Standard Operating Procedure

SC26-07 MANAGING INFECTIOUS DISEASE RISK AND BIOSECURITY IN WILDLIFE MANAGEMENT (OCTOBER 2026)

Animal welfare is the responsibility of all personnel involved in the care and use of animals for scientific purposes.

Personnel involved in an Animal Ethics Committee approved project should read and understand their obligations under the *Australian code for the care and use of animals for scientific purposes*.

Version 1.3

October 2026

GOVERNMENT OF WESTERN AUSTRALIA

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1 Acknowledgements

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2 Purpose

Managing biosecurity and animal disease risks should be considered by all personnel working in research and wildlife management, including those conducting biological surveys, fauna monitoring programs, captive breeding programs, translocations and introduced predator control, and when handling sick, injured, orphaned and confiscated fauna. This document is designed to raise awareness of the potential for disease transmission and to provide advice to minimise the risk of disease transmission between wildlife populations, and from wildlife to humans or domestic animals.

This Standard Operating Procedure (SOP) provides advice on minimising and managing the risk of infectious disease spreading from one individual or population to another (including human or domestic animal to wildlife and vice versa) in research and wildlife management only.

3 Scope

This SOP has been written specifically for scientific and education purposes, and endorsed by the Department of Biodiversity, Conservation and Attractions' (DBCA) Animal Ethics Committee (AEC). However, this SOP may also be appropriate for other situations.

This SOP applies to all activities involving fauna that are undertaken across Western Australia by DBCA (hereafter department) personnel. It may also be used to guide fauna related activities undertaken by Natural Resource Management groups, consultants, researchers and any other individuals or organisations. All department personnel involved in fauna research and management should be familiar with the content of this document.

This SOP complements the *Australian code of practice for the care and use of animals for scientific purposes* (The Code). The Code contains an introduction to the ethical use of animals in wildlife studies and should be referred to for all AEC approved projects. A copy of the code may be viewed by visiting the National Health and Medical Research Council website (https://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes).

This SOP is based on Wildlife Health Australia's National Wildlife Biosecurity Guidelines and National Guidelines for Management of Disease in Free-ranging Australian Wildlife. The reader is referred to the Guidelines for further information. Wildlife Health Australia also produce Fact Sheets on some of the most significant diseases in Australian wildlife. **All personnel engaging in fauna activities should make themselves familiar with the extensive information available from this valuable resource.**

4 Animal Welfare Considerations

When seeking approval from the DBCA AEC, departmental projects involving fauna must demonstrate an understanding and application of biosecurity and disease risk management principles and practices.

Poor or inadequate management of disease risks and biosecurity has the potential to result

in serious negative animal welfare outcomes, both in terms of direct individual impacts and at the population and species levels. Conversely, risk management actions and procedures may also compromise the welfare of individuals and must be appropriately applied to achieve best welfare outcomes. The key animal welfare considerations that should be taken into account when managing disease risk are listed below and are highlighted throughout the document.

4.1 Injury and unexpected deaths

If adverse events including injury, unexpected deaths or unplanned requirement for euthanasia occur then it is essential to consider the possible causes and take action to prevent further issues. For projects approved by the Department's AEC, adverse events must be reported in writing to the AEC Executive Officer as soon as possible after the event by completing an *Adverse Events Form*. Guidance on first aid and field euthanasia procedures are described in the Department SOPs for *First Aid for Animals* and *Euthanasia of Animals Under Field Conditions*.

4.2 Level of impact

Fauna may be directly impacted when carrying out disease risk procedures and care should be taken to minimise the level of impact where possible.
Potential impacts include:

- Distress to animals during handling (refer to the Department SOP for *Hand Restraint of Wildlife* for further guidance).
- Physical injury to the animal (including creating wounds, which are susceptible to infection).
- Transmission of infectious agents between individual animals, geographically separate populations or across species.
- Stressed animals may have compromised immunity, which can increase susceptibility to disease. Stressed animals may also excrete more infectious material into the environment, increasing the chances of disease transmission.
- Irritation of the skin and eyes from contact with residual disinfectants if equipment is not properly rinsed after disinfection.

It is important to note that whilst these impacts are specifically associated with infectious disease risk procedures, an animal may also experience impacts from associated activities such as trapping, handling and marking.

5 Understanding Infectious Disease in Wildlife

This section is adapted from the *National Wildlife Biosecurity Guidelines* (Wildlife Health Australia, 2018).
Disease is any impairment of the normal structural or physiological state of an organism. Infectious disease is caused by an agent (usually a microorganism such as bacteria, virus, fungus, or parasite) that can be transmitted from one animal to another via various pathways. While there is growing knowledge about specific diseases in wildlife, there remain gaps in our understanding of the epidemiology of many infectious diseases in wildlife. New infectious diseases continue to emerge in wildlife around the world and there is the possibility that

diseases present in Western Australian wildlife and environments have not yet been identified. Many emerging diseases of wildlife are also zoonotic (zoonosis = disease of animals that can be transmitted to humans). Understanding and managing risk, to both animals and humans, is the key to optimising biosecurity.
General information on common zoonoses associated with wildlife in WA is provided in Appendix I.

5.1 Pathways of transmission

Infectious agents may be transmitted from one individual to another by a variety of different routes. Transmission may occur:

- **Directly**, through close contact with infected animals.
- **Indirectly**, through contact with products or contaminated things, which are called fomites. Most wildlife management activities will be associated with some risk of indirect disease transmission via fomites (e.g. tagging and measuring equipment, traps and handling bags, food containers, water containers, bedding, boots, clothes and vehicles).
- Via **vectors**, i.e. living organisms (frequently arthropods such as mosquitoes and ticks) that transmit an infectious agent from one host to another.

Pathways of transmission and infection include:

- **Inhalation** e.g. Chlamydia transmitted by inhaling aerosolised droplets containing bacteria exhaled by an infected bird; Q fever transmitted by inhaling aerosolised bacteria from macropod faeces.
- **Ingestion** e.g. Salmonella bacteria (transmitted by the faecal-oral route); infection with the protozoa Giardia after ingestion of water contaminated with faeces.
- Via **skin or mucous membrane** e.g. Leptospirosis can be transmitted via urine contact with mucous membranes or an open wound; ringworm fungus (direct contact with skin lesions); amphibian chytrid fungus (via contaminated environmental water).
- Via **placenta or maternal milk** (e.g. toxoplasmosis in pregnant humans).
- **Vector** transmission (via bite of insect, tick or mite) e.g. Ross River virus.
- By a **bite, scratch, needle stick or wound** contamination (e.g. Australian bat lyssavirus).

An understanding of the major routes of transmission for an infectious agent helps us to implement effective strategies to minimise disease risk.

5.2 Understanding and evaluating infectious disease risk

Risk management is the process of:

- **Identifying hazards**: identifying which infectious agents are of concern, where the disease may come from and be transferred to, and how it may be transferred.
- **Assessing the relative risk** associated with each hazard, including both the likelihood of the risk occurring and the consequences if the risk does occur.
- Deciding upon and **implementing control measures**, either to eliminate the risk or, if that is not possible, minimise the risk as much as possible (e.g. deciding unvaccinated workers should not handle bats, using disposable gloves when working with animal wastes).
- **Monitoring and evaluating** the risk and the control measures on a regular basis, to

make sure that risks have not changed, that control measure are being properly implemented and followed, that the control measures are continuing to appropriately minimise the risk, that no additional control measures need to be implemented and that the controls are not causing any new problems.

It may not always be possible to eliminate infectious disease risk when working with wildlife, but everyone should work to an **agreed acceptable level of risk** (or a safe or minimum risk level). An acceptable level of risk is the maximum overall exposure to risk that can be accepted, based on the benefits and costs involved. This may be determined by authorities, by an organisation or by an individual.

All animals should be handled with the presumption that they carry disease!

In the absence of information on disease risk, the **precautionary principle** should be applied. That is: if there is a suspicion that an interaction with wildlife may pose a disease risk (to other wildlife, domestic animals or humans), a risk is assumed (and managed appropriately) until proven otherwise. For example, we might assume any reptile (sick or healthy) may be shedding large amounts of *Salmonella* bacteria in its faeces, even though no tests have been conducted; or we assume any bat may be infected with Australian bat lyssavirus.

It is the responsibility of the Chief Investigator (CI) to undertake risk management in relation to infectious disease risk. All personnel are responsible for implementing specific control measures and risk mitigation in line with this SOP and the specific controls put in place for a given project.

6 Procedure Outline

The following baseline biosecurity procedures are adapted from the *National Wildlife Biosecurity Guidelines* (Wildlife Health Australia, 2018).

ANIMAL WELFARE: To reduce the risk of disease transmission from animals to humans (and vice versa) personnel must adhere to standard hygiene protocols and be able to recognise and deal with animals exhibiting signs of illness/disease.

6.1 Baseline biosecurity practices

Baseline biosecurity practices (also known as 'standard precautions' or 'general infection prevention and control practices') protect against many infectious disease risks associated with wildlife interactions.

Baseline biosecurity practices include:

- Hand hygiene.
- Keeping the work environment clean and tidy.
- Cleaning and disinfecting (or safely disposing of) equipment after use.
- Appropriate management and disposal of waste material (including animal, food, water and clinical waste).
- Appropriate management of laundry (bedding, towels and worker clothing).
- Safe use and disposal of sharps such as needles and scalpel blades.
- Managing accidental exposures to blood and body substances, as well as animal bites, scratches and sharps injuries.
- Care with the movement of animals and items from one location to another.

- Appropriate use of personal protective equipment (PPE).
- Managing the personal health of workers, including vaccination appropriate to the animal species encountered.
- Protection against biting insects and ticks that may be vectors.

ANIMAL WELFARE: Wildlife workers should follow baseline biosecurity practices for any contact with animals, at all times, regardless of the animal's species, age, health or perceived disease risk, to minimise the risks of exposure to and transmission of disease.

6.1.1 Mechanical cleaning

Mechanical cleaning is the stepwise process of:

1. Removing obvious organic material (e.g. shake out the handling bag, knock the mud off your boots), followed by
2. Washing with water (preferably warm or hot), using detergent or soap and scrubbing (use a brush, or dishwashing machine or clothes washing machine etc.), followed by
3. Rinsing clean with fresh water, followed by
4. Thorough drying.

Drying is important because most pathogens don't survive in a very dry environment. UV radiation from sunlight will help to kill pathogens.
Note: Be aware of increased risks of airborne/droplet transmission when using high-pressure cleaners to remove organic material.

6.1.2 Hand hygiene

Hand hygiene refers to washing (with warm water and soap) and drying of hands, and/or use of alcohol-based hand sanitizer products and gloves.
Hand washing is one of the most effective measures for preventing the spread of common diseases and should be routinely practiced and regularly undertaken when handling wildlife. Dry hands with a disposable towel after washing. Bar soaps are not acceptable, especially in field situations, as they are readily contaminated.
At a minimum, hand hygiene should be undertaken at the following times during wildlife interactions:

- At the beginning and end of the work day
- Before and after handling wildlife and their products (including faeces or other biological material)
- Before eating, drinking, smoking
- Before and after any invasive procedures (e.g. ear tagging, placing a microchip, collecting a blood sample)
- Between handling wildlife and domestic animals
- Between contact with different cohorts of animals
- Before preparing and handling animal or human food
- After cleaning equipment, surfaces or the work environment

Hand sanitisers should contain a minimum of 60% alcohol and are only suitable for use on visibly clean hands. Hand sanitisers (even when used correctly) may not inactivate all pathogens (e.g. *Cryptosporidium* is not killed by hand sanitisers).
Cuts, abrasions and other exposed skin (e.g. rashes or irritated areas) should be covered by a

water-proof dressing, so there is no portal of entry for infection.
Disposable gloves (e.g. latex, vinyl and nitrile) should be worn for work activities that involve contact with potentially infectious materials. Gloves are single use items that should be put on just before the start of the procedure and removed immediately after finishing the procedure, followed by hand washing. Wildlife workers should have disposable gloves available at all times, ready for use when needed, even if they are not worn for routine procedures. **Wearing disposable gloves is not a substitute for appropriate hand hygiene.**

6.1.3 Equipment hygiene

The methods used to clean and disinfect equipment must be determined by the CI (or equivalent), based on the degree of risk.
All equipment used on wildlife should be clean prior to use.
All equipment including traps, trapping kits and handling bags must be cleaned and disinfected at the end of the trapping session or in between sites. Handling bags only require hygiene measures in between individual animals when the animal is suspected of being ill or carrying infectious disease, or the bag has been soiled. Best practice – inspect and clean trapping kits at the end of each day within a trapping session and start with fresh clean bags each day if possible.
Wash handling bags and any other material items that have been in contact with animals separately from personal clothing, then machine or air dry. Hand hygiene should be performed after handling used laundry items.
Traps should be mechanically cleaned, disinfected, rinsed and dried with UV exposure for 24 hours. **Note:** Aluminium box traps should be fully opened during cleaning by removing the side pin and all surfaces cleaned. Care should be taken not to transport faecal material or seeds caught in the mesh or shade cloth of funnel traps.
Equipment should undergo chemical disinfection after cleaning (see Section 6.1.4 and Appendix II).

6.1.3.1 Disinfection

Disinfectants work by either killing or reducing the virulence of infectious agents. Disinfection does not necessarily kill all microorganisms, and some infectious agents are particularly resistant to disinfection (e.g. *Mycobacterium* spp; *Clostridium* spores). Many disinfectants are not effective in the presence of organic material and mechanical cleaning should always occur before disinfection.
When selecting and using chemical disinfectants, ensure that selected products are:

- Effective against the infectious agents identified as a risk (see Appendix II for specific information).
- Prepared in accordance with the manufacturer's instructions (e.g., concentrations, dilutions).
- Used as directed (particularly minimum contact periods), and with reference to safety data sheet instructions for use and storage.
- Rinsed off after disinfection so that no residue remains, as residue can cause irritation to animals and in some cases degrade equipment surfaces. The residue smell may also discourage animals from entering traps and/or cause stress or harm while in bags.

ANIMAL WELFARE: Irritations to the skin and eyes of animals can occur from contact with residual disinfectants used on equipment. It is important that any surface treated with disinfectants is subsequently rinsed with water to remove residual chemicals before drying.

Appendix II summarises some of the properties of commonly used disinfectants. Refer to the AUSVETPLAN Operational Manual – Decontamination for more information on properties and choice of chemical disinfectants.

6.1.3.2 Sterilisation

Sterilisation refers to the complete eradication of all infectious agents. Techniques of high heat, pressure and/or irradiation are often used to sterilise equipment. These techniques may be used in specific field situations e.g. "flaming" biopsy equipment.

6.1.4 Personal protective equipment (PPE)

PPE can be used to reduce risk of exposure to an infectious disease, as well as to reduce the risk of injury when handling wildlife or other items such as sharps. PPE can also reduce the risk of spreading infection to a third party (animal or human).
PPE to reduce infectious disease risk includes items such as:

- Disposable gloves
- Long-sleeved shirts, long trousers, coveralls, aprons
- Boots
- Gauntlets or puncture resistant gloves to protect against animal bites and scratches
- Use of double-gloving
- Face masks and respirators
- Eye protection e.g. safety goggles

For PPE to be effective, it should be appropriately selected and used. Choice of PPE should be based on the method of transmission of the infectious agent. PPE should be:

- A suitable size and fit
- Worn correctly
- Fit for purpose in the conditions in which it will be worn (e.g. does not cause heat stress or fogging and provides sufficient dexterity etc.)
- Only used once, if disposable
- Appropriately cleaned and stored (or disposed of) after each use

6.1.5 Vector protection

If there is risk of vector transmission, consider insecticidal treatments for equipment, personnel and/or animals, and PPE for personnel. If the risk is particularly high, it may be necessary to incinerate bags, and to clean and disinfect traps between each entrapment (i.e. between each redeployment or rebaiting of traps within a trapping session).

6.1.6 Personal health

As for working with humans, personnel should avoid working closely with fauna if they are unwell, both for their own safety and to protect animal welfare.

People should be aware of the personal factors (e.g. pregnancy, concurrent disease,

medications and treatments, vaccination status) that may influence their susceptibility to infectious disease risk. They should discuss the risks with their doctor and take additional precautions as advised.

Wildlife workers should receive the appropriate vaccines to work safely with wildlife. Any open wound can also result in tetanus from infection with *Clostridium tetani*, which is prevalent in soil. Its therefore recommended personnel are vaccinated against rabies if working with bats (to provide cross-protection against bat lyssavirus), Q fever if working with native wildlife such as macropods and bandicoots, and tetanus vaccination for all (see WHA Biosecurity Guidelines for bat research in caves in Australia for further information).

Wildlife workers should also be aware that they may transmit infectious disease to the wildlife with which they work, for example ringworm fungus or protozoal diseases such as *Giardia*. Appropriate biosecurity management, including hygiene and barrier nursing, will minimise these risks.

6.2 Additional biosecurity considerations for specific scenarios

6.2.1 Wildlife translocations

Wildlife translocations are considered to pose a higher biosecurity risk because:

- They involve direct contact with animals, which may be prolonged by lengthier procedures such as fitting radio transmitters.
- Animals are generally moved over long distances, far greater than would occur through natural movements, allowing for abnormal or accelerated geographic spread of pathogens.
- Animals are usually moved in groups and there may be multiple translocation events. The greater the number of individuals within a group, or number of introductions, the higher the risk.
- During the process of translocation, individuals are assumed to be under increased physiological stress. This may be due to confinement, transport and stresses associated with settling into a new environment such as the need to seek sufficient food, water and shelter. This additional stress may mean that translocated animals are more likely to shed pathogens.

6.2.2 Wildlife work with island populations

Island populations are considered to represent a higher biosecurity because their wildlife is cut off from movements with mainland animals. Consequently, their wildlife may have a different exposure to pathogens and may have evolved a different suite of pathogens to mainland populations. Additionally, movements of wildlife workers, equipment or animals between the island and the mainland may provide a novel pathway for movement of pathogens.

A formal **disease risk assessment** process helps to identify and prioritise risk management activities for translocations and for any wildlife work with island populations. Disease risk assessment is a formal process of determining:

- Which infectious agents present a hazard for the specific translocation in question.
- The pathways through which animals or humans could be exposed to the infectious agents.
- The likelihood and consequence of each hazard identified.
- The risk mitigations for the identified significant risks.

For more information on wildlife disease risk assessment, see the IUCN Guidelines for Wildlife Disease Risk Analysis (2014).

ANIMAL WELFARE: A **biosecurity risk management plan** should be developed and implemented prior to any planned transfer or translocation of wildlife. Critical steps for development of a risk management plan include:

- **full health check** of each individual prior to transfer, including collection of samples for testing or storage, by a veterinarian with clinical experience with the species being moved
- assessment of the **health status of the receiving populations** (all at-risk species, not just the species being moved) prior to transfer
- **post transfer monitoring**, reporting and disease surveillance of the receiving populations

6.2.3 Biosecurity risks associated with sick animals

Interacting with sick wildlife can pose high biosecurity risks. In addition to the existing risks associated with the necessary human intervention, the biosecurity risks are amplified because:

- The animal may be infected with a contagious disease, which may be transmitted via handling or management practices
- The animal is likely immunosuppressed and is more likely to be susceptible to other infections or to be shedding a pathogen.

Wildlife workers should be aware of the common infectious diseases for the species and geographical location, particularly zoonotic diseases (see Appendix I). In species where an infectious disease is already known to be present (e.g. Bandicoot Papillomatosis Carcinomatosis Virus 1 in Shark Bay bandicoots), it is important that personnel are familiar with the specific signs of the disease and the specific biosecurity protocols in place to prevent disease spread.

Seek expert advice from veterinarians where required. Wildlife Health Australia produces a series of fact sheets that provide information on a range of diseases in Australian wildlife.

Most biosecurity risks can be managed by treating sick individuals as high risk. In addition to baseline biosecurity, consider the following additional procedures:

- Isolate the animal from other healthy animals.
- Handle or care for the animal only after processing all other healthy animals.
- Consider using additional PPE appropriate to the likely transmission pathway.
- Only personnel who need to be directly involved should remain in the immediate vicinity in high disease risk situations.
- Take photos and write down a description of the signs of disease.
- Incinerate bags that have been used to handle sick animals.
- All relevant information on the species, collector, date of collection and the location where the animal was collected must be recorded and included if the animal is relocated for care or for postmortem assessment.

Personnel and equipment should only work/travel from low to high-risk areas to reduce likelihood of transporting/moving diseases between sites in these instances. Regardless of

whether there is a suspicion of infectious disease, the standard biosecurity procedures of isolation, taking photos and collecting relevant information apply.
Personnel should report suspicion of a notifiable disease to the National Emergency Animal Disease Hotline on 1800 675 888.

6.2.4 Handling dead animals or their tissues

If in doubt, animal carcasses and waste products should be assessed and managed as high risk. The level of biosecurity risk for a dead animal that was sick prior to death should be considered the same as for a sick living animal. Biological samples, waste products and carcasses should not be stored in the same fridge, freezer or container as human or animal food.
In addition to baseline biosecurity, other processes that will minimise biosecurity risk associated with biological samples, carcasses and waste include:

- Using documented procedures for handling, storage and disposal.
- Strict application and use of PPE. Minimum PPE for handling dead animals or their tissues is wearing disposable gloves.
- Storing specimens in appropriate leak-proof containers (such as screw-top vials, plastic bags), and at an appropriate temperature.
- Careful handling to minimise contamination of external surfaces of containers.
- Safe and appropriate disposal of products, carcasses and other waste e.g. by clinical waste disposal service, deep burial, or incineration.
- Adhering to safe packaging and handling regulations and contacting receiving laboratories prior to the submission of high-risk material.

Animal carcasses may need to be retained for necropsy. Where possible, carcasses intended for necropsy should be kept chilled (not frozen). If the specimen may be useful for vouchering purposes, refer to the department SOP for *Vouchering Vertebrate Fauna Specimens* for further information.
If the specimen is not required for diagnostic purposes or vouchering, the body should be either buried at an appropriate site or disposed of at an approved refuse disposal site or via a veterinary clinic. Animal carcasses must be disposed of in a manner that complies with any regulations, including environmental compliance requirements. Contact the Local Government Authority to arrange disposal of animals euthanased on Shire land.
Animals which are found dead or are euthanased by chemical means should never be fed to other animals. Such carcasses should be disposed of by secure means such as waterproof bagging, then into either a biological waste disposal service, deep burial or incineration. The recommended minimum depth of burial is 1 m.

7 Competencies

A person who is competent has the knowledge, skills, and experiences that allow them to capture and handle animals successfully, and appropriately manage adverse events as required. Department personnel, and other external parties covered by the department's AEC, undertaking fauna-related activities require approval from the committee and will need to satisfy the competency requirements (Table 1). Other groups, organisations or individuals using this SOP to guide their fauna monitoring activities are encouraged to also meet these

competency requirements as well as their animal welfare legislative obligations.

Table 1. Competency requirements for carrying out disease management procedures

Competency category	Competency requirement	Competency assessment
Knowledge	Broad understanding of the framework governing the use of animals in research and environmental studies in Western Australia	Training (e.g. DBCA Fauna Management Course or equivalent training). In applications, provide details on the course provider, course name and year.
	Understanding species biology and ecology	Personnel should be able to correctly identify the likely species to be encountered at the site(s) being studied, and have an understanding of the species' biology and ecology. This knowledge may be gained through sufficient field experience and consultation of field guides and other literature.
	Awareness of basic hygiene practices and biosecurity risks and protective measures	Personnel should be familiar with National Wildlife Biosecurity Guidelines (Wildlife Health Australia, 2018).
	Safe and effective use of chemicals	Personnel should be familiar with all relevant safety data sheets and understand the safety precautions required.
Disease risk management skills and experience	Personal and environmental hygiene	Personnel should be able to apply the hygiene procedures outlined in this document
	Recognising and dealing with animals with illness/disease	Personnel should be able to recognise diseased animals and signs of illness in species expected at the study site(s). This knowledge may be gained through sufficient field experience and/or consultation of literature. Awareness of general disease risk management and

	knowledge of the general and specific disease risks associated with particular species and/or environments. This can be gained through personal experience, other species experts and resources such as the *National Guidelines for Management of Disease in Free-ranging Australian Wildlife* and Wildlife Health Australia Fact Sheets.

8 Approvals

In Western Australia any person using animals for scientific purposes must also be covered by a licence issued under the *Animal Welfare Act 2002*, which is administered by the Department of Primary Industries and Regional Development.

Projects involving wildlife may require a licence/authorisation under the *Biodiversity Conservation Act 2016 (examples below)*. Personnel should consult the department's Wildlife Licensing Section for further guidance. It is your responsibility to ensure you comply with the requirements of all applicable legislation.

- Fauna taking (scientific or other purposes) licence (Reg 25)
- Fauna taking (biological assessment) licence (Reg 27)
- Fauna taking (relocation) licence (Reg 28)
- Section 40 Ministerial Authorisation to take or disturb threatened species.

9 Occupational Health and Safety

Departmental personnel, contractors and volunteers have duties and responsibilities under the Occupational Safety and Health Act 1984 and Occupational Safety and Health Regulations 1996 to ensure the health and safety of all involved. Fieldwork is to be undertaken in line with the department's corporate guidelines, policies and standard operating procedures, including but not limited to, risk management and job safety analyses. Further information can be found at https://dbca.sharepoint.com/Divisions/corporate/people-services/HS/SitePages/SOPs.aspx

If department personnel or volunteers are injured, please refer to the departmental Health, Safety and Wellbeing Section's 'Reporting Hazards, Near-misses and Incidents' intranet page, which can be found at https://dbca.sharepoint.com/Divisions/corporate/people-services/HS/SitePages/Reporting-Hazards,-Near-Misses-and-Incidents.aspx

10 Further Reading

It is recommended that the following SOPs are consulted when proposing to undertake fauna-related activities:

- Department SOP *Animal Handling and Restraint Using Soft Containment*
- Department SOP *Euthanasia of Animals Under Field Conditions*
- Department SOP *First Aid for Animals*
- Department SOP *Hand Restraint of Wildlife*
- Department SOP *Transport and Temporary Holding of Fauna*
- Department SOP *Vouchering Vertebrate Fauna Specimens*

11 References

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12 Glossary of Terms

Animal handler: A person listed on an application to the department's Animal Ethics Committee who will be responsible for handling animals during the project.
Disinfect: To cleanse something so as to destroy or prevent the growth of disease-carrying microorganisms.
Fomite: Object or material which is likely to carry infection (e.g., clothes, traps, bags, calipers, boots, ear punch).
Host: The animal or plant on/in in which a parasitic organism lives.
Pathogen: Any disease producing organism, including viruses, bacteria, protozoa, ectoparasites and endoparasites, or other microorganism.
Trapping session: For the purposes of this document a trapping session is the culminant of one or more days trapping at the same site and for the one purpose, using the same equipment.
Vector: An insect or other organism that transmits a pathogenic fungus, virus, bacterium, etc.
Virulence: The severity or harmfulness of a pathogen.
Wildlife: Free-living animals of native, non-indigenous or feral species.
Zoonosis: Disease acquired by humans from contact with animals.

Appendix I: Common zoonoses found in Australian wildlife

If it is suspected that a worker has a zoonotic disease, this should be reported to the CI, their manager and to a medical practitioner. This ensures that they receive appropriate health care and that any significant disease event in wildlife that may place other humans at risk is recorded. Any unexplained or persistent disease in a wildlife worker should be referred for investigation by a medical practitioner as a potential zoonotic disease. Wildlife workers should be aware of legal requirements for notification (to the relevant state/territory Work Health and Safety regulator) of confirmed zoonotic disease acquired in the workplace. Diseases marked with a * are notifiable in WA when diagnosed in humans (see www.health.wa.gov.au for list of diseases notifiable in humans).

Disease and pathogen	Wildlife hosts	Transmission	Human symptoms	Main biosecurity practices
BACTERIA				
LEPTOSPIROSIS* *(Leptospira interrogans)*	Rodents, possums, platypuses, feral pigs.	Contact with urine, aerosol, ingestion (food and water).	Flu-like with muscular pains, severe headaches and fever. Serious cases can cause vomiting, kidney disease, internal bleeding and death	Hygiene, including hand and environmental cleaning; PPE to protect exposed skin, mucous membranes (eyes, nose and mouth), open wounds; rodent control.
CAMPYLOBACTER* & SALMONELLA* spp	Birds, mammals, reptiles	Ingestion (food, water, faecal-oral).	Diarrhoea, fever, stomach cramps	Hand, food and environmental hygiene.
MYCOBACTERIA: atypical mycobacteria (e.g. *M.marinum, M.avium, M.genavense*)	Soil and water environments; birds	Aerosol or skin contact with infected animal or carcass, wound contamination	Respiratory e.g. cough, shortness of breath Skin infections	Hand hygiene; protect skin wounds; disinfect cuts and scratches; ventilation controls and use of respirator PPE
MYCOBACTERIA: *M.tuberculosis* complex* (includes *M.pinnipedii*)	Marine mammals	Aerosol inhalation	Respiratory e.g. cough	Ventilation controls and use of respirator PPE
MYCOBACTERIA: *M.ulcerans* ("Buruli ulcer")	Possums (not reported in WA)	Insect or animal (possum) bite, contamination of puncture wounds	Swelling, skin ulcers	Mosquito control; avoid mosquito bites; protect skin wounds; disinfect cuts and scratches
Q FEVER* *Coxiella burnetti*	Macropods, bandicoots	Contact with infected animals, placental tissues, faeces, fomites, inhalation	Severe flu-like illness. Chronic infection can also occur	Do not inhale or handle contaminated material (especially if you have open wounds) A vaccination is available for humans
PSITTACOSIS (ORNITHOSIS)* *Chlamydia psittaci*	Birds (especially parrots)	Contact, aerosol, inhalation	Generally mild flu-like illness	Hand hygiene; wear PPE when handling sick or dead birds; ventilation controls

VIRUSES				
AUSTRALIAN BAT LYSSAVIRUS* **Virus related to rabies**	Insectivorous bats and fruit bats. Assume all Australian bat species are potential hosts	Bite or scratch from an infected bat, or saliva contamination of mucous membranes/ broken skin	Neurological, death	Rabies vaccination; PPE, post-exposure management
HIGH PATHOGENICITY AVIAN INFLUENZA (H5 BIRD FLU)*	Birds, mammals (especially marine mammals and predator/scavengers)	Inhalation, contact, aerosol; eating infected carcasses	Usually mild – conjunctivitis, respiratory signs. Serious disease or death occur rarely	Hand hygiene, PPE (protecting hands, eyes and mouth)
MURRAY VALLEY ENCEPHALITIS*	Birds, mainly waterbirds.	Mosquito bites	Headache, fever, giddiness, drowsiness, seizures	Avoid mosquito bites, insect repellent, wear long pants and sleeves, stay indoors at dusk
ROSS RIVER VIRUS*	Wide range of mammals, birds and some reptiles	Mosquito bites	Joint disease, rash, headache, fatigue, fever	Avoid mosquito bites, insect repellent, wear long pants and sleeves, stay indoors at dusk
FUNGI				
RINGWORM (*Microsporum spp., Trichophyton spp*.)	All mammals, especially orphaned macropods.	Contact; fomites.	Itchy skin rash	Hand, equipment and environmental hygiene; antifungal treatment.
ASPERGILLOSIS ***Aspergillus spp*.**	Birds	Inhalation from air, feather dust etc.	Difficulty breathing, cough, meningitis	Respiratory PPE
PROTOZOA				
GIARDIA	Mammals, birds and reptiles	Contact, ingestion (faecal-oral; food and water).	Stomach cramps, nausea, diarrhoea	Hand and food hygiene, treatment of drinking water; appropriate disposal of faeces
TOXOPLASMOSIS ***Toxoplasma gondii***	All mammals and birds can have cysts in muscles, or other tissues Cats excrete in faeces	Ingestion via contact with objects contaminated by cat faeces or cysts in raw meat of non-felid mammals and birds.	Flu-like symptoms; can cause foetal damage if pregnant women infected	Strict personal hygiene, avoid skin contact with infected animals/faeces, wear gloves when handling raw meat or items suspected to be contaminated by cat faeces
ECTOPARASITES				
SARCOPTIC MANGE (*Sarcoptes scabiei*)	Mammals including wombats, bandicoots, dingoes	Direct and indirect contact.	Intense itching and rash	Hand, environmental and equipment hygiene; antiparasitic treatment

Appendix II: Information on commonly used disinfectants

The following tables provide guidance on commonly used disinfectants but is not an exhaustive list. Always follow product labels and material safety data sheets for correct application time and dilution for any products used.

Tables adapted from Australian Veterinarian Association Guidelines for Veterinary Personal Biosecurity 2017 and Animal Health Australia Operational manual: Decontamination.

Disinfectant category	Activity in the presence of organic matter	Advantages	Disadvantages	Precautions	Comments
Alcohols: **Ethyl alcohol** **Isopropyl alcohol**	Rapidly inactivated	Fast-acting; no residue; relatively non-toxic	Rapid evaporation; irritant to open wounds	Flammable	Not appropriate for environmental disinfection Primarily used as antiseptics Alcohol based hand rubs available for use in the field
Biguanides: **Chlorhexidine**	Rapidly inactivated	Non-toxic	Incompatible with anionic detergents		Not appropriate for environmental disinfection Primarily used as antiseptics
Halogens: **Hypochlorites (bleach)**	Rapidly inactivated	Broad spectrum, including spores Inexpensive Can be used on food preparation surfaces	Inactivated by cationic soaps/ detergents and sunlight Frequent application required	Corrosive Irritant Mixing with other chemicals may produce toxic gas	Used to disinfect clean environmental surfaces Only commonly available sporicidal disinfectant
Quaternary Ammonium Compounds (QACs) **e.g. F10**	Moderate	Stable in storage Non-irritating to skin Low toxicity Can be used on food preparation surfaces Effective at high temperatures and pH	Incompatible with anionic detergents		Commonly used primary environmental disinfectant Some residual activity after drying Available in various forms for use on skin, personal items and equipment
Peroxymonosulfate compounds e.g. VirkonS	High	Can be used to clean and disinfect in one step Broad spectrum Available in various forms	Expensive compared to other categories Contraindicated for use on skin	Skin, eye and respiratory irritant Toxic to aquatic organisms	

Agent	Alcohols: Ethyl alcohol Isopropyl alcohol	Biguanides: chlorhexidine	Hypochlorite (bleach)	QACs (e.g. F10)	Peroxymonosulfate compounds (e.g. VirkonS)
Mycoplasmas	++	++	++	+	++
Gram negative bacteria (e.g. Salmonella, Campylobacter, Leptospira)	++	++	++	++	+
Gram positive bacteria	++	+	++	+	+
Pseudomonas	++	±	++	±	+
Enveloped viruses (e.g. influenza, herpes)	+	++	++	+	+
Chlamydiae	±	±	+	-	+
Non-enveloped viruses (e.g. parvovirus)	-	-	++	-	±
Fungal spores	±	±	+	±	±
Acid fast bacteria (e.g. Mycobacteria)	+	-	+	-	±
Bacterial spores	-	-	++	-	+
Coccidia (e.g. Toxoplasma)	-	-	-	-	-

Refer to Appendix 4 of AVA Guidelines for Veterinary Personal Biosecurity for more information on properties and choice of chemical disinfectants (++ Highly effective; + Effective; ± Limited activity; - No activity).