

On Maritime Hunter-Gatherers: A View From Cantabrian Spain

LAWRENCE G. STRAUS*

A recent *Current Anthropology* article by Yesner (1980), while not without weaknesses and contradictions as noted by the commentators, constitutes another important contribution to ongoing discussions of maritime adaptations, huntergatherer subsistence and population pressures in prehistory. It is my purpose to briefly supply added evidence suggestive of subsistence intensification resulting from population increase and including utilization of shellfish and fish during the Upper Paleolithic and Mesolithic in Vasco-Cantabrian Spain. Although factors such as environmental and sea level change, population control and decimation are important to any general consideration of hunter-gatherer subsistence behavior and change, the Cantabrian data provide a useful example of the stress-related role marine resources can play in a specific, geographically circumscribed region, as alluded to by my colleague González Morales in his CA* comment and by Yesner in his reply.

Writing in early 1975, I suggested major changes in subsistence strategies among Cantabrian hunter-gatherers beginning with the Solutrean period around 20,000 years ago (Straus 1977). These changes consisted of trends toward both the diversification of wild food resources utilized and the development of specialized techniques and technologies for

the exploitation of certain high yield resources (e. g. red deer, ibex). Clear evidence of intensification, which included the initial appearance of significant amounts of mollusc shells in the Solutrean, the Cantabrian trends developed against a background of apparent increases in regional population density. Slightly updating the figures I gave earlier (Straus 1977) in light of subsequent published discoveries, the indications of greatly increased site density in the late Upper Paleolithic and Mesolithic can be cast in tabular form:

Culture/ Stratigraphic Unit	No. of Sites	Appx. Temporal Duration	No. of Sites per Millennium
Acheulean	3	100,000	0.03
Mousterian	13	65,000	0.20
Aurignaco- Perigordian	18	15,000	1.20
Solutrean	33	3,000	11.00
Lower/Middle Magdalenian	35	3,000	11.67
Upper Magdalenian	36	3,000	12.00
Azilian	33	3,000	11.00
Asturian	28	2,000	14.00

These figures refer to a region of some 10,000 km², sharply bounded by the Cantabrian Cordillera and Sea. Naturally they represent only the roughest sort of estimate of human population densities and are biased by such factors as differential site preservation and visibility, archaeological definition and resolu-

* Department of Anthropology. University of New Mexico. Albuquerque, New Mexico 87131. U.S.A.

tion, changes in prehistoric settlement-subsistence systems, etc. Nonetheless they are the best evidence available at present and do seem to suggest a sharp increase in regional population density in the late Upper Paleolithic. Visual evidence for the increasingly dense packing of sites (almost all of which are in caves) can be found in two maps presented in our recent *Scientific American* article (Straus et al. 1980). Similar indications of a major increase in site density, particularly in the Magdalenian period, are to be found in the adjacent regions of the French Pyrenees (Clottes 1976) and Aquitaine - including the Périgord (Laville et al. 1980). In addition to there being large numbers of late Upper Paleolithic and Mesolithic sites in Cantabria, many of these contain evidence of repeated occupations in the form of long stratigraphic sequences of Solutrean, Magdalenian and/or Azilian levels. Modern excavation at such sites as Los Azules, Las Caldas, El Juyo, Rascaño, Ekain and La Riera (where we have defined 20 Solutrean levels and lenses alone) confirm the frequency and intensity with which many Late Würm sites, were reutilized, a fact long suspected from such classic Solutrean, Magdalenian and Azilian sites as Aitzbitarte, El Castillo, Cueto de la Mina, El Valle and La Paloma. In contrast, multi-occupation early Upper Paleolithic and Mousterian sites are rare (e.g. El Castillo, Cueva Morin, El Pendo, Cueto de la Mina).

Recent excavations at La Riera Cave have confirmed the trends in subsistence intensification, revealing the existence, for example, of an early Solutrean shell midden consisting of large-size limpets (*Patella vulgata*). During the last 10,000 years of the Pleistocene and first 1,500 years of the Holocene along the eastern shore of Asturias, hunter-gatherers increasingly supplemented their diet of large and medium-sized ungulates with molluscs and anadromous salmonids, and, eventually, crabs, sea urchins and ocean fish. Once marine food resources began to be exploited, the La Riera record shows a long-term trend toward further intensification and even over-exploitation (e.g. utilization of the open littoral as well as the estuarine zone, dramatic increase in the ratio of shell weight to bone weight, sharp de-

crease in limpet size) (Straus et al. 1980; 1981). Nonetheless, sea mammals never seem to have played a significant role in Cantabrian subsistence; only isolated bones and teeth of (scavenged?) seals have been found in Solutrean or Magdalenian deposits at Altamira, La Riera and Tito Bustillo. In general, at La Riera, neither overall environmental shifts nor moderate changes in distance from site to shore (due to sea level fluctuation) seem to have been correlated with evidence of subsistence change - including marine resource exploitation. This leaves population pressure as a potential ultimate cause for the observed intensification.

The intensification trend at La Riera (and, generally, along the coast of eastern Asturias and western Santander) culminated in the formation of Asturian shell middens, which temporally overlap with at least the later Azilian (and, perhaps, the early Neolithic) (Straus, et al. 1978; Straus 1979). As demonstrated by Clark (1976), Asturian diet was still based on the hunting of red deer and other ungulates, with limpets, topshells, other shellfish and fish providing important (critical?) supplements. Preliminary oxygen isotope data from the La Riera Asturian conchero (Deith, personal communication) suggest that mollusc collection may have been a winter «tiding-over» strategy. Rather than viewing the Asturian as a «coastal culture» —archaeologically identified by its cobble pits and shell middens— I suggest that it may represent a functional and/or depositional pose, constituting one aspect of complex early Holocene settlement-subsistence systems, which also included a hunting pose (the Azilian) and perhaps even a later agricultural one (the early Neolithic). This argument is pursued at greater length in a recent review of the Cantabrian Mesolithic (Straus 1979).

The Cantabrian example serves to illuminate several of the points Yesner and his reviewers discuss.

1. Regional human population density increase can be an important long-term reality, affecting hunter-gatherer subsistence strategies. In northern Spain, Quaternary environ-

mental changes seem to have played only a secondary causal role - if any.

2. When needed, marine food resources can become at least critical supplements to hunter-gatherer diet, presumably once some threshold population density has been crossed.

3. The increasing utilization of these resources is but one of several options which may be taken in the intensification of the food search; another is obviously the eventual control of food resources through domestication.

It is my belief that attempts to explain the evidence for changing subsistence strategies can constitute an organizing theme for future paleoanthropological research in northern Spain. Critical data requirements for such an enterprise include detailed, accurate regional environmental reconstructions, complete faunal collection and analysis, intensive archaeological reconnaissance to locate additional sites (especially open air stations), a detailed chronology based on criteria independent of artifact assemblage classifications, information on the seasonality of site occupations, etc. Also needed are general temporal models of settlement-subsistence systems from which testable hypotheses might be derived. Pursuit of such goals will require the organization of increasingly elaborate, long-range, interdisciplinary research programs and the development of true paleoanthropological infrastructures in the region, such as that of the Sociedad de Ciencias Aranzadi in San Sebastián.

BIBLIOGRAPHY

- CLARK, G. A. 1976.—*El Asturiense cantábrico*. Madrid: C.S.I.C.
- CLOTTE, J. 1976.—«Les civilisations du Paléolithique supérieur dans les Pyrénées», in *La Préhistoire française*. Edited by H. de Lumley, Vol. 1, pp. 1.214-1.231. Paris: C.N.R.S.
- LAVILLE, H., J-P. Rigaud and J. Sackett. 1980.—*Rock Shelters of the Perigord*. New York: Academic Press.
- STRAUS, L. G. 1977.—«Of deerslayers and mountain men: Paleolithic faunal exploitation in Cantabrian Spain». *For Theory Building in Archaeology*. Edited by L. R. Binford, pp. 41-76. New York: Academic Press.
- STRAUS, L. G. 1979.—«Mesolithic adaptations along the coast of northern Spain. *Quaternaria* 21:305-327.
- STRAUS, L. G., G. A. CLARK and M. R. GONZALEZ MORALES. 1978.—«Cronología de las industrias del Würm tardío y del Holoceno temprano en Cantabria: Contribuciones del Proyecto Paleoeológico de la Riera», in *C-14 y Prehistoria de la Península Ibérica*. Edited by Almagro Gorbea and M. Fernández-Miranda, pp. 37-43. Madrid: Fundación Juan March.
- STRAUS, L. G., G. A. CLARK, J. ALTUNA and J. A. ORTEA. 1980.—Ice-Age subsistence in northern Spain. *Scientific American* 242 (6): 142-152.
- STRAUS, L. G., J. ALTUNA, G. A. CLARK, M. R. GONZALEZ MORALES, H. LAVILLE, A. LEROI-GOURHAN, M. M. DE LA HOZ and J. A. ORTEA. 1981.—Paleoecology at La Riera (Asturias, Spain). *Current Anthropology* 22, 655-682.
- YESNER, D. R. 1980.—Maritime hunter-gatherers: ecology and prehistory (with CA* comment). *Current Anthropology* 21:727-750.