SAVORY INSTITUTE

AFRICA CENTRE FOR HOLISTIC MANAGEMENT

A CASE STUDY

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Most rural communities in Sub-Saharan Africa are plagued with the problems of desertification, drying rivers and wells, people living in poverty, increasing spread of infectious diseases, persistent crop failures and dwindling livestock, and the exodus of young people. While livelihoods are dependent on agriculture, forestry, livestock, wildlife, and tourism, the land, water, and biodiversity once vibrant in the area and critical to these livelihoods have been so dramatically impacted by human influences that they have threatened peoples' lives. The Greater Learning Site of the Africa Centre for Holistic Management (ACHM) is showing that these trends can be reversed. Through Holistic Decision Making people here are becoming empowered to restore the natural resource base on which they depend. The term holistic is used because the land cannot be viewed separately from the social, cultural and economic aspects of a community.

ACHM is a local not-for-profit organization established by Zimbabweans to restore their way of life and the resources upon which they depend. Located 22 km from Victoria Falls and working with neighbours in Hwange Communal Lands, The Zimbabwe Forestry Commission and Zimbabwe National Parks and Wildlife Management, the Dimbangombe Learning Site and communities of Hwange are demonstrating that the land, water, and biological resource base can be healed through properly managed livestock. ACHM's head office is situated on Dimbangombe Ranch a 3000ha property. The property is separated from the Hwange Community 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 north, and into the surrounding wildlife reserves of Namibia, Botswana, Zambia and Angola

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Compiled with information, writing, and data from Jody Butterfield, Doreen Murove BSc., Astrid Huelin BVM&S MRCVS MSc., Precious Phiri BSc., and Constance Neely Phd

and is part of the Kavango-Zambezi Transfrontier Conservation Area. This area is known for its big game – lion, leopard, cheetah, elephant, buffalo, roan and sable antelope, and a rich array of birds.

At an altitude of 800m rainfall ranges between 350-800mm (with an average of 650mm) occurring mostly between November and April, the ranch is characterised by rough, rocky basalt hills with intersecting vleis (a shallow minor lake of a seasonal or intermittent nature). The vegetation is diverse with mixed mopane woodland, vlei, and teak woodland areas. There are three rivers two of which flow all year round and other parts have perennial pools. The Dimbangombe River runs into the Kabonde for a short stretch and the Kabonde into the Tsitsangombe. The Tsitsangombe is a tributary of the Matetsi River which flows into the Zambezi River. There are three working boreholes and water reservoirs that can hold 50,000 to 78,000 litres. Above ground perennial water is available in two artificial watering points close to headquarters and in pools along the Dimbangombe, Kabonde and Tsitsangombe most years.

Dimbangombe River – Watershed Restoration with Livestock

Through Holistic Planned Grazing, livestock are used for land restoration by harnessing the power of their hooves to break up hard ground so air and water can penetrate. Old grass is trampled down so the soil is 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 of plants and allow adequate time for plants to recover) keeps perennial grasses healthy, greatly minimizing the need to burn and expose soil. Because of Holistic Planned Grazing, the Dimbangombe River is flowing again through most of the year and forage is abundant even in drought years.

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 neighboring 16,000ha Hwange Communal Lands (HCL) 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 and commit significant time and energy governing "their centre."

Increasing Crop Production with Animal Impact

Following harvest and crop residue feeding, community livestock are kraaled on successive crop fields at night to break up the soil with their hooves and deposit nutrient rich dung and urine. The treatment has more than doubled the yields on community controlled fields, made abandoned fields usable again, and eliminated the labor required for transporting manure.

Sevi Ndlovu in her animal-treated field (left) and in a conventionally managed field beside it (right).

Between 2010 and 2012 funding provided by USAID-OFDA DDR enabled expansion of activities within Hwange Communal Lands from 4 communities to 14 communities. Core groups within each community who are most interested, most affected, and most prepared to improve their lives and livelihoods through land restoration using holistic management has resulted in the development of 17 Land Management Herds (LMH). (Some communities have more than one LMH). People in the communities that have been mobilized and understand the principles and practices of Holistic Land and Livestock Management through the learning opportunities facilitated by ACHM field officers who continuously work with other members within their communities to encourage all livestock owners to participate. Farmer to farmer learning, through exchange visits between communities and the Dimbangombe Ranch, is a powerful learning tool used regularly to encourage people to improve their crop and grass production. The result is enhanced food and water security and human livelihoods.

ACHM and Communities of HCL are assisting communal and emerging commercial farmers locally, and Government departments and NGO's in the region by demonstrating how to:

- Restore water catchments and river flow through Holistic Planned Grazing;
- Increase forage, wildlife, and livestock production through Holistic Planned Grazing and low-stress animal herding techniques;
- Utilize herding teams and predator-friendly livestock and crop production options and

- Use concentrated animal impact to increase crop yields, restore degraded pieces of land and to create firebreaks.

Visitors and trainees to Dimbangombe benefit from first-hand exposure to the challenges and rewards real communities face in using livestock to restore their land.

Dimbangombe's Management – A Brief History:

When purchased by Allan Savory 40 years ago, Dimbangombe ran 100 head of cattle, was burned frequently, and was generally in a deteriorating state. This was followed in the 1980's with cattle periodically on the ranch but always concentrated on the best alluvial soils, further damaging the land. In 1998-99 approximately 70 cattle were re-introduced to the ranch with the purpose to show that by properly managing them they could restore the land. Goats and sheep were introduced in 2006 and 2009 respectively.

The ranch is managed using the Holistic Management framework. The grazing is planned twice a year at the start of the wet season and beginning of the dry season using an aide memoire for Holistic Planned Grazing created for herding situations. In 2004-05 the mobile overnight kraal (enclosure) was introduced. Until this time livestock were kept in a permanent overnight kraal alongside the headquarters. Using the idea of woven wood Angolan kraal panels the kraal became easily mobile. Since this time the mobile overnight kraal has been moved on average every seven days and is used as a land restoration tool, together with the behaviour, trampling, and grazing of the cattle being herded. Boma sheeting is now under trial for use as a replacement, since monitoring showed that the woven wood panels cannot be sustainably harvested.

The LMH on Dimbangombe is owned by a mixture of HCL community members, staff and ACHM. During times of drought in the past (2002, 2004, and 2005) more livestock came onto the ranch to take advantage of the "grass bank" as the communities' animals had run out of forage due to the existing livestock management activities. The only requirement to date for livestock coming onto the ranch from the communities is that they arrive in good enough condition to survive, as livestock near starvation in the past have died from the stress of walking to the ranch and/or in attempting to adapt quickly to the change in environment and management.

Livestock Production Summary:

This table shows the kg per hectare of cattle, goats and sheep using end of year population numbers from 1998 and 2006 through 2010. The change in kgs per hectare observed during 2007 and 2008 was due to large numbers of goats on and off the ranch as part of a USAID-funded community goat banking project.

Year	Total Cattle	Kg	Total Goats	Kg	Total Sheep	Kg	TOTAL KG	TOTAL KG/Hectare
1998	70	21,000	0	0		0	21,000	**8.4**
2006	139	41,700	678	16,950		0	58,650	**23.46**
2007	383	114,900	563	14,075	9	225	129,200	**51.68**
2008	257	77,100	388	9,700	15	375	87,175	**34.87**
2009	337	101,100	262	6,550	17	425	108,075	**43.23**
2010	468	140,400	82	2,050	30	750	143,200	**57.28**

**Cattle weight estimated at 300kg per animal, goats and sheep at 25kg per animal.*
**During 2002-2005 there were sometimes up to 700 cattle on the ranch especially during the dry season (April to October/November) although figures used below are for the animals recorded on the ranch as at 31st December of each year.*

Livestock Production Challenges: Tick borne diseases and condition of livestock, particularly cattle condition towards the end of the dry season, and goat and sheep condition during the wet season, has been an ongoing challenge. Even with these challenges, by May 2011, the herd had grown to approximately 500 cattle, 60 goats, and 60 sheep. Cattle are provided with a salt lick as the only nutritional supplement.

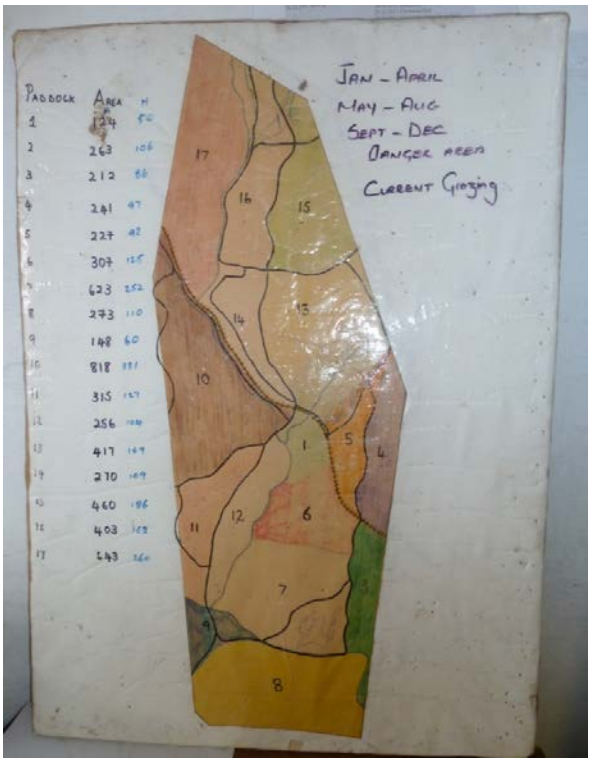
HM in communities of HCL – A Brief History:

In 2008, three pilot communities started combining their animals into larger herds during the growing season and followed the grazing plan, which they created with guidance from the ACHM team. Some livestock owners remained dubious and kept their animals in separate groups that continued to wander. By the end of the growing season in 2009, the difference in forage yields where the grazing plan was followed versus where animals were allowed to wander was up to average four times greater. ACHM is testing a new community mobilization strategy to assist in removing the doubts of non-participating livestock owners so they can achieve similar results.

Holistic Management Land Monitoring Methodology

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 we refer to as the "future resource base." Dimbangombe uses fixed-area transects with 50 random sampling points located 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 15cm 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 and forb). In addition canopy cover, insect, and animal signs are noted.



Map of Dimbangombe showing paddocks, river and railway used for Holistic Land planning

The transects on Dimbangombe have been located where management team plans to produce specific changes. 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. Transect areas are triangular in shape, starting from a fixed point, marked with a peg, and extending laterally from that point to the furthest point left and right contained within a camera view finder (using a 50 mm lens). A photo is taken at the marker peg looking straight out to the horizon to record a general view of the transect area (with the fixed feature centered in the photo, as much as possible) and then a second photo taken with the camera tipped down 45 degrees to record soil surface condition. Sample points are randomly located within the view and out to 50 meters from the original point. A GPS reading is taken at the marker peg for locating the transect sites easily.

Land Monitoring Results

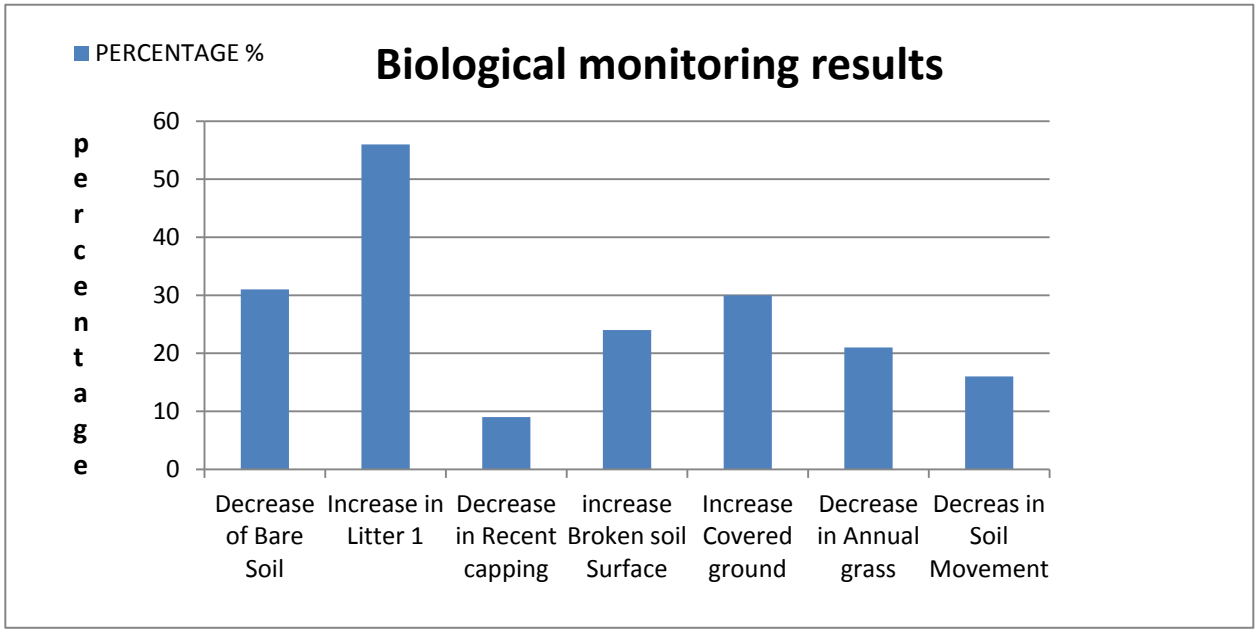
The overall findings between 2001 and 2009 in all 9 transect sites are as follows:

- A 31% decrease in bare ground and 56% increase in litter cover. What this means is that there is now less surface loss of rainfall and also less subsequent soil surface evaporation of whatever rainfall did soak into the soil.

- A 12% increase in perennial grass plants. This reflects in increased forage, over a longer period, for both livestock and wildlife. Now four herds of sable are residents on the property. As the grazing plan is followed livestock and wildlife are able to share forage and still have reserves for when the rains are late and sparse.

- A 21% decrease in less desirable annual grasses. This may be a reflection of the increase in perennial grasses, but could also be a seasonal difference.

- A 17% decrease in soil movement. Less soil movement results in less silt in the river. There is anecdotal evidence (first hand accounts from long-time area residents) that river flow has improved. The Dimbangombe River is running longer into the dry season in average rainfall years and has more perennial pools now than in the 1970s. Most notably, over the last three years new open water, fish, and water lilies have appeared and lasted though the long dry season. In addition the water catchment reaches a distance of 1.5 km higher than previously known.



Above graph highlights improvements that have occurred on the land between 2001 and 2009.

<u>Transect 1 – Some results</u>

2001: This site is in open grassland with scattered trees and shrubs on fairly level ground with loam soils. Dominant features are short *zerophytic*-type annual grasses, sharp seeded and suited to establishment on a hard-capped soil. Although there are some perennial grass species most are overrested and oxidising. Annual grasses dominate and the soil is capped hard and covered by algae.

Desired future resource base at such sites (where there is bare ground and impala habitat is not being maintained) is for this to be a more productive perennial grassland with a highly effective water cycle and high biodiversity. Perennial grass species will be much more dominant and better distributed. Species should be more of a broad-leafed type with seedling establishment capability on a covered soil representing more effective water and mineral cycling. Perennial grasses dominate, the capped soil surface is broken and covered with plant litter.

Results Produced – 2001-2010:

The site started off in 2001 with a high number of oxidizing annual grasses and mature-capped soil. Bare soil has decreased by 52% by applying tools of grazing and animal impact. Like some of the other sites it was accidentally burnt in 2009, but regained litter cover in the following season. By 2010 litter cover had increased by 66%, and broken soil (versus capped soil) increased by 33%. Some of quantitative data on perennial grasses was not reliable, but the photo evidence below shows an obvious increase in perennial grasses. The quantitative data that is reliable, as well as the photographic evidence shows that this landscape is moving in the direction planned.

In this photo taken November 2001, this site had mostly dead, oxidizing grass and bare ground. Planned grazing and animal impact were used on this site to cover the bare ground and decrease the oxidizing grass.

The November 2006 photo below shows the site fully covered in grass.

In the November 2007 photo to the left we see dense grass cover and the November 2009 photo to the right shows trampled-down litter covering the soil surface. Differences seen in trampling of the grass between different years is related to the timing that the LMH was in that paddock during that year.

Conclusion

Through its partnership with communities of Hwange and other neighbors, ACHM is creating a model of sustainable resource management and development that can be replicated in the region and elsewhere in Africa to restore land productivity, diversity of wildlife, and local community livelihoods. As all involved in development know, societal change is difficult and more so in today's Zimbabwe, so this work is not without considerable challenges. However in this case people working together, are slowly but steadily making a difference by learning how to manage their natural resources –livestock, crops, wildlife, and watersheds – in a sustainable fashion, making sound livelihood decisions without sacrificing their cultural values. They are demonstrating that Holistic Management is successful because it is cost-effective, highly scalable and nature-based. It is sustainable because it increases land productivity and carrying capacity, livestock stocking rates, and prosperity for pastoralists without compromising the long-term viability of the resource base, or creating dependency on imported technologies.