



**forestry, fisheries
& the environment**

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

**PROTOCOL FOR THE MANAGEMENT
OF HIGH PATHOGENICITY AVIAN
INFLUENZA (HPAI)
FOR THE SOUTH AFRICAN
NATIONAL ANTARCTIC
PROGRAMME**

Updated: April 2024



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1. PURPOSE

The purpose of this protocol is:

- a) To aid early detection of high pathogenicity avian influenza (HPAI) outbreaks and to assist with quantifying their effects.
- b) To provide guidance for the management and handling of wildlife susceptible to and infected with HPAI.
- c) To implement biosecurity measures to mitigate the spread of and mortality caused by the virus.
- d) To reduce the risk to human health.

2. BACKGROUND

High pathogenicity avian influenza (HPAI) has in recent years caused unprecedented mortality of wild birds worldwide, including in South Africa, with threats to population levels for some species already under multiple anthropogenic pressures. HPAI is a disease caused by a virus and is highly contagious in birds. It can be spread over long distances, across and between continents, by wild water birds.

Since 2017, HPAI has caused millions of deaths in commercial chickens and severe damage to the ostrich industry in South Africa. To date, over 30,000 South African seabirds have been affected, mainly Cape Cormorants, Swift Terns, and African Penguins. Thousands of deaths have been recorded in seabirds and marine mammals (mainly South American Sea Lions and Southern Elephant Seals) in South America since December 2022. In October 2023, HPAI (H5N1) was detected in seabirds and marine mammals on the island of South Georgia and in Antarctica in February 2024, in skuas. By the end of January 2024, at least 200 Gentoo Penguins had died from HPAI in the [Falkland Islands](#) and the virus was also detected in Gentoo and King Penguins on [South Georgia](#). At least 50 [Wandering Albatrosses](#) also died on South Georgia early in 2024 and other [procellariiform species](#) affected in the region include Southern Fulmars and Black-browed Albatrosses in the Falklands. Virus was detected in Antarctic Fur Seals and Elephant Seals on South Georgia. From the Antarctic Peninsula, there have also been suspected cases in Antarctic Fur Seals, Gentoo



Penguins, and Kelp Gulls. Recent reports can be viewed on the website of the [Sub-Antarctic and Antarctic highly pathogenic avian influenza H5N1 monitoring project](#).

The risk to seabirds and marine mammals breeding at the Prince Edward Islands (comprising Marion and Prince Edward) has therefore also increased.

This protocol is recommended in the [Prince Edward islands Management Plan](#), and some aspects are covered by Section 2.2.15 “Wildlife disease management” and Section 5.5 “Prevention and control of outbreaks of disease among animals.”

3. HPAI VIRUS TRANSMISSION AND SPREAD

Avian influenza (AI) viruses are present in guano and discharges from the mouth, nostrils, and eyes of infected birds. Any bird carrying the HPAI virus can spread the disease to other birds through direct contact, or respiratory droplets, when in they are close together. The virus is therefore able to spread rapidly between birds that spend extended periods close together, such as in dense seabird colonies. Infected animals will also have the virus present in tissues and organs and can be a source of virus for other birds or mammals that consume them (predators or scavengers). Mammal to mammal transmission is suspected in seals but has not yet been proven.

The virus can also be spread through water contaminated by guano/faeces and possibly carcasses or via contaminated objects, including equipment, vehicles or humans with contaminated clothing or hands. The virus survives particularly well (up to months) in cool, dark conditions and in damp areas and organic matter such as guano or mud. High salinity conditions and extremes in pH shorten virus survival time. The virus is therefore inactivated quicker in salt water but can survive extended periods in fresh water, especially at low temperatures. Contaminated standing fresh water may act as a source of the virus.

4. HPAI IN PEOPLE

Between January 2021 and December 2023, worldwide there were at least seven human infections with H5N1 HPAI of the Clade 2.3.4.4b strain; five infections were



severe. The risk to humans is therefore still low but has increased from previous strains, and a much higher number of other mammals has been infected. Mammal-to-mammal transmission has not been proven but is a possibility, with the large numbers of marine mammals affected in South America.

People slaughtering poultry and those in close contact with infected birds are at highest risk. Infection could occur through contact with body fluids that enter the eyes, nose or mouth as aerosol or droplets, especially if carcasses are opened. People need to take precautions to not only prevent spreading the virus to other birds but also to protect themselves (see Section 12). Strict health and safety measures should be employed for those handling infected birds and materials. It is also advised that seasonal flu vaccinations are received, to reduce the chance of avian and human flu viruses combining.

Although the risk for human infection with HPAI is considered low, people who develop flu-like symptoms within 10 days of being in contact with potentially infected animals should seek medical attention. They should inform a healthcare professional that they have possibly had exposure to avian influenza virus. The medic can consult the National Institute for Communicable Diseases (NICD) on the clinician Hotline number (0800 212 552).

Advice from the NICD on [HPAI in humans](#) is available on their website, as well as general [advice on influenza](#), which includes early treatment with oseltamivir (Tamiflu).

Nasal swab samples should be taken from symptomatic people who are suspected to have been exposed to HPAI. Swabs with instructions will be provided by the NICD. After sampling, swabs should be inserted into tubes containing DNA/RNA Shield or RNA/ater (the same tubes that will be used for animal samples), which must be clearly labelled with the patient's name and the date. The swab handles need to be cut to fit into the tubes. Ensure the scissors/ side cutters used to cut the handle are washed, soaked in bleach solution (see section 12.3) for 15 minutes and allowed to dry before use (do not cross-contaminate from animal samples). An NICD sample submission form must be completed with the patient's details and can be inserted into a zip-lock



bag and into the bag with the sample tube and frozen at -20°C. A photograph of the completed form and labelled tube should also be kept as back-up.

5. CLINICAL SIGNS OF HPAI

Infections with HPAI in **seabirds** have mainly presented as neurological signs due to brain damage, varying from depression and unusual docility or tameness, although subtle twitching and tremors to obvious abnormalities such as walking or swimming in circles, whole-body tremors and seizures or fits occur in severe cases.

Some signs of respiratory infections, including nasal and ocular discharge and swollen sinuses have been seen and behaviour such as open-mouth breathing, nasal snicking (coughing), sneezing, gurgling or rattling may be observed.

Some birds have eyes that appear cloudy, due to corneal oedema and recovered Northern Gannets in Europe were observed to have dark irises.

A video of clinical signs in seabirds can be found at this link:

<https://photos.app.goo.gl/bHh7oH4HLbpFrcBZ7>

Marine mammals affected by HPAI show neurological signs including difficulty moving, muscle tremors and spasms, uncoordinated movements, seizures (fits) and lack of response to stimuli and their surroundings. Respiratory signs include difficulty breathing, including abdominal breathing, mucus in the mouth or excessive salivation, discharge from the nose, coughing and sneezing. There is also an association with abortions and diarrhoea.

Please take videos of any suspicious behaviour or clinical signs and share them with people who have experience with HPAI (see Appendix 1 for contacts) to decide whether HPAI is likely and whether sampling is justified.



6. OUTBREAK DETECTION AND MONITORING

Surveillance is essential to detect and respond to HPAI outbreaks as early as possible and to track the severity of outbreaks when they occur. This will allow the appropriate response measures to be put in place and the effects of the virus to be quantified and distinguished from other pressures on marine top predator populations. A good knowledge of normal, baseline mortality rates can assist with early detection of an HPAI outbreak, as an increase in mortality will be easily detected through regular monitoring. Effective monitoring relies on trained and alert people, who recognise and report signs of HPAI. Regular patrols should be undertaken at sites where animals gather for breeding, roosting, bathing, etc. Please review the work plan for the year and ensure that most sites will be seen regularly.

Laboratory testing is needed to confirm that the HPAI virus is present in a population, although there can be a strong suspicion based on observation of typical clinical signs and a drastic increase in mortality rate. Genetic study of viruses detected can also assist with understanding the possible origins and routes of virus transmission. Once an outbreak has been declared, based on laboratory testing or clinical signs and mortality rate, dead animals which are found with no other clear cause of death may be reported as suspected HPAI cases.

7. REPORTING

If any sign of HPAI is observed (unusual numbers of carcasses without an obvious cause of death or animals behaving strangely), first don appropriate PPE (at least mask and goggles) before further investigation or touching any suspect animal.

For any dead animal or animal that appears ill, the following must be recorded:

- a) Date observed
- b) Exact location (GPS coordinates in decimal degrees)
- c) Species
- d) Number of animals affected per species



- e) estimated percentage of total colony affected (dead and ill) OR current estimated colony size (individuals) (if possible/ applicable)
- f) Estimated size of area affected (if possible/ applicable)
- g) Age category (e.g. chick/ juvenile/adult)
- h) Whether the animals were found alive or dead
- i) If alive, what clinical signs were they showing?
- j) If dead, what state of decay were they found in?
- k) What was done with the animal, if anything?
- l) Name and contact details of the person who made the observation, if further information is required
- m) Photographs of dead animals should be taken to assist with species and age identification and determining state of decomposition. If the correct PPE is available, photograph birds from above and below, with the wings stretched out and the tail spread, as well as a side view of the head. Include any clinical signs (e.g. nasal discharge, swollen head) and include a sample label in a photo, if samples were taken.

If possible, reports of dead animals or animals showing HPAI symptoms should be made directly on the Department of Forestry, Fisheries and the Environment's (DFFE) Seabird Avian Influenza Reporting Tool:

- The Survey123 App can be downloaded from the Google Play Store or the Apple App Store and then the project can be loaded using the QR code below.



- Alternatively, you can follow this link in a web browser: <https://arcq.is/1585011> and open the App to link to the project.
- **Please select "Continue without signing in," on the Survey123 login page.**



- The reported data can be viewed on a dashboard, web map, and database [here](#). Data can be downloaded as a CSV file (under Options) from the web map page.

If reporting in this way is difficult, a reporting template is available as Appendix 2 and can be completed in Microsoft Excel (which can be shared online) or printed and completed on paper.

In terms of the PEI Management Plan (p146), suspected disease outbreaks (increased numbers of animals with no obvious cause of death or animals showing clinical signs) must immediately be reported to the Environmental Control Officer (ECO) and Team Leader (TL), who appoints a Field Coordinator for further monitoring and response. Regular reports should be made to an HPAI steering committee, appointed to advise remotely and final collated information should be supplied in the annual ECO report. A Field Coordinator and outbreak monitor/record-keeper should be appointed at takeover, at the start of the overwintering period. These can be the same person but all reports from the island should be collated and samples should be organised by the same person.

The HPAI steering committee should comprise at least one representative from the PEI Management Committee, the principal investigators, a SAPRI representative, the field coordinator and experts with experience with avian influenza in marine animals.

Confirmed or suspected cases of HPAI should be reported internationally to the World Organisation for Animal Health, via Western Cape provincial Veterinary Services and the national Director: Animal Health, Department of Agriculture, Law Reform and Rural Development's (DALRRD). Though it may not be possible to confirm HPAI with laboratory testing until samples return to South Africa, suspected cases should be reported. The PE Islands are technically part of Ward 115, City of Cape Town and therefore fall under the office of State Veterinarian: Boland. Suspected HPAI outbreaks and/or cases can be reported to either the responsible state vet or a State Vet: Epidemiology. Contact details are available on the Directorate Animal Health,



DALRRD website and in Appendix 1. Additionally, information should be provided to the SCAR Antarctic Wildlife Health Network via the SA SCAR representative.

It is important that no one discusses suspected cases with anyone outside the overwintering team and the HPAI steering committee, until an official public announcement has been made.

After the outbreak is considered over, the overwintering team must carry out post-event monitoring as instructed by D: SO&AS.

8. SPECIMEN COLLECTION FOR LABORATORY TESTING

Detailed instructions for sampling are attached as Appendix 3 and equipment required in Appendix 4.

1.1. Introduction

Confirmation of HPAI infection is done through specific laboratory tests, most commonly a PCR test to detect the RNA (genetic material) of the HPAI virus. Testing for avian influenza virus in South Africa can only be done in laboratories that are approved by the national Directorate Animal Health of DALRRD. Surveillance done for research purposes also requires approval from this directorate, under Section 20 of the Animal Diseases Act No. 35 of 1984.

1.2. Sampling live birds

To confirm if live birds, that are showing clinical signs of HPAI, are affected by the HPAI virus, oral/ pharyngeal and/or tracheal and cloacal swabs can be collected. If the bird cannot be handled for sampling, fresh guano can be sampled after the bird has moved away, if a sample can be linked with certainty to a specific bird. Insert the swab into the faecal component and avoid the white urate portion.

To date, nasal and rectal swabs from live marine mammals have been a poor source of virus in infected individuals, so sampling live mammals is not described.



Where possible, take a video and consult with an experienced person before sampling. Otherwise try to make sure that the bird is showing consistently abnormal behaviour, or that there is more than one bird behaving strangely, before sampling.

1.3. Sampling dead animals

Brain swabs should be collected from dead animals suspected to have died from HPAI. Sampling of the lung and lower trachea is important in marine mammals and if neurological clinical signs are not dominant but HPAI is still suspected. Techniques to take these samples as safely as possible, without opening the whole carcass, are described in Appendix 3.

Samples should be taken within 3 days of when the animal died, but brain samples may still be useful after a longer period, if environmental temperatures have been low and sampling sooner is impossible.

If an abnormally large number of carcasses is noted, without a visible cause of death, samples can be taken from up to 3 animals. Try to sample animals from across the affected area.

1.4. Sample transport

All samples should be kept cool but not frozen and protected from direct sunlight. Where immediate (within 7 days) transport to a laboratory is not possible (e.g. due to long voyage times), specialised transport media like DNA/RNA Shield or RNA^{later} must be used to allow for long-term storage by freezing samples at -20°C.

1.5. Sample records

Please keep careful records of samples taken so that test results can be matched to the information about the sampled animal. Photograph field notebooks as a backup and enter the information in a sample list (Excel template supplied in Appendix 2). The information can also be added in the App.

1.6. Sample numbers



There will be limited consumables available for sampling so they should be used carefully. **Three live and three dead individuals of each species** will be enough, once the mortality rate and clinical signs have been discussed and concluded to be consistent with HPAI.

9. CARCASS REMOVAL

The carcasses of animals that have died from HPAI are potential sources of the HPAI virus which can infect other animals, especially scavengers. Removing these carcasses may reduce the quantity of the virus in the environment and reduce the risk of infection in other animals. Moving carcasses away from targeted areas such as freshwater bathing and/or drinking sites or high-traffic areas (e.g. pathways) may be especially effective. However, the contribution of carcasses to the overall amount of the virus in the environment may be of far less importance than the amount shed by infected animals and the feasibility and harmful effects of carcass collection and disposal should be weighed against the possible benefits.

Carcass removal should only be done if all the following criteria can be met:

- 1) A safe and effective carcass disposal option is available (e.g. burial: see section 10).
- 2) Carcasses can be collected without excessive disturbance of healthy animals. Such disturbance may increase the transmission of the disease if it leads to changes in behaviour (especially if animals crowd together or disperse to other healthy colonies) or stress. Disturbance can cause severe negative effects which are unrelated to the disease.
- 3) Sufficient personnel are available to collect carcasses.
- 4) Carcass removal can be done with minimal risk to people. Risks can be related to dangerous terrain or a virus with high potential to transmit to humans. Anyone handling potentially infected carcasses should wear suitable protective clothing (see section 12.1 for details).
- 5) Carcass removal and disposal can be done without increased risk of spreading the disease to new areas or species.



- 6) Fresh carcasses can be collected or frequent collection can be organised, as carcasses will be most infectious soon after the bird dies.

Accurate records must be kept of the number of carcasses collected, the date, time and location collected, species, ages, and transport and disposal methods (see section 7).

10. CARCASS DISPOSAL

Carcass disposal options are extremely limited, which will limit the number of carcasses that should be removed. The only recommended action to consider is therefore moving some carcasses to an area where there is a lower probability that they will cause harm. If possible, first discuss with the HPAI steering committee, so the risk can be assessed.

Carcass disposal options include:

- A. Burial: sufficient space and suitable substrate is required to ensure that a hole can be excavated and the carcasses will not cause contamination of soil or water sources. There are few suitable sites on Marion Island, and may impact ecological functioning, so this is not recommended.
- B. Composting - sufficient plant material is required to achieve the correct carbon-nitrogen ratio and the correct moisture level. This is not available on Marion Island.
- C. Incineration/burning is not allowed on Marion Island without permission.
 - a. Incineration in an incinerator: the machinery and fuel must be available and the processing capacity of incinerators can be limited. This is unlikely to be a suitable option for mass mortality events.
 - b. Burning: sufficient fuel and airflow (possibly burning on a platform) is required to maintain sufficient heat.

11. SICK ANIMALS

Sick animals should not be handled or moved except for sampling. Their removal is unlikely to cause a significant reduction the amount of virus in the environment, as not



all sick animals will be observed and they will begin shedding virus before they appear ill.

Treatment is also unlikely to be feasible and will be ineffective in many cases. Euthanasia is not common practice under SANAP and is not recommended. No methods of euthanasia is painless, and training and practice is required to ensure that the animal does not suffer unnecessarily.

Any handling of sick animals poses a risk to human health and to healthy animals that may be handled afterwards.

12. BIOSECURITY GUIDELINES

Anything that touches an infected bird or contaminated object, or environment may transfer the HPAI virus to a healthy bird. Anything that is visibly dirty poses the greatest risk, so every attempt should be made to ensure that footwear, clothing and equipment are cleaned of visible dirt as soon as possible after leaving an area densely populated by animals, and that, wherever possible, disinfectant is applied afterwards. Try to keep equipment and clothing as clean as possible e.g. minimise the number of objects that touch the ground and do not sit on the ground in the colony. Please do not discard any unused or excess disinfectant in the field and under no circumstances allow it to enter streams or dams.

HPAI virus is present in seabird colonies in South Africa but is currently not often visible as clinical cases. Therefore, new equipment that has not been in contact with South African birds should be used and older equipment should be thoroughly cleaned and soaked in disinfectant before use.

Vessels and aircraft should also be cleaned and disinfected before moving from one part of a colony to another and between colonies, especially the foot wells, wheels, and undercarriage. Dirty equipment and clothing should be cleaned before transport, or packaged to prevent contamination of rucksacks, or the vessel or aircraft.

12.1 Clothing and personal protective equipment (PPE)



Biosecurity and PPE recommendations below have been matched to HPAI risk level for different activities and disease situations. They are designed both to protect staff and prevent virus spread between sites and species. Individuals may choose to adopt a more precautionary approach, but this is considered the minimum. PPE categories increase as the probability of HPAI virus exposure increases (highest for handling infected animals) and the risk of human infection rises (highest after there have been detections in other mammal species).

When washing potentially contaminated clothes, rinse off as much visible dirt as possible, soak in disinfectant for at least half an hour, and wash as hot as possible, ideally at more than 60°C, or add a disinfectant such as F10SC.

Rubber (gum) boots are advised as they can be easily changed and properly cleaned. Ensure that the treads are also cleaned and disinfected, and that no guano/dirt has gone inside a boot. At all times, when moving between colonies, clean off dirt and rinse boots wherever possible and ideally also spray with disinfectant (carry a 500 ml spray bottle). If using fresh water, do not wash into the water as you could spread virus. Ideally wash in the sea.

Goggles will be re-used so should be sprayed with disinfectant immediately after use so they can be safely handled, then cleaned and sprayed again. Leave them wet to allow for contact time.

The PPE required is listed in Appendix 4.

Category A PPE (for lowest HPAI risk/ normal activities)

- Overalls/ rain suit/ oilskin jacket and trousers that keep clothes and skin clean and dry underneath and can be easily cleaned and sprayed with disinfectant.
- Wear disposable gloves or clean and sanitize hands/ disinfect gloves between handling individual live animals. Alcohol sanitizers can be used on hands or spray hands/ gloves with F10SC.
- Footwear and outerwear to be cleaned and disinfected between sites/areas of high wildlife density with appropriate disinfectant. At a minimum, trying to rinse off mud and guano from a colony from footwear.



Clothing should be dedicated to colony work and should ideally be waterproof but should be as impermeable as possible and should have minimal folds and seams and no Velcro that will catch dirt and guano. The PPE should be able to be sprayed thoroughly with disinfectant after visiting a colony.

Category B PPE (for working near infected colonies but without direct contact with animals)

Same as category A, plus:

- Fluid resistant face mask/ respirator
- Eye protection

Category C PPE (for highest HPAI risk- contact with potentially infected animals)

- Disposable, fluid-resistant suit equivalent to European standard EN 14126, CE certified as Category III, Type 5-B or 6-B (EN 13982-1:2004 or EN 13034:2005) e.g. Tyvek 500 suit
- EN149 **FFP2** or NIOSH **N95** respirator
- Goggles that seal against the face
- Non-porous boots, to be cleaned and disinfected when leaving infected sites/areas of high wildlife density, with appropriate disinfectant.
- Double layered disposable latex gloves. Outer gloves changed between handling individual live animals.

Disposable clothing must be sealed in a plastic bag immediately after use, taking care not to contaminate the outside of the bag, and placed into a biohazard bin to be incinerated. PPE must be donned and removed correctly for it to be effective. Care must be taken not to spread contaminants from the outside of the protective clothing when removing it and not to touch the face with contaminated gloves or hands.

[The Centre for Disease Control \(CDC\) in the USA](#) advises on how to “Safely remove PPE in sequence”:

1. Remove and dispose of the apron, if worn;
2. Clean and disinfect boots;



3. Remove boots;
4. Remove and dispose of the coverall;
5. Remove and dispose of gloves;
6. Wash hands with soap and water;
7. Remove goggles and respirator;
8. Clean and disinfect reusable goggles and respirator; and
9. Wash hands with soap and water again

12.2 Basic Principles of Disinfection

Note: disinfection applies only to clothing, footwear, equipment, vessels and aircraft (man-made objects) and will not be done on any animal or in any colony. No disinfectant is to be discarded onto the ground or into any water.

Important factors that affect the efficiency of disinfection are:

1. The target pathogen.
2. Concentration of disinfectant used.
3. Contact time (the pathogen must be exposed to the disinfectant for a minimum period before it is killed).
4. The presence of organic material or other dirt.
5. Material to be disinfected (more porous or rough materials may provide “hiding places”).

Few disinfectants work optimally in the presence of organic material, so faeces and dirt should be rinsed, wiped, or scraped off as much as possible before the disinfectant is applied. Where possible, clean equipment with soap and water before applying disinfectant. If proper cleaning and disinfection is not possible when leaving the colony, spray with disinfectant and then place in a sealed plastic bag or container, for safe transport and cleaning at a later stage.

The disinfectant must be mixed to the correct concentration required to kill the target pathogen and enough contact time must be allowed. Guidance is provided in section 12.3 and on the product packaging. If it is not possible to clean all the dirt off first,



increase the concentration and/or contact time as much as possible. If a piece of equipment is disinfected after touching an infected bird but is used on another bird before the contact time has elapsed, there is a risk that the second bird may be infected. For some disinfectants, the contact time can be reduced by increasing the concentration, but all disinfectants differ in the extent to which this is possible. For some, the concentration must be increased drastically to make any significant reduction in contact time.

Please make every attempt to avoid dripping disinfectant onto the ground and do not discard any disinfectant in the field. All disinfectant should be disposed of in dedicated bins for return to South Africa.

12.3 Recommended disinfectants for HPAI virus

Virkon S - Use for hard, nonporous surfaces e.g. equipment/aircraft

- Mix 20g powder in 1L water (2% solution).
- Contact time 7-10 minutes.
- May damage metal so do not leave it on for more than half an hour or use plastic equipment where possible.
- May be an irritant to the skin.
- Available as 50g sachets.
- Can be purchased from farmers' co-ops.

F10 SC – Can be used widely, including on skin

- Less irritant to skin, so can be used to disinfect hands and arms. Some people are allergic, however.
- Mix **2ml in 1L of water** (1:500 dilution): **10 minutes contact time** (this is described on the label as the dilution for viruses (e.g., Newcastle disease)).
- Mix **4ml in 1L of water** (double concentration = 1:250 dilution) for **5 minutes** contact time (but this will double your costs and F10 can be expensive).
- F10 hand gel and soap are also available.
- Also causes some rusting of metal equipment but the F10 Sterilant with rust inhibitor is another option, though more expensive.



Purchase from Veterinary Suppliers:

- VetServ (021 557 2955).
- Lion Bridge (www.lionbridge.co.za).
- Lakato (021 944 6900).
- Health and Hygiene (011 474 1668, info@healthandhygiene.co.za, www.healthandhygiene.co.za).

Household bleach (Sodium hypochlorite) – For hard, nonporous surfaces e.g. equipment or fabrics where colour loss is not a concern

- Mix 100ml of bleach in 1L of water (= “10% bleach”. Bleach is available at 3.5% concentration in South Africa (e.g. Jik) so this creates a 0.35% solution of sodium hypochlorite).
- Contact time 12-15 minutes.
- In the presence of a lot of dirt and organic material, the concentration needs to be increased to 2-3% and the contact time should be 10-30 minutes. To mix 3.5% bleach to a 2% solution, mix 600ml bleach with 400ml water.
- Corrodes metal (rinse off after half an hour), may discolour fabric or may irritate the skin.
- For working in seabird colonies, use products without added detergents or other ingredients.

Examples of other effective products, with active ingredients listed, are available on the US [Environmental Protection Agency \(EPA\) website](#).

For use in the field, safer and less persistent disinfectants may be required. The EPA also has a [list of active ingredients](#) that are considered more environmentally-friendly. Compounds effective against HPAI virus are listed below and may be used for hard, non-porous surfaces:

- Hydrogen peroxide e.g. [Oxivir](#) (1 minute contact time)
- [Citric acid](#)
- Peracetic/ peroxyacetic acid e.g. [Oxiacid](#)



12.4 Suggested Disinfecting Equipment

- A bucket with a lid to transport and soak equipment and clothing in disinfectant. At minimum, plastic bags for clothing or equipment that needs disposal or cleaning.
- A 500ml spray bottle or knapsack sprayer if larger volumes of disinfectant are required, for example for aircraft.
- Scrubbing brushes for equipment and footwear.
- A cloth in a waterproof container for applying disinfectant.



13. MANAGEMENT OF SEABIRD COLONIES AT VARYING RISKS OF HPAI

The table below shows some expected possible scenarios, with varying levels of HPAI outbreaks on Marion Island, extending to possible marine mammal infections. Extra actions may be required as the situation worsens, and other activities may need to be restricted, to protect animals and humans.

Adapted from the Government of South Georgia & the South Sandwich Islands' [Biosecurity Handbook](#), revised October 2023, with thanks.

	Level 0 No HPAI in linked locations	Level 1 HPAI in linked locations, few seabirds affected	Level 2 HPAI in seabirds, with increased mortality	Level 3 Mass mortality in seabirds	Level 4 Mass mortality in mammals
Regional spread of HPAI	No reported HPAI on PEIs, South Africa, Crozet, Gough or Amsterdam Islands	HPAI observed in South Africa, Crozet, Gough or Amsterdam Islands	HPAI observed in seabirds on Marion Island	HPAI observed in seabirds on Marion Island	HPAI observed in seabirds and mammals on Marion Island
Indications / mortality	Mortality not above baseline No individuals showing HPAI signs	Mortality not above baseline 1 or 2 individuals showing possible HPAI signs	Above baseline mortality is suspected but not considered mass mortality Numerous individuals are displaying HPAI signs	Wide-spread mortality across different life stages and/or species. Multiple HPAI signs present in a significant number of individuals	Mass mortality in both birds and mammals <u>across multiple sites</u> , strongly suspected or confirmed due to HPAI
Media/public communication (Draft statement Appendix 5)	None	None	Release a media statement- SCAR and WOHAI should be informed so it cannot be kept secret	Notify the public of the situation and the response in place	Notify the public of the situation and the response in place.



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	Level 0 No HPAI in linked locations	Level 1 HPAI in linked locations, few seabirds affected	Level 2 HPAI in seabirds, with increased mortality	Level 3 Mass mortality in seabirds	Level 4 Mass mortality in mammals
All activities within the colony but <u>more than 5m</u> from animals	Operations as normal.	Operations as normal with added vigilance	Projects may continue under caution	Activities reviewed and high-priority projects may continue under caution with category B PPE	Activities reviewed and high-priority projects may continue under caution with category B PPE, if agreed
All activities within the colony and <u>less than 5m</u> from animals	Operations as normal.	Operations as normal with added vigilance	Projects may continue under caution with category B PPE	Activities reviewed and high-priority projects may continue under caution with category B PPE	Animal approach in infected species/colonies to stop. Permits reviewed and with DFFE agreement in exceptional circumstances monitoring may continue under caution with Category C PPE, if agreed
Activities – handling healthy animals	Operations as normal.	Operations to continue with category B PPE	Projects may continue under caution with Category B PPE	Animal handling in infected species/colonies to stop. Permits reviewed and with agreement from DFFE, in exceptional circumstances, may continue with Category C PPE in species/colonies with no HPAI	No animal handling



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	Level 0 No HPAI in linked locations	Level 1 HPAI in linked locations, few seabirds affected	Level 2 HPAI in seabirds, with increased mortality	Level 3 Mass mortality in seabirds	Level 4 Mass mortality in mammals
HPAI Monitoring requested for anyone entering the colony	<p>5-minute survey period for HPAI signs prior to starting work in the area of high wildlife density. Move to category B PPE if any abnormalities are observed</p> <p>Report suspect cases immediately the ECO and TL</p>	<p>10-minute survey period for HPAI signs prior to starting work in area of high wildlife density. Move to category B PPE if any abnormalities are observed</p> <p>Report suspect cases immediately to ECO and TL</p>	<p>Trained staff in category A PPE should monitor ongoing mortality and symptomatic individuals at site, at least weekly but daily if possible.</p>	<p>Trained staff in category B PPE should note ongoing mortality and symptomatic individuals at site at least weekly but preferably daily. Observers should remain >5m from wildlife.</p>	<p>Trained staff in category B PPE should note ongoing mortality and symptomatic individuals at site at least weekly but preferably daily. Observers should remain >5m from wildlife.</p>



Acknowledgements

Special thanks to the following contributors

Azwianewi Makhado, Makhudu Masotla, Millicent Makoala, Daisy Kotsedi, Carol Jacobs (all DFFE), Laura Roberts (Animal Health, Directorate: Veterinary Services, Department of Agriculture, Western Cape Government; University of Pretoria), David Roberts (The Southern African Foundation for the Conservation of Coastal Birds), Liezl Pretorius (University of Pretoria, previously Dyer Island Conservation Trust), Maëlle Connan (Nelson Mandela University) and Peter Ryan.

14. LINKS TO OTHER ADVICE ON HPAI IN ANTARCTICA

World Organisation for Animal Health

Practical guide for authorised field responders to HPAI outbreaks in marine mammals
<https://www.woah.org/app/uploads/2024/02/practicalguide-forauthorisedfieldresponders-hpaimarinemammals-feb24.pdf>

The Council of Managers of National Antarctic Programs (COMNAP)

Highly Pathogenic Avian Influenza (HPAI) Preparedness, Monitoring & Response
<https://www.comnap.aq/heightened-risk-of-hpai-in-antarctica>

COMNAP Guidance on HPAI Preparedness in Response to the Heightened Risk (version 1/30 August 2023) [from the Member's Only Documents area](#)

Scientific Committee on Antarctic Research (SCAR)

Antarctic Wildlife Health Network (Dewar et al)

Sub-Antarctic and Antarctic highly pathogenic avian influenza H5N1 monitoring project
<https://scar.org/library-data/avian-flu>

[The risk of highly pathogenic avian influenza in the Southern Ocean: a practical guide for operators and scientists interacting with wildlife](#)



International Association of Antarctica Tour Operators (IAATO)

IAATO 2022-23 Biosecurity Protocols Regarding Avian Influenza

<https://iaato.org/iaato-2022-23-biosecurity-protocols-regarding-avian-influenza/>

US National Science Foundation (US Antarctic Program (USAP))

Updated Guidance on the Highly Pathogenic Avian Influenza - Environmental Update for USAP Personnel

https://www.nsf.gov/news/news_summ.jsp?cntn_id=308279&org=OPP

European Polar Board

Upcoming issues of importance: Avian influenza

<https://www.europeanpolarboard.org/communications/upcoming-issues-of-importance/>

Antarctic wildlife: Risk of Avian Influenza

<https://www.europeanpolarboard.org/news-events/news/article/news/antarctic-wildlife-risk-of-avian-influenza/>

Sites with information on cases

<https://www.acap.aq/resources/disease-threats/avian-flu>

<https://scar.org/library-data/avian-flu>