Campylobacter jejuni and Campylobacter coli in wild birds on Danish livestock farms - DTU Orbit (20/08/2019)

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Background: Reducing the occurrence of campylobacteriosis is a food safety issue of high priority, as in recent years it has been the most commonly reported zoonosis in the EU. Livestock farms are of particular interest, since cattle, swine and poultry are common reservoirs of Campylobacter spp. The farm environment provides attractive foraging and breeding habitats for some bird species reported to carry thermophilic Campylobacter spp. We investigated the Campylobacter spp. carriage rates in 52 wild bird species present on 12 Danish farms, sampled during a winter and a summer season, in order to study the factors influencing the prevalence in wild birds according to their ecological guild. In total, 1607 individual wild bird cloacal swab samples and 386 livestock manure samples were cultured for Campylobacter spp. according to the Nordic Committee on Food Analysis method NMKL 119.

Results: The highest Campylobacter spp. prevalence was seen in 110 out of 178 thrushes (61.8 %), of which the majority were Common Blackbird (Turdus merula), and in 131 out of 616 sparrows (21.3 %), a guild made up of House Sparrow (Passer domesticus) and Eurasian Tree Sparrow (Passer montanus). In general, birds feeding on a diet of animal or mixed animal and vegetable origin, foraging on the ground and vegetation in close proximity to livestock stables were more likely to carry Campylobacter spp. in both summer (P <0.001) and winter (P <0.001) than birds foraging further away from the farm or in the air. Age, fat score, gender, and migration range were not found to be associated with Campylobacter spp. carriage. A correlation was found between the prevalence (%) of C. jejuni in wild birds and the proportions (%) of C. jejuni in both manure on cattle farms ($R^2 = 0.92$) and poultry farms ($R^2 = 0.54$), and between the prevalence (%) of C. coli in wild birds and the proportions (%) of C. coli in manure on pig farms ($R^2 = 0.62$).

Conclusions: The ecological guild of wild birds influences the prevalence of Campylobacter spp. through the behavioural patterns of the birds. More specifically, wild birds eating food of animal or mixed animal and vegetable origin and foraging on the ground close to livestock stables were more likely to carry Campylobacter spp. than those foraging further away or hunting in the air. These findings suggest that wild birds may play a role in sustaining the epidemiology of Campylobacter spp. on farms.

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