Wildebeest and Malignant Catarrhal Fever (Snotsiekte) in cattle – An update

Malignant Catarrhal Fever (MCF), better known as snotsiekte in Namibia and South Africa, is currently a hot topic amongst Namibian game farmers. Newly imposed, poorly researched legislation enforcing a 10 m double fence on farms where wildebeest are kept have devastating economic consequences not just to the game farmer, but secondarily to the Namibian economy.

This article consists of two parts. The first part is about the disease, its symptoms, how it is transmitted etc. The second part specifically addresses the Namibian situation regarding MCF cases and the imposed legislation on game ranchers. To compile this article, I have extensively consulted the literature as well as experts in South-Africa, where the disease is far more prevalent. I hope that all parties affected by MCF will find this article informative and that it may provide the starting point to a fairer and more cooperative approach of disease mitigation.

MCF / Snotsiekte – the disease

Introduction to the disease

Malignant catarrhal fever, commonly also referred to as MCF or snotsiekte, is a serious disease, caused by a group of viruses that belong to the *Herpes* viruses. The disease has a world-wide distribution.

The two most important herpes viruses causing MCF in cattle are the alcelaphine herpesvirus 1 (AlHV-1) which is found in wildebeest, and the ovine herpesvirus 2 (OvHV-2) found in sheep. Both wildebeest and sheep are asymptomatic carriers of the disease (they do not get sick). Within the natural wildebeest distribution range in Africa, AlHV-1 is the most important (but not only) source of infection of cattle, whereas the OvHV-2 strain is responsible for many MCF outbreaks in buffalo in SA, as well as the vast majority of MCF infections outside of the African continent.

MCF in bovine is a low morbidity but high mortality disease (relatively few animals in a herd are infected but most of those will die). The disease affects e.g., cattle, buffalo, bison, deer etc. MCF symptoms, though suggestive are not diagnostic for the disease, since they are also commonly seen with bacterial pneumonia, bovine viral diarrhoea (BVD), infectious bovine rhinotracheitis (IBR) and importantly, foot and mouth disease (FMD) (Figure 2 - Figure 5).

Onset of disease symptoms can be acute (sudden) or take a few days to fully develop. Symptoms include a high fever, severe inflammation of the mucous membranes in the nose, mouth and eyes resulting in a snotty nasal discharge, excessive salivation and a severe infection of the eyes (Figure 1). Some cases also display nervous symptoms, diarrhoea, skin lesions and arthritis (lameness).

Disease outbreaks often result in conflict situations developing between cattle- and game ranchers, with claims for compensation potentially ending up in court. Even though clinical symptoms as well as autopsy findings will be suggestive of MCF, an accurate disease diagnosis through additional laboratory tests is essential to unequivocally prove or disprove MCF as cause of mortalities!

Figure 1 Cow with "typical" snotsiekte symptoms; salivation, tearing, nasal discharge, corneal oedema, matting of facial hair and necrosis of the skin on the nose © CABI

Wildlife Vets Namibia

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na

P.O. Box 50533
Windhoek, Namibia

www.wildlifevetsnamibia.com

Examples of conditions easily confused with MCF

Below are some examples of diseases that could be confused with MCF.

Figure 2 Bovine Respiratory Disease (BRD) is a complex and multifactorial diseases which results in inflammation and damaged tissue in the lungs and respiratory tract. This calf, showing mucopurulent nasal discharge, is likely infected by the Pasteurella bacteria. © Anwar et al (2019)

Figure 3 A calf suffering from Infectious Bovine Rhinotracheitis (IBR). This is a highly contagious and infectious viral disease that causes acute inflammation of the upper respiratory tract © Veterian Key

Figure 4 A cow suffering from a Gedoelstia haessleri larval infestation in the eye, causing severe inflammation, corneal damage and swelling of the eye (uitpeuloog). © M Bijsterbosch

Figure 5 A case of acute Bovine Virus Diarrhoea (BVD) in a calf. Signs of acute infection include fever, lethargy, loss of appetite, ocular and nasal discharge, oral lesions, diarrhoea and decreasing milk production. © Dr. J. Campbell

Wildlife Vets Namibia

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na

P.O. Box 50533
Windhoek, Namibia

www.wildlifevetsnamibia.com

Proper approach to a diagnosis of MCF

Especially in conflict situations, it is essential that clinical as well as post mortem examinations, sample collection and submission to a laboratory are done by a qualified veterinarian. During a PM examination, formalin samples of kidney, forestomach and intestinal wall, lymph nodes, spleen and brain should be collected for histopathological examination in a laboratory. These examinations will be able to confirm MCF as the cause of the death (or may point to other potential diseases), however, they will not be able to differentiate between MCF transmitted by wildebeest or sheep. To achieve this, additional samples must be submitted to the laboratory with the specific request for a PCR analysis. PCR (Polymerase Chain Reaction) is a highly accurate and specific laboratory examination based on viral DNA analysis. It will differentiate MCF caused by the wildebeest versus the sheep strain. In case of an MCF outbreak due to the sheep strain, a cattle farmer obviously has no case against a game rancher.

Whole blood in EDTA (purple top tube) is a good sample to use for PCR testing in sick animals. Where an animal has died, small quantities of fresh or freshly frozen (not in formalin!) lymph node and lung are the best samples to do PCR testing on, but spleen, liver, and intestine, are also acceptable. Samples should be kept cold and submitted to the Central Veterinary Laboratory (CVL) in Windhoek as soon as possible.

Treatment

There is currently no effective treatment to cure MCF. Even though there is no risk of cattle suffering from MCF infecting other cattle in the herd, sick animals should be isolated from the herd/group to improve individual supportive care (good nursing e.g., cleaning eyes and nose, providing good quality soft food and fresh water, protection from the elements, esp. harsh light, fly exposure etc). Medical treatment consisting of anti-inflammatories, multivitamin support and antibiotics can be tried. Recent research suggests that Ivermectin has anti-viral actions against the herpes virus. As a result, some prominent veterinarians in SA routinely use high dose Ivermectin treatment in affected cattle, even as prophylactic treatment. The prognosis for most animals is poor and severely affected animals should be euthanised for humane reasons.

Currently there is no registered, commercially vaccine against MCF available. However, the Moredum Institute in Scotland, UK has been successful in developing a vaccine which has been tested and found effective in field trials conducted in the UK, Kenya and South Africa. Onderstepoort Biological Products (OBP – the state-owned vaccine manufacturer at Onderstepoort, South Africa) has signed a licensing agreement with the Moredum Institute to acquire the technology to enable final development, registration and production of this BMCF vaccine. This vaccine should be commercially available in the near future.

How is this disease transmitted?

We know that both wildebeest and sheep are well-adapted asymptomatic carriers of MCF. The wildebeest associated virus (AlHV-1) is present on the African continent as well as internationally in zoos and game farms hosting wildebeest. The sheep-associated MCF virus (OvHV-2) exists in domestic sheep, has a worldwide distribution and is responsible for most cases of MCF on a global scale.

The carrier hosts (wildebeest or sheep) shed the virus into the environment via oral, nasal, and possibly ocular secretions. The susceptible hosts are infected through inhalation and ingestion of virus-laden secretions following close contact with the carrier, however infections of MCF have occurred in cattle with no carrier hosts present within kilometres. An arthropod vector (e.g., fly or midges etc.) is likely playing a significant role in this regard (Figure 6). Since cattle do not shed the virus, they are considered a dead-end host, which eliminates the risk of cattle to cattle transfer of MCF.

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

Figure 6 Flies (photo left © Ralco), midges (tiny flies) or even moths (photo right © Dr Henry Labuschagne) could be the insect vectors spreading MCF over a long distance.

Factors favouring animal-to-animal transmission of MCF include:

- **Viral stability under local environmental conditions** - The MCF virus is unstable in the environment (outside the host) and, in hot, dry weather loses over 99.9% of its infectivity within 3 hours. This fact likely accounts for a low incidence of MCF in Namibia when compared to other regions of Africa.
- **Spatial considerations** - close contact between the carrier and susceptible species, and a cool, moist environment increase the risk of disease transmission.
- **Stressful situations** in the carrier host increases virus shedding, while stress experienced by cattle will increase their susceptibility to MCF infection.

Table 1 There are important differences regarding the disease spread within the carrier species (wildebeest vs sheep) as well as the spread from the carrier to cattle. These are summarised in the table below.

DIFFERENCES IN DISEASE TRANSMISSION BETWEEN WILDEBEEST AND SHEEP ASSOCIATED MCF		
Criteria	**Wildebeest**	**Sheep**
Disease spread within the carrier species: Vertical vs Horizontal	Vertical (cow to calf) rare, mostly horizontal between animals in herd	Vertical (ewe to lamb) rare, mostly horizontal between animals in flock
Period of most intense host infection	Calf before 4 months age	Lambs after 2-3 months age
Period of most intense virus shedding	Calf before 90 days. After 120 days very little virus shed	Lamb after 5 months age, peak at 6-8 months
Main spreaders of disease	Calf under 4 months age	Adolescent lambs and adults. Lambs under 60 days are free of virus and can build disease free flock
Seasonality of disease	Wildebeest calving and weaning/breeding season. In zoos year-round; stress associated?	Year round, no correlation to lambing season
Vehicle of transmission	Nose, eye and mouth secretions	Nose, eye and mouth secretions
Mode of transmission	o Direct close wildebeest/sheep to cattle contact is most important. Frequently, cattle do become infected with MCF without known close contact between cattle and wildebeest/sheep. o Transmission via contaminated food and water sources is possible. o An insect vector (spreader) is very likely. o Neither wildebeest nor sheep associated MCF spreads from infected to healthy cattle (dead end infection).	

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

What is the incubation period of MCF?

The incubation period (time from infection until animals show signs of disease) is influenced both by virus infectivity and host susceptibility. It can be as short as two weeks, but more commonly around two to four months after exposure. Since virus shedding in wildebeest (and sheep) is at a peak during stress situations (after birth and during weaning, as well as adverse weather conditions) one expects outbreaks of MCF in cattle two to four months later.

Does MCF pose a health threat to humans?

In view of the increasing threat of zoonotic diseases (disease spreading from animal to man or vice versa) it is fair to be concerned about the potential human health risk of the MCF group of viruses. However, in spite of MCF having been around for a very long time, there has never been a report of this disease in humans.

Wildlife Vets Namibia

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na

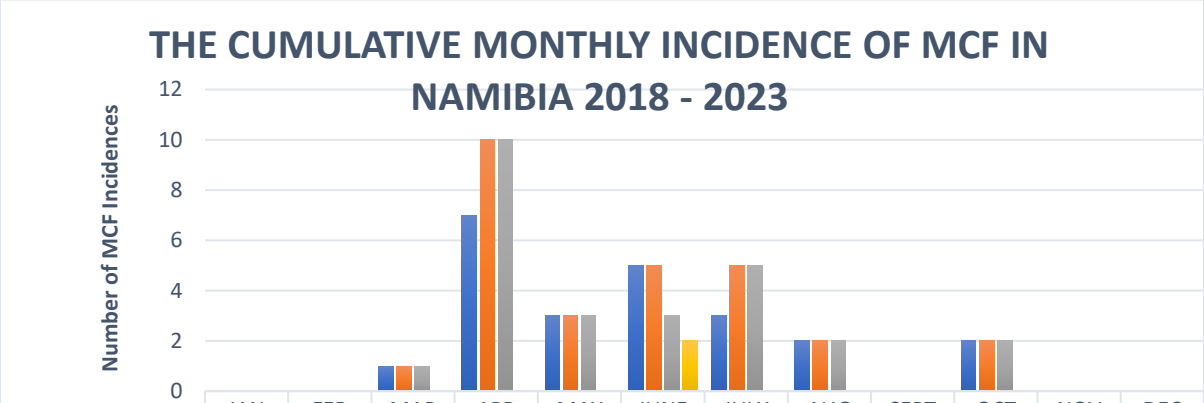
P.O. Box 50533
Windhoek, Namibia

www.wildlifevetsnamibia.com

MCF / Snotsiekte in the Namibian context

Namibian Statistics

The epidemiology section of the Directorate of Veterinary Services (DVS) publishes a monthly National Summary Report providing information on pasture conditions, disease outbreaks etc. I have repeatedly requested copies of these reports for the past few years but never even received a reply from the person responsible for compiling these reports. I did, however, manage to obtain the relevant PCR statistics from the Central Veterinary Lab (CVL) and analysed them. The following graphs will summarise the PCR results from 2018 to 2023.



	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
OUTBREAKS	0	0	1	7	3	5	3	2	0	2	0	0
CASES TESTED	0	0	1	10	3	5	5	2	0	2	0	0
WB	0	0	1	10	3	3	5	2	0	2	0	0
SHEEP	0	0	0	0	0	2	0	0	0	0	0	0

Figure 7 The national cumulative monthly incidence of MCF positive cases as confirmed by PCR testing between 2018 and 2023 © U. Tubbesing, data extracted from CVL (Central Veterinary Lab, 2023)

Over a six-year period (2018 to and including 2023) only 106 samples were submitted to the CVL for PCR testing. Of these, 26 tested positive for MCF of wildebeest origin and 2 of MCF of sheep origin. The latter occurred in the Khomas region. Even though very few samples were submitted, one can clearly identify the months April to August as high-risk months in Namibia.

In South Africa the wildebeest-associated MCF mostly occurs in the Limpopo and North West provinces, and demonstrates two distinct peaks. The first peak is associated with the wildebeest calving season in December and January and occurs from January to May, with the highest numbers in early April. A second, more important peak, occurs from September to November and correlates with the weaning of wildebeest calves and the mating season a few months earlier.

Wildlife Vets Namibia
Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

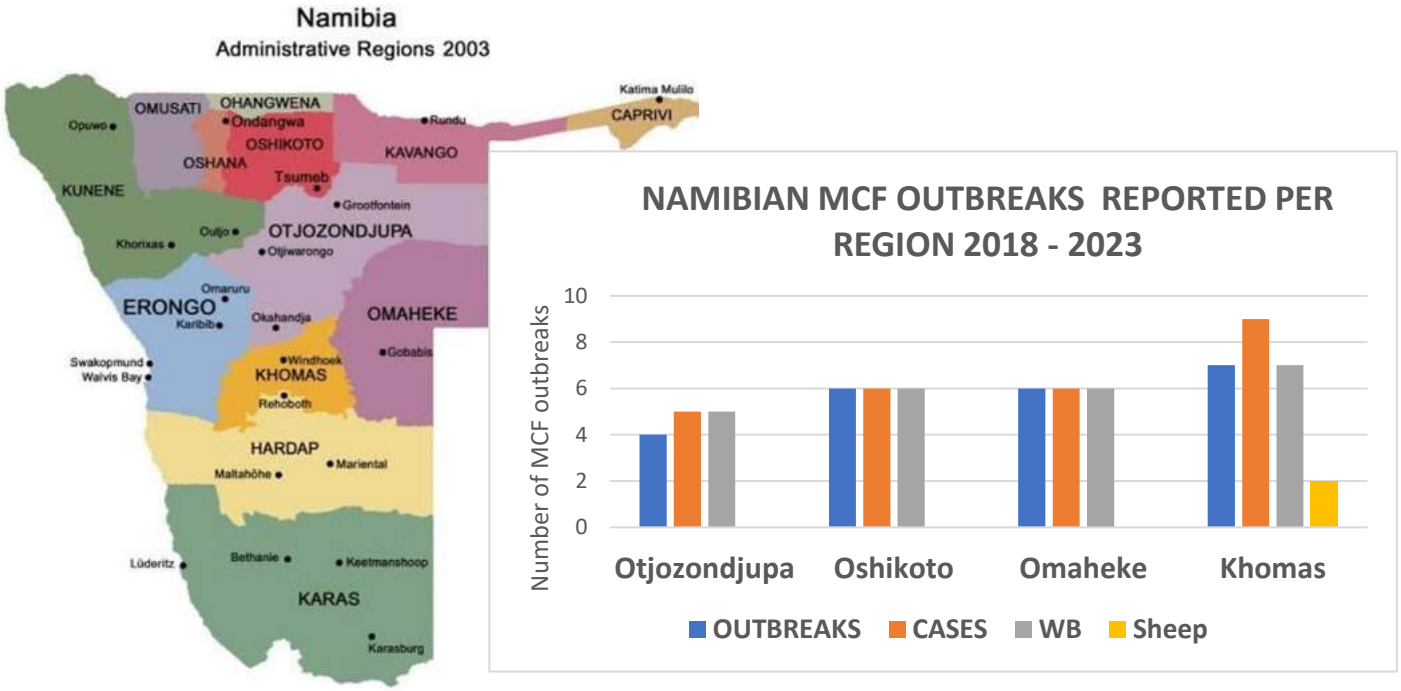


Figure 8 This table indicates in which Namibian regions the MCF outbreaks have occurred. As shown, the only samples submitted and confirmed MCF outbreaks occurred in the central, northern and eastern regions of Namibia. Even though these areas also correspond with the main game ranching areas, it is highly unlikely that the disease is limited to those areas. It would be interesting to see if increased sample submission from the Karas and Hardap regions would result in more sheep associated MCF cases being diagnosed. © U. Tubbesing, data extracted from CVL (Central Veterinary Lab, 2023).

During 2023, only one sample was submitted for PCR testing and found negative, yet the DVS epidemiologic report for September 2023 shows five cases in the Outjo district with no mortalities and another 2 cases in the Omaruru area with one mortality. For October 2023, two cases were reported for the Outjo district with no mortalities. Considering the normally high mortality rate in cattle infected with MCF, these reported "cases" become highly questionable.

In summary, it seems that MCF in Namibia is over-reported in the monthly DVS Epidemiology statistics and unsubstantiated by laboratory examinations. The low mortality rate reported in the Epidemiology report suggests that quite a few so-called MCF cases were likely animals suffering from other diseases. The actual cases proven by PCR amount to 28 (26 x wildebeest origin and 2 x sheep) over 6 years, an average of 5 cases per year. It is obvious that very few veterinarians actually make the effort to confirm the disease by collecting and submitting samples for PCR testing. The number of confirmed cases will likely increase, should veterinarians take on a more diligent approach to disease diagnosis.

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

Namibian "regulations"

In 1987 the Namibian Directorate of Veterinary Services issued a "regulation" aimed at minimising the risk of MCF outbreaks in cattle. These, in a nutshell, were:

- In order to create a disease buffer zone, all wildebeest had to be kept in camps/farms separated from neighbouring properties by a second fence at least 10 meters away from the first. This requirement also applied between neighbouring game farms each stocking wildebeest as well as for game farms bordering the National Parks, a requirement defying all logic!
- Specific fencing requirements were laid down for wildebeest camps (7 strands of wire etc.) and only game farms/camps complying with these requirements would, following a DVS inspection, be registered as wildebeest camps.
- All movement of wildebeest to be limited to, and from specified, registered wildebeest camps certified by the department.
- No wildebeest may be moved without a permit issued by Veterinary Services.

Even though sheep are internationally considered a significant source of MCF infections in cattle, the regulations made no mention of sheep and their role in the disease, nor are any control measures in place concerning sheep – cattle contact.

Around 2015 there were intensive discussions and multiple meetings involving the Namibia Professional Hunting Association (NAPHA), DVS and Namibia Agricultural Union (NAU), where alternative means of MCF control and especially compensation schemes were discussed. During these meetings it became clear that especially the NAU and Livestock Producers Organisation (LPO) were the main driving force insisting on the double fence regulation being enforced, irrespective of the lack of scientific support for such a control measure.

Following investigation by a legal team commissioned by NAPHA, it was determined that the "regulation" which was stringently enforced by DVS was in fact a non-binding internal memorandum and that these "regulations" could not be enforced. This was followed by a few years during which DVS could not enforce their "regulation" and frequently issued transport permits for wildebeest to non-registered farms and camps.

In December 2018, the Double Fence Regulation was written into law and is now stringently enforced by the DVS (Republic of Namibia, 2018) (Appendix I provides a copy of the currently enforced fencing guidelines[1]). I am not aware of any public consultation having taken place on this issue. This was most likely deliberate to avoid our objections to the issue.

These new regulations do not even make exceptions for situations where the double fence would be superfluous e.g.:

- Along road reserves – DVS should rather put in a concerted effort to enforce the maintenance of stock fences along road reserves to minimise the risks of accidents and the spread of disease from likely unvaccinated animals in the road reserve to farm animals.
- Between adjacent game farms.
- Between adjacent farms (game and/or cattle farms) both stocking wildebeest.
- Between neighbours who agree on a cooperative management plan which may include a compensation agreement and where the cattle farmer thus waives the need for the double fence.

[1] The regulations can also be found here: https://www.lac.org.na/laws/annoREG/Animal%20Health%20Act%201%20of%202011-Regulations%202018-358.pdf

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

Implications of the MCF regulations to the game farmer and the game industry in general?

The majority of Namibia's population depends directly or indirectly on the agricultural sector for their livelihoods. Agriculture's contribution to the country's GDP (fishing excluded) has, over the last five years amounted to just over 4%. Livestock farming contributes roughly 65% of agricultural production, with crop farming and forestry making up the remaining third of production. It is not clear how much the game industry contributes (International Trade Administration, 2022).

According to the World Travel and Tourism Council (WTTC), travel and tourism contributed approximately 14.7%of GDP in Namibia, and 15.4 percent to total employment in 2019. The Namibian tourism industry is recovering from the negative impacts of the COVID-19 pandemic and it is predicted that visitor numbers and revenue levels will return to pre-COVID levels in 2024. (International Trade Administration, 2022) In 2020, Namibia was ranked 13th out of 30 of the world's top emerging travel destinations, a list compiled by tourism boars and voted by the world's top travel bloggers (Travel Lemming, 2020). while African Budget Safaris lists Namibia as the best African country for wildlife, desert safaris, birdwatching and diverse scenery (African Budget Safaris, 2023).

Due to the popularity of Namibia as a travel destination for both eco- and hunting tourism, as well as the gradual desertification of the country, many farmers have changed over from stock to game ranching, which now significantly contribute to Namibia's GDP. The above statistics put the relative financial importance of tourism vs agriculture into context. The following section will highlight the devastating effect the double fence regulation has on the game farmer and the tourism industry. Considering the low incidence of MCF in Namibia, the negative economic impact far exceeds the potential benefits to be derived from the double fence.

- Fencing costs: The current cost of fencing complying with the wildebeest regulations is NAD 34 000.00/km. A 400-ha sized square wildebeest camp will cost a game farmer NAD 272 000.00. Should he/she be forced to erect a double fence around a square 5000 ha farm, it would cost NAD 962 000.00! Add to this the cost of NAD 82 000.00/km for game proof fencing (NAD 2.4 million for a 5000-ha farm) as required by the Ministry of Environment, Forestry and Tourism (MEFT), to enable the game farmer to claim ownership of his/her game. These costs are extreme and pose a significant financial burden on the game farmer, making the profitability of game ranching questionable.
- To minimise the ecologic impact on a game ranch, many game ranches prefer to erect their wildebeest camp in one corner of their farm. Due to cost constraints these camps are often relatively small and are inadvertently over-stocked to allow for a fair trophy animal production.
    - This small camp situation is stressful for the wildebeest, resulting in increased virus excretion and the risk of infection to cattle. Since these wildebeest can't disperse over the entire ranch, they come into closer contact with cattle in adjacent camps. It is thus highly likely that these wildebeest camps may, in fact increase the risk of MCF outbreaks on neighbouring farms.
- Reduced value of Wildebeest: Since the double fence rule has been strictly enforced, the demand for live wildebeest has declined drastically, resulting in a dramatic drop in prices obtained through the sale of both blue and black wildebeest. Game farmers with big herds of wildebeest suddenly have a game asset with minimal market value.
- Reduced wildebeest populations: Since many farmers are not in a financial position to erect a double fence, their farms will end up being cleared of wildebeest or, alternatively never being stocked with wildebeest. This obviously reduces the species variety on a game ranch and thus detracts from its attractiveness for tourists. In addition, there will be

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

a substantial loss of income from trophy hunting where wildebeest are a very desirable trophy.

- Degradation of landscape: One of the things that attracts tourists to Namibia are the biodiversity, its beautiful and diverse landscape and wide-open spaces. Enforcing double fences and wildebeest camp construction directly degrades these attractions.
- Ecologic/animal welfare problems: Game frequently gets trapped between these fences and die of thirst and starvation (Figure 9).

Figure 9 Red hartebeest trapped between a game fence and 10m buffer fence succumbed to thirst and starvation © U. Tubbesing

Proponents of the double fence regulation claim that the increase in game ranching in Namibia resulted in a dramatic increase in the incidence of MCF. Since the introduction of the original double fence regulation in 1987 until around 2010, the number of farms with registered wildebeest camps has risen from 23 to over 325 (records from DVS). I would assume that, by now there are well over 500 cattle and game farms stocking wildebeest. Quite a lot of cattle farmers in Namibia use hunting tourism as a second source of income and following the COVID 19 pandemic, many game farmers started stocking cattle. As a result, many farmers now stock both wildebeest and cattle on the same farm.

The scientific literature on MCF clearly states that MCF outbreaks in cattle often occur with no wildebeest or sheep within two to five kilometres from the disease outbreak. Some report that favourable wind direction increases the risk of such infections. It is thus highly likely that an insect vector may act as transmitters of the disease. This should make it clear that the 10 m double fence regulation will not be an effective management tool.

Summary of facts about MCF to consider

The following facts are vital and need to be considered if we want to take a less confrontational and more conciliatory/cooperative approach to manage our animals, both game and livestock, to minimise MCF outbreaks and avoid conflict situations between game and cattle ranchers:

- MCF has a world-wide distribution, wildebeest not. Sheep are the main source of infection in cattle and certain wildlife species outside of Africa.
- Wildebeest (both blue and to a lesser extent black) as well as sheep harbour strains of the virus capable of causing MCF. Most cattle farmers keep at least some sheep on their farms. Red hartebeest and goats are also asymptomatic carriers, but we do not know if they contribute to disease in cattle.
- Namibia is likely the country in Africa with the lowest incidence of MCF, yet it is the only country world-wide enforcing a double fence policy.
- Namibia's seemingly lower incidence of MCF compared to other African countries (SA, Kenya and Tanzania), can quite likely be attributed to the virus being labile and not surviving for long in our harsh dry climate.
- MCF, together with lumpy skin disease, bluetongue etc. are **notifiable diseases (aanmeldbare siektes).** Any (suspected) outbreak has to be reported to the local State Veterinarian as soon as possible, however, there are no specific prescribed control measures. **Controlled animal diseases** (e.g., Foot and mouth disease, TB, rabies, anthrax etc.) are more serious diseases which must also, by law, be reported to the nearest state veterinarian. The state veterinarian then has to initiate prescribed control and/or eradication measures to prevent the spread of the disease and minimise its economic impact.
- Because MCF has a world-wide distribution, it does not threaten our meat export market nor should an outbreak give DVS the right to "close" (quarantine) a farm! People confuse MCF (a notifiable disease) with FMD (foot and mouth disease, a controlled disease) where an outbreak in Namibia would indeed result in the cessation of all exports (meat and live animals) from Namibia and result in all farms in the region of an outbreak being placed under strict quarantine.

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

- The symptoms of the disease are not diagnostic, however, there are reliable laboratory tests available that can positively identify MCF infected animals and even differentiate between MCF of wildebeest and sheep origin. Without a positive PCR test proving that cattle are infected by MCF *of wildebeest origin* nobody can blame wildebeest for the outbreak and a claim for compensation would not be granted.
- The exact mode(s) of disease transmission is not yet clear (direct contact and/or insect transmission). The fact that MCF transmission frequently happens over a distance of up to 5000 meters or more strongly suggests some vector involvement. The 10-meter buffer zone is thus a laughable control measure.
- Transmission between infected cattle does not happen.
- Stress in carriers (wildebeest and sheep) esp. around calving, weaning and management interventions, plays an important role in increased virus shedding in nasal secretions. These are high risk times for cattle to become infected with MCF.
- Stress in a cattle herd increases its susceptibility to MCF.
- MCF has a relatively long incubation period (time of exposure till first signs of disease) of 3 weeks to 4 months or longer.
- The DVS, worried about being held liable for losses by cattle farmers is thus keen to submit to pressure by the LPO and NAU to enforce the double fence rule. This serves absolutely nobody since outbreaks of MCF can be expected in spite of the double fence. In fact, it is quite possible that DVS is more liable because it enforces a scientifically unsound control measure rather than embarking on a proper education campaign.

Alternative, more effective, less expensive and ecologically harmful ways of reducing the incidence of MCF

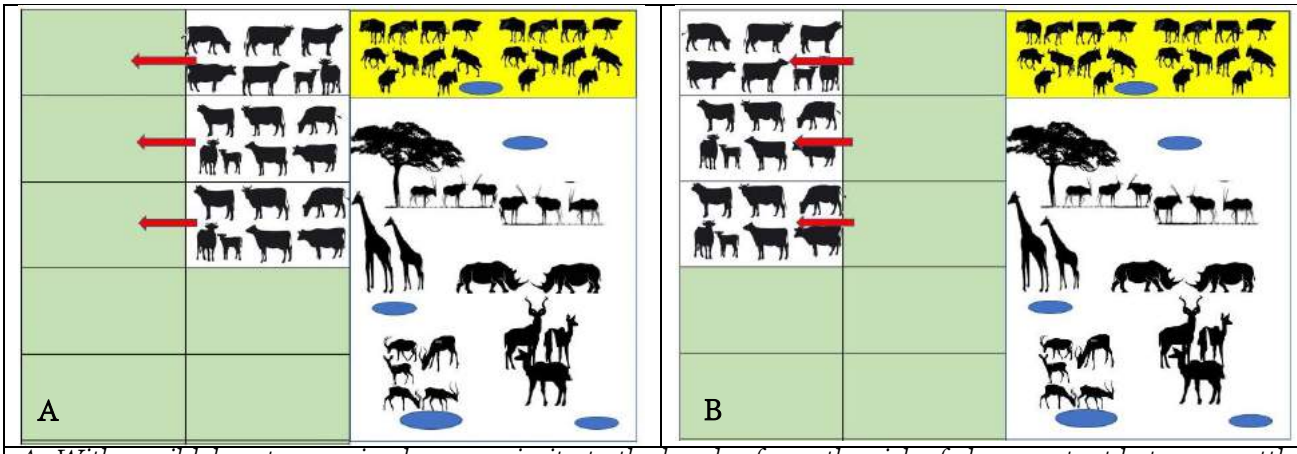
I would like to propose an alternative, four-pronged approach towards minimising stock losses due to MCF. This approach is based on current knowledge (and experiences in SA - Appendix II The role of WRSA in the Snotsiekte conflict) of the disease and only requires the cooperation of neighbours and no expensive double fences. Even if a 10 m double fence does exist between wildebeest and cattle, it would still make sense for these farmers to apply the guidelines provided below.

- Vaccinating cattle should form the cornerstone of our fight against MCF and should negate the need for a double fence. If an insect vector can be identified, vector control can further minimise the risk of an outbreak. Onderstepoort Biological Products is in the process of final development, registration and production of a proven and effective MCF vaccine for cattle.
- Wildebeest management should strive towards stress avoidance and minimising the risk of animals breaking out of game ranches. This can be achieved by keeping social structures intact and avoiding overstocking, i.e., allow the wildebeest to range freely on a suitably sized farm, rather than confining them to a small camp where fights between bulls are likely to cause break-outs. Further, inform your neighbours about planned stressful manipulations to wildebeest herds (game capture, culling etc.) which will increase virus shedding and the risk of infection. This will give neighbours a chance to plan their rotational grazing to maximise the distance between cattle and wildebeest.
- Cattle management should aim at stress avoidance (proper parasite control and nutrition etc.), while minimising the risk of exposure to wildebeest during the high-risk periods through proper planning of rotational grazing which should be planned in consultation with neighbours that have wildebeest on their property. Farmers may even consider injecting their cattle with Ivermectin at the start of the high-risk periods.
- Proper habitat management on both game and adjacent cattle farms can reduce the wildebeest – cattle contact and thus the risk of MCF outbreaks significantly:
    - Avoid over-stocking and starvation stress on both farms. This will also reduce the risk of break-outs.
    - Avoid placing water holes, dams and posts close to your border.

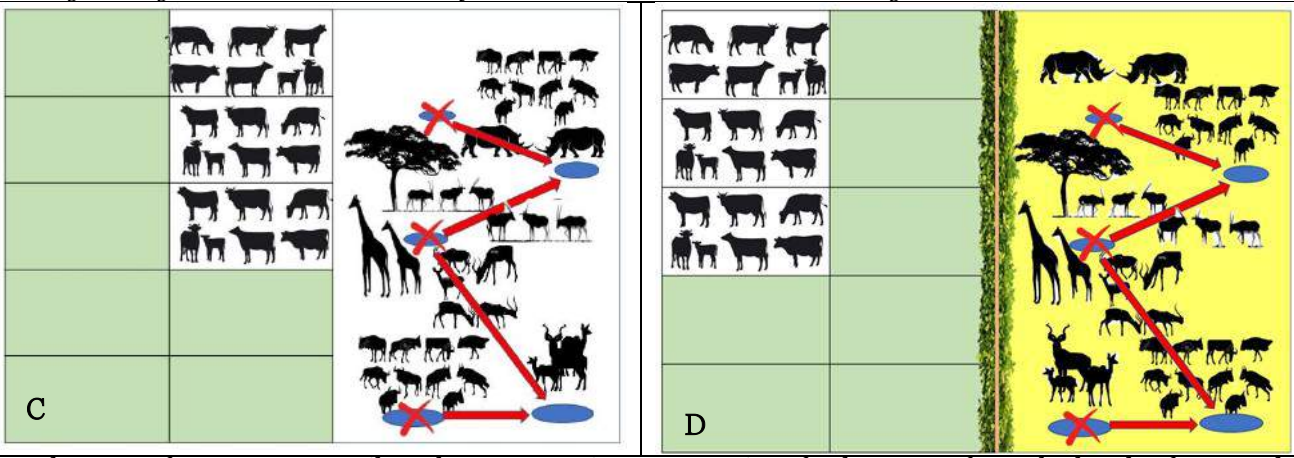
Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

- Wildebeest are strict grazers that, if possible, avoid dense bush and prefer open grassland. By de-bushing areas away from border fences one can create grass plains which will draw the wildebeest away from common borders with cattle farmers.
- Wildebeest love areas of fresh grass growth, e.g., after a fire or after mowing grass. Controlled veld burns or grass cutting in game farm areas close to a border fence with a cattle farm should thus ideally be coordinated with the neighbour and his rotational grazing schedule.
- The responsibility of maintaining border fences in a good state should be shared between neighbours, even if the border fence happens to be a game-proof fence erected by the game farmer.

Cooperation between neighbouring farmers should be the main tool in mitigating the risk of MCF (Oberem, 2023), which is illustrated by Figure 10.



A: With a wildebeest camp in close proximity to the border fence the risk of close contact between cattle and wildebeest is substantial.
B: By simply moving cattle away from the border fence (common sense rotational grazing planning) during the high-risk season, the risk of MCF transmission is dramatically reduced.



C: The game farmer can contribute by constructing water points further away from the border fence and by selective debushing (controlled burns etc.) away from border fences. This will draw wildebeest herds away from the game fences and reduce close wildebeest – cattle contact. Without the wildebeest camp, the wildebeest are allowed to move over the entire farm with a far smaller chance of close cattle to wildebeest contact.
D: Combination of rotational grazing, judicial debushing (where feasible, consider leaving dense bush strip along border) and water points away from fences would be the optimal solution but requires advance planning and a cooperative management approach by both neighbours.

Figure 10 Ways to reduce the incidence of MCF. Communication and cooperation between farmers is essential
© U. Tubbesing

Wildlife Vets Namibia
Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

The above measures should go a long way towards reducing MCF in Namibia. They do require good neighbourly relations and cooperation, something we all should strive to achieve.

Until a vaccine against MCF is available, one could consider financial compensation of farmers for stock losses, through a national fund. The latter should be established by an annual contribution of say NAD 5 000.00 by each game farmer with wildebeest on his farm. With say 800 game ranchers contributing, the fund would collect NAD 4 000 000.00 in the first year. A cattle farmer who suffers stock losses proven to be due to MCF of wildebeest origin can then submit a claim directly to the fund administrators, much like an insurance claim. Looking at current MCF statistics as reported by DVS Epidemiology, this fund would far exceed possible annual claims, yet the annual contribution by game ranchers with wildebeest would be a fraction of annual maintenance costs of the wildebeest fence, never mind the erection costs.

In conclusion

The wildlife industry makes a very significant and growing contribution to Namibia's GDP. It is a major job creator and a source of affordable protein. Since the game ranching industry primarily caters for the tourist, it is a major earner of foreign currency. Just like cattle, wildlife too must be viewed as a national asset and not a liability.

It is high time that the Directorate Veterinary Services (DVS) reviews the existing regulations. They are not only outdated and ineffective, but are also a source of misinformation to the farmers, resulting in many conflict situations between game and cattle ranchers. Alternative, cheaper, ecologically sound and likely more efficient solutions do exist and should be applied. The DVS should play a leading role in providing farmers with proper advice and education.

Wildlife Vets Namibia

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na

P.O. Box 50533
Windhoek, Namibia

www.wildlifevetsnamibia.com

Bibliography

African Budget Safaris, 2023. *Best Countries to Visit in Africa? Here are 15 Amazing African Countries*. [Online]
Available at: https://www.africanbudgetsafaris.com/blog/best-countries-visit-africa/
[Accessed 01 2024].

Central Veterinary Lab, 2023. *MCF Screening 2018 - 2023 (Excel sheet),* Windhoek: CVL.

International Trade Administration, 2022. *Namibia - Country Commercial Guide - Agricultural Sector*. [Online]
Available at: https://www.trade.gov/country-commercial-guides/namibia-agricultural-sector
[Accessed 01 2024].

International Trade Administration, 2022. *Namibia - Country Commercial Guide - Travel and Tourism*. [Online]
Available at: https://www.trade.gov/country-commercial-guides/namibia-travel-and-tourism
[Accessed 01 2024].

Oberem, P., 2023. *The role wrsa has played in an attempt to lessen conflict between cattle and game ranchers over the wildebeest (and sheep)-borne disease, Bovine Malignant Catarrhal Fever (snotsiekte),* South-Africa: WRSA.

Republic of Namibia, 2018. Government Notice 358 of 2018 (GG 6803). In: *Animal Health Act 1 of 2011 - Section 32*. s.l.:s.n.

Travel Lemming, 2020. *30 Emerging Travel Destinations for 2020*. [Online]
Available at: https://travellemming.com/2020-emerging-destination-awards/
[Accessed 01 2024].

Wildlife Vets Namibia

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na

P.O. Box 50533
Windhoek, Namibia

www.wildlifevetsnamibia.com

Appendix I Wildebeest guidelines (Government Notice 358 of 2018)

DIVISION 31
MALIGNANT CATARRHAL FEVER (MALIGNANT HEAD CATARRH, SNOTSIEKTE, CATARRHAL FEVER, GANGRENOUS CORYZA)

Confinement of wildebeests in camps

151. (1) An owner or keeper of wildebeest must confine or cause such wildebeest to be confined in approved camp as specified by the Chief Veterinary Officer.

[The article "an" has been omitted before the phrase "approved camp".]

(2) An application for approval of a wildebeest camp contemplated in subregulation (1) must be made to the local State veterinarian in an approved form according to Annexure 16 and the approval made by the Chief Veterinary Officer must be in the form set out in Annexure 17.

(3) A person may not introduce, move or caused to be moved any wildebeest from any landed property or establishment to any other landed property or establishment unless either properties or establishments have approved wildebeest camps referred to in subregulation (1) and are accompanied by a movement permit set out in Annexure 23.

[There is a grammatical problem here; subregulation (3) was probably intended to refer to "both properties or establishments" instead of "either properties or establishments".]

Specifications for wildebeest camps

152. The specifications for the boundary fences of the wildebeest camps referred to in regulation 149(1) must -

[The cross-reference to regulation 149(1) is clearly in error; regulation 151(1) may be the intended reference.]

(a) be at least 110 centimetres in height;

(b) have a minimum of 7 strands of wire, and the first wire strand must not be more than 10cm above ground level;

(c) be not more than 15 cm part counting from ground level, wires 1 to 5, and wires 5 to 7 not more than 20 cm apart; and

[The word "apart" is misspelt in the *Government Gazette*, in the phrase "15 cm apart", as reproduced above.]

(d) be at least 10 metres away from neighbouring farm boundary fences.

Powers of Chief Veterinary Officer

153. Despite regulation 152, the Chief Veterinary Officer may change the specifications for boundary fences he or she considers necessary.

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

Appendix II The role of WRSA in the Snotsiekte conflict

WRSA
WILDLIFE RANCHING SA

Wildlife Ranching South Africa
Reg No: 2006/030722/08 · Vat No: 4200 228 098
Building number 9, 3 Bauhinia Street, Oxford Office Park
Highveld Techno Park, Centurion, 0157

Our GAME

02 August 2023

THE ROLE WRSA HAS PLAYED IN AN ATTEMPT TO LESSEN CONFLICT BETWEEN CATTLE AND GAME RANCHERS OVER THE WILDEBEEST (AND SHEEP)-BORNE DISEASE, BOVINE MALIGNANT CATARRH (SNOTSIEKTE)

REPORT COMPILED BY:
Dr Peter Oberem:
B.Sc. (Zoology and Entomology), B.Sc. (hons.) Veterinary Parasitology.

INTRODUCTION:

Since the lifting of the ban against the movement and introduction onto private property of wildebeest in South Africa and the dramatic growth in the game industry stimulated by the amendments in the Game Theft Act and the New South African Constitution, the conflict between game ranchers and cattle farmers has grown.

MEASURES TAKEN BY WRSA:

There have been numerous court cases dealing with such matters, however, as circumstances differ from case to case, e.g., cattle farmer/game farmer was there first; proving the source of the infection, if cattle farmer is surrounded by game ranches with wildebeest; lack of clear diagnosis etc.
WRSA has recognized this and has made a major effort in trying to ameliorate the conflict.

This was done in various ways:

1. Onbudsman: For many years, WRSA funded and supported the efforts of an ombudsman to facilitate dialogue and finding mutually acceptable solutions to individual conflict situations. This service came to an end as farmers/ranchers did not really make use of the service.
2. Technical support of both cattle and game farmers under situations of conflict. Much of this work was done by Dr Peter Oberem who is a veterinarian (see above) and game rancher with a major interest (via Afrivet) in the disease: His main advice is that the "warring neighbours" should be prepared to talk and negotiate with each other in a search for a mutually acceptable solution which should include:

Dr Ulf Tubbesing
☎ +264 (0)81 128 0350
✉ ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com

i. Good neighbourly communications always.
ii. Cattle owner moving cattle from being too close to game farm during high risk (stress) periods if possible.
iii. Confirming the diagnosis of wildebeest (not sheep)-borne BMC. If negative for Wildebeest-borne BMC, cattle owner pays for vet, his treatment for animal-welfare reasons, diagnostic procedures, etc. If a positive diagnosis is made the wildebeest owner should pay for this.
iv. Cattle owners will need to have validated values for the affected animals in order to ensure fair compensation.
v. If wildebeest-borne BMC is confirmed (and if the game rancher is the newcomer to the area) as the cause of death and or euthanasia the game rancher should be prepared to compensate the cattle owner at the agreed on validated price.
vi. He further suggests that a newcomer game rancher, in good faith, put the value of, say, 3 cattle, at the validated value provided by the cattle farmer into a trust account for said purpose.

3. Development of a vaccine to protect Cattle against the disease: WRSA, through Afrivet Business Management (Pty) Ltd embarked on a project to find and introduce a 'snotsiekte' vaccine into South Africa. To date the following has been achieved:
a. Source of researched attenuated live virus vaccine found (Moredun in Scotland).
b. This vaccine has been proven to be effective at protecting cattle against in vitro infections in the laboratory.
c. The necessary serological levels needed to protect cattle have been determined in the same laboratory.
d. It has successfully been extensively tested in the field in east Africa, and
e. Tested in the field by Afrivet in South Africa where sufficient antibody levels (serological levels) were attained to confer protection.
f. Afrivet negotiated the transfer of the technologies, attenuated strain and cell line needed to grow the vaccine strain from Moredun to Onderstepoort Biological Products (OBP).
g. OBP have successfully produced a batch (as far as I know 30 000 doses) and in order to get regulatory approval to sell the vaccine need to do trials, locally, in insect proof facilities/stables which they do not have. This latter requirement is nonsensical and while we wait, many cattle are dying.
h. The possibility of Afrivet distributing this vaccine on section 21 prescription exists if the authorities and OBP agree to go this route. Afrivet is willing to do its part in getting the necessary scripts and distribution agreement.

Fortunately, much good work has happened over the past 15 to 20 years, however it is hugely frustrating at this late point to be held up by, (in my mind) unnecessary bureaucracy when so many animals are at risk (and are dying) and so much unnecessary animosity between cattle and game ranchers exists and grows.

Dr Ulf Tubbesing
+264 (0)81 128 0350
ulft@africaonline.com.na
P.O. Box 50533
Windhoek, Namibia
www.wildlifevetsnamibia.com