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Adaptive Responses of Native Amazonians. RAYMOND B. HAMES AND WILLIAM T. VICKERS, eds. New York: Academic Press, 1983. xii and 516 pp., maps, diags., index and biblio. \$49.00 cloth (ISBN 0-12-321250-2).

The ecological framework of resource use and settlement by Indians in Amazonia and adjacent regions of lowland South America is the main focus of this collection of fifteen previously-unpublished papers edited by two anthropologists. A major question tackled is how natives adapt to the supply, quality, and distribution of game, fish, forest products, and soils in tropical forests environments. The contributions, written mostly by anthropologists, are grouped into sections dealing with agriculture, hunting and fishing, nutrition and settlement patterns.

The book successfully portrays recent information and ideas about cultural and ecological factors that influence the size, permanence, and pattern of settlements in the well-watered region. Strengths of the book include an emphasis on empirical evidence based on protracted field work and a discussion of theoretical implications.

The issue of limiting factors in resource availability is a major theme throughout the lengthy book. Daniel Gross, for example, asserts that protein scarcity is a major constraint on the development of large, sedentary aboriginal populations away from major rivers. This position has been steadily losing ground as evidence accumulates that the uplands of Amazonia were quite densely settled in pre-historic times and that protein is not in short supply in the region. Gross ignores the works of geographers such as William Denevan and Nigel Smith who have argued that interfluvial areas were more densely settled than previously thought. Furthermore, anthropologists in this edited volume, particularly Stephen Beckerman, Robert Carneiro, Kristen Hawkes, Kim Hill, and Dennis Werner, suggest that the alleged protein shortage has been exaggerated and that farming, hunting, and gathering can sustain sizable populations

away from major rivers. Gross and the shrinking protein scarcity camp have apparently confused protein scarcity with an occasional shortage of more desirable game species. Hames and Vickers sensibly suggest that a number of factors, including warfare, a lack of suitable building materials, and supernatural reasons, account for the shifting of village sites. The current size of tribes in Amazonia is no indication of population densities in pre-contact times: introduced diseases have ravaged aborigines for centuries.

Although the book is a valuable and stimulating addition to our understanding of cultural ecology in the tropics, it is marred by some flaws. Several chapters deal with tribes outside Amazonia: a title such as "Aboriginal Adaptations in Lowland South America" might have been more appropriate. Some of the contributors grapple clumsily with optimal forage theory, an idea launched originally by zoologists. Just as in sociobiology, theories that seem to fit the animal kingdom often bog down when applied to humans. In a nutshell, optimal forage theory states that predators minimize energy or time inputs when searching for prey. But several contributors, such as Beckerman, note that tribes devote more time to hunting even though they can gain more meat by fishing; here culture comes into play. People like variety in their diet, so they take trips that may not make much sense from an energy balance perspective. Sometimes it seems that academics drag theories around like Linus blankets.

Most books contain typos, but this one contains an unusual number. Colombia is misspelled. Scientific names are always a minefield, particularly for social scientists. Table 5.1 is especially unreliable with regards to current usage and spelling of scientific names of animals. The genus of giant otter and the species names for the forest rabbit, nine-banded armadillo, and tapir are not spelled correctly. *Pimelodus* is misspelled in Table 10.3.

In spite of some blemishes, the editors are to be commended for tapping the expertise of diligent field researchers and for compiling a solid, scholarly contribution that will attract the attention of geographers, anthropologists, sociologists, historians, and biologists. Key Words: *cultural-ecology, optimal forage theory, tropical forest ecology, Amazonian settlement, nutrition, hunting and fishing.*