

Holistic management of livestock, Zimbabwe, 2001 - 2009

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About the authors

Andrea Malmberg is the Director of Research and Knowledge Management at the Savory Institute, a global network dedicated to restoring the grasslands of the world. She was raised on the land with livestock and real food in the western United States and has run profitable land-based businesses for over fifteen years. She holds a Bachelor of Science in Agriculture and a Master of Science in Natural Resources from Washington State University as well as a Masters of Applied Positive Psychology from the University of Pennsylvania. After completing her studies in Zimbabwe and Argentina in 2007, Andrea became an Accredited Field Professional in Holistic Management. Over the last twenty years and in many different capacities, Andrea has facilitated researchers and citizens in gathering data and interpreting and understanding ecological, financial, and psycho-sociological phenomena so that they can make sound ecological, economic, and quality of life decisions.

Jody Butterfield is a Savory Institute co-founder and serves as the Institute's Southern Africa Programs Director. She is based half the year in Zimbabwe where she co-founded the Africa Centre for Holistic Management, and led the ACHM team that developed the methods and materials for introducing Holistic Land and Livestock Management to communal farmers. She also led development of a program that has thus far trained over 100 Holistic Land & Livestock Management community facilitators from NGOs and government ministries in the Southern African Region and beyond. She is the author of numerous articles and several papers and books co-authored with husband Allan Savory, including, *Holistic Management: A New Framework for Decision Making*. She holds a BA in Journalism and an MA in American Studies from the University of Utah.

Description: The Africa Centre for Holistic Management

Many rural communities in Sub-Saharan Africa are experiencing problems of desertification, drying rivers and wells, poverty, increasing spread of infectious diseases, crop failures and dwindling livestock. Most livelihoods are dependent on agriculture, forestry, livestock, wildlife and tourism. These livelihoods are now under threat due to dramatic human influences on land, water and biodiversity. All these resources have been once vibrant in the area and are still critical to the livelihoods of the people. The work of the Africa Centre for Holistic Management (ACHM) shows that these trends can be reversed through holistic decision-making and management.

ACHM is a local non-profit organization established in Zimbabwe to enhance food and water security and human livelihoods by using properly managed livestock to restore degraded watersheds and croplands. It is located near the Hwange Community, 22 km from Victoria Falls. The Centre has demonstrated on its own property that the land, water and biological resource base can be restored by properly managed livestock. ACHM is situated on a 4,600 ha property comprised of private and

state land (788 ha) – known as Dimbangombe. The property is separated from the Hwange Communal Lands by a patch of state forestland and a main road that runs along the community's western edge to Victoria Falls. Dimbangombe is one of many properties that make up a single contiguous wildlife range stretching from the Hwange National Park in southwest Zimbabwe to Zambezi National Park in the northwest, and into the surrounding wildlife reserves of Namibia, Botswana and Zambia. This area is known for its big game – lion, leopard, cheetah, elephant, buffalo, roan and sable antelope, and a rich array of birds.

Dimbangombe is situated at an altitude of 950 m. The rainfall ranges between 350-800mm (with an average of 600 mm) occurring mostly between November and April. The ranch is characterised by rough, rocky basalt hills with intersecting vleis (low-lying grasslands). The vegetation is diverse with mixed mopane woodland, vlei and teak woodland areas. There are three rivers which flow intermittently and in most years have perennial pools. There are three working boreholes and water reservoirs that can hold between 50,000 to 78,000 litres. Above-ground perennial water is available in two artificial watering points close to headquarters. The Dimbangombe River is flowing again through more of the year due to the implementation of holistic planned grazing and forage is now abundant even in drought years.

Holistic management implies that the land cannot be viewed separately from the social, cultural and economic aspects of a community. In 1994, Dimbangombe was donated to ACHM to be used as a Holistic Management demonstration and learning site for the Southern Africa region. ACHM's staff realized that the villagers in the neighbouring 400,000 ha communal lands would be important partners in this venture and began to build relationships with them. Community leaders were invited to serve on the Africa Centre's Board of Trustees. Today, all five chiefs in the Hwange Community serve as Trustees.

Land management: timing and strategies in holistic approach

When the property was purchased by Allan Savory 40 years ago, Dimbangombe had 100 heads of cattle, the vegetation was burned frequently – nearly every year in some areas – and it was generally in a deteriorating state. After the 1980s, cattle were periodically on the property but always concentrated on the best alluvial soils, which further damaged the land. In 1998-99 approximately 70 cattle were re-introduced to Dimbangombe to show that by properly managing them they could restore the land. Cattle numbers increased each year, reaching just over 300 at the end of 2009. Goats were introduced in 2006 and sheep in 2009. This multi-species herd moved through 10 or so unfenced paddocks under Holistic Planned Grazing.

To help build up animal numbers in the Dimbangombe herd and to provide relief to community farmers short of forage, ACHM created a "grass bank" in 2003. ACHM staff were encouraged to participate in the grass bank and add their own animals to help get the increasingly abundant grass grazed and trampled down prior to the next growing season. Grass bank participants were asked to cover veterinary costs for their animals, but were not charged any grazing fees. The only other requirement, added in the drought of 2007, was that animals arrive in good enough condition to survive. That year many livestock owners brought their animals too late (near death), or the animals were so diseased they had to be turned away to avoid contagion. Since its initiation, the grass bank has taken in between 100 and 200 cattle each year (274 in 2007, from 37 families), but in future the

aim is to have enough communities under holistic planned grazing that their forage will not run short, even in droughts, and there will be no need for a Dimbangombe grass bank.

Increasing crop production and improving animal management

The grazing on Dimbangombe is planned twice a year – at the start of the wet season and again at the beginning of the dry season – using the Aide Memoire for Holistic Planned Grazing, a step-by-step planning guide that has been adapted to herding situations.

Livestock are used for land restoration by harnessing the power of their hooves to break up hard ground so that air and water can penetrate. Old grass is trampled down and the soil covered making it less prone to the drying effects of sun and wind. Their dung and urine help fertilize the hoof-prepared soil, and their grazing (which is timed to prevent overgrazing and allow adequate time for plants to recover) keeps perennial grasses healthy, greatly minimizing the need to burn and expose soil.

In 2004, the mobile *overnight kraal* (enclosure) was developed on Dimbangombe. Until this time livestock had been kept in a permanent overnight kraal alongside the headquarters on the ranch to protect them from predators, mainly lions. In 2007, the idea was introduced to communities, where the mobile kraal was placed on harvested crop fields at night – remaining in place for about seven days on each section of the crop field so the animals could break up the soil and maize stems with their hooves and deposit nutrient rich dung and urine.

This treatment more than quadrupled (4.4 times) the maize yields on community controlled fields in both 2008 and 2009, made abandoned fields usable again, and eliminated the labour required for transporting manure.

In 2008, livestock owners in three of four pilot communities combined their animals into larger herds during the growing season and followed the grazing plan they helped create. However, some livestock owners did not want to participate and continued to allow their animals to wander around their homestead area. By the end of the growing season in early 2009, the difference in forage yields from the fields where the grazing plan was followed versus where animals were allowed to wander without control was on average 3.7 times greater in the first case. Once crops were harvested in April, herding stopped and animals were allowed to wander, feeding mainly on crop residue, until the new growing season commenced in December.

From 2008 to the end of 2009, cattle and goat performance improved on Dimbangombe as a result of the prevention measures taken, including changes in the grazing planning. The dry season grazing plan minimized the number of times animals would pass through an area and left the most productive, easy to reach areas to be grazed late in the dry season. In the wet season plan, the drier hillsides were favoured and the low-lying wet areas avoided. Cattle mortality decreased by 1 percent, and goat mortality by 9 percent. ACHM provided training for community animal health workers in all four communities in 2009 and they in turn introduced basic disease prevention and treatment measures.

Land monitoring results

A crucial part of Holistic Planned Grazing's success is biological monitoring to make sure the plan is moving toward the desired landscape or what is referred to as the "future resource base." Dimbangombe learning site uses fixed-area transects. Fifty random sampling points are allocated by throwing a dart backward over one's shoulder. Data is collected from within a 15 cm radius around the dart point after each toss. The data collected within 15 cm includes litter cover (the amount of dead plant debris covering the soil surface), soil surface description (capped, broken, covered) and the nearest perennial (whether it is a grass, tree, shrub, sedge or forb). In addition, canopy cover, insect and animal presence are noted.

Each transect's starting point has been located where a fixed feature – such as a large tree or hill – can serve as the focal point for the photographic record, to ensure that anyone viewing the photographic evidence can clearly see the fixed feature in each subsequent photograph. A GPS reading is taken at the marker peg for easily locating the transect sites.

The overall findings between 2001 and 2009, on all 9 of Dimangombe's transect sites were as follows:

- A 31% decrease in bare ground and 56% increase in litter cover meaning less surface loss of rainfall and less subsequent surface evaporation.
- A 12% increase in perennial grass plants reflecting increased above-ground mass production over a long time period. Livestock and wildlife are therefore able to share forage and have forage reserves for sparse rainy seasons.
- A 21% decrease in less desirable annual grasses which can be a reflection of increase in perennial grasses, but also a seasonal difference.
- A 17% decrease in soil movement resulting in less silt accumulation in the river. The Dimbangombe River is running longer into the dry season in average rainfall years and has more perennial pools now than in the 1970s.

Other features of the holistic management program in Hwange Community

Improvements to the training program in 2008 using a participatory facilitation model and picture cards to cater for community members who were illiterate or not fluent in the language used by the facilitator, resulted in a new level of understanding of the importance of the new practices and behaviour. All four pilot communities were more aligned in understanding the need to take recommended actions. But several challenges remained.

Ongoing challenges

While ACHM made good progress in moving toward greater water security through an improving watershed on the Dimbangombe learning site in the 2001-2009 study period, that was not the case in the four pilot communities.

The community monitoring transects initiated in 2006 showed no improvement in watershed health by 2009, due to the fact that throughout the growing season too few animals were kept in a single herd and control of the grazing plan was lost (animals allowed to wander on their own will overgraze

plants, greatly reducing forage production and increasing bare ground). However, ACHM was able to demonstrate an increase in forage production on the areas in each community where grazing was planned as opposed to where animals were wandering all over the place – 3.7 times more forage on average. This was exciting to community participants and kept them motivated, but these areas were small relative to the size of each community.

Within three years (2007-2009) ACHM produced 14 village-based trainers who, supported by ACHM staff, began teaching people in their communities how to enhance food and water security and human livelihoods through Holistic Management and Holistic Planned Grazing. But, as good as they were, they had too few hours available to devote to training activities, and the knowledge needed was too extensive to effectively “cascade” it throughout the community over the time period originally planned. As a result, too few people acquired the necessary skills for successful implementation.

Lessons learnt

This case study demonstrates how livestock management can be beneficial for soil restoration and health improvement, particularly on the watersheds/catchments of the Dimbangombe learning site and in the animal-impacted crop fields of the Hwange Communal Lands. Through Holistic Management, animals and the environment benefit but also people’s lives are improved through increased income and food security. Some of the key lessons that have been learned are:

- Until ACHM is able to effectively mobilize the livestock owners in each community to combine their animals into a herd and follow the grazing plan they help create, water security is not likely to improve in the short- or long-term. Therefore, ACHM plans to create a mobilization-for-change process specific to the challenge of gaining community-wide commitment to keeping animals together and following the grazing plan community members create.
- It is critical to identify and target for training and involvement those owning the largest numbers of livestock in the community (not just “all livestock owners”), as the large livestock owners have the most influence in whether or not animals will join the community herd.
- In an effort to increase retention of community-based trainers (CBTs), most of whom were enthusiastic young adults with families to help support, ACHM provided a small stipend to the trainers (\$25 per month) in 2009. Although it was understood that the community should be providing compensation, the ACHM staff felt community members would not be so inclined until they understood the value of the knowledge the CBTs were sharing. The stipends definitely improved retention – none dropped out – but there was no indication community members would be willing to pay in future.
- Similarly, remuneration for herders trained by ACHM was not forthcoming leading to a low retention rate. Only a handful remained active, who were usually livestock owners themselves. Agro-pastoralists tend to view herding as a low-skill task. Compensation will be important for retaining herders with the level of skills needed to make livestock owners confident their animals will be well cared for when running in a communal herd.
- It is critical to provide training materials and trainers/facilitators to address the issue of a perceived drop in livestock performance when animals are herded rather than allowed to

roam in the dry season and how such a drop can be avoided (through good grazing planning).

- It will be necessary to develop alternatives to the highly effective lion-proof kraals developed on Dimbangombe since the material used in constructing the panels (the limbs of a rambling shrub) could not be harvested sustainably.

Through its partnership with the Hwange community, ACHM hopes to become a model of sustainable resource management that can be replicated in the region and elsewhere in Africa to restore land productivity, diversity of wildlife and local community livelihoods. Societal change is difficult, so this work is not without considerable challenges. However, people working together are slowly but steadily making a difference by learning how to manage their natural resources in a sustainable fashion. The Dimbangombe learning site is demonstrating that Holistic Management is successful because it is cost-effective and nature-based, and sustainable because it increases land productivity and carrying capacity and livestock stocking rates. Based on experience to date, these benefits can be best transferred to communities through the addition of an effective, community-wide mobilization process so that communities in turn achieve greater prosperity without compromising the long-term viability of the resource base, or creating dependency on imported technologies.