

CHIKANDA: A TALE OF ORCHIDS, AIDS, AND ZAMBIAN BOLOGNA

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THERE WAS A TIME IN ZAMBIA when a bag of dried caterpillars would get you an interview with the tribal chief. Nobody but a destitute widow would think of offering a gift of chikanda. Those days have passed. Dried caterpillars are passé, and everybody wants chikanda, a meatless sausage made from orchid tubers. Today, chikanda is all the rage, an upscale delicacy served in the finest restaurants in the cities. Originally a poor man's food restricted to a few tribes in Zambia, Malawi and Katanga, today it is a trendy food everywhere in urban Zambia and other southern African countries. The resulting "orchid rush" is wiping out whole orchid populations and is threatening orchid species all over the continent. Wildlife Conservation Society biologist Tim Davenport warns, "At current unsustainable rates of exploitation, many species will be wiped out in a manner of a few years."

So what is this "chikanda?" "Chikanda," a name from the Bemba language, has long been a favorite food of rural Zambians. This meatless sausage, jokingly called "Zambian bologna," is made by cooking the ground tubers of wild orchids with peanut powder and spices. This paste thickens to a sliceable patty or loaf as it cools. The final result is an opaque jelly that is sold by the slice at roadsides, markets and restaurants. The rural Zambians eat it with "nshima," a corn- or rice-based meal that is the staple of the area, while urbanites eat it as a sandwich for a snack.

Peat bogs in the northern Zambian plateau, formerly the source of chikanda, have now been depleted of the more popular species of *Disa*. Increasingly dryland species of edible orchids such as *Disa*, *Satyrium* and *Brachycorythis* are being collected although dryland habitats are less likely to recover from over-collecting. Zambia has already wiped out most of their favorite orchids for this dish and now illegally imports between 2.2-4 million orchid tubers from Tanzania, where the dish is known as "kikande." Because chikanda is not popular in Tanzania, the country has lots of edible orchids for export. Ninety percent of edible orchids collected go to the Zambian market. Truckloads of the edible orchids cross into Zambia every day, often covered with a layer of potatoes for disguise, in direct violation of CITES Appendix II regulations. The orchids produce just one tuber, and collecting the tuber kills the orchid.

In a country where the majority of the population

lives in poverty, collecting edible orchid tubers is a very profitable business. In the Makete and Mbinga district of Tanzania, a sack of edible orchids sells for 250-300,000 Tanzanian shillings (about US \$210-\$250). By contrast, a sack of Irish potatoes, the major cash crop, sells for 40-50,000 Tanzanian shillings (about US \$33-\$40). Similarly, a street vendor can get the equivalent of US \$4.00-\$5.00 for a loaf of chikanda while he would only get US\$.70 for a loaf of bread. A poor man or woman can make about seven times as much by trading or dealing this product than by doing any similar trading. Sadly for the orchids, this is a very desirable activity in a poor, illiterate country.

To compound the difficulty of controlling the unsustainable harvesting of orchids, the gathering is to a large extent done by HIV/AIDS widows and orphans. Studies in the Makete District in Tanzania show that the pandemic which began in the late 1980s resulted in a staggering number of orphans left uncared for and widows without means. Many grandparents were left with large numbers of grandchildren. The youth and



Black tubers from peaty soil make the best chikanda.

the aged could not do intensive farming and did not have the means to get started even if they could. Orchid gathering was one of the few ways to get an income for people with no money for seed or fertilizer or food. Although many people there collect wild plants for food and trade, the orphans use it to survive. Orphans rely almost entirely on this cash to buy food and school items. Studies in HIV/AIDS households in

Tanzania showed that 97% said that gathering orchids was their main economic activity as compared to 9.7% of non-affected households. It is estimated that there are 12 million HIV/AIDS orphans in Africa, a number expected to reach 14 million by 2015. The dependency on gathering and selling non-timber forest products for cash was anticipated by the Africa Biodiversity Collaborative Group. Moreover, because the orphans do not have a parent to serve as a teacher, they often gather (and thus destroy) non-edible orchids. Traders for chikanda tubers routinely reject 25-50% of what orphans gather in contrast to only 10% of non-orphans. This results not only in a waste of time but a waste of orchids and benefits no one. The increase in AIDS households combined with the increased pressure from the chikanda craze has led to a huge gathering pressure and the subsequent decline in populations of edible orchids. What is sad is that thousands of destitute women and children are trapped in a system founded on a declining resource with no way out.

In the wild, seventy percent of orchids are epiphytic, five percent are lithophytic, and twenty-five percent are terrestrial. Many of these terrestrial species are deciduous and survive the dry season by growing a subterranean fleshy storage organ called a tuber, about the size of a small potato. The tuber has a single bud



Chikanda served with tomato and chili pepper sauce.

which sprouts in November at the start of the new rainy season. Traditionally, harvest begins in April when the above-ground plant has dried out. Now, harvesting takes place also in November and December when the young sprouts are dug up. After several years of growth, a plant may produce a five gram tuber, but repeated annual harvests have resulted in tubers no larger than one gram. No large tubers remain, only

dwarfs. In the past, people only harvested a few wetland species of *Disa*, but now they collect rare woodland species of *Disa* as well as species of *Satyrium*, *Habenaria* and *Brachycorythis*. To compound matters, tubers are often taken from plants before they have flowered and produced seeds, an unsustainable practice.

In the past, these tubers were roasted by youth while grazing livestock, sometimes to make balls to play with. This was done on a small scale, but now that has all changed. Mike Bingham reports in "Chikanda, An Unsustainable Industry" that a typical daily haul from Tanzania will consist of 90 kg grain bags each containing 80,000 small tubers of two or more species of *Disa* or other edible orchids. Davenport and Ndangalasi in 2003 reported that tubers of more than 85 edible orchid species of the genera *Disa*, *Habenaria*, and *Satyrium* from the wilds of the Southern Highlands of Tanzania, considered the most desirable for chikanda, were being "strip-mined." In Zambia, where desirable orchids have been overexploited, other less desirable orchids (those that don't make a good "jelly") are harvested, and people have to walk far and camp out to get even these. The poor in Zambia exchange their few kilograms of tubers for "chitenge," a two-meter (six foot) square of traditional material used by Zambians to carry babies, filter water, carry groceries, advertise political parties, and as clothing.

Locals claim they can easily tell the difference between edible and non-edible orchids. They say that edible orchids are sweet, have sugar crystals, are considered "female" orchids, and are highly marketable. Non-edible orchids are said to be bitter, have watery tubers, are considered "male" orchids, and are not marketable.

Van der Niet and Gehrke reported Makete to be considered a center for diversity of disas, habenarias, and satyriums. Studies recorded 21 species of *Disa*, 77 *Habenaria* species, and 33 *Satyrium* species found in Tanzania. Challe and Struik did a study on three villages in Tanzania. They found in those villages seven edible orchid species that were being collected for chikanda and five non-edible orchid species that were not being collected. Years of collecting resulted in a sharp decline in edible orchids and an increase in non-edible orchids. The most abundant species at the onset of the study were the edible ones.

Disa erubescens, *Disa robusta*, and *Satyrium trinerve* (syn. *atherstonei*) accounted for 79.5% of the total number of edible orchids gathered. These three species showed an 82.7% decline in numbers over the length of the study.

Studies in the Makete and Mbinga districts of Tanzania show that disas and satyriums have the most



Collecting tubers destroys *Satyrium riparium*.

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Young girl collects *Satyrium riparium*.

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District	
Makete	<i>Disa erubescens</i>
	<i>Disa ocostachya</i>
	<i>Disa robusta</i>
	<i>Disa welwitschii</i>
	<i>Satyrium buchananii</i>
	<i>Satyrium chlorocorys</i>
	<i>Satyrium crassicaule</i>
	<i>Satyrium robustum</i>
	<i>Satyrium sceptrum</i> (syn. <i>acutirostrum</i>)
	<i>Satyrium trinerve</i> (syn. <i>atherstonei</i>)
Mbinga	<i>Brachycorythis pleistophylla</i>
	<i>Eulophia schweifurthii schweifurthii</i>
	<i>Habenaria xanthochlora</i>
	<i>Disa baurii</i> (syn. <i>hamatopetala</i>)
	<i>Disa zombica</i>
	<i>Satyrium buchananii</i> .
	<i>Satyrium crassicaule</i>
	<i>Roeperochian wentzeeliana</i>
	<i>Roeperocharis wentzeliana</i>

edible species. The table below includes some of the identified wild edible orchids in Makete and Mbinga districts, Tanzania.

The Makete district has the highest number of both edible and non-edible orchid genera and species compared to Mbinga. In times of scarcity, non-edible tubers are collected, and attempts are made to pass them off as edible. The unsustainable collecting pressure for chikanda threatens these orchids.

What Can Be Done?

Regulation of orchid exports from Tanzania is not meeting with a great deal of success. All the orchids are already protected by the International Union for Conservation of Nature (IUCN) and listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). This is doing nothing to stop the tubers flooding into Zambia from Tanzania. Government units in the Ministry of Agriculture and Cooperatives lack the resources to deal with the problem and are reported to be under-funded or not funded at all. The fact that HIV/AIDS orphans subsist on the tuber collection only makes matters more complicated. With poverty affecting 73% of the population and HIV/AIDS afflicting 18% of those 18-49 years old, there are few easy answers. However, the tuber collection is not being carried out in a sustainable manner, and reports indicate that the edible orchids in Zambia and Tanzania may be threatened to extinction if proper management techniques are not implemented. Large areas of Ufipa, Mbeya, and Kipengere in Tanzania have already been stripped of orchids.

The New York-based Wildlife Conservation Society worked with the Tanzanian government to designate 135 square kilometers (84 square miles) of the Kitulo Plateau, a particularly rich area, as a national park to conserve orchids. The greatest diversity of orchids in Tanzania occurs there. According to Davenport and Ndangalasi, the Plateau is reported to have about 350 species of vascular plants, including 45 terrestrial orchids, many of which have restricted distributions. Thirty-one orchid species are endemic to Tanzania of which fifteen are endemic to Kitulo/Kipengele and ten species are restricted to Kitulo/Poroto. According to Challe and Struik, despite protection as a national park, gathering has continued, although cautiously in order not to get caught. Even in strictly guarded National Parks in Caprivi, Namibia, encroachment has continued.

Tanzanians who gather orchids are aware of the impact of high gathering. Sixty-five percent of gatherers questioned in one study said that too much gathering would result in species not having enough time to regenerate. In Challe and Struik's study of three villages in Tanzania, one native gatherer said: The edible ones are "the gold," that is the highly marketable ones. We are not giving enough rest for the orchid plant to complete its life journey, that is, we harvest before they complete seeds for potential and future "gold."



Disa robusta



Disa erubescens



Disa welsitschii



Disa zombica

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Habenaria holubii

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Therefore, the gatherers themselves understand the need to collect the tubers only after seed production. Many of these Tanzanian orchids bloom mainly after fires and not every year. Seed production, therefore, is very important in the years that they flower. It would be helpful if communities could be educated and encouraged to let the orchids finish producing seed before harvesting.

Studies show that people in rural communities are concerned about the loss of orchid abundance and want advice; efforts are being made to teach local communities about their own resources. This is more difficult than it sounds. A Washington-based agency recently provided funds to empower rural communities to sustainably manage some of their own resources to alleviate poverty. Chikanda, bush meat and edible caterpillars were chosen to manage, but the project was soon terminated, and chikanda was the first to be dropped. It seems that poverty was unaffected by the program.

An encouraging idea is to find a substitute for the orchid tubers that would work as well in the dish, as has been done in some places with salep. In Asia, there are records of their using corn flour instead. In Zambia, it is unlikely that a substitute would be cheaper at the moment. However, as orchids disappear and become more expensive and as inferior tubers are gathered, it should be easier to manufacture a cost-effective substitute.

Better storage of the gathered tubers would help. In India and Turkey, tubers are blanched, skinned and sun-dried and become hard like stones. They can last indefinitely and be milled like flour. Zambian buyers are suspicious of this preparation. Many inferior types of tubers are passed off as more favored ones to make more money. These will not make a good gel. Buyers will only buy unwashed tubers, the color of the soil indicating whether they were taken from a peat location (black) or a dryland location (red). Sellers will even rub tubers with peat to give them the black color of the favored wetland species. This suspicious attitude results in a loss of some fresh tubers. Better storage and drying of the tubers would result in less waste.

Setting up conservation areas has been suggested but is not without problems of its own. In April 2004, John Jellis, owner of a private nature reserve, found that every plant of *Disa roeperocharoides* in his preserve had been taken.

It has been suggested that the plants could be cultivated for culinary use, but it is not cost-effective at the moment. The price would have to increase twenty times before it was profitable. At the moment, it takes three years or more for a single tuber with a two gram mass to be produced. Local communities have been willing to grow the orchids on their farmlands as one conservation measure, but the economics of such slow tuber production simply does not work for a cash crop. Perhaps, if the rich continue to want it and are willing to pay, more productive cultivars could be developed.

Storing orchid seed in gene banks seems advisable.

It is hoped that the chikanda craze will pass and orchids can be reintroduced into their former habitats. Orchids have shown themselves to be resilient. Mike Bingham, expert on chikanda, believes that few species will be driven to extinction, but that numbers will drop drastically until it is not cost-effective to keep visiting an area. The orchids may then have a chance to regenerate. As Bingham says, "Some orchid species may not survive, but most will bide their time until the chikanda craze is replaced by some other transient fashion."

Recipe For Chikanda

You need: Salt, water, 250 g of chikanda (8 ounces), 500 g of pounded ground-up nuts (about a pound of peanuts), one tablespoon of chili, and two tablespoons of soda (bicarbonate of soda).

Wash the orchid tubers to remove soil. Cut the fresh root into small pieces. Put the small pieces in the sun to dry. Pound the pieces and sieve. Pound ground-up nuts (peanuts) and make a paste in half a saucepan of water. Cook the ground nut paste. Add salt, chili, and bicarbonate of soda. Stir for about five minutes. Sprinkle the sieved root powder bit by bit into the ground nut sauce until it is thick. Continue stirring and adding soda bit by bit. When it stops sticking to cooking stick and the saucepan, then it is ready. Smooth the top by dipping the cooking stick into soda water and slide the cooking stick on top of the chikanda. Sprinkle soda water on top of it and bake for around half an hour.

Other recipes just tell you to empty the boiled chikanda into a mold and refrigerate without baking.

Traditionally prepared, chikanda yields 8.8% protein, 82.2% water, and 2.6% fat and ash.*

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References

- Bingham, Mike. "Chikanda Trade in Zambia," *Orchid Conservation News*, Issue 4, May 2004.
- Challe, Joyce F. X. and Lisa L. Price. "Endangered Edible Orchids and Vulnerable Gatherers In the Context of HIV/AIDS in the Southern Highlands of Tanzania," *Journal of Ethnobiology and Ethnomedicine* 5 (41) December 2009.
- Challe, J. F. X. and P. C. Struik. "The Impact on Orchid Species Abundance of Gathering Their Edible Tubers by HIV/AIDS Orphans: A Case of Three Villages in the Southern Highlands of Tanzania," *NJASWageningen Journal of Life Science* 56(3) 2008: 261-278.
- Davenport, T. R. B. and H. J. Ndangalasi. "An escalating trade in orchid tubers across Tanzania's



Habenaria subarmata



Satyrium sceptrum

Southern Highlands: Assessment, dynamics and conservation implications." *Oryx* 37(1) 2003: 55-61.

Hamisy, William Chrispo. "Orchid Conservation Project Development of Conservation Strategies for the Wild Edible Orchid: Progress Report," Ruffold Small Grants Foundation November 2007 and 2010.

Mapunda, Lourance Njopilai David. "Edible Orchids in Makete district, the Southern Highlands of Tanzania: distribution, population and status." (Master Thesis) International Master Programme at the Swedish Biodiversity Centre, 2007.

Nyomora, A. M. S. "Distribution and Abundance of The Edible Orchids of The Southern Highlands of Tanzania." *Tanzania Journal of Science* 31 (1) 2005: 45-54.

Nyirenda, Moses A. "Biodiversity Assessment for Three Mpika Wetlands of the SAB Project: A Study Commissioned by Wetland Action," October 2008.

van der Niet, Timotheüs and Berit Gehrke. "Rare Terrestrial Orchids on Mbeya Peak, Southern Tanzania." *Journal of East African Natural History* 94(2) 2005: 279-285.

http://www.ionopsis.com/edible_orchids.htm, "Edible Orchids," 9/25/11.

<http://lowdown.co.zm/2007/2007-04/chikanda.htm>, "Chikanda: An Unsustainable Industry," Mike Bingham, 9/14/11 (The Zambian Lowdown)

http://spgrc.org.zm/index.php?option=com_docman&task=doc_download&gid=17&itemid=47, "Threatened Wild Orchids: A Review of Threats,

Economic Contribution and Initiatives for its Conservation in Tanzania and Zambia," Lerotholi L. Quobela, July-December 2009.

<http://www.scientificamerican.com/article.cfm?id=illegal-trade-threatens-a>, "Illegal Trade Threatens African Orchids," Sarah Graham, August 2, 2001.

<http://www.zambia-advisor.com/chikanda.html>, "Chikanda—The African Polony," 9/14/11.

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