LAND STEWARDSHIP PROJECT

LSP *Myth Buster* #45

An ongoing Land Stewardship Project series on ag myths and ways of deflating them.

Updated: November 2015

→ *Myth*: Less Wildlife Habitat Makes for Safer Food

→ *Fact*:

Almost a decade ago, a deadly multistate outbreak of E. coli sickened 205 people and killed three. This highlighted a major problem for the food industry: fresh produce is now the leading cause of food borne illnesses in the U.S. During the 1970s, less than 1 percent of illnesses were traced to fresh produce; today it's 46 percent. This has sent food companies and government agencies scrambling for solutions to a growing human health crisis. In the case of the 2006 E. coli outbreak in bagged spinach, the source was traced to a farm in California's Central Coast region, where more than 70 percent of the salad vegetables sold in the U.S. are produced.

One source of the contamination was thought to be feral pig feces. As a result, farmers were pressured by the industry to keep wildlife as far away from their fields as possible. Tall fences and rodent traps, among other measures, were put in place. Farmers also removed wildlife habitat—lots of it. One estimate is that between 2005 and 2009, 13 percent of the remaining riparian vegetation along California's Salinas River and its tributaries was removed. Many farmers replaced grasslands, marshes, wooded areas and other natural habitats with bare ground buffers. The message: food safety and wildlife conservation don't mix.

But a study published in September found that not only does having wildlife habitat near produce fields not increase the presence of E. coli and salmonella (another nasty food-borne pathogen), it actually may decrease health risks to humans. The paper, which was published in the *Proceedings of the National Academy of Sciences* (*PNAS*), featured data on E. coli and salmonella gathered between 2007 and 2013 in the Central Coast region.

What researchers found was that E. coli increased by an order of magnitude in produce fields during the study period, *despite* the removal of wildlife habitat. An increase in salmonella was also associated with riparian habitat removal. The researchers did find more feces-borne pathogens where livestock such as cattle were present near produce fields, a problem in areas such as California where large-scale dairy operations have exploded, putting large numbers of cattle (and their manure) into densely-packed areas.

There's no disputing that wildlife feces can spread pathogens in produce, so why did habitat removal actually have the opposite effect? One theory proposed by the scientists is that bare soil buffers simply don't deter animals with wide ranges from wandering into farm fields. In addition, studies show that when there is enough habitat available to accommodate a wide variety of rodents, for example, it "dilutes" the population, making the species that carry pathogens not so prevalent. There is also the fact that when there's less perennial vegetation present in a watershed, it's easier for contaminants such as feces to wash off adjacent slopes into fields or waterways that can eventually flood those fields. It is also interesting to note that herbicides and fungicides can reduce the presence of the kind of soil bacteria that compete with and even feed on pathogens such as E. coli. Natural habitats are more likely to contain that beneficial bacteria.

The authors of the *PNAS* study say habitat removal may not only be expensive and counter-productive to food safety, but it also eliminates many of the other ecosystem services such habitat provides, including cleaner water and pollinator habitat. That latter benefit is becoming particularly key as honeybee and wild bee populations continue to crash, increasingly denying agriculture an ecological service that makes every third bite of food possible.

None of this is breaking news to farmers who are certified organic or otherwise don't rely heavily on agrichemicals to raise food. As the Wild Farm Alliance points out, there are numerous examples of farmers utilizing "beneficial" species to keep insect pests under control, for example. Numerous studies show that when predator-prey populations get out of whack, food produced by humans often becomes vulnerable.

Another *PNAS* study published in September reported that bats boosted corn yields on Illinois farms by 1.4 percent, which equates to a $1 billion ecological service worldwide to corn producers. It turns out the bats are voracious eaters of corn earworm moths, whose larvae can do major damage to corn. The presence of earworm larvae was almost 60 percent higher when bats were excluded.

Taking advantage of the agroecological services something as complex as nature can provide is no easy matter—it doesn't lend itself to being sold as an input or computer program. That's why for years the Land Stewardship Project has been promoting farming systems reliant on the close monitoring of the landscape and all its workings. Such monitoring requires more "eyes to the acre" than ever.

In the 2002 book, *The Farm as Natural Habitat: Reconnecting Food Systems with Ecosystems*, North Dakota farmer David Podoll described how he controlled Canada thistles by providing ecological "edge" areas near his fields. It seems these areas harbored painted lady butterflies, which lay eggs in the thistle's flowering head. When the larvae hatch, they munch their way out, pretty much shredding the flower. In addition, the natural habitat adjacent to Podoll's fields allowed a rust disease that attacks Canada thistle roots to overwinter.

How did Podoll figure all this out? "You just watch," quipped the farmer.

→ More Information

- The *Proceedings of the National Academy of Sciences* (www.pnas.org) study on food safety in California is called, "Comanaging fresh produce for nature conservation and food safety."
- The *PNAS* study on bats and corn pests is called, "Bats initiate vital agroecological interactions in corn."
- More on how wildlife and farming can go together is available from the Wild Farm Alliance at www.wildfarmalliance.org/resources/food_safety.htm.

This **Myth Buster** *is brought to you by the members and staff of the Land Stewardship Project, a private, nonprofit organization devoted to fostering an ethic of stewardship for farmland and to seeing more successful farmers on the land raising crops and livestock. For more information, call 612-722-6377 or visit www.landstewardshipproject.org.*