

NEWSLETTER JANUARY

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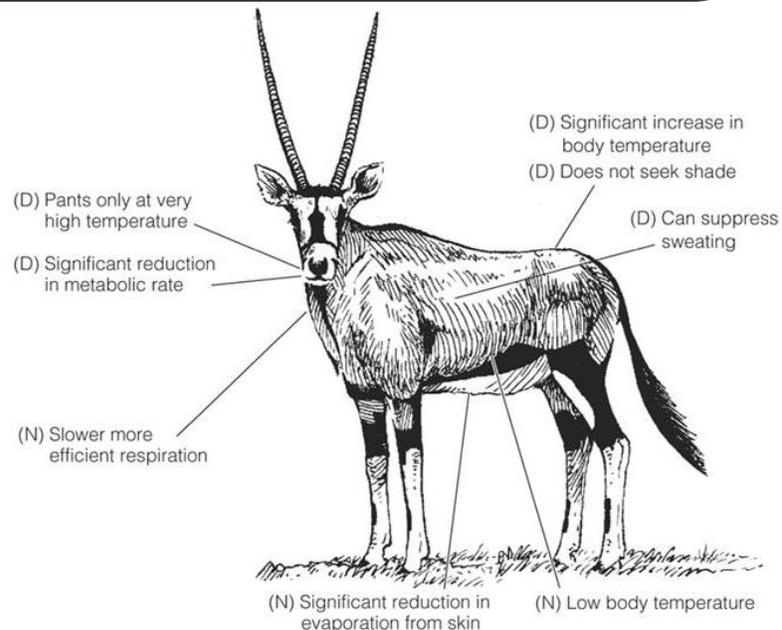
Dear clients,

We hope you all had a wonderful holiday, and that 2020 will be an amazing year for everybody! In this newsletter you can read about how animals keep cool, corneal ulcers and we have uploaded 2 labels you can use when you have a case of rabies or anthrax. If you are still interested in the PM course 14 March at AfriCat, don't forget to sign up asap! We only have a few places left. All the best for the new year! Kind regards, Ulf and Mariska

ADAPTATION TO HEAT

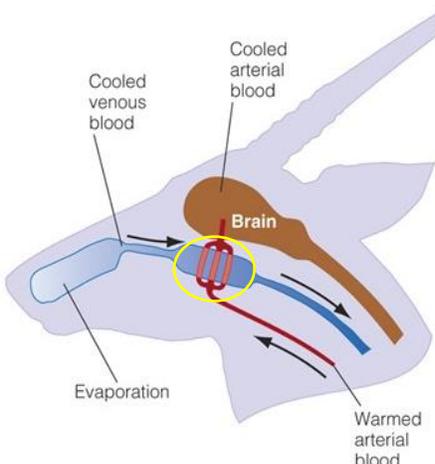
Summer is in full swing, and while many of us will seek coolness inside by the aircon or plunge into the swimming pool, how do animals handle the Namibian heat?

Most of them will simply try to avoid the heat; they seek shade and shelter, or move to areas with more wind or where cooler conditions prevail. But as you will know, some antelopes such as springbuck and oryx, will often stand in the scorching sun. The brain is particularly sensitive to high temperatures, and therefore most animals have a 'selective brain cooling mechanism'. This is called the *carotid rete*, or *rostral epidural rete mirabile* (Latin for 'wonderful net'). In desert-adapted species like the oryx this is particularly well-developed.



Physiological adaptations to aridity and heat. D=day, N=night ©

[Pearson Education Inc. \(2016\)](#)



It is a highly complex system, but we try to explain it in a simplified way. The rete is a formation of arteries and veins in a sinus at the base of the brain (yellow circle). Warm blood travels from the brain to a network of small arteries in the nasal passages. The blood in these nasal passages is cooler, due to evaporation of moisture in the nasal mucosa (e.g. via panting). So as the warm and cool blood stream close to each other, the temperatures equalize. The heat is 'taken out' and flows back to the brain. Interestingly, as the blood is cooler the brain is fooled; it will think the body temperature is lower than it actually is. The body temperature can rise up to 42°C, without ill effects (5° above normal!). Since the brain does not tell the body to excessively pant/sweat, it preserves water, handy in our arid environment! As the night falls, the body cools down to 'normal' temperatures.

Position of the carotid rete (yellow circle), which is located within a cavernous sinus at the base of the brain © [Pearson Education Inc. \(2016\)](#)

CORNEAL ULCER

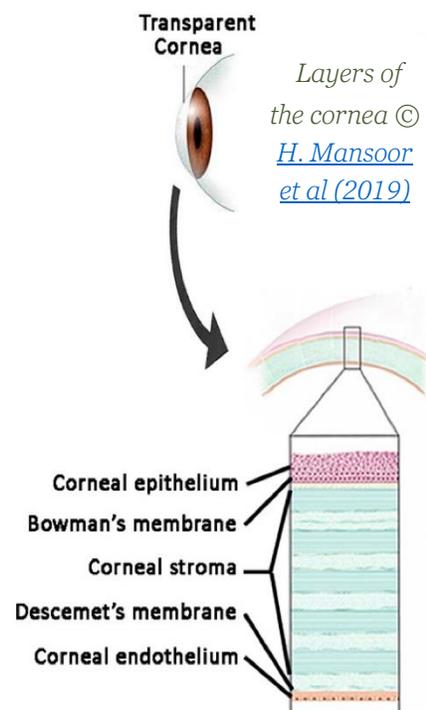
A few months ago we were called out for a captive leopard with an eye problem. It appeared she had an ulcer in her eye that perforated the cornea. This caused an inflammation (endophthalmitis) in the inside of the eye. Sadly, the eye was too damaged and had to be removed.

First things first, what is exactly an ulcer? An ulcer (Afr. oop seer) is a sore that can take many forms, and can be inside, or outside of the body. It is a break in a membrane, or in other words, a breach of the continuity of the membrane. You probably have heard of stomach ulcers, which are often caused by stress. But you can also have an ulcer on a leg, or maybe you have had those little white spots inside your mouth or lips? Those are also ulcers. Ulcers can be caused by many things; e.g. injuries, diseases, infections and stress.

This leopard had a corneal ulcer. The cornea is the transparent front part of the eye and acts as a barrier against dirt and germs, and it plays an important role in seeing. It functions as a window that controls and focusses light coming into the eye.

The cornea has 5 layers, which are highly specialized skin cells:

- 🐾 Epithelium; outermost layer which stops outside matter from getting into the eye. It also absorbs oxygen and nutrients from tears.
- 🐾 Bowman's membrane; transparent sheet of collagen.
- 🐾 Stroma; thickest layer, which gives the cornea an elastic but solid and strong form.
- 🐾 Descemet's membrane; thin sheet of tissues that protect against infection and injuries.
- 🐾 Endothelium; single layer at the back, which works like a sort of pump. The stroma absorbs excess liquid, while the endothelium pulls it out, and thereby keeping the eye clear.



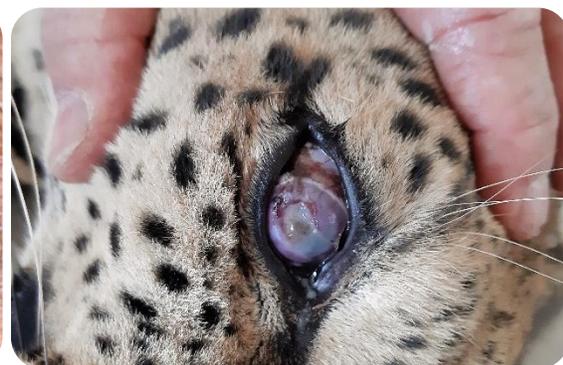
A corneal ulcer can be caused by an infection (e.g. bacteria, fungi, virus or even parasites) or an eye injury (e.g. scratch, foreign object). Even a vitamin A or protein deficiency may cause corneal ulcers. A corneal ulcer causes redness and pain. The eye becomes more sensitive to light and will increase the tear production. They usually start as a white or dull spot on the cornea, and sometimes these ulcers develop over the whole eye, and can penetrate deeply into the eye.



Lateral (side) view of a deep corneal ulcer in a dog © [T. Gabriel](#)



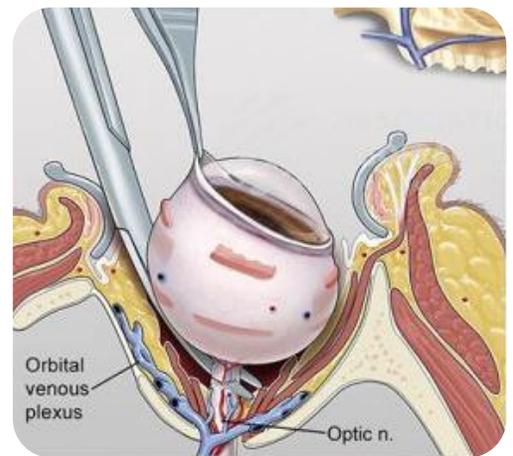
Deep stromal corneal ulcer in a dog © [K. Gelatt](#)



Corneal ulcer in the leopard which penetrated deep into the eye, causing an infection © [M. Bijsterbosch](#)

Superficial corneal ulcers usually heal by themselves in a few days. But when the ulcer becomes infected, or it is so deep that it reaches the Descemet's membrane, the eye cannot heal on its own and intervention is needed. For pets a vet will usually give eye drops, or even perform a surgery, whereby dead or poorly healing tissue is removed. This will need intensive after care, and this is the problem in wild animals... We (usually) cannot give drops several times a day, so eye problems are very difficult to treat in wild animals. Unless one is very early, there is usually not much what we can do. In case of this leopard, the eye was so badly infected that the whole eye was beyond saving, and had to be surgically removed.

The removal of an eye can be done in two ways. The first one is an *enucleation*, hereby the entire eye is removed, and the eyelids are stitched shut. Another option is an *evisceration*, hereby most of the eye is removed, but the muscles and outer shell are left. This is usually done to place a prosthetic eye in. This is purely for cosmetic reasons, and at least for animals does not have an advantage. In this case the entire eye was removed.



Surgical removal of the complete eye is called an enucleation © [UGA \(2015\)](#)

After the surgery the leopard was taken back to her enclosure, and woken up. The first few days the eye is irritating, but recovery usually goes quick.



LABELS – RABIES & ANTHRAX

When an animal dies, and you suspect rabies or anthrax, it is always good to send samples to your vet or to the laboratory. When the lab confirms it is one of the 2 diseases, you know that you should take action (e.g. vaccinating). To make the sending process easier for you, we have created PDF labels that you can fill in on your computer (or of course the old-fashioned way with a pen ☺). Print the filled-in label, stick it on the package and this way everybody knows the package should be handled with care.

Sent rabies sample

Rabies is a fatal viral disease, that can cause death in humans (always make sure you're, and your pet's vaccinations are up-to-date). A diagnosis of rabies can only be made when the virus is detected in the brain. Wrap the head in newspapers (to absorb body fluids), and then in a watertight plastic bag (make sure no juices can run out of the bag). Keep the bag cool, NOT frozen, and properly label the bag.

The head must be sent to the State Veterinary Laboratory in Windhoek, but the lab does not always have the right reagents to do the test... It is therefore safest to first check with your vet.

Download the rabies label [here](#). If you want to read up about rabies, read our online article [here](#).

Sent anthrax sample

Anthrax is a serious infectious disease caused by the bacteria *Bacillus anthracis*. It can cause severe illness and death in humans. It is difficult to confirm anthrax based on the signs (e.g. sudden death, dark unclotted blood, bloody discharge from body openings) and when anthrax is suspected the best thing is to call a veterinarian. DO NOT open the carcass. The veterinarian can in most cases confirm anthrax based on a blood smear, but note that this is not always possible. Samples become unreliable about 24h after death.

Based on your veterinarian's advice, the ear can be cut off (were gloves). Put this in a watertight plastic bag (again make sure no juices can run out of the bag). Also take a sample of the bloody soil, and put it in a separate watertight bag (again don't forget your gloves!). Properly label the bag.

The ear and soil sample must be sent to a veterinary clinic of your choice.

Download the anthrax label [here](#). If you want to read up about anthrax, read our online article [here](#).



Possible RABIES sample

Handle with care!

Animal species: <input type="text"/>	Check:
Date of death: <input type="text"/>	- Head kept cool
Symptoms: <input type="text"/>	(cool elements) <input type="checkbox"/>
<input type="text"/>	- Head wrapped in
<input type="text"/>	watertight bag? <input type="checkbox"/>
	- Bag labelled? <input type="checkbox"/>

Sender details	Sent to:
Name <input type="text"/>	<input type="text"/>
Address <input type="text"/>	<input type="text"/>
Cell no <input type="text"/>	<input type="text"/>
Email <input type="text"/>	<input type="text"/>

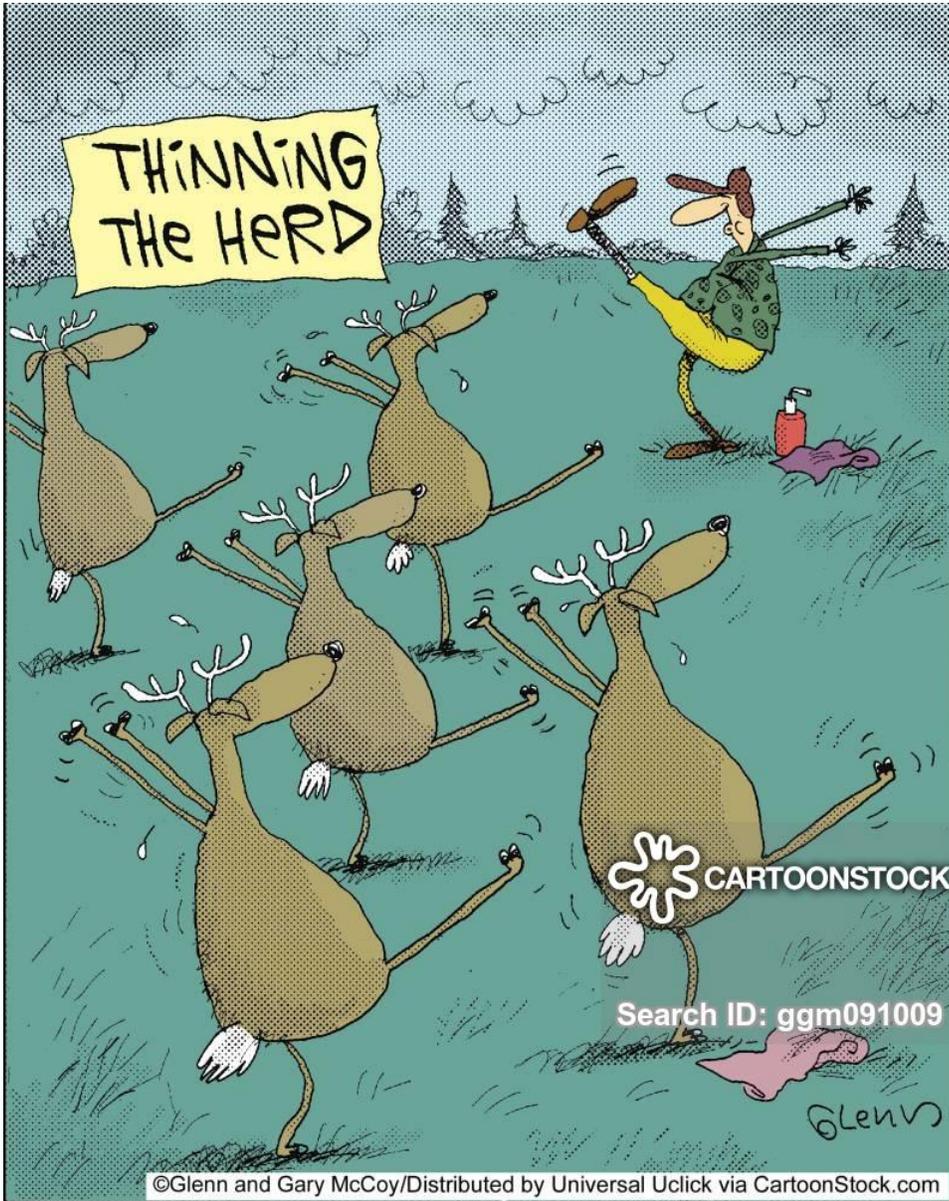


Possible ANTHRAX sample

Handle with care!

Animal species: <input type="text"/>	Check:
Date of death: <input type="text"/>	- Sample wrapped in
Symptoms: <input type="text"/>	watertight bag? <input type="checkbox"/>
<input type="text"/>	- Bag labelled? <input type="checkbox"/>

Sender details	Sent to
Name <input type="text"/>	<input type="text"/>
Address <input type="text"/>	<input type="text"/>
Cell no <input type="text"/>	<input type="text"/>
Email <input type="text"/>	<input type="text"/>



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DR ULF TUBBESING

P.O. BOX 50533, BACHBRECHT,
WINDHOEK

+264 (0) 81 128 3050

ULFT@AFRICAONLINE.COM.NA

WWW.WILDLIFEVETSNAMIBIA.COM

FACEBOOK: [WILDLIFE VETS NAMIBIA](#)

YOUTUBE: [WILDLIFE VETS NAMIBIA](#)

