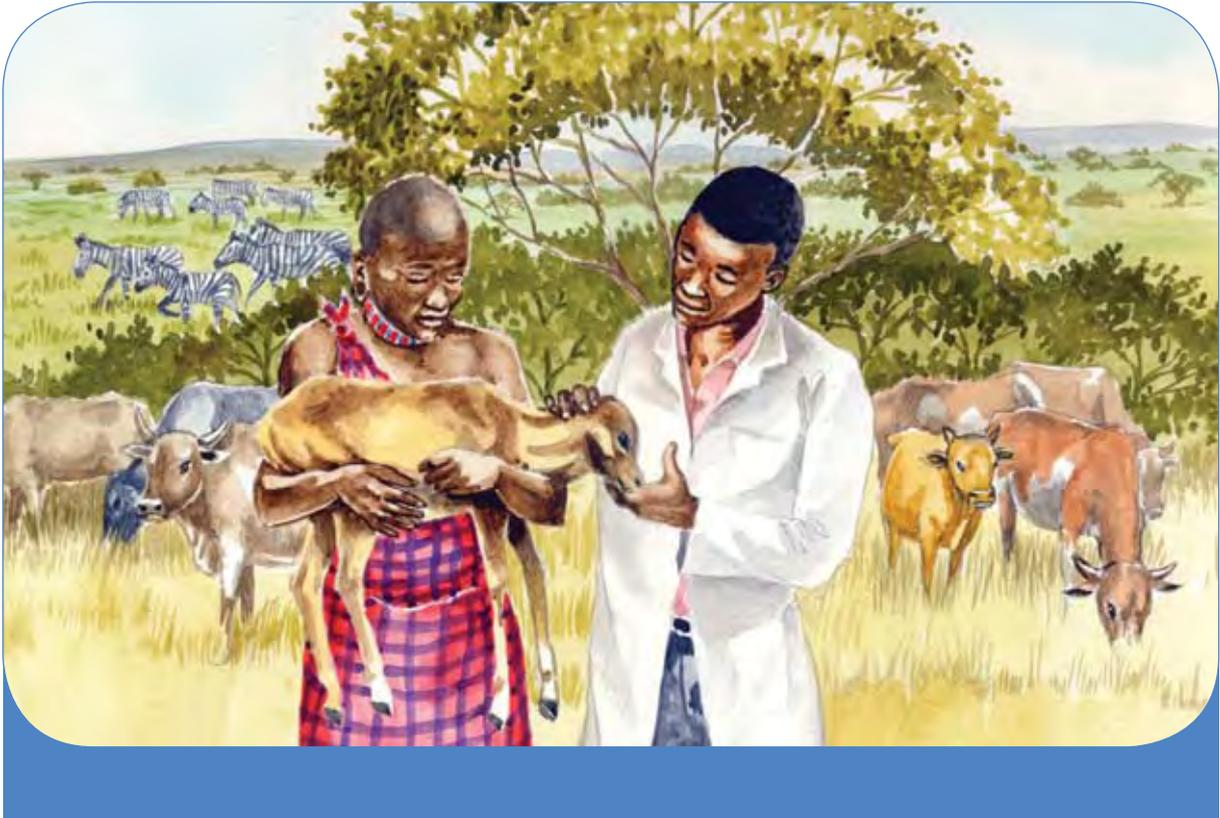


Managing livestock diseases near wildlife sanctuaries in East Africa



For centuries pastoralists have managed both their herds and the rangeland through seasonal movement, reserving areas of pasture for drought seasons, protecting certain types of trees and avoiding areas known for disease. This traditional land-use planning helped both livestock and wildlife thrive on the Maasai Steppe, which still has the greatest concentration of large wild mammals in the world.

But in recent decades both government policy and human population growth have constricted pastoralists' freedom of movement, squeezing pastoralist herds into smaller and smaller spaces.

Restricting movement endangers pastoralist livelihoods, leads to conflict and also creates a growing "interface" where wildlife and livestock meet. Livestock and wildlife then share pasture, water, salts and parasites and diseases.

Whether or not they come from wildlife – some do and some do not – livestock diseases can devastate herds and family incomes. Many pastoralists lose a sizeable portion of their livestock and spend a sizeable portion of their income combating disease each year. Some microbes even jump to humans.

For a sense of scale: a recent study in Isinya District, Kenya, found that 60 percent of calves and 50 percent of adult cattle were estimated to have been ill during one year, 2003–04 (Bedelian *et al.*, 2006).

Helping pastoralists keep herds healthy can increase badly needed income as well as help maintain human health.

WHY THIS MODULE?

Disease is more than a matter of microbes. Disease rates rise or fall depending on a large number of ecological and social factors. At the moment, both community members and scientists have observed livestock disease on the rise in pastoral areas.



Livestock-wildlife resource sharing

Diseases new to particular regions are emerging. Previously controlled ones are coming back. Others are expanding their range.

Both planners and community members need to be aware of trends influencing livestock disease, since diseases affect community well-being and income. And most can be controlled or even eliminated by human action.

Trends affecting the rise in livestock disease include many of those discussed in this Toolkit (see especially Modules 1 and 2). In brief, they are:

- **Climate change.** Temperatures in East Africa, as in most of the world, are slowly rising. In addition, the climate crisis is producing more extreme weather more frequent droughts but also more floods when it rains. When animals are weakened by lack of food or water, they are more vulnerable to disease. And, in a vicious circle, disease-weakened animals are less able to withstand drought.
- **Disease-bearing insects on the rise.** As temperatures rise and moisture levels change, "vectors" – insects that carry disease – are expanding their territory, infecting animal populations in new places.
- **Land squeeze.** Turning rangeland into farmland is squeezing pastoralists into smaller spaces, denying them the traditional ability to move with the rains and fresh pasture, and putting them into more contact with wildlife.
- **Decrease in public animal health services.** The withdrawal of the state from the delivery of animal health services constrained by decreasing public-sector budgets, a severe shortage of qualified, inadequate infrastructure and equipment and weak monitoring and information systems has also hampered the ability of veterinary services to effectively deliver high quality services to pastoral areas.

CONSIDER THE CATTLE

“People worry that if we separate wild and domestic animals, it will be like another park coming in and they don’t want that. It’s more helpful to emphasize sharing the land. But sometimes animals need to be separated for a short time. For instance, keeping cattle out of wildebeest birthing areas until wildebeest calves are three months old will prevent livestock from getting sick from Malignant Catarrhal Fever. But to do that, there must be somewhere else to take the cattle, that’s reserved for them. That’s very important to remember when planning land use.

*Moses Neselle
Veterinarian and community planner*

The good news is that some diseases can be prevented or controlled by wise land-use planning at the community level (see Module 2). Key to effective planning is giving careful consideration to pastoralist needs and knowledge, so their herds have adequate space free of disease and emergency pasture.

In addition, the burden on pastoralist communities from wildlife-related disease can be compensated for by creating new opportunities, such as nature-based businesses. Countries in East Africa allow communities to benefit from tourism, bee-keeping and other enterprises based on the presence of wildlife and healthy forest and bushland (see Module 3).

What follows is not a substitute for veterinary guidance, but a brief guide to important facts and recent developments in common livestock diseases in pastoral lands near protected areas.



Veterinary officer administering medication to animal

COMMON LIVESTOCK DISEASES AND THEIR TRENDS IN PASTORAL AREAS

1. Anthrax

(Maa: Engeeya Nairowa; Swahili: Kimeta)

What you need to know

Anthrax infects livestock as well as buffalo, zebra and other grass-eating animals. Anthrax bacteria can live a long time in the soil. Animals are most likely to pick up anthrax at the beginning of the rainy season, when the grass they are eating is short.

With land-use changes, as livestock and wildlife are pushed into more confined spaces, the incidence of anthrax is rising.

People can get it too, by handling or eating meat from infected animals.

Look for ...

- Sudden death of apparently healthy livestock
- Swellings in the throat, chest, abdomen and/or legs of animals that become sick but don't die.

Be careful

If people or predators open the carcass of an animal that died from anthrax, they can trigger an epidemic as spores spread through the air and the ground. The

patch of soil where body fluids leaked can harbour infection for up to 60 years!

If you think an animal has died from anthrax, guard the carcass or use thorn bushes or stones to keep predators from tearing the carcass open.

Burn the carcass after sprinkling it thoroughly with kerosene or petrol. Or bury it two metres deep and cover it with ashes or lime.

Prevention and control

Vaccination works for nine to twelve months and is best delivered as a community or government effort to protect all cattle.

Antibiotics can be effective if treatment starts early, though prevention is preferable and less costly.

2. Rift Valley Fever

(Swahili: Ugonjwa wa Bonde la Ufa)

What you need to know

Many people think Rift Valley Fever (RVF) comes from wildlife, but it does not.

RVF is carried by rats and mosquitoes. The mosquitoes bite infected rats, then pass on the infection when they bite livestock.

Cases increase during the wet season when there are more mosquitoes and especially when heavy rains create standing pools of water where mosquitoes breed.

They also rise at the end of the rainy season, when rat populations increase.

RVF was unheard of in the Maasai Steppe of Tanzania until 1997, when an epidemic followed the heavy rains of El Niño. It seemed under control after that until an unusually wet season in late 2006, when an epidemic spread from the Rift Valley region of Kenya. In 2006 and 2007, RVF epidemics in both Kenya and Tanzania killed thousands of cattle and more than 150 people.

Climate change is likely to produce more seasons of unusually heavy or long rains, so RVF epidemics are expected to continue.

Look for ...

- **In livestock:** A wave of spontaneous abortions in cattle, sheep or goats.
- **In people:** Flu-like symptoms including sudden fever, headache, muscle and back pain. If you have jaundice and vomiting, go to the clinic immediately, or hemorrhage, blindness or death may follow.

Be careful

People can get RVF through mosquito bites, from slaughtering or eating infected animals, possibly from drinking raw milk and even from inhaling the virus from the carcass of an infected animal.

RVF affects tomorrow's herds since it interferes with breeding.

In case of an epidemic, animals from the affected area will be quarantined. During the epidemic and for a month afterward, it is illegal to sell animals (cattle, sheep or goats) and products (milk, meat or hides).

If you see abnormal abortions, immediately report them to the Village Executive Officer, or Extension or Veterinary Officer.

Prevention and control

For livestock: annual vaccination is effective. A community or government effort to protect all cattle is best.

For people: Use bednets to prevent mosquito bites. Also avoid directly touching an aborted foetus. Protect yourself by using plastic gloves or plastic bags on your hands. Then bury the carcass deep enough not to be dug up by dogs and other predators.

Government programs can help by being prepared with vaccines after heavy rains. Response must be swift to be effective.

There is no known treatment for RVF.

3. Foot and Mouth Disease (FMD)

(Maa: Oloroibi, Swahili: Ugonjwa wa midomo na miguu)

What you need to know

Foot and Mouth Disease (FMD) affects cattle, sheep, goats, buffalo, antelope and sometimes elephants. It moves swiftly through a herd, killing very young animals and causing dramatic loss of weight and productivity in others.

Foot and mouth disease is transmitted by direct contact from one animal to another. It can also be carried by the wind – as far as 250 km!

People rarely get the disease.

A decade ago, FMD would typically strike herds once a year. Now, in much of East Africa, it occurs three times a year. In addition, as the climate warms, more strains are emerging.

Look for ...

- A number of livestock that show drooling, blisters and lameness at the same time.
- Calves dying suddenly from a heart attack.

Be careful

FMD has huge economic effects. A cow's milk production can drop by 75 percent for the rest of her life. In addition, instead of calving every year or so, she might calve every two or three years.

Prevention and control

Vaccination can work but is expensive, since vaccines are imported and now must cover multiple strains. Communities can plan for and buy vaccines cooperatively. A few communities in northern Tanzania are already doing this.

Government has a role to play in prevention. For instance, the Tanzanian government has pledged to subsidize vaccinations for some 2 million cattle. Yet the country has nearly 20 million and all could benefit.

FMD is a danger particularly where land is shared with buffalo and wildebeest. So FMD and the cost of vaccines are two of the many reasons that communities should consider land-use planning and conservation-based ventures (see Modules 2 and 3). Such businesses help communities offset the cost of living with wildlife, earning income from its presence.

4. Malignant Catarrhal Fever (MCF)

(Maa: *lingati*, Swahili: *Ugonjwa wa Nyumbu*)

What you need to know

Two separate viruses cause Malignant Catarrhal Fever (MCF) in cattle. One is carried by sheep and goats, the other by wildebeest and oryx.

The latter is particularly a problem when and where wildebeest calve. The calves give off the viruses for three months after birth.

For centuries, MCF did not significantly affect pastoralists because they moved their herds to other areas each year during the wildebeest birthing period.

This traditional land-use planning system has broken down, though, over the last few decades as competition for land has risen and cattle and wildebeest graze together even during the sensitive birthing period.

Unless mitigating steps are taken, there will be more and more contact between cattle and wildebeest, so MCF is likely to continue to increase.

Look for ...

A cow's eyes become opaque. The animal soon goes blind and dies.

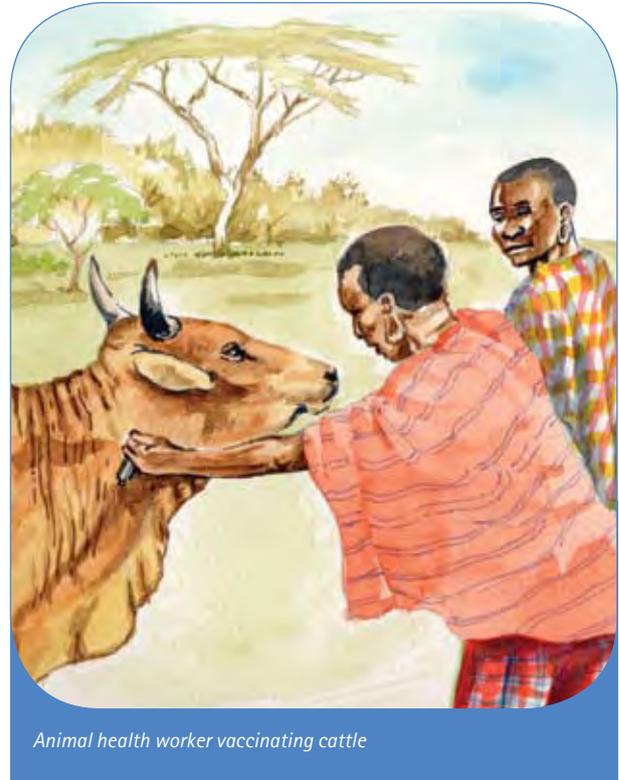
Prevention and control

No vaccine or treatment currently exists.

Control would be through wise land use. Land-use plans should take into account the needs of cattle owners as well as the movement and breeding sites of wildebeest. Plans might incorporate a separate grazing area for cattle during the wildebeest birthing season, roughly late February to May. See Module 2 on participatory land-use planning.



Wildebeests calving



Animal health worker vaccinating cattle

5. Corridor Disease (Theileriasis)

(Maa: *Engeeiya Nairowa*, Swahili: *Ndigana moto*)

Corridor disease includes a number of fatal cattle diseases, of which East Coast Fever (ECF) is the most common.

ECF is transmitted by the brown ear tick, which infests wild buffalo. Buffalo prefer bushy places – the same locations that cattle typically graze during the dry season.

Look for ...

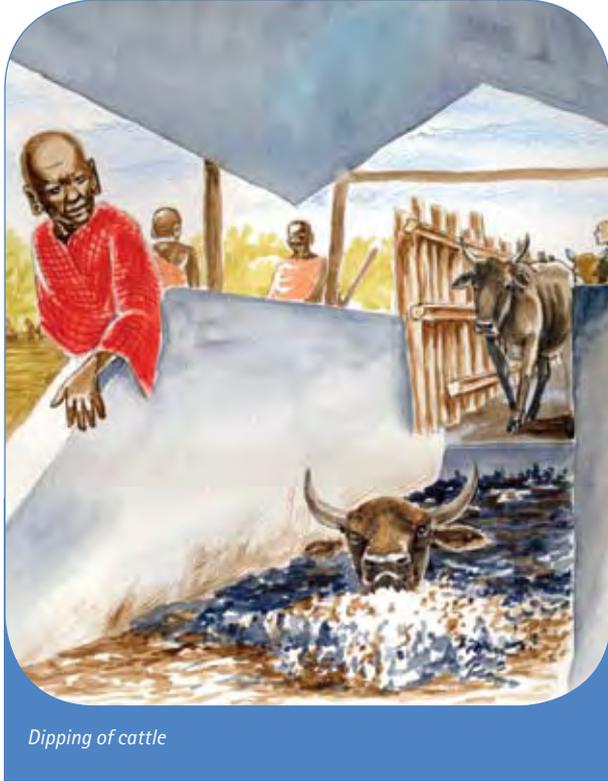
The disease has few visible symptoms, though deaths usually occurs from respiratory problems.

Prevention and control

Drugs to treat Corridor Disease exist but are expensive; control is preferable.

Communities and government officials can organize cattle dips to kill the carrier ticks. Traditionally pastoralists burn pasture shortly after the end of rainy season, i.e. early dry season (the time when migratory wildlife e.g. buffalo also return to parks). Burning is also done to encourage new-growth for grazers in these areas, hence double effect.

Land-use planning is also an important measure. The more space there is for livestock and wildlife, the less likely that cattle will encounter buffalo and their ticks.



Dipping of cattle

6. Trypanosomosis

(Maa: *Endorobo*, Swahili: *Ndorobo*)

What you need to know

Trypanosomosis (tryps) infects wild animals, livestock and people. It is carried from one infected animal or person to another by tsetse and other flies. In people it is called "sleeping sickness."

Tryps is another disease on the rise. In previous eras, people avoided bushy areas where tsetse flies are common. Today, pastoralists are being pushed into these areas as more desirable land is taken for farms.

Called "*entorobo*" in Kimaasai, tryps is one of the most destructive livestock diseases in Africa since it sickens so many animals, costs so much to treat and can recur again and again in the same individual animals. It infects and kills cows, sheep, goats, donkeys and dogs.

Be careful

Some pastoralists in East Africa spend more money fighting tryps than on any other aspect of pastoralism.

One recent study found that up to 15 percent of cattle in part of southern Kenya contract *entorobo* in any one month.

In humans, sleeping sickness is fatal. Tarangire and Babati Districts in northern Tanzania are considered sleeping-sickness zones.

Look for ...

Chronic fever, swelling, dermatitis and nervous disorders. The disease leads to severe weight loss, anaemia and death. Definite diagnosis can only be made by an appropriate laboratory.

In people, sleeping sickness produces fever, headaches, joint pains and itching. The second stage involves the central nervous system and can create poor coordination, confusion and sleep abnormalities. It is treatable, but can be fatal without treatment.

Prevention and control

Most effective would be land-use planning that ensures pastoralists adequate land free from tsetse flies.

Tsetse-fly areas are usually rich in wildlife, however, so make good areas for tourism and can double as emergency herding land during drought.

In tsetse-infested areas, residents attract and kill the flies by placing pieces of black, blue, or white cloth, dipped in pesticide, on trees or shrubs.

Drug treatments exist for tryps, but the microbes can become resistant. Equitable land-use planning for control is preferable.

Key points to remember

- 1** Due in part to changes in climate and land-use, common livestock diseases are on the rise in pastoral areas of East Africa. Along with reduction in rangeland and sharing the land with wildlife, the diseases place an added burden on the pastoralist community.
- 2** Livestock diseases can be reduced by planning and equitable land-sharing, ensuring that pastoralists are not relegated to the most disease-infected parcels of land. They need adequate space, a degree of movement and flexibility to keep herds healthy.
- 3** When conducting land-use planning, pastoral areas should be carefully mapped: where are livestock, in which season? Where are wildlife diseases most common? If villagers make use of land in neighbouring villages, joint planning can be helpful.
- 4** In addition, conservation-based businesses should be encouraged, with income directed to the community. Pastoral communities could greatly benefit from multiple streams of income.
- 5** Efforts to combat the effects of increasing drought could be helpful as well, for instance, rainwater harvesting and development of traditional wells and dams.
- 6** Government has a huge role to play in supporting communities with vaccination and other disease-control programs. Extension programs by veterinary officers could be strengthened and graduates of the veterinary college in Emboreet, for instance, deployed to agro-pastoral areas.

Key points to remember

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