

Establishing Native Pollinator Habitat Organically: *Tips from our Experience at Kerr Center*

– DAVID REDHAGE

When most people think of pollinators, they think of the honey bee. The honey bee (*Apis mellifera*) has been domesticated since ancient times – and farmers have long depended on it to pollinate a variety of fruit and vegetable crops.

But other bees-- native, undomesticated (wild) -- are important pollinators, too.

In recent years the honey bee has been under stress from diseases, parasites and various herbicides and pesticides. Colony health and numbers have declined drastically.



As a result, native pollinators are being looked at to help fill the gap. The honey bee is not native to North America. Numerous other pollinators are native-- including thousands of species of insects such as solitary and bumble bees, wasps, flies, butterflies, moths, and beetles as well as bats and hummingbirds. These native pollinators are attracted to native plants, but they also visit crops, gardens, and landscape plants, providing valuable pollination services.

Unfortunately, like the honey bee, our native pollinators are also under pressure, due to habitat changes.

The Kerr Center has been working on a project to assess re-establishing native pollinator plants using organic techniques. Organic techniques have the potential to reduce damage to pollinators during the establishment phase by not using various herbicides and pesticides.

We have faced many challenges and learned many lessons. Following is a summary of our work, and recommendations based on our experience.

SITE SELECTION

One key factor in the success of reestablishing pollinator habitat is to assess the site for planting. Pay particular attention to the existing vegetation. Existing plants can prevent a successful wildflower stand.

The Kerr Center has had the most problems with bermudagrass (*Cynodon dactylon*), crabgrass (*Digitaria sanguinalis*), Johnsongrass (*Sorghum halepense*), and Serecia Lespedeza (*Lespedeza cuneata*). None of the four species listed are native to North America. All tolerate drought conditions, and respond rapidly to favorable growing conditions.

Our experience in 2000 illustrates this. The Kerr Center established a stand of wildflowers in near the main office using non-organic techniques in an area dominated by bermudagrass. First we tilled a

Kerr Center founder and trustee Kay Kerr Adair planting wildflowers in 2000.



lawn area (bermudagrass) and sowed a mixture of perennial and annual wildflowers.

During the spring of year two the stand was sprayed with a grass herbicide to control the bermudagrass. No additional sprays were used from that point on. The stand persisted for three years and dramatically declined after that because of encroachment by bermudagrass and weeds.

Currently the only flowers

coming back each year are Blanketflower (*Gaillardia pulchella*), and Mexican hat (*Ratibida columnifera*). Some already existing native flowers persist including wild bergamot (*Monarda fistulosa*), basketflower (*Centaurea americana*) and passionflower (*Passiflora incarnata*).

We have also noted Common coreopsis (*Coreopsis grandiflora*) and Golden coreopsis (*Coreopsis tinctoria* Nutt.) can compete with bermudagrass on low fertility sites within pastures.



Mexican hat (*Ratibida columnifera*)



Yellow Wild Indigo (*Baptisia sphaerocarpa*) flourishes in rotationally grazed pastures on the Kerr Ranch. It attracts bumble bees in May.

TECHNIQUES FOR ESTABLISHING NATIVE WILDFLOWERS

Based on work done at the Kerr Center Certified Organic Horticulture Farm and the Kerr Center Ranch, the following are recommendations for establishing a native wildflower planting using organic techniques.

One approach is to use cover cropping and tillage to suppress competing vegetation on the site chosen for wildflower plot

Cover cropping and tillage are used to control bermudagrass on the six-acre Kerr Center Horticulture Farm, which was certified organic in 2011. The Kerr Center publication entitled *Rotations, Cover Crops & Green Fallow on the Cannon Horticulture Project* outlines our current cover crop program.

We have found that summer cover crops are the cornerstone to suppressing and removing bermudagrass, crabgrass and Johnsongrass.

We are working with additional cover crops which may prove useful. One advantage we have at the Horticulture Farm is irrigation, which can be used to insure establishment of a good cover crops in dry years. This may not be available in some areas where wildflower establishment is desired.

The cover crop technique suppresses the problem grasses but requires periodic perimeter tillage to maintain grass control, particularly bermudagrass. This is not conducive to establishing a low maintenance, perennial wildflower stand. As an example, Maximilian's sunflower requires several years of undisturbed growth to become fully established.

This technique is best reserved for plantings of annual wildflowers and on sites with limited erosion potential.



In our office landscape, we have planted Purple prairie clover (*Petalostemon purpureus*). Both native and honey bees are attracted to this perennial prairie clover.

An alternative approach is to use transitional organic methods to control competing vegetation

Existing vegetation would be controlled using grass/broad-leaf herbicides. Once this is done, establish the wildflowers and from that point on, use only organic techniques.

We used this method on the Kerr Center office landscape renovation, beginning in 2013. It was a good site for this technique since the beds are surrounded by permanent pavement and sidewalks, which prevent the encroachment of invasive grasses.

Realize this method may not work long-term if there is a strong stand of competing grasses in the surrounding landscape. Bermudagrass, crabgrass and Johnsongrass will eventually encroach.

Based on limited experience here at the Kerr Center, the following techniques hold the most promise for long-term organic pollinator habitat establishment.



David Redhage with Giant Coneflower plant in Kerr Center greenhouse.

Prepare the area to be planted and use potted perennial wildflowers.

While more expensive, this will establish a base of plants which have the potential to compete with the existing grasses. Select perennials which can compete well with grasses (Maximilian's sunflower, compass plant, rattlesnake master).

Use native flowering shrubs and trees when working in a landscape with bermudagrass (recommended by the Xerces Society).

Finding sources of native shrubs and vines can be difficult and expensive. It may require seed collection and contracting for growing shrubs to be used in a large scale pollinator habitat development project or in smaller projects, growing the plants yourself.

As part of the Kerr Center landscape renovation, we have planted some native honeysuckle along a fence directly in bermudagrass sod.

Establish a stand of pure native prairie grasses first.

Once the stand has been well established for 2-3 years, sow in wildflower seeds. Do not include too much switchgrass because it tends to dominate stands. In native prairies, forbs and grasses grow together, so they should work in the same area. The native grasses can



Switch grass in the Kerr office landscape. It competes well with bermudagrass.

compete with bermudagrass, crabgrass and Johnsongrass.

The one weakness to this method is *Sericea lespedeza*. *Sericea* is tolerant of periodic burnings and can even increase. If it is found in the stand area, it has the potential to increase in the native grass stand, competing with the wildflowers as well as the established grasses.

The Kerr Center attempted two versions of this technique, the first in 2000 on a site near the current Horticulture Farm. The site was tilled and a no-till drill was used to plant the native grasses. Grasses were established but there was *Sericea* on the site. Goats were introduced to help control the *Sericea*. The goats were removed two years ago, but the *Sericea* has come back strong.



Rattlesnake master (*Eryngium yuccifolium*) attracts large numbers of native bees.



Both native and honey bees are attracted to Maximilian sunflower (*Helianthus maximiliani*). Birds eat the seeds, and the plant is palatable to livestock.



American bumble bee, *Bombus pensylvanicus*, is becoming rare.

The second attempt using this method is on the recently acquired native prairie site. While not a situation of reestablishing a stand, it is a situation of renewing a native prairie.

The native grasses and some native wildflowers already exist on the site, so no grasses were established. It was burned in the spring of 2013 and 2014, and wildflower seeds of those which were not identified in the prairie were hand sown to increase stand diversity.

Seeds used include yellow puff, rattlesnake master, compass plant, Maximilian sunflower and Illinois bundleflower.



Compass plant (*Silphium laciniatum*) attracts bumble bees and other native bees. Its tap root can reach down 15 feet.

Acknowledgements

Editor: Maura McDermott

Photography: David Redhage, Maura McDermott

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Design and layout by Argus DesignWorks.

Special thanks to Jennifer Hopwood and Eric Mader of the Xerces Society for Invertebrate Conservation for technical assistance and review.

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David Redhage heads the center's Native Pollinator Enhancement Project (NPEP). He has planned and coordinated efforts to conserve native plants and habitat for the benefit of native pollinators and honey bees, and oversees management of a variety of habitats, from pasture and meadows to office landscape. He has photo-documented habitat on the Kerr Center's 4000 acres and contributed to the center's educational materials on pollinators and native plants.

In addition he has coordinated and presented information at educational events on pollinators.

David has also been instrumental in setting up various riparian area management demonstrations and forestry projects on the Kerr Center Ranch. He has a long time interest in natural resource management.

David came to the Kerr Center in 1993 after receiving an M.S. in Agricultural Economics from the University of Missouri-Columbia.

David is also the program manager for the USDA's Sustainable Agriculture Research and Education Program Professional Development Program, Southern Region (SSARE PDP).



MAURA MCDERMOTT

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Maura McDermott has been Communications Director for the Kerr Center since 1998.

She is assisting David Redhage in the photo-documentation of native plants and pollinators on the Kerr Ranch, and is responsible for the center's pollinator web pages.

Before joining the center, Maura was a contributing editor and award-winning writer for *Oklahoma Today* magazine. Her specialty was gardening/agriculture and the natural history of the state. She received two awards from the International Regional Magazine Association for her natural history articles.

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In 2011 the Kerr Center, in partnership with the Xerces Society, received a Conservation Innovation Grant from the USDA's Natural Resources Conservation Service (NRCS) to provide education to agriculture and conservation educators and the public about the importance of native pollinators and how to preserve and establish habitat for them. Projects include a labelled landscape, horticulture and range plantings, workshops, publications, presentations and web pages. To learn more visit www.kerrcenter.com.



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This material is based upon work supported by the Natural Resources Conservation Service, U.S. Department of Agriculture, under number 69-7335-1-21.



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