In-Situ Conservation Practices in the Gamo Highlands of Ethiopia

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The south-central portion of the greater Ethiopian Plateau is one of several regions in Eastern Africa with particularly high levels of biological endemism. In terms of the evolution of human food production, the Ethiopian Highlands are generally considered to be one of several major locations, globally, where a variety of plants were first domesticated, i.e., one of the centers of the (probable) origins of agriculture. This part of Ethiopia (the south-central part of the Ethiopian Highlands) also has a particularly dense concentration of distinct culture groups, all living within a relatively small geographic area. The Gamo Highlands are centrally located within this area.

The peoples of the Gamo Highlands have lived in their current location for a long period of time (some for perhaps more than 2000 years), and have experienced a lengthy period of relative isolation. The local human population has been very dependent upon locally-produced food and other biological products, and there is, in the predominant farming system found here, a high proportion of endemic plant and animal species, races, and/or varieties. Those which are most central to the Gamo diet, and in many ways to Gamo culture as well, are endemic to either the Ethiopian Highlands as a whole, or, often, to the southern portion of these highlands. Among the most noteworthy endemics are enset (Ensete ventricosum), the Gamo/Oromo "potato" (Coleus edulis), Ethiopian cabbage (Brassica carinata), and t'eff (Eragrostis teff).

Because endemic species continue to play a vital role in local agricultural production, and because this production occurs within an ecologically circumscribed area (moist highlands surrounded by semi-arid lowlands), a "sustained-yield" type of conceptualization and decision-making at individual, household, and community levels is common in Gamo society. An adequate supply of socially-valued biological products must continue to be produced at the local level. Additionally, the more "multi-use" a particular species is, the higher is its social value, and, concurrently, the more efforts are made to actively conserve and manage it.

The prime example (in Southern Ethiopia), is enset, a monocot similar in appearance to Musa (banana) species. It produces no edible fruit, but rather a large, starchy, underground corm that is used to produce a variety of food products. In my field research among the Gamo Highlanders, I recorded eight major enset-based food products. I also discovered that the strong and durable enset fiber, obtained from the plant's leaf ribs and pseudostem, has many uses in Gamo daily life. It is, for example, the primary lashing material used in constructing traditional Gamo houses, wherein over 90% of the people still reside.

In human ecological terms, this is a relatively closed system---the majority of human needs continue to be met from the local natural resource base. A relative balance has had to be maintained between the human needs for various species (and their useful products) and the space/habitat needed for each. Consequently, while more land is devoted to food production, space is also actively and consciously set aside for forest products and for grazing land. Even within agricultural fields, valued adventitious species are frequently not disturbed, but are allowed to grow as "companion" crops and are harvested along with the planted species. Kolt'so (Arisaema spp.) is most noteworthy in this regard.

A well-established, locally-developed religious/ethical system and an intact and well-functioning traditional political system help to ensure that locally-developed conservation rules, practices, and sanctions are maintained. These, for example, include, seasonal region-wide closure of high elevation grazing lands, rules dictating prescribed fallow periods for croplands, the maintenance

of designated sacred forest groves, rules controlling the harvest of forest species, and complete proscription against the killing of certain wild species of plants and animals.

An active system of local markets helps to ensure that seeds, rootstock, livestock, etc. are actively circulated. They also serve to sustain local demand for the products of valued local species. Perhaps most importantly, local markets serve an essential communication function, i.e., they provide fora for the sharing of information regarding the status of crops, pasture, forest, and soils. This vital communication function is also served by a traditional system of community meetings wherein ecological information is shared, esp. among community elders (locally elected leaders), and wherein local resource management decisions are made.

A "perfect" system of local natural resource management, however, this is not. Population density/pressure is high, and there is a clear contemporary lack of effective social control processes in regard to human population levels. In the past, high levels of endemic warfare and a high infant mortality rate may have acted as major factors limiting human population growth. Neither are major limiting influences in the Gamo Highlands today, due to an effective state-maintained peace among previously warring ethnic groups and the introduction of Western medical interventions that are effectively reducing infant mortality. Additionally, the local system of markets is gradually becoming more open to external products. Outside influences are increasing.

Compared to the hypothesized pre-human ecological system that probably existed in these highlands prior to human habitation (thought to be primarily a type of tropical cloud forest), the current, largely anthropogenic, system contains too little forest, too few forest species, too much land devoted to agricultural crops (with concurrent soil erosion problems), an absence, or severe reduction in, top-end/major predator species (though some still occur---esp. leopard and hyena), and too much fragmentation, with resultant deleterious biogeographical "island" effects. But, compared to modern, industrialized land use systems, like agricultural monocropping and plantation forestry, the current land management system commonly found in the Gamo Highlands is much more species rich, and it seems to have existed in a relatively stable state for at least several centuries.

What implications might this have for other similar tropical highland locations? Two seem most evident. First, increasing the "centrality" of local endemics in internal (local) markets should help to increase the local socioeconomic value of these species, thus improving the chances that active conservation measures will be taken to protect them. (This is assuming that readily available, similarly-priced substitutes are not readily available in local markets.) Second, the encouragement of local participation and management in conservation efforts that build on existing social/ethical systems will likely garner more effective support than will efforts to promote programs that are simply imposed via external initiatives. In this regard, encouraging even nascent locally existing "conservation ethics" by actively incorporating them in a meaningful way into government and/or NGO-sponsored conservation programs should markedly improve the efficacy of such programs.

For further information regarding in-situ conservation practices and the human ecology of the Ethiopian Highlands, please refer to the following papers/publications (by Daniel M. Cartledge, Ph.D.):

- In-Situ Conservation Practices of the Gamo Highlanders of Southwest Ethiopia, invited presentation at the International Rice Research Institute, Los Banos, Philippines, January, 1999.
- The Management of Ensete ventricosum in the Gamo Highlands of Southwest Ethiopia. Culture and Agriculture,Spring, 1999.
- Toward an Anthropological Theory of Natural Resource Management in Indigenous Communities. A selection in Anthropological Theory in North America, E.L.Cerroni Long, ed., Greenwood Publ., 1999, pp. 197-211.
- Population and Sustainability in the Southwest Highlands of Ethiopia. A paper presented at the 97th Annual Meeting of the American Anthropological Association in Philadelphia, PA, December 2-6, 1998.
- Studying Community Environmental Threats: Anthropological Perspectives on Quality-of-Life Analysis in Environmental Issue Identification and Assessment.A paper presented at the Society for Applied Anthropology Annual Meeting, San Juan, Puerto Rico, April 21-26, 1998.
- The Human Ecology of Food in the Tropics. 1997. In SNAC II: Syllabi for Nutritional Anthropology Courses, Leslie Sue Lieberman, ed., Gainesville, FL: CNA.
- Taming the Mountain: Human Ecology, Indigenous Knowledge, and Sustainable Resource Management in the Doko Gamo Society of Ethiopia, 1995. Ann Arbor, MI, UMI (Ph.D. Dissertation).
- Ensete Farming Systems in the Southwest Highlands of Ethiopia: Their Past, Present, and Future Sustainability.Co-authored with Steven Brandt and Clifton Hiebsch, presented at the African Studies Association Conference, Seattle,1992; earlier draft of this paper presented at the Carter Conference, Univ. of Florida, 1992.