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Avian Diseases: Carriage of Bacterial Pathogens by Canada Geese and Blackbirds

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National Wildlife Research Center Scientists Examine Goose Impacts on Humans and the Environment

Wildlife Services' (WS) National Wildlife Research Center (NWRC) is the only Federal research organization devoted exclusively to resolving conflicts between people and wildlife through the development of effective, selective, and acceptable methods, tools, and techniques.

Disease transmission by free-ranging wild birds, such as Canada geese, blackbirds and pigeons is of increasing concern in the areas of public health and safety and agricultural production. Rapidly increasing populations of urban Canada geese are contaminating recreational areas with pathogenic bacteria that may pose human-health risks. Blackbirds and pigeons may also carry and disseminate emerging pathogenic bacteria that could affect livestock at confined animal feeding operations and dairies.



urban landscapes and animal health in agricultural landscapes. This research is critical in order to evaluate risks and develop Ecological Assessments related to goose management.

Applying Science and Expertise to Wildlife Challenges

Public Health and Safety—NWRC scientists have received numerous requests for information on the impact of waterfowl, specifically Canada geese, on agricultural production and public health and safety. The focus of this research project is to understand and develop management methods and recommendations to reduce the impact of Canada geese as carriers of disease, parasites, and noxious weeds. Canada geese can affect human health and safety in

Urban Landscapes—Fecal samples from Canada geese were collected throughout the year from a number of sites throughout the United States. This study characterized the prevalence of *Escherichia coli* serogroups (salmonella, listeria, and campylobacter) in Canada geese. The overall prevalence for *E. coli* ranged from 2 percent during the coldest time of the year to 94 percent during the warmest months of the year. During March through July, when nonmigratory geese dominated the local goose population, the prevalence of enterotoxigenic (ETEC) forms of *E. coli* was 13.0 percent. During the same period, the prevalence of enterohemorrhagic (EHEC) forms was 6.0 percent, while prevalences for enteroinvasive (EIEC) and enteroagglomerative (EAEC) forms were 4.6 and 1.3 percent, respectively. All samples positive for *E. coli* were examined for genes coding for virulence factors, including: SLT-I, SLT-II, eae, hly-A, K1, LT, STa, STb, CNF1, and CNF2. Prevalence for salmonella was less than 1 percent, while prevalence for listeria in goose feces ranged from 8-12 percent. The prevalence for campylobacter ranged between 0-60 percent depending upon the sampling location. These data will prove useful in focusing attention on the risks that increasing populations of urban Canada geese may pose to public health.



Major Research Accomplishments:

- WS demonstrated that the chemical, nicothiazin, has potential as a reproductive inhibitor for Canada Geese.
- WS demonstrated that red lasers are effective in hazing Canada geese.
- WS demonstrated the presence of human pathogenic *E. coli*, *Listeria*, and *Campylobacter* bacteria in goose feces.

