A Late Pleistocene Site on Oregon's Southern Coast

by Roberta L. Hall, Loren Davis, and Michele Punke

In November 2002, our research team received news from Beta Analytic that a charcoal sample we had submitted from the Indian Sands site (35CU67C) on the southern Oregon coast dated to 10,430 ± 150 radiocarbon years (cal. 12,930-11,690 BP). With this date, Indian Sands, which was first described by archaeologists in 1935, became the single site from coastal Oregon to join a small number of Late Pleistocene Pacific coast sites in Alaska (Dixon 1999; West 1996), British Columbia (Carlson and Dalla Bona 1996; Fedje and Josenhans 2000; Fedje et al. 2001), and California (Erlandson 1988; Meyer and Rosenthal 1997; Schwaderer 1992). The charcoal and the lithic artifacts associated with it were recovered in September 2002 from a 70 cm deep level in a test excavation.

We appreciate the opportunity to provide background on our project especially because we have learned much from the work of British Columbia coastal researchers such as (but not limited to) Roy Carlson, Daryl Fedje, and Rolf Mathews, and because of our personal experience in Canadian anthropology. We believe that coastal archaeological research has implications and applications not only for archaeologists and coastal tribal members but for everyone who is concerned about the history and sustainability of coastal ecosystems.

Our Late Pleistocene date came as the culmination of three years of geoarchaeological research along the southern Oregon coast designed to identify sediments, and archaeological sites within them, dating to the Pleistocene-Holocene transition (operationally, 15,000 to 8,000 cal. BP). Preceding this project was a quarter century of involvement with the Coquille Indian Tribe in anthropological research that includes archival studies, ethnology, and human biology research as well as archaeology (Hall 1984, 1995). As in prior studies, the Coquille Indian Tribe was a research partner. Following tribal restoration in 1989, the tribe's cultural resource program embarked on an ambitious research and education program that involved study of landscape evolution as well as prehistory and recent culture history.

Background

The long-term objective of our project is "to determine parameters affecting human occupation of the Late Pleistocene on the southern Oregon coast." We seek not only to discover archaeological sites of the appropriate antiquity but also to model landforms, climate, and the cultural and human ecology of the earliest coastal settlers, whether they arrived by land or sea. In this article, we emphasize geoarchaeological methods plus the findings at one specific site, but other

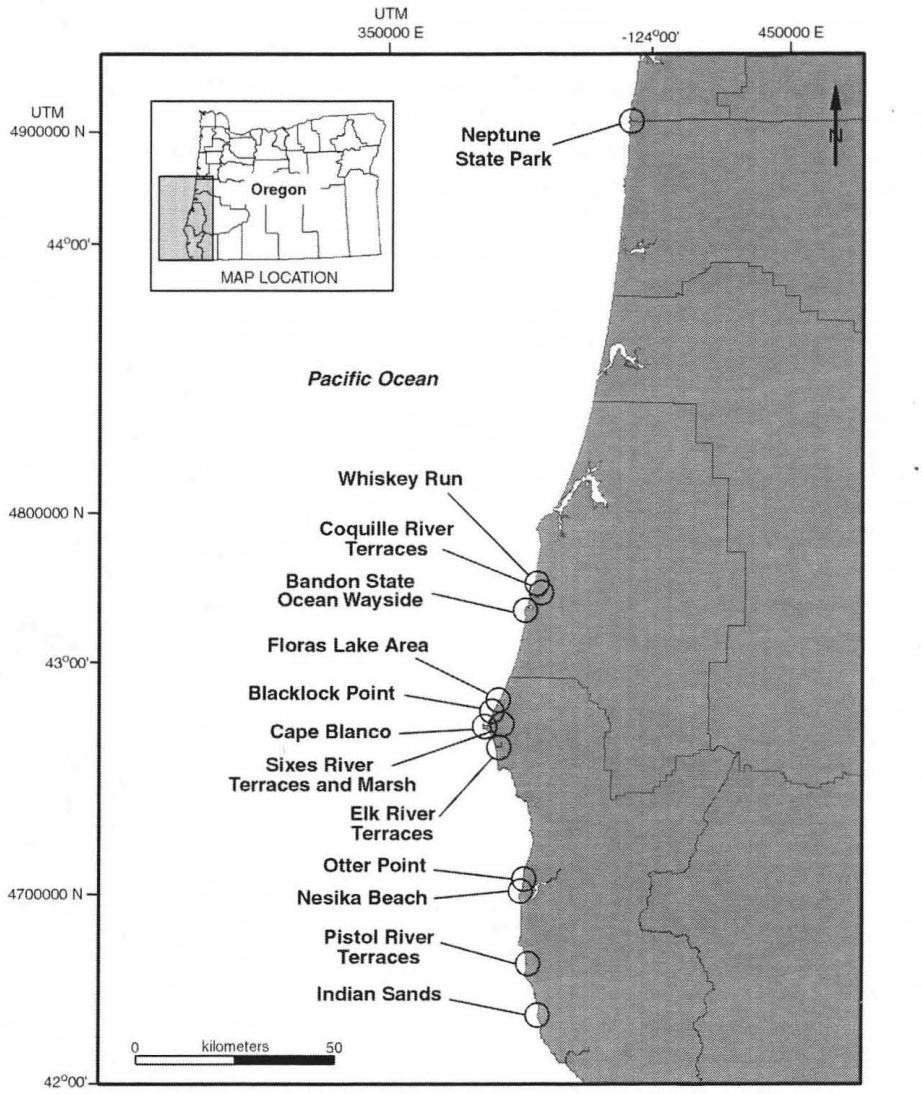

Figure 1: Locations from which samples for soil analyses or for radiocarbon or TL dating have been taken.

aspects of our research are described on our Web site: http://www.osu.orst.edu/dept/anthropology/SeaGrantWeb/index.html.

Among the issues our project addresses are the antiquity of maritime traditions on the North American Pacific coast, the possibility of an early coastal migration, explanations for the paucity of old sites on the Oregon coast, and methodologies used to locate sites of the Late Pleistocene or Early Holocene. Archaeological work in Alaska and British Columbia (for example, Dixon 1999, Mandryk et al. 2001, and Carlson and Dalla Bona 1996) has challenged the long-held premise that coastal people coast came from inland areas and only very slowly learned to use ocean-based resources. The paucity of sites more than 6,000 years old in coastal Oregon compared with the abundance of sites under 3,000 years old may be explained by the geologic dynamism that includes inundation due to rising sea level, burying by alluvial or dune deposits, and erosion, along with the possibility that such sites simply did not exist or were very few in number. Along the Oregon coast several major obstacles stand in the way of finding old sediments and old archaeological sites. Whereas recent coastal sites tend to be identified by their shell middens (which change the pH from acidic to mildly alkaline and thus help to preserve faunal remains), older sites likely would have been associated with a shoreline now under the sea well west of Oregon's current coastline. Any sites on the current coast that date to more than 10,000 years ago are not likely to have any shell because they would have been too far from a source of shellfish. Because it is also unlikely that such sites would look like recent sites, we believe that there is a substantial risk that even though they exist they will not be discovered. Methods based simply on surface surveys do not take into account these landscape changes that reflect the coast's dynamic history in the Holocene; different methods of discovery are required to locate older sites (Hall et al. 2002).

Methods and Materials

To respond to these challenges, in 1999 we proposed and subsequently embarked upon an interdisciplinary approach emphasizing Geographic Information Systems (GIS) data and analysis along with stratigraphic investigations in advance of archaeological fieldwork. This contrasts with the age-old approach that we can crudely characterize as "Wander around; find stuff, then interpret it." We developed maps integrating all available geologic and soils information and used these to prepare models based on known patterns of human settlement and resource use (Punke 2001). Data of interest include bathymetric observations as well as current and past locations of coastal river valleys. We reasoned that coastal foragers of the Late Pleistocene may have moved up rivers or streams and into river valleys. We followed the GIS studies by field surveys of the coast and river valleys and included soils analyses as well as dating of sediments, using radiocarbon and thermoluminescence tests, with the goal of understanding the stratigraphy in key areas and the dynamic forces responsible for them. While we primarily tested public lands managed by Oregon State Parks, the US Forest Service, US Fish and Wildlife, and the US Bureau of Land Management, we also were given access to several privately owned properties (Figure 1). Data from all of these investigations will be integrated in future analyses that we believe will suggest new understandings of site development processes on the Oregon coast.

As we sought early landform features we began to learn how much the Oregon coast had changed through time and what these changes might mean for our study. For example, we discovered relict, uplifted peats and remnants of now-dry stream channels that consistently dated younger than 2,000 years BP. During archaeological testing of a site near Bandon, Oregon (35CS9) our work revealed that the combined effects of dune migration and bedrock uplift could work in concert to shift the position of coastal streams and thus affect the sites available for settlement by hunter-gatherers in different time periods. Farther south, work at the Indian Sands site revealed that some coastal headlands still retained dunes and soils of the age that we sought. The decision

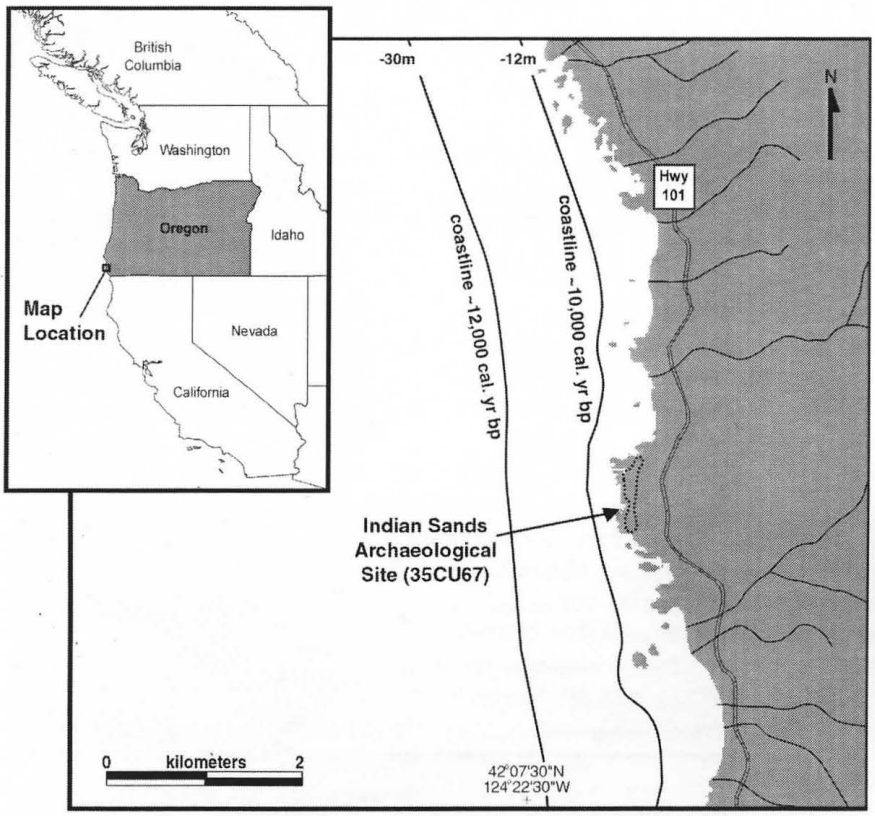

Figure 2: Shoreline near Indian Sands and reconstructions at 10,000 Cal. BP and 12,000 Cal. BP.

to test a soil horizon that was bounded above by Early Holocene dates and below by Late Pleistocene dates led to our discovery of a 10,430 BP occupation. The concordance of archaeological, geographic, geologic, and soils science methods directly resulted in success at Indian Sands.

Cultural Materials

Recovery of a small lithic assemblage from the 10,430 BP level at Indian Sands has offered a valuable perspective on an otherwise unknown period of prehistory of our region. Preliminary analysis by graduate student Sam Willis indicates that the tools are primarily in late stage reduction. Of the 136 lithic pieces from test units at Indian Sands, most are very small - less than 2 cm - and are made of chert (probably local chert as there are outcrops nearby). There also are significant numbers of obsidian pieces that originated from volcanic deposits northeast of Klamath Falls, Oregon, and the Medicine Lake basin in northeastern California (Craig Skinner, personal communication 2002). Both of these obsidian sources are well known to students of obsidian technology in the region and they suggest that the Late Pleistocene settlement of which we have found evidence had a long enough or secure enough occupation for its members to be involved in regional trade or resource-gathering traditions. Lithic studies will add to our understanding of how the site was used as well as information concerning the cultural ecology of the people who used Indian Sands.

Discussion

Our methods and goals are similar to those of some British Columbian projects. For example, Daryl Fedje and colleagues in Haida Gwaii have developed considerable data concerning sea-land relationships at the end of the Pleistocene, data that have allowed them to understand site formation and preservation processes of some known sites and to identify areas to seek other early sites (Fedje 1993; Fedje et al. 2001). While some methods and analyses overlap between the areas, different approaches stem from differences in glaciation history. Some coastal sites in the Queen Charlotte Islands that were inundated in the Pleistocene have re-emerged due to isostatic rebound of land that had been depressed by the weight of glacial ice, but Oregon has no glacial history and Oregon beaches of the Late Pleistocene have remained under the sea. Whereas British Columbia's glacial-sculpted coastline features many protected, resource-rich inlets and estuaries that have fostered large populations and complex societies, the Oregon coastline is almost totally unsheltered from dynamic forces of sea and storm. Nonetheless, we believe it is important to map coastlines and river channels as they existed in the Late Pleistocene because these data can help us locate sites on the existing coast as well as understand better the coastal environment faced by earlier peoples.

Using bathymetric data from the National Oceanic and Atmospheric Administration (GEODAS 1998) and global sea level estimates at the time of the Pleistocene-Holocene transition (Fleming et al. 1998) we reconstructed paleoshoreline locations for the Indian Sands vicinity (Figure 2). At the time of the earliest known occupation at Indian Sands, the shoreline was between 1 and 1.5 km west of the site; 2,000 years later it was less than 0.5 km away. These reconstructions are congruent with the cultural assemblages at the site, for example, and suggest why the deepest level contains lithics but lacks shell, while culturally-altered shell provided the basis for dating deposits on the deflated surface to 2,000 years later (Moss and Erlandson 1999). (See Davis et al. for a detailed discussion of the geoarchaeological work and the excavation at the site.)

Future Work

Our project to find sites and understand the ecology of the earliest coastal settlers in Oregon has only completed its first phase. We propose to do additional test excavations at the Indian Sands site in June, 2003; further study of chert and obsidian artifacts and technology; application of existing paleoecological data and environmental reconstructions based on ocean and fresh-water cores (Pisias et al. 2001; Grigg and Whitlock 1998); and collection and analysis of additional geological and paleoecological data on the southern Oregon coast. These approaches will help us understand the human and cultural ecology of Oregon's earliest coastal people. By integrating Oregon's earliest sites into the regional framework of the Pacific coast, we may also help to answer questions investigated by archaeologists in British Columbia concerning the chronology and patterns of early migrations and settlements in the Americas.

Acknowledgments

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