The Baldwin Woods Forest Preserve protects 450 acres of land for long-term study within the historic 3,700-acre Baldwin Woods ecosystem.

The KU Field Station Baldwin Woods Forest Preserve
An environmental, cultural and educational resource
A forest oasis at the prairie’s edge

At the far western boundary of the eastern deciduous forest biome, where moist woodlands give way to the drier grasslands of the Great Plains, lies a gem of species diversity: the KU Field Station’s 450-acre Baldwin Woods Forest Preserve.

This area, one of the highest-quality protected forest stands in the state, supports a wealth of woodland-associated plants and animals. It serves as a refuge for rare species and imperiled biological communities. Because many of these species are at the western edges of their ranges and will respond to small environmental changes, Baldwin Woods is of special importance for research into the effects of climate change.

Public Land Surveys in the 1850s show that at the time of settlement by Euro-Americans, eastern Kansas was dominated by vast areas of tallgrass prairie. Forests were scarce and typically confined to sites protected from prairie fires along streams or on steep, north-facing slopes. Unlike many new-growth wooded areas in the region today, Baldwin Woods is a remnant of the original hardwood forest, replete with beautiful understory species—an island in a former sea of grass.

In the mid-19th century the greater Baldwin Woods was a 3,700-acre forest grove. In 1980 a portion was designated a National Natural Landmark by the U.S. Secretary of the Interior in recognition of its importance to the nation’s cultural and ecological heritage. The KU Field Station’s Baldwin Woods Forest Preserve protects a significant contiguous area within the designated landmark.
Under the pervasive influence of climate, the bedrock and terrain of Baldwin Woods have been transfigured into a mosaic of habitats varying in light, temperature, humidity and moisture. Through millennia, plants and animals have come and gone in response to this ever-changing patchwork. The forest-dominated assemblages here today probably formed in the last 12,000 years after the last ice age as deciduous forests followed the retreating continental glaciers northward.

Situated near the western edge of North America’s vast deciduous forest biome, Baldwin Woods is an ecological haven—a last significant forest outpost at the prairie’s doorstep and a reservoir sustaining regional biodiversity. Moist, north-facing slopes and ravines provide sanctuary for white and red oaks, basswoods and white ashes. Spring ephemerals, wildflowers that bloom in early spring before trees leaf out, are most plentiful where the soil remains cool and moist. The abundance and variety of these plants, which are diminutive and sensitive to disturbance from grazing and logging, attest to the importance of this site. Humid, shaded floodplains shelter towering sycamores and cottonwoods, with pawpaws, American bladdernuts, and a wealth of sedges and grasses in the understory. Sunlit, south-facing slopes and ridges favor blackjack, post and black oaks, as well as shagbark hickories, and often are carpeted with drought- and fire-adapted prairie grasses and wildflowers.

In total, nearly 80 species of woody plants are known in Baldwin Woods, half of which are trees. Each particular forest type has its own suite of species, and more than 500 species of flowering plants and ferns—nearly a quarter of all those documented in Kansas—have been found at Baldwin Woods. The site also is home to nearly 100 kinds of bryophytes (mosses and other spore-producing plants), 200 kinds of macrofungi and 200 kinds of lichens. Few places in the region boast the concentrations of habitats or species found in this ecological sanctuary.

(Right) Layers of shale and sandstone form the escarpment in the core of Baldwin Woods known as “The Cliff.”

Inset photos: Birdfoot violet also blooms in early spring, while Indian pipe emerges in autumn.

Spring ephemerals emerge through the leaves and moss of the forest floor in April: early-blooming spring beauties, fragile fern, and leaves of trout lily and rue anemone.
A rich community of wildlife

Baldwin Woods supports a diverse array of animal life. Most notable are species dependent on eastern deciduous forest habitats. Animals such as the southern flying squirrel and the red-bellied snake are widely distributed in eastern North America but become increasingly rare and localized toward the western limits of their ranges, where humid forests give way to open plains. For these eastern species, this area is at the western end of the line.

Baldwin Woods also supports a variety of species that thrive in a mix of wooded and open environments. Generalist species, such as white-tailed deer, raccoon and fox squirrel, are dependent on forest habitats but tolerant of fragmented landscapes. Such species have abundant suitable habitat and tend to be common and widely distributed in the region.

Thorough surveys have yet to be conducted for most animal groups on the Forest Preserve. At least 25 species of reptiles and amphibians occur on the property. Birds, at 156 recorded species, are a diverse group that waxes and wanes by season. The birds fall into three broad categories:

- Year-round residents, comprising about one quarter of the bird fauna of the Preserve, remain on site throughout the year, breeding in the summer and coping with cold winters. Sample species in this group include the red-shouldered hawk (top), pileated woodpecker, American goldfinch and tufted titmouse.

- Summer residents make up another one quarter of the bird species and arrive in the spring, breed during the summer, then migrate south in the fall. Whip-poor-will, Kentucky warbler (second from top), summer tanager (center right), and indigo bunting are among the summer residents.

- Seasonal visitors make up about one half of Baldwin Woods’ bird species. Most are neo-tropical migrants that pass through the area briefly in the spring en route to northern breeding grounds, and again in the fall as they head south. Black-throated blue warbler (second from bottom) and Blackburnian warbler (bottom right) are examples of seasonal visitors.
Humans have interacted with the Baldwin Woods ecosystem—a mixture of forest, savanna, prairie and streams—for centuries. From early Native American cultures to later-arriving immigrants and Euro-American settlers to today’s permanent communities, the area has sustained residents, hosted sojourners and witnessed countless travelers. This historical footprint is evident in the landscape and in lore.

The Santa Fe Trail passed along the high ridge, adjacent to south side of Baldwin Woods, known as “The Narrows.” From 1821 to 1880, thousands of travelers used this route from Westport (near Kansas City) to Santa Fe. This ridge affords an unobstructed view to the north. In the Civil War era, a large white oak tree on this spot was used as a signal point to send messages by lantern to Blue Mound, east of Lawrence, where they were relayed to Mount Oread in Lawrence when border ruffians (pro-slavery forces from Missouri) were in the area. The Lawrence, Leavenworth and Galveston Railroad line, which ran from Lawrence through Baldwin Woods to Ottawa, passed through Baldwin Woods.

No matter what their form of transportation—foot, horse, wagon, car or train—people traveling north or south have dealt with the steep hill (escarpment) in Baldwin Woods. This geologic feature contributed to the development of the forest as the more moist, north-facing slopes fostered trees and were protected from prairie wildfires coming from the south.

Today, only a small portion of the original forest in the Baldwin Woods area remains—and challenges to preserving this landscape are complex. While past habitat loss and fragmentation in the Baldwin Woods area was largely due to agricultural development, the single greatest threat at present is residential development. Fragmentation—in which roads or residences cut into an otherwise contiguous forest—is the less obvious threat but is just as detrimental as habitat loss. Roads and other disturbances break up the forest and increase the forest edge, where invasive species (e.g., Amur honeysuckle, multiflora rose, garlic mustard, and various predators and nest parasites) penetrate large areas of previously intact forest, changing the entire ecosystem.

Given the proximity to urban centers, habitat loss will be an ongoing challenge. Fortunately, the Baldwin Woods Forest Preserve protects a remnant of the historic landscape. Other contiguous areas, preserved through fee title or conservation easements, whether or not they are part of the Forest Preserve, will provide additional protection.
A place for study

The Baldwin Woods Forest Preserve is a platform for scientific research across the ecosystem—from studies of biogeochemical processes, soils and microorganisms to ecological studies of plants and animals.

The Preserve also enables long-term monitoring of ecosystem structure and functioning. These longitudinal studies are critical to understanding our environment and predicting the consequences of future change in climate. Scientific studies are carried out with as little disturbance as possible so as not to damage the sensitive ecosystem.

A portion of the Preserve was designated as the state’s first Legacy Forest by the U.S. Forest Legacy Program in recognition of its rich and varied ecosystem.

The Preserve is made up of several tracts (Breidenthal, Rice, Wall and other tracts), the first dating to 1965. All were acquired through private gifts and non-state grants.

The Forest Preserve is managed as a part of the KU Field Station, a unit of the Kansas Biological Survey. The 3,700-acre Field Station includes a 1,450-acre prairie preserve in Anderson County, as well as a core area of about 1,800 acres north of Lawrence. The core area consists of native and managed habitats, experimental and support facilities, research sites and nature trails. It is open to academic programs and individuals from KU and elsewhere as a teaching and research resource.

Hundreds of individual trees are monitored in long-term forest plots in Baldwin Woods. Scientists study the dynamics of carbon and nutrients in soils and vegetation to understand how ecosystems respond to stress, including drought.

(Top) KU groups and classes visit the Forest Preserve, benefiting from its rich diversity and proximity to urban areas. (Center) Biological samples are used for comparative forest ecosystem studies in the laboratory. (Bottom) A researcher cores a tree in the Preserve for samples to be analyzed for stable isotopes of carbon and oxygen. This provides insight as to how trees are influenced by climate in this region and enables predictions about their responses to altered climate in the future.