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E. coli 0157:H7 present but not common in wildlife of nation's salad bowl

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The disease-causing bacterium *E. coli* O157:H7 is present but rare in some wildlife species of California's agriculturally rich Central Coast region, an area often referred to as the nation's "salad bowl," reports a team or researchers led by a UC Davis scientist.

The researchers, who are nearing completion of a massive field study to help identify potential sources of *E. coli* O157:H7 near Central Coast farms, presented their findings today during the annual meeting of the American Society for Microbiology in San Diego. They reported finding occasional *E. coli* O157:H7 infections in fecal samples of wildlife species common to the area, including cowbirds, coyotes, crows, mice and feral pigs.

Based on their findings, the researchers recommend that farmers in this region continue to follow "good agricultural practices," a set of accepted, on-farm procedures designed to protect crops from contamination during production and harvest.

The study was spurred by a 2006 nationwide *E. coli* O157:H7 outbreak linked to fresh, bagged spinach grown in California; the outbreak resulted in 205 reported illnesses and three deaths.

"The study helps us better understand the possible risk of crop contamination from wildlife and allows us to compare that to the risk of contamination from other possible sources such as livestock and irrigation water," said lead study author Michele Jay-Russell, a

veterinarian at UC Davis' Western Institute for Food Safety and Security.

"We are sharing this data with the produce industry, regulators, and conservation groups to help improve prevention strategies that protect public health and preserve native wildlife populations and their habitats," she said.

E. coli O157:H7 poses a serious human health threat, commonly causing abdominal cramps and diarrhea, sometimes bloody. Severe infections may be require hospitalization and result in kidney damage and even death. People most at risk for serious complications include young children, the elderly and those with compromised immune systems.

From 2008 through 2009, the team collected and tested 1,133 fecal samples from wild birds and mammals on 38 private properties in Monterey, San Benito and San Luis Obispo counties in California. All three counties are home to farms that grow fresh spinach, lettuce and other produce.

Laboratory tests revealed that *E. coli* O157:H7 was present in samples from two cowbirds, two coyotes, five crows, one deer mouse and 10 feral pigs. Samples from deer, opossums, raccoons, skunks, ground squirrels and other bird and mouse species all tested negative for the bacterium.

Robert Mandrell, principle investigator and research leader from the U.S. Department of Agriculture's Agricultural Research Service, said that the discovery of a low level of *E. coli* O157: H7 among Central Coast wildlife was somewhat surprising.

"The fact that we have identified two bird species with an incidence of *E. coli* O157:H7 of more than 3 percent, feral swine with about a 4

percent incidence and several coyotes and rodents that tested positive for O157:H7 suggests there are at least several sources of pathogen movement in this region," Mandrell said.

"We have no evidence that the concentration of the pathogen was high in the feces of the animals that tested positive, so the significance of wildlife as a source of direct contamination associated with outbreaks remains unclear," he said.

Mandrell said the researchers are comparing the genetic makeup of the *E. coli* O157: H7 strains found in wildlife to that of strains isolated from other sources including cattle, soil and water. They hope these comparisons will help them to better assess the movement of the bacteria in this agriculturally important region.

Following up on these findings, the study team is evaluating other potential wildlife sources of *E. coli* O157:H7, including amphibians and reptiles, and is conducting focused research to refine best practices that promote appropriate management to protect both food safety and the environment.

Provided by University of California - Davis