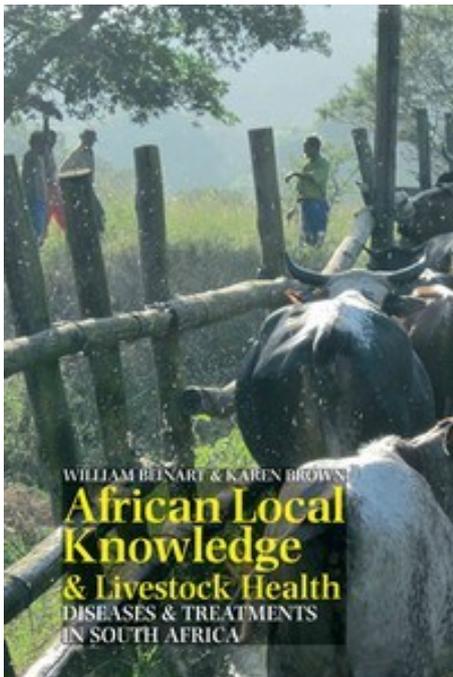


African Local Knowledge and Livestock Health: Diseases and Treatments in South Africa, 2013.

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Background and Overview of the project



African Local Knowledge and Livestock Health was born out of an ESRC grant which ran from 2008- 2013 (Social History of Veterinary Medicine in South Africa since 1930, RES-062-23-0158). The aim of the project was to gain some insights into African understandings of livestock diseases and treatments and try to assess how these might have evolved over time. We were interested in examining the social, political and cultural milieu in which state scientists pursued biomedical ideas and the impact this has had on local African veterinary knowledge. We were also intrigued by recent scientific papers that indicated very high usage of ‘traditional medicines’ by African smallholders to treat their animals.¹ Our research has resulted in a book, which attempts to describe and analyse a wide range of local knowledge in this sphere – exploring environmental, nutritional, medical and supernatural ideas. We hope that this research will also be useful for practitioners and livestock owners. We have written an

outreach report with these audiences in mind and believe that veterinary policy and rural development in general should take careful account of local knowledge.

Our own earlier work in this field had focussed largely on the history of veterinary science and public policy. This has been important in shaping the relationship between the South African state and African rural communities over the long term. However, our analyses did not fully explain how African livestock owners reacted to various phases of state intervention precisely because there was so little understanding of African veterinary knowledge. Older ethnographies such as Monica Hunter's *Reaction to Conquest* (1936), set in Mpondoland in the Eastern Cape, revealed little about approaches to livestock health. The recent surge in historical study of African indigenous medicine largely bypasses the treatment of animals.

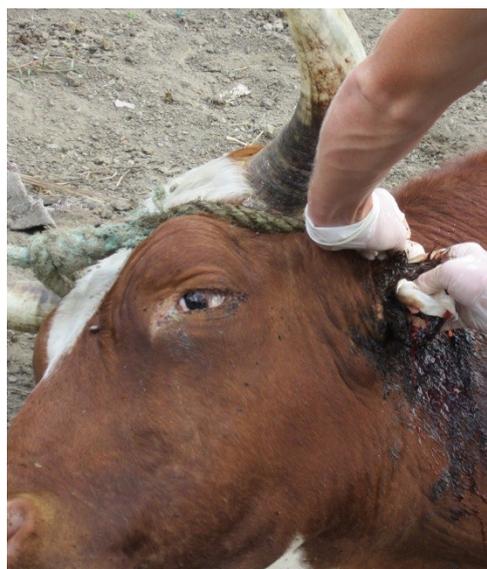
Yet the question of livestock health is important because livestock have made a vital contribution to South Africa's economy at both commercial and smallholder levels. Livestock continue to play an important role in the lives of some black families, both urban and rural. Cattle have a social and cultural value as well as an intrinsic economic worth. The ability to slaughter for the ancestors, throw a good funeral feast or host a spectacular wedding celebration enhanced one's social status in the community. Henry Ramafoko from Mabeskraal (North West Province) stated that 'without cattle we are nothing; cattle are part of our nature'. He regarded cattle as integral to Tswana identity and to notions of personhood. He felt that cattle still provided some financial security in old age and, equally importantly, they ensured he maintained a stake in the land and reflected his status as a successful elder. (Henry Ramafoko, Mabeskraal, 2 February 2010).

For these reasons, farmers have observed the health of their animals and experimented with different ways of preventing and curing diseases. Local veterinary knowledge has constantly evolved, incorporating new ideas about causation and treatment. Much of this knowledge has been passed down from previous generations, but contemporary conceptualisations of disease and treatment also result from social interactions between African farmers, various livestock experts and the state. Arguably, this is one of the most important fields of African local knowledge in which millions of people are engaged.

The survival and pursuance of local knowledge has become increasingly important because of the partial withdrawal of the state from veterinary provision. During the first half of the twentieth century, South African governments imposed compulsory controls over animal diseases that reached into the lives of every African family. During the apartheid era (1948-94), some of these functions were devolved to the homelands. Generally they continued with state subsidised dipping to kill ticks that spread diseases and ran vaccination campaigns to combat zoonotic infections such as anthrax. However, compulsory controls were gradually relaxed and since 1994, the African National Congress (ANC) government has curtailed national veterinary provision due to budgetary constraints and other priorities. This has contributed to the perception – very likely correct - that there is a crisis in livestock health, particularly in the control of ticks. Richard Msezwa, an elderly informant from Mbotyi in the Eastern Cape recalled:

When I was a boy herding you seldom saw ticks in the veld. If you saw a tick you would get excited and call the other herdboys over. Now if you walk through grass your trousers become black with ticks. (Richard Msezwa, Mbotyi, 25 February 2008).

Mseza associated the explosion in tick number with the demise of compulsory and frequent dipping. Like most African smallholders, he had become increasingly reliant on his own strategies to cope.



Ticks on ears, Mbotyi, and ears eaten away, with screwworm, one of the consequences of tick infestation.

It is anomalous that the state has partially withdrawn from veterinary provision, at the very moment that more land is becoming available to African livestock owners. Land reform has proceeded slowly in South Africa but African owners are gradually gaining access to larger areas. Most of the redistributed land is used for livestock rather than for crops. Land reform is essentially livestock reform. This trend is likely to continue and the number of African livestock owners will probably increase. Consequently, and perhaps counter-intuitively with respect to a society that has urbanised rapidly over the last century, animal health is of growing importance and interest to a greater number of people. A small number of wealthier African farmers own hundreds of animals on private farms, but the evidence is not for a major concentration of animals in fewer hands. In general, hundreds of thousands of African livestock owners – possibly over a million - possess relatively small herds and flocks, probably averaging below 10 cattle per family. The great majority of these livestock are managed on land under forms of communal ownership. Disease is an ever-present problem, and one of the biggest obstacles all farmers face.

The Field Sites



Any African livestock-owning settlement in the country was a potential interview site for us, but we did try to seek diversity. **We carried out research in three provinces of South Africa: North West Province, Free State and the Eastern Cape.** In most

cases, farmers grazed their animals on unfenced communal lands that facilitated the spread of infectious diseases. Ticks and tick-borne diseases were ubiquitous although very few informants associated the diseases that scientists see as tick-borne (gallsickness/anaplasmosis, redwater and heartwater) with these vectors. Other problems were a range of viral and bacterial infections as well as worms, poisonous plants and malnutrition. However, as with ticks, few linked diseases with germs or pathogens. Instead informants perceived that environmental and nutritional conditions shaped sickness and good health.

We have tried to identify diseases by recording descriptions of symptoms and the names that people ascribed to certain conditions. This has not always been easy because neither of us are trained vets and because African livestock owners sometimes used words for disease that encompass a wide range of symptoms. African descriptions of diseases, and the names they gave to them, did not always correlate with scientific taxonomies. For instance, some stockowners spoke of 'blood disease' – a category that we could not directly relate to any biomedical classification. Each African language has its own terms and even within the same language group, people used different words for what appeared to be the same disease. In North West Province, where most of the informants spoke Setswana, for example, there were five different words for blackquarter – a cattle disease that is easily recognisable because the legs turn black and emit a particularly nasty smell after death. The differentiation in naming often reflected slightly different ideas about both causation and categories.

a) North West Province

Karen Brown worked largely in North Western Province - flat highveld lands, with a mixture of savannah and bushveld. Here most informants identified as Tswana. She had a serendipitous contact with Barbara Kgari, who proved to be a wonderful research assistant. The majority of the research in this area was carried out in the communal areas around Mafikeng and Mabeskraal, as well as the peri-urban areas of Garankuwa-Mabopane-Winterveld located to the north of Pretoria.



Fafung – north of Brits. Known as the ‘place where animals die’ namely because of a toxic weed called *mohau*. The landscape is dry, the soils sandy and the grasslands interspersed with thorny vegetation and thickets.



Lokaleng (nr. Mafikeng). A dry area on the margins of the Kalahari Grasslands.

Most informants grazed their animals on communal lands although a few of the more prosperous farmers were able to rent camps from the state. Maintaining fences was often difficult as fencing material was a prime target for theft. Stockowners were not able to separate their animals from other herds. Nor could they establish any effective system of veld rotation to optimise and restore the grasslands.



Makeshift fence, Lokaleng (nr. Mafikeng)

The main diseases our Tswana informants encountered were: tick-borne infections such as gallsickness (*gala*), which affects cattle, and heartwater (called by its Afrikaans or English name), which can infect all ruminants; bacterial diseases such as blackquarter (*serotswana*, *sephatlho*, *leotwana*, *letsogwane*, *ramokutwane*), anthrax (*lebete*) and botulism/lamsiekte (*magelta*, *makokomalo*); lumpy skin disease (*boletswe ba letlano*), spread by midges; and various poisonous plants, in particular giflaar (*Dichapetalum cymosum*, known locally as *mohau*). Many stockowners also complained about birthing problems and abortions in their cattle (*pholotso*).

b) QwaQwa (Free State)

As a contrast, Karen interviewed in the mountainous former homeland area of QwaQwa, now in the Free State. Here she was lucky to find Tumisang (Gavin) Mohlakoana, a zoology student at the Free State University in Phuthaditjhaba, to act as research assistant. QwaQwa is a mountainous zone, lying in the shadow of the Malutis (Drakensberg). It is also densely populated with concentrated village settlements of predominantly Sotho speakers. In some areas access to grazing was limited, restricting the accumulation of livestock at some homesteads. A number of farmers took their animals into the mountains to graze during the summer, but this practice has declined due to problems of stock theft. The cold winters ensured that ticks and tick-borne diseases were less of a problem than at other field sites, although outbreaks of gallsickness (*nyoko*) were common. Other cattle diseases in this region were blackquarter (*serotswana*), tele poisoning (tulp; *Homeria pallida*) and malnutrition (*boketa*). Scab (*lekgwakgwa*), spread by acari mites, was a concern of sheep owners.



Heavily populated village of Lusaka in QwaQwa



The more open settlement of Lejwaneng, QwaQwa

c) Koppies – Free State

Karen's final destination was the small highveld town of Koppies, located in the flat, arid environment of the northern Free State. It was the only area where we interviewed white commercial farmers as well as African livestock owners from the adjacent township of Kwakwatse. Koppies is a largely Afrikaans-speaking area and at some distance from the nearest apartheid homeland. Here the route was also fortuitous in that the librarian at the Onderstepoort Veterinary Institute (Pretoria), David Swanepoel, owns a farm in the area. This zone provided a strong contrast to the other research sites in the sense that white Afrikaner farmers generally espoused a biomedical approach to animal health. The African livestock owners she interviewed had all worked on white farms and they had a much stronger biomedical understanding of disease than our informants elsewhere. African informants here grazed their animals on the scrap of

communal land outside Kwakwatse, although some had access to government land at the Sibongile Trust Settlement. Problems including ticks and tick-borne diseases, anthrax, blackquarter, brucellosis and diplodiosis (a form of poisoning derived from rotten maize).



Cattle grazing on a white-owned commercial farm, near Koppies.

d) Mbotyi – Mpondoland, Eastern Cape

William Beinart interviewed in Mpondoland (Eastern Cape) on the east coast, where he had researched on rural history and resistance in earlier years. He worked largely in Mbotyi village where Sonwabile Mkhanywa offered outstanding support as a translator and assistant; he was also a great source of knowledge about plants. The village is situated on the coast in an area of high rainfall and dense vegetation, providing an interesting contrast to Karen's research areas. The homesteads are surrounded by some of the largest indigenous forests in South Africa – a habitat for a wide range of medicinal plants. The east coast is notorious for its ticks and gallsickness (*inyongo*) and redwater (*umbendeni* or *ihlwili*) were problems in this area. Mpondo stockowners also complained about the recent arrival of the vicious bont tick (*qologqibe* – literally the finisher of livestock) which destroyed teats, created deep abscesses and sucked the blood dry. The bont tick was also responsible for spreading heartwater (*amanzana*). Tumours and cancers (*amathumba*) often featured in their testimonies, as did the more mysterious disease *umkhondo* brought about by several entities, including a metaphorical snake.

Mbotyi was one of the few areas where we saw the practice of localised transhumance. Farmers sent their cattle away from the village to nearby grazing lands at Lambasi during the summer months to optimise grazing, keep them away from the cultivated mealie fields and reduce their exposure to ticks.



Looking towards the Lambasi coastal plateau from Mbotyi village



Cattle regularly visit the beach to avoid insects

e) Additional Research Sites in the Eastern Cape

A trio of other investigators, Andrew Ainslie in Peddie, Vimbai Jenjezwa in the Kat River Valley and Mike Kenyon at Masakhane (near Alice), augmented our research in the Eastern Cape.



Woman applying a mixture of Dazzle dip and used car oil on Angora goat, Kat river



Animal Health Technician vaccinating cattle against lumpy skin disease, Hertzog

Overall, we interviewed over 250 people, supplemented by conversations with scientists and officials. We were also able to observe some processes, such as slaughters and plant collection, although we were largely reliant on people's verbal descriptions of what they thought and did in relation to the identification and treatment of diseases.

The Context and Scope of the Book: African Local Knowledge and Livestock Health: Diseases and Treatments in South Africa

Understanding local knowledge has become a central academic project amongst those interested in Africa and developing countries more generally. Critiques of centralised, top-down development have underlined the failure of many technocratic development projects by colonial and post-colonial governments, partly because of the reluctance of experts to engage with local knowledge and recognise social and environmental constraints.

We hope that our book will be a significant contribution to this general field and make a major contribution at three levels. Firstly, we explore a central body of rural African knowledge in a systematic way, using over 250 interviews. Our core argument is that African approaches to animal health rest largely in environmental explanations. Secondly, we examine the relationship of local knowledge about livestock disease to scientific knowledge. We discuss the legacy of traditional ideas, and the extent to which African stockowners have incorporated biomedical ideas and treatments. We relate these issues to current debates in history and anthropology about medical pluralism and also discuss contestations over knowledge and their implications for effective treatment. Thirdly, we debate changing African approaches to livestock diseases in South Africa during recent decades. African veterinary medical knowledge remains largely unrecorded and this book makes an important contribution in capturing its diversity, as well as its limits, in a number of different localities. We contextualise our research within a discussion of scientific and biomedical approaches to animal diseases developed in South Africa over the last century. However, our main body of material results from interviews conducted with African rural and peri-urban livestock owners.

Recent approaches in the history of medicine have also helped to frame our approach. Here the historiography is moving away from a focus on the polarities between local and scientific ways of knowing, to explore cultural exchanges and pluralism. Colonialism helped to create a multi-therapeutic society but there was no overwhelming shift towards a biomedical hegemony, even in South Africa. There are strong echoes of such interchanges in the veterinary sphere and our interviews reflected the limits of western biopower as a cultural force.

We record African understandings of disease and the degree of acceptance (and rejection) of biomedical explanations. We also discuss a wide range of treatments from dipping with chemicals, to plant remedies and the doctoring of space. Our aim is to understand the significance of, and interrelationship between ecological, biomedical and supernatural approaches to livestock diseases. Overall, our findings suggest relatively limited penetration of biomedical ideas about germs, or parasites such as ticks, in the explanation of disease. The dominant form of understanding rested in environmental and nutritional concerns. African livestock owners were also attentive to supernatural threats, but we argue that witchcraft is now less prominent, and more

ambient forms of supernatural danger have become prevalent. We believe that our detailed discussion of natural, nutritional and environmental aspects of veterinary understanding and treatment is a relatively new approach and will help to expand the debate on these issues in African Studies.

Our Findings (1): Disease Causation – Natural Causes

One of our most striking findings is that even livestock owners who used vaccines and modern drugs did not necessarily accept the aetiological explanations that might be expected to inform the administration of these therapeutics. Despite the fact that most of those interviewed were now enthusiastic protagonists of dipping to kill ticks, biomedical knowledge had not passed with the dip. Informants did not generally view ticks as vectors of disease but as a nuisance that had to be dealt with to protect the well-being of their animals. In the past there had been vaccination campaigns, organised by the state to control zoonotic infections such as anthrax. However, stockowners' understandings of the source of anthrax were quite different to the biomedical interpretations.

a) Identifying Infection

The cultural and economic value of livestock and the ubiquity of disease ensured that most stockowners proactively monitored the health of their animals. When identifying diseases farmers firstly noted the outward clinical symptoms. There was no evidence that stockowners took temperatures and they did not refer to fevers. In North West Province, descriptions were often very general, focussing on defecatory activity. Constipation was a common indicator of ill health and a free-flowing gut pointed to a well-functioning system. Tswana stockowners often described sick animals as lethargic and deprived of power (*maatla*): they would linger in the shade, refuse to graze and lagged behind the rest of the herd. Descriptions of symptoms could be vague and informants offered similar inventories for a number of diseases. They referred to healthy animals as strong, whereas the sick were weak. In Mbotyi informants used the English word 'strong' to denote disease resistant and healthy animals.

Sometimes stockowners could only determine the disease after death by carrying out post-mortems – usually as part of the butchering process. In this respect, especially, local medical knowledge about animals differed from that about people because they do not carry out necropsies on human bodies. As a consequence, it may be, in part, that explanations for animals diseases are more strongly based on observation and natural causes than for human diseases. In Mbotyi there were specialist slaughterers whom neighbours called upon to supervise post-mortems and sacrifices.



Slaughter and post-mortem at Mbotyi, carried out by specialists in the village.

The gallbladder was often the most important organ in the identification of disease and gallsickness was immediately recognisable by gall spewed out over the other organs. Anthrax was characterised by blood oozing from the orifices and blackquarter by putrefying carcasses. However, not all observation and post-mortems led to an identification of the disease.

b) Ideas about Contagion and Predisposition

If a stockowner deduced that his livestock had contracted a particular infection, he probably would not isolate the ailing animal as a disease control measure. Seketsa Mokoena from QwaQwa confirmed that:

We normally allow sick and healthy animals to mix together. You just medicate for the sick. It is the same for people. We do not separate the sick.

(Seketsa Mokoena, Lusaka, 1 March 2011)

Throughout our field sites we did not encounter a general notion of contagion; rather respondents indicated that animals contracted diseases if they were weak or had a certain predisposition. Nevertheless, there were some exceptions and a few informants mentioned that they would like to isolate sick animals but lacked the space in the kraals to do so. Most farmers confined their animals in enclosures (kraals) overnight and let them graze on the communal lands during the day. Sometimes stockowners kept sick livestock in the kraal during the daytime when the rest of the herd were grazing in the veld. However, this generally occurred only if the animal could not walk, or for purposes of observation, or to provide treatment. Informants did not claim that they were separating potentially infectious stock from the rest, and at night the sick and the healthy shared the same kraal.



A small animal kraal, Madidi (NWP)



Milking cows in the kraal, Lokaleng

Predisposition to certain infections came up in a number of testimonies from North West Province and QwaQwa. In both regions, stockowners believed that the youngest and fattest calves were most prone to blackquarter, for example. Some identified particular breeds, such as brahmans, as more resistant to disease, suggesting that there was an awareness of acquired immunity, although they did not use that term. In particular there was the belief in North West Province that goats were exceptionally hardy. In Mbotyi stockowners tried to source their livestock from the locality as they seemed to be far more resistant to local infections than those procured from further afield. Experience suggested that transfer of livestock to new environments made them vulnerable to disease.

c) **Environment and the Seasonality of Disease**

Disease does not spread between animals but it has its time or its season. It will come again in that season. Each disease has its own time.

(Nongede Mkhanywa, Mbotyi, 25 February 2009)

Seasonal changes were at the forefront of environmental explanations for disease causation. Stockowners tended to associate specific conditions with particular times of the year. Changes in temperature and rainfall patterns alter the grasslands and make animals susceptible to infections brought on by cold and heat. The winter frosts and winds can leach the vegetation of its moisture creating a brown and dusty landscape, broken around September or October by the first spring rains. Winter is potentially a time of malnutrition on the Highveld, especially in the mountains of QwaQwa. In summer the rains bring more verdant vegetation which consists of both nutritious grasses and – especially in North West - noxious plants. Heat and humidity spawn ticks and worms. Mud in the kraal causes footrot. Summer can be a particular difficult time for livestock due to the threat of diseases like gallsickness and blackquarter.

Gallsickness was the most common disease we encountered throughout our field sites; blackquarter was notably prevalent in North West Province and QwaQwa. A frequently encountered explanation for both gallsickness and blackquarter was the rapid change of grasslands from dry to lush, or vice versa, which mirrored the revolving seasons and shifting rainfall patterns. The animals' digestive systems were simply unable to cope with dramatic transformations in the succulence of their diet. Constipation was a key indicator of ill health, leading to inappetence, malnutrition and ultimately death. In the case of gallsickness, post-mortems revealed that the gallbladder had become blocked or burst, drowning the internal organs in bile. As Richard Molebalwe succinctly put it: 'The grave of the cow is in the stomach.' (Richard Molebalwe, Bethanie, North West Province, 26 October 2009).

The emergence of the first lush grasses of summer could lead to deaths from plant poisonings. Toxic flora often sprouted early and attracted livestock as they appeared to be the greenest, most edible plants in the veld. Toxicoses were most common in the North West Province, with *mohau* (gifblaar), *teledimo* (tulp) and *sekaname* causing the

greatest number of fatalities. *Sekaname* was also used as a medicinal plant, blurring the boundaries between treatments and toxicity. *Mohau* was particularly pernicious and a scourge in some areas. The village of Fafung, for example, was 'known as the place where animals die' because of its prevalence. (Simon Mathibedi, Mmakau, 9 November 2009).

Hot, humid summers also gave rise to worms. The fetid condition of the kraals, and the grass immediately around them, with their piles of dung, was an ideal breeding ground for worms. Cold dry winters could lead to malnutrition, deficiency diseases and to what Tswana farmers called 'blood diseases', which literally drove animals mad:

Cattle affected by *bolowetse ra madi* (blood diseases) become constipated and stagger around as if they are blind. They bump into things and appear drunk as if they have too much blood. Dry grasses and inadequate water stop the stomach working properly; the composition of the blood changes and drives animals mad. (Samuel Mothapo, Slagboom, 10 November 2009).

There is no direct scientific explanation for 'blood diseases' although they may reflect plant poisoning or diseases like anthrax. Blood diseases indicated that something was very wrong with the functioning of the body and the sick animal had to be purified, rather than just treated, with medicines to make it well.

d) **Ticks**

Ticks spread some of South Africa's most serious diseases including gallsickness (anaplasmosis), redwater (babesiosis), heartwater (ehrlichiosis) and historically the highly fatal East Coast fever (theileriosis). Since the early twentieth century scientists have advocated dipping animals in acaricides to kill the ticks. In the early years they filled deep tanks with arsenic solutions. The dipping tank survives in some villages such as Mbotyi, although the general use of tanks has been superseded in recent years with sprays and – for those with sufficient resources – pour-on acaricides such as *Deadline*.



Cattle after dipping – Mbotyi, 2012



Cattle in the dipping tank – Mbotyi, 2012.



Disused dipping tank – Madidi (NWP)

Many informants over the age of 40 remembered dipping and spoke nostalgically of dipping days. Whatever hostility there might have been in the past, there was now a general wish for the state to reactivate the dipping tanks to control ticks. However, stockowners' motives for wanting a return to dipping often differed substantially from the scientific rationale. A striking outcome of our research was the fact that despite state dipping campaigns, very few informants associated ticks with diseases. Nongede Mkhanywa's views, quoted below, reflected the position of many respondents:

The ticks suck the blood from animals and they die; there is no particular disease that causes death but they suck the blood. (Nongede Mkhanywa, Mbotyi, 23 February 2008).

Despite the disassociation of ticks with disease, all our informants spoke of ticks as a major problem and one of the greatest challenges to rearing livestock. The reasons lay in the belief that ticks caused emaciation by distressing the animals so that they could not graze. They literally sucked the blood dry. Ticks also nested on the udders, in the ears or under the tail and could cause extensive damage to the hides. Teats, destroyed by tick bites, provided no milk for suckling calves. Stockowners described the bont tick, which also spreads heartwater, as the most insidious of species because its large mouthparts could cause irreparable damage to udders and soft tissues. In Mbotyi informants gave it the graphic name - the *qologqibe* - or finisher of livestock.



Ticks on the anus (Mbotyi)



Ticks on the udders (Mbotyi)

There was the sense in Mbotyi and in North West Province that the ecological range of the bont tick was expanding and that they were causing havoc in areas where they had not been spotted before. This collaborates some of the scientific findings, especially for the North West Province.²

Ticks taken from a herd of cattle in Mableskraal (NWP) by Mokoboro Rakgomo. Rakgomo had an elaborate nomenclature for ticks compared with many Tswana informants who tended to call all species of ticks *kgofa*.



Kgofa e thamaga (bont tick)



Kgofa e tala (green tick)



Kgofa e khibidu (red tick)



Kgofa e ntsho (black tick)

The detrimental effects that ticks inflict on the overall health of animals ensured that stockowners were proactive in dealing with them. They wanted clean, tick-free animals to prevent the lesions and the irritations they caused. However, most livestock owners sprayed or dipped irregularly to kill ticks when they accumulated. Scientific prescriptions require frequent, regular dipping to break the cycle of tick reproduction and disease transmission. This gap in ideas about disease control potentially undermines the effectiveness of tick treatments.

Some stockowners used the dipping preparations recommended by the Veterinary Department such as the injectable Ivomec, the pour-on Deadline, or Triatix, added to water to make a dipwash. Others used biomedical treatments when they could afford to, sometimes bought from informal vendors, and interspersed dipping with the use of plant medicines such as aloes, which many stockowners believed had repelling qualities. Some families claimed they never bought dips and always relied on the local floral pharmacopeia, lauded because of its efficacy and its affirmation of African culture. The cultural importance of using 'traditional' plant medicines appeared most forcibly in interviews in QwaQwa where local veterinary knowledge was associated with the survival of Sotho identity amongst men. In Mbotyi, by contrast, interviewees stated that they had no medicines to deal with ticks.

Some informants felt that dips were not as effective as they used to be. It is likely that this results in part from problems in their administration such as incorrect solutions and dirty water. However, there is a long history of tick resistance to a number of the common acaricides such as Triatix. As a result, scientists are looking at other approaches to tick management. An 'integrated approach', proposed by parasitologists at the Onderstepoort Veterinary Institute, incorporates a multi-pronged approach including: exposure to ticks to build up some resistance to tick-borne diseases; alternating pour-ons with acaricide solutions; applying acaricides only when the tick-load becomes excessive to minimise growing tick resistance; and the rearing of more tick resistant breeds such as Nguni. The majority of stockowners with whom we discussed these ideas, especially in North West Province, were horrified at the idea that a few ticks on the animals' bodies could be a good thing and actually help to improve veterinary health. African informants, in general, were dismissive of Ngunis because of

their small build, and expressed a strong preference for larger varieties. In Mbotyi, Brahmans, which also have some tick resistance, were preferred.



Nguni cattle in a fenced camp at Ramatlabama (NWP)

Our Findings (2): Disease Causation – Supernatural Causes

a) Witchcraft

In her famous ethnography *Reaction to Conquest* (1936), Monica Hunter noted that witchcraft ‘permeates the whole of life’ and that there was little distinction between natural and supernatural explanations of disease in Mpondoland. She also explained that ‘much space has been devoted to witchcraft and magic, but it is commensurate with the part they play in Mpondo life. The belief in them permeates the whole of life’. Our research into African local knowledge about livestock diseases suggests a more complex and changing picture. Interviews indicated that that natural and environmental – but not biomedical – understandings of disease are now more significant than the supernatural, and that the form of the latter may have changed.

Respondents did not generally attribute disease to witchcraft, except in exceptional circumstances. In North West Province only three out of over a hundred interviewees

offered testimonies which described their experiences of witchcraft. It may be that people were not prepared to share these ideas with us and beliefs in the occult are stronger in relation to animal health than appeared. However, all three narrations bore similarities in their explanations of witchcraft. In each case the motivation for witchcraft was ascribed to jealousy as neighbours did not wish to see their victim's herds grow. Evidence of death by witchcraft included: (1) sudden deaths, especially if an apparently healthy animal suddenly dropped dead in the kraal overnight (2) mysterious causes such as the presence of strange inorganic substances in the stomachs (3) the loss of many animals even if the kraal had been protected against witchcraft with special muthi (medicines) (4) individual selection. If many stockowners experienced the same fate then the cause of death and disease was likely to be natural or environmental.

In QwaQwa most informants expressed a strong belief in the supernatural. However, they associated manifestations of witchcraft with infertility and cattle theft rather than death. In these instances, the witches had neutralised the protective muthi stockowners used to doctor their animals and the kraal. Witches might also send bolts of lightning to kill cattle – at post-mortem the spurting of blood and rapidly decaying carcass could be the result of occult forces.

In Mbotyi stockowners made few references to livestock deaths brought about by witchcraft. However, there were strong beliefs in more ambient supernatural forces that undermined the livestock economy. There was also a wider belief in maleficent powers in North West Province and QwaQwa and these appeared to be distinct from witchcraft.

b) The Ambient Supernatural – Umkhondo and Mohato

Far more frequent than direct references to witchcraft, were phenomena which we have called the ambient supernatural. In both North West Province and Mbotyi, this was associated with words for footprints or traces - the concepts of *mohato* and *umkhondo* respectively. Neither of these terms appears in the older ethnographies and we see them as hybrid supernatural concepts drawing both on older ideas of witchcraft and pollution, as well as newer ideas of infection or natural dangers. In North West Province and QwaQwa informants articulated strongly genderised views of pollution in which women were cast as the malevolent bearers of misfortune. Ritual pollution has featured

in South African ethnographies throughout the twentieth century and remains a formidable concept in these areas. However, the belief in the polluting power of women appeared to be less strong in Mpondoland, at least in relation to livestock health.

In the North West Province, *mohato* was associated with menstruating women and widows, who could cast misfortune and infertility on the cattle kraal. One informant described *mohato* as a form of 'cross-infection' from human to animals. In both North West Province and QwaQwa unpurified widows were the most dangerous people of all; they were the instruments by which dead husbands could wreak revenge on their neighbours. In QwaQwa stockowners offered seven terms relating to the different polluting effects of women. Sotho informants claimed that women destroyed the protective *muthi* used to safeguard livestock from diseases, infertility and theft, rather than being a direct threat to animals themselves. Nevertheless, these ideas are changing and in some families women of all ages look after the animals.



A woman with her cows in Mabeskraal –some women do own and look after livestock.

The term, *umkhondo*, used in Mbotyi, was often associated with the deposition of disease in the dew. Animals fell sick if they crossed infected traces. This could be expressed as an almost natural phenomenon, associated with mud in the kraal, or small spiders in dew-laden grass. Sometimes it was related to *ichanti*, a metaphorical snake – historically seen as a witch's familiar. A couple of older men also used the term for *umlaza* - pollution by women. Farmers responded by keeping their animals in the kraals until the sun had burnt off the dew. They also doctored the kraal with protective *muthi*. Thus, the concept of *umkhondo* includes elements of natural explanations of disease, but is also associated with a range of rather indefinable symptoms attributed to ambient supernatural forces, rather than to witchcraft per se.

Our Findings (2): Preventatives and Treatments

a) Treatments and the transfer of knowledge

Farmers used a range of different medicines. A small minority swore by biomedicines because, in their view, they worked faster and were more effective. They claimed they never resorted to plants or other forms of 'traditional' medicine. The antibiotic Terramycin as well as the parasiticides Deadline, Ivomec and Dectomax, were particularly popular. At the other extreme some believed that local medicines were far more effective than any 'white man's medicine' and disavowed all knowledge or interest in biomedical products. This point of view was most marked in QwaQwa, where some stockowners associated the use of herbal animal potions with Sotho cultural identity. Veterinary knowledge was also an assertion of manhood as most women were excluded from this field.

The great majority of informants used a variety of different therapeutics depending on the disease in question. Financial considerations could also play a part. Some bought dips and vaccines when they could afford to and supplemented them with local medicinal plants when they could not. Others used dips and vaccines for certain conditions, but had found that plant remedies were much more effective for some problems, in particular birthing difficulties, infertility and abortions, as well as inappetence and general poor health. A number of stockowners said they used both local plant medicines and biomedicines because the dual action of the different drugs enhanced their potency. Some believed that Africans would always rely on herbal medicines to some degree, as biomedicines could not deal with diseases ascribed to witchcraft or ambient supernatural forces such as *mohato* and *umkhondo*.

The transfer of local knowledge is part of an oral tradition and can be shrouded in secrecy. We found that informants were prepared to divulge a certain amount of information to us, except in the case of muthi used to prevent witchcraft. *Sangomas* and other African healers were more circumspect, but they were willing to share general details about local therapeutics. What surprised us was the patchy way in which knowledge appeared to have been handed down to the younger generations.

Knowledge of veterinary medicines is very much a male preserve reflecting the dominant role of men in rearing livestock in the majority of households we interviewed. Several younger men complained that the elders did not disclose the traditional plant medicines they used. In some families, especially in North West Province, fathers only transferred knowledge to a favoured son because, it was said, sharing these secrets with all the offspring made the homestead vulnerable to witchcraft. Not everyone could be trusted and there was the fear that witches might obtain vital information and use it to their advantage. However, labour migrancy, resulting in the absence of young men from the villages, had contributed to the breakdown in knowledge transfers as fathers died before transmitting information to their sons. In a number of interviews, informants expressed bitterness about the perceived loss of knowledge and uncertainty about how best to treat their animals. This loss of practical information meant that their only recourse was to purchase expensive biomedical drugs.

Nevertheless, the great majority of people we interviewed treated some diseases with solutions made from plants collected from forests or the veld. They plucked plants when they needed them, usually from the wild, as they believed that naturally growing flora were more potent than cultivated varieties. Barks, roots and leaves from different plants all featured in the muthis that we heard about. Sometimes they administered only one herb at a time; but on other occasions, particularly in Mbotyi, they used a mixture of plants. They used water as a solvent, usually without heating, but for particular remedies the solution would be boiled. From a biomedical perspective, measurements were lax and there was no accurate system of working out the dosage. Stockowners usually administered the concoctions as an oral drench and dosed their animals at intervals until the medicine achieved the desired effect - often of a purgative nature. Treatments made of naturally growing plants corresponded with their understanding of disease causation as stockowners ascribed the origins of most infections to the veld and other environmental conditions. Informants tended to regard loose bowels and effective defecation as a general sign of good health, so that a range of symptoms, not just constipation, could be cured by purging.

Local knowledge included non-plant remedies. In North West Province and QwaQwa, farmers inserted copper wires or tar into the dewlap to ward off anthrax and blackquarter. Although many informants said they now used vaccines, this method of

controlling these bacterial diseases continued in some villages. Throughout our field sites, stockowners daubed substances like petrol, motor oil and household disinfectants onto the skin to treat lesions and repel ticks. African beer acted as a laxative and a tonic. Animals, such as ground up millipedes, could treat blindness and ground cuttle fish shells were used for eye problems; snake-skins, buried in the kraal, were said to fend off evil.

b) Popular Plant Remedies in North West Province

The most popular plant medicines were *kgopane* or *mokgopa* (different generic words for aloes), *sekaname* and *lepate*. Tswana stockowners believed that medicines served a dual purpose. They give their animals plant extracts to build up their strength so that they were more resistant to diseases, and they administered drugs to expel unwanted substances such as dung and gall from the body. Informants found that aloes were particularly useful for maintaining and restoring health and for cleansing the digestive system. The ready availability of aloes and the fact that stockowners believed they had curative and tonic properties against a variety of diseases, ensured their frequent usage.

People used aloes in different ways. Some chopped up the leaves and placed them in the water-trough as a tonic and tick repellent. There was the widespread belief that aloes made the blood bitter and this repelled ticks and caused them to drop off. Aloes also have a strong laxative effect ensuring frequent defecation – a sure sign of good health. Frequent defecation aided the expulsion of worms. Farmers also used aloes to treat diseases such as gallsickness. In cattle that had aborted or when the placenta failed to drop, stockowners dosed their cows with aloes to purge the uterine system. A poultice made from warmed aloe leaves cured sores and lesions. Aloes seemed to be the ideal broad-spectrum plant.

Although many Tswana stockowners regarded aloes as an effective ‘wonder drug’ for improving the health of humans as well as animals, scientists have been less enthusiastic. Tests on the tick-repelling qualities of aloes have proved negative.³ However, scientific trials carried out in the laboratory will not accurately mirror the way drugs and plants are employed in the field. An interesting idea would be for scientists to

carry out field experiments, using the doses and combinations of plants in the ways that farmers routinely administer them. It may be that results from the field would differ from the laboratory findings.



Two popular types of aloes (NWP)

Another broad-spectrum plant, *sekaname* (slangkop; *Drimia spp*) similarly had an important and diverse role in the Tswana pharmacopeia. Potentially a toxic weed, giving animals diluted extracts of *sekaname* was said to protect them from this form of toxicosis. Therapeutically *sekaname* was particularly popular as a blood purifier as stockowners often associated infection with 'dirty blood' or blood diseases. The red bulb variety of *sekaname* turned the liquid a dark red, reminiscent of blood. There were parallels with the doctrine of signatures and homeopathic medicine here and the idea of treating like with like. As with aloes *sekaname* could make an effective tonic and poultice, repel ticks and cleanse the digestive and uterine tracts. Mixed with other plants it could enhance fertility.



Sekaname

Lepate (also known as *tshetlho* or *makanangwane*; *Dicerocaryum eriocarpum*) is a creeper with pretty pink-purple flowers. Stockowners mainly used it for reproductive problems relating to abortions, dystocia and retained placentas. Added to water, the plant created a viscous substance that resembled vaginal fluids. A litre of this infusion would drive out the placenta and any noxious uterine matter within a day. Many farmers, who otherwise purchased vaccines and antibiotics to prevent and cure infections, swore by *lepate* as it was not only readily available in the veld, but also far more effective than the pessaries on the market. Some informants also used it to cure gallsickness, blackquarter and anthrax. As a disinfectant smeared on the hands, it was said to prevent slaughterers from catching anthrax from infected carcasses.



Lepate

Informants also had a range of medicines to protect kraals and livestock from witchcraft, *mohato* and general misfortune. They were generally more secretive about sharing this information lest their muthi be annulled by stronger, magical medicines. However, some were prepared to disclose at least some of their recipes. Stockowners, or the local healers they employed to protect the kraal, often buried muthi at the entrance and inside the enclosure. Alternatively, they burnt the herbs believing that the smoke could ward off evil forces. These were annual rituals.

A particularly popular plant for dealing with the ambient supernatural was *mogaga* (*Drimia altissima*). The Tswana used this for ritual cleansing and for protecting livestock from widows during their period of mourning. Widows cast flakes of the bulb on the ground as they walked to protect the environment from *mohato*. Some mixed with *mogaga* with other plants such as *sekaname* and *lepate* to protect the kraal from

witchcraft and menstruating women. Medicines might also include python fat, which informants from North West Province and QwaQwa claimed could deflect witches and scare off thieves.



Mogaga

If an animal broke a bone stockowners might make a poultice from the ash of burnt *thobega* (*Seddera sufruticosa*). Some also buried pieces of *thobega* bulb in the ground where the animal fell, stating this speeded up healing. The Sotho used the same plant, which they called *thobeha* in a similar way. It reflected a mixture of practical healing (a poultice) and the doctoring of space (the ground that caused the animal to trip). Medicine here involved treating both the victim and the environment. A healer of broken bones near Mbotyi also exorcised the earth and sprinkled muthi into incisions carved into the ground near the affected animal; a local sangoma said this was Sotho medicine.

Table of Plants used in North West Province

Plant - local name	English/ Afrikaans/ Latin name where known	Usage	Method of usage
Kgophane/Mokgopa	<i>Aloe spp.</i>	Treatment for gallsickness and constipation. Anthelmintic. Purify the blood; make the blood bitter to repel ticks. Poultice. Tonic for all species of livestock. Fertility enhancer. Post-parturition cleanser. Treatment and prevention for anthrax.	Infusion made with water as a drench; crush leaves and mix with salt or ash to make a lick; grilled to release the sap to make a poultice for sores
Lengana	Wormword; <i>Artemisa Afra</i>	Coughs in goats (+humans)	Feed the leaves or make an infusion
Lekatse		Retained placenta	Ground roots added to ash from thatch roofs and salt and water
Lepate (also known as tshetlho)	<i>Dicerocaryum eriocarpum/ senecioides</i>	Retained placenta; venereal disease in bulls	Infusion
Lethole	<i>Hydnora johannis</i>	Cleanse the blood; prevent reproductive diseases	Ground into a powder
Makanangwane	<i>Dicerocaryum eriocarpum/ senecioides</i>	Retained placenta; post parturition cleanser; cure for gallsickness and blackquarter; disinfectant	Infusion made with water
Makgonatsotlhe	<i>Sphedamnocarpus pruriens</i>	Retained placenta; eyewash; blackquarter	Infusion of roots
Malla digangwa		Fertility enhancer	Mixed with python fat and burnt in kraal

Manyana	Dagga, marijuana; <i>Cannabis sativa</i>	Preventative for horsesickness	Infusion made with coffee, salt and tobacco; added to water trough
Mathubadifala	<i>Boophane disticha?</i>	Fertility enhancer; venereal disease in bulls; post-parturition cleanser; blood cleanser	Crushed leaves mixed with crushed sekaname bulb
Mogaga	<i>Drimia altissima</i>	Ritual cleansing; protects cattle from widows and menstruating women	Flakes of bulb scattered on earth or whole bulbs thrown into kraal; mixed with mosiama to make infusion
Mogato		Ulcers and abscesses, especially on udders	Ointment from leaves and goats milk
Mokeye	<i>Acacia gerrardi</i>	Protect the kraal from widows and menstruating women	Pieces of root mixed with mogaga and sekaname bulb
Mongololo or mongollo	<i>Pouzilzia mixta?</i>	Retained placenta and dystocia; cure for gallsickness, diarrhoea and poor appetite	Infusion made from roots; bark mixed with salt as a lick
Monna Maledu	<i>Hypoxis hemerocallidea</i>	Cleanse the blood; treat sores; diarrhoea	Ash from grilled plant dries up sores
Moralla	<i>Gardenia volkensii</i>	Prevents anthrax	Burn bark in kraal
Moretlwa	<i>Grewia flava</i>	Prevents blackquarter	Twigs covered with pig fat and smeared on cattle
Morototshwetshe		Laxative; cure for gallsickness; prevents anthrax; blood cleanser	Infusion from the roots; mixed with sekaname and mosalashopeng for anthrax

Mosalashopeng	<i>Withania somifera</i>	Cure for anthrax	Mixed with sekanama and Mosalashopeng.
Moshitlwane		Blindness; stiff joints	Decoction made from roots
Mosiama		Mixed with mogaga for ritual cleansing	Crushed with pestle and mortar to make powder
Mositsane	<i>Elephantorrhiza elephantina</i>	Laxative; gallsickness	Crushed, added to water and dried.
Motsha	<i>Acacia niolotica</i>	Fractures	Used to make splints.
Nata		Tick repellent - makes blood biter	Twigs from the tree placed in feeding trough
Phate ya ngaka	<i>Hermannia depressa?</i>	Protection from sekaname poisoning	Decoction of roots and sekaname bulb
Rramburo	<i>Scilla natalensis?</i>	Retained placenta	Soak the bulb in water to make slimy infusion
Sebete	<i>Senna italica</i>	Constipation; diarrhoea; gallsickness; blood purifier; cure and preventative for anthrax	Decoction made from roots; sometimes roots are ground up and salt added
Sebete bete		Gallsickness; retained placenta; abortions	Creepers added to water
Sekaname	<i>Drimia spp.</i>	Cleanse the blood; preventative and cure for anthrax; tick repellent -makes blood bitter; heals sores; treat blackquarter and redwater; constipation; anthelmintic; retained placenta; kraal medicine	Flakes of bulb steeped in water as a drink or disinfectant; ground up and placed in trough; mixed with porcupine or kudu dung for blackquarter

Sekhalo	<i>Ziziphus zeyheri</i>	Diarrhoea in calves from too much milk	infusion made from roots
Serokolo	<i>Carissa bispinosa</i>	Prevents cross-infection from humans to animals (mohato)	Infusion
Seswagadi	<i>Jatropha zeyheri</i>	Retained placenta	Decoction made from roots
Thobega	<i>Seddera sufruticosa</i>	Speeds up healing of fractures; placed on fractures and buried in ground	Burnt to make ash

c) Popular Plant Remedies in QwaQwa

In QwaQwa herbal remedies were very popular but there seemed to be less uniformity in the choice of plants compared with North West Province. To treat constipation and gallsickness, for example, stockowners not only resorted to aloes (*mohalakane* or *lekgala*), but also *leshokgwa* (*Nasturtium officinale*/*Xysmalobium undulatum*), *lebejana* (*Asclepius spp.*), *mofifi* (*Rhamnus prinoides*), *kgamane* (*Rumex spp.*), *kgware* (*Pelagonium cafferum*), *hloenya* (*Dicoma anomala*) and *mositsane* (*Elephanthorhizza elephantina*).



Kgamane

Stockowners also used *mositsane* for a number of other conditions including diarrhoea and worms. They regarded *mofifi* and *lebejana* as effective tonics and some

stockowners made sprays from these plants, claiming they were excellent acaricides and tick repellents.



Lebejana

Sotho informants were very circumspect about revealing details about the medicines they used to doctor the kraal and protect their livestock from misfortune. They did however relate that they used medicines to enhance the fertility of their livestock and encourage copulation. *Podisa* (species unknown) was recognised locally as an aphrodisiac and it offered protection against sorcery. The Sotho used it to protect the cattle kraal and enhance fertility.



Podisa

Unlike in North West Province and the Eastern Cape, some informants complained that access to medicinal plants was becoming more difficult due to over plucking by traditional healers serving an urban market. However, few kept plants in their own garden, claiming that medicines were only powerful if extracted from their natural

environment. In this view, humans could not re-create the curative power of plants in their own yards. Conservation of local flora was therefore a concern, although informants felt they could do nothing to protect medicinal herbs themselves. Difficulties in accessing flora, which might now be restricted to high up in the mountains, had encouraged or forced some elderly stockowners to buy modern drugs from the farmers' coop.

Table of plants used in QwaQwa

Plant - local name	English/Afrikaans/ Latin name where known	Usage	Method of usage
Bolele	<i>Algae spp</i>	Protect the kraal	Sprinkled around kraal
Hloenya/ Loenya	<i>Dicoma anomala</i>	Improve fertility; gallsickness; tonic	Mixed with salt, water and mohaladitwe for fertility; made into a poultice to rub onto vagina; mixed with mositsane for gallsickness
Kgamane	<i>Rumex spp.</i>	Gallsickness	Decoction from roots
Kgapumpu	<i>Eucomis bicolor</i>	Infertility drug	Infusion from leaves
Kgware	<i>Pelargonium caffrum</i>	Gallsickness	Decoction from crushed bulb
Lebejana	<i>Asclepias spp</i>	Tick repellent; wounds; laxative for gallsickness	Infusion; may be mixed with aloes, or salt and vinegar for gallsickness
Lekhala	<i>Aloe spp.</i>	Gallsickness	Decoction from leaves
Leshokgwa	<i>Nasturtium officinale/ Xysmalobium undulatum</i>	Gallsickness	Decoction made from ground bulbs
Letwetlene		Diarrhoea from green grasses	Decoction from root
Moduane	willow; <i>Salix spp.</i>	Anthelmintic	Scatter leaves in kraal

Mofifi	<i>Rhamnus prinoides</i>	Gallsickness; acaricide; appetite enhancer; footrot	Boil the leaves to make an a spray; drink for gallsickness
Mohaladitwe	<i>Zantedeschia albomaculata</i>	Improve fertility; retained placenta	Infusion
Mohalakane	<i>Aloe spp.</i>	Gallsickness; constipation; emetic to remove plastics	Infusion; sometimes traditional beer is added
Mosisidi	<i>Salvia spp.</i>	Gallsickness	Decoction made from roots
Mositsane	<i>Elephantorrhiza elephantina</i>	Diarrhoea; worms; retained placenta; treat gallsickness and blackquarter	Decoction made from bulb as laxative; ground up and added to salt as a lick
Mothimolo	<i>Asclepias decipiens</i>	Constipation	Infusion
Phate ya ngaka	<i>Hermannia depressa?</i>	Blackquarter; constipation	Decoction made from leaves
Podisa		Protection from witchcraft	Crushed leaves added to water to make a spray
Poho tshela	<i>Phytolacca spp. / Xysmalosium undulatum</i>	Gallsickness; constipation	Decoction made from bulb; may add potassium permanganate
Qobo	<i>Gunnera perpensa</i>	Retained placenta	Decoction made from bulbs
Selepe	<i>Hermannia geniculata</i>	Protection from witchcraft	Crushed bulb made into a drink and mixed with other plants
Setimamollo		Blackquarter	Ash smeared on wire inserted in dewlap
Sheosheo	<i>Athrixia fontana</i>	Protect the kraal	Roots and bulb burnt in the kraal to protect cattle

Thobeha	<i>Seddera sufruticosa</i>	Fractures	Ash placed on the ground where animal fell; bulb shavings placed on wound
Tlwele	<i>Calpurnia sericea</i>	Diarrhoea	Infusion made from leaves; other plants may be added such as motoloana and mosokelo

d) Popular Plant Remedies in the Eastern Cape

Combinations of different plants were particularly popular in Mbotyi. Stockowners gathered the medicines from the local forests. Many species were relatively easy to find in the vicinity of the village.



Grinding leaves to make muthi for gallsickness (*inyongo*) in Mbotyi.

To treat gallsickness, for example, they used four different plants. They made an infusion out of the bark of the *umkhwenkhwe* tree (cheesewood; *Pittisporum viridiflorum*), the stem of a creeper called *injalamba* (probably an introduced species of *ipomoea* or *convolvulus*), and the leaves of two plants, *umlung'mabele* (knobwood; *Zanthoxylon capense*) and *umzane* (white ironwood; *Vepris lanceolata*).



Bark of *umkhwenkwe* tree (cheeseood; *Pittisporum viridiflorum*), chopped for medicine



umlung'mabele (knobwood; white women's breasts; *Zanthoxylon capense*); leaves used for gallsickness.

A concoction for birthing problems also consisted of four plants: *Umkhomakhoma*, *umsintsi* bark (coastal coral tree; *Erythrina* species, possibly *E. caffra*), *mhlolo* (*Grewia lasiocarpa*, a common small forest margin tree) and *umkhazi* (common bulrush; *Typha capensis*). *Umkhazi* is a wetland reed that is believed to have a number of medical properties, notably as an aid to human as well as animal birthing. Scientific experiments have indicated anti-bacterial properties though these were not very conclusive.

Sometimes farmers used more than four plants to make a mixture. For *umbendeni* (redwater) one stockowner's concoction consisted of eight species: the four mentioned

above for gallsickness, as well as *uqangazana* (verbena; *Clerodendrum glabrum*), *ulwimi lenkomo* (cows tongue; *Gasteria?*), *intongana* (*Drimia robusta*) and *ukofukofu* (unknown).

Stockowners took a number of measures to treat or prevent *umkhondo*. They administered a mixture of bark and herbs called *umkhumiso* that differed from the plants used for diseases seen to have natural causes. Some people burnt *umkhumiso* in the kraal whilst the animals were inside it, as a form of medical fumigation that protected the cattle and dispersed potential dangers. The choice of medicines for tackling supernatural causes was very personal. One stockowner, who was also a specialist herbalist, dosed animals suffering from *umkhondo* with an infusion of powdered *intolwane* (*Elephantorrhiza elephantina*) or *imfingwana* (*Strangeria eriopus*). She believed this muthi caused the fluid to drain from the joints so that sick animals recovered within a week. To keep the serpent away from the kraal, she sprinkled *imfingwana* on the ground to purify it. *Imfingwana* appeared in other testimonies, but mixed with other plants such as *amagamayo* and *isibande sehlati* (a type of long grass). They burnt this combination of plants in the kraal.

Table of plants used in Eastern Cape

Plant - local name	English/Afrikaans/ Latin name where known	Usage	Method of usage
Amagamayo		Umkhondo	Burnt in kraal
Balsemkopiva	<i>Bulbine frutescens</i> ?	Gallsickness	
Ikahala	<i>Aloe spp.</i>	Gallsickness	Infusion
Imfingwana	<i>Cycad; Strangeria eriopus</i>	Umkhondo	Root made into an infusion
Imbizo		Infertility	Decoction or burnt in kraal
Impitchi	Peach tree; <i>Prunus persica</i>	Tick wounds; myasis	Poultice

Injalamba	<i>Ipomoea spp.</i>	Gallsickness	Creepers stem mixed with other plants to make an infusion
Intolwane	<i>Elephantorrhiza elephantina</i>	Sheep dewormer; umkhondo; protect homesteads	Powdered root made into an infusion
Intongana	<i>Drimia robusta ?</i>	Redwater	Mixed with other plants to make an infusion
Isibande sehlati	Long grass	Umkhondo	Mixed with other plants and burnt in kraal
Isihlungu	<i>Acokanthera</i>	Snakebite	Infusion
Isifithi	<i>Baphia racemosa</i>	Gallsickness	Infusion
Isiqungu	Thatch grass	Counteract effects of pollution on muthi	Chewed
Mathunga	<i>Haemanthus albiflos</i>	Gallsickness	Infusion
Mhlolo	<i>Grewia lasiocarpa</i>	Retained placenta	Mixed with other plants to make an infusion
Ubuhlungu	<i>Acokanthera</i>	Gallsickness	Mixed with other plants to make an infusion for gallsickness
Ulwimi lenkomo	<i>Gasteria spp ?</i>	Redwater	Mixed with other plants to make an infusion
Umbezo	<i>Clusia pulchella</i>	Umkhondo; witches' familiars	
Umayime	<i>Clivia spp</i>	Protect homesteads	Mixed with other plants
Umkhazi	<i>Typha capensis</i>	Retained placenta	Mixed with other plants to make an infusion
Umkhomakhoma	Fern; <i>Nephrodium athamanticum</i>	Retained placenta	
Umkhumiso		Umkhondo	Mix of bark and leaves

Umkhwenkhwe	Cheesewood; <i>pittisporum viridiflorum</i>	Gallsickness	Bark mixed with other plants to make an infusion
Umlung'mabele	Knobwood; <i>zanthoxylon capense</i>	Gallsickness	Leaf mixed with other plants to make an infusion
Umsintsi	Coastal coral tree; <i>erythryna caffra</i>	Retained placenta	Mixed with other plants to make an infusion
Umthathi	Sneezewood; <i>nieshoust; ptaeroxylon obliquum</i>	Gallsickness; three day sickness	Mixed with other plants to make a decoction
Umzane	White ironwood; <i>vepris lanceolata</i>	Gallsickness	Leaf mixed with other plants to make an infusion
Uqangazana	<i>Clerodendrum glabrum</i>	Redwater; sores; tick damage	Leaf mixed with other plants to make an infusion
Uvendle	<i>Pelargonium reniforme</i>	Gallsickness	Mixed with aloes

Conclusions

African livestock owners, especially older men with larger herds, monitored ill health and closely observed the symptoms in live animals and through post mortems. The interviews pointed to a relatively strong adherence to non-biomedical understandings of disease. Nevertheless, when compared with earlier ethnographies, the testimonies also indicated a move away from ideas about witchcraft as a primary cause of disease and death. There also seemed to be a reasonably strong differentiation between natural and supernatural causation, which might have developed since the time ethnographies, such as that by Monica Hunter, were written. Farmers could spot the signs of some of the disease they ascribed to natural causation, such as blackquarter and gallsickness. But, other conditions like *umkhondo* produced vague, less obvious symptoms and their origins seemed to lie in the realms of the supernatural as a consequence.

Ideas were certainly hybrid but except for informants with high levels of education, smallholders tended to attribute diseases to aetiologies that did not resonate with contemporary scientific thinking. Stockowners associated most incidents of ill health with poor nutrition and environmental conditions. While impurity and witchcraft could play a role, these seemed to be restricted to specific diseases such as abortions and possibly anthrax. Actual descriptions of livestock deaths caused by witchcraft were rare, whereas the provenance of problems such as infertility often appeared to reside in the ambient supernatural. Ambient supernatural causation did not imply malevolence by an individual; rather it related to more unspecific and intangible forces in the atmosphere that could damage an animal's health and undermine its reproductive capacity.

We did not find a strong sense that germs, parasites or vectors such as ticks played a role in causing and spreading infections. There was some sense of immunity and resistance to diseases depending on the predisposition of individual animals and, whether or not the animals had grown up in a specific or nearby locality.

With regard to treatments, there was more openness to, and adoption of, western medicines than there was to biomedical explanations of causation. Dipping is now widely accepted, even though few informants appreciated its particular role in controlling diseases. Many livestock owners were prepared to mix biomedical treatments with other methods, including infusions from plants. Our overall impression from a range of research sites pointed to a growing interest in biomedicines, but an incapacity on the part of poorer black livestock owners to afford them. In this sense, the balance within hybrid and pluralistic approaches appeared to be shifting towards biomedical ideas, but this was an uneven process. The gaps in knowledge and uncertainty about the best treatments were striking in relation to some diseases. We judge this in relation to not only efficacy, but also the perceptions of livestock owners themselves.

Our findings suggest that effective veterinary programmes should take account of dynamic local knowledge and work with the ideas held by hundreds of thousands of African livestock owners. This is particularly important in contemporary South Africa because the areas available to black farmers are expanding and many will continue to operate on a small scale. While we do not assert that all biomedicines are equally

effective, available or affordable, we are also not arguing for medical relativism. Clearly, stockowners see some treatments, such as aloe solutions, as efficacious – although scientific experiments have not proven that. It is important that research continues into African knowledge about local solutions so that plant and other healing materials can be tested. We suggest that it is also important to research the use of plants in the field over a period of time, rather than simply analyse them for chemical agents. Stockowners sometimes consult experts for remedies and for dealing with challenging birthing problems. These experts could be a font of information and may be prepared to work with scientists in testing plant remedies. Nevertheless, it is also important to acknowledge the variability, fragmentary character and limits of local knowledge, as well as the problems that might arise in its deployment in state sponsored medical and development strategies.

Outputs

- 1) William Beinart and Karen Brown, *African Knowledge & Livestock Health: Traditional, Environmental and Biomedical Approaches in South Africa*, forthcoming James Currey and Wits University Press, November 2013.
- 2) Karen Brown, Andrew Ainslie and William Beinart, 'Animal Disease and the Limits of Local Knowledge: Dealing with Ticks and Tick-borne Diseases in South Africa', *Journal of the Royal Anthropological Institute*, 19, 2 (2013), 319-337.
- 3) Outreach report, September 2012. This provides an overview of our findings and conclusions as well as some recommendations for improving the interactions between stockowners and policy makers in the hope of ameliorating livestock health in the communal areas. It is downloadable at: <http://www.africanstudies.ox.ac.uk/sites/sias/files/documents/African-Local-Knowledge-Report.pdf>

¹ P. J. Masika, W. van Averbeke and A. Sonandi (2000) 'Use of Herbal Remedies by Small-scale Farmers to treat Livestock Diseases in Central Eastern Cape Province, South Africa', *Journal of the South African Veterinary Association*, 71, 2 (2000).

² Arthur M. Spickett, I. Heloise Heyne and Roy Williams. 'Survey of the livestock ticks of the North West province, South Africa', *Onderstepoort Journal of Veterinary Research*, 78, 1 (2011).

³ A.M. Spickett, D. van der Merwe and O. Matthee, 'The Effect of Orally Administered *Aloe Marlothii* Leaves on *Boophilus Decoloratus* Tick Burdens on Cattle', *Experimental and Applied Acarology*, 41,1-2(2007).