Vertebrates in Venezuela

Vertebrate Ecology in the Northern Neotropics. JOHN F. EISENBERG, Ed. Smithsonian Institution Press, Washington, D.C., 1980. 272 pp., illus. Cloth, $17.50; paper, $8.95.

Little is known of the natural history of South America; this is even true in the case of mammals and birds. In fact, about as much is known of the fossil mammals of South America as is known of its living species. It therefore is of great interest that a book on the vertebrate ecology in the northern neotropics has been published.

This book is another of a series sponsored by the National Zoological Park. Contained within it are 17 papers as diverse in topic as a description of the vegetation of the llanos of Venezuela, a description of two new species of mouse opossums, a list of the birds on a ranch in central Venezuela, and a description of the activity patterns of caiman. Several of the papers are especially noteworthy. R. M. Wetzel and E. Mondolfi provide a taxonomic review of armadillos of the genus *Dasypus*. Their redescription of *D. pilosus* from the highlands of Peru raises the question why this species has a fur coat long enough to cover its carapace, whereas other high-altitude or temperate-zone armadillos are nearly naked. These authors also show that small species of this genus occur both north and south of the Amazon basin; a study of the chromosome morphology and serology of these species may tell us whether they are closely related or are convergent. M. A. O'Connell describes the influence of seasonality on the population density, longevity, and reproduction of six species of didelphid marsupials. She questions the view that marsupial reproduction is an adaptation to seasonal uncertainty. R. Rudran examines the demography and social mobility of howler monkeys and suggests that the principal cause of mortality was infanticide. At least 40 percent of infant deaths in this population resulted from this behavior. It normally occurred after a male invaded an established troop. Rudran believes infanticide to be an important regulator of (many?) primate populations. J. G. Robinson reports that urine washing in the capuchin monkey occurs with greatest frequency during periods of high temperature and low humidity; he suggests that this behavior may have its greatest significance in temperature regulation. C. A. Brady in a study of the crab-eating fox shows a dramatic shift in diet between the wet season, when the diet consists mainly of insects, and the dry season, when it consists mainly of vertebrates and land crabs. Even though the members of a pair hunt together, they were not observed to hunt cooperatively. D. G. Kleiman, J. F. Eisenberg, and E. Maliniak demonstrate that there is much variation in the reproductive parameters of caviomorph rodents beyond that attributable to body mass. The factors responsible for this residual variation will be clarified only with further studies of this fascinating group.

> The book review editor is attempting to make a collection of writings about the reviewing of scholarly books, and particularly scientific ones. Any references readers can provide to such writings would be appreciated.

In spite of the quality of these contributions, I have two complaints about this book. A minor one concerns its overly broad title. The northern neotropics presumably include everything north of the Amazon basin to central Mexico, but most of the observations reported in the book were made on one ranch and in one national park in Venezuela. More important is the question whether the editors and sponsors have chosen the best way to disseminate this material. Given the lack of intellectually unified themes, such as have been successfully tackled by the National Zoological Park in their books on arboreal folivores and marmosets, would not such specialized papers get better visibility by being published in specialist journals? Nevertheless, the publication of the work contained in this volume is a valuable contribution to our understanding of the most interesting continent—South America.

BRIAN K. MCNAB
Department of Zoology, University of Florida, Gainesville 32611

"In a meeting of major biomass components of the llanos ecosystem, a caiman and a capybara eye each other." [From *Vertebrate Ecology in the Northern Neotropics*]

Peruvian Prehistory

Prehistoric Hunters of the High Andes. JOHN W. RICK. Academic Press, New York, 1980. xxii, 362 pp., illus. $27.50. Studies in Archaeology.

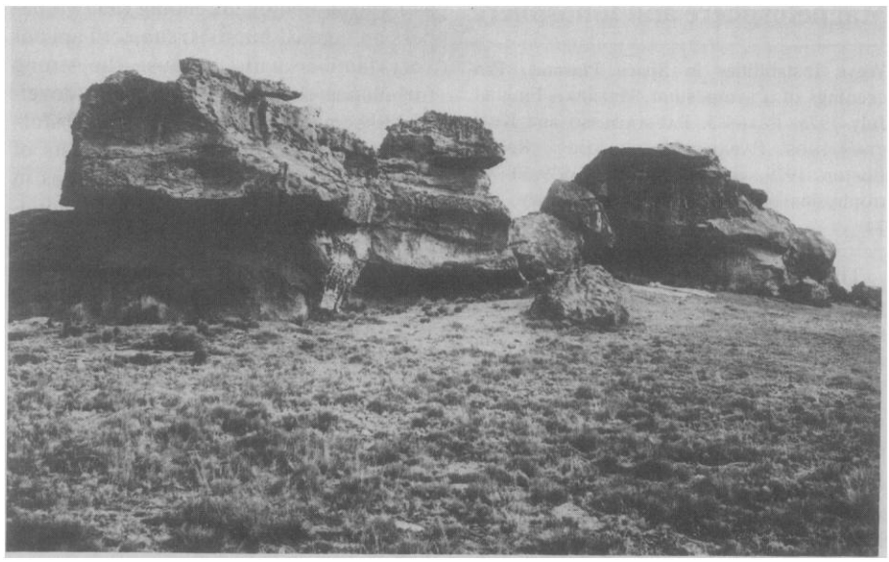
In the best tradition of Peruvian archeology, Rick gives us a simple hypothesis, boldly defended: year-round sedentism in preceramic times on the puna of Junín, based primarily on vicuña hunting. There is also a secondary hypothesis, less well developed but deserving of further elaboration, relating projectile point types and styles to makers who identified themselves with particular hunting bands. Along the way, Rick provides a complete and exemplary report on his excavations.

Most surviving hunter-gatherers that have been studied live in marginal or un-

stable habitats. Rick, with most of his colleagues, believes that this has led to an overemphasis on the mobility of such groups. The sedentism hypothesis he proposes is explicitly confined to what he sees as an optimally stable, productive situation that prevailed in Junín from about 6175 to 1690 B.C. The model fits what is known of Junín archeology, but one must also accept several propositions on faith. Central to these is Rick's hopeful belief that "if cultural evolution exists, it must respond to the threat of self-extinction" (p. 341). Populations on the puna had to regulate their reproduction and establish "equilibrium hunting practices" that persisted several thousand years as a preadaptation for pastoralism. Rick acknowledges that the literature is replete with examples of expediency (filling the bellies of the living rather than worrying about those unborn) on the part of hunters, but he intimates that conservation superseded overexploitation in the absence of outside markets and potent new technologies. Similarly, while acknowledging that food webs with few links tend to be unstable, he is confident, with some support from his own data and H. Wright's study of the environmental history, that a stable puna environment fostered relatively constant populations of vicuña.

Though the puna may be stable, I am wary of Rick's portrayal of it as "optimal," the zone that supported the "majority" of all preceramic peoples in the Andean region. Rick identifies only six puna plant genera probably used as food, and vicuña density (10 per square kilometer) provides a markedly lower biomass than deer alone at warmer altitudes. Moreover, the puna is marginal today; its life forms are few and specialized, and it is hard on human inhabitants. By Rick's own admission, the high puna was settled late by hunting specialists, who remind this reader of lingering Paleo-Indians.

In general, Rick's arguments from archeological, faunal, and botanical remains support an exploitative pattern based nearly exclusively on the puna, although D. Pearsall, in her botanical chapter, notes that *Dodonaea* wood was used regularly for fuel even though it had to be carried up 1000 meters from neighboring intermontane valleys. In the end Rick may prove right about sedentism in Junín, but it will probably be a more exceptional pattern in the greater Andean scene than he appears to believe. Today, outside of Junín, high-altitude sites are not permanently occupied but intermittently reused. Stone-walled shelters and middens laden with carbon, ash, and burnt soil (as are found at Pachamachay, the major site Rick excavated) are weak evidence for sedentism. The relatively undisturbed strata suggest discontinuous occupation and minimal "house-cleaning," perhaps conforming to Rick's alternative hypothesis of rotating (nonconservationist) territories rather than truly continuous settlement.



Pampacancha, one of the series of rock shelters in the area surveyed on the Junín puna. "The series of tuff overhangs contains deposits typical of hypothesized hunting camps, as well as the remains of pictographs. Excavations were conducted in the shelter on the far right." [From *Prehistoric Hunters of the High Andes*]

Elsewhere in the highly varied Andean environment, seasons and resources are often complementary, contrary to Rick's assertion. In the context of postglacial climate changes, loss of important game species, and rising human population, transhumance became an efficient and effective strategy in zones such as Ayacucho and the Callejón de Huaylas. There, environments are closely enough juxtaposed that decreased fertility from migrant male absenteeism, travel-provoked miscarriage, or difficulty in transporting children has not troubled us. Where resource zones are discontinuous, trade and the "archipelago" system were much used by later prehistoric peoples.

Rick's hypothesis on point style as an indicator of band affiliation dovetails with his sedentary isolationism. Tool types have been overused in attempts to set up broad cultural and chronological horizons, and Rick helpfully points out the limitations of previous typological studies. Conversely, we can get far more social meaning out of stone tool style than we yet have. Still, stylistic similarities are strong, if not completely consistent chronologically, between Junín and other parts of central Peru. Temporal distributions may not be duplicated, but apparent relationships indicate a zone of interaction within which some types had wide currency. Rick's approach is intriguing, but our definitions of style and type are too gross for assignment of tools to discrete bands. To make such assignments seem plausible, Rick goes to considerable lengths, denying similarities with specimens too far removed in time or space, positing alternating use of Pachamachay by (non-nomadic?) bands, and claiming indiscriminate reuse of scavenged points in Phase 6, where numerous specimens appear out of place. By Phase 7 (800 B.C.) the presence of exotic obsidian forces the recognition of long-distance trade or travel, and the unit of stylistic production is conceded to be larger than the small hunting band.

Rick's studies of style and typology are clearly moving in the right direction and will freshen the efforts of others, even outside the Andes. He explicates the record in Junín and gives us an object lesson in thoughtful analysis of the intricate relations between site use and lithic technology. He may have put the case for puna sedentism a bit too strongly, but it is quite possible that the extensive puna of Junín was poorly located or simply too self-sufficient to be part of a mobile seasonal round. By terminal preceramic and Formative times the ratio of points to scrapers rises sharply, indicating that Pachamachay finally served as a temporary, transhumant hunting camp rather than a long-term abode.

THOMAS F. LYNCH
Department of Anthropology,
Cornell University,
Ithaca, New York 14853