

**Working Paper on Social-Ecological Resilience Series  
No. 2009-012**

**Ecological Adversity and Food Supply in Northwest Zambia**

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**December 2009**

**Vulnerability and Resilience of Social-Ecological Systems**

RIHN Research Project E-04

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## **Abstract**

Most agricultural and food security studies on Zambia have concentrated on maize and other cash crops, and surplus maize producing provinces such as Central, Lusaka and Southern. Non-cash crops such as cassava, millet and sorghum, which were staple food crops for the people of northwest Zambia, have strangely been ignored by most researchers. As a marginal maize producer, North-Western province has been ignored, condemned and marginalized by both scholars and state officials, respectively. However, this paper is cognizant of the stark fact that cassava, finger and bulrush millet, sorghum and sweet potatoes have provided and continue to provide food security for the indigenous people of Northwest Zambia. North-Western province possesses enormous agricultural and economic potential. This paper examines food supply in the North-Western province of Zambia in the midst of adverse ecological conditions. It specifically considers the relevance of local ecological and climatic conditions to local food supply, and the survival strategies food insecure households have adopted in their quest for survival. The paper considers changing ecological disasters and changing survival strategies.

**Key words:** Ecological adversity; Food security; Northwest Zambia; Environment and ecology; Food security forecast systems; Coping strategies; Traditional land use systems; Sorghum-based agricultural system; Cassava-based agricultural system; Indigenous staple food crops; Diversified agricultural economy; Viable; Nutritional requirements

# 北西ザンビアの生態環境と食料供給

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## 要旨

ザンビア農業と食料安全保障に関する研究の多くは、トウモロコシとその他の換金作物に集中しており、トウモロコシ生産に余剰のあるセントラル州、ルサカ、南部州などに関するものが多い。換金作物ではないキャッサバ、ミレット、ソルガム等は、北西ザンビアにおける主食であるにもかかわらず注目する研究者は少なかった。北西州のトウモロコシ生産は少ないため、研究者や政府担当者から無視され、非難され、また取り残されてきた。本論文では、キャッサバ、シコクビエ、トウジンビエ、ソルガム、サツマイモが、有史以前から北西ザンビアの人々の食料安全保障を担ってきたという明確な事実を再認識する。北西州の農業と経済には高い潜在力が存在する。本稿では、厳しい生態条件の中にあるザンビア北西州における食料供給を検討する。特に地域の生態気候条件に適応した食料供給、そして生存のために食料不足世帯が対処する生存戦略を考察しながら、生態学的災害の変化と生存戦略の変遷を考える。

**キーワード:** 生態環境、食料安全保障、北西ザンビア、食料安全保障予測システム、対処戦略、伝統的土地利用システム、伝統的主食作物、農業経済の多様化、栄養要求量

## **Introduction**

The North-Western province of Zambia has been ecologically misunderstood and misrepresented. It has been portrayed as an unproductive area despite the region having so much agricultural and economic potential. The province has been marginalized due to its ecological inability to produce maize, yet the province is capable of producing other important staple food crops which have adequately provided and continue to provide food security for the local peoples. This paper examines the environment and ecology of the province and how the local communities overcame ecological constraints in their quest for food security. The local food crops such as cassava, sorghum, millets, sweet potatoes and many other crops have blended well with the environment and ecology in Northwest Zambia. The paper also examines the traditional land use systems which the local communities have employed in their quest for food security. The paper further examines the traditional food security forecast systems and the coping strategies which the local communities have employed during bad seasons. This approach is not only an attempt to reinterpret the significance of the local subsistence agricultural economy but has contemporary relevance for agricultural, rural and economic development in Zambia.

## **Environment and Ecology**

This study focuses on North-Western province which is one of the nine provinces in Zambia. With an area of 48,582 square miles (125,800 square kilometres) of Zambia's landmass of 290,586 (752,600), North-Western province is the third largest province after Northern and Southern, respectively; but it has had the smallest population.<sup>1</sup> The low birth rate and high child mortality are believed to have contributed to the low population in the province.<sup>2</sup> In addition, labor migration from the province to centers of employment in Northern Rhodesia, Southern Rhodesia, Belgian Congo and South Africa contributed significantly to population-stagnation in the province.

The province is mainly undulating terrain, lying at an altitude of 1250M above sea level. The province is divided into seven administrative districts of Solwezi (headquarters),

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<sup>1</sup>See J. A. Hellen, **Rural Economic Development in Zambia, 1890-1964** (Munich: Weltforum Verlag, 1968); and D. S. Johnson, "A Note On the Population of North-Western Province," in D. S. Johnson, ed., **North-Western Province**, No. 8 (Lusaka: Zambia Geographical Association, 1980): 73-85.

<sup>2</sup>See L. Samundengu, "The Role and Impact of Western Medicine in the North-Western Province of Zambia, 1900-1963," MA Thesis, University of Zambia, 1992.

Kasempa, Mufumbwe, Chavuma, Mwinilunga, Kabompo, and Zambezi. North-Western province is largely inhabited by various Luba-Lunda migrants from Angola and Belgian Congo who had settled there between the sixteenth century A.D. and 1925. These peoples could be divided into the following main ethnological groups: Kaonde, Lunda, Lamba, Chokwe, Luchazi, Ndembu, Mbunda, Luvale and Mbwela.

In terms of vegetation and soil classification, the province is divided into two parts by a line following the Kabompo River. To the west of this line, Kalahari soils predominate, while to the east, red and orange clay loam soils and termite hills occur. To the east of Kabompo River, sandy loam soils overlie basic and limestone rocks in the north and old ironstone beds occur frequently in the south. Kalahari soils in the province vary from black humid contact sands found in parts of Mwinilunga, Mufumbwe, Kabompo valley and Chavuma, to coarse grey and white sands found on the Luvale plains west of the Zambezi River.<sup>3</sup>

Kasempa, Mufumbwe and Solwezi districts have termite hills dotting the landscape. In terms of soils, the three districts have red and orange clay loam and sandy loam soils which either overlie basic and **calcareous** rocks or older ironstone beds. The latter soils are said to have poor drainage. Much of the red soil areas have heavy tree growth of **Isoberlinia-Brachystegia** and short grass. Red loam soils are most common north of the Solwezi-Mwinilunga road. Soils to the south change to heavier red orange-yellow clay overlying ironstone, and there are many extensive **dambos**<sup>4</sup> which vary from black peaty sandy to clay soils in composition. Kasempa and Mufumbwe districts are hilly in the immediate neighborhood and along the Kaungashi and Mombezhi rivers. Extensive swamps occur on the lower Lufupa and Mufumbwe rivers. According to Jaeger, the soils in Kasempa and Mufumbwe districts are mainly poor ferrallic 'sandvelt' soils, with the eastern and central parts having considerable pockets of more fertile red clay and loamy-clay soils.<sup>5</sup> The western

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<sup>3</sup>For soil classification and physical features of North-Western province, see memorandum from Provincial Agricultural Officer, Ref. 479/NWP/REP/11, dated June 29, 1960 to Acting Director of Agriculture (Lusaka), NAZ, MAG 1/19/2: Agricultural Development: North-Western Province, 1950-1960; NAZ, KDD 5/1: Kasempa District Notebook, 1902-1964; C. G. Trapnell, **Ecological Methods in the Study of Native Agriculture in North-Western Rhodesia** (London: HMSO, 1937); and C. G. Trapnell and J. N. Clothier, **The Soils, Vegetation and Agricultural Systems of North-Western Rhodesia** (Lusaka: Government Printer, 1937).

<sup>4</sup>A **dambo** is a flood plain or a swampy area during the rainy season, but dry for most of the year: See A. Clark, **Longman Dictionary of Geography: Human and Physical** (London: Longman, 1985).

<sup>5</sup>See D. Jaeger, "Settlement Patterns and Rural Development: A Human Geographical Study of the Kaonde, Kasempa District, Zambia," PhD Thesis, Royal Tropical Institute, 1981: 20-22.

part of Kasempa district is covered by Kalahari soils. In Solwezi district, torrential downpours of rains...scour[ed] the surface carrying away much of the soil and almost the whole of the highly fertile ashes left after the winter veldt fires.<sup>6</sup> This continual removal of top soil, essential to plant growth, rendered vast tracts of land in the district unfertile.

However, sorghum (**bicolov**), finger millet (**setaria italica**), bulrush millet (**pennisetum typhoides**), monkey nuts, sweet potatoes (**Ipomea batatas**), pumpkins (**curcubita maxima**), edible gourds, beans (**phaseolus vulgaris**), groundnuts (**arachis hypogaea**), maize (**zea mays**), cassava (**manihot utilissima and manihot palmata**), fruits, castor/pulza oil and tobacco have grown well on the soils of Kasempa, Mufumbwe and Solwezi districts.

Much of Mwinilunga district is heavily timbered. As a result, traditional agricultural work involved "very heavy clearing work" by men and their sons. The heavy timber growth that occurs in the district is largely due to high rainfall and a long rainy season. The district lies in the upper Zambezi watershed. The soils in the district are acidic and mainly Kalahari, with better rich soils occurring in certain places. Large sandy plains occur throughout the district.

Kabompo, Chavuma and Zambezi districts are largely flat terrain overlaid with Kalahari soils which are characterized by rounded and deep loose sand grains, and are said to be chemically poor and acidic. Zambezi district is part of the upper Zambezi watershed. The west bank of the Zambezi river, in Zambezi and Chavuma districts, has Kalahari soils which are "strongly leached with extremely low nutrient retention capacity,"<sup>7</sup> sandy plains, and various fish-rich tributaries of the Zambezi. The plains are waterless during the hot dry season but become inundated during the rainy season. Short grass and belts of light bush make up the main vegetation. The east bank of the Zambezi, in Zambezi and Chavuma and much of Kabompo district, are on higher ground and predominantly woodland. The area has sandy loam soils which are acidic and have a low nutrient retention capacity too. There are open grasslands, largely in river plains.

The Kalahari soils in Mwinilunga, Kabompo, Chavuma and Zambezi districts are reportedly of low fertility but have certain agricultural advantages such as good drainage,

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<sup>6</sup>G. A. Taylor's (Native Commissioner) report on the soils of Kasempa district, Ref. 4/4/17, dated January 25, 1934, NAZ, KTB 1/1: Solwezi District Notebook, 1915-1964.

<sup>7</sup>K. Tamminga, **Zoning of Farming Systems in Zambezi District, North-Western Province** (Kabompo, ARPT, 1987): 4.

easy to cultivate, and low weed growth on cultivated land. As a result, the soils have successfully supported a variety of crops such as cassava, finger millet, bulrush millet, sorghum, groundnuts, pineapples (**ananas comosus**), rice (**oryza sativa**), sugar cane (**saccharum officinarum**), sweet potatoes, beans, pumpkins, yams (**dioscorea**), cow peas (**vigna unguiculata**), edible gourds, fruits, kidney cotton, castor/pulza oil and tobacco.

Mufumbwe, much of Kasempa, Mufumbwe, the southern part of Solwezi, and southeast Mwinilunga were inhabited by tsetse flies, and the area west of the Lunga River in Kasempa was an endemic sleeping sickness area. Kabompo, Chavuma and Zambezi districts were tsetse fly free.<sup>8</sup>

It is worth noting that colonial land survey reports, compiled between the late 1930s and 1960, categorically concluded that since the greater part of North-Western province was covered by poor soils, the province was unsuitable for cash cropping and European settlement.<sup>9</sup> The only fertile patches mentioned in colonial reports were the upper Zambezi valley forest area and the well-watered Kalahari contact soils in Mwinilunga district. The province, therefore, was officially written off in terms of agricultural prospects. But recent studies have demonstrated that the province has enormous agricultural and economic potential.

### **Traditional Land Use**

A closer look at local traditional land use systems shows that there are essentially two major traditional land use systems in the North-Western province of Zambia, that is, the sorghum-based agricultural system of the Kaonde and Lamba, and the cassava-based agricultural system of the Luvale, Luchazi, Chokwe, Mbunda, Mbwela, Lunda and Ndembu.<sup>10</sup> While the Kaonde and Lamba of Kasempa, Mufumbwe and Solwezi districts have

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<sup>8</sup>See also R. Stjernstedt, "The Tsetse Fly in North-Western Province," in Johnson, ed., **North-Western Province**: 43-51.

<sup>9</sup>For instance, see report on the "Physical Conditions of North-Western Province," Ref. 479/NWP/REP/11, dated June 29, 1960, written by the Provincial Agricultural Officer, and the Crown Land Survey report on Mwinilunga district, dated September 28, 1950, compiled by a Senior Provincial Agricultural Officer, and sent to the Acting Director of Agriculture in Lusaka, NAZ, MAG 1/19/2: Agricultural Development: North-Western Province, 1950-1960; and Trapnell and Clothier, **The Soils**.

<sup>10</sup>See also Schultz, Clothier and Trapnell's classification of traditional land use systems in the North-Western province: J. Schultz, **Land Use in Zambia** (Munich: Weltforum Verlag, 1976); and Trapnell and Clothier, **The Soils**.



remained faithful to their staple sorghum, the Luvale, Luchazi, Chokwe, Mbunda, Lunda, Mbwela and Ndembu of Chavuma, Zambezi, Kabompo and Mwinilunga districts successfully substituted cassava for their indigenous staple food crop, finger millet, from the eighteenth century A.D. It is worth noting that cassava, maize, beans, groundnuts, sweet potatoes and tobacco spread to North-Western province from Angola, where the Portuguese had introduced them about A.D. 1600 from South America, and local peoples started growing them for subsistence, and sold them when opportunities prevailed. Cassava was quickly adopted due to its consistent and greater availability throughout the year, and its higher "survival value" during pestilences and drought. In addition, the crop did well on less fertile soils, did not easily exhaust soils, required less land, less water, less attention, and had a higher yielding rate in terms of calories per acre, and unit of land than grain crops.<sup>11</sup> Although the Kaonde and Lamba did not replace sorghum which had done well on a variety of soils, was drought-resistant, and had a short maturing period, they also adopted the new crops from America. As a result of adopting new crops, local peoples have had access to a variety of foods that availed them varied diets.

The local communities also maintained their food security by gathering wild foods, hunting wild animals and fishing. Food gathering was an important source of supplementary animal and plant nutrients for the local people during the rainy and the dry season, when domestic food supplies were low.<sup>12</sup> In addition, desperate food insecure villagers survived by living on wild roots, insects and small animals. Women and children collected various forest products such as mushrooms, wild vegetables, wild fruits, grasshoppers, flying termites, caterpillars, ground crickets, snared small bush animals, and dug up wild roots in the bush, river beds and plains. Boys snared birds. Men and boys collected beeswax, honey, rubber and grasshoppers too.

Hunting was an important source of game meat which provided local peoples with animal protein throughout the year, especially among the Ndembu, Mbwela, Lunda, Kaonde

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<sup>11</sup>For more details, see D. Livingstone, **Missionary Travels** (Toronto: Ward Lock and Co. Ltd, 1913); O. W. Jones, **Manioc in Africa** (Stanford: Stanford University Press, 1959); J. Vansina, "Long Distance Trade Routes in Central Africa," **Journal of African History**, Vol. III, No. 3 (1962): 375-390; and H. J. Von Oppen, "Terms of Trade and Terms of Trust: The History and Context of Pre-colonial Market Production Around the Upper Zambezi and Kasai (C. 1790-1910)," PhD Thesis, Free University of Berlin, 1990.

<sup>12</sup>See Jaeger, "Settlement"; V. W. Turner, **Schism and Continuity in an African Society: A Study of Ndembu Village Life** (Manchester: Manchester University Press, 1957); and White, "A Preliminary Survey." T. Scudder, "Gathering among African Woodland Savannah Cultivators: A Case Study: The Gwembe Tonga," **Zambian Papers**, No. 5 (1971), is immensely helpful to those who want to understand the critical role food gathering played among African subsistence cultivators.

and Lamba who were not cattle keepers. Game meat was a delicacy that was prepared and eaten as a sauce. Hunting was highly ritualized and esteemed, and an exclusively male activity among the local people.<sup>13</sup> Before the colonial period, various wild animals such as elephant, duiker, hartebeest, pig, eland, warthog, puku, baboon, monkey, antelope, impala, and water buck were abundant in the province, and hunters did not need to go far to kill an animal for domestic consumption. Local hunters used bows and arrows, spears, traps and pitfalls to kill game. The use of muzzle-loading guns in hunting, which made hunting easier, began with the arrival of Ovimbundu, Mambari and Portuguese caravan traders in the eighteenth century. Although hunting was an exclusive domain of a few specialist hunters in a village, all households had access to game meat through exchange of goods and services within and between villages. During the colonial period and thereafter hunting as an important food security activity was legally forbidden by the authorities. This forced the local people to start depending on domestic animals such as goats, pigs and cattle for animal protein. This has had adverse impact on the peoples' food security.

Fish provided protein, fat, vitamins, and other vital nutrients for the local people throughout the year. While fishing was a female and child-dominated activity among the Lunda, Ndembu and Mbwela, men, women and children participated in fishing among the Luvale, Chokwe, Luchazi, Kaonde and Lamba. Luvale, Chokwe, Luchazi, Kaonde and Lamba men killed fish with spears and axes, or trapped them in nets both during the day and at night. The Kaonde, Lamba, Luvale, Luchazi, and Mbunda sometimes poisoned fish and collected them in cylindrical reed baskets between August and October. Women and children also caught fish in reed baskets or dragged them out of water with bunches of grass in shallow rivers.<sup>14</sup> Fish were sun or smoke-dried to preserve them for future use. Fishing is still an important and unrestrictive source of food for the people of Northwest Zambia.

Since cassava was a staple food crop for most inhabitants of North-Western province, and in view of inconclusive debates on the nutritional value of the crop, a word of clarity on the same will suffice. Evidence demonstrates that cassava was no more nutritionally deficient than other food crops, and that it depleted the soil no more than other crops. On the contrary,

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<sup>13</sup>Ibid; C. M. N. White, "The Role of Hunting and Fishing in Luvale Society," *African Studies*, Vol. 15 (1956): 75-86; F. H. Melland, *In Witch-Bound Africa: An Account of the Primitive Kaonde Tribe and their Beliefs* (London: Seeley, Service and Company, 1923); V. W. Turner, "Lunda Rites and Ceremonies," *The Rhodes-Livingstone Museum Occasional Papers*, No. 3 (1953); and V. W. Turner, *The Forest of Symbols: Aspects of Ndembu Ritual* (New York: Cornell University Press, 1967).

<sup>14</sup>See Ibid.

the introduction of cassava in the region improved the agricultural systems and food security of the Luvale and Lunda communities. Cassava not only supplemented their food supply but became an important “insurance” crop in the midst of natural disasters such as drought and locust attacks. Cassava-growing also gave the people more time to perform other household chores since once the crop was ready in two years time a family would continue harvesting the tubers from the same plant for the next five years. The communities became more food secure. It is an established fact that cassava-growing societies in Zambia are more food secure than those which do not have cassava.

The negligibility of protein-content in cassava tubers should not have made earlier scholars and government officials to discourage, condemn, neglect or marginalize cassava-consumption when cassava tubers were a rich source of energy and the leaves, which were extensively eaten as a sauce by the villagers, supplied adequate amounts of protein and vitamins A and C.<sup>15</sup> Other local foods, containing different nutrients, eaten at the same or different times, made up a balanced diet and made local peoples active and healthy. Moreover, early colonial officials on district tours of duty reported coming across healthy men, women and children, and very old men and women in the villages of cassava-consuming communities. Colonial officials, such as White, attributed this state of affairs to the existence of a diversified local agricultural economy and a varied diet.<sup>16</sup> Writing in the late 1970s, Marter also argued that a subsistence cassava diet did not "necessarily imply an inferior diet."<sup>17</sup>

While earlier studies such as Jones' extensive study of cassava in Africa and local colonial studies by Allan and Hellen were skeptical about the adequacy of a cassava diet,<sup>18</sup> recent and more sophisticated studies by Cock, Falcon and Marter, and empirical evidence have demonstrated that cassava-dominated diets were not as deficient as they were earlier

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<sup>15</sup>For more details, see James H. Cock, **Cassava: New Potential for a Neglected Crop** (Boulder: West View Press, 1985); W. P. Falcon et al., **The Cassava Economy of Java** (Stanford University Press, 1984); Jones, **Manioc in Africa**; and C. M. N. White, "A Preliminary Survey of Luvale Rural Economy," **The Rhodes-Livingstone Papers**, No. 29 (1959).

<sup>16</sup>See White, "A Preliminary Survey."

<sup>17</sup>See the author's illuminative affirmative argument on the issue: A. Marter, **Cassava or Maize? A Comparative Study of the Economics of Production and Market Potential of Cassava and Maize in Zambia** (Lusaka: Rural Development Studies Bureau, 1978).

<sup>18</sup>See W. Allan, **The African Husbandman** (London: Oliver and Boyd, 1965); Hellen, **Rural Economic Development in Zambia, 1890-1964**; and Jones, **Manioc in Africa**.

portrayed.<sup>19</sup> This paper supports the latter argument. As a matter of fact, individuals in cassava-eating societies have been known to be healthy and strong.

### **Traditional Food Security Forecast**

The societies in North-Western province were able and are still able to forecast or predict a bumper crop and looming hunger the following season at family, village and kingdom level. This was an important survival mechanism local peoples possessed that ensured their survival. It was part of their survival package. Indicators villagers relied upon to determine their food security or insecurity were the nature of the rain cycle, an individual's health, likelihood of locust invasions or their absence, and likelihood of tribal wars, slave raids or peace.<sup>20</sup> Societies in Northwest Zambia still rely on their traditional knowledge systems to forecast their food security.

Traditional rain-fed agriculture was determined by the amount and duration of rainfall in a given season. Moderate and consistent rains generally meant a good agricultural season and food security for the villagers. A good rainy season and an accompanying good harvest were celebrated in villages and kingdoms after the harvest. Poor, erratic and heavy rains spelt hunger times ahead. Upon reading the weather pattern before the onset of rains, and forecasting that rains were going to be poor, traditional rulers or village headmen invoked ancestral spirits to intervene and ensure adequate rains fell.

An individual's health status and general attitude towards agricultural work were indicators of food security or food insecurity in households the following season. A healthy and hard working subsistence producer usually had surplus produce while an unhealthy or lazy one usually failed to adequately feed oneself or his/her household. In addition, villagers were conversant with the cycle of locust invasions, regional warfare or slave raids. Periodic locust invasions usually meant less food and spelt hunger for villagers since locusts struck

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<sup>19</sup>See Cock, *Cassava*; Falcon, *The Cassava Economy of Java*; and Marter, *Cassava or Maize?*. And empirical reports by district colonial officials on tours of duty in Northwest villages allude to healthy and old villagers in cassava-eating societies.

<sup>20</sup>Interviews, Senior Chief Kasempa, K. B. Mushitala, Kasempa palace, Kasempa, December 22, 1996; J. Muasa, MP, Kasempa, December 21, 1996; T. Kisala, Mukumbi village, Solwezi, October 10, 1996; and A. N. Chitawo, Chitawo village, Chavuma, Zambezi, December 9, 1996. See also important suggestions on the theme by Suzanne Gervais, "Peasants' Perceptions of their Food Security: Identification of Alternative Indicators, Burkina Faso," *Food Systems under Stress in Africa*, Proceedings of a Workshop held in Ottawa, Ontario, Canada, 7-8 November, 1993, International Development Research Center; and Allan, *The African Husbandman*.

during the rainy season and devoured fresh plants. More food was usually stored by households when locust invasions were expected. However, tribal wars or slave raids exposed victims or displaced people to excruciating hunger or famine.

### **Household Food Security Survival Strategies**

This section examines survival strategies food short households and individuals in Northwest Zambia adopted in their bid to regain their food security.<sup>21</sup> Occasionally, households and individuals became food insecure due to ill health, drought, floods, regional warfare, slave raids, locust invasions or royal mourning rituals. To regain their food security, hunger-threatened households scaled down their daily food intake, while food insecure households tried to regain their lost food security by acquiring food, begging for food or embarking on "distress" migrations, while refugees relied on their host-tribes' benevolence. Women divorced their husbands for being lazy or failing to perform agricultural work. Scott attributed the existence of such protective technical, social and moral arrangements in peasant societies to peasant fear of food shortages and hunger.<sup>22</sup>

Upon realizing that food stocks were not going to sustain them for long up until the next harvest, hunger-threatened households or individuals scaled-down food consumption by cutting down the number of main meals per day from two to one.<sup>23</sup> This was the first adjustment measure hunger-threatened households or individuals adopted in their attempt to remain food secure. Consequently, households and individuals ate less food in the interim period. This practice is still in existence in Northwest Zambia.

Whenever the west bank of the Zambezi, in Zambezi district, became inundated, finger millet and cassava crops were destroyed, causing hunger in Luvale villages.<sup>24</sup> As a result, food short villagers lived on wild roots and fruits, and acquired cassava, finger millet

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<sup>21</sup>See useful suggestions by J. Barker, **Rural Communities Under Stress: Peasant Farmers and the State in Africa** (Cambridge: Cambridge University Press, 1989): 195-196; Gervais and Beaudry, "Peasants' Perceptions"; and C. Siandwiza, **Household Food Security and Nutrition in Zambia**, Institute for African Studies Working Papers, University of Zambia (1992).

<sup>22</sup>See J. C. Scott, **The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia** (London: Yale University Press, 1976).

<sup>23</sup>Interviews, L. Kazumba, Mukumbi village, Solwezi, October 10, 1996; T. Kilini, Davuma village, Sailunga, Mwinilunga, November 14, 1996; L. Musole, Chikata village, Kabompo, December 14, 1996; H. Ndungu, Kahula village, Chavuma, Zambezi, December 9, 1996; and S. Samunyumbe, Samunyumbe village, Kasempa, December 22, 1996.

<sup>24</sup>Ibid.

or bulrush millet in Angola or on the east bank, in return for hoes, axes, fish or cattle. Sometimes, they relocated to Angola or the east bank until the floods subsided. When floods occur in Zambezi district, which is flood-prone, the villagers become vulnerable and since they cannot cross into Angola due to modern boundaries the Zambian government provides them with relief food and relocates them temporarily.

Hunger-stricken households and individuals, who prematurely exhausted their food stocks before the next harvest, traditionally tried to regain their lost food security by begging for relief food from their extended family members, friends or neighboring villages with surplus food stocks, or from village headmen.<sup>25</sup> Relatives, friends and neighboring villages with surplus food stocks had a mutual and moral obligation to assist hungry relatives, friends or neighbors. Village headmen had an obligation to feed hunger-stricken villagers by collecting food from villagers who had surplus food. Although begging villagers were always given relief food, the food they were given was not adequate enough to make them food secure. Begging for food was simply a short term adjustment measure desperate households temporarily resorted to in their bid to survive. Food insecure households have continued to beg for food from their relatives and friends.

Elderly men and women grew their own food crops and/or reared domestic animals on their land holdings until energy failed them, after which they were taken care of by their offspring, their social security in old age. This explains why it was important for individuals to have children. This practice is still in existence. Grown-up children tend to take care of their elderly parents. Parents “invest” in their children’s education so that so that in old age their children would take care of them.

In extreme situations, famine-threatened households or individuals usually abandoned their famine-stricken villages and went to live temporarily with their relatives who had surplus food stocks. Food secure households were morally obliged to take care of their insecure relatives although they were compelled to temporarily scale down their food consumption when they had too many mouths to feed. However, the arrangement was reciprocal.<sup>26</sup> This practice has continued in independent Zambia. Families going through bad times send their children to their better-off relatives. The extended family networks are still intact and help vulnerable families.

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<sup>25</sup>Ibid.

<sup>26</sup>Ibid.

## **Conclusion**

In conclusion, it is worth noting that local households in Northwest Zambia have maintained their food security by virtue of having a diversified agricultural economy that have availed them adequate food and varied diets. In addition to their indigenous foods, the local people successfully adopted new American crops such as cassava, maize, beans, groundnuts, sweet potatoes and tobacco which they cultivated for subsistence and for sale. The local staple food crops have fulfilled the local communities' nutritional requirements. The climate and ecology of Northwest Zambia have been responsive to the local peoples' food requirements. The local communities have understood their environment and the local ecosystem which they have successfully manipulated vis-a-vis their household food security. The local traditional "moral economies" also have had protective food security adjustment mechanisms or coping strategies such as begging, reducing consumption, food gathering and distress migration which food short households or individuals have occasionally adopted in their quest to regain their food security when food supplies were inadequate.

This paper has also demonstrated that the traditional agricultural systems of the peoples of North-Western province have been viable enough to sustain households in terms of food supply in the long term, quantitatively and qualitatively. However, the colonization of the province by the British from 1902 and the emergence of an independent Zambian state from 1964 marked a turning point in the status of household food security among the peoples of Northwest Zambia. The agricultural systems and survival strategies have undergone profound transformation. Where the societies' ability to overcome natural calamities has been undermined the Zambian government has provided relief food and temporary shelter.

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