

BRINGING NATIVE PLANTS TO KANSAS ROADSIDES

A Position Paper of the Kansas Native Plant Society

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The Road Not Traveled

Is there a Kansas resident who has not heard a non-Kansan recount the tale of their long, uninteresting automobile trip across the state? No amount of patient tutoring about the scenic beauty of our state can convince them that Kansas has much to offer the casual traveler.

The Kansas Scenic Byways program has made an admirable start at highlighting many of our historical, geographical, cultural, and natural attractions for residents and tourists. Local Chambers of Commerce have worked diligently to draw visitors into their communities. Yet, the very routes that Kansas travelers use to reach these destinations offer little in the way of variety, interest, and natural beauty. Many of the 650,000 acres of highway right-of-way are covered with cool-season grasses that are neither native to Kansas nor reflective of the proud prairie heritage of our state. These present roadsides require costly mowing and provide little in the way of visual interest.

Today we have an opportunity to make virtually any trip across Kansas a more memorable experience. With a relatively small investment, these roadsides could share the magnificence of our state's native prairies with residents and visitors alike.

Kansas roadsides can recapture some of the vistas that travelers once were able to enjoy throughout the state. Wildflowers of colors as diverse as an artist's palette springing up through little bluestem and side-oats grama can reclaim their rightful place along highways and even county roads. A carefully designed, multi-year program of seeding and maintenance can, over time, once again show off Kansas to its best advantage.

All that is needed to embark on this native roadside vegetation program is a modest investment to get the plants established and the political will to make it happen. Because some of the most desirable species take several years to reach maturity, results will not be instantaneous. Once established, however, the native flora will require relatively little maintenance. In just a few years, Kansas residents and visitors will begin to enjoy the full range of distinctive grasses and wildflowers that have historically made Kansas one of the most beautiful prairie states.

A Brief History of the Kansas Roadsides

Ranking near the top of Kansas' natural resources is its triumvirate of grassland ecosystems: the tall-grass, mixed-grass, and short-grass prairies that once stretched across the state from border to border. These grasslands drew settlers throughout the latter half of the 19th century. The "horse high" waves of big bluestem, golden meadows of sunflowers, buffalo grass, and literally hundreds of species of other native grasses and forbs put their distinctive stamp upon the landscape of the proud new state. As the settlers cleared their land, plowed the topsoil, and planted wheat, corn, oats, and other crops, the state's prairies provided an extraordinary foundation for agricultural development.

Agriculture was the primary engine of the economy over the last century, but it also changed the Kansas landscape. As the years passed, the portion of our state that has never been cultivated shrank to a small fraction of the original prairie. The happy exception is found in the Flint Hills, where shallow topsoil over layers of limestone discouraged cultivation but offered a perennial supply of native grasses and forbs to support the cattle industry. Exceptional remnants of original prairie can still be found in other parts of the state, but their number dwindles with each passing year. Today the casual resident or visitor traveling on Kansas highways seldom gets a glimpse of the splendor of the indigenous Kansas flora.

A thoughtful roadside management program might well have mitigated the assault on our native ecosystems. But *Roadsides: The Front Yard of the Nation*, written by Jesse M. Bennett in 1936, influenced roadside managers to plant turf

grasses along highways despite the intensive labor required to maintain a well-manicured lawn. By the 1980s and 1990s, the spiraling cost of labor and herbicides, coupled with increasing interest in native plants, was leading to widespread dissatisfaction with these “front yard” roadsides.

The Scenic Byways program in the 1990s aimed to make highway travel more fun. The program identifies interesting travel destinations and its Kansas segments often feature our prairie heritage. Its routes cry out for the preservation and restoration of native plants along the roadsides. It should also be noted that Scenic Byways has developed some excellent materials designed to introduce children to native plants and indigenous fauna of Kansas.

The federal government was also moving toward native vegetation. In 1987 it required that a portion of the landscaping budget for any new federal highway be spent establishing native roadside plants. Within a few years, the Federal Highway Administration (FHA) had become concerned with the control of invasive species on roadsides, and its guidelines indicated a preference for the establishment of native plants to the maximum extent possible.

Increasingly, the concept of Integrated Roadside Vegetation Management (IRVM) began to be employed in state and federal programs. According to William Quarles:

There is now a movement to re-vegetate U. S. highways with native plants, thus recovering at least some of what has been lost. Roadside managers are seeing the advantages of native plants as part of integrated vegetation management (IRVM) programs. These programs combine mowing, mulching, controlled burns, competitive plantings, and selective use of herbicides to manage invasive weeds. At many sites, native plants can provide a practical solution to weed management, leading to a reduction in pesticide applications and to less expense in labor (Quarles, 2003).

The most recent effort to revitalize Kansas roadsides came in the summer of 2001 when Ron Klataske, Executive Director of Audubon of Kansas and Fred Markham, Landscape Architect for the Kansas Department of Transportation

(KDOT) brought together a number of parties, including the Kansas Department of Wildlife and Parks (KDWP) and the Natural Resources Conservation Service (NRCS), to develop a responsive roadside management program. A committee of stakeholder organizations recommended changes in the timing of mowing to benefit native grasses, wildflowers, butterflies, grassland birds, water quality and aesthetic values" (*Audubon of Kansas*, 2007). The reduced mowing program that was negotiated, although far less comprehensive than an earlier roadside program in Iowa, was a major step forward. By 2003, Klataske and Markham had designated ten demonstration sites for IRVM restoration and obtained funding from "Prairie Passage," a federal program featuring prairie remnants from Minnesota to Texas, for the development of several parts of that route in Kansas.

In recounting the collaboration between KDOT and Audubon, Markham said:

Prior to the opportunities presented by the prairie passage, the Kansas Department of Transportation did not have goals to implement IRVM programs and did not have anyone who was promoting roadside management. One of our goals was to preserve the native plants we have on our roadside rather than planting large areas to a mix of grasses in wildflowers. Past attempts to establish diversified seed mixes were "mowed gone," because our crews did not understand or had not "bought into" the concept of correct mowing procedures during plant establishment and beyond. The prairie passage, along with the need to save money on mowing and redirect the efforts of our maintenance crews to other responsibilities, has acted as an agent to change (Markham, 2003).

Unfortunately, KDOT's recent implementation of this "limited mowing" proposal has been uneven, at best. Drives around the state reveal many areas where roadside mowing has not changed from earlier practice, including much of I-70, the main east-west corridor. On a more positive note, KDOT has recently developed native seed mixes tailored to different parts of the state. The recent appointment of a statewide task force on roadside aesthetics to explore uses of native plants on Kansas roads signals the State's continued recognition of the legitimate place of native plants on highways.

Benefits of Native Vegetation on Roadsides

The opportunity to present residents and visitors with a more attractive and authentic view of our state by fostering native plant roadsides might be reason enough for making the investment. There are, however, many other benefits that will derive from the conversion to native vegetation, including the following:

1. **Erosion control.** The deep root structure of native grasses and forbs significantly reduces the erosion of soils.
2. **Drought resistant vegetation.** Tall-grass prairie plants found in the eastern third of Kansas are naturally drought resistant, requiring no supplemental watering. Mixed-grass and short-grass varieties found in the western part of the state are even hardier in drought conditions.
3. **Control of invasive species.** During establishment, slower growing native plants may struggle to out-compete annual weeds. Once established, a good stand of native grass and forbs is the first line of defense against invasive species.
4. **Better drainage.** Warm-season grasses and forbs aid drainage from roadways and shoulders by absorbing more runoff than cool-season grasses.
5. **Reduced snowdrift.** Tall native grasses, such as big bluestem, switch-grass, and Indian grass can significantly reduce snow drifting onto highways, improving safety and reducing maintenance costs.
6. **Increased bird habitat.** As our prairie ecosystems have diminished, many species of Kansas birds have declined due to the reduction of habitat. Native plant roadsides will provide cover, seeds, and insect populations to help reverse that trend. Grass nesting birds, such as pheasant, bobwhite quail, and upland plover will be especially advantaged.

7. **Small wildlife habitat.** Many small mammals, reptiles, amphibians, and butterflies have also suffered from diminished habitat. Red fox, western chorus frogs, and monarch butterflies will once again be sighted and heard more frequently on cross-country trips. Increasing the struggling wild bee populations would, in turn, benefit a number of our native forbs.
8. **Native plant seed production.** Native grasses and forbs along roadsides are perennials that will bloom year after year with little or no maintenance. Many will also produce valuable seed that can be used to establish prairie in other nearby sites, contributing to more overall biodiversity.
9. **Reduction of carbon emissions.** A reduced mowing program will significantly decrease the amount of carbon released into the atmosphere, even while reducing the consumption of non-renewable fuels.
10. **Carbon sequestration and storage.** The deep, elaborate root structures of native prairie plants sequester carbon, store it safely, and thereby reduce greenhouse gases. While the magnitude of this deterrent to global warming is still being determined, it is certain that native plants sequester and store far more carbon than non-native turf grasses traditionally employed on roadsides.
11. **Cost-effectiveness.** Less mowing will substantially lower the cost of fuel and labor for roadside maintenance. Once established, native grasses and forbs seldom need to be mowed, watered, sprayed, or fertilized.

Two Successful Roadside Management Programs

The program of roadside management that has received the most national attention is the Texas initiative stimulated by Lady Bird Johnson's campaign for highway beautification. In 1970, she challenged Texas to turn its 73,000 miles of

highway into “the biggest garden in the world”. The state now estimates that their integrated roadside management program saves \$8 million a year.

The state of Iowa recognized early on the value of preserving its prairie heritage by converting roadsides to native vegetation. In 1992, Iowa instituted one of the first Integrated Roadside Vegetation Management programs. The Iowa legislature had paved the way by setting up the Living Roadway Trust Fund in 1988 and funding it in 1989. By 1998, 31 of Iowa’s 98 counties had a fully implemented IRVM program; 35 had a partially implemented program (Smith, 1998). At present, the Iowa roadside management program is a model of inter-agency cooperation and effectiveness.

Programs of this sort that will benefit generations of residents over many years do not happen without the sustained effort of key groups and individuals. Both of these efforts required the advocacy, dedication, and pioneering spirit of local ecologists, engineers, and government officials. Neither was accomplished overnight. But these two efforts, as well as several others that they have spawned throughout mid-America, have resulted in an appreciably improved quality of life for their state’s residents and an incentive for tourists to travel within their borders.

Kansas Roadside Management: The KNPS Position

It is not necessary to reinvent the wheel to restore Kansas roadsides. The basic blueprint already exists in the “Integrated Roadside Vegetation Management Plan” recommended by the National Highway Administration and adopted by several states. This plan places special emphasis upon use of appropriate native plants on roadsides while ensuring that roadsides are safe and attractive.

A Kansas IRVM program supported by KNPS would include:

A Restoration Program for Kansas Roadsides (2008-2015).

1. Survey Kansas roadsides to determine what steps will be needed to restore each area to attractive stands of regionally appropriate native grasses and forbs. Roadsides should be classified as: (1) areas that are already native and diverse and only need to be maintained appropriately, (2) areas that are completely or mostly non-native and need to be converted to native, (3) new construction areas that require seeding, and (4) showcase areas (such as rest areas and cloverleafs) that should be planted in especially showy displays.
2. Prepare a plan for the restoration of roadsides, complete with priorities, restoration schedule, and a budget.
3. Restore, as scheduled, each non-native, newly constructed, and showcase site for several years until native grasses and forbs are established on that site.

A Maintenance Policy for Immediate Implementation.

4. Mow, as needed, a 15-foot “clear zone” on either side of the roadway to optimize safety. This 6-inch cut should be expanded at intersections and inside curves to provide clear lines of sight.
5. Mow or burn the remaining right-of-way only when necessary to control undesired woody invaders, and no more often than every third year. This seldom disturbed “prairie zone” should extend from the clear zone to the fence row.
6. Mow or burn the “prairie zone” before April 15 (to protect nesting birds) or after November 1 (following the fall display and to encourage seed propagation). Avoid, where possible, mowing or burning the “prairie zone” on both sides of a highway in the same year.

7. Treat noxious and invasive plants with spot applications of an appropriate herbicide when necessary. Never broadcast herbicides that indiscriminately kill all forbs.
8. Do not seed any right-of-way area with exotic, non-native plants. The KNPS Native Seed Program can recommend sources of native seed collected from local ecotypes and offers collecting guidelines that help ensure healthy native plant populations.
9. Never fertilize established roadside vegetation.

Making It Happen

Before a successful roadside development program can be established in Kansas, several things must happen. First, a strong coalition of groups working for the goals described above must be forged. Past leadership by leaders of Audubon of Kansas and KDOT has made significant progress, but a broader, more durable, and perhaps more vocal coalition is needed.

Some members of that coalition, including the Kansas Native Plant Society, have the resources to consult about site needs, seed mixes, and the techniques of prairie restoration, and to help monitor the implementation of the program. Initiatives to educate the public about the advantages of native plants on roadsides are also needed to ensure acceptance of desirable changes in our state's roadsides.

Groups will also be needed to make the case to public officials and lawmakers. Leaders drawn from the Natural Resources Conservation Service (NRCS) and Kansas Department of Wildlife and Parks (KDWP) may be helpful in working with KDOT or in providing influential testimony before legislative committees.

Finally, although long-term cost savings can be expected from the transition to native vegetation on roadsides, the early years of projects on most road segments will require a somewhat larger portion of KDOT's budget to be allocated to roadside maintenance. Possible ways of generating this increased funding include legislative

appropriations, grants from government programs, grants from private foundations, or solicitation of contributions from business and other private donors. Some elements of the coalition will need to consider which funding approaches are most promising and help generate that revenue. The Iowa model of a living trust dedicated to Iowa's IRVM program might serve Kansas well.

The Kansas Native Plant Society believes that designing, funding, implementing, and gaining public acceptance of a revitalized prairie roadside program, although challenging, is not only feasible but also necessary. If successful, the investment will lead to an even more beautiful state and enrich the lives of Kansans for generations to come.

References:

Bennett, J. M. 1936. *Roadsides: The front yard of the nation*. Boston, Mass: The Stratford Co.

Jensen, K. (1999). Integrating ecology with practical roadside maintenance. *Kansas University Transportation Center Newsletter* Spring. Retrieved from *Road Management and Engineering*, November, 2000 (Reprint of Article).
<http://www.usroads.com/journals/rmej/0011/rm001102.htm>

Klataske, R. September (2007). *Audubon of Kansas*. Opportunities to celebrate prairie wildflowers & grasses along Kansas roadsides largely lost in Kansas.
<http://archive.constantcontact.com/fs029/1101711496562/archive/1101832580982.html>

KDOT and Audubon Society hatch partnership to promote prairie vegetation and cut mowing costs. (2001). *KUTC Newsletter, Summer*, 10-13.

Markham, F. (2003). A catalyst for change. *Greener Roadsides* (summer). Retrieved from
https://www.environment.fhwa.dot.gov/ecosystems/greenerroadsides/gr_summer03p3.asp

Quarles, W. (2003). Native plants and integrated roadside vegetation management. *IPM Practitioner* 25 3 / 4, 1-8. Retrieved from
<http://www.birc.org/MarApril2003.pdf>

Smith, D.D. (1998). Iowa prairie: original extent and loss, preservation and recovery attempts. *J. Iowa Acad. Sci.* 105(3): 94-108.

Wildflowers make Kansas roadsides spectacular in mid-september (2008 September 16). *Audubon of Kansas*. Retrieved from <http://www.audubonofkansas.org/2008/09/16/wildflowers-make-kansas-roadsides-spectacular-in-mid-september/>

2016-2017 Update by Michael Kaye:

Conniff, R. (2013). Green highways: new strategies to manage roadsides as habitat
Retrieved from:

http://e360.yale.edu/features/green_highways_new_strategies_to_manage_roadsides_as_habitat

Roadside Habitat Management. (2017) *Audubon of Kansas*. Retrieved from:

<http://www.audubonofkansas.org/conservation/roadside-habitat-management/>