

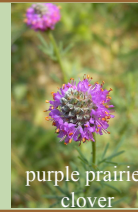
# In the Spotlight:

## Limestone/dolomite prairie

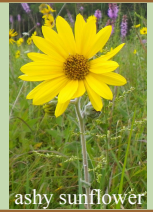
By Brian Yahn, Vegetation Ecologist



grey-headed  
coneflower



purple prairie  
clover



ashy sunflower

An extremely rare community in Kentucky is the Limestone/dolomite prairie. This type of grassland is dry to very dry (i.e. sub-xeric to xeric), dominated by herbaceous plants and is often treeless, or has only a few trees scattered across the community. Soils are usually thin with limestone or dolomite bedrock near the surface (or occasionally some bedrock is exposed). This community was once abundant in the western two-thirds of Kentucky, an area first referred to by early Euro-American settlers as the “Big Barrens.” Since settlement, the conversion of land to agriculture and development, as well as suppression of natural fire and loss of natural grazers has greatly reduced this community, on the landscape. Higher frequency of landscape-level fire at the time of settlement likely played the largest role in shaping Kentucky’s Big Barrens. Many plant communities repeatedly burned and supported a stable grassland system of herb-dominated prairies and open oak woodlands (widely-spaced trees with a grassy understory) instead of the fire-suppressed closed forests we see today.

Outside of Kentucky, grassland communities similar to Limestone/dolomite prairies were once the dominant land cover in the Great Plains states ranging from North Dakota south to Texas (also known as the Prairie Peninsula). Kentucky’s smaller but important prairie-woodland matrix was also found (just to the north and south) in Ohio, Indiana and Tennessee. Since much of this eastern prairie matrix has been destroyed by land conversion, prairies and barrens east of the Mississippi River are one of the most imperiled ecosystems in North America (Noss 1995).

Limestone prairie, Lewis County  
~ KSNPC photo by Dave Skinner



KSNPC’s classification of Limestone/dolomite prairie broadly describes dry calcareous prairies across the state. NatureServe (the national authority on the status of rare species and natural communities) distinguishes at least two types of dry calcareous prairies in Kentucky. One type, the most regularly occurring in the Commonwealth, is found in the Big Barrens (or Highland Rim Region) and is considered globally imperiled (=G2G3). The second type occurs along the rolling hills of Crooked Creek in Lewis County (northeast Kentucky), within the Outer Bluegrass Region. This community is considered globally critically imperiled (=G1Q) (NatureServe 2012).

Describing the natural condition of this community can be difficult as most remnants are small and isolated, and continually disturbed by unnatural processes. Most prairie remnants remain open due to mowing or grazing by livestock which has prevented trees from invading the area (and from succeeding to forest). Regular mowing and/or heavy grazing disturbs the soil, often causing erosion and creating a condition where invasive non-native plants can compete and thrive. Repeated mowing and/or grazing can also stimulate the native grasses to outcompete native forbs (i.e. prairie wildflowers). These conditions usually produce low diversity grasslands (mostly native grasses mixed with non-native and weedy plants). Thus, Limestone/dolomite prairie remnants that support an abundance of high-quality prairie wildflowers are very rare on the landscape. In an effort to improve poor or less than ideal conditions, prescribed fire can be used to remove woody species and promote herbaceous plants. Then herbicides can be applied to treat invasive or aggressive species. As a result, high-quality, fire-dependent plants usually flourish.

The best Limestone/dolomite prairie remnants that occur in Kentucky are dominated by little bluestem (a grass) and often have good populations of conservative native grasses scattered throughout. Common native grasses include Elliott’s beardgrass, longleaf dropseed, silver bluestem and yellow indian-grass. Less abundant and rare native grasses include big bluestem, northern dropseed and side-oats grama. Native shrubs and small trees frequently seen in high-quality remnants include Carolina buckthorn, Carolina rose, eastern redbud, fragrant sumac and





rusty blackhawk. High-quality remnants are also diverse with wildflowers (i.e. forbs) and can include an array of species. A single plant family, the asters (composites), helps to characterize Kentucky's calcareous prairies by having a plentiful variety of common species including ashy sunflower, dense blazing star, early goldenrod, field goldenrod, gray-head prairie coneflower, prairie rosinweed, scaly gay-feather, Small's ragwort, stiff-hair sunflower, tall boneset, tall gayfeather, tall tickseed, three-leaved rosinweed and wavy-leaf purple-coneflower. Other common plants from different families include several bush-clovers, flowering spurge, green milkweed, pale-spiked lobelia, slender mountain-mint, slender-stalked gaura and many more (KSNPC 2012).

In Kentucky, Limestone/dolomite prairies also provide habitat for rare species of plants and animals, a few found nowhere else outside of this community. Over 40 KSNPC-listed plants have been documented on, or in close association with Limestone/dolomite prairies (KSNPC 2012). These associated rare species (not highlighted below or listed above) include the blue wild indigo, Carolina larkspur, compassplant, hairy hawkweed, rough rattlesnake-root, round-head bush-clover, slender blazingstar, tansy rosinweed and many more. Unique birds, herps and insects often found associated include Henslow's sparrow, lark sparrow, short-eared owl, northern harrier, northern pine snake, eastern corn snake, eastern slender glass lizard, six-lined racerunner and numerous species of butterflies, leafhoppers and moths (KSNPC 2012). Extirpated animals that once depended on Kentucky's prairies and barrens include the greater prairie chicken and the American bison.

Since the time of Euro-American settlement, prairies and barrens have been disappearing from Kentucky at an alarming rate. Estimated at 2.5 to 3 million acres at the time of settlement, natural prairies and open woodlands (barrens) are now almost gone, with less than 1 percent of prairies and barrens remaining today in Kentucky (Abernathy et al. 2010). And those remaining prairie patches are not recognized (or are sometimes ignored) by most of our citizens (and even some of our biologists!). Plowing, planting, grazing, mowing, development of roads and buildings, lack of fire, succession to forest,... all these activities continue to degrade conditions and often obliterate these remnants from existence. Better understanding and protection is needed to keep our prairie heritage alive. For more information on prairies and barrens in Kentucky, please visit our online nature preserve directory: [http://naturepreserves.ky.gov/naturepreserves/Pages/statewide\\_snpsna.aspx](http://naturepreserves.ky.gov/naturepreserves/Pages/statewide_snpsna.aspx) or contact Brian Yahn, ecologist ([brian.yahn@ky.gov](mailto:brian.yahn@ky.gov)) or pick up a copy of *Kentucky's Natural History, An Illustrated Guide to Biodiversity*.

#### References

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## Species associated with Limestone/dolomite prairie:

### Corn snake

*Pantherophis guttatus*

**KSNPC Status:** Special concern

**USFWS Status:** None

**General Description:** A medium-sized snake, ranging in length from 30 to 48 inches. Also referred to as “red rat snakes,” corn snakes are most often red to orange in color, however, individuals may vary from brown to gray. The belly is whitish and boldly checkered with black and the underside of the tail is usually striped. The species has weakly keeled scales and a divided anal plate. Dorsal spots, or blotches, are typically red or orange and outlined with black. Spots closest to the head divide into branches that extend forward to meet in a spearpoint between the eyes. In Kentucky, corn snakes are most often confused with milk snakes (*Lampropeltis triangulum*) and prairie kingsnakes (*Lampropeltis c. calligaster*).



Photo by John R. MacGregor

**Habitat:** Corn snakes are good climbers but spend much of their time below ground, foraging or resting in rodent burrows or other underground passages.

**Range:** Distributed from southern New Jersey to Kentucky, extending southward to southeastern Louisiana and east to Florida.

**Reason for Protection Status:** Kentucky populations of this species are at the northwestern extent of the range. Their distribution is limited in the state and occurs in two widely disjunct populations.

### Leonard’s Skipper

*Hesperia leonardus*

**KSNPC Status:** Watch list (appears to be declining)

**USFWS Status:** None

**General Description:** Upperside of wings is reddish-orange to brown. Underside of wings is reddish brown with a band of white, cream, or yellow spots. Forewings and hindwings have moderately wide black borders along rear edge. Wing span is approximately 1.25 – 1.75 inches.



KSNPC photo by Ellis Lauder milk

**Habitat:** Open grassy areas, especially prairies and barrens that support good populations of the caterpillar’s host plant, little bluestem (*Schizachyrium scoparium*).

**Flight Season:** Adults are active during late summer and early fall (Aug – Sep).

**Range:** Much of eastern and central North America, including southern Canada. In Kentucky this species is usually found locally in small colonies.

### Northern (or Prairie) dropseed

*Sporobolus heterolepis*

**KSNPC Status:** Endangered

**USFWS Status:** None

**General Description:** This perennial grass is one of the true prairie grasses that is characteristic of the tall grass prairies of the Midwest U.S. It forms dense clumps or bunches of long hair-like (less than a quarter inch wide) leaves. As with many grasses, the flowers are wind pollinated. This dropseed is a food plant for certain species of grasshoppers and leaf hoppers and the seeds are eaten by birds such as white-throated and other sparrows and juncos. It mostly spreads by seed but once established is persistent if the habitat remains open. It is being used in prairie restoration and landscaping.



**Flowering Period:** Summer. Seeds mature in late summer and early fall.

**Habitat:** Prairies. This grass is often a good indicator of high-quality prairies.

**Range:** Ontario to Saskatchewan, south through the Midwestern U.S. to Texas and east to North Carolina.

**Reasons for Listing:** The decline in grasslands across Kentucky due to development as well as the lack of fire needed to maintain grasslands.

