Chapter IV

LATE PREHISTORIC HUMAN ECOLOGY AT LAKE CAHUILLA

In this chapter we shall examine the ecology of lakeside adaptation in Coachella Valley at prehistoric Lake Cahuilla during its most recent high stand. The data to be considered are drawn from analysis of human coprolites and midden deposits obtained in shoreline campsites at the Myoma Dunes near present Indio; at Wadi Beadmaker, a fishing site in the Dos Palmas embayment on the northeast shore; at the Bat Caves Buttes, a former island off the northeast shore of Lake Cahuilla; and at Travertine Rock, a small islet near the west shore, just west of the present Salton Sea (Fig. 3).

1. THE MYOMA DUNES

At the northwest end of Lake Cahuilla, bordering the former shoreline and stretching from the vicinity of present La Quinta to well northwest of the town of Indio, a distance of nearly ten miles, is a region of accumulated sand derived from the Whitewater River drainage in the upper Coachella Valley. Mounded dunes lacking slip faces apparently were formed by deposition among mesquite (*Prosopis glandulosa*) thickets that grew in response to the high water table during the recent stands of Lake Cahuilla. The mesquite continued to crown out of the tops of the dunes as they gradually rose to heights of up to 35 or 40 feet. Many of the mesquite thickets that crown these dunes have ring-shaped growth patterns many yards across. They are probably clones, arisen from a single plant, and if so, are not less than 500 years old. There are also interdune basins with elevations of less than +42 feet, the level of the last stand of Lake Cahuilla. These evidently contained water during the recent lake stand. The +42 foot contour winds along the easterly side of the dune field and represents the actual former shoreline. The gradient of the floor of Coachella Valley in this region is quite gradual, and the undulating shoreline and adjacent shallows was the scene of a rather extensive Freshwater Marsh plant community (Figs. 3, 13, 16).

Reconnaissance in the dunes revealed an almost continuous belt of archaeological sites, including shallow middens of *Anodonta* shells, vast scatters of ceramic sherds, burned rocks, and other artifacts, and bones of birds, fish, and other animals. These remains are normally buried within the dunes, but where the anchoring mesquite cover has died, or where the wind has cut into the deposits, the materials are exposed on the surface to be sandblasted into fragments with each new storm. The northwest faces of the dunes are most susceptible to such deflation because of the direction of the prevailing wind, and many of these deflating surfaces show abundant evidence of former occupation. Sometimes when the wind blows strongly from another direction, as, for example, from the southeast, sites which normally are immense scatters of artifacts and

food remains are completely covered with sand and the opposite slopes of the dunes show the only evidence of former occupation. Thus, archaeological reconnaissance in this region is to some extent a hit-or-miss venture, depending on which way the winds have recently blown.

Since all the heavier materials exposed by deflation of the dunes settle to a common level, items of various ages occur together on the same deflated surface. Despite this fact, ceramics, shell artifacts, and occasional small projectile points of the Cottonwood and Deser Side-notched series date most of the exposed materials to about A.D. 900 or later. Occasionally items are seen which apparently date to earlier stands of Lake Cahuilla, but there is the growing conviction that the main sand deposits formed along and just back from the shore of the lake during the recent lacustral intervals. By locating cultural deposits in the process of deflation, materials relevant to a particular time plane can sometimes be obtained. Attention for this study focused on the Myoma Dunes, a locality just north of the former railway siding of Myoma. This is in turn just northeast of the present Bermuda Dunes Airport.

The Myoma Dunes locality was largely destroyed a few years ago in the course of highway construction. Some of the main dunes bearing cultural material were simply hauled away to be used for road fill. What remains today is but a remnant of a vast occupation zone. Several substantial shell middens and a bed of paired valves representing clam beds stranded by the receding lake were also destroyed. It was at the Myoma Dunes that a deposit of human coprolites was exposed where the mesquite had been removed. Further search disclosed several other such deposits.

The largest coprolite bed, a prehistoric latrine or refuse mound designated Bed A, was visited repeatedly for a period of several years and specimens collected following wind storms. Excavations with trowel and brush also produced large numbers of coprolites, but many of them were simply collected from the surface of the deposit as they were gently exposed by wind. In all, upwards of a thousand specimens were collected from an area about four yards across. The deposit had undergone some decomposition and the majority of the coprolites it contained were too friable to recover. Control stakes set in the deposit indicated that it deflated about two feet or more during the period in which coprolites were collected. At this writing, the deposit slowly continues to deflate, yielding additional specimens.

Coprolite beds B and D were discovered soon after they were exposed on the surface and were excavated in their entirety, yielding about 30 and 50 specimens, respectively. These letter designations are merely labels. They do not imply any stratigraphic position with respect to one another. An attempt was made to date the coprolite deposits by the radiocarbon method, with generally unsatisfactory results, as discussed in the previous chapter. The deposits are probably all of about the same age and are thought to date to some portion of the latest stand of Lake Cahuilla.

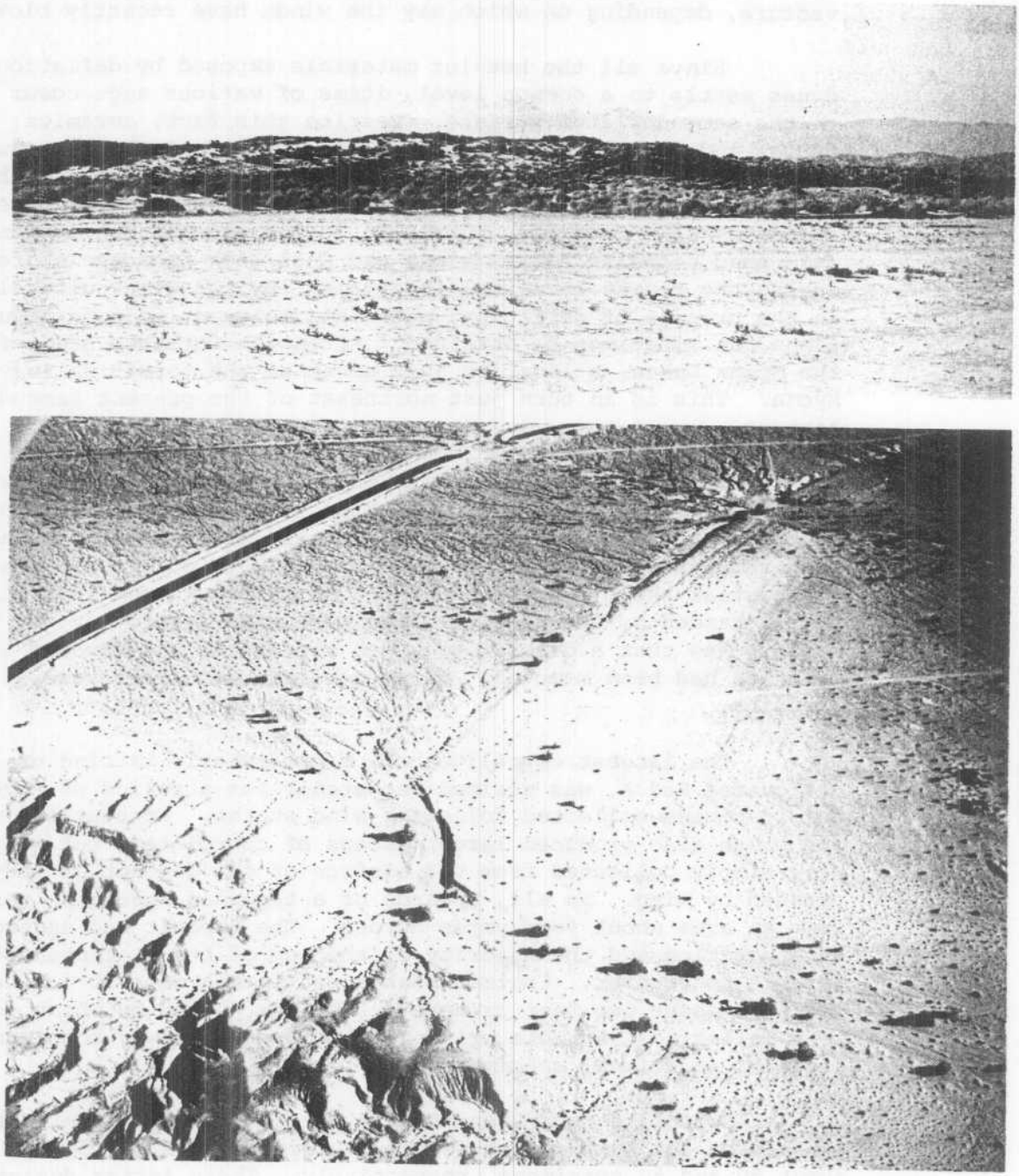

Fig. 16. Views of archaeological sites. Upper: view northwest from the bed of Lake Cahuilla showing the Myoma Dunes and location atop the dune of Coprolite Bed A. Lower: aerial view of Wadi Beadmaker. The site is located on the beach remnant between dissected mesa and Orocopia Wash in lower foreground. Coachella branch of the All American Canal at upper left.

Coprolites are perishable material and have seldom been recovered in open sites north of Peru. The fact that they are preserved at all in the Salton Basin makes the region an important one for research.

ANALYSIS OF COPROLITES FROM MYOMA DUNES BED A

Coprolites as a Source of Dietary and Paleoecological Information

Human coprolites contain the most complete archaeological record available on prehistoric dietary patterns. In recent years, analyses of coprolites, particularly from dry cave deposits, have yielded abundant evidence detailing the food habits and living conditions of the prehistoric inhabitants of specific regions in the arid western states. Specialized studies reveal the pollen content of coprolites and offer clues to the season of occupation represented at specific sites as well as information on prehistoric environments. It is even possible to recover evidence of endoparasites that afflicted human populations, and the history of such infestations has been worked out in detail for some regions, with the oldest evidence for the New World dating back as much as 10,000 years The abundant literature on coprolite analysis has been summarized elsewhere (Wilke and Hall 1975).

In the Arid West, studies have been conducted on material from pueblo ruins in Colorado, Utah, and Arizona (e.g., Fry and Hall 1973, Rohn 1971; Callen and Martin 1969). These analyses show the importance of both wild plant and animal foods and also cultivated plants in the diet. A series of samples spanning the greater part of the last 10,000 years has been analyzed from Danger, Juke Box, and Hogup caves on the margins of the inhospitable Bonneville Desert of western Utah (Fry 1970). These samples show the long-term reliance on such items as pickleweed (*Allenrolfea occidentalis*) seed, pronghorn antelope (*Antilocapra americana*), and other arid lands resources in this region, but the diet represented apparently reflects only the seasonal autumn occupation of the sites in question. One of the most ambitious coprolite research projects ever undertaken focused on caves overlooking former shallow lakes and marshes in the Humboldt and Carson sinks of west-central Nevada (Napton 1969, 1970; Heizer and Napton 1970). Coprolites from Lovelock, Humboldt, and Hidden caves show that the aborigines of this region relied heavily on bulrush (*Scirpus*), cattail (*Typha*), and other aquatic plants, as well as fish of several species, aquatic birds, and other wetlands resources. There is also reason to believe that a year round diet is represented in the deposits of the caves and nearby open sites, and that the pattern of lake margin and marsh exploitation began in the western Great Basin as early as 2500 B.C. The pattern persisted with increasing intensity until it was destroyed by white intrusion in the nineteenth century.

Except for a few samples from historic deposits in Bamert Cave, Amador County (Nissen 1973), no coprolites have been analyzed from archaeological sites in California.

Analysis

The coprolites from Lake Cahuilla were analyzed to recover information on aboriginal human ecological conditions, as outlined in Chapter I. Analysis followed essentially the method of Callen and Cameron (1960). The procedure employed is outlined in Appendix A. Identified components of each coprolite were coded on edge-punched cards to facilitate data interpretation.

A total of 77 coprolites was analyzed from Bed A at the Myoma Dunes. Initially, 27 specimens were rehydrated and separated into dietary components in the context of a laboratory class on aboriginal diet reconstruction, conducted by Richard Ambro at the University of California, Riverside. An additional 50 samples were later analyzed. The coprolites were in most cases single, well-formed specimens (Fig. 17). A few consisted of several fragments considered at the time of collection to represent a single coprolite. This may have introduced a slight error in terms of the components represented in several samples (e.g., samples MDA-14, MDA-23), but it would not affect the overall diet represented in the archaeologial deposit. Nine samples from Bed A were analyzed by Eugene Hattori (1975) for pollen content. Inasmuch as the coprolites were recovered from a definite latrine deposit only about four yards across, they are probably all of human origin.

CONSTITUENTS OF COPROLITES FROM BED A

A variety of dietary elements, both plant and animal, was recovered from the coprolites analyzed from Bed A. These are described below, together with brief discussions of the nature of the material in each category, relative importance in the aboriginal diet as reflected in the number of samples in which a given item occurred, probable season of acquisition, and use by aboriginal groups in other regions. Floral remains are treated first, followed by faunal remains. A complete listing of all components identified from each sample appears in Appendix B.

Floral Remains

Bulrush (*Scirpus* spp.). Seeds identified as hardstem bulrush, also known as tule, or great bulrush (*Scirpus acutus*) (Fig. 18), occurred in 16 (21%) of the 77 samples. The seeds were both whole and fragmentary, but were not heavily milled, and may not have been milled at all. In most cases, they gave the appearance of having been parched, an observation also noted on the material from Lovelock Cave, Nevada (Napton 1970:306), where bulrush seeds of this species and of *S. robustus* were among the most important dietary elements. Apparently the seeds in the Myoma Dunes samples were parched in basketry or ceramic trays by shaking or swirling them around with live coals, a practice that occurred widely across western North America. Charcoal fragments occurred in all but two of the samples containing the seeds of hardstem bulrush. This bulrush is one of the conspicuous plants of freshwater marshes, sometimes forming immense stands of more than 15 feet in height.

Seeds of the softstem bulrush (*Scirpus validus*) (Fig. 18) were also a common element in coprolites from Bed A. The seed was present