
PHEASANTS FOREVER
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The Birds and the Bees

What do pheasants have to do with that apple you had for a mid-morning snack or that handful of almonds you ate during lunch while hunting last fall? They're more connected than you might think. That apple was dependent on a pollinating insect, possibly a honeybee. Before and after that honeybee pollinated your apple or almonds, they probably spent several months in or near prairies or grasslands in the Upper Midwest and northern Great Plains. That's the same habitat where many of this country's pheasants are hatched and raised. Even if you don't live in the northern plains, a local beekeeper may have their hives near your favorite hunting spot.

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Bees and monarch butterflies, are critical to human food supplies. A common pesticide, neonic, is synonymous with these insects' demise and rarely does much for farmer yields, according to a report released by the Center for Food Safety March 24, 2014. Almost every corn and soybean seed planted in the Midwest is coated with the neurotoxin. Many backyard products include neonics and many nursery plants are pre-coated with the chemical. (See next story on neonics.)

Honeybees spend part of their lives pollinating orchards and fields, most famously the almond groves of California. Those orchards and crop fields are typically monocultures, that is, only one type of plant. When the almonds bloom, turning entire hillsides pink, the bees have an unlimited amount of pollen and nectar. However, the almonds only bloom for a few days each year. After that, there are few to no other plants blooming to provide nectar and pollen. The bees are then moved to other parts of the country to pollinate other crops such as apples, pumpkins, cranberries, etc.

To keep the bees and their hives alive during the rest of the year, many beekeepers truck them to the northern prairies where there are large blocks of grassland habitat. Here, bees can forage over the landscape, gathering pollen and nectar from dozens of wildflowers. When each hive has 20,000 or more bees and there are hundreds of thousands of hives, it takes a lot of acres and a lot of flowers to keep them all fed.

On the prairie, there's always something in bloom, from the pasqueflower poking up through March snows to heath asters that flower until the autumn's first hard frost. It's the diversity and abundance of wildflowers in these large grassland landscapes that attract the bees and beekeepers.

Bees and pheasants are both dependent on the same grasslands. North Dakota, South Dakota and western Minnesota always rank toward the top year after year for pheasant harvest. These states are also where more than 50 percent of the country's commercial bee hives spend their summer. North Dakota is the top honey producer in the country. In South Dakota, the state in-

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Researchers have found over 100 different pesticides in bee hives.

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Even predatory dragonflies get into the pollination game.

sect is the honeybee and the state bird is the pheasant. Coincidence? (Pheasant chicks will die without insects to eat.)

Pollinators provide 20 to 30 billion dollars worth of services to the agricultural community. Practically everything we buy in the produce aisle at the grocery store is directly dependent on pollinators. Much of the food from the rest of the grocery store is indirectly dependent on pollinators. Without honeybees, many of the shelves would be empty, and the food that was left would cost a lot more.

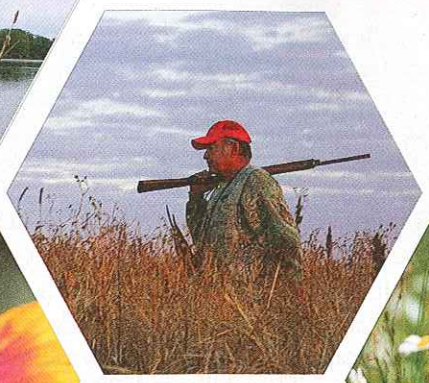
Honeybees face a host of problems, all lumped under the term Colony Collapse Disorder. In the spring of 2013, some beekeepers were losing 50-60 percent or more of their hives. There are several culprits that can be lumped into the Three Ps: pesticides (see adjoining story on neonics), parasites/pathogens and poor nutrition.

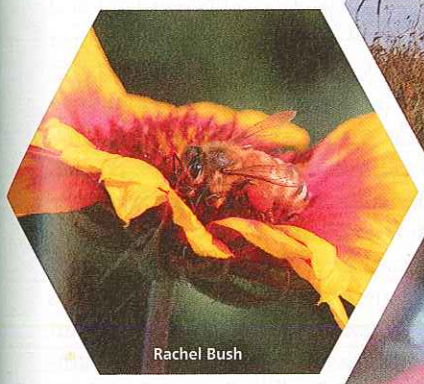
Poor nutrition is the topic most relevant to pheasant habitat. People with poor diets are often more susceptible to colds and flu than those who eat a healthy balanced diet. Moms and grandmas have been telling children this for generations. Eat your vegetables: corn, peas, beans, carrots, broccoli, etc. Maybe queen bees tell their offspring the same thing. Get lots of pollen and nectar from a range of sources: mints, asters, coneflowers, beebalm, gentians, clovers. Dr. Marla Spivak from the University of Minnesota and one of the countries leading bee experts said in an interview with National Public Radio that honeybees "have to get all their amino acids from different flowers… And if their nutrition is bad, they are more susceptible to the effects of pesticides,…diseases and parasites." Mom's dietary advice works for bees too!

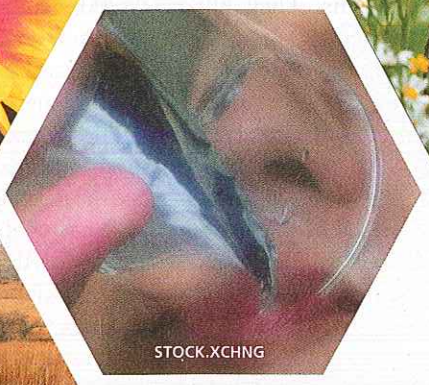
A strong healthy bee may be more resistant to or better able to cope with diseases and pesticides. However, a bee with poor nutrition will be much more susceptible to both.

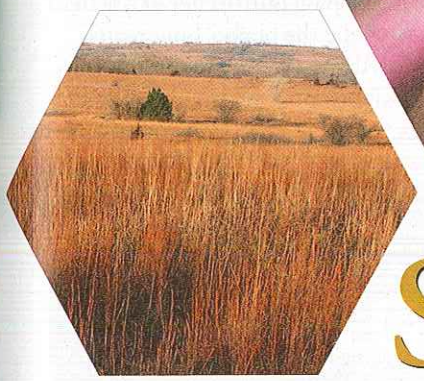
While the focus should be on habitat, we cannot ignore the continuing persistent use of ever more powerful pesticides, insecticides, herbicides, fungicides and any other type of – cides in the agricultural landscape. Researchers have found more than 100 different pesticides in beehives. All those chemicals aren't good for the bees, and more and more data show they aren't really good for pheasants or people either.

The connection between honeybees and pheasants (and pheasant hunters) is simple...HABITAT. Both need large blocks of grassland with a diversity of wildflowers. Unfortunately, unprecedented acres of both native prairie and CRP are going rootside up. This is disastrous for both the birds and the bees. The loss of habitat has impacted those of us who chase rooster tails. The loss of pollinators will impact everyone who eats. Prairie is all about diversity, and so are honeybees, pheasants and Pheasants Forever.









"It is ironic to think that man might determine his own future by something so seemingly trivial as the choice of an insect spray."
— Rachel Carson, author of *Silent Spring.*

A New Silent Spring?

Neonic pesticides threaten pheasant, other wildlife

Across much of the Midwest, the heart of pheasant country, 95 percent or more of the grasslands have been lost. What remains is often 80 acres here, a quarter section there. We owe it to the pheasants and other upland wildlife struggling to hang on in this region to make those remaining acres as safe, healthy and productive as possible. Yet, today, that may not be the case.


Roger Hill

There is one class of pesticides on the market since the mid-1990s that has been generating a lot of press recently, little of it good. Neonicotinoids, neonics for short, are derived from the nicotine in the tobacco plant.

Many older pesticides were synthetic and had unintended negative consequences in the environment. Think DDT. Neonics, and other pesticides such as the pyrethroids (derived from chrysanthemums), are plant-based chemicals, and were hopefully less destructive to non-target species. It's hard to find corn or soybean seed, for crops or food-plots, that's not coated with neonics.

In nature, everyone is attacking everyone else, or fending off attacks. It's survival of the fittest out there. Animals can fight or flee, but plants can do neither. So, plants have evolved poisons to defend themselves. Hydrogen cyanide, strychnine and curare, to name but a few, are all plant-derived chemicals. It would be hard to argue that any are benign. Likewise, neither are neonics.

In the last couple years, commercial beekeepers sounded the first warning about neonics as they watched colony after colony collapse or disappear. When researchers began collecting and analyzing their data, they found it wasn't just bees. These chemicals, and their effects, were rippling through the landscape.

Neonics are neurotoxins. They kill insects by disrupting their nerve cells, causing paralysis, leading to suffocation, causing death. The problem is that all of us, bees, birds, people, have nerve cells and all those nerve cells function pretty much the same. As researchers continued to investigate these chemicals, they found that many neonics can suppress the immune system and cause developmental abnormalities.

There's a 2012 research paper titled "Immune suppression by neonicotinoid insecticides at the roots of global wildlife declines." Another paper published the following year is titled "Pesticide acute toxicity is a better correlate of US grassland bird declines than agricultural intensification." The titles alone speak for themselves.

Bees, bugs, songbirds, pheasants, people, all live in the same environment, drink the same water and breathe the same air. A 2007 study stated that "Increasing use of this insecticide [imidacloprid] and potential toxicity among humans warrants a heightened awareness…" A 2013 press release by the European Food Safety Authority stated some neonicotinoids 'damage the developing human nervous system — in particular the brain."

Use of these chemicals has increased dramatically since their introduction. Neonics came into the market in the

mid- 1990s. By 2003, Americans were using just under 500,000 pounds. That increased to nearly 1.5 million the following year and climbed to almost 3.5 million pounds in 2009. Presumably, numbers have continued to climb in the past four years.

The USFWS estimates that each year, 67 million birds die from direct exposure to pesticides on farmlands in the US. Most tragic are hens who die from poisoning, killing her and the all the eggs in her nest. Ten times that number are exposed to pesticides, but presumably survive.

These, and other, chemicals impact pheasants and other wildlife in a number of ways. Pesticides are applied to fields and some frequently drifts into adjacent wildlife habitat areas, including grasslands and wetlands. Also, insects exposed in the cropland fly into the grassland habitat and are eaten by pheasants and other wildlife. Pheasants also go into the crop fields to forage. Researchers in Canada found neonic levels as high as 100 times the acceptable level in many wetlands.

These chemicals may be killing millions of insects in pheasant habitat, insects egg-laying hens and fast-growing chicks must have to survive. With fewer insects, hens will lay fewer eggs and chicks may not find enough food to survive. If hens are eating insects with sublethal levels of neonics, she passes those chemicals to her eggs. That may lead to developmental problems and fewer eggs hatched. Some chicks may not find enough food to survive, starving or becoming weak and more vulnerable to predators. As chicks eat insects, the chemicals may be compromising their immune systems, making them more susceptible to diseases and parasites. Each insect is small, but birds eat hundreds of thousands of insects over the year. Added up, that's a lot of toxic chemical.

Put together, toxicity and habitat loss means fewer rooster tails to chase through fall bluestem. Whether beekeeper, bird hunter, parent or expectant parent, we should all be concerned.

Hoch is a professional grassland ecologist in Minnesota.