Wildlife Vets Namibia February 2020 Edition 23

NEWSLETTER FEBRUARY

In this newsletter:

Dear clients,

In this newsletter we have a closer look inside an elephant's trunk, a fascinating tool! We give information about hooves, and want to share a case with you where cattle ate poisonous plants, leading to photosensitivity. Lastly, we wanted to share some photos of an interesting Wildlife Para-Professional Weekend we had at Erindi.

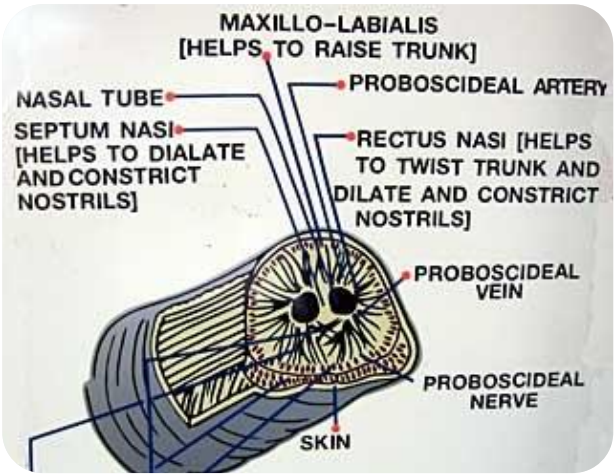
Kind regards, Ulf and Mariska

INSIDE AN ELEPHANT´S TRUNK

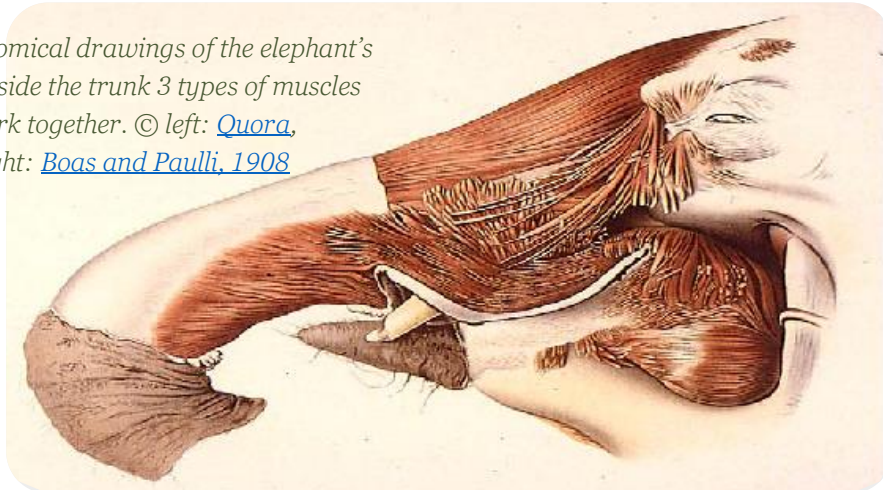
The African elephant has two 'fingers' at the end of its trunk © M. Bijsterbosch

The trunk of an elephant is basically a modified nose, full of muscles, and no bones. If you look inside the trunk, it looks more like the inside of a tongue than a nose. The trunk, just like the tongue, is a unique structure, called *muscular hydrostats* (e.g. trunk, tongue, octopus' arm). These muscular hydrostats consist of muscles, and are used to manipulate items, or to move around without the support of the skeletal system. When you lift weights for example, your arm muscles and joints work together to lift the weight. So, one group of muscles work and contract from the joint, while others relax and become longer and so your arm goes up and down. In a muscular hydrostat the muscles are oriented in three directions; parallel to the long axis, perpendicular to the long axis, and a group is wrapped obliquely around the axis. It's a bit of a complicated story, but basically these muscle tissues utilize water pressure to move. The muscles do all the work, and don't need a skeletal structure to support them. This makes the elephants trunk, with 40.000 muscles, extremely flexible (the entire human body has 'only' +/- 650). With all that muscle power they can lift up as much as 300kg, but the muscles are also sensitive enough that they can pick up a tortilla without breaking it.

Besides a lot of muscles, the elephant's trunk also contains almost 2000 olfactory receptors to smell with (compare this to bloodhounds, who 'just' have +/- 800). Elephants can smell water from kilometres away, and avoid landmines for example. They can also use their trunk as a snorkel, or as a hose. With one suck, a trunk can pull in as much as 10 litres of water. Impressive piece of equipment, those trunks!



Two anatomical drawings of the elephant's trunk. Inside the trunk 3 types of muscles work together. © left: Quora, right: Boas and Paulli, 1908



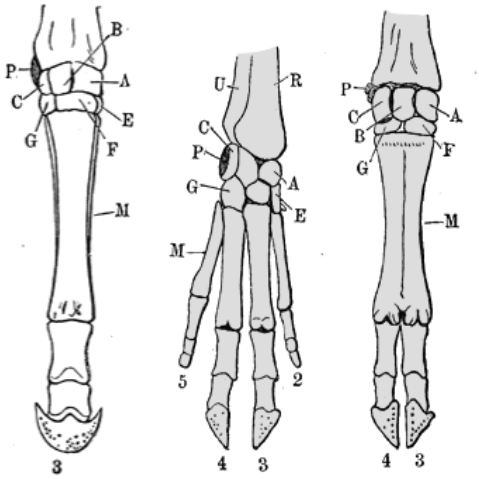
THESE HOOVES ARE MADE FOR WALKIN'

Ungulates (ungulate is a member of the group of mammals with hooves) comprise a broad group of mammals; from antelopes to rhinos and zebras. They are divided into two groups:

- Even-toed ungulates (*Artiodactyla*; ártios = even, *dáktylos* = finger/toe)
  - Bear weight on an even number of toes, usually two (cloven hoof)
  - Digest plant cellulose usually in one of the stomach chambers
  - E.g. pigs, hippos, antelopes, giraffes, cattle and goats
- Odd-toed ungulates (*Perissodactyla*; *perissós* = uneven, *dáktylos* = finger/toe)
  - Bear weight on an odd number of toes, usually one
  - Digest plant cellulose usually in their intestines
  - E.g. horses, zebras, rhinos, tapirs

A hoof is basically the tip of the toe of an ungulate, covered by a thick horny (keratin) material. Hooves are very important; they support the weight of the animal, protect the tissues and bones in the hoof capsule, and provide traction.

Hooves, comparable to our nails, grow continuously throughout an animal's life. In animals, hooves usually wear down as the animal walks. Some factors can influence hoof growth, such as the hoof structure and health (genetics plays an important role), the environment and the performance of an animal. In smaller camps with sandy soil for example animals are prone to grow long hooves. It is interesting to see how hooves in different species have adapted over time to the species' environment and habits.



Skeleton drawings, from left to right,: pig, cow and horse © Meyers Lexicon

Klipspringers have small, rounded hooves with a padding in the centre that basically works like a suction cup, to help them balance in rocky areas © San Diego Zoo

Lechwes have long, pointed hooves, that help them move through swampy areas © P. Flack

Giraffe hooves can reach 10-15 cm high. The back of the hoof is close to the ground to provide additional support the heavy body weight © Africa Hunting

Zebra hooves. The hoof wall grows out of the coronary band, basically like our nails grow from our nailbeds © L. Fox

Long hooves break easily, which can cause severe pain. This obviously affects foraging- and mating behaviour and normal locomotion.

Overgrown hooves of a sable bull, that started breaking lengthwise. The hooves were trimmed to a normal position © M. Bijsterbosch

PHOTOSENSITIVITY DUE TO *LANTANA CAMARA* AND DUWWELTJIE

Recently we received a photo of a cow, showing severe skin lesions typical of photosensitivity (see on the right). These lesions are caused by ingestion of toxic plants, known as *Lantana* camara (tickberry), or *Tribulus terrestis*, better known as Duwweltjie.

Brahman cow with severe signs of photosensitivity

The *Lantana camara*, and several other related species are toxic ornamental shrubs. They originate from tropical America but have spread all around the world, including Namibia. This plant can survive in a wide range of climatic and soil conditions, and will often out-compete other species, leading to a reduction in biodiversity, land production and toxicity of livestock. As a result, they are classified as invader species and should be destroyed. The duwweltjie is a very common indigenous weed that typically grows on disturbed/over grazed grounds.

Lantana camara © WML Consulting Engineers

Duwweltjies along the airport road © M. Bijsterbosch

Both the Duwweltjie and *Lantana camara* can, at times, be toxic to livestock. The exact mechanism of how the compounds lead to toxicity is complex. The chemical compounds alter membrane functions of especially liver cells. Due to liver disease substances accumulate in the body that dramatically increase an animal's sensitivity to sun burn.

Signs

Animals becomes photosensitised; they become sensitive to the sun and literally develop a sunburn which is characterised by redness of the skin, cell death, swelling and itching. Eventually blisters appear, and even patches of skin can slough off. Unpigmented skin as well as skin on the face, back and udder are most severely affected. In severe cases even pigmented skin areas can also become involved, and due to fever the animal might to into shock. Depending on the severity of the liver lesions, animals may show jaundice, poor appetite, weight loss and die. In sheep this condition is often associated with a swelling of the head and typical "sunburn" lesions on the eyelids and lips – the classic "geeldikkop.

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Early signs of photosensitivity are discharge and inflammation of eyes and nasal septum © SA Mohair Growers Association

Typical swollen face and ears of a sheep suffering from acute clinical geeldikkop © E.M. van Tonder

The final stage of photosensitivity involves the skin sloughing © Vet in training

A necropsy will show the skin lesions described above and is likely show a swollen, pale/yellow fragile liver, an enlarged gall bladder, filled with dark black sticky fluid, enlarged and yellow kidneys, and jaundice (Afr. geelsug).

Treatment

Affected animals should be removed from the offending source (to avoid further intake of the plants involved) and brought into the shade during the day. Anti-inflammatory and anti-histamine injections (ask your vet for advice!) might relieve the skin irritation and stop self-inflicted trauma (rubbing, kicking towards the sore skin patches). Additional therapy is mostly supportive of nature (multivitamins, possible antibiotic cover as well as liver supportive treatment) and depends on the severity of the disease as well as the value of the animals involved. In severely affected animals that might not recover euthanasia is a realistic option.

Prevention

Maintaining a healthy ecosystem and proper pasture management on your land and preventing these plant to reaching or spreading to your farm is one way of avoiding photosensitivity amongst livestock. Also do not debush to radical that animals can find shade from the sun.




WILDLIFE PARA-PROFESSIONAL WEEKEND

Since Wildlife Vets Namibia consider education and sharing of knowledge a vital part of our services, we organised and held a special weekend for the Wildlife Para-Professionals of Namibia. The Erindi Private Game Reserve greatly sponsored and supported this weekend, making it affordable to all.

A Wildlife Para-Professional (WPP) is somebody who, after completion of an immobilisation course accredited by the Veterinary Council of Namibia and, depending on stringent regulations laid down by council, may be registered. They must work under a supervising wildlife veterinarian and must be registered by the Namibian Veterinary Council. These people may then immobilise specific target species and animals (research or emergency situations where no veterinarian is immediately available). NO opioids may be used, so antelopes, rhinos etc can only be immobilized by a registered wildlife veterinarian.

During this weekend the WPP's were able to discuss and share experiences and ask questions, and we presented our Post-Mortem course. In the course we gave lectures on e.g. anatomy and physiology, sample collection, PM photography, lesions one might encounter, the PM procedure, how to handle crime (poaching) scenes and we did a necropsy on an African wild dog carcass. We did some field work as well, we immobilized an injured African wild dog, and a big lion male with a large seroma on the side. The weekend was not only a lot of fun, but also provided everybody with the opportunity to improve their skills and knowledge. We hope to turn this into an annual event! A big thanks to all the participants and especially Erindi for providing the excellent venue at incredible value!

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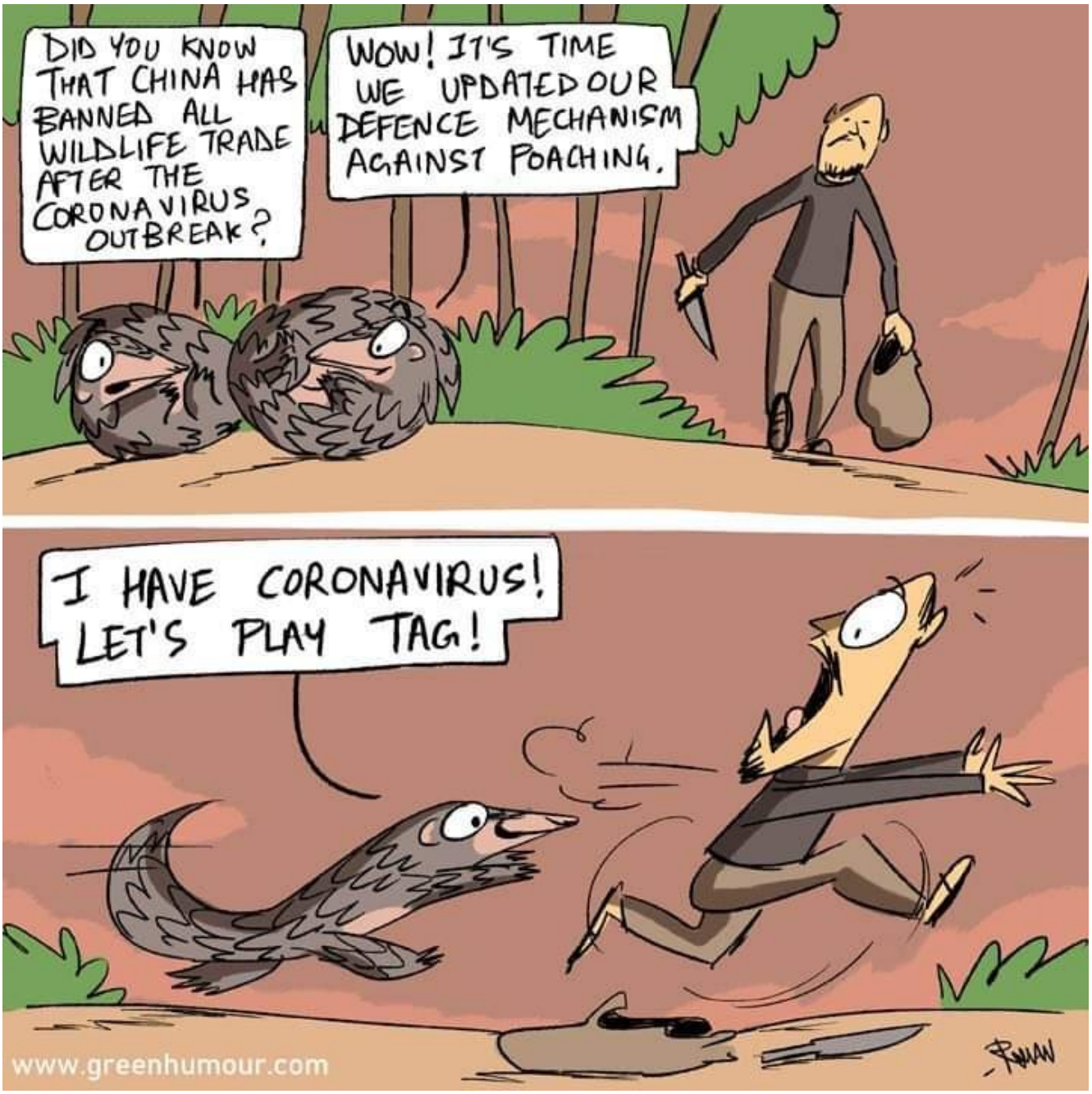

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