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## Amazonia, Ancient

As the largest tropical rain forest on the planet, Amazonia holds a unique place in both world environmental history and the imagination of South America. A vast region that extends through present-day Brazil and seven other South American nations (Colombia, Ecuador, French Guiana, Guyana, Peru, Surinam, and Venezuela) it symbolically stands for the dominance of nature over humans and as a source of still-unknown plants and animals. But in fact Amazonia has been an intensively managed, human-made environment for many hundreds of years. The current perception of Amazonia as one of the last wildernesses reflects not the rain forest's pristine nature, but rather the erasure of its human population through the violence of the colonial conquest of the native population.

Conventionally, the Amazon River basin is considered, at a minimum, to comprise 96 million hectares; the Amazon River itself is the largest (by volume) in the world, being nearly 160 kilometers wide at its mouth. The civilizations that arose there were functionally isolated from the rest of the world, and this has meant that evidence for these past civilizations has emerged only slowly, given the absence of stone-building and the sheer scale of the Amazon as a context for research.

Any definition of Amazonia as an ecological, cultural, or political unit therefore tends to proceed more by a process of exclusion than by reference to broad uniformities in the Amazonian environment because such uniformities are illusory. The definition of Amazonia employed here reflects the conventions established in Steward's *Handbook of South American Indians* (1946–1963) and carried over into current anthropological usages, whereby Amazonia is understood to comprise the whole of the Amazon River drainage system,

including the right-bank tributaries of the Orinoco, to which the Amazon River has two connections: one permanent (via the Casiquiare Canal) and one seasonal (via the flooding of the upland savannas between the Rio Branco and the Essequibo River). This latter connection effectively unites the Atlantic coastal region of the Guianas with the Amazon River basin, giving rise to the designation "Guayana" or "Guianas" (in Steward's *Handbook*) for this area encircled by the Atlantic, Orinoco, and Amazon, which can then be considered as a subregion of Amazonia, as defined earlier. Steward (1946–1963, III, 885) also hypothesized that Guiana was a center of dispersal for the "tropical forest-complex" of agriculture of the manioc plant—a tuber whose pulp became a staple of the regional diet—although this view was later challenged.

However, it should be noted that these conventions in the geographical criteria for the delimitation of regions were connected to a wider classificatory scheme in the *Handbook*. In an attempt to give some analytical shape to the mass of ethnological, historical, and archaeological information that the *Handbook* brought together, these contrasting geographical zones were also thought to delineate cultural regions. As Robert Lowie put it in his introductory essay to Volume III of the *Handbook*, "The Tropical Forest complex is marked off from the higher Andean civilizations by lacking architectural and metallurgical refinements, yet outranks cultures with the hunting-gathering economy" (Lowie 1948, 1). Accordingly, the Andean and Colombian-Venezuelan regions, fitting their status as the locale of the Incan empire and other gold-working chiefdoms of the Circum-Caribbean and Colombia sierras, were assigned "advanced" sociocultural status on the basis of cultural traits, such as hierarchical organization, metalworking, burial practices, and so forth. Because these cultures lay outside the agriculturally poor region of the tropical forests of Amazonia, their complex and large-scale character was accepted as a logical result of an environment conducive to the development of human civilization.

## A "Counterfeit Paradise"

In the Amazonian region, any evidence of advanced civilizations was rejected by archaeologists and historians as the exaggeration of an unreliable historical record or as a result of extraneous origins, the result of cultural diffusion from the Colombian or Andean regions. The evidence was dismissed because of the assumption that the Amazon region was ecologically

unfavorable to human settlement on a large scale, despite its dense vegetation and variety of fauna—it was a “counterfeit paradise” (Meggers 1992). The evidence for this was taken to be the poverty of soils away from the flood plain deposits, the small scale of contemporary indigenous societies, and the absence of major archaeological sites, except in the case of the mound builders of Marajó Island at the mouth of the Amazon. The presence of this sophisticated culture was “explained” as having resulted from a down-river migration from a more complex center in the Peruvian or Colombian Andes. The apparent decline of this cultural complex, almost from the point of its establishment on Marajó, was then taken as “proof” that higher sociocultural forms could not sustain themselves in the lowland tropics where manioc agriculture was practiced. In contrast, other experts championed the idea of the Amazon basin as a cradle of migration across the rest of the continent, a view supported by a significant proportion of recent research.

Whether or not Amazonia was, or is, in fact a “counterfeit paradise,” therefore, remains at the heart of scholarly dispute. Because there have been insufficient archaeological data to resolve this dispute, historians and ethnographers have added their voices to the debates on native ecology and agriculture, demography, and population levels. The eventual outcomes of such research are of profound significance in answering questions not just about human-environmental relationships, but also about the place of Amazonia in the overall development of New World society and culture.

## Early Settlement

It transpires that human occupation of Amazonia is much more ancient and more extensive there than had once been assumed. By about 9000 BCE two lithic (using stone tools) traditions had become widespread in Amazonia. (These stone implements included arrowheads and edged cutting tools for processing animal game and grindstones for preparing maize.) By 5000 BCE two more practices had emerged. First, there is evidence that by 2000 BCE groups on the Atlantic coast were using domesticated plants, with maize use emerging in the Minas Gerais region by about 1500 BCE. Second, current research indicates that occupation of the lower Amazon began around 10,000 BCE, and there has been a dramatic discovery of ceramics from around 6000 BCE in a site along the lower Amazon, making this the earliest example of pottery in the Americas.

Close examination of this early period in northeastern Amazonia, along the Guiana coastal region, illustrates the close relationship between agricultural adaptation to a complex environment and a resultant development of appropriate lithic technologies. Transitions from gathering to the horticulture of certain plants, particularly the *ite* palm (*Mauritia flexuosa*) and the *mora* tree (*Mora excelsa*), as well as other utilitarian species, are directly reflected in the development of the lithic repertoire. Although these subsistence techniques are theorized as being ancestral to the emergence of tropical forest horticulture in the region, the developmental analogies are probably stronger with the *sambaqui* (shell-mound) peoples of coastal Brazil than with the occupants of the tropical forests because their horticultural and foraging repertoires are quite distinct. This suggests that progressive adaptation to the complexities of the Amazonian environment was a process repeated across the whole region.

Various ancient societies also practiced relatively intensive forms of agriculture, evidenced by widespread landscape modification throughout Amazonia. In fact, it has been argued that the landscape of Amazonia, as it is seen today and as it has been for the last 350 years or so, is the historical product of a return to a semiwilderness consequent on the colonial depopulation of the native inhabitants. Moreover, the current evidence for the existence of prehistoric roads and causeways in both the llanos (prairies) of Bolivia, Colombia, and Venezuela and in the heart of Amazonia itself indicates that these landscape modifications were related to the presence of large and complex societies.

For example, recently investigated systems of extensive ridged fields and agricultural mounds along the Atlantic coast of the Guianas underline how limited knowledge of the “tropical forest” region really is. The presence of complex agricultural techniques to deal with the low-lying, swampy conditions in this region, as well as the use of intensive farming practices from at least 700 CE, shows how complex adaptations were made to the variety of Amazonian environments. Thus archaeological evidence also fits well with the historical sources that report both significant population and a complex agricultural repertoire among the indigenous groups.

## Soil Holds Clues

Apart from this physical manipulation of the landscape, research interest in ancient Amazonia has focused on anthropic or anthropogenic soils (that is, soils

whose formation is directly related to human activity)—or at least on trying to assess what kind of soils in Amazonia may have been generated through human activities, how widespread they actually are, and to what extent such soils were intentionally fomented. The banks of the main channel of the Amazon as well as of many of its tributaries are replete with black earth sites, illustrating both the continuity and antiquity of human presence. The use of such sites for agricultural purposes thus illustrates both sophisticated knowledge of soil properties and systems of agricultural management that were stable over many generations.

These kinds of soils, particularly *terra preta* (black earth), which is black anthropogenic soil with enhanced fertility due to high levels of soil organic matter and nutrients, are common throughout Amazonia. (The valuable soil has been created either through direct agricultural fertilization or as a consequence of intense human settlement—human waste materials enrich the soil with nitrogen.) The historical evidence shows that there was no one-to-one relationship between the presence of agriculturally favorable soils and the past existence of complex polity or an extensive cultural repertoire. This investigation of anthropogenic soils by scientists seems to provide evidence that human occupation of an area was not dependent on conducive environmental conditions. However, archaeological investigation of the many well-documented *terra preta* deposits along the main Amazon channel, as well as along its tributaries, is still in the early stages.

## Agriculture and Diet

The addition of maize to modes of subsistence that previously centered on palms and manioc, as well as the systematic exploitation of other food plants, has also been the subject of study. However, interest in the advent of maize cultivation results from seeing maize use as a token of social and cultural complexity—given its easy storage and high nutritional value—and so evidence of its use in Amazonia, where the use of manioc varieties is predominant in the historic and ethnographic reports of aboriginal horticulture, is especially significant. However, this apparent predominance of manioc agriculture in ethnographic and historical materials about Amazonia may result from the way in which manioc use increased over the last five hundred years as a result of indigenous access to steel tools via trade with the Europeans. The use of steel axes would have permitted much greater clearance of forest for the

forest of manioc, a root that must be dug from the earth, than would have the use of stone axes. As a result, and also stimulated by European trading interest in manioc flour, there were distinct advantages for domestic groups in opting out of the systems of intensive agricultural production that sustain large civilizations. Consequently the dietary use of manioc, as opposed to maize, may well have increased substantially during the historic period.

## Basic Questions Remain

The nature of these transformations over the last five hundred years is critical to an understanding of ancient Amazonia, but the sheer size of the region and the lack of sociocultural continuity between past and present society and culture, as a result of colonial depopulation, make comprehensive study of the environmental history of the region especially challenging. Many of the basic questions of Amazonian prehistory remain open, not least of which are those of the scale and longevity of human occupation. It seems likely that ethnography and history, as much as archaeology, will continue to play a role in the discussion of human adaptations to the Amazonian environment., mean that. Work in progress that emphasizes ethnoarchaeological techniques, systematic survey, and interpretation of historical records, as well as the deployment of new technical resources, such as geophysical survey, seems well positioned to do justice to the complexity of Amazonian antiquity.

As these techniques are deployed and the database grows, it already seems likely that issues of human environmental adaptation will be cast in a different framework to that which produced the idea of Amazonia as some kind of false paradise whose apparent botanical bounty belied the actual poverty of its soils for human usages. Already much of the work there tends to suggest that Amazonia is too complex an environment, and its human adaptations too various, to be adequately characterized as either utterly unfavorable or uniformly conducive to human settlement. The very uncertainties about the definition of an Amazonian region, discussed earlier, reflect the fact that the conceptualization of Amazonia as a homogeneous entity is in itself flawed. As debates about models of the Amazonian environment are replaced with actual investigation of human adaptations through time, researchers will be in a far better position to appreciate the variety and complexity of human adaptation to both the chal-

allenges and the potential of the Amazon basin proper, as well as of the surrounding regions.

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See also Amazon River; Brazil

## Further Reading

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## Andes

The environmental history of the Andes has unfolded in the context of a spectacular natural diversity and

notable cultural achievement. The Andes form a complex of mountain ranges in western South America that extend 7,000 kilometers from Venezuela to Tierra del Fuego. Few people have lived in the southern Andes, where conditions make it difficult to sustain human life. In contrast, the portion of the Andean Highlands that lie within tropical latitudes have fertile valleys and sharply telescoped vertical habitats that have favored agricultural diversification over short distances.

Prehistoric Andean peoples domesticated a wide range of plants, of which the potato is the best known, permitting a sedentary form of life that goes back to at least 4000 BCE. The consolidation of local societies into larger polities started around 1000 BCE. At a much later time, the Inca Empire (c. 1100–1532 CE) absorbed people of different cultures into an intricately organized state apparatus based on sustainable farming and the raising of llamas and alpacas. At different periods, pre-Colombian peoples constructed earthworks that dramatically reshaped certain landscapes. Stone bench terraces on steep slopes enabled crops to be irrigated with little loss of soil to erosion. Elsewhere, systems of artificial ridges made it possible to grow crops in swampy terrain. In 1532 the Spaniards conquered the Inca empire and introduced most of the inventory of European crops, animals, technology, religion, and political organization. Native people of the Andes long resisted wholesale absorption into Spanish culture. To this day, the highland peasantry reflects a mixed heritage of indigenous and introduced folkways.

The Andes manifest both continuity and discontinuity from their pre-Colombian past. Highland deforestation is the most visible human impact, but the bulk of the tree cover had already been removed by or in the Inca period. Colonizing Spaniards stripped most remaining woodland to meet the increased demand for firewood and house timbers and to accommodate the grazing needs of cattle, sheep, goats, and equines. The fortuitous introduction of eucalyptus after 1860 provided an alternative wood supply, although plantations of exotic species have created vulnerable monocultures of one kind of tree that also have taken massive quantities of water out of the soil.

The contemporary Andean landscape must be seen as a product of human interventions in the past, not as a simple response to biophysical factors. Desertification, especially severe in Bolivia, reflects overgrazing, not climatic change. Soil erosion and water pollution are not recent, but are of growing severity. Unrestrained cultivation of steep slopes and negative effects of mining on streams continue to take their toll on land