo © R. K. McConathy)

Wetlands are found across the ORR in many low-lying areas, primarily adjacent to streams and rivers and at springs and seeps. The sizes of wetlands on the reservation range from several square yards at small seeps and springs to

approximately 25 acres at White Oak Lake. Most of the designated wetlands on the ORR are less than an acre in size. Wetlands larger than an acre are typically associated with impounded water, including inundated bays along the Clinch River and Poplar Creek, created ponds and shallow lakes like White Oak Lake, and beaver pond habitat.



The rare tuberled rein-orchid (Platanthera flava var. herbiola) is one of more than 20 state-listed plant species found on the Oak Ridge Reservation.

The purple fringeless orchid (Platanthera peramoena), uncommon in the area, is found in wet areas under powerline rights-of-way.

Snapping turtles are one of the species found in wetlands on the ORR. (Photo © R. K. McConathy)

Unusual ORR Wetlands. One unusual wetland community type on the ORR is the bottomland hardwood forest. This community supports black willow, sycamore, box elder, blue beech, green ash, red maple, and hackberry trees. Bottomland forests were once typical of eastern U.S. floodplains. They are now uncommon because of the widespread use of floodplains for farming and development. This community is considered a threatened ecosystem statewide and nationally because it has suffered a 70-84% decline. A few of these communities still exist on the ORR, particularly around larger streams such as lower East Fork Poplar Creek and Bear Creek.



Sphagnum moss and ferns are dominant species in the New Zion Forested Headwater Wetland. Several groundwater seeps supply the wetland.

Another rare plant community type associated with the bottomland hardwood forest is the forested canebrake community. Dense stands of cane were characteristic of riparian areas during presettlement times, but these areas are increasingly uncommon. Forested canebrake communities are listed as critically rare by the National Biological Survey and globally rare by The Nature Conservancy.

Threats to Wetlands. Many wetlands have been destroyed over the years. The most damaging impacts have been associated with agricultural practices that drained or diked many wetland areas over the past century. However,

interest in preserving and restoring wetlands has increased in the past half-century as their value and ecological importance have become more fully understood.



Great blue herons, one of the more than 200 breeding bird species found on the ORR, can be found around areas like the Clinch River Embayment Wetland. (Heron photo © R. K. McConathy)

Threats to wetlands on the ORR include loss or degradation of habitat as a result of land development, extreme or sustained fluctuations in the water level of the reservoirs, and heavy truck traffic and improper use of herbicides on utility rights-of-way. As urban development and agricultural use have expanded, wetlands have been filled in and have become less common, both across the United States and in the Ridge and Valley ecoregion where the ORR is situated. Thus, the ORR wetlands have become increasingly important at a local, regional, and national level.

For more detailed information about wetlands and other natural habitats of the ORR, contact Pat Parr, the ORNL Natural Resources Manager, at 865-576-8123 or parrpd@ornl.gov; or check the Research Park Web site at www.esd.ornl.gov/facilities/nerp.