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## REVIEWS

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### ***The Punta Arena Site: Early and Middle Holocene Cultural Development on Santa Cruz Island***

Michael A. Glassow, Jennifer E. Perry,  
and Peter F. Paige  
Santa Barbara: *Santa Barbara Museum of Natural History  
Contributions in Anthropology* 3, 2008, 101 pp., 20 b/w  
figures, 2 maps, 27 tables, \$21.95 (soft cover).

#### **Reviewed by Todd J. Braje**

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For over half a century, archaeologists have debated the relative influences of climate, environment, and culture on patterns observed in the Santa Barbara Channel prehistoric archaeological record of southern California. Such debates have been especially contentious over the timing of and triggers for the rise of socio-political complexity and institutionalized hierarchies among the Chumash of the Northern Channel Islands (e.g., Arnold 1992; Gamble 2008; Kennett and Kennett 2000; Rick 2007), but have also extended into the deeper past. Archaeologists have used changes in sea surface temperatures (SST) and marine productivity, for example, to explain temporal variation in the relative abundances of shell midden faunal constituents, a theme Glassow, Perry, and Paige have continued with their new book, offering an interesting case study of the complex intersection between climate and culture.

This data-rich manuscript is the culmination of more than a decade of intensive research by Michael Glassow and his University of California, Santa Barbara students on western Santa Cruz Island, California, at the Punta Arena site (CA-SMI-109). Glassow and colleagues began work at Punta Arena in 1997 as part of the Red Abalone Midden Project (RAMP), which focused small-scale excavations, radiocarbon dating, and zooarchaeological analysis on five sites along western Santa Cruz Island. The primary goal of this research was to better understand the context for the formation of red abalone middens,

those shell middens dated between about 7,500–3,300 years ago with abundant, large red abalone shells, and to determine whether their appearance and decline was driven primarily by environmental or social factors.

Relying largely on radiocarbon dating and zooarchaeological analysis from two test units (totaling ca. 1.6 m.<sup>3</sup>) but also on the analysis of small numbers of shell, bone, and stone artifacts, Glassow et al. build a sequence of social, cultural, and ecological change from about 8,800 to 2,000 years ago on western Santa Cruz Island. Their analysis includes an interesting reconstruction of coastline change, sea level rise, and sea surface temperature fluctuation. From these, they conclude that intervals of cool sea-surface temperatures and high marine productivity triggered a more intensive occupation of coastal sites and the harvesting of marine resources – in the case of Punta Arena this included an increased reliance on dolphins and red abalone. Glassow et al. suggest that these linkages between population density, settlement systems, and marine productivity need further testing and are influenced by a variety of local and regional factors.

Although not comprehensive, Glassow et al. compare results from Punta Arena to other red abalone middens on Santa Rosa and San Miguel islands. In several cases, the density of red abalone shells is not strongly correlated with SST or marine productivity (see Braje 2007; Braje et al. 2007), especially at the west end of the Channel on San Miguel Island. Rather than using these data to modify their conclusions, Glassow et al. offer a number of complicating factors that may obscure the patterning they have identified at Punta Arena and challenge archaeologists to build more refined reconstructions of site-specific settlement systems and occupational histories, to consider the influence of sea level rise and other local and regional environmental changes on marine resource availability, and to focus more attention on patterns of terrestrial environmental change and its influence on subsistence systems.

This disconnect from east to west across the Santa Barbara Channel, where Santa Cruz red abalone middens are tied to cool SSTs and San Miguel red abalone middens

occur during both warm and cool water events, has been central to debates over the relative influences of climate and culture in the creation of red abalone middens. A growing body of data suggests that SST fluctuations played a much more subtle role in the creation of red abalone middens at the west end of the Channel, where water temperatures are generally colder and upwelling stronger, and a more pronounced role at the east end in waters surrounding Santa Cruz Island (see Braje et al. 2009). Glassow et al. also neglect to consider the potential role of human-induced trophic cascades stemming from the human hunting of sea otters as playing a part in the formation of Middle Holocene red abalone middens (see Erlandson et al. 2005). Ultimately, however, Glassow et al.'s pioneering red abalone midden project and this book have spurred a number of similar studies of red abalone middens on the other Northern and Southern Channel Islands, and even on California's central coast, with archaeologists attempting to tease out the complex influences of climate and culture in creating this interesting ca. 4,000-year phenomenon. A resolution to this debate will only be found in more intensive archaeological investigations modeled after Glassow et al.'s RAMP.

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