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# Patterns of Demographic Change in the Missions of Central Alta California

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**T**HE debate over the consequences of the "Columbian Exchange," the biological interaction between Eurasia and the Americas, has generated a number of interpretations of one aspect of the biological interaction, namely the demographic decline of the Indian populations in the New World following sustained contact with European populations. Discussion has focused on the causes of demographic collapse, and the issues that seem the most controversial: the size of Indian populations at first contact with Europeans; and the degree of decline in the Indian populations.<sup>1</sup> The lines of the debate have been clearly established, and the question of contact population size and the degree of contraction will be answered only with an increase in the number of regional and sub-regional studies to establish a broader data base, and serve as a point of departure from which to compare patterns of demographic change in different regions.

The Californias serve as an ideal example of Indian demographic collapse during the course of the late eighteenth to early nineteenth centuries. The mission, when selected as the basic unit of analysis, has certain advantages. Documentary sources, for example, are relatively good, and include sacramental registers of baptisms, burials, and marriages, and censuses and reports that record population levels. The diversity of the sources allows for a broad range of analyses, but they do not include a discussion of the age structure of the population. Nevertheless, the available sources do enable a broad discussion of the causes and degree of demographic change.

A number of scholars have examined the cause of demographic collapse in the Californias, and have included stress, disease, and subsistence crises among their explanations.<sup>2</sup> This essay does not attempt to explain in detail the causes of demographic change, but rather to document population movements in the seven missions in central Alta California, from Santa Cruz in the north to San Luis Obispo in the south. The basic premise entertained here is that the process of demographic change in the Californias can best be examined on the basis of detailed studies of discrete subregions which for cultural, geographical, or historical reasons manifested similarities in the development of mission communities and patterns of demographic change.<sup>3</sup> This paper, then, explores demographic change in the seven mission communities, contributing to the growing literature on Indian demographic change in the Americas.

## DEMOGRAPHIC ANALYSIS OF INDIAN POPULATIONS

Any demographic study of a preindustrial society and a New World Indian population has a number of inherent methodological weaknesses which must be addressed and, if possible, compensated for. One issue largely limited to the New World is the size of Indian populations at the time of the first sustained contact with Europeans. A discussion of contact population sizes is useful as a base from which to estimate the degree of population loss that occurred. Moreover, an understanding of demographic trends following the Spanish conquest is vital for an

understanding of the evolution of patterns of land tenure and use, systems of labor exploitation, and administration (see, for example, Chevalier [1963] and Gibson [1964]). Furthermore, the way in which one perceives the complexity of pre-Hispanic Indian civilization in the core areas of Spanish America and the impact of Spanish conquest can reflect resulting population estimates. Advocates of low contact estimates, such as the late Angél Rosenblat, minimize the impact of Spanish conquest and the resulting population loss, and tend to favor a description of low levels of social and political development in the Americas prior to the arrival of the Spaniards. Low population estimates also figure into the "white legend," a strand of historical analysis that developed in Spain and that attempts to minimize the impact of the Conquest on the Indian populations, especially the degree of demographic collapse. An assumption of low levels of population loss is in turn used as evidence of the mildness of Spanish colonial rule (see, for example, Sánchez-Albornoz [1974] and Denevan [1976]).

With the higher population estimates it is easier to conceptualize more complex Indian societies and drastic decline following the Conquest. In the case of central Mexico, the scenario of drastic Indian population decline seems to fit into the general pattern of the evolution of land tenure and use, and labor. In the coastal lowlands, the Indian populations disappeared rapidly, and African slaves were imported to supply labor for large-scale sugar and cotton production. In the highlands, on the other hand, the rate of Indian population decline was not as great as on the coast, but did contribute to change in land and labor. Population decline between 1521 and 1550 forced a transition from the inefficient use of abundant labor that characterized the *encomienda* to the rationing of a declining labor supply through

the *repartimiento*, a labor draft. By the early seventeenth century the Indian population had declined to the point that *repartimiento* became dysfunctional as a system of organizing labor. Land use patterns shifted from the intensive exploitation that characterized pre-Hispanic agriculture to more extensive land use with the grazing of livestock and the introduction of Mediterranean agriculture. As the Indian population contracted, land became available for the development of haciendas and livestock *estancias* (Chevalier 1963; Gibson 1964).

The first estimates of native populations at contact, by researchers like James Mooney and Alfred Kroeber, were conditioned in part by the level of Indian civilization, and also by first-hand experience in the early twentieth century with the remnants of Indian societies in the United States (Denevan 1976). In recent years, as scholars have taken a closer look at the historical record, the estimates of contact population levels have grown. Estimates, however, are careful guesses which in no way can be considered precise. The standard practice has been to establish a range of low and high estimates.

Scholars have used different methods to calculate estimates, but all such estimates usually require making generalizations that eliminate any sense of local variation. Cook and Simpson (1948) and Cook and Borah (1960a, 1960b, 1963) used tribute records and other sources to calculate the population of central Mexico in 1519. The trick was to find a multiplier to equate tribute with population, which required, in part, establishing the monetary value of tribute (Cook and Borah 1971-79, I:73-118). Other methods have included calculating carrying capacity, interpreting the complexity of settlement patterns from archaeological evidence of settlement patterns and a notion of the size of settlements, and calculating the ratio of baptisms to population. Meigs (1935), Aschmann

(1959), and Cook (1976a) used multipliers to calculate the population from the total number of baptisms of local Indians in a mission district or the maximum recorded mission population. This method is based on the assumption that all local Indians entered the record of vital statistics, and that the multiplier can give a figure that approximates the size of the local population.

One final method is the "disease mortality model" that assumes estimates of the mortality of historical populations can be used to calculate the degree of population loss from epidemics. These estimates are, in turn, used to project backwards to a base population from the recorded nadir of the population. The disease mortality model used for example by Dobyns (1983) and Cook (1981) is based on two unsustainable assumptions: that the mortality rates of epidemics are uniform over space, and that the actual nadir of the population has been identified and used in the calculation.

Because of the lack of precision with population estimates as discussed above, the study of mission demographic patterns as a reflection of general Indian demographic patterns suffers from an inherent weakness. There is currently no way to accurately establish the relationship between the mission populations and the general Indian populations. What percentage of the total Indian population in a given region entered the mission records? Since this question cannot realistically be answered, an analysis of mission demographic patterns cannot be used to discuss patterns for the general population.

A worthwhile study, however, can be made when the mission community is taken as the basic unit of analysis, and there is a certain logic to selecting the mission community. The mission as a colonial institution was modeled on the policy of *congregación* instituted in the core areas of Spanish

America in the late sixteenth century, and the Spanish goal of settling Indians in an urban polity. The whole process of acculturation and conversion to Catholicism entailed congregating Indians in mission communities and urban centers, and, as noted below, the demography of the missions was similar in many respects to preindustrial urban demography.

One question remains to be addressed: the reliability of the sources used in the reconstruction of mission demographic patterns. The primary sources are counts of mission populations recorded in annual and biennial reports prepared by the Franciscans, and the sacramental registers of baptisms, burials, and marriages. Studies of European historical demography have made the most sophisticated use of preindustrial records of vital statistics, and have discussed the limitations in the use of these records (Flinn 1981; Wrigley and Schofield 1981:15-30).

The major limitation is under-recording, both in censuses and sacramental registers. In the case of sacramental registers, the most serious under-recording occurred in the registration of newborn children, generally because of death shortly after birth, or, as was common in many situations, because of the fees charged by the presiding priest. In Europe nonconformity with a state religion also caused some children to not be listed in the baptismal record, or any other register of sacraments. Most attempted to receive church burial, but during major mortality crises the registration system frequently broke down. Church marriage was generally too expensive for the poor, and many families were established outside the church. As for censuses, most counts were prepared either for taxes or conscription for military service and, needless to say, there was a strong motive for avoiding being counted. Furthermore, in most cases the state structure was not strong enough nor the bureau-

cracy extensive or well paid enough to ensure accurate counts.

Although not precise, certain features of the Alta California mission registration system rendered the mission vital statistics somewhat more reliable than other similar contemporary records. By its very nature, the acculturation process required a degree of supervision of the Indians in order to ensure against deviation from the norms established by the Franciscans, although the degree to which the missionaries supervised the movements of the converts and exercised coercive force is under debate. The Franciscans maintained a master list of converts known as the *libro de padron*, and generally erased the names of those individuals who died or successfully fled the mission communities. The registration system, however, could not keep track of all individuals who entered the record, and some under-registration may have occurred. It has been suggested that population counts may have been inflated by the missionaries in order to exaggerate the degree of success of their enterprise. A careful examination of the population counts, which were prepared annually for most of the period of operation, and the aggregate of baptisms and burials recorded at the missions indicates that there was little if any inflation of population counts. The mission records of vital statistics (the censuses and sacramental registers) may contain some under-registration that cannot be accounted for, but they are, nevertheless, a good guide to the dynamics of population change in the mission communities.

#### PATTERNS OF GENTILE RECRUITMENT AND DEMOGRAPHIC COLLAPSE

As argued in an earlier article (Jackson 1983a), the mission populations failed to reproduce in the face of high mortality, and population levels reflected the success or

failure of the missionaries to recruit gentiles. As long as the missionaries recruited gentiles, the mission Indian communities were characterized as open populations. Once recruitment slowed or stopped, the mission communities became closed populations that received few additions from outside of the community, and the mission populations inevitably declined. A comparison can be made between the mission Indian communities in Alta California and pre-industrial cities. Both depended on migrants from the hinterland to maintain population levels in the face of chronic high mortality rates (Jackson 1983a).

Put simply, the model or explanation outlined above explains population movements in the mission Indian communities. A closer examination of patterns of recruitment and life expectancy in the missions provides a fuller explanation of the dynamics of demographic change, and especially the inability of the populations to increase through natural reproduction.

In his final and perhaps most important work on the Alta California missions, written with the eminent historian Woodrow Borah, Sherburne Cook used mission registers from eight missions to examine, among other things, the age distribution of recruits brought to the eight missions, including the seven in central Alta California. Also examined was the life expectancy in the missions of gentile recruits and Indians born at them (Cook and Borah 1971-79,III:177-311). Cook and Borah (1971-79,III:229) concluded that the survival period in the missions was low for young children, and that those baptized between age two and forty-four survived some ten to fourteen years (Cook and Borah 1971-79,III:229).

Cook and Borah (1971-79,III) calculated mean periods of survival in five of the central Alta California missions for gentiles recruited locally before 1809, and for whom

a burial record could be found: San Carlos (established 1770)--13.3 years; San Luis Obispo (established 1772)--17.4 years; Santa Cruz (established 1791)--8.6 years; San Juan Bautista (established 1797)--9.8 years; and San Miguel (established 1797)--14.9 years (Cook and Borah 1971-79,III:221-222).

Several possible explanations can be given for the difference in the periods of survival. Population densities could play a role in mortality. The population of San Luis Obispo, for example, was relatively small and was geographically isolated from other mission communities until the 1790s; isolation may have shielded it somewhat from the impact of contagious diseases. Santa Cruz mission, on the other hand, was close to a major non-Indian population center, the Villa de Branciforte, and maintained close links with other mission and non-Indian communities. Some other considerations that must be taken into account are: the density and distribution of the populations, either at the mission and surrounding villages or else concentrated at the mission; weather, diet, the type of housing, and levels of stress.

The survival rates of gentile recruits can be compared with levels of infant mortality among children born at the missions, defined here as the percentage who died between birth and age four within five-year cohorts. Rates changed over time, and are recorded in Table 1.

Patterns of mortality, especially infant and child mortality, when considered with patterns of gentile recruitment by age, go a long way toward explaining the demographic collapse in the mission communities and, incidentally, the success of the mission economy and the establishment of a colonial economic order in Alta California. Gentile recruitment occurred in two phases: recruitment of the local population from the immediate hinterland of the missions, and large-scale recruitment of Yokuts from the Central

Valley beginning about 1809. Cook and Borah (1971-79,III) extracted data on age at recruitment, differentiating between the baptisms of local gentiles and of Yokuts. The data on the local recruits seem to indicate a high-fertility, high-mortality population. Young children from birth to age nine accounted for 33.5% of all baptisms at the seven missions. The figure, however, may be biased on the side of baptisms of young children and young adults, since at some missions children were baptized first and some parents and older individuals died before entering the mission record or successfully avoided recruitment.

The case of the Yokuts from the Central Valley is somewhat different. Young children made up a smaller percentage (28%) of the total of baptisms. This may reflect a more accurate cross section of the Central Valley population, since more complete family units were brought in at the same time. The smaller number of children may also suggest the beginning of the disruption of the Yokuts population under the impact of disease and other factors, or an attempt to recruit more people of working age (generally defined as being above age ten) in order to enlarge a dwindling labor force.

The percentage of total gentile recruits by age cohorts is presented in Tables 2 and 3. The cohorts set up by Cook and Borah (1971-79,III) have been rearranged to more closely match the larger age group from which the missionaries probably expected the greatest labor inputs, the age group 10 to 49. This category frequently was used in the missions' annual reports to describe the demographic characteristics of the Indian population.

The high infant and child mortality rates created an imbalance in the age structure that, over the long run, limited the ability of the Indian populations to reproduce. Put into other words, without the influx of new

**Table 1**  
**PERCENTAGE OF CHILDREN BORN AT SELECTED CENTRAL ALTA CALIFORNIA MISSIONS WHO DIED BEFORE AGE FOUR BY FIVE-YEAR COHORTS<sup>a</sup>**

Cohort	San Luis		Santa Cruz	San Juan	
	San Carlos	Obispo		Bautista	San Miguel
1775-1779	42.4	41.0			
1780-1784	55.3	43.5			
1785-1789	36.6	46.5			
1790-1794	70.8	69.9	75.0		
1795-1799	52.3	68.3	77.8	64.7	66.7
1800-1804	24.8	61.4	79.0	69.9	61.2
1805-1809	66.7	72.5	77.2	67.0	58.8
1810-1814	60.4	60.6	62.3	67.4	47.6
1815-1819	57.1	58.9	67.8	64.2	54.8
1820-1824	63.5	58.4	57.3	68.2	48.9
1825-1829	67.6	52.0	19.6	65.6	58.3
1830-1834	16.2	65.2	24.5	27.0	54.8
Mean	52.4	59.5	60.3	61.8	54.7

<sup>a</sup> Source: Cook and Borah (1971-79,III:234-238)

**Table 2**  
**PERCENTAGE OF AGE COHORTS OF LOCAL GENTILES RECRUITED INTO THE CENTRAL ALTA CALIFORNIA MISSIONS<sup>a</sup>**

Cohort	San Carlos	San Antonio	San Luis Obispo	Santa Cruz	Soledad	San Juan Bautista
	1771-809	1771-1814	1773-1809	1719-1814	1791-1819	1797-1812
0-9	40.5	39.1	25.7	35.6	27.3	35.3
10-24	27.0	19.4	28.6	24.6	31.5	24.8
25-44	19.4	21.7	24.7	27.8	23.4	22.3
45+	13.1	19.3	21.0	11.9	17.7	17.6

<sup>a</sup> Source: Cook and Borah (1971-79,III:197-204).

**Table 3**  
**AGE DISTRIBUTION BY PERCENTAGE OF CENTRAL VALLEY YOKUT RECRUITS IN FOUR ALTA CALIFORNIA MISSIONS<sup>a</sup>**

Cohort	San Antonio	Santa Cruz	Soledad	San Juan Bautista
	1834-1838	1810-1835	1806-1835	1816-1833
0-9	7.5	19.8	23.4	30.1
10-24	58.8	43.3	33.0	25.4
25-44	23.8	28.1	32.8	31.8
45+	9.9	8.8	10.6	12.6

<sup>a</sup> Source: Cook and Borah (1971-79,III:197-204).

recruits, the pool of women capable of bearing children would be smaller with each succeeding generation until the population would face extinction. At Santa Cruz Mission, for example, a total of 1,048 children in the 0-9 cohort received baptism between 1791 and 1835, 46% of all Indian baptisms (Cook and Borah 1971-79,III:199, 234) (Table 4). Except for the first years of operation when large numbers of gentile recruits entered the mission, the 0-9 cohort comprised less than a fifth of the total mission population. The total of young children in relation to the

**Table 4**  
**PERCENTAGE OF CHILDREN OF THE 0-9 COHORT**  
**IN RELATION TO THE TOTAL INDIAN POPULATION<sup>a</sup>**

Year	Population	% of Children in 0-9 Cohort
1791	89	47
1792	158	36
1793	233	35
1794	332	27
1795	507	27
1796	523	30
1797	495	32
1798	504	24
1806	466	12
1809	499	9
1810	507	8
1811	462	6
1812	437	6
1813	398	8
1814	388	9
1815	365	10
1816	358	13
1817	408	10
1818	410	12
1819	381	13
1820	461	17
1821	519	16
1822	499	15
1823	474	17
1824	461	16
1825	429	16
1826	428	13
1827	410	15
1828	364	14
1829	333	11
1830	320	10
1831	298	11
1832	284	11

<sup>a</sup> Source: Jackson (1983a:42).

total population only increased during the two peak periods of recruitment in the early 1790s, and after 1820 with the influx of large numbers of Yokuts.

The population of girls and women faced extreme attrition in numbers, which further reduced the number of women capable of bearing children. Again, in the case of Santa Cruz Mission, 49% of all baptisms between 1791 and 1846 were of females, yet females did not make up half of the total Indian

population at the mission. The attrition in the female population over time is illustrated (Table 5) by relating the number of girls and women to the total population, and to the total of baptisms of girls and women to date. As was the case with young children, the number of females in relation to the total population increased only during periods of heavy recruitment.

The mission populations experienced a rapid turnover in people and considerable instability in social relationships with changes in marriage partners due to the death of spouses. The disruption of the Indian populations further reduced the ability of the population to increase through natural reproduction. Several Indian genealogies from Santa Cruz mission serve to highlight the point made above. From a sample of nine extended family groups, twelve men married more than once. Quirico, an Ohlone baptized in 1791, died of smallpox in 1838, and had at least four wives while he lived at the mission. Isidro, a Yokuts recruit baptized in 1816, survived until 1875, and had at least two wives. Of the twelve, two had four wives, three had three wives, and seven had at least two. Three points, however, need to be made about the sample of family groups. First, the sample was taken to reconstruct the genealogies of nine families known to have lived at Santa Cruz following secularization and at least into the 1840s, and thus is biased in that respect. Second, most of the men did not experience the longevity of Quirico and Isidro. Finally, seven women in the sample had more than one husband, but each had only two (Santa Cruz Mission Baptismal, Burial, and Marriage Registers).

The irony of the play of demographic forces at the missions was that the imbalance in the age and sex structure favored the development of the mission economy. In terms of the inputs needed to foster the



growth of the agricultural sector of the economy, technology remained static and land was abundant. Capital was invested as seed and implements, but the key input was labor. The age and sex structure placed a high percentage of the total populations within the most productive cohorts, namely the 10-49 cohort, and especially the 19-49 cohort. The mission populations had low dependency ratios, the numerical relationship between the work force and the unproductive sectors of the population, the old and very young. This situation facilitated large-scale agricultural production, limited only by the quality of the soil and availability of water, and allowed for the release of sufficient labor to tend the herds of livestock and construct the imposing building complexes which have come to symbolize the mission and Spanish-Mexican heritage in California. At the height of mission prosperity, when the Indian populations were still relatively large, the only major constraints on labor were passive resistance and large-scale flight.

#### MORTALITY AND OTHER LIMITS ON THE MISSION POPULATIONS

Conventional wisdom holds that epidemics of contagious Eurasian diseases, such as smallpox and measles, precipitated demographic collapse among the Indian populations of the Americas, and this explanation has been applied to the case of the Alta California missions. A closer examination of the historical record, however, suggests that a different explanation is necessary. An examination of the burial registers of the northern Alta California missions shows that very few contagious epidemics attacked the mission populations. Rather, it appears that chronic endemic illnesses, such as dysentery and respiratory diseases, coupled with poor sanitation in the mission communities and other factors, contributed to the heavy mor-

Table 5  
FEMALE POPULATION AT SANTA CRUZ MISSION  
RELATED TO TOTAL POPULATION, AND TO THE  
TOTAL NUMBER OF BAPTISMS TO DATE<sup>a</sup>

Year	Population	Female Population	Females as % of Population	Baptisms of Females to Date
1798	509	238	47	378
1813	398	139	35	789
1814	404	139	34	796
1820	401	175	44	950
1823	474	182	38	1,039
1824	457	184	40	1,060
1825	429	161	38	1,067
1826	428	167	39	1,087
1828	364	114	31	1,102
1832	284	87	31	1,133

<sup>a</sup> Source: Jackson (1983a).

tality rates (Cook 1976b:17-23; Jackson 1983a:36-41).

It recently was suggested (Jackson 1985) that cultural factors and the stresses of the acculturation process in the missions may have been factors in demographic collapse. This appears to have been the case with the Indian populations of the Alta California missions as well. Taylor (1979) argued that the Indian communities of central Mexico retained a strong sense of corporate identity throughout the colonial period. He also argued that village identity provided the cohesion that allowed the villagers to cope with the impact of demographic collapse and incorporation into an exploitative colonial system. In Alta California, on the other hand, the very process of acculturation loosened or broke the existing social bonds that might have facilitated the passage from Indian to loyal Spanish citizen.

Large-scale Indian flight was a second factor that contributed to the relative decline of the mission Indian populations. Fugitiveness was the most common form of Indian resistance to the mission regime, and represented the least dangerous form of protest on an open frontier. Cook (1976b:

426) argued that fugitivism was a drain on the mission populations, and estimated that up to 1834, 5,428 Indians had successfully fled from the 21 missions (Cook 1976b:426). In 1798, for example, 138 Indians fled from Santa Cruz Mission. In reporting the incident to governor Diego de Borica, Santa Cruz missionary Manuel Fernandez, O.F.M., wrote:

I tell you that the Neophytes that are presently fugitives are 46 adult males, 34 adult [females], 27 boy children 8 years [of age and] below, and 35 girl children, that together are 138 [people]. *Those that daily unite for the labors are something more than 30 to 40 men* [emphasis added] [Kimbrow et al. 1985:20].

Three months later Fernandez wrote:

Joaquin Mesa arrived with 52 of the recent fugitive Neophytes: 30 are 15 years [of age] and above, and *so above that only 14 of them half serve for work* [emphasis added] and 22 are parvulos [young children] [Kimbrow et al. 1985:20].

All of the mission communities in central Alta California experienced both small-scale and large-scale flight, although it was not a constant drain on the mission populations. By the first decades of the nineteenth century, as the missionaries began the large-scale resettlement of Yokuts and other Central Valley groups to the missions, fugitivism had become such a problem that the Spanish, and later Mexican, military organized punitive expeditions designed to recapture fugitives.

Following secularization, there was a mass exodus from the missions. Some have argued that with secularization the mission regime automatically disappeared. Our current knowledge of the actual process of secularization and the changes in the mission regime following secularization is, however, largely limited to the outlines of the actual legal process, and a sense of the degree to

which the local settlers appropriated much of the former mission lands and goods for themselves. A recent study of Santa Cruz Mission (Kimbrow et al. 1985) documents in more detail the actual workings of secularization.

Despite the legal abolition of the mission regime, local officials at Santa Cruz Mission attempted to maintain the labor system for five years, and did not complete the secularization process until 1840, when the remaining Indians were granted the status of free citizens. In the 1830s and 1840s, the incipient California elite appropriated much of the ex-mission land and goods, but some Indians did receive grants of land and buildings within the mission complexes. Although the Franciscans no longer exercised direct control over mission temporalities, they did work closely, at least in the case of Santa Cruz Mission, to maintain as much as possible the mission labor regime and the working of the mission economy (Kimbrow et al. 1985:64-69).

The loosening of the controls and the confusion that resulted from secularization, however, facilitated flight from the missions despite efforts to maintain a sense of continuity. At San Antonio, for example, 50% of the Indians living at the mission in 1832 had left by 1839; 42% left from San Juan Bautista (Jackson 1985:476-478). For Santa Cruz, we get an estimate of 9% leaving by 1840. The Indian population in the Santa Cruz area, however, did not reside in the vicinity of the former mission compound, but lived in several small villages and worked as seasonal laborers on nearby ranches. When the census was prepared in 1840, 102 Indians were found at the ex-mission (Jackson 1983a; E. Kimbro, personal communication 1986). Forty-nine percent remained at San Luis Obispo by 1839 (San Luis Obispo Baptistal and Burial Registers; California Mission Statistics, 1769-1834). In compari-

son, we can cite a figure of 60% for the five San Francisco Bay missions (Jackson 1985: 477-478).

Up to this point, two general demographic patterns in the seven central Alta California missions have been examined: first, the chronically high mortality rates, that contributed to an absolute population decline; and second, the flight from the missions, which caused a relative decline in the populations. The following are mission-by-mission case studies of population movements as related to mortality and patterns of recruitment of gentiles. The primary sources are the mission registers of baptisms and burials, population counts taken from original documents, tables of statistics abstracted from primary sources no longer extant, and published sources.

#### **San Carlos (Established 1770)**

San Carlos was established in 1770 on Monterey Bay and moved in the following year to a site in modern Carmel. The population of San Carlos Mission passed through two phases: a period of heavy recruitment of gentiles, which ended about 1809, and a transformation from an open to a closed population with the completion of gentile recruitment and a consequent decline in population (Cook and Borah 1971-79, III:201). The mission population, however, experienced sustained growth only until 1795, when a maximum recorded population of 876 was reached (San Carlos Mission Annual Reports, 1780-1796, 1797-1798, 1804-1823; California Mission Statistics, 1769-1834; Engelhardt 1973:243).

After 1795, the number of baptisms declined, and the number of gentiles recruited and births at the mission failed to match deaths. As a consequence, the mission population began a period of decline only interrupted by three years of slight growth. In 1796, there were 839 Indians living at the

mission, 533 in 1809, and 165 in 1834 on the eve of secularization. All told, the numbers had dropped by 81% in the 39 years between 1795 and 1834 (Fig. 1).<sup>4</sup> Following secularization, the remnant population dispersed, and a number of the ex-mission Indians found work on the surrounding ranches, a movement reported as early as 1827 (Engelhardt 1973:243). In 1842, 40 Indians remained at the mission, 24% of the 1834 population levels (Engelhardt 1973:248).

#### **San Antonio (Established 1771)**

San Antonio Mission experienced patterns of population movement similar to those reported at San Carlos. The missionaries stationed there actively converted gentiles from the Salinan population living in the Salinas Valley and Santa Lucia Mountains until 1810. During this period, the Franciscans baptized 2,026 gentiles and 1,354 children born at the mission, and recorded 2,270 burials, a net gain in population of 1,110. In total numbers, the population generally grew, but it fluctuated with the influx of recruits. There were 1,176 people in 1797, 1,097 in 1801, a recorded maximum of 1,296 in 1805, and 1,122 in 1810 (San Antonio Mission Baptismal and Burial Registers; San Antonio Mission Annual Reports 1775-1796, 1797-1798; Jackson 1985:471-474) (Table 6, Fig. 1).

For the next 18 years (1811-1828), the mission population was closed and received no new recruits from outside of the mission community. The net result was a rapid population loss as births failed to match deaths. During those 18 years the Franciscans recorded 763 births and 1,191 burials, and a net loss in population of 428. The population stood at 1,103 in 1811, but dropped to 710 in 1828, a decline of 36% (San Antonio Mission Baptismal and Burial Registers; Jackson 1985:471-473).

In the years after 1829 the Franciscans recruited a small number of Yokuts from the

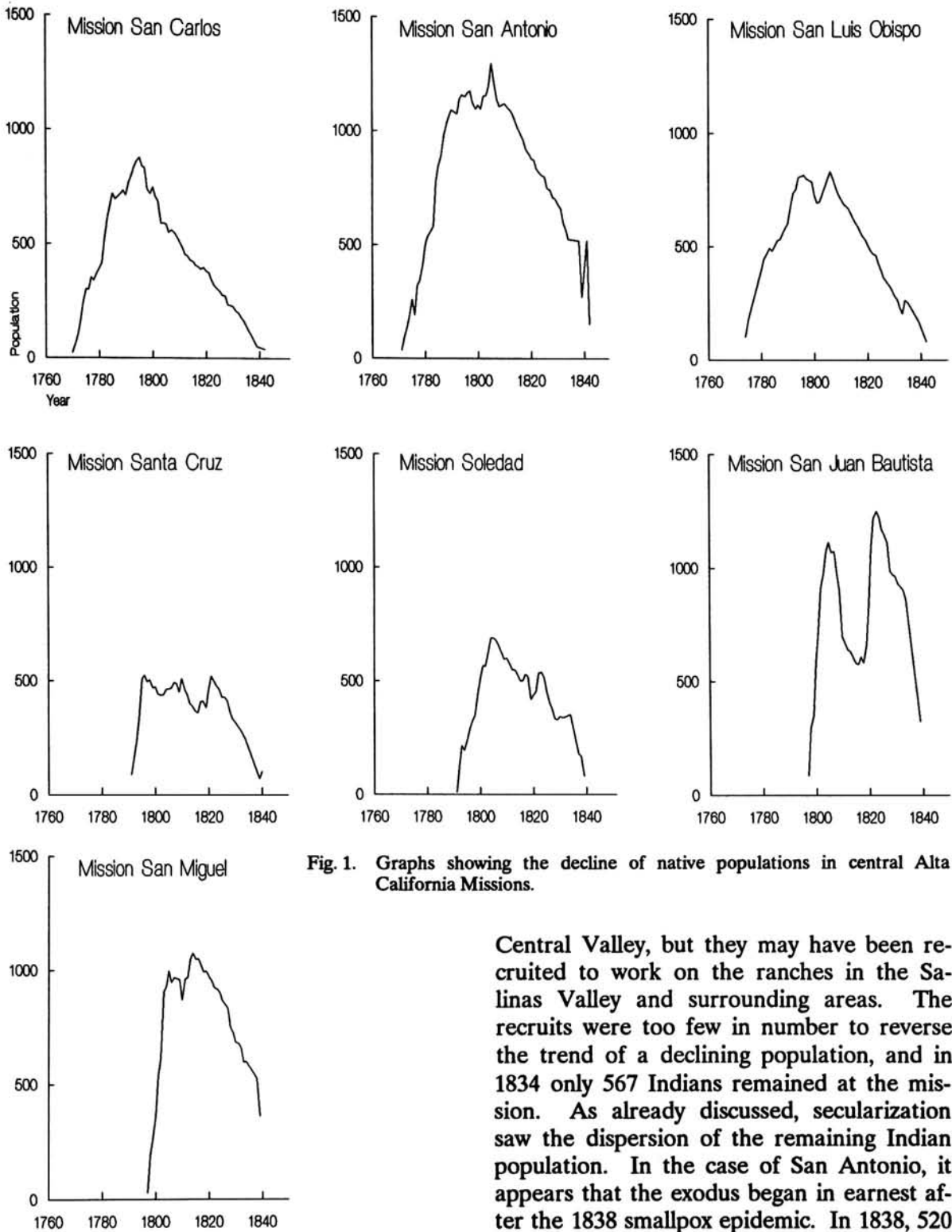


Fig. 1. Graphs showing the decline of native populations in central Alta California Missions.

Central Valley, but they may have been recruited to work on the ranches in the Salinas Valley and surrounding areas. The recruits were too few in number to reverse the trend of a declining population, and in 1834 only 567 Indians remained at the mission. As already discussed, secularization saw the dispersion of the remaining Indian population. In the case of San Antonio, it appears that the exodus began in earnest after the 1838 smallpox epidemic. In 1838, 520

Table 6  
 BAPTISMS, BURIALS AND POPULATION AT SAN ANTONIO MISSION, 1771-1840<sup>a</sup>

Year	Gentile		Excess of		Year	Gentile		Excess of		Year	Excess of		Population
	Baptisms	Burials	Baptisms	Burials		Baptisms	Burials	Baptisms	Burials		Baptisms	Burials	
1771	19	0	3	16	1807	4	52	113	57	1807	4	52	1,140
1772	16	0	3	13	1808	4	40	78	34	1808	4	40	1,108
1773	126	5	2	129	1809	9	65	68	6	1809	9	65	1,114
1774	23	7	8	22	1810	29	38	59	8	1810	29	38	1,122
1775	146	10	77	79	1811	0	59	69	20	1811	0	59	1,103
1776	64	12	22	54	1812	6	53	69	10	1812	6	53	1,093
1777	46	10	46	10	1813	0	55	73	18	1813	0	55	1,074
1778	27	11	17	21	1814	0	47	78	31	1814	0	47	1,044
1779	59	20	11	68	1815	0	45	82	37	1815	0	45	1,008
1780	70	27	14	83	1816	0	57	82	25	1816	0	57	985
1781	51	21	38	34	1817	0	41	64	23	1817	0	41	962
1782	60	24	25	59	1818	0	33	75	42	1818	0	33	922
1783	107	26	34	99	1819	0	47	67	20	1819	0	47	902
1784	88	40	46	82	1820	0	37	61	24	1820	0	37	878
1785	114	40	77	77	1821	0	37	40	3	1821	0	37	875
1786	86	47	67	66	1822	0	37	78	41	1822	0	37	834
1787	38	42	30	50	1823	0	43	60	17	1823	0	43	817
1788	47	62	45	64	1824	0	35	45	10	1824	0	35	806
1789	12	64	34	42	1825	0	42	48	6	1825	0	42	801
1790	14	70	60	24	1826	0	34	83	49	1826	0	34	751
1791	24	47	109	24	1827	0	39	53	14	1827	0	39	744
1792	13	62	51	24	1828	0	22	54	32	1828	0	22	710
1793	30	67	41	56	1829	1	24	31	6	1829	1	24	704
1794	20	49	41	28	1830	1	22	46	23	1830	1	22	681
1795	13	35	48	0	1831	0	21	41	20	1831	0	21	661
1796	28	30	51	7	1832	0	17	38	21	1832	0	17	640
1797	40	37	50	27	1833	0	20	57	37	1833	0	20	600
1798	29	44	84	11	1834	13	17	61	31	1834	13	17	567
1799	55	39	89	5	1835	5	15	35	15	1835	5	15	526
1800	27	65	79	13	1836	16	17	48	15	1836	16	17	
1801	23	44	70	3	1837	9	11	32	12	1837	9	11	
1802	78	40	135	17	1838	23	9	34	2	1838	23	9	520
1803	135	49	82	102	1839	0	14	53	39	1839	0	14	270
1804	93	27	96	24	1840	0	10	26	16	1840	0	10	
1805	137	69	94	112	1841	0	10	26		1841	0	10	
1806	22	47	153	84	1842	0	10	26		1842	0	10	150

<sup>a</sup> Sources: San Antonio Mission Baptismal and Burial Registers; California Mission Statistics, MS 1769-1834; Jackson (1985:471-472).

Indians reportedly lived at San Antonio, but in the following year Visitor-General William Hartnell counted only 270. In 1842, 150 Indians remained (California Mission Statistics, 1769-1834; Jackson 1985:471-473).

A detailed census of San Antonio prepared following secularization (ca. 1841) sheds further light on the state of the Indian population. The census, which may be incomplete, recorded a total population of 518, a population that was in flux. During the course of the preparation of the document, 50 people died, 9.7% of the censused population. Four of the deaths were at the hands of hostile gentiles, probably from the Central Valley. Six people went to San Luis Obispo with a man named Aguilar. Seventeen people married, including six widowers and seven widows (Gutierrez MS).

An examination of the actual nuclear family size clearly shows the high rates of infant and child mortality. Of 99 intact nuclear families, 45 (46%) had no children, and only 12 (12%) had more than two children. Seventy-three widowers had a mere 30 children living with them. Older children, however, may already have left the households of their parents. The unbalanced sex ratio is indicated, for example, by the nearly 3:1 ratio of widowers to widows. The difference cannot be attributed to more frequent marriages of widows (Gutierrez MS). Some recently converted Yokuts continued to live at the mission. One subcategory in the census was entitled *Pupilos e hijos de Gentiles* ("Pupils and children of Gentiles"), and 78 were included under the category, although again the tally may be incomplete (Gutierrez MS).

#### San Luis Obispo (Established 1772)

The population of San Luis Obispo Mission passed through several periods of growth and decline linked to the success of gentile recruitment (Fig. 1). Between 1772

and 1796, the Franciscans baptized 1,360 and recorded 542 burials, a net gain in population of 818. In 1796, the population of the mission was 814 (San Luis Obispo Mission Baptismal and Burial Registers; San Luis Obispo Mission Annual Reports, 1778-1796; California Mission Statistics, 1769-1834).

Over the next few years the population fluctuated. Between 1797 and 1801, the Franciscans recorded 94 more burials than baptisms, and in 1801 the population was 692. In the next three years a second surge of gentile recruitment brought the population to a figure of 961 (in 1805), although the figure seems too high. The number of baptisms decreased again, and the population dropped. From 1805 to 1833, the Franciscans baptized 565 and buried 1,222, a net loss in population of 567. In 1833, 203 Indians reportedly lived in the mission. Finally, in 1834 and 1835 the Franciscans baptized a last group of gentiles, probably from the Central Valley, but the influx of people did not dramatically offset the continuing trend of a declining population. Between 1833 and 1838, 223 Indians received baptism and 147 burials were recorded, leaving a net gain of 76. There was a slight increase in numbers as the population rose to 264 in 1834 and 253 in the following year, but then dropped to 170 in 1838 and 81 in 1842 (San Luis Obispo Mission Baptismal and Burial Registers; San Luis Obispo Annual Reports, 1778-1796; California Mission Statistics, 1769-1834).

#### Santa Cruz (Established 1791)

Demographic patterns at Santa Cruz Mission have been examined in more detail elsewhere (Jackson 1983a), and will only be summarized here. Santa Cruz missionaries recruited from among the Ohlone/Coastanoan and Yokuts, and recruitment occurred in three phases based on geographical areas: from the immediate hinterland, the area of

modern Santa Cruz County, from 1791-1801; from the intermediate coastal valleys from 1795-1813; and finally from the Central Valley Yokuts after 1810 (Jackson 1983a).

In the first six years following the establishment of the mission, the missionaries recruited from among the local population, and recorded the baptism of 691 recruits, 46 births, and 131 burials, a net gain of 606. In 1796, the population stood at 523 (Jackson 1983a).

Over the next 20 years baptisms roughly equaled burials, and the population fluctuated but experienced a general downward trend. Between 1797 and 1816, 676 gentiles received baptism (including 120 in the year 1810), and there were 231 births and 1,045 burials, leaving a net loss of 138. The population was 495 in 1797 and 507 in 1810, but had declined to 358 in 1816 before the last push of heavy Yokuts recruitment (Jackson 1983a). Between 1817 and 1821, the Franciscans recruited 290 Yokuts, a net gain in population of 194. By 1821, the population was 519, a second peak (Jackson 1983a).

After 1822, the Franciscans continued to recruit small numbers of Yokuts, but the influx of new converts was not large enough to offset the continuing high mortality rates. The Franciscans baptized 94 gentiles and recorded 180 births, but this was offset by 601 burials which left a net loss of 327. There were 499 Indians at the mission in 1822, and 238 in 1834. As already discussed above, secularization saw an exodus from the mission, and in 1840, 102 remained at the mission and some 160 in the Santa Cruz area (Table 7) (Jackson 1983a).

#### **Soledad (Established 1791)**

An analysis of population movements at Soledad Mission is limited by the absence of a burial register, but this is partially offset by the use of figures on burials from extant annual reports. The reliance on the annual

reports, however, leaves gaps in the record.

The first period of conversion of the local Salinan population and sustained population growth at the mission continued until 1805. During this period the Franciscans recruited 995 gentiles, and recorded 83 births. In 1805, the population stood at 688 (Soledad Mission Baptismal Registers; Soledad Mission Annual Reports, 1791-1796, 1797-1798).

Over the next four years, 1806-1809, the number of gentile recruits dropped, and the population declined. There were baptisms of 308 recruits and 140 births. On average, 22 gentiles entered the mission every year in this period, down from an average of 66 baptisms of gentiles in the earlier period. In 1819, 417 Indians remained at the mission (Soledad Mission Baptismal Registers; Soledad Mission Annual Reports, 1810-1819).

Between 1820 and 1823, a large number of Yokuts entered the mission, and the mission experienced a short-term growth to a population of 536 in the latter year with an excess of 98 burials over baptisms. The average number of gentile baptisms increased to 47. After 1824, though, the number of recruits dropped, and the inevitable population decline began as baptisms of gentiles and children born at the mission failed to match mortality. There were 512 Indians at the mission in 1824, 350 in 1834, and 168 in 1838 after the beginning of secularization and the dispersion of the remaining population (Table 8) (Soledad Mission Baptismal Registers; Soledad Mission Annual Reports, 1824-1832; California Mission Statistics, 1769-1834).

Problems with agriculture, the need for and limitations of irrigation, and the relatively small size of the labor force, dictated an interesting form of economic specialization at Soledad Mission. The construction of buildings was completed by 1810, and by all accounts the mission building complex was

Table 7  
BAPTISMS, BURIALS AND POPULATION AT SANTA CRUZ MISSION, 1791-1860<sup>a</sup>

Year	Gentile		Excess of		Population	Year	Gentile		Excess of		Population
	Baptisms	Births	Burials	Baptisms			Burials	Baptisms	Births	Burials	
1791	82	0	2	80	89	1818	29	21	31	19	410
1792	73	1	5	59	158	1819	0	13	48	35	381
1793	78	4	6	76	233	1820	94	19	33	80	461
1794	119	11	27	103	332	1821	98	13	31	80	519
1795	242	16	75	183	507	1822	0	20	39	19	499
1796	97	14	91	20	523	1823	10	16	53	37	474
1797	20	13	64	24	495	1824	13	16	48	19	461
1798	72	16	64	24	504	1825	1	18	51	32	429
1799	26	14	70	1	468	1826	19	12	32	1	428
1800	41	11	51	1	472	1827	1	10	29	18	410
1801	15	10	51	1	442	1828	6	10	61	45	364
1802	42	14	61	26	437	1829	7	3	41	31	333
1803	17	14	33	5	437	1830	4	12	29	23	320
1804	63	12	49	26	461	1831	1	9	33	38	298
1805	61	13	53	21	464	1832	0	7	35	8	261
1806	90	15	105	0	466	1833	2	6	16	13	238
1807	49	12	53	8	492	1834	16	12	15	13	226
1808	31	15	49	3	485	1835	3	3	19	38	160
1809	1	6	49	42	449	1836	1	4	18	1	148
1810	120	11	61	70	507	1838	4	7	49	2	113
1811	1	9	56	46	462	1839	3	5	9	1	120
1812	0	9	30	21	437	1840	0	6	8	7	110
1813	1	8	49	40	398	1841	0	6	8	37	37
1814	10	6	26	10	388	1843	0	6	8	1	160
1815	1	11	37	25	365	1845	0	6	8	1	148
1816	15	12	34	7	358	1852	0	6	8	1	113
1817	69	14	33	50	408	1860	0	6	8	2	120

<sup>a</sup> Sources: Jackson (1983); Edna Kimbro (personal communication 1986). The population figures for the period following secularization are taken from ongoing research by Edna Kimbro, and represent the number of Indians living in the Santa Cruz area and not necessarily at the former mission.



Table 8  
BAPTISMS, BURIALS AND POPULATION AT SOLEDAD MISSION, 1791-1840<sup>a</sup>

Year	Gentile			Excess of			Year	Gentile			Excess of			Population
	Baptisms	Births	Burials	Baptisms	Burials	Population		Baptisms	Births	Burials	Baptisms	Burials	Population	
1791	9	0	0	9	0	9	1816	29	10	38	1	500		
1792	64	6	6	64	6	118	1817	42	17	32	27	527		
1793	63	12	10	65	13	213	1818	12	17	39	10	519		
1794	26	10	23	13	13	193	1819	3	10	46	33	417		
1795	26	10	12	24	24	240	1820	40	14	32	22	436		
1796	59	5	17	47	47	289	1821	13	5	27	9	450		
1797	48	8	27	29	29	322	1822	124	11	55	80	532		
1798	50	19	41	28	28	345	1823	9	25	29	5	536		
1799	105	18		++	++	444	1824	0	13	35	22	512		
1800	100	18		++	++	512	1825	0	13	56	43	454		
1801	92	8		+	+	565	1826	7	9	37	21	409		
1802	69	13				563	1827	0	5	31	26	373		
1803	86	10		-	-	627	1828	3	6	52	43	333		
1804	98	7		+	+	687	1829	4	5	18	9	327		
1805	100	9		+	+	688	1830	22	5	21	6	342		
1806	67	5				679	1831	17	5	35	13	336		
1807	26	11		-	-	651	1832	22	4	26	0	339		
1808	8	5		-	-	624	1833	49	5		++	346		
1809	16	4		-	-	595	1834	38	9		+	350		
1810	43	10	52	1	1	598	1835	14	10					
1811	20	7	50		23	575	1836	16	5					
1812	15	8	51		28	549	1837	2	5					
1813	19	11	30	0	0	547	1838	3	5					
1814	0	14	36		22	531	1839	4	9					
1815	8	11	48		29	500	1840	0	3					

<sup>a</sup> Sources: Soledad Mission Baptismal Registers; Soledad Mission Annual Reports, 1791-1796, 1797-1798, 1810-1832; California Mission Statistics, 1769-1834. Those years in which changes in population levels indicated an excess of baptisms are indicated by "+", or "+ +". Those years in which the change in population indicates an excess of burials are indicated with a "-". Those years in which the number of baptisms was the same as the number of burials are indicated with a "0".

not as extensive in size as those at other sites. After 1810, existing buildings were repaired or those damaged by rains were replaced (Soledad Mission Annual Reports, 1791-1798, 1810-1832). Later reports recorded a concentration on textile production, mainly woollens, an activity ideally suited to the type of land available and the inability to initiate large-scale irrigation. The 1829 annual report, for example, noted that "the Indians have been occupied at the looms and other jobs at the Mission" (Soledad Mission Annual Report, 1829). The lands in the mission domain were better suited to livestock grazing within the context of the limitations of irrigation. Large herds of sheep, which reached between 8,000 and 9,000 head after 1810, provided the raw materials for the looms (Soledad Mission Annual Reports, 1791-1798, 1810-1832).

#### **San Juan Bautista (Established 1797)**

The case of San Juan Bautista Mission received attention in the discussion of fugitivism, and was a clear example of how fugitivism could significantly reduce mission population levels. Proximity to the Central Valley facilitated flight, but also enabled the missionaries stationed at San Juan Bautista to send military expeditions to recruit large numbers of Yokuts and recapture fugitives. The mission Indian population experienced two easily defined periods of growth followed by drops in population levels, the first associated with incorporation of the local Ohlone/Coastanoan population into the mission community, and the second with recruitment of Yokuts.

The first phase of population growth occurred between 1797 and 1807. In 11 years 1,492 recruits received baptism, and the Franciscans registered 306 births. Burials totaled 796, leaving a net gain in population of 1,002. The population was 1,112 in 1805, but dropped to 1,072 in 1807 following a

major epidemic in 1806. From 1808 to 1816, the number of recruits dropped to 38; there were 256 births, and 594 burials, resulting in a net loss of population of 300. The numbers stood at 980 in 1808, and 575 in 1816. The drop in population discussed earlier left some 146 people unaccounted for. Most probably were successful fugitives, but an incomplete notation at the end of the San Juan Bautista baptismal register recorded the transfer of 41 Indians to neighboring missions (San Carlos, Soledad, and Santa Cruz) (San Juan Bautista Mission Baptismal and Burial Registers; Jackson 1985:474-477).

After 1817, the influx of Yokuts caused the population to grow. Between 1817 and 1823, 877 Yokuts entered the mission (296 in the year 1821 alone) and 349 births were recorded. Burials reached 524, a net gain in population of 702. In 1823, the population was 1,248. After 1824, the number of recruits dropped, and the mission population declined. Between 1824 and 1840, there was a net loss in population through mortality, and in 1839, 324 Indians remained at the mission. Between 1835 and 1839, some 396 people left the mission, 46% of 1834 population levels (Table 9, Fig. 1) (San Juan Bautista Mission Baptismal and Burial Registers; Jackson 1985:474-477).

#### **San Miguel (Established 1797)**

The final case study is of San Miguel Mission, located in the southern reaches of the Salinas Valley. The Franciscans completed the recruitment of the local Salinan population by 1819, but the population fluctuated with the success and failure of gentile recruitment. In 1805, 1,000 lived at the mission, but the population dropped to 949 following the 1806 epidemic. The recorded maximum population of 1,076 came in 1814, but the population declined in numbers in subsequent years with the drop in the number of recruits. In 1834, 599 remained

Table 9  
 BAPTISMS, BURIALS AND POPULATION AT SAN JUAN BAUTISTA MISSION, 1797-1840<sup>a</sup>

Year	Gentile		Births	Burials	Excess of		Population	Year	Gentile		Births	Burials	Excess of		Population
	Baptisms	Burials			Baptisms	Burials			Baptisms	Burials			Baptisms	Burials	
1797	84	7	3	7	80		85	1819	107	40	69		78	660	
1798	173	10	8	10	171		296	1820	171	64	36		199	843	
1799	58	33	20	33	45		347	1821	296	64	102		258	1,098	
1800	285	15	19	15	289		586	1822	206	64	142		128	1,222	
1801	151	33	17	33	135		723	1823	61	53	88		26	1,248	
1802	225	26	26	84	467		910	1824	26	56	114			1,221	
1803	116	42	42	103	56		976	1825	12	31	101			1,166	
1804	166	21	21	109	78		1,073	1826	45	35	90			1,146	
1805	143	63	63	108	98		1,112	1827	18	32	81			1,108	
1806	22	30	30	199		147	1,068	1828	55	25	227			986	
1807	69	57	57	95	31		1,072	1829	12	33	58			969	
1808	1	25	25	93		67	980	1830	22	28	49	1		964	
1809	0	25	25	78		53	902	1831	7	28	81			928	
1810	1	28	28	85		56	700	1832	20	35	69			916	
1811	4	27	27	63		32	666	1833	6	43	95			902	
1812	0	31	31	59		28	638	1834	1	40	61			858	
1813	11	33	33	52		8	633	1835	1	47	64				
1814	1	20	20	47		26	607	1836	1	40	54				
1815	2	34	34	62		26	580	1837	6	38	68				
1816	18	33	33	55		4	575	1838	6	68	159				
1817	29	40	40	35	34		608	1839	5	50	55			324	
1818	7	24	24	52		21	582	1840	8	57	54		11		

<sup>a</sup> Sources: San Juan Bautista Mission Baptismal and Burial Registers; Jackson (1985:476-477).

at the mission, and 361 in 1839 (Table 6, Fig. 1) (California Mission Statistics, 1769-1834; Engelhardt 1971:60).

### CONCLUSIONS

A number of factors contributed to the absolute and relative decline in the mission populations. Those included chronic endemic disease and perhaps cultural and social disruption associated with the missionary program and the stresses of cultural change. As a result of high mortality rates in the mission communities, the Indian populations failed to reproduce. Population movements and the size of the mission populations largely depended on the success or failure of the recruitment of non-Christian gentiles from the hinterland. An examination of the dynamics of population change demonstrates two major trends: high infant and child mortality rates largely wiped out any population growth through natural reproduction; and the attrition in the population of women and girls greatly limited the reproductive capacity of the Indian population. As a result of these patterns, the size of each succeeding generation born at the missions, not counting the influx of recruits from the hinterland, was smaller, and the pool of potential mothers kept shrinking.

As was the case throughout the Americas, the Indian populations of Alta California declined once they were brought into sustained contact with an exploitative European colonial system and newly introduced Eurasian disease. In the case of central Mexico, for example, the Indian population recovered after a century of decline, but a degree of the recovery occurred within the context of mestization. In the central Alta California missions, on the other hand, the Indian populations declined throughout the mission period, although gentile recruitment constantly repopulated the mission communities. Mestization appears not to have been a

major factor in patterns of demographic change prior to secularization.

Following secularization, the mission communities broke up, and many Indians left the missions to become permanent or seasonal workers on the ranches being carved out of former mission lands. There is, however, much that we do not know about the social history of the survivors of the missions during the Mexican period. After the Anglo-American conquest of California in the years 1846-1848, the surviving Indians increasingly became marginated, and were lumped together with the poor Mexican mestizos into a despised lower class by the dominant Anglo society. It is at this stage that mestization occurred as a major demographic process.

### NOTES

1. Crosby (1972) provided a theoretical framework for the larger debate. Denevan (1976) introduced the question of contact population levels. Cook and Borah (1971-79) and Cook (1981) are examples of studies that discuss contact population levels and the degree of demographic collapse in Mesoamerica and the Andean region. Dobyns (1983) and Johansson (1982) are recent examples of studies of North America which take opposite views on the question of contact population levels.

2. For Baja California see Cook (1937) and Jackson (1981). For Alta California see Cook (1976a, 1976b), Shipek (1981), and Jackson (1983a). Jackson (1985) discussed the causes of demographic collapse in northwestern New Spain, Sonora, and the Californias.

3. Several earlier studies have examined patterns of demographic change in subregions of the Californias (Meigs 1935; Aschmann 1959; Jackson 1983b, 1984a, 1984b).

4. Population figures are taken from Jackson (1983a, 1985) and "California Mission Statistics 1769-1834," a collection of statistical tables abstracted for H. H. Bancroft in the 1880s from original reports destroyed during the 1906 earthquake and fire. I have tested the abstracted statistics against original annual reports and the statistical tables contained in the individual mission histories written by Engelhardt (1971, 1973), and have concluded that the population figures contained in the tables are reli-

able. The summaries of baptisms and burials generally do not agree with figures from the extant baptismal and burial registers and extant annual reports, but are close enough to give a general notion of movements in the populations. Figures for the combined population of the central Alta California missions are as follows:

Year	Number of Missions	Population	Mean Population
1775	3	740	247
1780	3	1,292	431
1785	3	2,017	672
1790	3	2,403	801
1795	5	3,583	717
1800	7	4,519	646
1805	7	5,936	848
1810	7	5,120	731
1815	7	4,536	648
1820	7	4,476	639
1823	7	4,772	682
1825	7	4,407	630
1830	7	3,503	500
1834	7	3,041	434
1839	7	1,224	175

## REFERENCES

### Archival Sources

Archivo General de la Nación, México, D.F.: Misiones, Tomo 2; and Provincias Internas, Tomo 19:

- San Carlos Mission Annual Reports, 1797-1798.
- San Antonio Mission Annual Reports, 1797-1798.
- San Luis Obispo Mission Annual Reports, 1797-1798.
- Soledad Mission Annual Reports, 1797-1798.
- San Miguel Mission Annual Reports, 1797-1798.

Archivo Histórico de Hacienda, México, D.F., "Documentos Para la Historia de México" second series, Tomo 2:

- San Carlos Mission Annual Reports, to 1796.
  - San Antonio Mission Annual Reports, to 1796.
  - San Luis Obispo Mission Annual Reports, to 1796.
  - Soledad Mission Annual Reports, 1791-1796.
- (The annual reports in this document collection do not represent a continuous run for the years before 1785, and include reports through 1796.)

The Bancroft Library, University of California, Berkeley:

- 1) MS "California Mission Statistics, 1769-1834."
- 2) San Carlos Mission Annual and Biennial Reports, 1804-1823 (in the document collection "Archivo de las Misiones").
- 3) MS Joseph Jesus Maria Gutierrez, O.F.M., San Antonio, August 16, 1841?, "Quaderno en donde consta las familias casadas, y sus hijos. Tambien los viudos y viudas y sus hijos y hijas, los solteros y solteras, los huérfanos y huérfanas de ésta Mis[ión] de S[a]n Ant[oni]o de Padua."

Monterey Diocese Chancery Archive, Monterey, California:

- San Antonio Mission Baptismal Registers, 1771-1840.
  - San Antonio Mission Burial Registers, 1771-1840.
  - San Luis Obispo Mission Baptismal Registers, 1772-1840.
  - San Luis Obispo Mission Burial Registers, 1772-1840.
  - Santa Cruz Mission Baptismal Registers, 1791-1856.
  - Santa Cruz Mission Burial Registers, 1791-1894.
  - Santa Cruz Mission Marriage Register, 1791-1840.
  - Soledad Mission Baptismal Registers, 1791-1840.
  - San Juan Bautista Mission Baptismal Registers, 1797-1840.
  - San Juan Bautista Mission Burial Registers, 1797-1840.
- Santa Barbara Mission Archive-Library, Santa Barbara, California:
- Soledad Mission Annual Reports, 1810-1832.

### Published Works

- Aschmann, Homer  
1959 *The Central Desert of Baja California: Demography and Ecology*. Ibero-Americana 42.
- Chevalier, Francois  
1963 *Land and Society in Colonial Mexico: The Great Hacienda*. (Alvin Eustis and Lesley Byrd Simpson, trans. and ed.) Berkeley: University of California Press.
- Cook, Noble David  
1981 *Demographic Collapse: Indian Peru, 1520-1620*. Cambridge: Cambridge University Press.

- Cook, Sherburne F.  
 1937 *The Extent and Significance of Disease Among The Indians of Baja California From 1697 to 1773*. Ibero-Americana 9.
- 1976a *The Population of the California Indians 1769-1970*. Berkeley: University of California Press.
- 1976b *The Conflict Between the California Indian and White Civilization*. Berkeley: University of California Press.
- Cook, Sherburne F., and Woodrow Borah  
 1960a *The Population of Central Mexico in 1548: An Analysis of the Suma de Visitas de Pueblos*. Ibero-Americana 43.
- 1960b *The Indian Population of Central Mexico, 1521-1610*. Ibero-Americana 44.
- 1963 *The Aboriginal Population of Central Mexico on the Eve of the Spanish Conquest*. Ibero-Americana 45.
- 1971-79 *Essays In Population History*. Three vols. Berkeley: University of California Press.
- Cook, Sherburne F., and Lesley Simpson  
 1948 *The Population of Central Mexico in the Sixteenth Century*. Ibero-Americana 31.
- Crosby, Alfred  
 1972 *The Columbian Exchange: Biological and Cultural Consequences of 1492*. Westport: Greenwood Press.
- Denevan, William, ed.  
 1976 *The Native Population of the Americas in 1492*. Madison: University of Wisconsin Press.
- Dobyns, Henry  
 1983 *Their Number Become Thinned: Native American Population Dynamics in Eastern North America*. Knoxville: University of Tennessee Press.
- Engelhardt, O.F.M., Zephyrin  
 1971 *San Miguel Archangel: The Mission on the Highway*. Ramona, CA: Acoma Books (Reprint edition).
- 1973 *Mission San Carlos Borromeo*. Ramona, CA: Ballena Press (Reprint edition).
- Flinn, Michael  
 1981 *The European Demographic System, 1500-1820*. Baltimore: The Johns Hopkins University Press.
- Gibson, Charles  
 1964 *The Aztecs Under Spanish Rule: A History of the Indians of the Valley of Mexico, 1519-1810*. Stanford: Stanford University Press.
- Jackson, Robert H.  
 1981 *Epidemic Disease and Population Decline in the Baja California Missions, 1697-1834*. *Southern California Quarterly* 63:308-346.
- 1983a *Disease and Demographic Patterns at Santa Cruz Mission, Alta California*. *Journal of California and Great Basin Anthropology* 5:33-57.
- 1983b *Demographic Patterns in the Missions of Northern Baja California*. *Journal of California and Great Basin Anthropology* 5:131-139.
- 1984a *Demographic Patterns in the Missions of Central Baja California*. *Journal of California and Great Basin Anthropology* 6:91-112.
- 1984b *Gentile Recruitment and Population Movements in the San Francisco Bay Area Missions*. *Journal of California and Great Basin Anthropology* 6:225-239.
- 1985 *Demographic Change in Northwestern New Spain*. *The Americas* 44:462-479.
- Johansson, S. Ryan  
 1982 *The Demographic History of the Native Peoples of North America: A Selective Bibliography*. *Yearbook of Physical Anthropology* 25:133-152.
- Kimbrow, Edna, Robert Jackson, Mary Ellen Ryan, and Randy Milliken  
 1985 *Como la sombra huye la hora: Restoration Research, Santa Cruz Mission Adobe, Santa Cruz Mission State Historic Park*. MS on file at the California Department of Parks and Recreation, Sacramento.
- Meigs, Peveril  
 1935 *The Dominican Missionary Frontier of Lower California*. Berkeley: University of California Press.
- Sánchez-Albornoz, Nicolás  
 1974 *The Population of Latin America: A*

History. (W. A. R. Richardson, trans.).  
Berkeley: University of California Press.

Shipek, Florence

1981 A Native American Adaptation to  
Drought: The Kumeyaay as Seen in the  
San Diego Mission Records 1770-1798.  
*Ethnohistory* 28:295-312.

Taylor, William

1979 *Drinking, Homicide, and Rebellion in  
Colonial Mexican Villages.* Stanford:  
Stanford University Press.

Wrigley, E. A., and Schofield, R. S.

1981 *The Population History of England,  
1541-1871: A Reconstruction.* Cam-  
bridge: Harvard University Press.

