

H5 Avian Influenza – Years 7 and 8

Australian Curriculum Links Learning Area Science Biological Science

AC9S7U01

Investigate the role of cell structures and multicellular systems in organisms and explain how they enable survival and reproduction.

AC9S8U01

Explain how cells contribute to the structure and function of living organisms and how changes in physical and biological conditions can affect populations within ecosystems.

Science as a Human Endeavour

Students learn that:

- Science is used to investigate and respond to real-world challenges such as disease outbreaks.
- Scientific knowledge informs decisions made by governments, biosecurity agencies, veterinarians and environmental organisations.
- Scientific evidence supports actions that protect biodiversity, ecosystems and agricultural industries.

Science Inquiry

Students:

- Develop questions about disease transmission and wildlife health.
- Analyse information from texts, images, maps and data.
- Evaluate evidence used to identify and monitor disease outbreaks.
- Communicate scientific ideas using appropriate terminology.
 - Consider how scientific evidence informs decision-making about biosecurity and conservation.

Cross-Curriculum Priorities

Sustainability

Lesson Plan

Learning Intentions

We are learning to...

... understand how H5 avian influenza affects wildlife populations and ecosystems.

...investigate how diseases can spread between animals and environments.

...examine the role of biosecurity in preventing and managing disease outbreaks.

Success Criteria

We will be successful when we can...

...explain what H5 avian influenza is and how it can spread through animal populations.

...analyse how disease outbreaks can impact wildlife and ecosystems.

...communicate scientific information using appropriate scientific vocabulary.

...create a campaign to communicate key information to educate others on avian influenza.



H5 Avian Influenza in Australia:

Protecting Ecosystems Through Biosecurity

H5 avian influenza is a disease caused by influenza A viruses. These viruses are pathogens, which are organisms that cause disease. H5 avian influenza mainly affects birds but can also infect other animals. In some cases, it can cause serious illness and death.



Figure 1 - A Tasmanian, Yellow-tailed Black Cockatoo.

The disease spreads when a pathogen moves from one host to another. H5 avian influenza can spread through contact with infected birds, as well as contaminated water, droppings, feathers, and respiratory secretions. Migratory birds can carry pathogens over long distances, introducing the disease to new areas.

Scientists use epidemiology, the study of disease spread, to investigate outbreaks. They collect evidence through field observations, laboratory testing, wildlife monitoring, and tracking bird migration. By comparing different sources of evidence, scientists can identify patterns and make reliable conclusions about disease risks.

H5 avian influenza can affect ecosystems because birds play important roles such as pollination, seed dispersal, predation, and scavenging. Large declines in bird populations can disrupt food webs and ecological relationships. Disease outbreaks can also reduce biodiversity, making ecosystems less stable and less able to recover from future challenges.

To reduce disease risks, governments and scientists use biosecurity measures. Biosecurity includes actions that prevent diseases from entering, spreading within, or leaving an area. Examples include monitoring wildlife, cleaning equipment, limiting access to affected areas, and separating domestic poultry from wild birds.

An important part of biosecurity is surveillance, which is the ongoing monitoring of diseases and animal populations. Surveillance helps scientists detect outbreaks early, track disease spread and assess whether management actions are working.

Members of the public can assist by reporting sick, injured, or dead birds. People should follow the **Avoid, Record, Report** process: avoid contact with wildlife, record observations from a safe distance, and report the information **to the Animal Disease Hotline on 1800 675 888**.

Scientific evidence, biosecurity, and community surveillance are essential tools for protecting wildlife, biodiversity, and healthy ecosystems.



Figure 2 - Critically endangered Swift Parrots return to Southern Tasmania every year to breed.



Lesson Plan

Tuning In

Display four images:

- Critically endangered Swift Parrots arriving at a watering hole after migrating to Tasmania for breeding season
- A poultry farm with free-range chickens
- Wildlife officers wearing personal protective equipment (PPE)
- A map showing migratory bird routes into Australia, from around the world

Ask students:

"What do these images have in common?"

"Imagine you are part of a biosecurity response team investigating a possible avian influenza outbreak. What evidence would you need to determine whether there is a disease outbreak?"

Record student ideas under the headings:

- What evidence is available?
- What further information is needed?
- Who would be involved in the investigation?

Explain -

"Scientists rely on evidence to investigate disease outbreaks and make decisions that protect wildlife, agriculture and ecosystems. H5 avian influenza is a biosecurity issue because it has the potential to affect wild birds, domestic poultry and entire ecosystems. Today we will examine how disease spreads, how outbreaks are monitored and why biosecurity is critical to Australia's environmental and agricultural health."

Show students the poster - Avoid • Record • Report

Discuss:

"Why is it important that members of the public do not collect, move or handle sick wildlife themselves?"

"How might reports from the public contribute to scientific investigations?"

Show the HZAA Community Biosecurity webpage and explain that it provides trusted information to help protect Tasmania's wildlife:

<https://www.hzaa.com.au/conservation/community-biosecurity/>



Modelling - I do

Introduce the new vocabulary:

Biosecurity - Measures used to reduce the risk of diseases, pests and harmful organisms entering, spreading within or leaving an environment.

Exemplar Sentences:

1. Strong biosecurity measures help prevent diseases from spreading between wildlife and livestock.
2. Australia's biosecurity system protects agriculture, biodiversity and public health.

Pathogen - A microorganism or infectious agent, such as a virus, bacterium, fungus or parasite, that causes disease.

Exemplar Sentences:

1. Avian influenza is caused by a viral pathogen.
2. Scientists investigate how pathogens move through animal populations.

Surveillance - The ongoing monitoring and collection of information to detect and track diseases.

Exemplar Sentences:

1. Wildlife surveillance helps experts identify disease outbreaks early.
2. Surveillance programs provide data that supports biosecurity planning.

Epidemiology - The study of how diseases spread through populations, including where diseases occur, how they are transmitted, and how outbreaks can be controlled.

Exemplar sentences:

1. Scientists used epidemiology to investigate how avian influenza spread between bird populations along migration routes.
2. Evidence collected through epidemiology helped authorities identify high-risk areas and improve biosecurity measures.

Distribute the text and read using your chosen strategy.



Guided Practice - We do – Check for understanding by answering quiz questions

What is a pathogen?

- A. A type of bird migration route
- B. An organism that causes disease
- C. A method of tracking animals
- D. A way to improve biodiversity

Why do scientists use surveillance during disease outbreaks?

- A. To increase bird migration
- B. To prevent birds from nesting
- C. To detect outbreaks early and monitor disease spread
- D. To reduce the number of bird species in an area

Why might a decline in bird populations affect other species in an ecosystem?

- A. Birds can play important roles in food webs and ecological relationships.

- B. Birds stop all plants from growing.
- C. Other species cannot survive in the same habitat as birds.
- D. Birds are the only animals affected by disease.

Which statement best explains why biosecurity and surveillance work well together?

- A. Surveillance only studies migration, while biosecurity studies ecosystems.
- B. Biosecurity replaces the need for surveillance.
- C. Surveillance finds disease outbreaks, and biosecurity helps reduce their spread.
- D. Both are used only after a disease has disappeared.

Independent Practice - You do

Create an evidence-based awareness campaign that informs your school community about H5 avian influenza and biosecurity.

Your campaign should:

- **Explain** what H5 avian influenza is and how it spreads.
- **Define** biosecurity using scientific language.
- **Describe** why surveillance and reporting are important.
- **Explain** the "Avoid, Record, Report" process.
- **Include** at least **four evidence-based actions** people can take to reduce disease spread and the Animal Disease Hotline number: 1800 675 888.

You may present your campaign as:

- An infographic
- A digital presentation
- A scientific poster
- A community awareness brochure

Use diagrams, images, and scientific vocabulary to communicate information clearly and accurately.

When completed, use the information you have learnt to write and deliver a one-minute public awareness presentation explaining the importance of biosecurity in protecting wildlife and ecosystems.



Plenary

Share your campaign with a partner and explain:

- Why biosecurity is important for wildlife, agriculture and ecosystems.
- How evidence informs decisions made by scientists and governments.
- Why surveillance and reporting are critical during disease outbreaks.

Key Message

Biosecurity is a shared responsibility.

Avoid

Record

Report - 1800 675 888

By understanding disease transmission and following good biosecurity practices, communities can support wildlife conservation and help protect Australia's unique ecosystems for future generations.

For further information:

Australian Government - <https://www.agriculture.gov.au/campaigns/birdflu>

Department of Natural Resources and Environment Tasmania - <https://nre.tas.gov.au/biosecurity-tasmania/animal-biosecurity/animal-health/poultry-and-pigeons/bird-flu>

Behind the News – Video - <https://www.abc.net.au/btn/classroom/bird-flu/I06937876>

Kids News - <https://www.kidsnews.com.au/explainers/eight-ways-australia-can-help-in-the-fight-against-bird-flu/news-story/I1fa4aac2b36192130da00a97fda372d>



H5 Avian Influenza & Biosecurity Awareness Campaign

Student Success Checklist

Name: _____

Class: _____

Use this checklist to make sure your campaign includes all required information.

Content

- ☐ I have explained **what H5 avian influenza (bird flu) is**.
- ☐ I have explained **how H5 avian influenza can spread**.
- ☐ I have included a clear definition of **biosecurity**.
- ☐ I have explained **why biosecurity is important** for wildlife, livestock and ecosystems.
- ☐ I have described the **Avoid, Record, Report** process.
- ☐ I have included the **Animal Disease Hotline number: 1800 675 888**.
- ☐ I have explained **how members of the public can help scientists and wildlife experts**.

Scientific Understanding

- ☐ I have used accurate scientific information.
- ☐ I have used at least **three scientific terms** correctly (e.g. biosecurity, pathogen, surveillance, outbreak, ecosystem).
- ☐ I have explained why **evidence is important** when investigating disease outbreaks.

Self-Assessment

I am most proud of...

One thing I could improve...

- ☐ I have described of how H5 avian influenza can affect **wildlife populations and ecosystems**.

Communication

- ☐ My information is clear, concise and easy to understand.
- ☐ I have used headings and subheadings.
- ☐ I have included relevant images, diagrams, maps or symbols.
- ☐ My campaign is visually appealing and organised.
- ☐ My spelling, grammar and punctuation have been carefully checked.

Presentation

- ☐ I have written a short presentation script to accompany my campaign.
- ☐ My presentation explains the key messages clearly.
- ☐ I can explain why biosecurity is everyone's responsibility.
- ☐ I am prepared to share my campaign with the class.

