Chapter II

ABORIGINAL ENVIRONMENTS OF COACHELLA VALLEY

Coachella Valley includes a broad range of biotic zones and habi-
ats ranging from coniferous forests high on the Peninsular Range to
rid plains with drought- and salt-tolerant plants on the desert floor.
n addition, the various stands of Lake Cahuilla offered a variety of
quatic plant and animal resources. The present biotic diversity of the
alley is a result of complex climatic and edaphic factors, which in turn
ave been shaped by the geological history and structure of the Salton
asin. The following pages describe briefly the environmental setting
f Coachella Valley and the way in which it changed over the last millen-
um. Since a very important part of the past environment of the valley
as been the various stands of Lake Cahuilla, which covered the floor of
he whole Salton Basin, it is necessary to review the recent history of
he lake with reference to the entire basin and the Colorado Delta.

GEOLOGIC HISTORY

Sometimes called the Cahuilla Basin or the Salton Trough, the
alton Basin is a northwestern landward continuation of the Gulf of Cali-
ornia rift. This structural trough was formed by gradual subsidence
oincident with the uplift of the surrounding mountains during the Mio-
ene, Pliocene, and Pleistocene (Dibblee 1954; Hamilton 1961). There is
vidence in the form of raised Pleistocene and Holocene shorelines (Stan-
ey 1962, 1965, personal correspondence) and active fault zones which
ndicates that the crustal movements which formed the trough are still
oing on (see Elders *et al.* 1972). During mid-Pleistocene time, sediments
oded from the Colorado Plateau were deposited in the Colorado River
elta in sufficient volume to form a great natural dam across the trough
owns and Woodward 1961). The delta thus forms a low divide between
e basin and the Gulf of California, with the minimum elevation of the
lta variously reported to be about 40-47 feet above sea level (Arnal
61:445; Van de Kamp 1973).

Lake Cahuilla stood many times in the Salton Basin during the last
veral tens of thousands of years (Hubbs, Bien, and Suess 1965:89-90).
st or all of these lake stands since at least the late Pleistocene were
fresh water, formed by inflow of the Colorado River for extended per-
ds of time. However, the number of lake stands and their duration dur-
g the Holocene alone has not been determined. Between lake stands the
sin was dry, or visited but briefly by ephemeral lakes. Shells of mar-
e molluscs only several thousand years old occur in the basin, but
ese are found at very low elevations and probably indicate highly saline
nditions during advanced stages of recession of freshwater lakes, rather
an actual marine conditions (Van de Kamp 1973:841-844). The most recent
and of Lake Cahuilla is generally considered to have begun not more than
00 years ago and to have ended 400-500 years ago (Rogers 1939:4).

GEOGRAPHIC FEATURES

From the Colorado Delta the floor of the Salton Basin dips to at least 273 feet below mean sea level in the Salton Sink, then gradually narrows and rises along the axis of Coachella Valley to 2580 feet at the summit of San Gorgonio Pass 150 miles to the northwest (Fig. 3). The drainage is about 75 miles in maximum width, although the floor of the depression averages only about 20 miles wide. Coachella and Imperial valleys comprise the northern and southern portions of the basin, respectively. These valleys are today separated by the Salton Sea, which occupies the Salton Sink, the lowest part of the basin. This body of water was formed in the interval 1905-07, when the Colorado River was accidentally diverted into the basin. It survives today as a sump into which waste water from irrigation is constantly channelled.

The Coachella Valley is bordered on the west by the San Jacinto and Santa Rosa mountains, which form the prominent ridge of the northern Peninsular Range. These mountains reach elevations of from 6000 to more than 10,000 feet and cause a pronounced rainshadow effect in the valley. To the north and east, the most prominent topographic features are the Little San Bernardino, Cottonwood, Eagle, Orocopia, and Chocolate mountains. The first of these are merely continuations of the Transverse Range of southern California, and are high enough to support an open Pinyon-Juniper Woodland plant community, while the latter two are exceedingly arid and desolate, with only the sparsest cover of scrub vegetation. The Indio and Mecca hills, badlands of uplifted Miocene (?) and Pliocene sediments (Buwalda and Stanton 1930), rise along the San Andreas fault zone on the immediate northeast flank of Coachella Valley.

Precipitation is sparse enough in the Salton Basin that in aboriginal times no active streams habitually flowed all the way to the playa in the Salton Sink. Even today, waters that reach the foot of the mountains quickly sink in the porous detrital outwash at the mouths of desert canyons. It is probable that runoff from the surrounding mountains collected in the sink only rarely, in times of very severe thunderstorms.

The Whitewater River drains the eastern slope of the San Bernardino Mountains. It is the largest perennial stream that entered the Salton Basin in aboriginal times. The waters of this stream sink at the eastern entrance to San Gorgonio Pass, rarely flowing more than a mile or two after entering the upper Coachella Valley. A few small creeks also rise high on the desert slope of the Peninsular Range. Most notable of these are Snow, Chino, Tahquitz, and Andreas creeks, all of which rise high in the San Jacinto Mountains. These streams descend into the eastern entrance to San Gorgonio Pass and the upper end of Coachella Valley. In historic time, Cahuilla Indian settlements were located at the various canyon mouths where water was available, and also at springs and shallow wells dug to the water table in the lower valley.

A number of large washes enters the Coachella Valley from the north and east. The larger of these include Salt Creek, and Berdoo, Fargo, and Box canyons. These washes are visited but occasionally by ephemeral streams whose sometimes violent flow is measurable only in minutes or hours, and are thus of no consequence as dependable water sources. But the washes served the important function of providing access to and from the adjacent uplands.

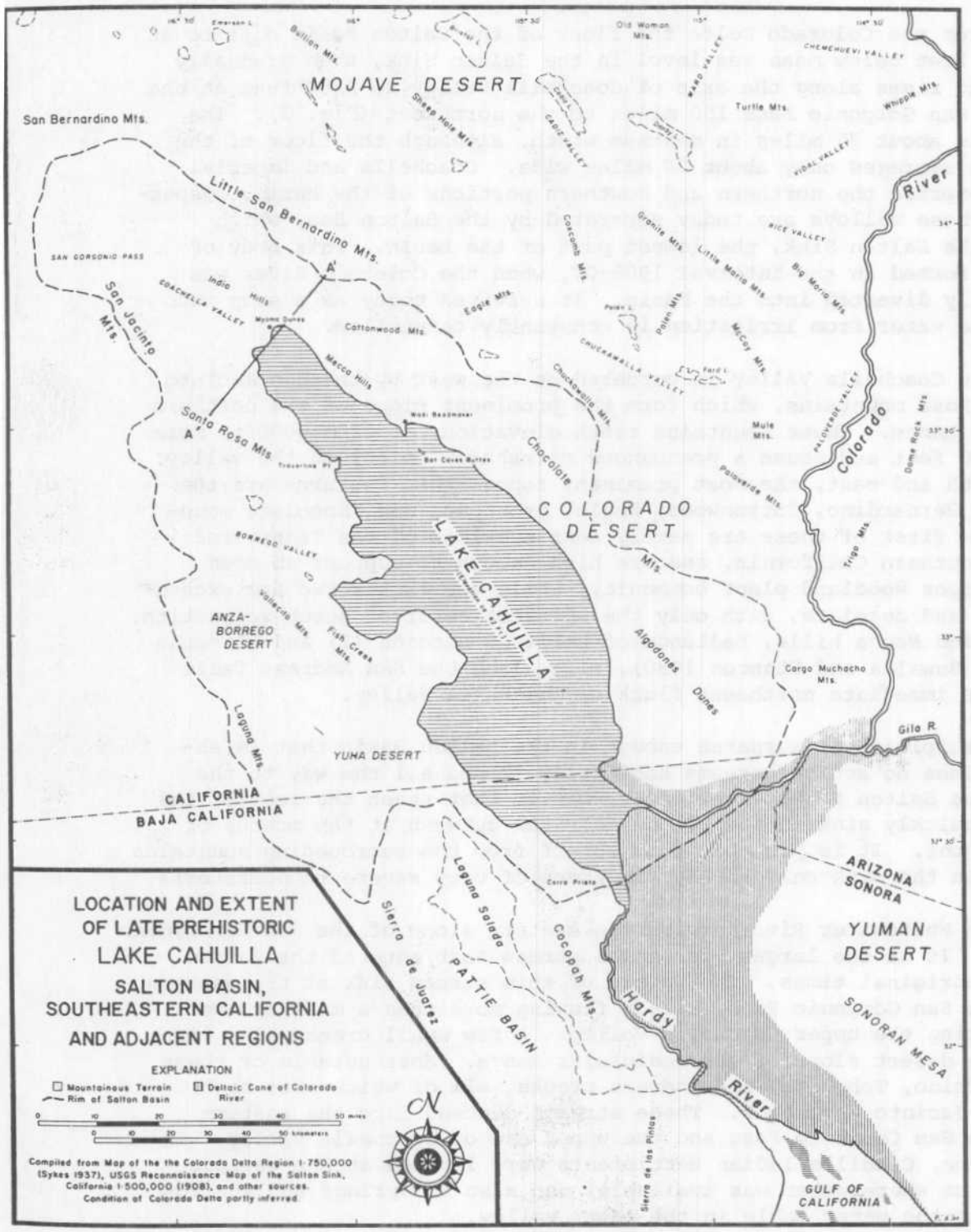

Fig. 3. The Salton Basin of southeastern California, and location and extent of late prehistoric Lake Cahuilla. Section A-A' marks location of vegetation transect shown in Fig. 13.