

Title: Investigating *Salmonella* in wildlife of Atlantic Canada

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Abstract:

Salmonella is a gram-negative, rod-shaped, flagellated bacterium found in the gastrointestinal tracts of humans and animals worldwide. Diverse serovars are identified based on the structural antigens, resulting in varying properties among each serovar. *Salmonella* is a common enteric resident in wildlife that can be transmitted among wildlife, domestic animals and humans. Due to its ubiquity, it can be multidrug resistant. Recent *Salmonella*-related human illness outbreaks in Atlantic Canada underscore the need to understand wildlife's role in its transmission. This study aims to investigate the occurrence and characteristics of *Salmonella* species in wildlife of Atlantic Canada to better understand potential transmission risks to humans and domestic animals.

Rectal swabs from wildlife carcasses, including avian and mammalian species, were enriched and selectively cultured to isolate *Salmonella*. Initial enrichment was performed in buffered peptone water to resuscitate viable bacteria, followed by *Salmonella*-selective enrichment in Rappaport-Vassiliadis (RV) medium. Cultures were plated onto modified semi-solid RV medium to identify motile *Salmonella* and onto MacConkey agar to evaluate lactose fermentability. Non-lactose fermenting isolates were further examined on Xylose-Lysine-Tergitol 4 Agar to identify hydrogen sulfide-producing black-centred colonies. The identification was confirmed by MALDI-TOF mass spectrometry.

Of the 34 samples from Nova Scotia (18), Prince Edward Island (11) and New Brunswick (5), only one sample tested positive for *Salmonella* spp., indicating a low prevalence in the studied population. The isolate was detected from a dead bald eagle of Nova Scotia, which was serotyped to Muenchen of the O:8 serogroup. The serovar was found to be susceptible to ampicillin, third-generation cephalosporins and quinolones.

The low prevalence of *Salmonella* spp. in wildlife of Atlantic Canada suggests a limited risk of transmission to humans and domestic animals. However, given the complex ecosystem, continuous surveillance is recommended to monitor *Salmonella* prevalence and its characteristics to support One Health initiatives.

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