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RISK FACTORS ASSOCIATED WITH MYCOPLASMAL CONJUNCTIVITIS IN HOUSE FINCHES : RESULTS FROM A CITIZEN BASED STUDY

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Observations from a citizen-based survey were used to identify potential risk factors associated with Mycoplasma gallisepticum-associated conjunctivitis in house finches (Carpodacus mexicanus). Over two years, 778 volunteers provided 7224 monthly observations by questionnaire at residential bird feeding sites in eight states of the eastern USA. House finches were 14 to 72 times as likely to be observed with conjunctivitis than five sympatric passerines. Year, season, platform, hopper, and tube type feeders were associated with conjunctivitis in house finches. Multivariate analysis suggests that increased risk was associated with the second year of the study (OR=1.36-1.70), cooler, non-breeding periods from September through March (OR=1.16-1.49), and the presence of tube type feeders (OR=1.09-1.41). Platform feeders may have been protective (OR=0.70-0.88). Prevention of disease transmission may include modifying bird feeding activities based on season and type of feeders in use.

INTRODUCTION

An epornitic of conjunctivitis in house finches (Carpodacus mexicanus) was first recognized in February 1994 in the eastern USA (Fischer et al., 1997). Subsequent field and laboratory investigations resulted in repeated isolations of Mycoplasma gallisepticum (MG) as the causative agent of the epornitic. Historically, MG has not been considered a naturally occurring pathogen in wild passerines.

The modes of transmission of MG in house finches are unknown, but are presumed to be enhanced by social and foraging behavior at bird feeders. In November 1994, the Cornell Laboratory of Ornithology initiated the House Finch Disease Survey (HFDS) to track the spread of conjunctivitis throughout the eastern range of the house finch by using an established network of volunteers from a citizen-based bird feeder monitoring program. Our objective was to identify risk factors associated with conjunctivitis in house finches at residential bird feeding sites based on observations from the HFDS.

METHODS

Between November 1994 and October 1996, 778 volunteers provided 7224 monthly observations at residential feeding sites across an eight state region in the eastern USA. Information collected by questionnaires each month included health status of house finches and five sympatric passerines, types and number of bird feeders maintained, neighborhood housing density and altitude of the site. The prevalences of conjunctivitis in the five species were compared by unadjusted odds ratio (OR) and Chi-square. The association of potential risk factors and conjunctivitis in house finches were evaluated using Chi-square tests and a stepwise logistic regression model with house finch disease status as the outcome.

RESULTS

House finches were 14 to 72 times as likely to be observed with conjunctivitis than the sympatric species ($p<0.001$). Year ($p<0.001$), season ($p<0.001$), platform ($p=0.004$), hopper ($p=0.05$) and tube type feeders ($p=0.005$) were significantly associated with conjunctivitis in house finches. Multivariate analysis revealed that increased risk was associated with the second year of the study (95% confidence interval OR=1.36-1.70), cooler, non-breeding periods from September through March (OR=1.16-1.49), and the presence of tube type feeders (OR=1.09-1.41). In addition, the presence of platform type feeders may have been protective against conjunctivitis in house finches (OR=0.70-0.88).

DISCUSSION

The HFDS used repeated volunteer observations over a wide geographic area to successfully confirm increased risk of conjunctivitis in house finches compared to five sympatric species. Results also indicate that the prevalence of conjunctivitis likely increased during the second year of the study (third year of the outbreak). Conjunctivitis was more likely to be found in annual periods for house finches characterized by greater ranging and contact with birds of disparate populations, formation of feeding aggregations, colder temperatures and reliance on feeding stations which may facilitate disease transmission. Feeders with limited numbers of perches and restricted portals for available seed (tube) were more likely to be associated with conjunctivitis observations than more exposed and spacious feeding operations (platform). Strategies to decrease these risks and help prevent disease transmission may include modifying bird feeding activities appropriately, based on season and type of feeders in use.

BIBLIOGRAPHY

Fischer, J.R., D.E. Stallknecht, M.P. Luttrell, A.A. Dhondt, and K.A. Converse. 1997. Mycoplasmal conjunctivitis in wild songbirds: An example of the spread of a new contagious disease in a mobile host population. Emerging Infectious Diseases 3: 69-72.

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