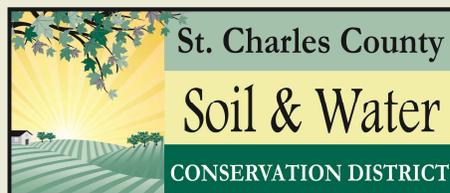


# THE REPORTER

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## Missouri Pollinators: It's not all about the Honey Bee

Bees, birds, bats, and butterflies – They beautiful, intriguing creatures; subjects of story books and scientific studies; varied and complex in body and behavior; mysterious in their habits; threatened in their diminishing habitats...and most importantly, they are pollinators vital to our survival. Plants require pollinators for effective reproduction, and we need plants! According to the United States Department of Agriculture (USDA), approximately one of every three bites of food consumed in the United States exists because of animal pollinators, including bees, butterflies and moths, birds, bats, and beetles. Three-quarters of the world's flowering plants and 35% of the world's food crop depend on animal pollinators to reproduce.

Most of the credit for crop pollination goes to the star of recent headlines, the European honey bee

(Missouri's state insect), brought to North America with early European settlers in the 1600s. Wild populations have been in Missouri for at least 200 years; but there are no native North American honey bees.

Two things have brought the honey bee to national attention over the past several years – their undeniable efficacy for crop production, and their astonishingly rapid decline. The number of honey bee colonies managed for agriculture in the U.S. dropped from 6 million in 1947, to just 2.5 million today (USDA). Beekeepers are reporting losses in the hives of about 33% each year since 2006. Because of this, managed colonies are often boxed and trucked over long distances to U.S. fruit and nut orchards in places like California and Maine.

There are many theories, and some proven elements, in the discussion of the



causes of honey bee decline, including the over-use of pesticides, the reduction of pollinator forage and habitat; and a condition called Colony Collapse Disorder (CCD), for which researchers have not yet been able to pinpoint a specific cause. The

## 2015 Declared International Year of Soils

As agricultural producers, most of the Reporter's readers are well-versed in the importance of healthy soils: the foundation of agriculture, and an element necessary for the survival of all life on Earth.

But often the general public barely gives a second thought to the "brown bullion" - as long as the grocery shelves are stocked. Bringing public attention to the importance of soils is behind the decision of the 68th session of the United Nations General Assembly to designate 2015 as the International Year of Soils. The Food and Agriculture Organization of the UN hopes to increase understanding of the importance of soil for food security and proper ecosystem function.

According to the Natural Resources Conservation Service, "Soil health is critical to our future in the face

of mounting challenges such as growing global population, climate change, and extreme weather events. Healthy soil is essential as global demands rise for food, fuel, and fiber. Soils play a critical role in food security, hunger eradication, climate change adaptation, poverty reduction and sustainable development."

Each month of the year will have a theme, with January's theme being "Soils Sustain Life". Things to think about this month might include:

According to current demographic predictions, the world's population will surpass nine billion by the year 2050. Farmers will need to produce as much food and fiber in the next 40 years as they have in the last 500.

Private landowners, ag producers, and the general public will enhance understanding by first remembering that

soil is a biological system. Without proper care, soil can "die", or become virtually useless for growing plants. Important steps to take to preserve and improve soil health on your land include:

- Improve soil by disturbing it less
- Grow a diversity of crops
- Maintain living roots in the soil
- Keep the soil covered

These steps promote the health of living organisms in the soil and increase productivity. The soil food web cycle is responsible for cycling nutrients and releasing organic glues that increase soil aggregate stability, which is critical for water infiltration and gas exchange, both critical components of crop production.

fact remains that the honey bee has experienced a significant decline and agencies, such as the USDA, are on a mission to reverse that trend. In June of 2014, the USDA provided \$8 million in the Conservation Reserve Program (CRP) for five northern states establishing new habitats for honey bees. More than half of the commercially managed honey bees are in those five states during the summer. Earlier in the year, \$3 million was put into the NRCS Environmental Quality Incentive Program (EQIP) in midwest states to support honey bee populations. Large urban areas are also taking action by lifting bans on urban beekeeping. It has become trendy for residents of New York City, Seattle, San Francisco and Chicago to keep backyard honeybees, providing safe refuge for the insects and helping to cross pollinate local flora.

### Don't Ignore the Natives

Protecting the honey bee is an important element in protecting the world's food supply; but we cannot ignore the other valuable crop pollinators – the **over 3,500 species of native bees**, of which 450 species

are present in Missouri, with the most efficient native crop pollinator species among them being the bumble bee.

Bumblebees are social bees, living in colonies with a single queen and approximately 50 individuals, usually in tunnels in the ground. The female workers will visit the same patches of flowering plants over and over, as long as nectar and pollen are present. The hairy body of the bumblebee is the perfect “pollen duster”, picking up the golden specks on the hairs which are then groomed into pollen sacs. Bumblebees also use a technique called buzz pollination which is a powerful way to release pollen in the flowers of tomatoes and potatoes – both of which have pollen trapped inside chambers with tiny openings. The high-intensity buzzing of the flight muscles of the bumblebee shake out the pollen grains like salt from a shaker. Honey bees cannot do this!

Besides tomatoes and potatoes, bumblebees are pollinators for cashews, Brazil nuts, Chili peppers, green peppers, red peppers, bell peppers, watermelon, tangerines, cantaloupe and other melons, cucumber, zucchini, persimmon, strawberry, cotton, sunflower, flax, apple, apricot, cherry, plum, eggplant, almonds, peach, pear, raspberry, blackberry, blueberry, cranberry, most legumes, and all the clovers..

Claire Kremen, a conservation biologist at the University of California, Berkeley, conducted studies in the efficiency of honeybees and native bees in pollinating watermelon. She found that some of the natives, including two species of bumblebee, did a far better job of delivering pollen than the honeybees.

Another group of native social bees are the sweat bees, with around 70 species living in Missouri. These tiny metallic greenish or bluish insects nest in burrows in the soil, and have been found to be good pollinators.

Missouri is also home to leafcutter bees, mason bees, and carpenter bees; as well as other animal pollinators like bats and birds; migratory hummingbirds and butterflies; and hundreds of different types of flies. An interesting note is that flies pollinate more than 100 agricultural crops such as onions, strawberries, carrots, apples, lettuce, tomatoes and buckwheat. It has been estimated that less than one-tenth of the fly species on the planet have been named or studied. (Smithsonian Institute)

Native bees are valuable pollinators that effectively and efficiently pollinated all North American plants for decades before the honey bee was introduced. **Not a single native plant in North or South America actually needs a honeybee to survive.** As we continue to see honeybee populations decline, it becomes important to protect the habitat and foraging opportunities of native bees in order to provide insurance for continued sufficient crop yields.

A wealth of flowers is needed to support native bee communities; and undisturbed ground surfaces, and grassy fields are needed for nesting. Some things that landowners and farmers can do to increase the presence of native bees are:

- Plant native wildflowers and herbs. Well-adapted native plants will thrive with minimal attention and provide the best foraging opportunities for native bees. Be sure to use plants that will flower throughout the growing season, including plants such as goldenrod and aster for fall blooms.

- Utilize hedgerows, riparian corridors, road accesses and other areas on the farm for flowering plants. These areas are less likely to be sprayed with pesticides and will become a safe place for native bees.

- Alternate crops when possible.

Traditional farming leaves many fields in a monoculture. Rotating crops has benefits to soil and pollinators.

- Leave areas of oak woodland intact whenever possible. Native bees find significant forage opportunities on a variety of trees including willow, redbud, maples, cherries, sumac, basswood, and honey locust; and shrubs such as serviceberry, buckbrush, raspberry, elderberry, and more.

- Minimize herbicides. Spot treat weeds in problem areas where you are establishing wildflowers, and use the least amount and most targeted chemicals for crops. Avoid spraying field borders, filter strips, hedgerows and windbreaks.

- Minimize pesticides. Use the most targeted product for the specific problems found in agricultural fields. Consult with NRCS about effective agricultural pest management. Control drift from applications so that areas where native plants are being established receive no pesticide.

- Leave downed trees near pollinator plantings, and/or drill holes in wood blocks and place them near plantings or in crop fields to attract the wood tunneling bee species.

- Leave some grassy areas undisturbed for ground burrowing bees.

- Minimize tillage to disturb soil less. Some of the best crop pollinators live underground.

- Use cover crops like rye and clover

All homeowners – urban and rural – can do their part to add to the diversity of flowering plant forage for native bees. A rich, diverse plant community is required to provide rich sources of pollen and nectar. Our reward for encouraging an abundant and diverse community of native bees is fertile and productive landscapes for generations to come.

Contact the Natural Resources Conservation Service or the Missouri Department of Conservation for information on programs to assist with establishing pollinator forage and habitat on your farm.

SWCD is an equal opportunity employer and provid-

# District Hosts 70th Annual Meeting of Cooperators

Nearly 100 farmers, landowners, partners and friends gathered on the evening of November 20th for the 70th Annual Meeting of Soil & Water Conservation District Cooperators in St. Charles County. The event is held to thank agricultural producers for their work producing the food and fiber of our nation, and for paying attention to the natural resource conservation needs of their land.

Many partners participate in assisting landowners; and several agency partner representatives joined with the SWCD in this evening of thanksgiving. The Natural Resources Conservation Service, the Farm Service Agency, University of Missouri Extension and the Missouri Department of Conservation were represented.

This year's guest speaker was Robin Machiran, a Cultural Resource Specialist with the Archeological Research Center of St. Louis. Her discussion included a comparison of an early 1800s settlement site and an early 1900s site, both from the greater St. Louis area.

A Thanksgiving style buffet dinner was once again catered by Marsha Perotti of Wentzville; and enhanced by all the delicious side dishes and desserts provided by our farm families. Father Gary Vollmer of St. Theodore Parish in Flint Hill provided the invocation.

Elections were held for two SWCD Supervisory positions. Mark Scott and Alan Poggemueller have retired from service on the board; while Sam Harris and Adam Bonderer were elected to those vacated positions. Sam is from the Wentzville area and raises both chicken and cattle; and Adam is a fifth generation grain farmer and agricultural retailer (Saale Farm and Grain) near West Alton.

Each year the District recognizes an agricultural producer who is applying conservation practices on the land. The Cooperator of the Year went to brothers: Donald and Dennis Machens. The Machens were recognized for 100% no-till and conversion of croppeds acres to cover crops. These practices reduce soil erosion, and pro-

tect water quality, enhance the productivity of the soil, and improve habitat for pollinators and other animals.

A highlight of the event is always the awarding of door prizes. This year our generous donors provided more than 40 door prizes. We would like to thank the following donors:



Brothers Donald (left) and Dennis Machens received the Cooperator of the Year Awards. Don Johnson (right), SWCD Board President, presented the awards



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Wm. Nobbe & Co., Inc.  
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*Thank You*

## Farm Facts - Just for Fun

- Pork is the most widely eaten meat in the world.
- Elevators in the Statue of Liberty use a soybean-based hydraulic fluid.
- The longest recorded flight of a chicken is 13 seconds.
- Today's American farmer feeds about 155 people worldwide. In 1960, that number was 25.8.
- Soybeans are an important ingredient for the production of crayons. In fact, one acre of soybeans can produce 82,368 crayons.
- The heaviest turkey ever raised weighed 86 pounds, about the size of an average third-grader.
- There are 350 squirts in a gallon of milk.