Background

Starlings have been roosting in large numbers around Nantwich with resulting mess from droppings. The question was asked, “What risk to human health do these birds present, including the possibility of histoplasmosis transmission?” The flocks tend to leave an area within a couple of minutes every morning and, due to the large number of birds in the flocks, this results in a cloud of dust and feathers coating everything in the area (e.g. cars, window sills) - does this provide a health risk?

Health investigation

In order to answer this, the Cheshire and Merseyside Health Protection Unit has consulted with national veterinarian experts in birds and Health Protection Agency experts in zoonoses and also attended a public meeting convened by Cheshire East council for the local residents to discuss starlings and related issues, including health. The relevant scientific literature was searched (PubMed and Google).

Starlings

Flocking starlings have unique characteristics due to the following features –
- The birds flock in larger numbers than any other UK passerine with the possible exceptions of rooks and jackdaws.
- The flocks use winter roosts and fly together at higher densities than other UK passerines. Even pigeons do not roost or fly in such large numbers or so densely.

Possible issues

From this the following issues arise –
- Flock waste products at and near roost sites can give rise to nuisance issues such as ‘white washing’ faeces, damage to trees and buildings.
- Physical damage, such as aircraft strikes, road/motorway collisions, has been reported from moving flocks (e.g. during the winter of 2010-11 vets collected carcases from a large roost site (1000s of birds) five metres from the M74 motorway).
- Large dense flocks are prone to mass mortality incidents – each year two or three of these are recorded in the UK. There are multiple causes for such incidents, the largest

1 Passerines, or perching birds, is the biggest order of birds, including over half of the world's bird species. The group includes flycatchers, birds of paradise, crows and all the familiar garden birds of Britain. Passerine birds have three forward pointing toes and one backwards pointing one.
being 700 birds that died in one night of heavy rain in a park in Hull. These events can cause concern in the public and are picked up by the press and now referred to as ‘aflockalypse’ incidents. Similar incidents have been reported elsewhere: USA (in starlings and related red-winged blackbirds and grackles) and in Sweden.

- Livestock issues: starlings
  - (a) consume significant quantities of livestock fodder
  - (b) spread livestock diseases, e.g. swine dysentery. If the livestock is already infected with salmonella, starlings may increase the dissemination of this problem
  - (c) physically spoil animal fodder by contamination with their faeces

**Possible health problems**

A number of diseases have been associated with high density flocks of birds coming in close proximity to man and the spread of zoonotic diseases from starling flocks cannot be completely discounted:

- Endemic salmonellosis (Stm DT 40 and 56) is prevalent in garden birds feeding at contaminated garden bird feeders and humans get infected, but any disease is usually mild although Stm DT160 has been known to cause hospitalisation in patients in New Zealand. However, starlings use these garden feeders only to a limited extent.

- Other possible diseases include avian influenza M bovis (causes TB in cows and rarely in humans), campylobacteriosis and a self-limiting gastro-intestinal infection with Yersinia. Nevertheless, the risk of humans contracting these diseases from starlings is very low when compared with other known sources or outbreaks in the human population of bovine TB, campylobacter and gastrointestinal infections. The transmission of avian influenza (bird flu) to humans is unknown in the UK outside of poultry flocks and needs close contact with sick birds, not just their faeces.

- Human allergic responses (such as ‘bird fanciers lung’) could possibly arise due to the concentration of bird products (e.g. feather dust) at roost sites; bird fanciers lung is usually associated with enclosed roosting sites (such as with racing pigeons or parakeets) as the open air reduces the high concentrations of dust needed to cause the allergic response.

- While there is a theoretical chance of asthma being aggravated by bird products, very little has been written about this outside of pet-keeping, farming and occupational exposure. It would appear that the risk to the general public of short term exposures is very small compared to other allergens that stimulate asthma.

A number of papers have looked at starlings and gastrointestinal pathogens (especially Campylobacter) and variously conclude that:

- Chickens are a far more likely source of human disease than geese or starlings.
- There is no evidence that wild starlings represent a major source of Campylobacter or other infections of food animals or humans.
- Although starlings can carry a plethora of microorganisms there is little evidence that they have any real role in epidemiology of human disease.
- European starlings can serve as a vehicle to disseminate *E. coli* O157 from farm to farm. What remains to be determined is the magnitude of the contribution that birds have in the overall ecology of *E. coli* O157 in livestock populations; this study did not look at human disease but was focused on safeguarding the food chain.
Overall, there is little evidence to suggest that wild birds, of whatever type, are a major source of human disease.

It is also possible that a small percentage of people are alarmed by big flocks of birds but nothing could be found around this theme in the published scientific literature (PubMed and Google Scholar searches).

**Histoplasmosis**

*Histoplasma capsulatum* is a dimorphic fungus\(^2\) that remains in a mycelial form at ambient temperatures and grows as yeast at body temperature in mammals. Infection causes histoplasmosis. Although the fungus can be found in many temperate climates throughout the world, it is endemic to the Ohio, Missouri, and Mississippi River valleys in the United States. Internationally, the fungus is predominantly found in river valleys in North and Central America, eastern and southern Europe, and parts of Africa, eastern Asia, and Australia. It is not found in the UK.

The soil in areas endemic for histoplasmosis provides an acidic, damp environment with high organic content which is good for growth of the mycelial form. Highly infectious soil is found near areas inhabited by bats and birds.

Birds cannot be infected by the fungus and do not transmit the disease; however, bird excretions contaminate the soil, thereby enriching the growth medium for the mycelial form. In contrast, bats can become infected and they can transmit the fungus through their droppings.

Contaminated soil can be potentially infectious for years. Outbreaks of histoplasmosis have been associated with construction and renovation activities that disrupt contaminated soil. In addition, travellers to endemic areas are at risk of histoplasmosis because airborne spores can travel hundreds of feet.

Most individuals (approximately 90%) with histoplasmosis are asymptomatic. Those who develop clinical manifestations usually have problems with their immune system or are exposed to a high quantity of fungus.

If symptoms develop, the onset occurs 3-14 days after exposure. A flu-like illness (fever, headache, malaise, muscle and abdominal pains, and chills) is common; usually, histoplasmosis is a self-limiting disease, running its course and ending. Individuals exposed to a large quantity of fungus may develop severe breathlessness.

There have been no indigenous cases of histoplasmosis in the UK since the 1950s. There has been a very large number of people who have had problems with their immune system since then and yet not one of them has developed the disease, indicating that there is no local source within the UK.

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\(^2\) A fungus that lives in two forms, a multicellular, stringy (mycelial) form and a more usual roundish unicellular form (yeast).
Conclusion

In summary, the conclusions of a German study appear to hold for other situations: although starlings were a nuisance in a public park and can harbour bacteria causing human disease the strains of the bacteria were often not those which infect humans. The study noted that it is “improbable that these birds present a constant direct source of infection for human beings” (Gautsch et al. 2000).

Suggested control measures

- Increase local understanding of starlings and their limited role in human disease
- Use legal control methods to deter starlings
- Take common sense precautions and use good hygiene, including hand washing after working with soil or cleaning starling droppings.
- Consult your GP if disease is suspected or if it is mentioned by veterinarians.
- Private bird pest control companies and FERA (Food and Environment Research Agency) at Sand Hutton, York should have a government advisor available to help with pest bird problems.

Bibliography


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