Chapter 8

NEGATIVE SPECIES INTERACTIONS—INFECTION AND PARASITISM

IN THE NEWS

Influenza in its many forms is one of the most common diseases affecting humans each year, and many people underestimate its potential for harm. Avian influenza, or 'bird flu,' is caused by type A strains of the influenza virus. First identified in Italy more than 100 years ago, avian influenza occurs worldwide, and all species of birds are thought to be susceptible to the 15 forms of this virus. However, some birds are more resistant than others. Ducks and geese are the natural reservoir of the avian influenza viruses, but they are also very resistant to the viruses, which produce only a mild illness in them. By contrast, chickens and turkeys are extremely susceptible to bird flu and typically die from the highly pathogenic forms of this virus. Transmission of bird flu virus seems to occur when domestic flocks of chickens or turkeys have contact with waterfowl. Quarantine of infected chicken farms and destruction of exposed flocks are the standard means of preventing spread of the disease.

Because the influenza virus is unstable and genetically labile, a relatively harmless flu virus can mutate into a highly pathogenic virus. That happened during a 1983–1984 outbreak of bird flu in the United States. The subtype H5N2 flu virus, which initially caused a mild disease in chickens, mutated within 6 months to a form that killed 90% of infected chickens. Poultry farmers had to destroy 17 million chickens to end this epidemic.

The global concern is that these lethal bird viruses will cross over and infect humans. Influenza viruses can shift hosts by an exchange of genetic material between two subtypes. For example, the human flu virus in a person could acquire genetic material from the avian strain of the virus in a chicken. Highly pathogenic avian flu viruses can remain infective on farm equipment, cages or clothing, especially when temperatures are low. Pigs can be infected with both avian flu and human flu strains, so they may serve as a medium for the shift of highly pathogenic avian strains into forms that will readily infect humans.

The ability of the flu virus to jump from birds to humans was responsible for the 'Spanish flu' pandemic[1] of 1918–1919, which killed at least 40 million people. Influenza pandemics have occurred every 10–50 years during the last 300 years:

1 A pandemic is an epidemic that affects a large number of individuals on a global scale.