

**Cultural diversity in central America and Panama:  
its relationship to conservation and planning**

by

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**Abstract:** The most frequently overlooked aspect of conservation of natural resources and economic development is human cultural diversity. However, conservation and development of natural resources are basically *human-oriented endeavors* and all conservation and developmental efforts ought to start with a clear understanding of the *varied* needs of the people. In addition, cultural diversity is a natural resource that ought to be protected along with all the more commonly recognized resources of the ecosystems of which humans form an integral part. Cultural diversity in a large measure is an *ecological* phenomenon because such diversity includes variations in the ways different peoples perceive and utilize the environments in which they live. Thus, cultural diversity, in large measure, equates with ecological diversity. It has been well established that a high degree of ecological diversity (including taxonomic, niche, biogeochemical and other measures of diversity) is a necessary attribute of humid tropical ecosystems if such ecosystems are to remain viable over long periods of time. The current land-use trends in Central America and Panama are leading toward ever larger areas being devoted to monocultural use with sharply reduced ecological diversity that poses great dangers for the near and long terms. In addition, the resultant removal of people from rural areas results in growing social, economic and political problems, that are not being successfully met by developing nations. Not only is there a growing wastage of human resources, a weakening of the social structures, and an increasing and dangerous dependence upon monocultures oriented toward export markets, but the ecological diversity of the previous existing land-use systems are being lost. This kind of diversity is probably no less valuable to the ecological health of a nation's agriculture, forestry, and general resource utilization than is the genetic diversity of "primitive" crop plant varieties which biologists now recognize and increasingly seek to preserve as "modern" crop plant varieties become ever more simple genetically and hence ever more vulnerable to disease and other perturbations.

Developing nations often still possess a critically important ecological advantage that most industrialized nations forfeited unwittingly... that advantage being the continued presence of human cultural, i.e., ecological, diversity. This diversity, so often ignored by the conservationists and planners and developers, is one of the most valuable attributes of a developing nation's ecological patrimony.

The most frequently ignored or overlooked aspect of conservation of natural resources and economic development is human cultural diversity. Or to put it

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another way, *people* are generally overlooked even though it is obvious that without human beings there could be no such phenomena as resource conservation and resource development. But, when the plans are made to conserve or develop natural resources the starting point of such deliberations is seldom if ever with the diverse needs and aspirations of all the cultural elements that will be affected. This paper, therefore, is addressed to the following propositions: (i) that conservation and development of natural resources are basically human-oriented endeavors; (ii) that the most important resource any nation has is its people and that they must be the prime concern of all conservation and development efforts; and (iii) that cultural diversity must be recognized as an ecological resource, that is, as a natural resource to be conserved along with all the more commonly recognized resources of the ecosystems of which humans form a part. Because the regional focus of this symposium is Central America and Panama, most of my remarks will relate to that region but their implications and applications are by no means intended to be restricted to that part of the world.

The importance of diversity to the functioning of ecosystems is a now well established principle in ecology. Diversity is most often expressed in terms of taxonomic variation and it is known that, in general, mature ecosystems tend to have more taxonomic diversity than do earlier seral stages in the same ecosystems. Other kinds of diversity are also recognized, as for example, biogeochemical diversity, niche diversity and so on (Odum, 5). There is growing agreement among ecologists that ecosystems, and particularly humid tropical ecosystems, must possess a relatively high level of diversity if they are to retain stability over long periods of time. The implications of this are very important to conservation and development efforts and one of the growing trends in research is to determine what the lower limits of ecologically safe diversity are in order to provide needed guidelines for conservationists and developers (Farnsworth and Golley, 2).

However, one searches almost in vain for any mention that *human cultural diversity* is an aspect of diversity in ecosystems. Quite the contrary, the conventional wisdom appears to view cultural diversity as something to interest social scientists but not as having any ecological significance. But cultural diversity is, in a large measure, an ecological phenomenon. To employ a currently popular vernacularism, cultural diversity refers to life style diversity which simply means, for our purposes here, diversity in the ways various cultures perceive and utilize the natural resources available to them. This being the case, it is obvious that cultural diversity equates, at many important points, with ecological diversity. I will argue later that cultural diversity is a basic and valuable attribute of the ecosystems of developing countries. But before addressing that argument I wish first to discuss, in a brief manner, the range of cultural diversity in Central America and Panama.

**Indians:** Although it is usual to consider Central America and Panama as a part of a larger regional unit called *Latin America* it is a fact that these six nations not only have a rich Indian cultural past but retain diverse Indian cultures to the present day. The most recent census for which we have fairly accurate data on Indian populations yielded the following data (6): Guatemala 1,497,300 (53.6% of the total population); El Salvador, 100,000 (0.4% of the total population); Honduras 107,800 (5.5% of the total population); Nicaragua 43,000 (2.9% of the total population); Costa Rica, 8,000 (0.6% of the total population); Panama 62,200 (5.8% of the total population). By a conservative estimate, those 1,817,300 Indians represented 39 major tribal or cultural units.

Although one can generalize all these Indian groups into a single ecological

type characterized as agriculture with varying emphases on hunting and fishing, to do so is to obscure widely varying systems of human ecology. There is insufficient space here to detail all or even most of these systems so only three briefly drawn examples will be presented: (i) Indians of western Guatemala, chiefly Quiché, Mam and Cakchiquel; (ii) the coastal Miskito Indians of Nicaragua; and (iii) the Chocó of eastern Panamá.

In the western highlands of Guatemala hunting and fishing have declined to relative unimportance because of a scarcity of animals (there are some local exceptions). Agriculture is very important and is based on corn (*Zea mays*), beans (*Phaseolus* sp.) and squashes (*Cucurbita* sp.) although many other plants are also grown. A fairly wide range of agricultural systems are present but the dominant one is shifting cultivation. However, there is also a significant amount of what might be termed sedentary hoe cultivation. Crops are grown both for subsistence and for marketing in the region. Many domesticated animals, mostly of Old World origins are kept and include pigs, sheep, cattle, mules, goats, chickens; the native turkey and native ducks are also present. An important aspect of the human ecology of this area are the market centers where agricultural products and articles of home manufacture—textiles and ceramics—are sold. The markets serve also as important social centers (Mc Bryde, 3).

The ecology of the Miskito Indians of Nicaragua has recently been reported on in detail by Nietschmann (4). He gave their population in 1969 as being approximately 35,000 (which was somewhat higher than official government figures). Some of the Miskito people live in villages adjacent to the Caribbean coast while others have taken up inland sites once occupied by the Sumu Indians. The coastal Miskito depend to a major extent on the sea as a source of animal food in their diets. According to Nietschmann, the "perfect meal" for a coastal Miskito Indian would "consist first and foremost of meat, especially turtle [*Chelonia mydas*], white-lipped peccary [*Tayassu pecari*], or fish (roasted or browned in coconut oil) and boiled young cassava [*Manihot*], green bananas, duswa [*Xanthosomas* sp.] and some *wabul* (a thick porridge made from boiled green bananas mixed with coconut milk). Highly sweetened coffee and bread made from flour would complete the meal...". He goes on to say that other meats "held in high regard by the Miskito are white-tailed deer [*Odocoileus virginianus*], paca [*Cuniculus paca*], agouti [*Dasyprocta punctata*], manatee [*Trichechus* sp.], hicatee freshwater turtle [*Pseudemys* sp.], and fish of many kinds...".

Miskito agriculture is described as "a complex and ecologically conservative system which closely simulates in morphology and function the tropical forest which it replaces. The swiddens are man-created models of ecological diversity in species, and in three dimensional zonation of polycultural plants which maximize utilization of available sunlight, moisture, and humidity while protecting the easily degraded soil from exposure to sun and precipitation".

Turning to the Chocó (Bennett, 1), we encounter a tribe of forest Indians that inhabits eastern Panama and northern Colombia. These Indians always locate their pile dwellings near the bank of a river or a lake. The Chocó practice a mixed agriculture that includes both shifting and sedentary systems. The more important crop plants are rice (*Oryza*), plantains (*Musa*), yuca (*Manihot*) and bananas. Hunting and fishing are carried on actively and among the game mammals and birds most sought after are tapir (*Tapirus*), brocket deer (*Mazama*), agouti, spider monkey (*Ateles*), capybara (*Hydrochoerus*), white-lipped peccary, currasow (*Crax*) and guan (*Penelope*). Many fish species are taken as well as certain freshwater crustaceans (*Macrobrachium* sp.) and some turtles (*Pseudemys*).

If located not overly distant by canoe trip from a potential market, bananas are sometimes grown as a cash crop. The money from this sale is used to purchase such items as outboard motors, fuel and replacement parts for the motors, cooking oil, specialty foods, tobacco and fabric for clothing. Some Chocó have integrated hogs and chickens into their ecology. The hogs, which are never kept in large numbers are usually sold and the few eggs produced by the chickens are often used in barter.

These very brief descriptions of some aspects of the ecologies of some Indians in this region serve to indicate that Indian cultures not only survive but also retain an important degree of ecological diversity. It must be stressed that no two Indian cultures in this region have identical ecologies. Each group has worked out its own unique ways of using the land and the local natural resources. Although it is not unusual for persons writing about the Indians of Central America and Panama to group them into two or three large cultural aggregates, the actual ecological diversity does not justify such a procedure.

**Non-Indian People:** Often overlooked is the extraordinary range of cultural diversity among the non-Indians of this region. The major cultural stocks are derived from Africa, Europe and Asia (excluding for the purposes of this part of the discussion the fact that the Indians are descended from Asian emigrants of many thousands of years past).

The African stock is derived from a broad array of cultures that can only, with a complete ignorance of historical geography, be lumped into a culturally meaningful unit called African culture. Available data indicate that the people in this region who are of African ancestry came mostly from West Africa and from perhaps dozens of distinct tribal entities representing a broad range of cultures. The diversity of West African cultures is now coming to be appreciated and there is also a growing awareness that these people contributed importantly to the cultural complexes we see today in this region.

People of African ancestry are both rural and urban dwellers. They engage in a wide range of agricultural activities. Their urban employment ranges over the entire gamut of occupations followed by urban dwellers. In short, the African derived population is divisible into a complex array of ecological types resulting from the totality of their cultural experiences, not excluding those of their respective African homelands.

The European stock is derived from almost every part of Europe and secondarily, the United States. The most important group, of course, is that which is descended from Spanish stock that arrived to settle early in the 16th century. It was they who contributed most significantly to the changes in human ecology of the region, thus giving rise to the partial misnomer, *Latin America*.

There are almost as many life styles among this cultural stock as there are life styles in the region. However, for the purposes of general discussion, one may group the people into rural and urban cultures (realizing that these two broad categories are divisible into almost an infinity of subcultures). Of principal interest to us at this point is the rural component. Most economic activity in the rural areas is focussed upon agricultural and pastoral endeavor. Agricultural practices range from shifting cultivation on government or private lands usually not owned by the cultivator, to large private land holdings where only cash crops are grown. Pastoral activity ranges from keeping a few head of pigs or cattle to add to family income up to large cattle ranches utilizing the most modern animal husbandry techniques. Income, education, and value systems vary widely among the various groups. More

importantly, perhaps, is the fact that each of these rural subcultures tends to perceive and utilize the local natural, renewable and non-renewable resources in differing ways. In general, the value of local renewable resources tends to be greatest for those who have the lower economic incomes. For example, these people depend upon wild plants for medicine, food, building materials, textiles and other purposes and the wild animal resource often figures importantly as a supplement to the normal diet. As economic wealth increases there is a greater tendency to turn to commercial sources for the just mentioned needs and thus the perceived resource changes. As a further example, the shifting cultivator will view the presence of second-growth forest or woodland as a very desirable ecological feature to be maintained in order to provide future areas for his cultivation. On the other hand, the *ganadero* will perhaps see the same vegetation as something to be cleared away in order to plant pastures for the cattle he wishes to raise. Local game animals may be seen as a source of food by one rural group and as an object of recreational hunting by another. There is no single "standard" ecology for rural people in this region.

The people who are of recent Asian origin comprise a comparatively small part of this total population and are located mostly in towns and cities. However, some members of this group engage in agricultural and pastoral activities and these may embody both New World and Asian cultural components.

Brief as the above remarks on cultural diversity in this region are, they serve to establish that cultural diversity is present, which permits me to proceed to the next element of this paper, namely the ecological importance of cultural diversity to conservation of natural resources and economic development in this region.

Attention has already been drawn to the fact that it is now generally accepted that diversity is a necessary attribute of healthy ecosystems. I have just shown that there is great diversity represented among the various cultural units present in Central America and Panama. It follows, therefore, that human ecological diversity is one of the natural elements of diversity in tropical ecosystems and this leads me to suggest that this diversity is an attribute to be valued as highly as are those already accorded high ecological value. The value of this cultural diversity relates in various ways to ecosystemic health but more important is that it provides a counterpoise to the ecologically unfortunate trend toward larger and larger areas being converted to monocultural use. Diversity of resource use allows for the maintenance of a multitude of feed-back loops that help to protect the human-occupied ecosystems from shock occasioned by biological, physical and economic perturbations that might otherwise severely damage or even destroy over-simplified ecosystems. Thus, the people living in an area of high diversity are given a significant measure of protection against the failure of food production systems (both controlled and uncontrolled), and by extension, the larger regional units are buffered against ecological and economic shocks. It is true that under such a system of diversity short run economic yields may be reduced but the trade-off is that an important degree of ecological and economic stability can be maintained over the long run. Keynesian economics assures us that most economic decisions are short run decisions but one must note that the ecologists offer us no similar consolation.

Another positive attribute of cultural diversity is that it acts as a counter stimulant to the rural-to-urban migration that has come to be one of the most significant demographic phenomena in Latin America. When there is little or no appreciation for the ecological and economic value of rural cultural diversity, this

migration is hastened because of the trend toward creation of ever larger land holdings and ever simpler low diversity monocultural uses of the land. The previous labor-intensive economy is rapidly supplanted by a capital-intensive economy in which there are fewer opportunities for human employment which is often viewed as a desirable economic development. However, the displaced rural folk have now become an economic and social and political problem to governments, for when the people arrive in towns and cities there are always too few employment opportunities awaiting them. Once productive members of rural ecosystems, they now become a faceless aggregate, a problem for government to cope with. It is not usual that the governments of developing nations have access to a tax base large enough to acquire the sums needed for transfer expenditures that will provide for the needs of the rootless populace until it can be absorbed into urban economic infrastructures.

To move my argument along, my next remarks proceed from an assumption that cultural diversity has come to be accepted as a necessary component in all conservation and development plans and projects, and it will be convenient to begin this part of the discussion by drawing attention to the nature of the models usually employed by conservationists and economic planners in developing nations.

The models, with but few exceptions, are borrowed from industrialized nations where there is a high degree of cultural homogeneity insofar as the nature of labor employment and labor residence is concerned. Although many such models are available for discussion, I will use those that apply to wildlife management as being representative of the problem.

Most industrialized nations control by law the ways by which and the times during which the fish and wildlife resources can be harvested. Typically, there is a licensing system and there are legal restrictions imposed on the size and number of the animal species (or subspecies) that can legally be taken. There are also well defined periods when the animals may or may not be legally hunted or fished. Virtually all game birds and mammals are reserved for recreational hunting, which is the correct approach to management of these resources. Fish species may be treated as both recreational and commercial resources with separate laws and regulations governing their catch.

When fish and game conservation measures are drawn up in most developing nations, the industrial nation legal model is almost the only one given any consideration. The assumption is thus made that the people, that is, the varied cultural units in the developing nation, perceive the fish and wildlife resource from a single ecological vantage point—that being that the resource is best utilized for recreational hunting and fishing and thus managed toward that single end. Typically, a single set of laws based on that assumption is promulgated and immediately the ecological realities and ecological rights of some of the citizenry are ignored.

What *is* required are laws governing hunting and fishing that reflect the presence of more than one ecological constituency. The laws should answer not only to the desires of those who view hunting and fishing as principally recreational activities but also to the needs of those for whom the animal resource constitutes an important food source. This last consideration also requires regulations designed to control the number and species of animals taken and the times of the year when hunting and fishing may be conducted, but the laws ought to relate to the ecological realities of the cultures involved and should adjust to those realities as closely as sound *biological* conservation practice permits. Although it might not be possible to devise hunting and fishing regulations that answer to every human

cultural unit present in a nation, it ought not be over difficult to recognize all the larger but presently ignored constituencies. It would be a desirable practice to recognize zones or regions in which *only* subsistence hunting and fishing are permitted. Within such areas fish and game management would be directed toward maximizing production of those animal taxa which are most valued as food. Fish and game management would be integrated into the human uses of the ecosystems and perhaps some modification of such use patterns might result in greater yields of animal food. In the case of Indian cultures, every effort should be made to develop conservation programs that relate to their traditional ecologies. Such programs, of course, require the application of sound biological management practices but again they would be integrated into the human systems.

There are some areas remote from all but the sparsest human settlement and some of these areas contain the very species of game mammals and birds that are most attractive to recreational hunters. These areas should be identified and set aside in special reserves maintained by game management experts. In these situations legal models resembling those of industrialized nations are appropriate because the harvesting activity is essentially the same. Hunters would be required to pay for the services of licensed guides, room and board in special inns established for them and to pay substantial fees for licenses. I have in mind here, in part, the practices one may encounter in government operated hunting reserves in parts of Western Europe.

Although I have chosen to discuss cultural diversity as it relates to fish and game resource management and harvest, cultural diversity, once accepted as a necessary aspect of sound conservation and development practices must be part of all conservation and development efforts. I argue that the sooner this is done the better. At present, the overly simplistic models employed in conservation and development plans tend to relegate cultural diversity to the limbo designated as externalities by economists. Of course people are not externalities and there is unanimous agreement on this point since the object of most conservation and development efforts is to better the conditions of the people. The problem is that the varied cultural units that make up a nation's citizenry are usually viewed for planning purposes as though they comprised a single cultural, i.e., ecological, aggregate. Moreover this aggregate is then assumed to resemble the urban aggregates of highly industrialized nations. This is an inaccurate, misleading and ultimately costly view and can only increase rather than decrease many of those very problems that conservationists and developers seek to solve.

It is often lamented that developing nations have nothing but major obstacles in the paths leading to hoped-for industrialization. Almost universally overlooked is the fact that these nations still retain a critically important advantage that most if not all industrialized nations forfeited unwittingly. That advantage is the continued presence of ecological diversity in the human sector—a diversity that allows a variety of uses to be made of the natural resources of a nation. This cultural diversity, so often ignored or if not ignored deprecated, ought instead to be judged one of the most valuable attributes of a nation's ecological patrimony.

## RESUMEN

El aspecto menos comprendido de la conservación de los recursos naturales y del desarrollo económico, es la diversidad cultural humana. Sin embargo, la conservación y el desarrollo de los recursos naturales son esfuerzos básicamente

humanos y deben iniciarse con una clara comprensión de las múltiples necesidades del hombre. Además, la diversidad cultural es un recurso natural que debe protegerse, junto con los recursos más conocidos de los ecosistemas en los que el hombre forma una parte integral.

Hablando en términos generales, la diversidad cultural es un fenómeno ecológico, ya que abarca las diferentes maneras como el hombre percibe y utiliza el ambiente en que vive; o sea que la diversidad cultural se iguala a la diversidad ecológica. Es bien conocido que un alto grado de diversidad ecológica (taxonomía, de nicho, bioquímica, etc.) es un atributo indispensable de los ecosistemas tropicales húmedos si tales ecosistemas han de permanecer viables por largos períodos.

Los patrones actuales del uso de la tierra en Centroamérica y Panamá muestran una tendencia hacia el incremento de los monocultivos, con la consiguiente reducción en la diversidad ecológica, lo que implica grave peligro a corto y a largo plazo. Además, el desplazamiento de las gentes de las áreas rurales daría como resultado la creación de problemas sociales, económicos y políticos que las naciones en desarrollo no pueden resolver favorablemente. No sólo hay un desperdicio ascendente de recursos humanos, un debilitamiento de las estructuras sociales y una creciente y peligrosa dependencia sobre los monocultivos orientados hacia los mercados de exportación, sino que también se está perdiendo la diversidad ecológica de los sistemas anteriores del uso de la tierra. Esta clase de diversidad es quizás de igual importancia para la salud ecológica de la agricultura, la silvicultura y la utilización de los recursos generales de la nación, que la diversidad genética de las variedades "primitivas" de cultivos que los biólogos en la actualidad reconocen y se esfuerzan para conservar, conforme las variedades "modernas" de cultivos se tornan cada vez más sencillas genéticamente y por ende mucho más vulnerables a las enfermedades y otros trastornos.

Las naciones en desarrollo aun conservan una importante ventaja ecológica que la mayoría de las naciones industrializadas perdieron sin darse cuenta... la ventaja de contar con la presencia continua de la diversidad cultural, i.e. ecológica, humana. Esta diversidad, tan a menudo despreciada por los conservacionistas, planificadores y promotores, es uno de los atributos más valiosos del patrimonio ecológico de la nación en desarrollo.

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