

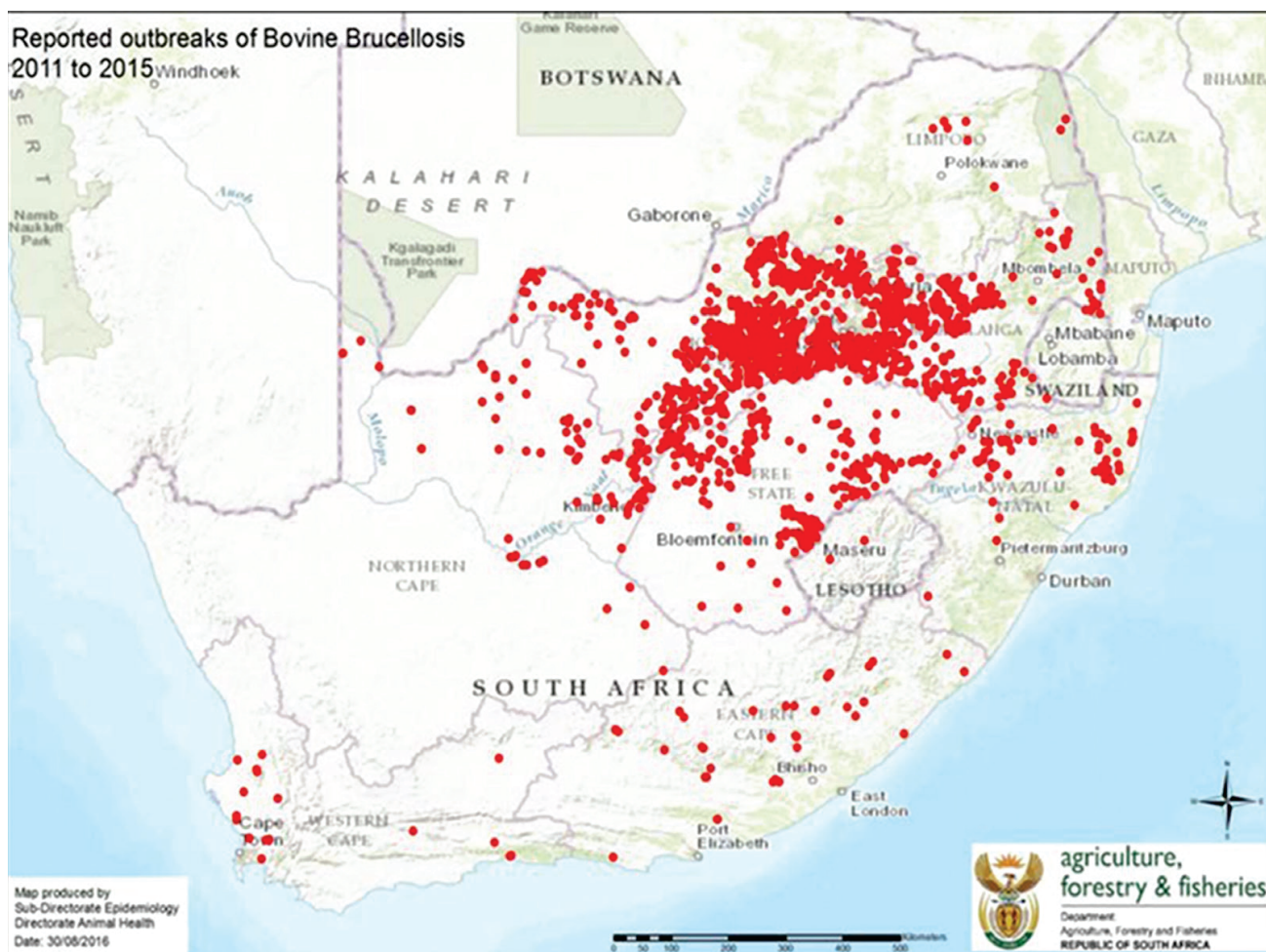


Figure 5: Bacterial Diseases – Bovine brucellosis (2011-2015).

SUMMARY

Keeping herds in private ownership disease free through biosecurity protocols on the farm and during transport are now more important than ever. Farmers and veterinarians must develop and implement management strategies and identify potential future scientific research in wildlife health to prevent, prepare, respond to, and recover from these diseases. We need to maintain disease free herds and ecosystems for our own health and the future of wildlife in South Africa.



Figure 6: Access control warning.

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BIOSECURITY Management Practices

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INTRODUCTION

The increasing demand for disease control services caused by the massive explosion in the wildlife industry and a general shortage of state veterinarians in some areas have highlighted the fact that farmers can no longer depend solely on state veterinary services for disease control. Informed veterinarians, livestock and wildlife producers, land owners and managers have become the first line of defence against animal diseases and have significant responsibilities in this regard.

The Animal Diseases Act 35 of 1984 controls diseases which have potentially serious economic consequences as well as diseases which can cause illness and death in humans. Role players in the industry have to be aware of these risks and consequences, and be pro-active in containing and preventing animal diseases. The controlled and notifiable diseases are stipulated in the Act.

Livestock and game biosecurity is a set of measures put in place to protect a population from infectious diseases at a national, regional, farm and camp level. Every farm and animal production system will have different operating environments, and thus a different range of biosecurity challenges and threats. By developing farm-specific and camp-specific biosecurity measures and procedures and strictly practicing every-day infection control, the risk of infection can be minimized to an acceptable level.

PATHOGENS - agents of disease

An organism capable of causing disease is known as a pathogen. Pathogens are known as agents of disease. The different classes of pathogens include:

- Viruses (foot and mouth disease, malignant catarrhal fever / snotsiekte, rabies, etc.);
- Bacteria (anthrax, brucellosis, tuberculosis, botulism, etc.);
- Protozoa (tileria, heartwater, babesiosis, etc.);
- Internal parasites (roundworm, tapeworm, flukes, etc.);
- External parasites (flies, ticks, mosquitoes, etc.);
- Poisonous plants/substances (tannins, alkaloids) and
- Fungi (mold)

The transmission of pathogens from one animal to another can occur either directly or indirectly. Direct transmission takes place when a susceptible animal comes into contact with an infected animal or its body fluids and tissues through:



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- the air (aerosol);
- saliva/bodily fluids;
- faecal-oral contact;
- sexual contact, and
- the mother through the placenta.

Indirect transmission happens through inanimate objects such as:

- food;
- water;
- objects or material on which diseasecausing agents can be conveyed, e.g. faeces, bedding, vehicles, etc., and
- various insects
- vectors.

The main ways in which diseases are spread on farms:

✦ Livestock/game

Diseases can be spread when introducing new animals into the herd or transferring animals between different production groups. Cross infection can take place between animals of the same species or different species.

✦ Vehicles and equipment

Contaminants like dirt, manure and carcasses are carried on vehicles such as trucks, tractors, frontend loaders as well as game transport vehicles and game capture equipment including stretchers, tag tools and other reusable equipment that are not sterilized after use.

+ Feed and water

Contamination or spoilage of feed or water can occur during storage and transport thereof. Water and feeding troughs can be contaminated with faeces and/or urine. Cross infection can occur at feeding points. Spoiled feed can introduce harmful molds and bacteria that can cause diseases.

+ Pests

Diseases can be spread by:

- feral animals
- domestic animals
- rodents
- insects and
- warthogs

+ Air

Diseases can also be spread by infected aerosol or dust particles.

In addition, nutritional deficiencies, inbred animals with poor genetic variation, stress, overpopulation and poor management practices are factors that can cause animals to be more prone to disease breakouts.

A good biosecurity program will help to reduce the risk of harmful pathogens being transferred from farm to farm and herd to herd. By adopting appropriate management practices a high degree of assurance can be achieved.

The following management practices are suggested:

✓ Quarantine isolation

The most basic form of biosecurity is isolating newly purchased animals from your breeding herds by using a quarantine area (boma). A well-planned quarantine boma will:

- prevent direct contact with the rest of your herd;
- provide an air space, water source and feed source separate from the rest of your herd;
- have an exclusion area of at least 30 meters between the bomas and perimeter fencing;
- have controlled access, and
- be double-fenced

✓ Test and re-test

When moving newly purchased animals, re-take blood (whilst still on the seller's farm to prove point of contamination) and re-do all disease tests. Keep the newly purchased animals in your quarantine boma until the second round of test results come back negative before introducing them to your herd. Test and re-test. A once-off negative result on a single animal is not enough. Routinely test the animals in your herd when darting and working with them.

✓ General on-farm biosecurity measures

Employ the following biosecurity measures as standard practice:

- Routinely test for foreign diseases when darting animals;
- Routinely sanitize reusable items (tag tools, stretchers, etc.);
- Routinely sanitize vehicles;

- Allow only farm vehicles in the game camps, no strange vehicles allowed. If visitors are touring the farm, consider their previous stops;
- Restrict access to camps; especially buffalo camps – all vehicles entering the buffalo camp must be disinfected;
- All game transport trucks and vehicles must be thoroughly cleaned and disinfected before and after each movement. All old bedding must be removed and the compartments sprayed for ticks with an effective acaricide, and
- Separate wildlife from cattle.

✓ Disinfectants

Products that are widely used by farmers, transporters and veterinarians to prevent the spread of pathogenic micro-organisms between herds of animals or from one farm to another, are called F10SC Veterinary Disinfectant/F10 General Farm Disinfectant. These are highly concentrated products that are diluted and used in backpacks/garden sprayers or high pressure washers to apply to the wheels and chassis of vehicles, delivery and transport trucks. It is used to disinfect PPE's (e.g. foot baths for gumboots), equipment, surfaces, and enclosures and deliver proper levels of hand hygiene. The products are broad spectrum and extremely safe to use in the presence of animals (from a hedgehog with burn wounds to an elephant with abscesses), people, equipment and the environment¹.



Figure 1: Disinfectants.

¹<http://www.f10products.co.za/index.php?id=3>

+ Darting and capture – biosecurity measures

Always plan ahead for all contingencies and have the relevant equipment/products at hand:

- Ensure safe handling of collected laboratory specimens and samples;
- Ensure proper disposal of used items such as darts and syringes (use a Sharps Box);
- Disinfect vehicles before and after use, and
- Keep water on vehicles for vets and staff to wash hands – no washing of hands in water troughs allowed.



Figure 2:
Example of a Sharps Box.

+ Feed security

- Keep unwanted animals (rodents, warthogs, etc.) away from feeding areas and feed storage areas. Control on-farm populations as much as possible.
- Store all feed on pallets, not directly on the floor or on cement.
- Feeding areas and water troughs must regularly be cleaned and manure removed.
- Install fly-traps if needed.

+ Veterinarian visits

- When handling animals, allow the vet to treat the sick animals only after attending to the healthy ones.
- Disinfect the vet's vehicle's tyres with F10 and a spray backpack – consider his previous stops.
- Make sure all relevant vaccinations are up to date.
- Consult with the veterinarian about your bio-security plan.

+ Personnel security

- Train personnel on the importance of health and hygiene.
- Personnel working with cattle may not work with buffalo.
- All personnel must be screened for TB regularly and prior to employment.

+ Inspect animals for possible diseases

- Clinical brucellosis symptoms are not obvious in wildlife. A low calving percentage and aborted material in the veld are some indications. Cows and heifers infected with brucellosis often look healthy.
- Heifers should be tested for brucellosis after calving. Do not introduce heifers to your herd before they have calved and been tested again. Latent infected heifers will only test positive after their first pregnancy!
- Watch for signs of disease like coughing, weight loss, difficulty breathing, abortions, still-births, decrease in milk production, metritis (infection of uterus), swollen testes in bulls, weak calves and other abnormalities.
- Watch for sores and blisters around the mouth, nose, hooves and teats as well as hygroma (swollen joints).
- Report unexplained deaths or abortions.
- Conduct post-mortem exams on all unexpected deaths.

+ Have a carcass-disposal plan

Carcasses and carcass by-products (intestines, skins, etc.) must be disposed of appropriately to prevent transmission of diseases and to preserve air and water quality. Typical methods include burial, incineration and composting. It is important to remove bones and old carcasses to avoid animals engaging in osteophagia (eating/chewing of bones).

+ Tuberculosis and other infectious diseases

Game farmers must realise that buffalo and livestock are no longer the only animals in danger of contracting diseases such as brucellosis and tuberculosis. *Brucella melitensis* as well as *Brucella abortus* have been diagnosed in sable antelope. State veterinarians in Limpopo have expressed their concerns that these diseases will soon spread to roan antelope.

Tuberculosis has become a major threat in the wildlife industry (most

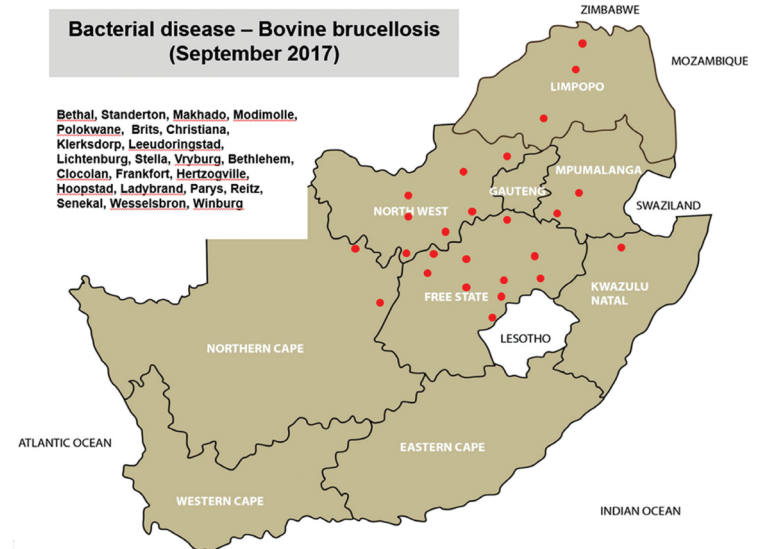


Figure 3: Bacterial disease – Bovine brucellosis (September 2017).

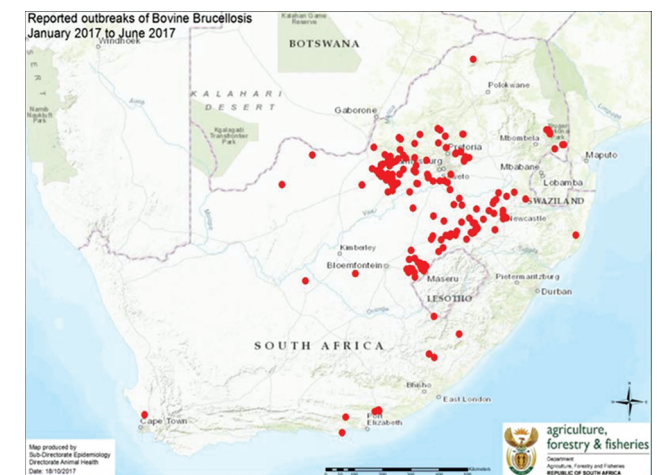


Figure 4: Bacterial Diseases – Bovine brucellosis (January 2017 to June 2017).

game species are susceptible to it) and has already been diagnosed in roan antelope on private game farms in the Limpopo province. Kudus are carriers of tuberculosis. An article recently published in the Sunday Times², states that an elephant that died from a human strain of tuberculosis is being regarded as patient zero in the latest threat to face the Kruger National Park's biosecurity. Tuberculosis is already endemic to the buffalo and lion populations of the Kruger National Park³ – the lion becoming infected by feeding on the infected buffalo carcasses.

Monthly disease reports are available on the AgriSA website.

²<https://www.timeslive.co.za/sunday-times/news/2017-08-12-death-of-kruger-tusker-from-tb-sparks-alarm/>

³General Principles of Diseases in Wildlife – Wildlife Campus