

Daily Life and the Development of the State in the Moche Valley of North Coastal Perú:
A Bioarchaeological Analysis

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ABSTRACT
Celeste Marie Gagnon

Daily Life and the Development of the State in the Moche Valley of North Coastal Perú
(Under the direction of Clark Spencer Larsen and Brian R. Billman)

In this dissertation the author explores what could be learned about the development of social inequality from a small-scale analysis. The people on whom the author focuses inhabited the Moche valley of north coastal of Perú and were one of the earliest New World groups to develop a state-level political organization (Bawden 1996; Billman 1996; Moseley 1992). Prior to this development, Moche valley residents lived in societies that were far less politically centralized and socially differentiated. The author uses bioarchaeological data to investigate changes in the activities of prehistoric, north coastal Peruvians. The author interprets patterns of change in daily activities within the wider archaeological context and in light of other studies of state societies to explore how people, through their daily actions, effected and reflected large-scale economic, social, and political change.

To address these issues, the remains of 750 individuals recovered from Cerro Oreja, a large prehistoric urban center in the Moche valley of Perú were examined. Cerro Oreja was continuously occupied from the beginning of irrigation agriculture through the formation of the Southern Moche state (1800 BC–AD 400), and residents buried their dead in the site's cemeteries throughout this period (Carcelen personal comm 1999). The remains of the

individuals who are the subject of this study represent women, men, and children of both high and low status.

The author examined each of these individual for dental caries, wear, abscesses, periodontal disease, antemortem tooth loss, and dental trauma. Additionally, the bones and teeth of several individuals were sampled for stable isotopic and dental calculus analyses. These data provide evidence to reconstruct diet and non-dietary tooth use at Cerro Oreja. However, these data are combined with the age-at-death and sex estimations and social status assessments, to trace agricultural intensification, chicha consumption, craft specialization, and coca use in the Moche valley. These findings revealed that although increased agricultural production, chicha consumption, and access to coca were important loci of pre-state social and political change, gender was the central axis along which these changes occurred. By expanding existing gender differences, elites created the social hierarchies that came to characterize the Southern Moche state.

Dedicated to my beloved Rachel Anne
and my dearest Michael

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Chapter 1 QUESTIONS OF STATE DEVELOPMENT

Researchers have linked prehistoric state formation in Perú and elsewhere to increasing centralization of political, social, and economic resources, a process that resulted in significant control by elites of previously dispersed daily activities of production, distribution, and consumption (Bawden 1996; Billman 1999; Brumfiel and Earle 1987a; Earle 1997; Haas 1982). Such a statement, however, raises several questions. How did certain individuals become elite? Why and in what ways did some individuals give or allow others to take control over aspects of their daily lives? Through archaeological investigations of large-scale phenomena (e.g., regional settlement patterns, macroeconomic organization, monumental architecture, and elite tombs) we see the sum of many people's actions over hundreds of years, particularly activities directed by the elite. But we cannot identify individual or family activities. We know little concerning the everyday lives of common women, men, and children. It is, however, through their daily activities that these individuals produced the social, political, and economic changes that transformed their egalitarian societies into states (Brumfiel 1992). In order to "see" these actions, we need to look at a smaller scale.

In this dissertation, the author explores what can be learned about the development of social inequality from a small-scale analysis. The people on whom the author focuses inhabited the Moche valley of north coastal Perú, and were one of the earliest New World groups to develop state-level political organization (Bawden 1996; Billman 1996; Moseley 1992). Prior to this development, Moche valley residents lived in societies that were far less politically

centralized and socially differentiated. We cannot directly observe or speak to the people who lived during the period of political consolidation, but people's economic, political, and social lives became inscribed on their physical bodies through the practices of daily living. In particular, human skeletal remains can provide us with a wealth of information at the individual scale, such as a person's age-at-death, indications of the types of foods she consumed, and evidence of the habitual behaviors in which she engaged (Larsen 1997).

Human remains can also provide us with information about how individuals lived their social identities. Gender and social status are important facets of individual lives. Although neither of these social constrictions are clearly visible in human skeletal remains, biological sex can provide us with a window into gender differences (Walker and Cook 1998), and mortuary treatment can provide us with a similar entrée to social status (Parker Pearson 1999). Using bioarchaeological research methods, this dissertation explores changes in the activities of prehistoric, north-coastal Peruvians. The author then examines how people, through these changes their daily actions, effected and reflected change in their wider sociopolitical organization.

To address these issues, human dental remains recovered from Cerro Oreja, a large, urban, prehistoric center in the Moche valley, Perú are examined. In 1994 and 1995, the Instituto Nacional de Cultura, Trujillo (INC) conducted excavations at Cerro Oreja. During these excavations, the INC excavated 909 burials from a cemetery associated with the site. Cerro Oreja was continuously occupied from the beginning of irrigation agriculture through the formation of the Southern Moche state (Billman 1996), and residents buried their dead in the largest cemetery during this period (Carcelen personal comm.). Preliminary inventories of

funerary objects suggested that individuals representing several social statuses were buried at Cerro Oreja. The excavated skeletal remains were also placed into several phases defined by ceramic grave goods, grave architecture, and stratigraphic position. These phases are the Cupisnique (1800– 400 BC), Salinar (400–1 BC), Gallinazo (AD 1–200), and Early Moche (AD 200–400) (Billman 1999; Moseley 1992). The first inland occupations and agricultural production of food products occurred in the Moche valley during the Cupisnique phase. By the Salinar phase, coastal sites were abandoned as agriculture became the central economic strategy. In the Gallinazo phase there were dramatic changes in settlement patterns; many sites were abandoned and there was an in-migration of highlanders. Finally during the Early Moche phase, highland sites were abandoned and the Southern Moche state was created. Because the remains recovered from the largest site represent individuals of all ages, both sexes, and several social statuses that date to the Cupisnique through the Early Moche phases, these skeletal remains provide a window into daily life during the process of state development.

Archaeologists agree that both agricultural intensification and craft specialization were important facets of state formation (Brumfiel and Earle 1997b; Haas 1982). With this in mind, general changes in diet and industrial activities are investigated. In addition to these widely cited factors of state development, the author examines two activities specific to the Andes and potentially central to Peruvian state development: the consumption of chicha and the chewing of coca leaves. Both of these activities have been shown to be important elements in the creation and maintenance of various types of social relationships in this region (Allen 1985, 1988; Isbell 1978; Morris 1997; Plowman 1985; Rostworoski 1988; Weismantel 1988).

These four areas of investigation, two of global importance and two of local concern, have biological implications.

To fully explore these four topics, the author contextualizes her analysis within three bodies of literature. “Theorizing the State: Social, Political, and Economic Contexts” presents some of the central works dealing with state origins and development of structural social inequality. This chapter is not an exhaustive review of the literature on state development, but is focused instead on the central issues, with a particular emphasis on coastal Peruvian states. The author summarizes the prehistoric context of the Cerro Oreja skeletal collection in “The Moche Valley: Archaeological and Biocultural Contexts.” In “Biological Signatures of State Development,” the author discusses some of the ways in which skeletal biologists have attempted to trace the rise of inequality as reflected in human remains.

The author introduces her research site and the skeletal collections upon which she bases her analysis in “Cerro Oreja: The Research Site.” In “Los Cerro Orejaños: Methods,” the author discusses her methods for estimating age-at-death and identifying the sex of individuals in the Cerro Oreja skeletal collection. The author also outlines how data relating to dental caries, periodontal disease, dental abscesses, antemortem tooth loss, dental wear, dental trauma, dental calculus, and stable isotopes were collected and analyzed, and how she uses these data to address her four topics. In “Describing Los Cerro Orejaños: Results” I present these data and summarize temporal patterns. Finally, in “Questions Revisited,” I discuss what the data on dietary reconstruction and non-dietary tooth use tell us about agricultural intensification, chicha consumption, craft specialization, and coca use, and thus, about the development of inequality and the state in the Moche valley. In this dissertation the author

shows that although increased agricultural production, chicha consumption, and access to coca were important loci of pre-state social and political change, gender was the central axis along which these changes occurred. By expanding existing gender differences, elites created the social hierarchies that came to characterize the Southern Moche state.

Chapter 2 THEORIZING THE STATE: SOCIAL, ECONOMIC AND POLITICAL CONTEXTS

2.1 Introduction

What is a state? In a time when the world is divided into nation-states, this question might seem to have a simple answer. However, in order to address this question, we must first understand that “state” is a relative category. Since researchers began to describe non-European societies in the late 19th century, states have been defined in contrast to societies that are not states. Early attempts to understand how societies differed were firmly set within the ideas of progress and European supremacy (Engles 1891; Marx 1906; Morgan 1877). Later, with the introduction of the band-tribe-chiefdom-state (Sahlins and Service 1960) and egalitarian-ranked-stratified-state (Fried 1960) typologies, the paradigm of progress was replaced by one of cultural evolution. Although cultural evolution has been abandoned by many anthropologists (but see Trigger 1998), the categories of Sahlins and Service and Fried are still used (albeit in modified forms) because they provide us with a way to talk about an important observation—in some societies most people have broad access to economic, political, and social resources, while in others, access to these resources is limited.

Archaeological research has shown that all humans once lived in small, mobile, and relatively egalitarian societies. At various times in the past, some groups came to live in larger, sedentary, and non-egalitarian groups (e.g., chiefdoms and states). Questions about how these transformations happened, and what their consequences were, underlie much anthropological research, including this dissertation. Because we live in a world of nation-states, questions

about the development of social inequality and state origins are necessarily questions about the past. Therefore, the data upon which we build our models are derived primarily from archaeological research. These data are the material artifacts of states, and so archaeological understandings of states are rooted in the material world.

Several detailed surveys of the state formation literature have been written (see Alcock et al. 2001; Brumfiel and Earle 1987a; Carneiro 1970; Gledhill et al. 1988; Jones and Kautz 1981, for a few examples), and so to begin, the author offers four cases as examples, rather than a complete review of state origin models. The author's purpose is to highlight the commonalities that are central to the development of social inequality as they relate to the focus of this dissertation. She then turns to the literature to find expressions of social change in the materials of everyday life. Finally, the author focuses on what researchers have to say about state formation in coastal Perú. Her intent is to collect tools for addressing questions about how the people of the Moche valley of north coastal Perú built their socially stratified and hierarchical state.

2.2 Origin Models

Carneiro (1970:733) defined the state as an “an autonomous political unit, encompassing many communities within its territory and having a centralized government with the power to collect taxes, draft men for work or war, and decree and enforce laws.” He believed that most people would not willingly participate in such a society, rather such an organization was a response to war. In a context of violence, people who could not move outside the state's territory were subject to its powers. Carneiro suggested two ways in which

people's abilities to relocate might have become limited because they were circumscribed by significantly less productive environments or surrounding areas were under the control of others. In either case, people could not move, and thus they were unable to 'vote' against statehood with their feet. Individuals who were accomplished in war capitalized on their success, accruing status and wealth and thus creating an upper class, while the conquered and captives became the lower class.

Service (1975) suggested that hierarchical societies arose from a need for stability. As populations grew, people's need for organized efforts to redistribute goods and resolve conflicts became more important. In Service's view, these functions, as well as the task of providing protection from others, were best accomplished by someone of authority. In such an environment, individuals who led by persuasion were able to pass their influence to their sons, providing for stability of leadership. Eventually, these positions of power became institutionalized creating the building blocks of a government. This was made possible by the production and control of agricultural surplus and the use of that surplus to fund non-agricultural specialists.

Following Fried (1967), Haas (1982) suggested that power was the central ingredient in state formation. The power that rulers had over the ruled was drawn from three bases: economic, physical, or ideological. In addition, Haas noted that power had four manifestations: 1) means—the sanctions used to get others to comply with requests, 2) scope—what requests are accomplished 3) amount—the frequency that requests are made, and 4) extension—how many people comply. There were also costs and benefits to exercising, complying with, and resisting power. Through the initial control and manipulation of the

economic base power, and later of physical and ideological power and their manifestations (the means, scope, amount, and extension), some people were able to modify the costs and benefits of compliance and resistance for others. When the elite controlled all the bases, economic, physical, and ideological, the state system was the most resistant to change.

Feasts were the centerpiece of Dietler and Hayden's (2001) ideas on state formation. These ritual events of communal consumption could have "serve[d] as mechanisms for the transformation of informal power into institutionalized formal political roles" (Dietler and Hayden 2001:17). They suggested that feasts provided a structure that maintained authority by binding other members of society to those who sponsored such events, both through actual provisioning of either food stuffs or trade items and through the accumulation of symbolic capital. Additionally, the feast provided the hosts with a mechanism through which they could co-opt the labor of others. Dietler and Hayden also noted that social categories were defined in the feast, particularly gender roles, as women were generally responsible for preparing and serving food and drink.

Unlike Carneiro (1970) and Service (1975), Haas (1982) and Dietler and Hayden (2001) provided ways to account for the actions of the lower class or non-elites. Carneiro suggested that non-elites had no power to resist. Service saw elite power as beneficial to everyone as it allowed for stability and progress. In Haas's view, the elite could have affected the costs of compliance and resistance by manipulating the bases and manifestations of power. In these modified circumstances, non-elites made choices which either brought them in line with the wishes of the elites, pitted them against the power structure, or more likely, resulted

in a complex of conformity and counteraction. Feasting, as Dietler and Hayden noted, could have been a site of the kind of manipulation envisioned by Haas.

Regardless of the central component proposed for state development, in the work discussed above (as well as in many other analyses), researchers invoked several common themes: environmental constraints, limitations on residential movement, systems of belief, warfare, food production, the development of specialists, and trade. All of these issues were important in state formation, but we should not expect all state leaders to have used the same networks of control, or to have centralized activities in the same ways. States developed within existing historical, social, and physical environments. Moreover, “the state” exists but it is not a seamless whole. It is an emergent property created through the actions of “positioned social agents” (Brumfiel 1992:551). Some people used political networks to support state survival because it benefitted them, not because it benefitted everyone.

2.3 Daily Activities as Loci of Social Change

Regardless of the paths by which social inequalities were created, structural elements that perpetuate and enhance these inequalities required some form of finance. There are two avenues by which elites could have funded their activities: staple and wealth finance systems (D’Altroy and Early 1985). Both forms of finance required the expropriation of goods or labor and thus impacted the daily activities non-elites. In a staple finance system elites derived funds from taxes paid in subsistence goods. In a wealth finance system funds were created through the manufacture or procurement through trade of speciality items. D’Altroy (1985) suggested that elites derived the resources that financed state structures by collecting tax in

the form of agricultural labor. In cases where the state owned the property and residents had usufruct rights, state administrators could have chosen what crops non-elites produced on state lands, collected those products, and stored them locally for their own use and the use of regionally based elites. Additionally elites could have created and supported groups of craft specialists who produced ideologically-charged items that were then used to pay a wide variety of elites, specialists, and non-subject peoples for their efforts to support the state.

Earle (1997) proposed that the economy, and in particular the intensification of subsistence activities, was the basic building block of social inequality. Although other researchers suggested that agricultural intensification was driven by population increase (e.g., Boserup 1965, Carneiro 1970), Earle argued that it was driven by elite competition. Intensification produced surpluses that fueled the economy, allowed for the development of a military, and provided resources that were used for the production and collection of wealth items. However, the nature of the economy affected the power strategies that elites could pursue, and in turn this affected the ability of elites to centralize and institutionalize power. Thus, by increasing agricultural production and exercising control over the acquisition of both food and craft items, elites were able to turn the basic economic activities into important sources of power. In this way, elites brought local people into the state apparatus, building hegemony while securing their positions.

Brumfiel and Earle (1987b) also noted the importance of both staple and wealth finance to the rise of social inequality. However, they more fully explored how elites used wealth items to bolster their social status and increase their political positions. Through the display and distribution of these limited and socially-charged craft items elites were able to

define both their status and the status of non-elites. As these wealth items became more important, specialists who produced them became more numerous. Brumfiel and Earle described a continuum of craft specialization. At one end were societies in which individuals produced pottery and other craft goods for trade in their homes, as an activity secondary to fulfilling the majority of their family's needs. At the other end were fully diversified economies where all individuals were specialized and most items used by family members were produced outside the home.

From this continuum they drew four points of variation, whether or not specialists were 1) independent or attached, 2) produced subsistence or wealth goods, 3) engaged part-time or full-time, and 4) worked at home, in workshops, or large-scale industries. Of these variables, they identified the first, the independence or attachment of specialists, as the most critical. The production of independent specialists was guided by "efficiency and security" in a system similar to current market forces. Specialists had flexibility to determine what and how much they produced. Attached specialists however, were obligated to produce according to the demands of a patron. Therefore, the daily activities of attached specialists, who were under the direct control of elites, were dramatically affected by this type of social differentiation. Additionally, it would seem that elites had greater control of the distribution of craft items produced by attached specialists. Brumfiel and Earle proposed that the development of attached specialists were strongly linked to the rise of social inequality, a position supported by other researchers (see Lewis 1996).

DeMarrais, Castillo, and Earle (1996) identified ideology as central to state development because it is an important source of social power. As archaeologists, they were

most interested in the material aspects of ideology because “to materialize culture is to participate in the active, ongoing process of creating and negotiating meaning” (DeMarrais et al. 1996:16). To materialize their message, elites required economic resources. Such resources allowed elites to deliver their ideology to others and sway them to their message, thus building hegemony. DeMarrais, Castillo, and Earle identified ceremonies, which included feasting, the use of ritual items, and the construction of public monuments, as avenues for materialization of ideology. In addition to transmitting an experience of beliefs, ceremonies displayed and thus reinforced social power through conspicuous production. The use of ritual items, which were mobile and durable objects, referenced the belief system in a more permanent way. When such objects were produced by attached specialists, the ideological messages they carried, and the individuals who had access to such knowledge, could be controlled by elites, reinforcing social positions. Finally, public monuments were unambiguous expressions of the power of those who had them built because of the vast resources that were mobilized for their construction. Such architecture was particularly powerful because it built hegemonic ideologies into the landscape in highly visible and permanent ways. Such created landscapes were a kind of social map. When used by the elite, these tools of materialization transmitted messages into the daily lives of people, simultaneously promoting social solidarity and legitimizing social inequalities.

2.4 State Origins on the Coast of Perú

Looking specifically toward Perú and the particulars of the Peruvian context, several researchers have traced the rise of inequality and states. Moseley (1975a) noted that state formation is generally thought to occur only among agriculturalists because the production of

field crops allowed for the creation of surpluses that were needed to support people who did not grow their own food, such as craft specialists and elites, and to support public construction projects. But Moseley questioned this assumption in the Peruvian case. The Pacific coast of Perú is one of the richest fisheries in the world. Moseley suggested that marine resources could have provided sufficient surpluses to sustain hierarchical social structures, and that the use of intensive agriculture was a later adoption by hierarchical coastal groups. He argued that archaeological evidence of population growth, a rise in craft activity, differentiation in burial practices, and most importantly the construction of public monuments (because of the labor and organization required) support his assertion that non-egalitarian societies preceded the development of intensive subsistence agriculture in coastal Perú.

In response to Moseley, Wilson (1981) suggested that these builders of the first public monuments, the coastal peoples with marine-based economies lived in relatively egalitarian societies. El Niño events, which negatively affect marine production, could not have been sufficiently buffered to support the large population needed to fuel the development of social inequality. Instead, Wilson proposed that pressure on marine resources resulted in a shift toward the production of field crops such as maize. Field crops could have been produced in large enough quantities to both enable population growth and to create storable surpluses. Agricultural intensification was, therefore, central to the development of state societies on the Peruvian coast.

In his analysis of state development on the north coast of Perú, Haas (1982 and 1987), like Moseley (1975a), identified the appearance of large public monuments as a hallmark of the development of social stratification. Inequalities, which Haas believed came from

differential control of floodplain agriculture, were exploited by elites as a means to co-opt the labor of others. He suggested these huacas (large platform mounds) had religious connotations, and thus increased the elite's control of local ideologies. Haas identified these societies as chiefdoms (which did not have access to the physical base of power) rather than states. This assertion has been supported by others (Feldman 1987).

Later sites that Haas (1987) identified as state centers were distinguished from earlier occupations by their inland placement, the size of their public monuments, and their proximity to irrigation canals. He proposed that the societies, in which the people who built these sites lived, were states. An important difference between the earliest socially stratified societies and later states was the amount of control that elites exercised. Haas stated that the increase in size of public construction could be used as a measure of elite power, and he proposed that this power was drawn from control over irrigation agriculture. Because of the continuing ceremonial (as opposed to bureaucratic or administrative) nature of these first inland monuments, it appeared that elites also used ideologies to support their social positions.

Once coastal states formed, further development of inequality and hierarchy was influenced by coastal-highland interaction. This interaction, which might have been in the form of trade and warfare, provided a context in which the elite were able to create militaries and exercise physical power to support their authority. With the addition of physical authority, Haas (1987) suggested that less effort was directed by elites toward the control of ideology, and thus, coastal states became secularized.

Elsewhere on the coast, S. Pozorski's (1987) research suggested a similar origin for states. In addition to public construction and irrigation agriculture, S. Pozorski noted

variability in the quality and size of domestic architecture within sites and the amount of urbanization present between sites, as well as evidence of craft specialization, as support for her identification of a state organization. Following this period, S. Pozorski also saw an increase in militarism as evidenced by the defensive nature of sites and the use of militaristic themes in iconography. Other indicators of state development included changes in site layout and architecture, and diet—with the introduction of maize, camelids and guinea pigs. But Webb (1987) disagreed with Haas (1987) and S. Pozorski (1987) about the nature of the societies of these first inland inhabitants. Based upon comparisons with ethnographic and archaeological analyses, he suggested that these societies were chiefdoms.

Regardless of whether or not researchers identified particular societies as chiefdoms or states, and exactly when they see the transition from chiefdom to state, all agreed that the construction of monumental architecture is an important marker of socially-stratified societies. This assertion has been based on the idea that some small group of elites convinced or coerced non-elites to labor on and provide resources for public projects. Although it was often unstated, what was just as clear from these studies is the idea that central management of these projects was required, and that this management was the purview of elites. Although the development of social inequality might have begun before people began to produce food in irrigated fields, agriculture was clearly important in the process. Craft activity, although less well studied, also seems to have been important. Finally, embedded within these studies, was the idea that economic and ideological changes preceded the use of force by elites. The rise of military authority, then, was a later development that changed the relationships of elites and non-elites.

Following the findings of researchers who have investigated state development in coastal Perú and elsewhere, the author specifically examines agricultural production (staple finance) and craft specialization (wealth finance) for evidence of increasing hierarchy and social inequality in the Moche valley. To fully explore these areas of investigation, two hypotheses are addressed in this dissertation:

Agricultural intensification: If the subsistence economy was an important basis of economic power for the developing Moche valley elite, then the consumption of agricultural products would have increased through time. If food consumption was a site of social differentiation, then the increasing distinction between elites and non-elites could have resulted in a greater consumption of agricultural products by non-elites in each phases, while elites consumed more highly valued animal products such as llama, deer, and fish.

Craft specialization: If wealth finance was a source of economic power, then elites might have controlled trade and used craft goods as part of their strategy to increase their economic and ideological power. Additionally, individuals might have been pressured to increase production of particular items, resulting in the creation of distinct occupational groups in the period preceding the development of the Southern Moche state.

2. 5 Conclusion

As can be seen from the studies discussed above, there are several issues of central importance to tracing the development of social inequality. For socially stratified-societies to have developed, some individuals or groups of individuals must have had the power to limit access to particular economically-important and ideologically charged resources. It was only when such individuals capitalized on this kind of power that they could have created systems of staple and wealth production and modified the distribution of such products to their benefit. Additionally, such elite individuals might have co-opted and modified local ideologies to

legitimate these social changes. However, we must still wonder why non-elites participated in, or at least allowed this type of power concentration to occur, particularly given that their daily lives were dramatically changed in the process of social stratification. On the one extreme, Carneiro (1970) suggested that non-elites had no power to resist such social changes. On the other, Service (1975) suggested that non-elites participate to the benefit of their society. If we take an intermediate view (c.f. Dietler and Hayden 2001 and Haas 1982), we must ask what non-elites gained through their participation in the activities that changes their societies. To begin to address this question, the author investigates what daily life was like based on the study of human skeletal remains in the Moche valley, and how it changed with the rise of structural social inequality. Only with this information can we begin to understand why both elite and non-elite people allowed their societies to change and how they effected these changes.

Chapter 3 THE MOCHE VALLEY: ARCHAEOLOGICAL AND BIOCULTURAL CONTEXTS

3.1 Introduction

People create their societies within particular environmental, cultural, and historical contexts. The environmental setting limits the types of activities in which people can engage, as well as providing the raw materials from which they construct their economies. Through particular histories and cultural activities elites and non-elites assign meaning to their activities and claim authority for their actions. Therefore, to understand state development and the rise of inequality in north coastal Perú, we must explore the particular contexts of this region.

The Río Moche is one of many rivers that cross the Peruvian coast (Figure 3.1). The Moche valley climate, and that of the other coastal valleys, is the result of its location between the Pacific and the Andes. Upwelling associated with the cold-water Humbolt current makes the Pacific waters off the coast of Perú some of the most productive for fishing in the world (Moseley 1975a; Parsons 1970). The Humbolt current, which begins in Chile and moves northward along the Peruvian coast, also affects inland rain fall. Air above the ocean is cooled by convection so its capacity to carry water vapor is greatly reduced. This air mass does not produce rain as it is carried inland by the prevailing on-shore breeze. The dramatic rise of the Andes uplifts the air, cooling it until the temperature drops below the dew-point, and rain falls along the western slopes and in the highlands (Moseley 1975a). Rain on the lower slopes and snow melt in the highlands flow down to the Pacific, feeding the coastal rivers that bring water to the arid coast. In the south, the foothills of the Andes rise quickly from the Pacific, so

the southern coast is both narrow and bisected by deeply cut valleys. In the north, the highlands are farther from the coast, so the northern coast is wider, and floodplains are broader than in the south. In the Moche valley, as well as other valleys of the north coast, people have long taken advantage of this expanded bottomland for food production. Through irrigation, they turned the arid coast into highly productive farmland (Moseley 1982).

Occasionally the easterlies winds that keep the warm waters of the central Pacific away from the coast decrease (Caviedes 2001). This change in wind pattern allows warm waters to spread eastward along the equator toward the South American coast (Caviedes 2001), creating a southward displacement of the Humboldt current (Murphy 1923; Parsons 1970). This phenomenon, known as El Niño, dramatically alters the coastal environment. The enormous quantity of marine life supported by the upwelling of the Humboldt current is substantially reduced and cold-water species are replaced by warm-water species. On-shore winds bring warm, humid air inland, resulting in rainfall and flooding on the coast (Murphy 1926). El Niño events are unpredictable and vary greatly in severity. In the most dramatic episodes, the productivity of the Pacific and agricultural fields is reduced. Moreover, floods devastate irrigation canals, affecting food production well after cold-water species have returned and the rains have ended (Billman 1996).

3.2 Early Agriculture in the Moche Valley

During the earliest occupation of north coastal Perú (before 1800 BC), people inhabited small coastal sites, where they exploited the rich marine resources of the Pacific (Moseley 1992). S. Pozorski (1983) excavated at two Cotton Preceramic period (Table 3.1)

sites in the Moche valley—Padre Alban and Alto Salaverry (Figure 3.2). Padre Alban was a small, seasonally-occupied site. For the people who lived at these sites, mollusks were the most important resource, but near-shore fish and marine birds were also important. S. Pozorski found squash, gourd, and cotton remains, but no evidence of irrigation agriculture. Although squash was probably a food resource, gourds and cotton provided raw materials for the construction of fishing nets.

3.3 The Cupisnique Phase

By 1800 BC, people of the Moche valley had begun to move inland and to transform their economy by adding agricultural products to their subsistence activities. The Moche valley became politically unified and a hierarchy of settlements was established (Billman 1999; S. Pozorski and T. Pozorski 1979; T. Pozorski 1982). Caballo Muerto, the largest site of this period and the political center of the valley, was occupied from 1500–400 BC (Figure 3.2). Public architecture dominated the site, testifying to elite's ability to mobilize labor (Table 3.2). The eight huacas (adobe mounds) at Caballo Muerto were constructed and were the center of ceremonial life. T. Pozorski's excavations (1982) indicated that no more than two or three of the huacas were in use at any one time.

The most extensively studied structure, Huaca de los Reyes, was built in three nested parts, each of which is characterized by increasingly limited accessibility. T. Pozorski (1982) suggested that this construction is indicative of a society in which elites controlled access to important rituals, and thus to ritual knowledge and ideological power. He suggests that these structures helped to integrate the population. Although rituals in the most interior areas of

huacas were limited to elites, the prominence of these structures on the landscape also provided a unifying experience for all. Further, he interpreted Caballo Muerto as the center of a multi-settlement chiefdom, ruled by a hereditary leader. The succession of mounds reflected the succession of leaders. Because there were no defensive structures in the valley at this time, T. Pozorski suggested that the leaders of Caballo Muerto did not use violence to support their social positions.

Although little evidence of habitation around Caballo Muerto has been found, it is possible that residential areas have been buried under the substantial alluvial deposits that have accumulated around the mounds (T. Pozorski 1982). Across the river at Cerro Oreja (Figure 3.2), occupational levels contemporaneous with Caballo Muerto have been identified, making it one possible habitation site. No one has yet excavated these Cupisnique phase domestic structures. Gramalote is the only other Cupisnique phase site in the Moche valley to have been excavated (S. Pozorski and T. Pozorski 1979). Gramalote, located on the coast, was settled during the first half of the occupation of Caballo Muerto (Figure 3.2). The site was small and contains domestic structures but no public architecture.

Subsistence remains were found at both Cupisnique phase sites. Although they recovered bones of fish and sea mammals, S. Pozorski and T. Pozorski (1979) estimated that shellfish provided residents of Caballo Muerto and Gramalote most of their protein (50% and 80%, respectively). During the early use of Caballo Muerto, Costeños¹ used deer to

¹ Although the residents of the Moche valley can be called the Mochica, the author has chosen to use the general term Costeños to refer to the residents of the Peruvian north coast because it is archaeological convention to reserve the term Mochica for the people of the Moche state.

supplement marine protein sources. Deer were hunted out by the end of the site's occupation. Domestic camelids then became the most important source of terrestrial protein. No plant remains were recovered from Caballo Muerto, but Gramalote yielded the remains of a variety of cultigens (S. Pozorski 1983). At Gramalote, the most important cultigens were the industrial plants cotton and gourd, but food plants such as squash, common bean, chile pepper, lúcuma, and avocado, were also recovered. Additionally, the residents of Gramalote were the first people in the Moche valley to consume peanut and maize. Approximately 4200m³ of canals were excavated during this time, which allowed for the irrigation of 4100 hectares, a testament to the importance of agricultural products in the Moche valley (Table 3.2). However, Billman (2002) noted that the canals were short and their construction and maintenance was probably organized at the village level, rather than as an integrated, valley-wide project.

Given the substantial quantity of marine foods that the residents of the inland site Caballo Muerto consumed, S. Pozorski and T. Pozorski (1979) have suggested that Gramalote was a satellite community of Caballo Muerto, which was established to provide steady access to marine resources. This trade of marine protein for inland cultigens created a basis for a valley-wide political system.

3.4 The Salinar Phase

Settlement patterns, economic production, and social organization changed in the Salinar phase (400–1 BC, Billman 1999). Cupisnique phase sites were abandoned, and Costeños began to aggregate at larger, inland sites (Billman 1999; Topic 1982). For the first

time, people built defensive structures in the valley, and located their settlements in defensible locations. Archaeologists have interpreted these changes as evidence of the onset of endemic warfare (Billman 1997, 1999; Topic and Topic 1978). The development of warfare during the Salinar phase can also be seen to the south in the Virú valley, where site types include fortified hilltops (Moseley 1992). Later in the Salinar phase, people aggregated further, as evidenced by the development of clusters of sites separated by uninhabited zones (Billman 1999).

Archaeologists have interpreted similar settlement patterns elsewhere as the result of the onset of regional, endemic warfare (Snow 1994). Earle (1997) stated that such a system indicates warring chiefdoms, where each group has sufficient defenses to withstand raids by other groups. While such a system existed, each group remained politically independent.

In Salinar phase settlements, ritual space was organized differently than it had been during the preceding Cupisnique phase (Table 3.2). Such spaces were not public, but smaller and varied according to the social status of those who used them (Billman 1999). This suggests that access to rituals was limited and that ideology was a divisive, rather than an integrative force, separating elites and non-elites.

Cerro Arena is the only Salinar phase settlement that has been excavated. It was a large and internally heterogeneous urban site (Figure 3.2). Brennan (1980a, 1980b) has identified three types of architecture at this site, based on the effort expended in wall and floor construction. Type 1, the most elaborate, included elite residences, small ceremonial structures, and possibly specialized administrative structures. Type 2, the most numerous type, included lower class residences that vary in quality and size. Brennan suggested this variability indicates that a wide range of non-elite groups inhabited Cerro Arena. Type 3 included well

built, non-residential structures that Brennan posited were storage facilities. The greatest concentration of Type 1 and 3 structures was near the pass into the valley, rather than near the canal. Brennan suggested that the placement of these structures indicates that the elites of Cerro Arena were more concerned about controlling the entrance to the Moche valley from residents of other valleys, than with controlling local access to the canals.

As noted, Salinar phase elites did not mobilize labor to construct monumental ritual spaces. They did, however, mobilize labor for canal expansion (Billman 2002). Approximately 67,000 m³ of canals were constructed during this time (Table 3.2). Although there are no zooarchaeological or macrobotanical analyses of Salinar for later Gallinazo phase occupations, the expansion of irrigation infrastructure during the Salinar phase suggests that the transition might have begun from a Cupisnique-style mixed marine and terrestrial economy to a system of intensive agriculture. The reorientation of the economy from collected resources toward agricultural products occurred in a climate of warfare. Agricultural fields could be worked in groups providing “safety in numbers,” and agricultural products were storable, providing food in times of siege.

3.5 The Gallinazo Phase

The reorganization of settlements during the Gallinazo phase (AD 1–200) indicated that Costeños were as socially and politically integrated as in the Cupisnique phase (Billman 1999; Moseley 1992; Topic 1982). They abandoned large sections of the valley, including the limited coca-producing areas of the middle valley. New sites were established and the population became increasingly concentrated in the lower-middle Moche valley, just above the

neck (Billman 1999). Cerro Oreja replaced Cerro Arena as the largest and most urbanized site in the valley (Figure 3.2). Evidence indicates that class distinctions persisted, but regional social organization appears to have changed (Moseley 1992). Unoccupied areas around the Salinar phase settlement clusters were re-occupied, and a three-tiered hierarchy of sites replaced Earle's (1997) warring hill-fort chiefdoms (Billman 1999).

In the Gallinazo phase people in the Virú valley also adopted this pattern of regional sociopolitical integration. In fact, the largest urban center on the north coast during this period, the Gallinazo Group, was located in the Virú valley (Figure 3.1) (Topic 1982). Gallinazo phase sites in the Virú, and south in the Santa valley, were characterized by clear distinctions between elites and non-elites in both domestic and monumental architecture. Moseley (1992) suggested that the Gallinazo Group might have been the center of a loosely organized, multi-valley political system.

Although warfare would have declined among valley residents with the establishment of a valley-wide political system, Billman (1999) found that defense continued to be important. Costeños aggregated into fewer larger sites because small sites were too easily targeted to be safe. Significant labor went into the construction of defensive structures (Billman 1999; Topic 1982) and into the construction of public ceremonial spaces (Table 3.2), which might have reflected a renewed interest in group identity (Billman 1999).

As Costeños changed their priorities, they diverted labor away from canal construction and toward the building of monuments. However, irrigation agriculture was still important, as the strategic placement of sites near canal intakes at the valley neck demonstrated (Billman 1999). Thus, it is possible that the economy did not change dramatically during the Gallinazo

phase, with the possible exception of a lack of access to coca, resulting from the abandonment of producing areas. The coca producing areas were not unoccupied, however. Ceramic analysis indicated that people from the highlands, or people with strong links to highland groups, lived there (Figure 3.3). Billman (1997, 1999) suggested that these highland settlers might have pushed Costeños out of the coca growing areas, and caused the general rise in conflict. These distinctive highland sites were abandoned as highland settlers were displaced, absorbed, or eliminated by Costeños at the close of the Gallinazo or in the Early Moche phase (circa AD 200).

3.6 The Moche State

Recent Moche state research suggested that what was once thought to be a single state stretching from northern border of Perú to the Nepeña valley, might actually have been a series of independent states (Billman 2002; Castillo and Donnan 1995; Quilter 2002). The Southern Moche state, with which the author is concerned, was centered in the Moche and Chicama valleys (Figure 3.1). Excavations in these valleys have revealed that the Moche phase elite marshaled their economic resources to build large public works, such as roads, irrigation canals, and huacas (Billman 2002; Hastings and Moseley 1975; Moseley 1975b). They doubled the arable land through canal construction (Table 3.2). The elite also amassed great personal wealth, as indicated by the wealth found in elite tombs (Alva and Donnan 1993; Donnan and Castillo 1992). To exert their influence, the elite used ideological power manifested in public rituals held at large monuments, and iconography that supported state ideologies. Physical power, in the form of warfare, conquest, sacrifice, and the threat of

violence, was also central to elite control (Bawden 1996; Billman 1996; Bourget 1996 and 2001; Shimada 1978; Verano 2001).

By the Early Moche phase (AD 200–400), two dramatic changes had occurred in the valley, highland immigrants abandoned sites in the coca-producing areas (Figure 3.3) and valley residents built the site of Moche (Figure 3.2). Costeños again occupied the entire valley. During this transition, early varieties of the iconographically charged Moche phase finewares that would later become so important to the elite of the Southern Moche state began to be included in some burials. Because Costeños who lived during the Early Moche phase made and used the same plain wares as their Gallinazo phase predecessors (Billman and Briceño 1999; Billman et al. 1999; Strong and Evan 1952), Late Gallinazo and Early Moche phase occupations cannot be distinguished except when fineware ceramics are found.

By the Middle Moche phase (AD 400–700), the settlement system became even more complex and included a four-tier hierarchy of sites (Billman 1999, 2002). Within these sites people were divided into an increasing array of social statuses and specialized occupations (Bawden 1996; Billman 1999; Topic 1982). Burials dating to the Middle Moche phase display this social stratification, as do the construction, location, and contents of domestic structures (Topic 1982; Van Gijseghem 2001). The excavation of spectacular tombs indicates that elites commanded royal status (Alvan and Donnan 1993; Donnan and Castillo 1992; Verano 1997a).

The Middle Moche phase elite extended political integration by conquering, reorganizing, and controlling settlement in the Virú, Santa, and Nepeña valleys to the south (Figure 3.1, Billman 1999; Moseley 1992; Topic 1982; Wilson 1988). With this rise in militarism, sacrifice became an important ritual activity (Bawden 1996; Bourget 2001; Verano

2001). Verano (2001) has suggested that the sex and age-at-death of sacrificial victims, as well as the common presence of healed trauma, indicates that victims were drawn from a warrior class. Although Quilter (2002) argued that this warfare might have been primarily ritualistic rather than for the purpose of conquest, the war captives who were sacrificed appear to have been residents of other valleys who were captured during battle (Sutter and Cortez 2005).

Construction of public architecture, seen during the Gallinazo phase, not only continued into the Early and Middle Moche phases, but stepped up dramatically with the construction of Huaca del Sol, the largest adobe structure in the Americas (Moseley 1992). The total volume of monumental architecture constructed during the Gallinazo and Early Moche phases was 67,000 m³, but during the Middle Moche phase construction increased to 1,290,000 m³ (Table 3.2). In this way, ritual again united the valley residents at large public structures and mobilized them against enemies from other valleys (who were sacrificed), while clearly distinguishing social classes within Moche phase society through access to iconographically significant artifacts (Bawden 1996; De Marrais et al. 1996).

The economic transformations that occurred with the development of the Southern Moche state were striking, particularly in contrast to the relative stability of the Gallinazo phase. In addition to the creation of a class of warriors, other individuals began to specialize in ceramic production (Bawden 1996; Russell et al. 1998; Uceda and Armas 1998), while irrigation was greatly increased (Billman 1999, 2002). These two changes were mutually supportive, as specialists who were not involved in agricultural activities acquired surplus created by those toiling in the fields. The macrobotanical and zooarchaeological data

suggested that the increase in arable land resulted in an increase in the consumption of field crops and reliance on llama for protein (T. Pozorski 1982).

By the time the site of Moche became the capital of the southern state (during the Early to Middle Moche phase), llama had almost entirely replaced other sources of animal protein (T. Pozorski 1982). Though residents continued to cultivate cotton and gourds, they probably used them for cloth and containers rather than for fishing nets. Costeños depended on maize and squash, but also produced common beans and peanuts. Moche phase iconographic images of the ritual use of maize and coca suggest that these crops were particularly ideologically charged (Bawden 1996; Gummerman 1995, 1997). T. Pozorski (1982) interpreted evidence of genetic change in some plant foods as active manipulation of important economic resources. Similar patterns appear at the site of Galindo, which served as the Late Moche phase center in the Moche valley (Figure 3.2).

Given the cultural history of Moche valley, it seems likely that in addition to agricultural intensification and craft specialization, two additional activities might have been linked to the development of social inequality and the state—the consumption of chicha and the chewing of coca leaves. In order to fully explore the role these activities played in the rise of the Southern Moche state areas of investigation, two additional hypotheses are tested:

Chicha consumption: The creation of canals might have afforded emergent elite, who organized their construction, greater control over irrigated fields and the crops produced in those fields. If so, chicha production could have been monopolized and access to chicha would have decreased early in the Gallinazo phase. If chicha production was centralized and used to “pay” men for laboring on monumental architecture and canal construction, then gender differences in chicha consumption would have become observable later in the Gallinazo phase and during the Early Moche phase.

Coca use: If access to coca was restricted as a result of highland control of producing areas, the bioarchaeological data would then show a dramatic decrease in coca use early in the Gallinazo phase. Reclaiming access to these areas might have been an important tool used by the elite to gain non-elite compliance. If so, then the displacement or elimination or absorption of the highlanders would have allowed the elite to monopolize coca and restrict its use.

3.7 Conclusion

As this overview of Moche valley archaeological research shows, we know much about the history of the valley. During the Cotton Preceramic period (3000–1800 BC) Costeños first began to produce agricultural products. Some Costeños moved inland and began the construction of the irrigation system during the Cupisnique phase (1800–400 BC). It is also during this time that they constructed the first public monuments. People abandoned their coastal settlements, expanded into the coca producing areas of the middle valley, and began to engage in warfare during the Salinar phase (400–1 BC). At this time, the irrigation system was greatly expanded. In the Gallinazo phase (AD 1–200) Costeños abandoned the coca producing areas of the valley. These areas were then inhabited by highland immigrants. Cerro Oreja became the largest, urban center in the valley. By the end of the Early Moche phase (AD 200–400) the Costeños regained control of the coca producing areas of the valley and began to create the institutions of the Southern Moche state. During the Middle Moche phase (AD 400–700) the site of Moche, down river from Cerro Oreja, became the center of the Southern Moche state and construction of the largest adobe structures in the Americas began. The large, hierarchical system of the Moche state started to wane in AD 700, and by AD 900, the Southern Moche state had collapsed.

In this setting, we can see the activities dominated by the elite, particularly during the height of the Southern Moche state, when prisoners were sacrificed and elites and religious figures were interred in elaborate tombs. This history does not, however, inform us about how ordinary women, men and children lived their lives during these periods. In order to “see” these people, we need to examine their remains, not those of irrigation canals and royal compounds. The residents of Cerro Oreja provide us with such an opportunity. Through examining these remains the author traces the residents of Cerro Oreja’s involvement in the agricultural intensification and craft specialization, which we know from our large histories were important during this time. Additionally, changes are documented in these residents’ access to chicha and coca in order to understand the role these important Andean products played in their lives.

Table 3.1 Cultural-Temporal Phases in the Moche Valley

Phase	Estimated Date	Cultural Horizon	Key Events
	3000 – 1800 BC	Cotton Preceramic period	beginning of sedentism ground-water agriculture
Cupisnique	1800 – 400 BC	Initial Period - Early horizon	establishment of inland sites beginning of irrigation and agricultural production
Salinar	400 – 1 BC	Early Intermediate period	abandonment of coastal sites Cerro Oreja is settled onset of warfare expansion of irrigation
Gallinazo	AD 1 – 200	Early Intermediate period	settlement focus on valley neck Cerro Oreja becomes center in-migration of highlanders
Early Moche	AD 200 – 400	Early Intermediate period	displacement of highlanders founding of Moche state
Middle Moche	AD 400 – 700	Early Intermediate period	establishment of center at Moche construction of Huaca del Sol dramatic expansion of irrigation
Late Moche	AD 700 – 900	Middle horizon	abandonment of the site of Moche loss of inter-valley integration

Following Moseley 1992 and Billman 1999

Table 3.2 Prehistoric Construction Projects in the Moche Valley

Phase	New Canals Excavated	Hectares Irrigated	Ceremonial Architecture
Cupisnique	4,200 m ³	4,100	416,000 m ³
Salinar	60,000 m ³	6,750–7,300	15,000 m ³
Gallinazo–Early Moche	0 m ³	6,750–7,300	67,000 m ³
Middle Moche	312,000 m ³	12,500–13,200	1,291,000 m ³

Following Billman 2002

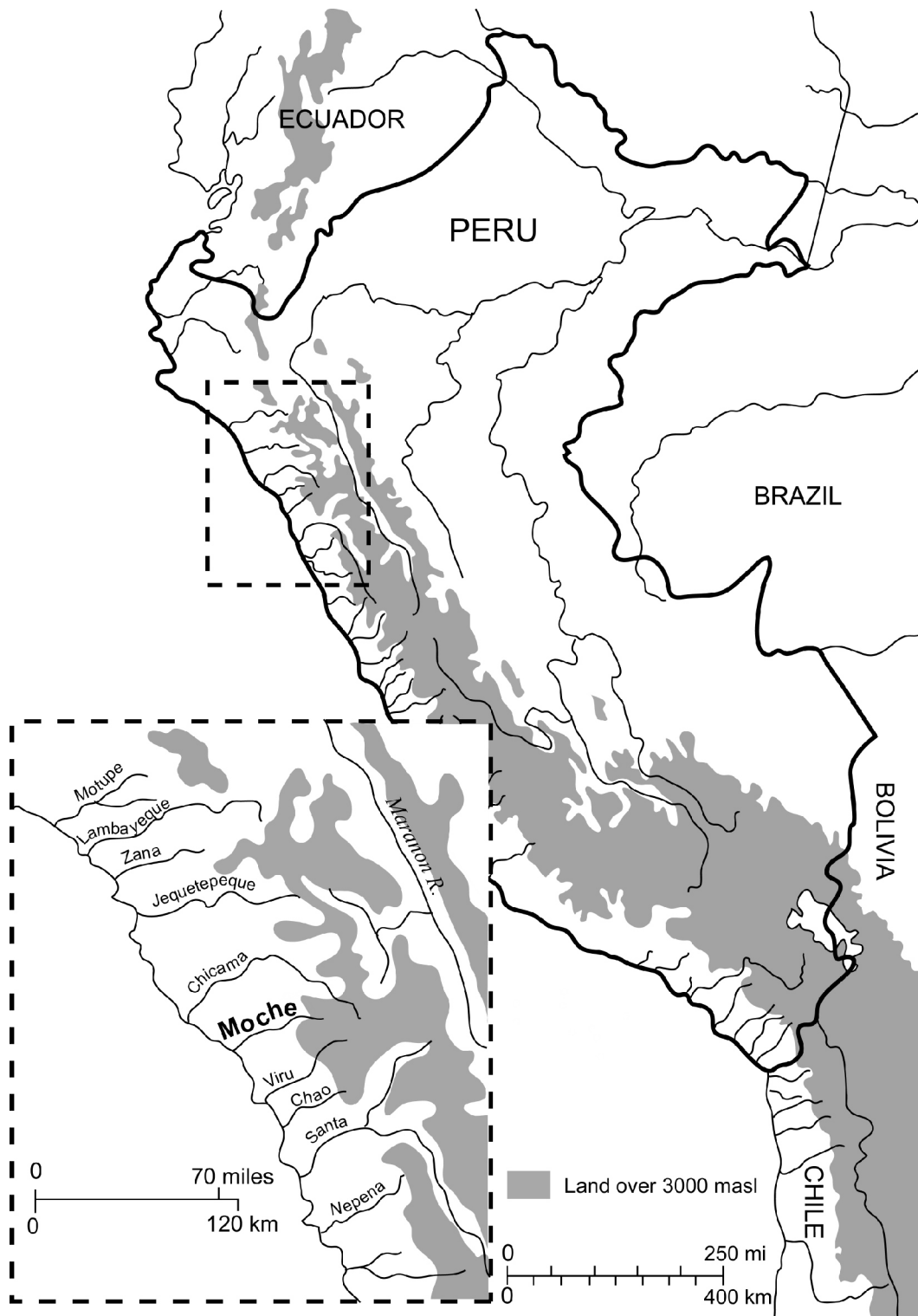


Figure 3.1: Map of Perú, north coast inset from Moseley 1992

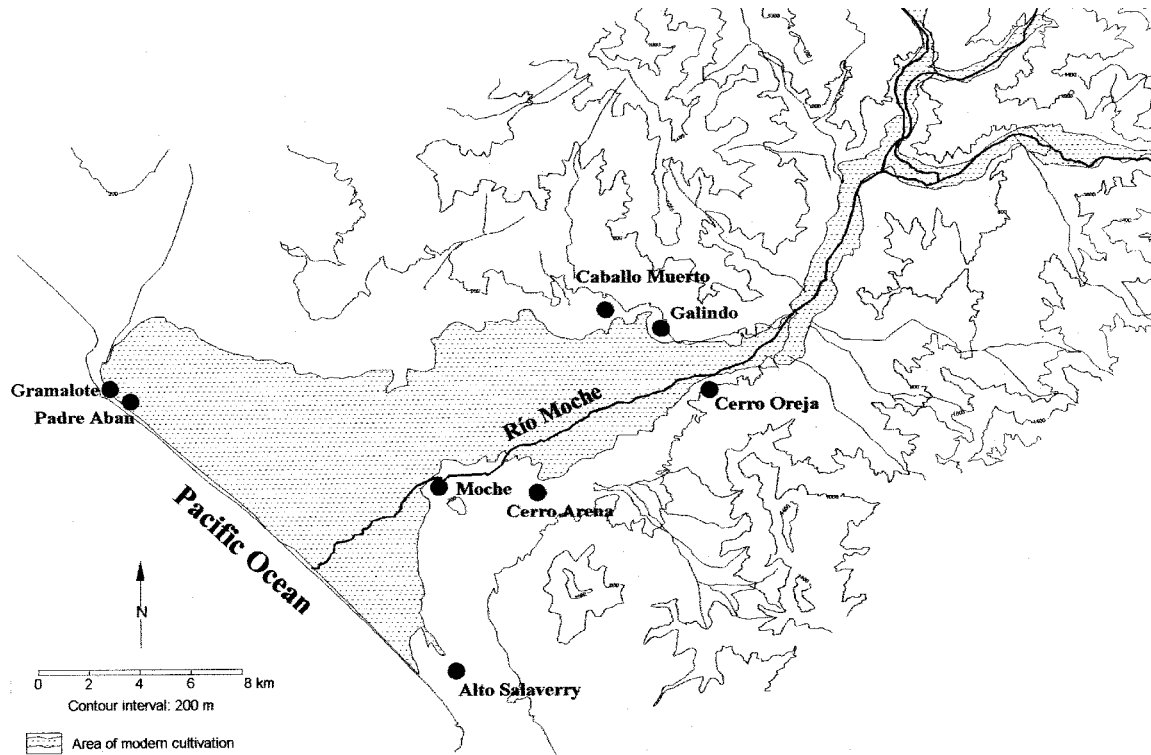


Figure 3.2: Location of sites discussed in text

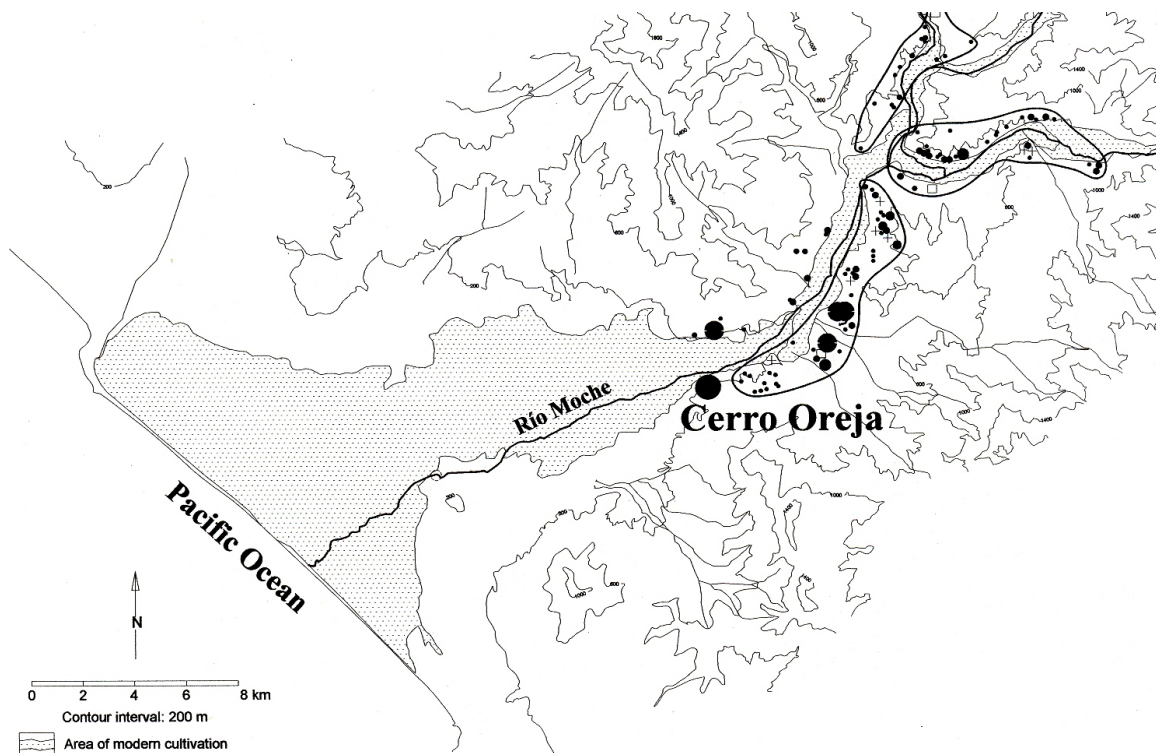


Figure 3.3: Highland sites in the coca producing areas of the middle Moche valley, from Billman 1999

Chapter 4 BIOLOGICAL SIGNATURES OF STATE DEVELOPMENT

4.1 Introduction

Through the practices of their daily lives, women, men, and children produced the social, political, and economic changes that transformed their egalitarian societies into states (Brumfiel 1992). Bioarchaeology is central to the examination of such individual daily activities because people's economic, political, and social practices are marked on their physical bodies through the practices of daily living (see Larsen 1997 for a detailed review of this literature). In this chapter, the author examines the ways in which researchers have employed bioarchaeological analysis to explore daily lives in order to frame questions about the development of social inequality.

Commonly, researchers have focused on two axes of social difference upon which inequalities can be created: gender and social status, and so the author focuses on the literature that explores the role of these two variables in the development of social inequality. Following this discussion, she details the work of bioarchaeologists working in the Moche valley. These biological analyses, together with the archaeological information presented in the previous chapter, provide a context and direction for the author's research. Examining this context through the analytical lens provided by theorists of state development (chapter 2) and gender and social status studies (this chapter) has led the author to examine changes in four areas of daily life: agricultural intensification, craft specialization, coca use, and chicha consumption. In examining these four activities, the author uses individual-scale biological

data to chart changes in daily practices and then to link these changes to the development of social inequality.

4.2 Gender Embodied

Biological sex has always been an important element in osteological studies. Methods of identifying a person as female or male from their skeletal remains are well established, though researchers continue to refine these methods and develop new measures.

Paleodemographic and paleopathological data are often presented for both females and males because researchers understand that the lives of females and males were (and are) different.

Sex differences are biological, but they are understood within a cultural context and thus given social meanings (Walker and Cook 1998). Sex, a biological constant with limited variation, is more accessible than gender. Gender is a historically contingent set of social relations that are continually being constructed (Gero and Conkey 1991). However, gender is constructed, in part, on the basis of biological sex, and so sex can provide us with a window into gender relations. Because skeletal remains provide us with partial histories, for both individuals and populations, they offer physical evidence of gender relations (Larsen 1998). By socially contextualizing the differences and similarities we observe in female and male skeletons, we can begin to understand some of the ways in which the lives of women and men were constructed, an important step in understanding past societies (Rautman and Talalay 2000). To explore how bioarchaeological data can help us understand the construction of gender in the past and the gendered experiences of females and males, the author briefly summarized several studies that addressed the issue of gender. As with her discussion of state formation

literature, this discussion is not meant to be a complete review but rather to highlight the commonalities that the author thinks are central to the development of social inequality as they relate to the focus of this dissertation.

Bridges (1989, 1991) tracked work loads associated with Archaic period foraging and Mississippian period agricultural activities in Alabama by examining changes in the cross sectional geometry of female and male humeri and femora. The cross sectional geometry of major long bones is an indication of an individual's strength because the skeleton's response to stress is the creation of new bone at the site of greatest loading (Bridges 1989). Bending and torsional forces are the most common types of loading stress placed on long bones because of their curved nature, and the asymmetrical forces placed on them as multiple muscles with different insertion sites contract allowing for complex movements such as walking. Therefore, cross-sectional geometry is the best measurement of long bone strength (Bridges 1989; Larsen and Ruff 1991).

Although Bridges (1989, 1991) did not expressly use gender as an analytical category, her analysis does lend itself to a discussion of changing gender roles, and thus can provide insight into how gender roles might have changed in the Moche valley. Bridges found that the femora of both Mississippian females and males showed evidence of increased work loads on the lower body when compared to Archaic individuals. However, Mississippian females also showed increased upper body strength. Overall, it seems that foragers, both women and men had smaller workloads than agriculturalists. Bridges suggested that differences between females and males indicates that "women's work" varied more substantially than men's during, and that women's agricultural work included a wider variety of strenuous tasks than

did men's. Therefore, the addition of agricultural work to daily life, in particular the processing of maize, differentially affected women's roles. It is clear from archaeological investigations in Perú that there were increases in arable land just prior to and during the formation of the Southern Moche state (Table 3.2). Given this, we would expect changes in agricultural activities, and as Bridges found, these changes in labor might have affected Moche valley women and men differently.

Ruff and Larsen (Larsen and Ruff 1991, 1994; Ruff and Larsen 1990; Ruff et al. 1984) also examined changes in work loads associated with the development of agricultural production. In contrast to Bridges' study, they found that the humeri and femora of both female and male preagriculturalists who lived in Coastal Georgia were stronger than those of later resident agriculturalists. They suggested that work loads decreased for both women and men with the shift to food production. However, during the contact period, work loads again increased for both women and men as they were forced to labor in Spanish missions. This variability suggested that there was no direct correlation between agricultural production and work load, but that work load varied as a result of differing environmental and social conditions.

In an examination of gender among this group of prehistoric and contact period Georgians, Larsen (1993, 1998) brought together several indicators of diet, health, and activity: dental caries, periosteal reaction of bone, and osteoarthritis. Dental caries is a process in which the acids produced by bacterial fermentation of sugar demineralizes tooth enamel or dentin. Because the bacteria responsible for dental caries thrive on starches and sugars, agriculturalists have higher rates of carious teeth than foragers. Periostitis is an inflammation of

the periosteum, which can result from infection, trauma, or nutritional deficiencies. In response to this inflammation, new periosteal bone is deposited. Osteoarthritis is a mechanical breakdown in the structure of joints. Although a wide variety of factors affect the development of osteoarthritis, levels of activity and long-term repetitive motions have been identified as important causative factors.

By tracking temporal changes in rates of these three indicators among females and males, Larsen traced changes in the lives of Georgian women and men. He found that through time, the diet of all native Georgians included greater amounts of starchy agricultural products, as indicated by increasing rates of carious lesions. However, the diets of females changed more dramatically, perhaps as a result of women's greater involvement in agricultural food production. This pattern has been documented in several settings throughout North American (see Larsen 1997 for a review). Health, as indicated by rates of tibial periosteal reaction, decreased for females and males through the study period (Larsen 1998). This change affected contact period males to a greater extent than females. Larsen suggested that this might have been the result of gender differences in the work required by Spanish missionaries. Native men involved in the repartimiento system were often required to travel far from home to participate in work parties. This travel provided increased opportunities for exposure to new infectious agents. Activity levels, as indicated by skeletal changes associated with osteoarthritis, showed decreasing differences between females and males through time. Larsen interpreted this decrease as an indication of a decrease in the gendered division of labor in the mission setting. Following Larsen, Ruff, and coworkers' findings, we might expect to find multiple shifts in the participation of women and men in agricultural production

in Moche valley. In particular, as social status became more distinct with the rise of inequality, non-elite women and men might have increasingly similar work loads as did the Native North Americans who were forced into Spanish missions.

Whereas the work of Bridges and Larsen and coworkers highlighted the importance of food production in the creation of gender roles, Hastorf (1990, 1991, 1993) took a more direct approach to studying gender. She stated that food is “a significant medium for determining and maintaining gender relations” (Hastorf 1991:133), in part because the household is a signification location of gender creation. She also noted that the ethnographic literature shows that cross-culturally women were recognized as the preparers and servers of food. She concluded that shifts in control of space (preparation, storage, and disposal patterns) and access to foods (changes in diet) could be used to trace shifts in gender relations.

Of particular interest to Hastorf (1990, 1991, 1993) were changes that might have occurred as a result of the Inka conquest of the central Andes. In her analysis of botanical remains recovered from pre-Inka domestic compounds, she identified these domestic structures as locations where food was processed and stored. Remains of a wide variety of plants were recovered from these compounds, particularly from centrally located exterior work spaces, or patios. These patterns suggested that women engaged in a variety of food-related tasks in the patio areas. Maize remains were rare compared to the remains of other plants, but they were concentrated in the patio areas. Hastorf interpreted patio areas as locations where women communally processed what little maize was produced.

Later, during the later Inka period, compounds yielded a smaller range of plant remains and maize was more common (Hastorf 1990, 1991, 1993). This change suggested to Hastorf that the Inka re-oriented agricultural production toward fewer plants and in particular, toward maize. The distribution of plant remains within patio areas also changed. Rather than being found throughout the area, plant remains were recovered from corners and a walled area around a hearth. Hastorf interpreted this distribution to indicate a greater spatial circumscription of female tasks.

Botanical remains, such as those discussed by Hastorf, can speak to agricultural production, but they cannot speak directly to the end result of production—consumption. By definition, plants that are consumed cannot be recovered from domestic contexts, other than latrines. However, bioarchaeological analyses can tell us directly about consumption. DeNiro's (see Hastorf's 1990, 1991) stable isotopic study of human remains from pre-Inka and Inka periods provides us with a picture of changing consumption patterns. Because different types of plants and animals vary in the proportion of stable carbon and nitrogen isotopes they take up during life, the proportions of these isotopes found in human bone vary according to which and how much of these plants and animals individuals consume. In particular $\delta^{13}\text{C}$ values indicate the amount of maize or marine resources a person consumed, and $\delta^{15}\text{N}$ values distinguish trophic level (for a detailed discussion see chapter six).

The bone chemistry of pre-Inka females and males suggested that they consumed similar diets (Hastorf 1990, 1991, 1993). Additionally, the isotopic signatures indicated that people did not consume much maize but instead depended on tubers and quinoa as staples. During the Inka period, $\delta^{13}\text{C}$ values suggested that the consumption of maize increased and

that this increase was gendered. Males consumed significantly more maize than did females. Hastorf suggested that while women spent more time making chicha (maize beer), men were the beneficiaries of this labor. Males also consumed more meat than women as indicated by $\delta^{15}\text{N}$ values. Men's greater access to and consumption of chicha and meat was probably the result of the Inka provisioning men taking part in work parties as part of mit'a, the labor tax system. Through the mit'a, men became involved in extra-household consumption, and women did not. This gender difference contributed to the creation of separate realms, physically, politically, and socially as indicated by household archaeology. These gendered differences appear to have cut across social status differences.

It is evident from the work reviewed here and that of other researchers, that biological data interpreted in a cultural framework can provide us with a window into past gender relations. In particular, production and consumption are activities central to the negotiation of gender relationships. As these activities are variable and locally defined, so are the ways in which production and consumption become gendered. Through taking part in daily activities, female and male bodies are changed, and are thus marked by gender. In the studies reviewed here, the geometry of female and male individual long bones was modified, their teeth and bones were affected, and their skeletal tissues were marked isotopically. In these ways, the gender of females and males became embodied.

4.3 Investigating Social Status

Social status has also been an important dimension of osteological studies. However, unlike the identification of sex, social status cannot generally be "read" from a person's

skeletal remains. Therefore, bioarchaeologists must turn to other sources for this information. Grave architecture and placement, body preparation and positioning, and grave good presence (including the remains of attendant individuals) have all been used to assess the nature of social stratification in a society (see Beck and co-workers 1995 and Parker Pearson 1999 for some examples). It is important to remember that mortuary activities are conducted for the living as much as for the dead and therefore, are not a simple reflection of the deceased's position in society, but also that of their family's. Additionally, these activities are likely to be arenas of status negotiation. By conducting elaborate mortuary rituals that require substantial economic investment, families can create or maintain their social status. (Brown 1995; Parker Pearson 1999:84-85).

Powell (1988, 1991) compared the skeletal remains of elites and non-elites from the Mississippian Moundville chiefdom for evidence of differences in health and diet to track the biological impact of social inequality. Mortuary analyses of Moundville burials suggested that the population had been divided into elites and non-elites. Elite status was indicated by the location of graves on mounds or in segregated cemeteries, and the inclusion of grave goods such as copper, artifacts of personal adornment, and animals remains. Non-elite status was indicated by non-mound grave locations and the inclusion of graves goods such as ceramic bowls and sherds or a lack of grave goods (Peebles and Kus 1977). The specific skeletal indicators Powell (1988 and 1991) examined were child growth, oral health, dental wear, anemia, and infectious disease. Adult stature and dental defects give us an indication of health because poor nutrition and illness in childhood prevent individuals from attaining their full stature potential and can result in dental hypoplasia. A person's oral health and bone

chemistry, as noted previously, are affected by her diet. Dental wear also tracks diet.

Agricultural foods are soft, and thus do not result in much wear on the teeth of agriculturalists. Anemia can result from a dietary deficiency of iron or infection (parasitic, bacterial, or viral), and thus evidence of this condition can tell us about an individual's general health status. Periosteal reaction, as previously noted, indicates poor health, nutrition, or trauma.

Although her interest was in understanding the biological impacts of social inequality, Powell's (1988, 1991) analysis of rates of dental wear led her to identify age, not gender or social status, as the primary cause of the differences in her sample. When she examined dental health, as measured by rates of dental caries and antemortem tooth loss, she found that age was still the most important factor in explaining differences, but she also observed differences between females and males. The lack of differences between elite and non-elites in dental wear and oral health was mirrored in other the bioarchaeological measures she used. In Moundville society, social status positions did not appear to have significantly affected individuals' access to critical resources and thus, their health.

Schoeninger and Schurr (1998) stable isotopic analysis of the human remains from Moundville also failed to identify significant difference between female and male, as well as elite and non-elite diets. The results of the Moundville studies suggest that in contexts of social differentiation there need not be inequalities of central resources such as food. We might then expect that during the Salinar and Gallinazo phases in the Moche valley all of the residents of Cerro Oreja had access to necessary foods, and that mortuary differences might not have translated to differences in diet and health.

Powell's and Schoeniger and Schurr's findings at Moundville are in contrast with Goodmand and Armelagos' (1988) findings from Dickson Mounds, which was located in another part of the Mississippian world. Goodman and Armelagos analyzed the remains of adult and adolescents dated to the Late Woodland, Mississippian Acculturated Late Woodland, and Middle Mississippian periods. They examined the teeth of these individuals for enamel hypoplasias. Enamel hypoplasia is an area of decreased enamel that results from a period of childhood illness or malnutrition sufficient to disrupt growth but from which the affected child recovers. They found that in nearly all cases, individuals who did not experience hypoplasia caused by childhood stress events lived longer than those who survived one such event. The later group lived longer than those who experienced more than one event. Although their study did not specifically focus on social status differences in health and diet among the individuals buried at Dickson Mounds, their results nonetheless speak to this issue. The average differences in age-at-death of stressed and non-stressed individuals varied the most during the Middle Mississippian period. Although they did not directly compare individuals of high and low status, they argued that the archaeological record indicates that Middle Mississippian people lived during a period of inequality. Therefore, they suggested the variability in health status during the Middle Mississippian period reflects the effects of social status differences on people's access to essential resources.

Lambert and Walker (1991) examined patterns of diet, disease, and violence in an effort to understand the formation of prehistoric chiefdoms in the Santa Barbara Channel Islands area. Archaeological data suggest that regional trade and a maritime economy were important elements in the rise of social inequality. This trade moved limited resources

throughout the region, but it was not sufficient to even out local variability. Although $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values showed an overall increase in the consumption of marine resources, coastal and island groups still consumed more such foods than did inland groups. Rates of anemia also show local variation in diet. Lambert and Walker observed a geographic cline in health, with groups who occupied the most remote islands more severely stressed than those who occupied larger, near coast islands; these in turn were more stressed than mainlanders. They interpreted this pattern as the result of differential access to clean water, to parasite-free foods, and to an adequate diet.

There was also evidence of dietary differences resulting from the rise of area chiefdoms. Lambert and Walker (1991) identified a decrease in tooth wear that they attributed to a shift from roots and tubers (which contain much grit) to fish and sea mammals. This dietary change was the result of people shifting their economy from a terrestrial base to a marine base. Although their analysis did not include a comparison of elites and non-elites, the economic shift from a terrestrial to a marine base was dependent on access to boats, a limited resource, and so they suggested that this shift did not benefit all individuals. During the early period of this economic transition, dental caries rates showed that females continued to eat more carbohydrates than men. Later, women's access to animal protein increased and gender differences in diet decreased, though differences among local groups remained. As with the groups studied by Lambert and Walker, the people of the Moche valley had access to marine resources. The use of shellfish would not have been limited by the need for boats, but the collection of fish and marine mammals would have been. Therefore, we might expect the use of marine resources to be linked to social status at Cerro Oreja.

More dramatic dietary differences between elites and non-elites have been found in state level Mayan societies. White and Schwarcz (1989) examined temporal changes and social status differences through stable isotope and elemental analysis of human remains from Lamanai, Belize. In general, they found that $\delta^{13}\text{C}$ values suggest a decrease in maize consumption from the earliest to the middle periods (Pre-classic to Terminal Classic), followed by a dramatic increase in the last periods (Post-Classic and Historic). Two Early Classic individuals who were interred in tombs and thus identified as elite, diverged from the group pattern. The combination of $\delta^{13}\text{C}$, $\delta^{15}\text{N}$, and strontium suggested that elite females and males consumed less maize than non-elites. Additionally, males had access to imported marine resources.

An even greater focus on social status-related dietary differences was found in the isotopic analysis of human remains from Pacbitun, Belize (White et al. 1993). To investigate differences between elite and non-elite diets, the authors used three different methods of designating social status: grave type, distance from the civic-ceremonial center, and types of grave goods present. Each measure yielded the same results: the highest status individuals consumed significantly more maize than the lowest ranking individuals. The difference between Mayan high status diets at Pacbitun (White et al. 1993) and Lamanai (White and Schwarcz 1989) were the result of variations in local resource availability. Although both sites were removed from the coast and located in the Mayan lowlands, Lamanai was on a large lagoon system, which would have provided some access to marine resources.

Cucina and Tiesler (2003) used dental data to investigate the effects of social status on diet among the Classic Maya. The remains they examined were recovered from three sites,

located in the northern Peten of Mexico: Calakmul, Dzibanché and Kohunlich. Study individuals were identified as commoners or privileged based on grave architecture, and the quality and placement of grave goods. Cucina and Tiesler found high status individuals to be more often affected by antemortem tooth loss and less often affected by dental caries than low status individuals. Additionally, they found lower rates of carious lesions among high status males than among high status females. Low status individuals displayed no such sex differences. They suggested that the differences in dental caries reflect dietary differences. Elite males consumed more protein (and fewer carbohydrates) than elite females, who in turn consumed fewer carbohydrates than non-elites. Rates of antemortem tooth loss did not follow the same pattern as carious lesions, nor did they correlate with age-at-death. Cucina and Tiesler noted that high status individuals had more extensive dental calculus deposits (calcified plaque) than low status individuals. Because the presence of dental calculus has been linked to periodontal disease, which results in tooth loss (Ortner and Putschar 1981), they suggested that higher rates of antemortem tooth loss among elites might have resulted from poor oral hygiene.

All of these studies suggest that Mayan elites had different diets than non-elites. It appears that among the Maya, unlike the Mississippian people of Moundville, differences in social status did translate into differences in diet. However the Mayan city-states were more highly stratified than the society at Moundville. Therefore, we might expect to see the development of differential access to foods during the end of the Gallinazo phase, as the people of Cerro Oreja became more socially stratified.

Fewer studies of this kind have been conducted in South America. Ubelaker and Katzenberg (1995) conducted a stable isotopic analysis of human remains from the site of La Florida, Ecuador. In this analysis, elite status was signaled by inclusion of metal, marine shell, textile, and exotic wood and stone artifacts in burial bundles. In some cases human sacrificial victims were interred with high status individuals. Values of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ suggested to Ubelaker and Katzenberg that although elites had greater access to maize, they did not consume more protein than their sacrificed retainers or other non-elites. Additionally, the timing of the shift to maize indicated that maize consumption increased as social inequality increased.

Kellner (2002) examined remains from the Nasca region of southern Perú for evidence of changes in health status, diet, activity levels, violence, and cranial modification. Although her sample did not include individuals of varying social statuses from the phases represented (Early Nasca–Wari), she was able to discuss the effects of increasing social complexity on the health of Nasca's residents as archaeological analyses indicated this as a time of social change. Kellner found a general decrease in health through the period studied. However, not all indicators of health tracked together. Similarly, she found that diet, levels of violence, and forms and prevalence of cranial modification did not change in linear or predictable ways.

These studies indicate that as resources vary according to local environment and history, the biological effects of social differentiation vary. We cannot expect that every instance of social hierarchy resulted in status or gender differences in access to necessary resources. We have seen that in some cases maize and protein are limited resources to which the elite or men have greater access. In other cases, maize was the food of the less powerful

(non-elites and women). What is apparent is that production and consumption were central to the marking and maintaining of gender and social status differences. Thus, the investigation of what food resources different groups had access to can provide us with clues to help trace the development of the Southern Moche state.

4.4 Bioarchaeology of the Moche State

Human skeletal remains recovered from Andean archaeological sites have been studied since the turn of the nineteenth century (Bandelier 1904; Hrdlička 1914; Muñiz and McGee 1897). South American physical anthropologists, like those who work in other regions, have focused on unique specimens—individuals whose skeletal remains displayed evidence of specific diseases, congenital abnormalities, trauma, or cultural modification (see Verano 1997a). More recently bioarchaeologists have broadened their paleopathological studies by employing population level and regional approaches (e.g., Cohen and Armelagos 1984; Larsen 1997). In South America, such analyses have examined the epidemiology of both particular pathological conditions and general levels of group stress (Allison 1984; Benfer 1984, 1989, 1990, 1999; Ortner et al. 1999; Verano 1997b, 1997c). Migration patterns have also been studied (Blom et al. 1998; Hoshower et al. 1995; Sutter 2000; Tomczak et al. 1998).

Analyses of human skeletal remains recovered from the north coast of Perú conform to this pattern. Verano (1997c) described a variety of genetic, traumatic, and pathological conditions among the individuals recovered from the Late Moche site of Pacatnamu located north of the Moche river in the Jequetepeque valley (Figure 3.1). Additionally, Verano

(1997b) identified population variation in skeletal responses to anemia, which he attributed to variations in both environmental and social conditions.

Bioarchaeologists have also studied the remains of individuals who lived under the hegemony of the Southern Moche state. Working in the Moche valley and in valleys to the north, Verano (1996, 1997d) examined elite burials and victims of human sacrifice, to address questions about Moche state violence and hierarchy. Donnan (1995) and A. Nelson (1998) studied mortuary practices associated with the Moche state. These and other studies have focused on either Moche phase sacrificial victims or elites, in part, because most of the available samples do not represent different social groups, or do not have the time depth required to identify changes through the transition from autonomous villages to the state.

Whereas these analyses examined individuals who lived during and after the height of the Southern Moche state's power, the Cerro Oreja Bioarchaeology Project was developed to investigate the origins of the state by examining life before and during its development. Yoshia (2004) examined the health status of a portion of the Cerro Oreja skeletal sample in her dissertation (see chapter 6:2). The skeletal indicators she used included subadult growth and adult stature, enamel hypoplasia, indicators of anemia, and periosteal reaction. Additionally, she charted the presence of scurvy, treponematosi, and osteomyelitis. She expected that the increasing social stratification and urbanization that characterized Cerro Oreja during the Salinar and Gallinazo phases, would have resulted in a decrease in health, particularly for low status individuals. However, these expectations were not met. Rather, she found that Salinar phase individuals more commonly displayed evidence of poor health than Gallinazo phase individuals, although these differences were only statistically significant for periosteal reaction

and indicators of anemia. Yoshida did not identify any sex differences in health, and within each phase, low status individuals were no more likely to be in poor health than high status individuals.

4.5 Conclusion

What is apparent from this brief review of the bioarchaeological literature is that skeletal remains can tell us about inequality in hierarchical societies. Social differentiation among these groups varied, as did their histories and environments. In some cases gender was the most important axis of variation, in others social status was central. Although the differences identified between gender and social status groups were not consistent, they commonly included access to particular foods, exposure to and risk of contracting infectious disease, and variations in work load. When we examine the bioarchaeological research that has been conducted in the Moche valley we find that researchers have most often investigated life during the period of Moche state supremacy. This leaves open many questions about how the Southern Moche state came to be. By examining gender, social status, and age differences in diet and work represented in the Cerro Oreja skeletal collection, the author begins to address questions about how the daily activities of common individuals changed prior to and during the period of state formation.

Chapter 5 CERRO OREJA: THE RESEARCH SITE

5.1 Introduction

The remains the author examined were recovered from the site of Cerro Oreja. This site was the largest settlement in the Moche valley during the Gallinazo and Early Moche phases (AD 1– 200). As this period preceded the development of the Southern Moche state and the establishment of the paramount center at the site of Moche, understanding the economic, social, and political organization at Cerro Oreja is important to our understanding of social inequality in the region.

Cerro Oreja was located at the neck of the Moche valley (Figure 5.1). Just downstream from this location, the Moche valley widens as the Río Moche drains into the Pacific. Upstream from the valley neck, the Río Moche cuts into the Andean foothills, and bottomland is limited as the valley slopes rise steeply. It is in this area that people built irrigation canal intakes. By the beginning of the Gallinazo phase, people had constructed a canal system that delivered water to large portions of the middle and lower valleys (Billman 1997). Gallinazo phase people used the irrigated valley bottom for agricultural production and constructed their homes on small terraces they built in the steep lower slopes of Cerro Oreja (Figure 5.2). This zone of occupation stretches for two km along the base of the mountain. Domestic structures were generally small and constructed from cane and mud; however, some people lived in larger, masonry compounds. Above the domestic zone a

ceremonial adobe brick huaca was constructed on a flat terrace carved from the mountain.

Located below the residences were three cemeteries, with a large masonry wall separating the homes of the living from those of the dead (Billman 1996).

5.2 Archaeological Investigations

Although limited testing was conducted at Cerro Oreja during the Chan Chan-Moche Valley Project (Moseley and Day 1982), the only substantial excavations were those directed by José Carcelen of the Instituto Nacional de Cultura (INC). This work was conducted in 1994 to mitigate the effects of the construction of the Chavimochic Canal. At this time, a few domestic structures and sections of three cemeteries were excavated (Carcelen personal comm 1999). The INC recovered 909 burials from site VM 150, 157:4:40, the largest of the cemeteries. The graves were excavated from a 550 m² area in five 10-by-10 m blocks and one 5-by-10 m block. Although most of these individuals died during the Gallinazo phase, workers also excavated individuals who died during the preceding Cupisnique and Salinar phases and the later, Early Moche phase. These temporal distinctions were primarily identified on the ceramic analysis conducted by the director of the INC project, José Carcelen (personal comm 1999). Table 5.1 lists the number of burials from each phase that were excavated by the INC, how many of these interments the author examined, and how many individuals her analysis identified.

The depositional history of this cemetery is complex. Before the landscape was modified by the residents of Cerro Oreja, the cemetery area was a depression. During the Cupisnique, Salinar, and Gallinazo phases, people excavated graves within this depression.

Sometime during the Gallinazo phase, the residents filled the depression, capping the cemetery. After this event, people built structures to house the dead, and burials were excavated into the fill debris within the structures. Later, these mortuary structures were themselves buried, and on this new surface Cerro Orejaños² built domestic structures. During this period, the dead were buried under house floors. Much later, during the Chimú phase, a canal was constructed over the cemetery. Although Carcelen could use only ceramic styles and the presence of cinibar and ocher on the remains to separate burials into phases, site stratigraphy allowed him to divide the Gallinazo phase interments into early, middle, and late periods, which were termed the Pre-structural, Structural, and Post-structural, respectively (Figures 5.3–5.6, and Table 5.1).

The preservation of the human remains was highly variable as a result of several factors, the most important of which were site hydrology and modern curation. Remains located in the lowest strata were least affected by the destructive action of water that percolated down from the Chimú canal. Although Cupisnique and Salinar phase remains are the oldest, they are the best preserved. The more recent Post-structural Gallinazo phase remains are in the poorest condition.

Damage during curation was primarily the result of the INC's limited funding. Because boxes and other packing materials are expensive and beyond their limited resources, INC researchers used the fewest containers possible to accommodate the skeletal remains. Often, the remains of several individuals were placed in one 50-by-40-by-30 cm cardboard box. INC

² Cerro Orejaños refers to the residents of the site of Cerro Oreja, in contrast to the more general term Costeños.

researchers dry-brushed bones clean and attempted to reconstruct fragmented elements in a few cases, but generally they placed all bones belonging to an individual in a single, large plastic bag with little or no padding. Occasionally, the most complete elements or the remains of children, were placed on a layer of cotton on the bottom of the box and covered with another layer of cotton and a cardboard divider. The bagged remains of other individuals were then put on top of the divider. These practices resulted in substantial damage. Further damage to the skeletal material occurred in 1996 and 1997 when El Niño rains caused the roof of the structure in which they were housed to collapse.

In addition to the human skeletal remains, INC excavators recovered a wide variety of burial goods. The inventory that INC researchers created noted only the presence or absence of items by artifact class (e.g., ceramic, metal, faunal, botanical). There is also a photographic collection of reconstructed vessels which was used to create a whole vessel count for each burial.

INC records show that less than 40% of the graves excavated included grave goods. The most common grave accompaniments were ceramic vessels. Two hundred and seventeen graves included at least one vessel, and 30% of these contained more than one vessel. Metal was recovered from 125 graves. Sheet or ingot copper placed in the mouth or near the hands was the most common metal artifact (Yoshida 2004). Less than 10% of the graves included animal remains, minerals, stone artifacts, or spindle whorls. Even less common (included in less than 1% of graves) were beads and textiles, or shell and wood items. Although ceramic vessels were the most common item, not all graves that were accompanied by burial goods contained vessels. The analysis of grave goods is preliminary, and currently no summary

information is available for grave structure. A detailed mortuary analysis is planned for the Cerro Oreja collection.

5.3 Conclusion

Although an additional survey of the site of Cerro Oreja is underway (Billman 2003) and a mortuary analysis of the graves and burial goods is planned, currently very little is known about the lives of the site's residents. We do know, however, that Cerro Oreja was occupied from the beginning of irrigation agriculture during the Cupisnique phase to the earliest days of the formation of the Southern Moche state (Billman 1996). Thus, generations of Cerro Orejaños lived during periods of social change, when social inequality became an important part of their lives. Therefore, their remains can provide us with a window into the changes in people's agricultural production, chicha consumption, craft specialization, and coca use that might have been important loci of social change.

Table 5.1 Cerro Oreja Large Cemetery Sample

Cultural Association	date	Burials Excavated	Burials Examined	Individuals Examined*
Cupisnique	3000–1800 BC	7	7 (100%)	8
Salinar	400–1 BC	78	68 (87%)	76
Pre-structural Gallinazo	AD 1– 200	298	225 (76%)	245
Structural Gallinazo	AD 1–200	318	202 (64%)	215
Post-structural Gallinazo	AD 1–200	139	123 (88%)	146
Gallinazo-Recuay	AD 1–200	3	3 (100%)	3
Moche	AD 200–900	6	4 (67%)	5
Chimú	AD 1000– 1470	2	2 (100%)	2
Unidentified		58	47 (81%)	50
Total		909	681 (75%)	750

* Burials often contained remains of more than one individual

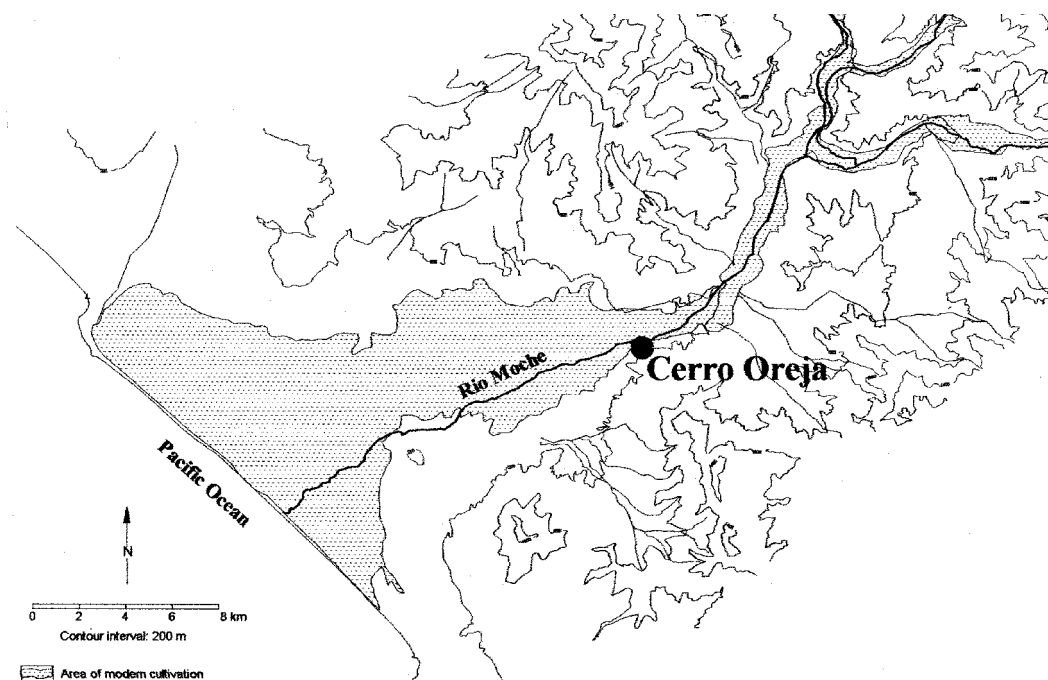


Figure 5.1: Map of the Moche Valley, Cerro Oreja identified



Figure 5.2: Cerro Oreja

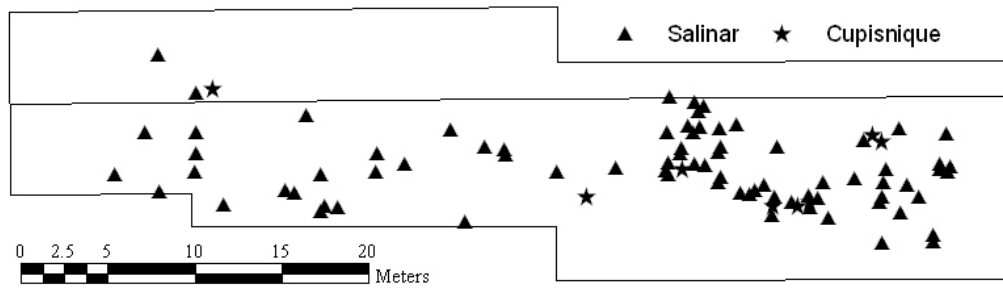


Figure 5.3: Cupisnique and Salinar burials

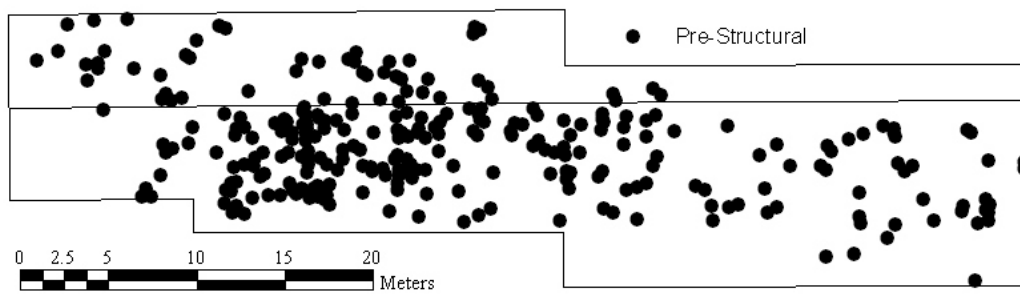


Figure 5.4: Pre-structural Gallinazo burials

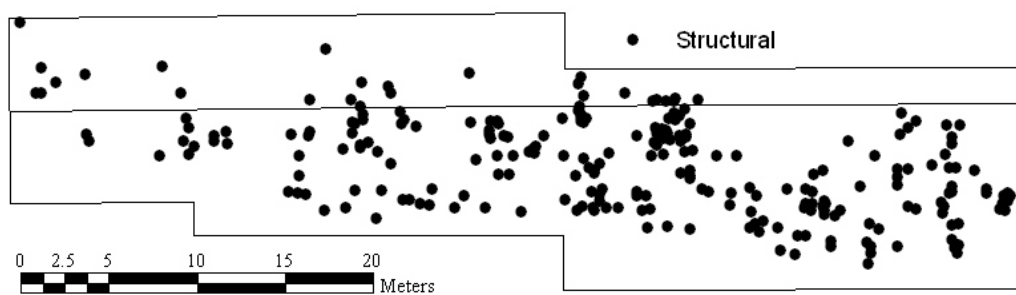


Figure 5.5: Structural Gallinazo burials

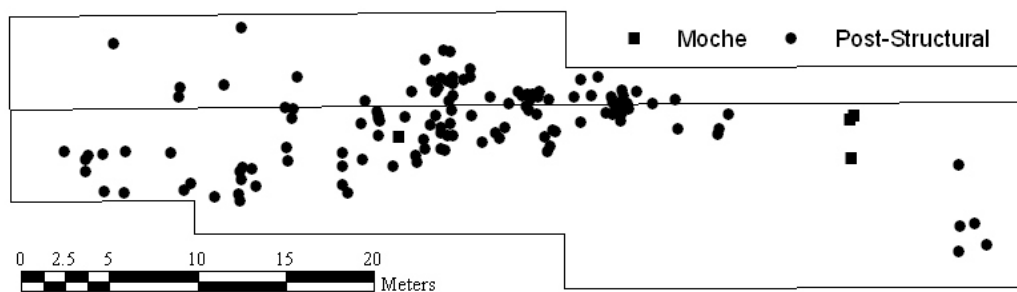


Figure 5.6: Post-structural Gallinazo and Early Moche burials

Chapter 6 LOS CERRO OREJAÑOS: METHODS

6.1 Introduction

The author examined the remains of 750 individuals recovered from the largest cemetery associated with Cerro Oreja. These individuals lived during the Cupisnique, Salinar, Gallinazo, or Early Moche phases. The following is a discussion of the methods the author used to collect and analyze the data. To begin the author describes the Cerro Oreja Bioarchaeology Project (COBP) curation protocols and team members' method for assessing the age-at-death and sex of study individuals. She then turns to her strategy for assessing social status as indicated by grave goods. This is followed by a description of her methods for collecting data pertaining to the reconstruction of diet and non-dietary tooth use, as well as a discussion of how these reconstructions relate to the author's four areas of investigation: agricultural production, chicha consumption, craft specialization, and coca use. Finally the author outlines the specific statistical procedures she employed to address her research questions about the development of inequality at the site of Cerro Oreja.

6.2 Collection Protocols

To begin the analysis of each individual, COBP team members reconstructed (when possible) cranial remains, os coxae, and long bones to be used in age-at-death and sex estimations, and various other analyses. The author's efforts focused on the maxillae, mandibles, and teeth, many of which had to be reconstructed from fragments. Because of pre-

excavation taphonomic changes, poor curation, and loss of fragments during re-boxing by INC employees of materials damaged by El Niño rains, many dental remains could not be included in the author's analyses as they were incomplete despite her laborious reconstruction efforts.

All teeth and alveoli from permanent and deciduous dentitions were identified and individually recorded both electronically in Visual dBASE, and visually using the dental inventory forms available from Buikstra and Ubelaker (1994). The author recorded buccal-lingual and mesial-distal measurements for each tooth and photographed the teeth and dentitions of 129 individuals. She also recorded the presence or absence of the following dental conditions: dental caries, periodontal disease, dental wear, dental abscesses, antemortem tooth loss, and dental trauma. Because of variations in preservation, all dental conditions were not observable for all cases. To maximize the number of observations available for analysis, the author assessed her ability to observe each tooth and alveolus for each condition independently.

6.3 Demographic Patterns

Age-at-death and sex estimations were made as a joint effort by COBP team members. During the summer field seasons of 1999, 2000, and 2001, Patricia M. Lambert, Bonnie Yoshida, and the author worked together to collect data and estimate the age-at-death and sex of 243 individuals. Under the direction of Lambert, the team established standardized procedures for estimating age-at-death and sex based on Buikstra and Ubelaker (1994). During an extended research season, Yoshida estimated the age-at-death and sex of an

additional 183 individuals. In 2003, the author examined these individuals along with the remains of 324 others.

6.3.1 Age Estimations

Subadult age estimates were primarily based on dental development, because dental development more closely approximates chronological age than does skeletal development (see Ubelaker 1989). Members of the COBP examined the teeth and jaws of each subadult and recorded the state of development and eruption of each deciduous and permanent tooth. This information was then compared to Ubelaker's (1989) sequence, which provides the best estimate of Native American dental development. Occasionally, the observed development varied somewhat from the model sequence. For clarification in these instances, the author used the mineralization sequence provided by White (1991), which is based on the work of Gustafson and Koch (1974) and Anderson et al. (1976). Deciduous teeth do not become well mineralized until after birth (Gustafson and Koch 1974); therefore the teeth of fetuses are not useful in determining age-at-death. To estimate fetal age-at-death in lunar months team members used measurements of all complete elements (Fazekas and Kósa 1978).

Skeletal development and long bone metrics provided supporting age-at-death information. Members of the COBP characterized the state of fusion of all preserved epiphyses (Buikstra and Ubelaker 1994), and measured all complete long bones (Johnston 1962). When age estimates based on dental data varied from those based on skeletal development, team members used dental ages. However, when there were no observable teeth or the observable teeth could only be used to generate a broad age range, skeletal data were

used to estimate age-at-death. In these cases, team members placed greater emphasis on those epiphyses with the smallest range of fusion and on femoral measurements.

Age-at-death is more difficult to estimate for adults than for subadults (Hoppa 2002). Once skeletal and dental development are complete, age related changes of the pubic symphyses, auricular surfaces, and closure of the cranial sutures are the most commonly used macroscopic techniques for estimating age-at-death (see Buikstra and Ubelaker 1994 and Bass 1987). Of these elements, morphological changes of the pubic symphysis are the most reliable (Buikstra and Ubelaker 1994:21), although the estimates provided are characterized by broad error ranges. Members of the COBP estimated adult age-at-death by comparing both right and left symphyses (when observable) to casts created for the Suchey-Brooks system (Brooks and Suchey 1990; Suchey and Katz 1986), as well as to system descriptions and images published in Buikstra and Ubelaker (1994). Because the Cerro Oreja skeletal remains were often poorly preserved, fragile symphyseal surfaces were often too fragmentary or eroded to be accurately observed.

Observations of auricular surfaces (Buikstra and Ubelaker 1994; Lovejoy et al. 1985) were used in conjunction with those of pubic symphyses to estimate age-at-death of adults. The auricular surface provides a more narrow estimate of age, and thus observations were used by COBP team members to tighten the estimate based on pubic symphyses. In addition, auricular surfaces were more commonly preserved than pubic symphyses, therefore they were often used as the primary source of data for estimating adult age-at-death.

Finally, the state of cranial suture closure was used to supplement age-at-death estimates based on previously discussed methods, or as the primary source of estimates when

pubic symphyses and auricular surfaces were not preserved. Members of the COBP used the composite system presented in Buikstra and Ubelaker (1994). When observable team members characterized each of 10 ectocranial, four palatine, and three endocranial sutures as open (0), minimally closed (1), significantly closed (2), or completely obliterated (3). Suture observations were then summed to create scores, upon which age-at-death estimates were made.

Using the methods discussed above, team members assigned individuals a mean age and an error estimate. Errors ranged from several months for well preserved children to as much as 15 years for fragmentary adults. When adult remains were too fragmentary to be assigned a mean age, they were grouped according to their minimum possible age at the time of death. These individuals fell into one of five different categories: 18 years or older, 20 years or older, 30 years or older, 40 years or older, or 50 years or older.

To chart temporal changes in the demographic composition of the skeletal population, the author calculated mean age-at-death for each phase. To make these summary measures more appropriate for the dental data, she also calculated mean age-at-death for several different groups of individuals in each phase: those under five years old, greater than five years old, and those greater than 20 years old, as well as for females and males greater than 20 years old. These categories correspond to the following analytical categories: individuals with deciduous teeth only, individuals with at least one permanent tooth, adults, adult females, and adult males.

Two tests were used to identify differences in ages-at-death, single factor analysis of variance (ANOVA), and notched boxplots. The ANOVA statistic is calculated using the

variance between mean ages-at-death and thus, can be used to test if sample mean differences are significant. However, because the difference between means used to calculate ANOVA, results can be dramatically affected by outliers in the data. Boxplots, which graphically represent medians, are not affected in this way (Drennan 1996). The waist within the box demarcates the sample median, the box the boundaries of the first and third quartiles (central 50% of the data), the whiskers the tails of the distribution, outlying cases are graphed individually (Figure 6.1). The notch identifies the 95% confidence interval. Samples that are significantly different at the 0.05 level have non-overlapping notches, such as those in figure 6.1 (Velleman and Hoaglin 1981).

No formal demographic analysis was undertaken as part of this research. As previously noted, the author only examined individuals recovered from 75% of the graves excavated from VM 150, 157:4:40 (Table 5.1). The sampling strategy she employed was developed to focus the author's work on individuals with observable dental remains. The remains of several individuals were often stored in a single box, therefore the author began her analysis with the boxes that contained the fewest individuals. This strategy insured that the author would first examine remains that were likely to have sustained the least amount of damage during storage and appeared to be the best preserved. Such remains were likely to yield the greatest amount of information. The remains the author has not yet examined were stored in boxes containing as many as 10 individuals.

This strategy likely resulted in an under-representation of poorly preserved adults and young children, as many such individuals were stored in a single box. Therefore, a formal demographic analysis would likely be biased. The author does not, however, think that her

sampling methods introduced a substantial bias in her dental analyses. Because those individuals not included in her sample were poorly preserved adults and very young subadults, their remains were unlikely to have provided many data relating to diet or non-dietary tooth use as indicated by dental remains. This assertion is supported by an examination of the distribution of the 161 individuals whose remains yielded no dental data. During the first five months of data collection (in 1999, 2000, and 2001), when the author was working with boxes that contained the fewest remains, she examined 173 burials. Of these remains only 12% (20 individuals) had no observable alveoli or teeth. During the seven months of the 2003 field season she examined remains that were with stored several individuals per box. Of the 346 burials examined 41% (141 individuals) yielded no dental data. Even if 40% of the remaining 229 graves (90) contained observable dental remains, this could only have increased the total sample by 20%.

It is important that the sample chosen for this study approximate a possible age-at-death distribution for a living population in order for it to have the capacity to represent the Cerro Orejaños. To test this possibility, the author employed the pattern matching analysis developed by Milner et al. (1989). The Cerro Oreja age-at-death distributions were compared to the mortality profiles of the Ju'hoansi of South Africa and the Yanomamö of the Amazon Basin. These populations were chosen by Milner et al. (1989) because significant information relating to their demography has been published, and their demographic patterns can be seen as opposites. The Ju'hoansi are generally characterized as having low fertility and moderate life expectancy, $GRR = 2$ and $e_0 = 33$, respectively. The Yanomamö have high fertility and a lower life expectancy, $GRR = 3.25$ and $e_0 = 20$. Using the preceding gross reproductive rates

and life expectancies at birth, the author identified the model West life tables in Coale and Demeny (1966) that most closely approximated these populations—females with a life expectancy at birth of 32.500 and 20.000 years. She then used the proportion of deaths for $GRR = 2.000$ and 3.5 (Coale and Demeny 1966:75 and 85) to generate comparative distributions. Following Hutchinson (2002), the author combined both Coale and Demeny's and the Cerro Oreja data into five year intervals for those aged birth to 20 years, into ten year intervals for 20-to-40-year-olds, and into one group for individuals 50 or older.

7.2.2 *Sex Identifications*

Members of the COBP identified the sex individuals 18 years at the time of death or older. Several researchers have developed methods for identifying the sex of subadults (Black 1978; DeVito and Saunders 1990; Loth and Henneberg 2001; Schutkowki 1993). However, the accuracy of these methods varies by population and therefore they have not been widely accepted (Saunders 2000). Female and male patterns of post-adolescent, pelvic growth vary as a result hormonal differences (Coleman 1969), thus, methods of sex estimation that use morphological differences of the pelvis, are the most reliable. Among these the method developed by Phenice (1969) has been shown to be the most accurate. Team members examined the pubic bones of each individual and noted the presence of a ventral arc, a subpubic concavity, and a sharp medial aspect to the ischiopubic ramus. All three features are diagnostic of female pelvises, a lack of these features characterizes male pelvises.

As a result of the often poor preservation of the Cerro Oreja skeletal collection, few pubic bones were well enough preserved to use the Phenice method. In these cases team

members considered qualitative observations of the os pubic including relative size of greater sciatic notch and width of the subpubic angle (White 1991). Additionally team members considered cranial robusticity of the nuchal crest, mastoid process, supra-orbital margin, supra-orbital ridge, and mental eminence (Ascádi and Nemeskéri 1970). Following Buikstra and Ubelaker (1994), these feature of the os pubis and cranium were given scores of 1 (female), 2 (probable female), 3 (ambiguous), 4 (probable male), or 5 (male). If the os pubis was extremely fragmentary or absent, team members used metric data from femora, tibiae, and humeri to support cranial sex identifications (Dittrick and Suchey 1986; İşcan and Miller-Shaivitz 1984).

Because of variations in preservation not all individuals could be assigned to a sex with the same degree of certainty. To incorporate the varying error, team members employed a four-tier system to rank the estimations: female or male, probable female or probable male, possible female or possible male, unidentified. In this analysis, however, the author pooled individuals in the identified and probably identified categories as identified, and grouped possibly identified individuals with those who were unidentified. The author combined this information with age-at-death estimations for each individual. She used this information to created three samples: “adult,” which includes every individual over 20 years, and “adult female” or “adult male” which are subsamples of adult. In order to assess the various phase sample sex ratios for comparability, the chi square statistic was calculated to test if females and males were buried at Cerro Oreja in similar proportions throughout the use-life of the cemetery.

6.4 Social Status

Grave goods can be used as a marker of social status because the investment families make in the construction of the graves of their deceased, and the items they bury with them, are affected by the family's access to wealth and prestige (Powell 1988). It is important to remember, however, that grave goods are not simply a reflection of a person's social status in life. As mortuary rituals are performed by and for the living, they also reflect the desires family member have for their dead as well as for themselves (Pearson 1999). In this way, social status can be negotiated through the process of burying the dead. Because of the complexities of mortuary rituals, detailed analyses of grave goods, burial types, body positioning, and cemetery construction need to be completed in order to create a nuanced picture of social status from graves. Although such an analysis is planned for the Cerro Oreja collection, currently only information about the presence of specific categories of grave goods is available. Although this information is limited, the author believes that it can be informative and can provide hypotheses to be tested once a mortuary analysis has been completed. For this analysis she chose to divide individuals in a simple manner—those with goods and those without. This division also allows the author to compare her findings with those pertaining to the health of Cerro Oreja's population presented by Yoshida (2004).

6.5 Reconstructing Diet

Agricultural intensification has long been associated with the rise of inequality and state formation. It has often suggested that land ownership, control of economic resources, and staple finance were central to the power strategies that allowed elites to manipulate the

costs and benefits of compliance for non-elites (D'Altroy and Earle 1985; Earle 1997; Haas 1982). On the Peruvian coast, agricultural intensification was of particular importance because, when irrigated, the north coastal valleys produced large amounts of storable foods (Carneiro 1970; Moseley and Deeds 1982). The construction of canals and monumental ceremonial architecture during the Cupisnique and Salinar phases (Table 3.2) suggests that Costeños intensified agricultural production during these phases, and that this intensification coincided with sociopolitical differentiation and centralization.

If the subsistence economy was an important basis of economic power for the developing Moche valley elite, the author expected the consumption of agricultural products to have increased through time. If social differentiation was, in part, created through the consumption of different foods, then the increasing distinction between elites and non-elites could have resulted in a greater consumption of some agricultural products by non-elites in each period, while elites consumed more highly prized animal products such as llama, deer, and fish (Bawden 1996:288; Murra 1980:49; Rostworowski 1981; Salomon 1986:83 & 95; Tomczak 2003). Additionally, Bawden (1996:78–79) noted that fishing was an economic speciality during the Moche phase, and that Costeños specializing in fish production lived in their own communities, separated from farmers but providing them, through trade, with important resources. Such specialization by communities has been identified in southern Perú (Tomczak 2003). It is not known, however, when this specialization developed along the north coast. If specialization in fishing was part of the re-structuring of society that coincided with agricultural intensification, the author would expect that through time fewer Cerro

Orejaños would have access to marine resources as the site is located some distance from the coast.

Chicha production and consumption was another potential locus of power centralization. It has been shown that the Inka state used chicha to “pay” men for their work on large-scale, state-sponsored projects, and that the production of chicha was a site of power negotiations at the local level (Hastorf 1990, 1991 and 1993; Moore 1989; Ubelaker and Katzenberg 1995). Evidence of similar state-sponsored work projects (Moseley 1975b) and maize agriculture (S. Pozorski and T. Pozorski 1979) have been found in the Moche valley. To the north at Pampa Grande, in an area of Moche influence, Shimada (1994) has identified chicha production during the Late Moche phase. Although iconographic studies suggest that maize was ritually important to elites of the Southern Moche state, archaeologists do not know how common chicha consumption was in the Moche valley, or if everyone—elite and non-elite, women and men—had access to chicha. By organizing the excavation of canals, emergent elite might have gained some control over irrigated fields and the crops produced in those fields. If so, chicha production could have been monopolized and access to chicha would have decreased early in the Gallinazo phase. If chicha production was centralized and used to “pay” non-elite men for laboring on monumental architecture and canal construction, gender differences in chicha consumption might have occurred toward the end of the Gallinazo phase and into the Early Moche phase.

To reconstruct the diet of the Cerro Orejaños, and thus track agricultural intensification (or the lack thereof) and the use of chicha, the author examined their remains for several biological indicators of general carbohydrate consumption. These indicators

included stable isotopic signatures of bone and tooth enamel and measures of oral health. Below, the author discusses each of these indicators, what information they provide about diet, the author's methods for collecting each data type, and the patterns of change she expects to see in the Cerro Oreja collection.

6.5.1 *Stable Isotopes*

The analysis of carbon and nitrogen stable isotopic signatures in human skeletal remains offers direct dietary information. Carbon and nitrogen, which are taken up from the environment by plants, enter human tissues directly through consumption of plants or indirectly through consumption of animals. Carbon has two naturally occurring stable isotopes, ^{13}C and ^{12}C . The ratio of these forms taken up by plants (designated as a $\delta^{13}\text{C}$ value) is a result of both the type of photosynthetic pathway utilized by the plant and its location in either a terrestrial or marine environment. Most terrestrial plants utilize a C_3 pathway that results in $\delta^{13}\text{C}$ values ranging from -20 to -34 per mil. A few plants, such as maize, utilize a C_4 pathway which concentrates greater amounts of ^{13}C . These plants are therefore characterized by less negative $\delta^{13}\text{C}$ values. Succulents vary their photosynthetic pathway depending upon environmental conditions. They may approximate either C_3 or C_4 plants. While all terrestrial plants take carbon from the atmosphere, marine plants have a variety of carbon sources, which translates into variability in $\delta^{13}\text{C}$ values (Schoeninger and Moore 1992; Schwarcz and Schoeninger 1991).

Nitrogen also has two naturally occurring stable isotopes, ^{15}N and ^{14}N . Plants obtain nitrogen in two ways, through fixing it from the atmosphere or by absorbing soil nitrates.

Terrestrial plants that fix nitrogen take up less ^{15}N and have more negative $\delta^{15}\text{N}$ values than plants that acquire nitrogen from soil nitrates. Most of the nitrogen available to marine plants is derived from nitrates so they tend to have more positive $\delta^{15}\text{N}$ values than non-nitrogen fixing, terrestrial plants. Nitrogen is also useful in tracing trophic levels as ^{15}N becomes concentrated in animals the higher they feed on the food chain (Schwarcz and Schoeninger 1991; Schoeninger and Moore 1992).

Various human tissues can be analyzed for $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values, but values of each tissue reflect a different portion of the diet. Researchers have found that carbon in bone and dentin collagen is derived primarily from consumed proteins, whereas the carbon in the inorganic component of bone (Ambrose and Norr 1993; Krueger and Sullivan 1983; Lee-Thorpe et al. 1989) and in tooth dentin and enamel (van der Merwe et al. 2003) represents the entire diet. Because enamel remains unmodified once dental development is complete, enamel $\delta^{13}\text{C}$ values represent childhood diets. Bone and dentin, however, are constantly being remodeled, so their isotopic signatures reflect a person's consumption patterns in the years before death (Tykot and Staller 2002).

Used together, $\delta^{13}\text{C}$ from skeletal and dental carbonate and $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values from bone collagen and dentin can provide a wealth of dietary information. Generally, isotopic values of food resources are graphed with the x-axis representing $\delta^{13}\text{C}$ values and the y-axis $\delta^{15}\text{N}$ (Figure 6.2). In this way a "map" of isotopic signatures is created. Samples collected from individuals recovered from archaeological sites then can be plotted on this map, providing us with an estimation of their diet.

To create a local baseline for interpreting the stable isotopic results of data, the author collected camelid, sea mammal, fish, bird, dog, and deer bone fragments. These remains were recovered from archaeological sites in the Moche valley, and just to the north in the Chicama valley.

The author collected the human bone samples analyzed for stable isotopic signatures from femora and tibiae shafts when possible. She also sampled dentin and enamel. Enamel and dentin samples ranged in size from two to three grams, and bone samples from five to 12 grams. The author chose bone and dental samples from 35 individuals who could be placed in a 5-year age category and who were identified as either female or male. These samples were processed by Robert Tykot and Adam Purcell of the University of Southern Florida. Following standard methods (Tykot 2004) bone samples were demineralized in 2% hydrochloric acid. Base-soluble contaminants were removed using a 0.1 M sodium hydroxide solution, and residual lipids were dissolved in a two to one to 0.8 mixture of methanol, chloroform, and water. Extracted collagen samples were freeze-dried and analyzed for $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ in a stable isotope ratio mass spectrometer. Both collagen yields and C:N ratios were used to check the integrity of the collagen samples. To prepare bone apatite and tooth enamel, fragments were cleaned, the surface layer was removed, and a powder sample was drilled from the center of each fragment. Approximately 10 mg of each powder sample were immersed in 2% sodium hypochlorite solution to dissolve the organic components. Any non-biogenic carbonates were removed in 1.0 M buffered acetic acid. Apatite and enamel sample integrity was assessed through yields obtained at each step in the preparation process. Again,

samples were analyzed for $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ using a stable isotope ratio mass spectrometer. The margin of error for $\delta^{13}\text{C}$ values is $\pm 0.1\text{‰}$, and the margin for $\delta^{15}\text{N}$ is $\pm 0.2\text{‰}$.

Additional bone samples were collected by Patricia Lambert and were processed by M. Anne Katzenberg of the University of Calgary. These samples were cleaned in distilled water in an ultrasonic cleaner (Harrison and Katzenberg 2003). When thoroughly dry, the samples were ground into a power of 0.375 mm-sized particles. Approximately 100–500 mg of the powder were treated with Clorox (until effervescence ceased) to remove all organic materials. Finally, samples were treated with a 1 M acetic acid. The remaining bone mineral was converted to CO_2 gas for mass spectrometry. The margin of error for $\delta^{13}\text{C}$ values is $\pm 0.17\text{‰}$.

6.5.2 Oral Health

Several measures of oral health can be used as proxies for estimating diet. These measures are: dental caries, dental wear, dental abscesses, periodontal disease, antemortem tooth loss, dental trauma. Carious lesions are areas of localized destruction caused by the acidic by-products of bacterial fermentation of carbohydrates (Larsen 1997; Ortner and Putschar 1981). Diets high in carbohydrates and sugars promote dental cavitation, as they provide food for bacteria (Goodman et al. 1984; Larsen et al. 1991; Ortner and Putschar 1981). Although carbohydrate and sugar consumption provide food sources for bacteria, other factors help create an oral environment suitable for caries formation. Tooth morphology is most important among these (Larsen 1997). Small grooves and fissures between cusps on the surface of premolars and molars provide a protected environment for bacteria, making these teeth more prone to caries than incisors or canines. Additionally, the larger size of

premolars and molars (as compared to incisors and canines) results in larger areas of contact between posterior teeth. These interproximal contact areas are also caries-prone.

The author examined each tooth for evidence of carious lesions. Because it can be difficult to differentially diagnose the early stages of cavity formation from developmental irregularities or staining, she recorded a lesion as present when she could see it macroscopically as an irregular bordered and discolored erosion that exposed fragile, necrotic dentine (Hillson 1996; Turner et al. 1991). Each lesion was characterized as affecting the crown, cementoenamel junction (CEJ), or root (Figure 6.3). The author noted the surface (occlusal, buccal, lingual, mesial, or distal) on which the lesion was found and the percent (1–25, 25–50, 50–75, 75–100) of the tooth surface affected.

Dental wear on the occlusal surfaces of teeth is caused by friction resulting from tooth on tooth contact (attrition) and grit on tooth contact (abrasion) (Powell 1985). Particles such as sand, grit, ash, and phyloliths in foods increase the abrasiveness of the diet, resulting in worn teeth with significantly fewer grooves and fissures and larger interproximal spaces that are thus less prone to caries (Powell 1985). Mechanical abrasion may also remove bacterial plaque, the “gelatinous mat” (Lukacs 1989:265) that adheres to tooth surfaces and provides an ideal environment for the bacteria that cause dental caries.

Additionally, the type of food consumed affects the angle at which the occlusal surface of teeth is worn. Smith (1984) explained that an oblique pattern of wear, where the lingual cusps of the maxillary and buccal cusps of the mandibular molar are most affected, is common among agriculturalists because their teeth contact each other during mastication. The food of hunter-gatherers is generally tougher, so their teeth do not contact each other but rather their

food. This leads to an even polish and wear across the teeth, causing them to be “flat.” Also, tougher foods require people to move their mandible side-to-side when chewing, which results in wear over the entire occlusal surface, and thus a flat wear pattern.

The author collected dental wear data for all deciduous and permanent teeth (Figure 6.4). Wear on incisors, canines, premolars, and first deciduous molars was described using a single number (one to eight) following Smith (1984). Following Scott (1979), each of the four main cusps of permanent molars and second deciduous molars was scored individually on a scale of one to 10. The author then used these data to characterize each molar using two measures: mean molar wear and mesial ratio. Mean molar wear was calculated as a simple average. The mesial ratio was calculated by dividing the wear score of the mesial-buccal cusp by the score of the mesial-lingual cusp for mandibular molars and by dividing the wear score of the mesial-lingual cusp by the score of the mesial-buccal cusp for maxillary molars. This measure describes the angle of tooth wear. A tooth that is worn flat (such as that of a hunter-gatherer) might display a wear score of four on both mesial cusps, in which case, the mesial ratio would be 1.0. A mandibular tooth that is worn at an angle (such as that of an agriculturalist) might display a wear score of eight on the mesial-buccal cusp and four on the mesial-lingual cusp, resulting in a mesial ratio of 2.0. The greater the angle of wear, the larger the mesial ratio.

Both dental caries and wear can expose living tissue in the pulp chamber to the oral environment, which leads to infection of the pulp chamber and the inflammatory response—pulpitis (Clarke and Hirsch 1991). The result of this inflammation is generally pulp death. Once pulp death has occurred, bacteria, their toxic waste products, and the histological

products of inflammation travel through the pulp chamber and apical foramen into the periodontal tissue. As a result, the apical alveolar bone is resorbed. Eventually sufficient pus may accumulate to erode the bone and allow for drainage. This stage is described as an abscess (Hillson 1996). The author examined each alveolus for abscessing, and recorded the location of each lesion. Additionally, she recorded the presence of reactive bone around each abscess, which indicates active infection (Figure 6.5).

Periodontal disease is a resorption of alveolar bone resulting from long-term gingivitis, the chronic inflammation of gingival tissue (Clarke and Hirsch 1991; Larsen 1997). This inflammatory response can be triggered by irritants, including the presence of plaque or dental calculus, bacterial activity, or metabolic problems such as scurvy (Ortner and Putschar 1981). Early in the disease process the alveolar bone becomes porotic, and as more bone is resorbed the margin becomes sharp and ragged in appearance. Eventually, the boney support becomes insufficient and the tooth is lost (Hillson 2000). There has been some debate (as yet unresolved) about differential diagnosis of periodontal disease and pulpitis. One view identified both local (or vertical) and general (or horizontal) bone loss, in which the distance between the alveolar crest and the cementoenamel junction increases, as evidence of periodontal disease (Hillson 1996). Periodontitis is thus implicated as a major cause of antemortem tooth loss (Hildebolt and Molnar 1991). Clarke and Hirsch (1991) argued that an increase in distance between alveolar crest and the CEJ alone cannot be used as measure of periodontal disease since teeth can continue to erupt throughout an individual's life and often do in response to severe wear. In their view, pulpitis is the cause of local bone loss, and is

therefore much more commonly the cause of antemortem tooth loss in archaeological samples than periodontal disease.

The author examined the alveolar bone of each tooth for evidence of periodontal disease. Only when there was clear evidence of resorption of the cortical bone did she make a diagnosis of periodontal disease (Figure 6.6). The author also recorded both the distance between the CEJ and the alveolar crest, and the location of the bone loss—buccal, lingual, mesial, or distal. Because it is important to be able to differentiate between bone lost to pathological and taphonomic processes, the author took care to include only well-preserved alveoli in the analysis.

The ultimate result of both abscessing and periodontal disease is antemortem tooth loss (Ortner and Putschar 1981). The author examined each alveolus for evidence that the tooth it held was lost before death. If it had been lost antemortem, she estimated the state of healing as either beginning to heal, mostly healed, or healed (Figure 6.7). Alveoli of teeth that had been lost antemortem were not included in the sample the author examined for periodontal disease or abscessing because with the loss of the tooth such infections heal.

Dental trauma can result when a person consumes foods containing grit and other hard particles (Milner and Larsen 1991; Turner and Cadien 1969). Thus, charting dental trauma can aid the reconstruction of diet. The results of dental trauma range from small chips in the enamel to large fractures of the tooth or total ablation (Milner and Larsen 1991). The author examined each tooth for evidence of dental trauma, noting the location of each chip or fracture (Figure 6.8).

As noted above, dental plaque has been indicated in the etiology of periodontal disease. However, only calculus (calcified plaque) is preserved archaeologically. The development of calculus itself has been linked to carbohydrate consumption (Hillson 1996). Also, micro-plant remains (e.g., phytoliths, pollen, starch granules) become embedded in calculus. When extracted, they can be used to identify what plants were eaten or processed in the mouth (Fox and Perez-Perez 1994; Nelson 1997; Reinhard et al. 2001). The author examined each tooth for calculus deposits and noted the affected surface—buccal, lingual, mesial, distal, or occlusal (Figure 6.9). When calculus deposits were present and an individual's teeth were sufficiently well preserved to withstand scraping with a dental probe, the author collected samples by holding each affected tooth inside a zip-lock plastic bag and removing the calculus deposits. She sampled each individual separately, but the sample for any individual contained deposits from any and all of her teeth.

The author choose calculus samples from 24 individuals of estimated age-at-death and sex to be processed by Karl J Reinhard of the University of Nebraska. Because the samples were small, Reinhard made some adjustments in the methods previously published (Reinhard et al. 2001). Reinhard (personal comm 2005) processed the calculus samples in four groups, each using a different procedure. The first four samples were dissolved in a five percent solution of hydrochloric acid. He added three *Lycopodium sp.* tablets, each of which contain approximately 12,500 spores and then processed the solution in plastic 15-ml centrifuge tubes. The spores were added because they increase the formation of a solid sediment in the bottom of the test tube during centrifugation (which helps to prevent the loss of microfossil material),

they increase the visibility of microfossils on the prepared microscope slide, and they aid in the quantification of microfossils.

Because no microfossils were recovered from the first four samples, Reinhard processed the next eight samples in glass 12-ml tubes, which have a smaller area for sedimentation. Microfossils were recovered from these preparations. The large number of *Lycopodium sp.* spores in the first samples made quantification difficult, so only one tablet was added to the preparation of the next eight samples. The last five samples were processed in plastic 15 ml tubes with one tablet of *Lycopodium sp.* spores. Identification of the recovered microfossils was completed by Reinhard using a Jenaval compound microscope using bright field, DIK, and darkfield objectives at 250x and 400x magnification.

Consumption patterns have biological impacts, as is apparent from the preceding discussion. However, consumption is also an important activity where social issues are negotiated. Therefore, in a changing social environment, we expect diet to reflect, and affect, the creation, differentiation, and maintenance of various social groups. Diet does not change in the same way for all people, and by combining dietary data with that of Cerro Orejaños' age-at-death, sex, and social status, the author charted the development of social inequality.

The author expected to see the following changes in the teeth and bone of non-elite Cerro Orejaños as a consequence of an increase in dietary carbohydrates, resulting from an increased agricultural production:

- 1) Increasingly positive $\delta^{13}\text{C}$ and decreasing $\delta^{15}\text{N}$ values of bones and teeth, reflecting a dietary shift from terrestrial animals and marine resources to maize.

2) A dramatic increase in dental caries, abscesses, periodontal disease, antemortem tooth loss, and a decrease in overall oral health as all of these conditions are associated with carbohydrate consumption.

3) An increase in the angle of generalized dental wear of molars (as indicated by the mesial ratio), and a decrease in the amount of dental trauma (particularly enamel chipping), resulting from the soft, carbohydrate rich diet of agriculturalists.

Hastorf (1990, 1991, 1993) and Ubelaker and Katzenberg (1995) have used bone chemistry to infer chicha consumption. As discussed in chapter four, Hastorf, in her analysis of pre-Inka and Inka period elites and non-elites from the southern highlands of Perú, identified increasing production of maize and changing patterns of $\delta^{13}\text{C}$ values as a result of Inka imperialism. She suggested these changes resulted from Inka elites re-orienting agricultural production toward chicha, which they then supplied to men involved in the mit'a. In their analysis of elite and non-elite prehistoric period individuals from highland Ecuador, Ubelaker and Katzenberg (1995) identified differences in $\delta^{13}\text{C}$ values. Because $\delta^{13}\text{C}_{\text{collagen}}$ and $\delta^{13}\text{C}_{\text{carbonate}}$ are tightly correlated, they argue that less negative $\delta^{13}\text{C}$ values among elites result from the consumption of maize, the only C_4 plant in the area, not from variations in protein sources. This assessment was further supported by a lack in significant difference between elites and non-elites in $\delta^{15}\text{N}$ values. These researchers have interpreted changes in $\delta^{13}\text{C}$ values as indicative of chicha consumption based on ethnohistoric models that identify chicha as the most common maize product consumed in the Andes. The author believes that by analyzing dental health data along with bone isotope analysis, a stronger argument for chicha consumption can be made.

To brew chicha, the starches in maize must first be transformed into sugars by sprouting the kernels³. The sprouted maize is dried, ground, mixed with water, cooked, and fermented, creating an alcoholic liquid (Culter and Cardenas 1947; Nicholson 1960). Because of its liquid form and its lowered sugar content (as a result of fermentation), the author argues that the consumption of chicha would not promote dental cavitation as strongly as would other preparations of maize. Therefore, the author would expect lower rates of dental pathological conditions among chicha consuming groups than have been documented among others who consume maize (see Gagnon 1999 and Larsen 1991). If maize was consumed primarily as chicha by Moche valley elites, the author expected to find:

- 1) Stable patterns of, or a slight increase in, dental caries, abscesses, periodontal disease, and antemortem tooth loss among elites, contrasting with a pattern of increase in these conditions among non-elites.
- 2) Increasingly less negative $\delta^{13}\text{C}$ signature in the bones and teeth of elites, reflecting the consumption of maize, a C_4 plant.

6.6 Reconstructing Non-Dietary Tooth Use

Craft specialization and wealth finance have also been suggested as central to state formation. The production of wealth items could have been controlled by elites and used as markers of special status, as payment for work performed by lower status individuals, and in trade with elite of other societies (D'Altroy and Earle 1985; Brumfiel and Earle 1987b).

³ The transformation of starch into sugar can also be accomplished by chewing maize to mix it with salivary amylase (Culter and Cardenas 1947; Nicholson 1960). This processing technique would certainly affect the oral health of women, who were the brewers of chicha in Perú (Silverblatt 1987). Because sprouted maize has been recovered from archaeological sites in the Moche valley (Moore 1989), and the chewing method of production has not been documented among living Costeños, it is likely that the sprouting method was employed by the women of Cerro Oreja.

Ceramics and other craft goods came to play an important role in the Southern Moche state, as the production and distribution of vessels that conveyed powerful ideological messages were controlled by the elite (Bawden 1996; De Marrais et al. 1996; Russell and Jackson 2001; Uceda and Armas 1998). However, little archaeological investigation of other craft activities has been conducted.

Weaving and sewing implements have been recovered from excavations of Moche phase domestic contexts (Bawden 1996), but no analyses have been conducted of these tools or of recovered the textiles. Given that camelid bone and cotton fibers have been recovered from Cupisnique phase sites in the Moche valley (S. Pozorski 1983; T. Pozorski 1982), we can assume that textiles were made from both camelid wool and cotton. Moche phase iconography suggests that weavers were women who worked both in formal contexts as specialists, and informally in their homes (Bawden 1996). Cotton and gourd have been identified as important industrial plants, used throughout the period of study in the making of fishing nets and floats (S. Pozorski 1983; T. Pozorski 1982). We do not know, however, who worked to create fishing nets, and if this activity was confined to specialized fishing families.

On the western slope of the Andes, coca can be grown only in a few foothill locations (Plowman 1985). Ethnohistorical research has shown that control of these limited coca fields was an important source of wealth and a site of conflict between coastal and highland groups (Rostworowski 1988). It has been suggested that competition over access to coca-producing locations might have extend well into the past (Billman 1996; Dillehay 1976, 1979). Iconographic images show that during the height of the Southern Moche state, coca had ritual importance (Bawden 1996). But, it is unknown how widespread coca use was before the

development of the state. During the Gallinazo phase, highlanders, or people more strongly connected to highland than to coastal communities, occupied the limited coca growing areas in the Moche valley (Billman 1999). Certainly this occupation impacted coca use among Costeños.

If access to coca was restricted as a result of highland control of producing areas, the bioarchaeological data would show a dramatic decrease in coca use early in the Gallinazo phase. Reclaiming access to these areas might have been an important tool used by emerging elite to gain non-elite compliance and to convince others to take part in the construction of public architecture. If so, the author expected that the displacement, elimination, or absorption of the highlanders would have allowed the elite to monopolize coca and restrict its use.

To reconstruct non-dietary tooth use among the Cerro Orejaños, the author examined their remains for several biobehavioral indicators, including: dental wear, dental trauma, periodontal disease, dental caries, antemortem tooth loss, and calculus. Having previously explored each of these indicators, the author focuses the following discussion on what information these data provide about tooth use, and on the patterns of change she expected to see in these conditions in the Cerro Oreja collection.

While mastication results in general occlusal wear, individuals who use their teeth for specialized tasks develop localized wear. Craft activities such as weaving, basketry, and making cordage, leave distinctive wear patterns on teeth (Larsen et al. 1998; Lukacs and Pastor 1988). This wear can be observed as occlusal surface grooves on particular teeth, and as lingual or labial wear on anterior teeth (Larsen et al. 1998). Bioarchaeologists have interpreted these patterns of wear as resulting from working with sinew, plant fibers, willow

shoots, or processing other plant materials, as well as from the use of labrets or other decorative items that repeatedly contact teeth (Milner and Larsen 1991). G. Nelson (1997) identified striations on the occlusal surface of Peruvian incisors. The patterns of these striations showed sex differences that she interpreted as the result of women using their teeth to process plant fibers, and men using tools which they clenched between their front teeth. Brown and Molnar (1990) identified interproximal grooving on Aborigine dental remains. Ethnographic analogy suggested that these grooves were the result of preparing sinew by repeatedly pulling it through clenched teeth. Finally, Turner and Machado (1983) identified a distinct pattern of occlusal wear in Brazilian dental remains, which they termed LSAMAT. This wear was found on the lingual surface of the anterior maxillary teeth but not on the occluding mandibular teeth. Turner and Machado (1983) suggested that LSAMAT was caused by pulling something between the teeth and tongue, as one might do when processing manioc. In this study, each tooth was examined for evidence of all types of localized wear discussed—macroscopically visible grooves and striations on any tooth surface, substantial wear on anterior teeth without similar wear on posterior teeth, and wear which occurred without corresponding wear on occluding teeth. When present, the author described the affected location (Figure 6.10).

Dental trauma can result from individuals using their teeth as tools as well as from the inclusion of hard objects in food (Milner and Larsen 1991). Following Milner and Larsen (1991) and Hutchinson (2002), the author suggests that people more often use their anterior than their posterior teeth as tools. She therefore expected changes in diet to result in changes in dental trauma throughout the dentition, but changes in the use of teeth as tools to primarily

affect anterior teeth. Furthermore, it is unlikely that children would have had the same patterns of tool use that induced dental trauma in adults, as children were not likely to have taken part in these activities to the same extent as adults. By looking at the pattern of teeth affected by dental trauma, the author explores who among the Cerro Orejaños used their teeth as tools in craft manufacture.

As noted above, starch grains, phytoliths, and fibers from the plants people put in their mouths can be recovered from dental calculus (Fox and Perez-Perez 1994; Nelson 1997). The author used the dental calculus samples she collected as part of the reconstruction of diet to track the non-dietary uses to which people put their teeth. The preservation of fibers such as cotton could indicate who was involved in weaving or net making activities.

By combining dental trauma and dental calculus data with age, sex, social status information, the author traces the development of social inequality. She expected to see the following changes in the teeth of some Cerro Orejaños as a result of an increased participation in craft activities:

- 1) An increase in the amount of localized wear and in the number of anterior teeth affected by dental trauma, resulting from some people increasingly using their teeth for specialized craft activities.
- 2) An increase in the differences between patterns of childhood and adult dental trauma, some adults increasingly used their teeth as tools.
- 3) An increase in the inclusion of craft related fibers in the calculus of some individuals.

The chewing of coca leaves is somewhat more difficult to trace, because the indicators of this activity are similar to those associated with an increase in carbohydrate consumption.

Patterns of periodontal disease, dental caries, and antemortem tooth loss have been used to identify the use of coca. When people chew coca leaves they add lime to their quid to activate the alkaloids, which are then absorbed by the oral mucosa. Lime causes the gingiva to become irritated, which can lead to periodontal disease, exposure of tooth roots, dental caries, and ultimately tooth loss (Ortner and Putschar 1981). Additionally, coca chewing causes a decrease in saliva production, which can increase bacterial activity. Because the tooth roots of people who chew coca become exposed, and their oral environment is more conducive to bacterial activity, coca chewers develop highly specific patterns of root caries and tooth and bone loss in the region where the coca quid is placed (Indriati 1997; Indriati and Buikstra 2001; Langsjoen 1996).

Based on these affects of coca chewing, Indriati and Buikstra (2001) created a scale of strong, mild, and weak dental indicators of coca use. The strongest indicator of coca chewing was the presence of severe mandibular root exposure with affected teeth displaying buccal root carious lesions. Mild indicators included similar lesions affecting maxillary teeth, root caries on other surfaces of mandibular or maxillary teeth, and root caries on premolars when the adjacent molars had been lost antemortem. The weakest indicator of coca use was the presence of buccal crown carious lesions on mandibular and maxillary teeth. They then tested this scheme on 35 Peruvian mummies. Individuals who displayed two teeth with strong indicators as well as other teeth affected by mild or weak indicators were identified as definite coca users. Individuals with one strongly affected tooth and at least one other affected tooth were identified as probable chewers. Those with more than 33 percent of their teeth affected by mild indicators were identified as possible chewers, while those with less than 33 percent

affected teeth were considered non-chewers. They compared their findings to the results of Aufderheide et al. (1991) who ran coca alkaloid metabolite tests on hair samples from each individual. They found that for 30 individuals (85%), their dental assessments of coca chewing and the assessments of Aufderheide et al. were in agreement. All individuals whom they identified as definite or probable users on the basis of oral health tested positive for alkaloids. A few possible chewers tested negative and a few non-chewers tested positive. They suggested that these discrepancies were the result of differences in response time of hair to coca chewing verses that of bone and teeth.

The peridontal disease, dental caries, and antemortem tooth loss data the author collected to reconstruct diet, therefore, also allows the author to track coca chewing. Although no link has been found between coca chewing and the presence of dental calculus (Ubelaker and Stothert 2006), calculus does trap plant material. Coca phytoliths in dental calculus can therefore help to identify who had access to coca leaves. If coca use changed as a result of the in-migration of highlanders and then their later displacement by elites, the author expected to find:

- 1) An early decrease in the number of tooth roots affected by dental caries and in rates of periodontal disease and antemortem tooth loss.
- 2) A decrease in the presence of coca phytoliths in the dental calculus.
- 3) A later increase in these indicators of coca use among some individuals.

6.7 Making the Data Speak

In order to identify and interpret patterns in the collected data, the author employed several preliminary statistical techniques. Because the data are of different types, she used

several different tests. First, the author discusses the preliminary tests she used to analyze the categorical data: dental caries, periodontal disease, dental abscesses, antemortem tooth loss, and dental trauma. The author then addresses the preliminary statistical procedures appropriate for analyzing the numeric, stable isotope and dental wear data.

As a preliminary technique to identify patterns the author examined categorical data at two different scales: that of the tooth or alveolus and that of the individual. Tooth level prevalence rates were calculated based on the total number of teeth or alveoli observable in each phase and social status. At the individual level, rates were calculated using the number of individuals with at least one observable tooth or alveolus in each phase and social status. To create comparable samples, the author calculated separate frequencies for deciduous and permanent teeth. Additionally, she calculated separate rates for the permanent teeth of all adults (both those who could be sexed and those who could not), adult females, and adult males. To test for significant differences among phases and age, sex, and social status samples, she calculated the chi square statistic.

In addition to these generalized procedures, the author utilized more specialized techniques for certain conditions. Because tooth shape affects the chances that a tooth will be afflicted with carious lesions, she calculated separate rates for each tooth type for both deciduous and permanent teeth, as well as separate anterior and posterior rates for adult, adult female, and adult male teeth. Because of the rarity of periodontal disease, dental abscesses, and antemortem tooth loss among children, the author only calculated rates of these conditions for the adult, adult female, and adult male samples.

Tooth and individual rates of dental trauma were calculated separately for deciduous and permanent teeth. Trauma or chipping on anterior teeth is more likely to result when an individual uses her teeth as tools (Hutchinson 2002), whereas trauma to posterior teeth more often results when she consumes foods with grit and other inclusions (Milner and Larsen 1991). Therefore, the author calculated separate rates for anterior and posterior teeth.

Dental wear and stable isotopic data are numeric, and thus the summary statistics and tests of significance that the author used to analyze these data are different. Summary statistics include ranges, means, and standard deviations. Tests for significance included ANOVA and notched box plots.

Samples for stable isotopic analyses were collected from adult individuals estimated to be either female or male. Summary measures for bone collagen $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$, and bone carbonate and enamel $\delta^{13}\text{C}$ were calculated separately for all adults, adult females, and adult males.

Wear on incisors, canines, and premolars was described using a single number (one to eight) following Smith (1984). Following Scott (1979), the author described each of the four main cusps of permanent molars and second deciduous molars individually on a scale of one to 10. Because wear is directly correlated with age, and she calculated summary wear measures for only adult teeth, and for the teeth of adult females and males. Sample sizes were small, so teeth were pooled by type and number, regardless of side or jaw.

Although traditional summary measures and preliminary statistical procedures can provide a basis for interpretation, the author required more sophisticated techniques to fully explore patterns in the data. Because of the nature of human dentitions and the vagaries of

skeletal preservation, researchers have struggled with several sampling issues when interpreting standard dental data. The primary issue is scalar: should individuals or teeth be the unit of analysis? The author analyzed these data at both levels.

At the individual-level, individuals are diagnosed as having or not having a particular condition. Such an analysis can provide researchers with useful information, but it can also obscure variation. At this level, an individual with 32 observable teeth, only one of which is carious, cannot be distinguished from an individual with 32 carious teeth, though these two individuals probably had different diets. Characterizing individuals by the percentage of affected teeth addresses this issue, but raises questions about sample comparability. An individual with 32 observable teeth, all of which are carious, and an individual with only two teeth, also carious, would both be classified as 100% affected. In addition to these issues of comparability, substantial data loss occurs when each individual is characterized by only one data point. In the comparison described above, 32 teeth were observed. However, when these data are analyzed at the individual level, there are only two data points—the presence or absence of carious lesions, or the percentage of affected teeth. This loss can result in sample sizes that are insufficient to address research questions.

To maximize data and address comparability difficulties, many researchers analyze their data at a higher scale (following Turner 1979). All the teeth of several individuals are pooled into groups, the boundaries of which are defined by the questions to be addressed. Statistical analyses of data grouped in this way assume that each tooth in the group is independent of all others. This assumption does not hold, as the teeth of an individual are affected by her diet and are therefore more likely to resemble each other than the teeth of

other individuals. Additionally, the pooling of samples can increase group heterogeneity, leading to spurious results. To test for dietary change over time, all individuals from each period can be grouped to create a lesion rate for each period. Statistical analysis of these rates may not identify significant differences among groups because differences among individuals may average out within periods. Summary measures of a bimodal distribution (e.g., female teeth are always affected while male teeth are not) can be very similar to those of a standard distribution (e.g., both female and male teeth are often affected). To address this issue, groups can be more narrowly defined, creating a larger number of groups that include fewer individuals. Doing so, however, decreases sample size and the power of statistical tests to identify differences among the groups.

Two other factors that complicate both individual and group level analysis are: the differing susceptibility of different tooth types to dental pathological conditions and the varying ages-at-death of sample individuals. Teeth vary in their overall size and in the complexity of their shape. Both of these factors affect a tooth's probability of developing pathological lesions. At the individual level of analysis, for example, a person with eight observable anterior teeth is much less likely to display carious lesions than someone with eight observable molars. At the group level, samples pooled for comparison might contain substantially different distributions of tooth types.

Dental pathological conditions are also age-dependent. For this reason, researchers segregate subadults and adults in both individual and group level analyses. In some cases the adult sample is further divided into young, middle, and old categories. As with other attempts

to mitigate sample heterogeneity, the level of error must be balanced against decreasing the sample size.

In attempting to address these persistent problems, the author analyzed her data using logistic regression. Although this type of statistical procedure has not been commonly used (but see Burns 1979), it is well suited for analyses of dental conditions. A log-linear model simultaneously explores the complex relationships between a categorical, dependent variable, in this study, the presence or absence of a dental condition or a wear score and any number of nominal, ordered, or numeric predictor variables. Secondly, it solves the dilemma of analytical scale. Model estimates of population parameters are calculated using individual teeth, allowing the largest possible sample size. However, the teeth of an individual remain linked, preserving individual level information. This nested sampling strategy adjusts for sample effects by weighting the value of the dependent variable for each tooth according to how much additional information it provides about the individual. Finally, interactions among predictor variables can be examined for significance. If two predictor variables vary simultaneously their interaction will be more significantly associated with the dependent variable than either would when separately analyzed. As the number of predictor variable interactions is increased, the power of the logistic regression to identify significant differences decreases. Thus, only interactions that the author found to be consistently significant in the preliminary statistical analysis were included in the log-linear models.

The models the author used in this analysis were programmed in SAS V8.2 (Appendix F). Because there were multiple observations for each individual the GENMOD procedure was employed. This procedure is a generalized estimating equations model (Liang and Zeger

1986). The Wald test was calculated as part of the logistic regression to test the null hypothesis that groups were characterized by similar rates of dental conditions. Additionally, the program generated frequency estimates obtained by using appropriate model-based combinations of model parameter estimates. The author graphed these estimates to provide visual images of the data trends.

Dental pathological conditions (categorical dependent variables) were modeled as a function of several predictor variables. These included the quantitative variable age-at-death, nominal variables phase and tooth type, binary variables sex and status, and interaction variables sex-phase, status-sex, and status-phase, using binary multinomial logistic regression. In these models age-at-death was treated as quantitative variable and not ordered because it behaved linearly, even when described in five-year intervals.

The predictor variables of phase, sex, and social status were discussed above. When analyzing the dental conditions—dental caries, periodontal disease, abscessing, antemortem tooth loss, and dental trauma—the author defined several nominal tooth types. Each tooth was assigned to either one of four permanent types (anterior, premolar, 1st or 2nd molar, 3rd molar), or to one of three deciduous types (anterior, 1st molar, 2nd molar) (Larsen et al 1991). Additionally, tooth types were weighted based on their expected occurrence in the population (.375, .25, .25, and .125, .6, .2, .2, respectively).

Because wear data are not categorical, they were analyzed using different models. Anterior and premolar wear scores were simple ordered data, thus they were modeled as a function of the variables listed above (except for tooth type) using multinomial logistic regression. The tooth type variable was not included in wear score models because wear is

strongly correlated with the length of time a tooth has been erupted. Rather, the author grouped the data by both tooth type and number. For example, all first incisors (left and right, maxillary, and mandibular) were analyzed together but analyzed separately from second incisors. As noted previously, molar wear data recording techniques were more complex than anterior tooth and premolar scores. Each molar was represented by four ordered data points. To facilitate by tooth comparisons, the author needed to reduce this information to a single number, thus she used the ordered data as if they were numeric, and calculated the mean wear and mesial ratio values discussed previously. Mean molar wear rates and mesial ratios were modeled as a function of the previously noted variables using linear regression.

6.8 Conclusion

In this chapter, the author presents her methods for both data collection and analysis. She examined each individual for dental caries, wear, abscesses, periodontal disease, antemortem tooth loss, and dental trauma. Additionally, the bones and teeth of several individuals were sampled for stable isotopic and dental calculus analyses. These data provide the author with the evidence to reconstruct diet and non-dietary tooth use at Cerro Oreja. However, these data alone could not address the author's questions about the development of social inequality. They need to be combined with the age-at-death estimations, sex identifications, and social status assessments discussed above. In bringing these data together with the theoretical, archaeological, and biocultural contexts outlined in the second and third chapters, the author created several specific hypotheses about agricultural intensification, chicha consumption, craft specialization, and coca use in the Moche valley. As informed by

the author's discussion of the biological signatures provided in the fourth chapter, she argues these hypotheses create a window into the role that changes in daily activities played in the creation of the Southern Moche state.

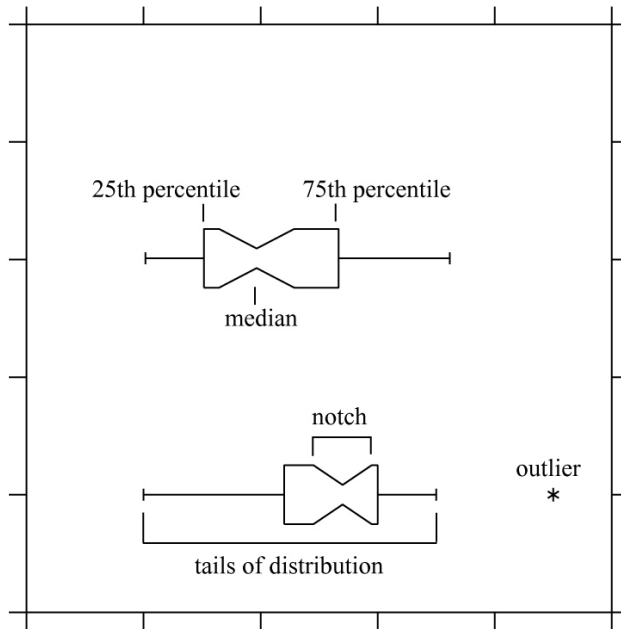


Figure 6.1: Example boxplot

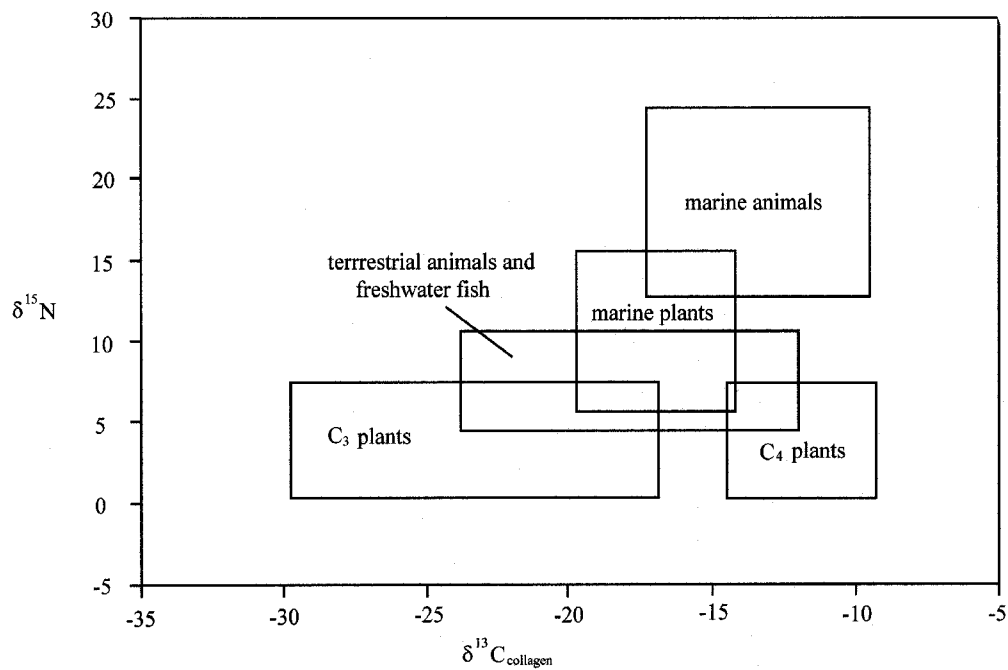


Figure 6.2: Stable isotopic “map” of food resources in Southern Perú from Tomczak 2003

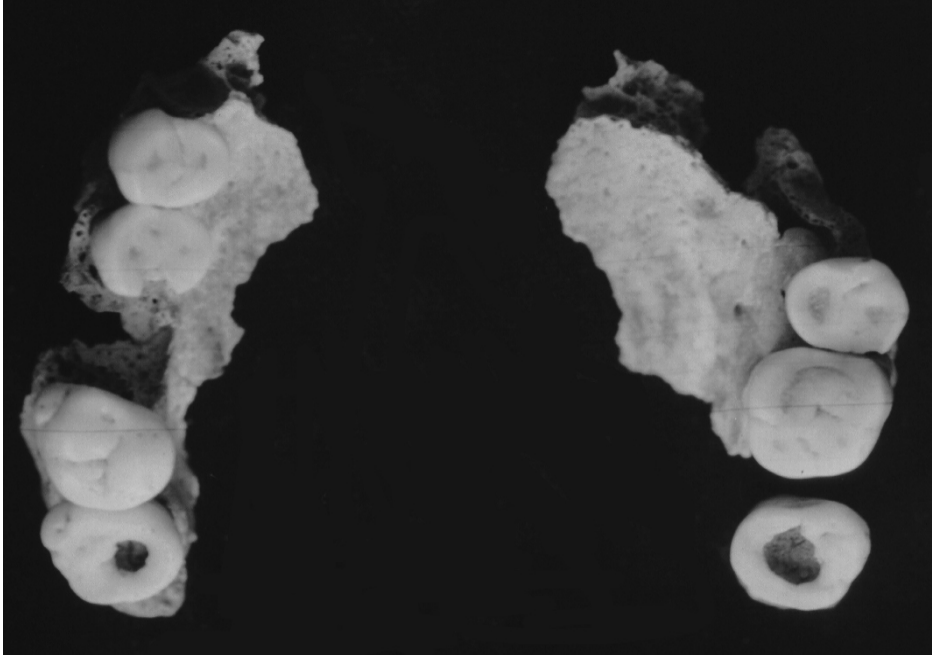


Figure 6.3: Carious lesions, right 2ND maxillary molar 25-50% affected and left 3rd maxillary molar 1-25% affected



Figure 6.4: Generalized occlusal wear

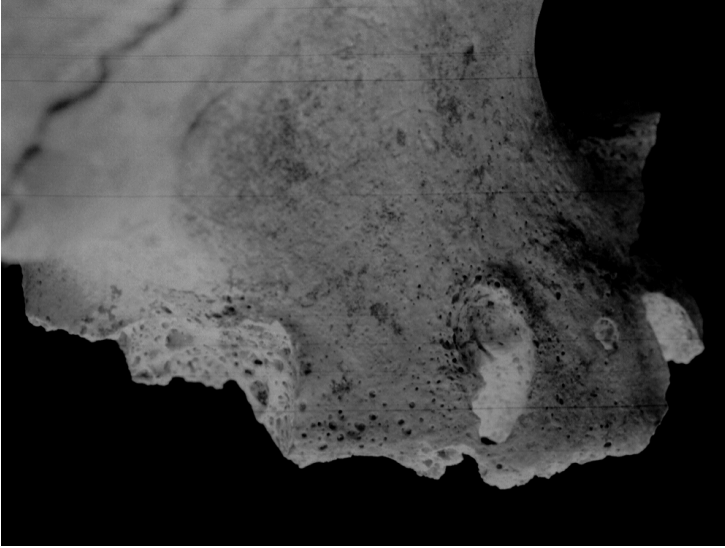


Figure 6.5: Apical abscess of maxillary canine with reactive bone

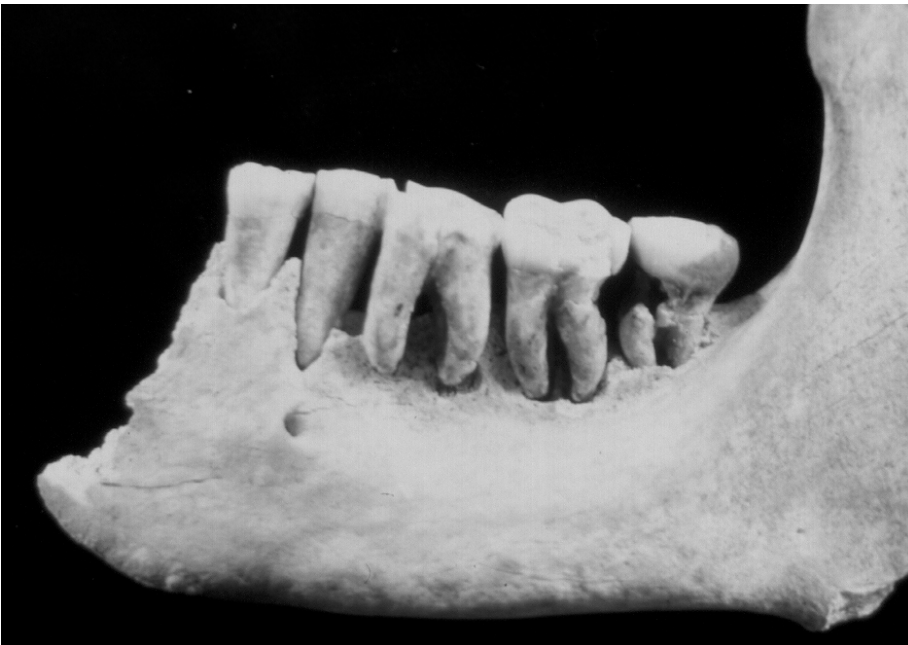


Figure 6.6: Periodontal disease, mandibular molars affected



Figure 6.7: Antemortem tooth loss with healing alveolar bone, mandibular 1st and 2nd premolars and 1st molar affected



Figure 6.8: Enamel chipping of mandibular 3rd molar

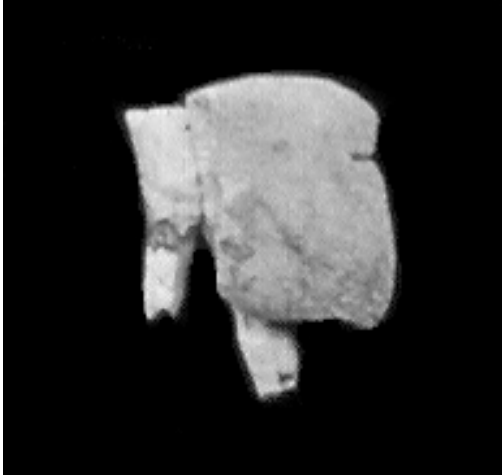


Figure 6.9: Calculus deposit, maxillary molar affected



Figure 6.10: Localized wear affecting the occlusal surface of maxillary left and right 1st incisor right 2nd incisor

Chapter 7 LOS CERRO OREJAÑOS: RESULTS

7.1 Introduction

The author examined the remains of 750 individuals recovered from the largest cemetery associated with the site of Cerro Oreja. These individuals lived during the Cupisnique (1800 – 400 BC), Salinar (400 – 1 BC), Gallinazo (AD 1 – 200), and Early Moche (AD 200 – 400) phases. The author developed four hypotheses concerning the development of social inequality in the Moche valley. These hypotheses address agricultural intensification, chicha consumption, craft specialization, and coca use. In this chapter, the author begins with an outline of the demographic patterns that characterize this sample. She then turns to a brief analysis of social status in the collection. Finally, she discusses the data relating to her hypotheses. The first two areas of inquiry can be addressed with data relevant to dietary reconstruction, and the second with data relevant to non-dietary tooth use. The data the author uses to reconstruct the diet of Cerro Orejaños are biological indicators of the consumption of particular foods, such as maize, and of the consumption of carbohydrates in general. These indicators include stable isotopic signatures of bones and teeth, plant microfossils recovered from dental calculus, and several measures of oral health (dental caries, dental wear, abscesses, periodontal disease, antemortem tooth loss, and dental trauma). The data the author uses to reconstruct non-dietary tooth use among los Cerro Orejaños include: dental wear, dental trauma, periodontal disease, dental caries, antemortem tooth loss, and dental calculus. The biological indicators were nearly the same but particular

combinations of data and specific patterns of co-variation in indicators allow the author to address each of her hypotheses. What these data revealed about social inequality among Cerro Orejaños is the focus of the next chapter.

7.2 Demographic Patterns

7.2.1 Age Estimations

The author presents ages-at-death profiles for the entire sample in Table 7.1 and Figure 7.1. Individuals ranging from six fetal-months to 56 years old at the time of their deaths were recovered from the cemetery at Cerro Oreja. The samples representing several periods were extremely small, but the Salinar, Pre-structural Gallinazo, Structural Gallinazo, and Post-structural Gallinazo phases were sufficiently represented to be included in this analysis.

The Salinar phase sample included the smallest percentage of young children (individuals less than 10 years old), whereas the Pre-structural Gallinazo phase sample contained the largest percentage of children (Figures. 7.2, 7.3, 7.4, and 7.5). This pattern does not appear to be a sampling artifact. As mentioned in chapter five, the deepest (and thus oldest) remains were the best preserved because they were less affected by the overlaying Chimú canal. The Salinar phase sample included the fewest children despite the fact that these remains were the best preserved.

To further compare the age structure of the Salinar, Pre-structural Gallinazo, Structural Gallinazo, and Post-structural Gallinazo phase samples, the author calculated several mean ages-at-death. As can be seen in Table 7.2, there was some variation in the sample demographic patterns. Generally speaking the various Salinar phase samples were

characterized by the oldest mean ages-at-death. Calculation of ANOVA identified significant differences (F ratio = 3.4, $p = .02$) among the complete samples in their mean ages-at-death. To see which sample or samples were significantly different, the author used the Sheffé test, which creates a table of pairwise comparisons. The Salinar phase differed from the Pre-structural and Structural Gallinazo phase samples ($p = .02$ and $p = .08$, respectively). All other comparisons were not significant.

Table 7.2 demonstrates that the greatest differences between phases in mean age-at-death is seen when the skeletal collection was divided into two groups—those who still had deciduous teeth at the time of their deaths (children), and those had permanent teeth (adolescents and adults). The adult mean ages-at-death for the four phases were not as divergent, but ANOVA did identify significant differences (F ratio = 3.0, $p = .03$). The Sheffé test showed that again the Salinar phase sample was different, but in this case it differed from the Post-structural Gallinazo phase sample only ($p = .05$).

Like other measures calculated based on means, ANOVA can be dramatically affected by outliers. Boxplots, which represent medians, are not affected in this way (Drennan 1996). In Figure 7.6 and 7.7, the author presents the notched boxplots for the complete and adult Salinar and Gallinazo phase samples, respectively. Although the boxplots did not identify significant differences in the ages-at-death for the complete sample (Figure 7.6), the adult age-at-death for the Salinar phase was significantly older than for the Post-structural Gallinazo phase. This suggests that there were some temporal differences in the age structure of the population.

The author also examined each of the phase samples age-at-death profiles to see how closely they approximated mortality profiles derived from living populations (Milner et al 2000). To this end, she employed the pattern matching analysis developed by Milner et al. (1989). In general, the Yanomamö model mortality pattern was the best overall approximation of the Cerro Oreja age-at-death profile (Figures 7.8–7.11), although Salinar phase profile from birth to four years was more similar to that of the Ju'hoansi (Figure 7.8). This deviation was not unexpected as there were fewer young children the Salinar phase sample (Figure 7.2) than in the Gallinazo phase samples (Figures 7.3–7.5).

Given the similarity of the Cerro Oreja age-at-death profile to the Yanomamö mortality pattern, it appears that the Cerro Oreja samples could represent the populations who lived at the site during this time. In particular, it is clear that none of the Cerro Oreja collections suffered from an under representation of subadults, which is a common problem among skeletal samples (see Hoppa 2002 for a review of this literature). However, there were several interesting differences between the Yanomamö and Cerro Oreja patterns.

The Cerro Oreja samples included a smaller percentage of individuals aged 50 years or older. This was not surprising given the difficulties of accurately estimating age from the skeletal remains of older individuals (Hoppa 2002). If the members of the Cerro Oreja Bioarchaeological Project research team underestimated the age-at-death of several individuals who were 50 years or older, then we would have expected a greater presence in the Cerro Oreja collections of younger adults. Such a pattern was clearly observable. There was a greater percentage of individuals aged 30 to 40 years and 40 to 50 years than in the

Yanomamö comparative sample (Figures 7.8 - 7.11). Because underestimation of age-at-death in adults is a recurrent problem of current methods, this deviation was not unexpected.

The greater presence of subadults aged five to 20 years in the Cerro Oreja collection, was unexpected. This could have been the result of the exclusion from the analysis of individuals identified as greater than 20, 30, or 40 years at the time of death (Figure 7.1). As noted in the previous chapter, not all adults were sufficiently preserved to be given a mean age-at-death estimate, and thus the author could not include these individuals in this analysis. If all adults could have been included, the percentage of subadults in the samples would have been lower. In order to investigate this possibility the author generated a set of modified age-at-death and mortality profiles. In these profiles, all adults (individual 20 years or older at the time of their death) were pooled. The Cerro Oreja modified age-at-death profiles still generally approximated the modified Yanomamö mortality profile except for the Post-structural Gallinazo phase sample, which was more similar to the modified Ju'hoansi mortality profile (Figures 7.12 - 7.15).

7.2.2 Sex Identifications

The author considered females or males and probable females or males as sex identified and all other individuals as unidentified. Due to the poor preservation of many of the Cerro Oreja pelvic remains, the sex of over half (167) of the 303 adults representing the Salinar, Pre-structural, Structural, and Post-structural Gallinazo phases could not be identified (Table 7.3, Figures 7.16 - 7.19). Because the phase samples were differentially affected by the disturbance of the overlaying Chimú canal, the proportion of unidentifiable adults varied. In

the Salinar phase sample, which was least affected, 39% of the adults could not be identified as to their sex, 52% could not be identified in the Pre-structural Gallinazo phase samples, 58% in the Structural, and 66% in the Post-structural, which was the most affected. Overall, women outnumbered men in the collection, but the difference was not significant (chi square, $p = .47$). Additionally, no sample differed significantly from a hypothetical sample of the same size that contained 50% females.

7.3 Indications of Social Status

The analysis of social status in the Cerro Oreja burial collection is preliminary. The presence or absence of grave goods was used to divide the sample into high or low status burials. Once a detailed mortuary analysis has been completed, the author will reassess these data. However, even these preliminary data are informative, particularly as they are the only data currently available which can speak to the development of social inequality in the Moche valley.

Less than half of the burials analyzed were accompanied by grave goods (Table 7.4). However, there were clear temporal differences in the proportion of individuals interred with goods. Through time, decreasing numbers of individuals were buried with grave goods (Figure 7.20). The method of dating burials used by researchers at the INC may account for some of the temporal variation. Salinar phase individuals were generally identified on the basis of body treatment or the inclusion of Salinar phase ceramic vessels. If there were Salinar phase individuals who were not treated with cinibar or red ocher and who were interred without grave goods, they would not have been assigned to a phase, and thus not included in the

author's analysis. This could have artificially inflated the proportion of Salinar phase individuals with grave goods. The three Gallinazo phase samples were distinguished stratigraphically, and thus would not have been affected by this bias. The continued pattern of decreasing numbers of individuals accompanied by grave goods through the Gallinazo phase suggests that this temporal trend was not simply an artifact of dating procedures.

7.4 Reconstructing Diet

7.4.1 *Stable Isotopes*

Samples of non-human bone and human bone and teeth were processed for both $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values. The non-human $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values (Table 7.5) were consistent with those used by Tomczak (2003) to create her dietary map (see Figure 6.2). Therefore, it appears that this map is generally applicable to the Peruvian north coast. Human bone apatite and tooth enamel samples both yielded $\delta^{13}\text{C}$ values. Unfortunately, $\delta^{15}\text{N}$ values were not available for the human bone samples because collagen preservation was insufficient.

Mean apatite $\delta^{13}\text{C}$ values ranged from -10.0 to -7.3 for the combined female and male samples of each phase, -10.2 to -7.4 for females, -10.4 to -7.0 for males, -10.0 to -6.7 for high status, and -8.0 to -7.0 for low status individuals (Table 7.6). Salinar phase individuals displayed more negative values than Gallinazo phase individuals. This difference was statistically significant (Figure 7.21). Calculation of ANOVA and the Sheffé test also showed the Salinar phase sample to be significantly more negative than any of the Gallinazo phase samples ($p = 0.00$). When the author divided the phase samples into females ($p = 0.003$) and males ($p = 0.000$), this pattern was preserved (Figures 7.22 and 7.23). The distinctiveness of

Salinar phase apatite $\delta^{13}\text{C}$ values could also be seen among high status individuals ($p = 0.0$, Figure 7.24). Although no Salinar phase individuals of low status were sampled for stable isotopic analysis, low status individuals from the three Gallinazo phases did not have significantly different $\delta^{13}\text{C}$ apatite values (Figure 7.25).

The author compared the apatite $\delta^{13}\text{C}$ values of females and males, and high status and low status individuals within each phase. Calculation of ANOVA failed to identify any significant differences among these comparisons. The box plots showed Structural Gallinazo phase females to have significantly more negative $\delta^{13}\text{C}$ values than did males (Figure 7.26). The box plot comparisons of high and low status individuals in each phase did not identify any significant differences (Figure 7.27). However, during the Pre-structural and Structural Gallinazo high status individuals were characterized by less negative apatite $\delta^{13}\text{C}$ values than did low status individuals, but during the Post-structural Gallinazo phase the pattern was reverse.

Mean enamel $\delta^{13}\text{C}$ values displayed greater ranges than mean apatite $\delta^{13}\text{C}$ values. Enamel values ranged from -9.2 to -6.2 for all individuals, -10.0 to -5.5 for female, -11.0 to -5.6 for male, -9.4 to -5.5 for high status, and -10.2 to -6.5 for low status individuals (Table 7.6). The distinctive pattern seen in bone apatite $\delta^{13}\text{C}$ values was not present in the enamel values, and calculation of ANOVA found no significant overall differences among the phase samples. However, notched box plots did identify a significant temporal pattern in enamel $\delta^{13}\text{C}$ values (Figure 7.28). Salinar phase values were significantly more negative than either the Structural or Post-structural Gallinazo phase values, whereas Pre-structural Gallinazo phase values were intermediate. Because of the limited number of enamel samples processed

for $\delta^{13}\text{C}$ values, comparisons between females and males or high and low status individuals could not be made.

7.4.2 Dental Calculus

Dental calculus samples from 24 individuals were processed to extract plant microfossils. Reinhard employed four different processing methods, the first of which (performed on four samples) was unsuccessful. The calculus of two samples processed using an otherwise successful method contained no plant remains. As a result, microfossil data were available for 18 of the 24 individuals sampled, of these 10 were females and eight were males. The Salinar and Structural and Post-structural Gallinazo phases were represented by five individuals each, while the Pre-structural Gallinazo phase was represented by three individuals (Table 7.7). Although these sample sizes were too small for statistical analysis, they offer complimentary dietary information.

Nearly all samples contained micro-plant remains, most of which could not be identified (Table 7.7). The most common food item was maize starch, which was recovered from 61% of the samples. Approximately similar proportions of female and males had maize starch in their calculus during the Salinar, Pre-structural Gallinazo, and Structural Gallinazo phases. The sex distribution of maize starch in Post-structural Gallinazo phase calculus differed. In this phase both females sampled yielded maize starch but only one of three males sampled did. Manioc starch was less common than maize, but it also appears to have been part Cerro Orejaño diet during the Gallinazo phase. Manioc was not identified in any of the Salinar

phase samples. The Salinar phase diet might also have differed from the Gallinazo phase diet in other ways, as fruit and possibly potatoes were identified.

7.4.3 Oral Health

Sample teeth were often fragmented. The author reconstructed each tooth for which enamel was recovered. Reconstructing the teeth allowed her to identify a distinctive pattern of tooth fragmentation. First, the roots cracked and broke. This was followed by fragmentation of the dentin and detachment from the enamel. Finally, the enamel fragmented. Although the author was able to reconstruct many tooth crowns, she was less successful at reconstructing roots. Because root carious lesions were likely to be under-represented in the sample, the author did not collect these data.

Carious lesions were present on all types of teeth (Tables 7.8 and 7.9). Total carious lesion rates among permanent teeth varied from 17 to 27 percent, and among deciduous teeth from six to 15 percent. Posterior teeth were more likely to display lesions than anterior teeth. In general, Salinar phase teeth, both deciduous and permanent, were the least likely to display lesions, although this pattern was not consistent within all tooth types. Among permanent teeth there was a general pattern of increasing rates of cavitation through time. This pattern was statistically significant (chi square $p = .012$) when all tooth types were pooled. Among deciduous teeth the pattern of temporal change was significant (chi square $p = .009$), although it was slightly different than among permanent teeth, in which Structural not Post-structural Gallinazo phase cavitation rates were the highest.

The author also examined the percentage of individuals who displayed at least one carious tooth (Table 7.10). Twenty-eight to 40 percent of individuals with deciduous teeth, and 56 to 76 of individuals with permanent teeth were affected. There was no significant temporal pattern. Because of the significantly reduced sample sizes which result from analyzing the carious lesion data at this scale, the author could not calculate separate rates for each tooth type, but rather pooled types into anterior and posterior categories. Again, there were no significant temporal patterns.

Because of the age-progressive nature of dental caries, the wide range in the mean ages-at-death among the temporal samples of permanent teeth, and the small range of mean ages-of-death among adults (Table 7.2), comparisons of carious lesion rates among adults were more informative. Total carious lesion rates varied from 19 to 32 percent among all adult teeth, 17 to 53 percent among adult female teeth, and 13 to 28 percent among adult male teeth (Table 7.11). Carious lesions affected the teeth of females more often than the teeth of males, a pattern that many other researchers have identified (for a review of this literature see Larsen 1997). As seen in the permanent dentition sample, adult teeth and adult female teeth showed a statistically significant pattern of temporal increase in dental carious lesions (chi square $p = .004$ and $.000$, respectively). The teeth of adult males do not follow this pattern. Male caries rates showed an increase from the Salinar to the Pre-structural Gallinazo phase, but rates then decreased such that Post-structural Gallinazo phase male teeth were the least likely to be affected by dental caries. Chi square analysis did not identify this pattern as statistically significant.

The percentage of adults who displayed at least one carious lesion was also examined. Among adults 64 to 82 percent were affected, among females 78 to 93 percent, and among males 50 to 86 percent (Table 7.12). No statistically significant differences were identified.

Rates of carious lesions were also analyzed by social status (Table 7.13). Among the permanent teeth of low status individuals, rates of affected teeth ranged from 12 to 23 percent, and among high status individuals from 18 to 35 percent. As seen in previous analyses of carious lesion, there was a pattern of increase through time. This pattern was statistically significant among high status individuals (chi square $p = .000$). Additionally, the author analyzed the differences in carious rates within each phase. Although in each phase the teeth of low status individuals were less often affected by dental caries than were the teeth of high status individuals, this difference was only significant during Structural Gallinazo phase (chi square $p = .032$).

Among the deciduous teeth of low status individuals, rates of affected teeth ranged from zero to 15 percent, and among high status individuals from seven to 15 percent (Table 7.14). There was no consistent temporal pattern. As with permanent teeth, deciduous teeth of low status individuals were generally less affected by dental caries than were the teeth of high status individuals. These differences were not statistically significant.

The author also conducted an analysis of social status differences in dental caries at the scale of the individual (Tables 7.15 and 7.16). Only one pattern was apparent among individuals with either observable permanent or deciduous teeth. Individuals of low status were less often afflicted with dental caries than those of high status among individuals with permanent teeth only. This pattern was not, however, statistically significant.

These preliminary analyses suggest that both phase and sex affected a resident of Cerro Oreja's chance of developing caries, but that social status did not. In order to more fully analyze the patterns identified above and to deal with the problem of interdependence of teeth, the author analyzed these data using logistic regression (see discussion of statistical procedures in the previous chapter). The model used included the following predictor variables: age, tooth type, phase, sex (for adults), and social status. In addition, the author ran two iterations of this model so that she could test the significance of different interactions among the predictor variables.

The first model explored the effects of phase on carious lesion frequency. Because there were differences between the sexes as well, the author included a phase and sex interaction variable in the model that examined adult teeth. In addition to testing for significant differences among sex and phase samples, this model generated rates that were adjusted for variations in sample composition. A clear pattern emerged (Figure 7.29). Female caries rates increased through time (Wald $p = .022$), but male caries rates did not. When these adjusted rates for females and males carious lesions were compared, a significant sex difference was identified within the Structural and Post-Structural Gallinazo phases (Wald $p = .010$ and $.026$, respectively). Among subadults a temporal pattern of increasing caries, similar to that seen among females, was identified, but it was not found to be statistically significant (Figure 7.30).

The second model, which included both social status and phase and social status and sex interaction variables, was created to explore the affects of social status on carious lesion frequencies. The deciduous data were insufficient for this model (due to small sample sizes),

but the adult data were sufficient. Among adults, neither temporal differences nor differences between social status categories within each phase were found to be statistically significant (Figure 7.31).

A dental abscess is the result of either untreated dental caries, or extreme wear. Because of the age progressive nature of these conditions, the author only analyzed dental abscesses among adults. Abscess rates displayed less temporal variation than did carious lesions. Among adult alveoli rates of abscessing ranged from eight to 17 percent, among female alveoli rates ranged from one to 14 percent, and among adult male alveoli rates ranged from two to 23 percent (Table 7.17). Post-structural Gallinazo phase alveoli in the adult and male samples were the least likely to display lesions. Among females, Salinar phase alveoli were least affected. Alveoli representing the Pre-structural Gallinazo phase were most often affected in all three samples. The temporal differences among adults and males were statistically significant (chi square $p = .002$ and $.000$, respectively).

The author analyzed the rates of dental abscesses by social status (Table 7.18). Among alveoli of both high and low status individuals abscess rates ranged from seven to 13 percent. There was temporal change. Rates of abscessing increased from the Salinar to the Pre-structural Gallinazo phase and then a decreased to Salinar phase rates by the Post-structural Gallinazo phase. This pattern was statistically significant among both high and low status groups (chi square $p = .047$ and $.035$, respectively). However, no significant differences were identified between social status groups in any phase.

Dental abscesses were also analyzed at the individual level. The percentage of individuals with at least one abscessed alveolus was higher than the aggregated affected

alveoli: 42 to 55 percent of adults, 40 to 56 percent females, and 17 to 58 percent of males (Table 7.19). Among the samples, those least likely to have an abscess represented the Post-structural Gallinazo phase. The adults and females who were most commonly affected represented the Salinar phase, while the males who were most affected represented the Pre-structural Gallinazo phase. None of these differences were statistically significant.

The author also examined the effect of social status on dental abscesses at the individual level. The percentage of high status individuals with at least one abscess ranged from 17 to 53 percent, with the lowest percentage of high status individuals affected in the Post-structural Gallinazo phase sample, and greatest percentage in the Structural Gallinazo phase sample (Table 7.20). Among low status individuals the range was higher, 35 to 67 percent, and the pattern was different. Low status Salinar phase individuals were most likely affected and Structural Gallinazo phase individuals least likely. Calculation of the chi square statistic did not identify significant differences between social status groups in any phase, nor any significant temporal patterns within each social status group.

These preliminary analyses suggest that both phase and sex affected a resident of Cerro Oreja's chance of developing dental abscesses, but that social status did not. As with the carious lesion data, the author analyzed these data using a logistic regression model that included age, tooth type, phase, sex, and social status as predictor variables, and two iterations to test for significant interactions among predictor variables.

The first model explored the effects of phase (including a phase and sex interaction variable) on abscess frequency. The author plotted rates that had been adjusted for variations in sample composition (Figure 7.32). Calculation of the Wald statistic identified temporal

changes in abscesses among males as significant ($p = .022$), but not among females. Sex differences within each phase were not found to be significant.

The second model included both social status and phase, and social status and sex interactions to explore the affects of social status. The abscess data were not sufficient to support this model. Neither would the data support a model with only the phase and social status interaction variables. The only model supported included the social status and sex interaction. This analysis did not identify statistically significant differences between high and low status individuals in any phase (Figure 7.33)

Throughout the occupation of Cerro Oreja, the rate of periodontal disease for all observable adult alveoli varied from 39 to 55 percent among adult alveoli, 34 to 76 percent among adult female alveoli, and 42 to 77 percent among adult male alveoli (Table 7.21). Unlike carious lesions, female and male alveoli were equally affected by periodontal disease. Among adults and females Pre-structural Gallinazo phase alveoli were most often affected, and among males Post-structural Gallinazo phase alveoli were most often affected. Among adults and males Structural Gallinazo phase alveoli were least often affected, and among females Post-structural Gallinazo phase alveoli were the least often affected. Temporal differences in periodontal disease were not statistically significant in the adult sample, however they were significant among both the female and male samples (chi square $p = .002$ and $.032$, respectively).

Among alveoli of high and low status individuals, periodontal disease rates ranged from 24 to 73 percent, and among low status individuals, rates from 20 to 45 percent (Table 7.22). Among high status individuals rates of periodontal disease dipped from the Salinar to

the Pre-structural Gallinazo phase. In the Structural Gallinazo phase they began to rise, and by the Post-structural Gallinazo phase they reached their highest point. This temporal pattern was significant (chi square $p = .001$). Among the alveoli of low status individuals, those representing the Structural Gallinazo phase were least often affected, and those of the Pre-structural Gallinazo phase were most often affected. This pattern was also statistically significant (chi square $p = .001$). There were temporal differences between the rates of affected high and low status alveoli. During the Pre-structural Gallinazo phase low status alveoli were more often affected but during the subsequent phases, higher rates were found among high status alveoli. These differences were statistically significant (chi square $p = .007, .002, \text{ and } .001$).

Most individuals in the sample displayed evidence of periodontal disease. Rates of individuals affected ranged from 70 to 89 percent of adults, 75 to 100 females, and 67 to 86 percent of males (Table 7.23). Those individuals least likely to have been affected by periodontal disease were Structural Gallinazo phase adults and Post-structural Gallinazo phase females and males. The adults and females most commonly affected represented the Salinar and Pre-structural Gallinazo phases, respectively. Males were equally affected during the Salinar and Pre-structural and Structural Gallinazo phases. None of these differences were statistically significant.

The author also examined the effect of social status on periodontal disease at the individual level. The percentage of high status individuals with at least one abscess ranged from 83 to 100 percent, with individuals from Salinar through Structural Gallinazo phases similarly affected (Table 7.24). The percentage of affected low status individuals ranged from

43 to 100 percent. The percentage of low status individuals affected by periodontal disease displayed a temporal pattern of steady decline. Temporal differences within both social status categories were not found to be statistically significant, nor were differences between social statuses within each phase.

The alveolus level preliminary analysis suggests that as with dental caries, both phase and sex affected a Cerro Oreja resident's chance of developing periodontal disease. Social status might also have done so. To further explore these patterns, the author used a logistic regression model which included age, tooth type, phase, sex, and social status as predictor variables.

The first model explored the effects of phase (including a phase and sex interaction variable) on periodontal disease frequency and plotted the adjusted rates (Figure 7.34). Calculation of the Wald statistic did not identify significant temporal changes in periodontal disease within either the female or male samples. However, sex differences within the Post-structural Gallinazo phase were significant (Wald $p = .017$).

The second model used to analyze these data included both social status and phase and social status and sex interactions to explore the affects of social status. However these data were not sufficient to support this model, nor did they support a model including only the phase and social status interaction. As with the abscess data, the model used included only the phase and sex interaction variable. This analysis identified low status individuals as more often affected by periodontal disease than high status individuals in each period (Figure 7.35). These differences were significant during the Salinar and Structural and Post-structural Gallinazo phases (Wald $p = .001$, $.006$, and $.000$, respectively).

Antemortem tooth loss occurs when the bone that supports the teeth is no longer sufficient. Such destruction can be the result of dental abscesses or periodontal disease. Ten to 15 percent of teeth were lost antemortem among adult Cerro Orejaños, 13 to 17 percent among females, and six to 17 percent among males (Table 7.25). There was a consistent temporal pattern, with Pre-structural Gallinazo phase adults, females, and males being most affected by tooth loss. Those less often affected were Post-structural Gallinazo phase adults and males, and Salinar phase females. This pattern was statistically significant among adults and males (chi square $p = .015$ and $.000$, respectively).

The author also analyzed the rates of antemortem tooth loss by social status (Table 7.26). Among the high status sample rates of loss ranged from three percent during the Structural Gallinazo phase to 23 percent during the Post-structural Gallinazo phase. Among the low status sample rates ranged from three percent lost during the Salinar phase to 12 percent during the Pre-structural Gallinazo phase. Temporal change within both the high and low status samples was statistically significant (both chi square $p = .000$). During both the Salinar and Post-structural Gallinazo phases rates of tooth loss were higher among high status individuals than among low status individuals. This pattern was reversed during the Structural Gallinazo phase. Calculation of the chi square statistical identified all of these differences as significant (Salinar $p = .000$, Structural $p = .027$, Post-structural $p = .000$).

As with other measures of oral health, the author analyzed antemortem tooth loss at the individual level. The percentage of individuals who had lost at least one tooth before death was higher than the aggregated affected alveoli: 57 to 67 percent of adults, 70 to 90 percent females, and 43 to 65 percent of males (Table 7.27). Those individuals least likely to have

abscesses represented the Post-structural Gallinazo phase among females and males and the Structural Gallinazo phase among adults. Adults and females most commonly affected represented the Salinar phases, whereas males were most affected during the Pre-structural Gallinazo phase. None of these differences were statistically significant.

The percentage of high status individuals who had lost at least one tooth ranged from 59 to 69 percent (Table 7.28). Among low status individuals the percentage of affected individuals ranged from 33 to 69 percent. The lowest percentage of high status individuals lost teeth during the Pre-structural Gallinazo phase and highest during the Salinar phase. The reverse pattern characterized low status individuals. Calculation of the chi square statistic did not identify significant differences between social status groups in any phase, nor any significant temporal patterns within each social status group.

These preliminary analyses suggest that phase, sex, and social status affected a resident of Cerro Oreja's chance of losing teeth before death. The author also analyzed these data using a logistic regression model that included age, tooth type, phase, sex, and social status as predictor variables. She ran two iterations of this model to test the significance of different interactions among the predictor variables.

The first model explored the effects of phase (including a phase and sex interaction variable) on the frequency of tooth loss. The author plotted the rates adjusted for variations in sample composition (Figure 7.36). Calculation of the Wald statistic identified temporal changes in antemortem tooth loss among males as significant ($p = .042$), but not among females. Sex differences within each phase were not found to be significant.

The second model, which included both social status and phase and social status and sex interactions, was created to explore the affects of social status on carious lesion frequencies. Among adults, temporal differences were not statistically significant (Figure 7.37). However, calculation of the Wald statistic identified differences between social status categories within each phase as significant (Salinar $p = .036$, Pre-structural $p = .011$, Structural $p = .039$, Post-structural $p = .033$).

7.4.4 Generalized Wear

Occlusal or generalized wear is directly affected by age, and there was a broad range of mean ages-at-death for subadults (Table 7.2). The author, therefore, only analyzed the dental wear of adult teeth. Mean wear scores for anterior teeth varied only slightly by tooth type (Table 7.29). The mean wear scores of central incisors were slightly greater (4.8 to 5.6) than those of lateral incisors (4.6 to 4.8) and canines (4.2 to 5.3). Salinar phase teeth showed the greatest range of wear scores for all types of anterior teeth. Structural Gallinazo phase teeth varied most in incisor wear, whereas Pre-structural Gallinazo phase teeth varied most in canine wear. Calculation of ANOVA identified significant temporal differences in canine wear ($p = .010$), and the Sheffé test indicated that Salinar phase canines were significantly more worn than either Pre-structural or Structural Gallinazo phase canines ($p = .035$, and $.026$, respectively). Box plots did not identify this difference as significant (Figure 7.38). Although ANOVA did not identify any significant temporal differences in incisor wear, box plots did identify Salinar phase first incisors as significantly more worn than Post-structural Gallinazo

phase first incisors. There was some variation in anterior tooth wear, but there were no consistent temporal patterns.

Premolars also showed little variation in mean wear scores, with first premolar scores ranging from 3.4 to 4.3, and second premolar scores from 3.2 to 4.1 (Table 7.30). First premolars were slightly more worn than second premolars, and both were slightly less worn than anterior teeth. Pre-structural Gallinazo phase premolars displayed the least variation in wear scores. Calculation of ANOVA identified significant temporal differences in first premolar wear ($p = .048$), although the Sheffé test did not indicate that any single phase differed significantly from any other. Box plots also failed to identify significant differences among wear scores for either first or second premolars (Figure 7.39). As with anterior teeth, there were no consistent temporal patterns.

Molars displayed even less variation in mean wear scores than other tooth types. First molar mean scores ranged from 5.0 to 5.5, second molars from 3.6 to 4.0, and third molars from 2.4 to 2.8 (Table 7.31). Salinar phase first and third molars had the highest wear scores, and Pre-structural Gallinazo phase first and second molars displayed the lowest scores. Neither ANOVA nor notched box plots (Figure 7.40) identified any significant temporal differences in mean molar wear⁴. However, second molars were characterized by the greatest variability in mean wear scores, as is indicated by the large number of outliers (Figure 7.40).

Mesial ratio values ranged from 1.2 to 1.3 for first molars, 1.2 to 1.4 for second molars, and 1.1 to 1.6 for third molars (Table 7.31). As with mean wear scores, neither

⁴Recall that the measure “mean molar wear” was created by averaging the wear scores of each of the four main molar cusps. Box plots of mean molar wear were created using the median of the measure mean molar wear.

ANOVA nor box plots identified significant temporal variation among first and second molars (Figure 7.41). Although the box plot of third molar mesial ratio showed no significant differences among phases, calculation of the ANOVA did ($p = .001$). The Sheffé test identified Structural Gallinazo phase third molars as worn at a greater angle than either Salinar or Pre-structural Gallinazo phase third molars ($p = .007$ and $p = .005$, respectively). In general, mesial ratio values varied more widely than mean wear scores, as was indicated by the consistent presence of outliers (Figure 7.41).

Although no consistent or significant temporal changes were identified in the generalized wear data, the analysis of dental carious lesions suggests that differences might have existed within the female and male samples. To investigate this possibility for tooth wear, the author divided the adult sample into females and males. Because no clear differences were found in the previous analyses and because of the decrease in sample size that occurred when the data were subdivided, she pooled the anterior teeth (first and second incisors and canines) and the premolars when performing statistical tests. Molar wear varied substantially by number, and so the author analyzed first, second, and third molars separately.

Female wear showed a fairly consistent temporal pattern with Salinar phase anterior teeth generally displaying the greatest amount of wear and Structural Gallinazo phase the least (Table 7.32). Calculation of ANOVA showed this pattern to be statistically significant ($p = .002$) and the Sheffé test identifies Salinar phase anterior teeth to be more worn than those of Structural Gallinazo phase females ($p = .005$). This pattern was visible in the boxplots (Figure 7.42) but was not identifiable as significant.

The temporal differences seen among female anterior teeth also characterize female premolars. Salinar phase premolars were consistently the most worn whereas Structural Gallinazo phase premolars were the least worn (Table 7.33). This difference was significant (ANOVA $p = .000$), and the Sheffé test showed female Salinar phase premolars to be significantly more worn than Gallinazo phase premolars from all periods ($p = .018$, $.000$, and $.008$, respectively). This pattern was also identified as significant in the notched box plot (Figure 7.43).

Among females, first molar mean wear scores ranged from 3.8 to 6.5, whereas mean third molar wear scores ranged from 2.2 to 3.7 (Table 7.34). Female Structural Gallinazo phase first molars were again the least worn (ANOVA $p = .000$). The Sheffé test identified Structural Gallinazo phase first molars as significantly less worn than those of either the Salinar or Pre-structural Gallinazo phases ($p = .020$, and $.000$, respectively). The box plot also showed this difference to be significant (Figure 7.44). The temporal pattern of wear for second and third molar mean wear scores was similar to that previously discussed. For both tooth types, Structural Gallinazo phase teeth were least worn (Table 7.22). Calculation of ANOVA did not identify this pattern as significant among second molars, but did identify it as significant among third molars ($p = .018$). As with the ANOVA, box plots did not identify significant temporal differences in the mean wear score of female second molars but did among third molars (Figure 7.44). Pre-structural Gallinazo phase females showed significantly more wear than female third molars from the Structural or Post-structural Gallinazo phases.

As with the pooled adult teeth, mean mesial ratios displayed a limited range for first or second molars and slightly larger range for third molars (Table 7.34). Neither ANOVA nor

box plots identified significant temporal variation among first and second molars (Figure 7.45). Among female third molars, significant temporal differences were found (ANOVA $p = .015$), and the Sheffé test identified Structural Gallinazo phase teeth as having a greater angle of wear than Salinar phase molars ($p = .051$). The box plots showed this pattern, as well as identifying Post-structural Gallinazo phase third molars as worn at a greater angle than Salinar phase molars.

Among males, there were no clear temporal patterns in anterior tooth wear (Table 7.35). Although ANOVA did not identify significant temporal differences in wear of male anterior teeth, the box plots showed that Post-structural Gallinazo phase teeth were significantly more worn than Structural Gallinazo phase teeth and that both Post-structural and Structural Gallinazo phase male teeth showed a smaller range of wear scores than the teeth of either Pre-structural Gallinazo or Salinar phase males (Figure 7.46).

Male premolars did show temporal variation (Table 7.36, ANOVA $p = .010$). The Sheffé test did not identify premolars from any particular phase as significantly more worn than any other. However, the box plots showed male Structural Gallinazo phase premolars to be significantly less worn than either Pre-structural or Post-structural Gallinazo phase premolars (Figure 7. 47).

As with female molars, male molars displayed a wide ranged of mean wear scores (first molars: 4.7 to 6.2, third molars: 2.1 to 3.4), and thus male molars were analyzed separately by number (Table 7.37). Consistently, male molars of the Salinar phase were the least worn, whereas those of the Post-structural Gallinazo phase were the most worn. Calculation of the ANOVA identified significant differences in mean third molar wear scores ($p = .021$), but the

Sheffé test did not identify the teeth of any one phase as significantly different. Box plots, however, showed significant temporal differences for all molars (Figure 7.48). Among all male molars there was a trend of increasing levels of wear through time with Salinar phase teeth being significantly less worn than Post-structural Gallinazo phase teeth. Among third molars, Salinar and Pre-structural Gallinazo phase teeth were significantly less worn than teeth of either the Structural or Post-structural Gallinazo phases. Male mesial ratio values displayed little range (Table 7.37), and neither ANOVA nor box plots identified significant temporal variation among them (Figure 7.49).

Wear scores were also analyzed by social status. Mean wear scores on anterior teeth of high status individuals ranged from 4.6 to 6.3 on first incisors, 4.5 to 5.5 on second incisors, and 4.2 to 5.9 on canines (Table 7.38). No significant temporal patterns were identified by ANOVA, but notched box plots identified Post-structural, high status, Gallinazo phase anterior teeth as significantly more worn than the teeth of other phases (Figure 7.50).

Premolar wear showed a temporal pattern in which high status Salinar phase teeth were more worn than Structural Gallinazo phase teeth (Table 7.39, ANOVA $p = .003$, Sheffé $p = .009$). The box plots however, did not identify high status Salinar phase premolars as significantly more worn than Structural Gallinazo phase premolars, but they did show Structural and Pre-structural Gallinazo phase premolars as significantly less worn than those of Post-structural Gallinazo phase individuals (Figure 7.51).

The mean wear scores of high status molars ranged from 4.6 to 5.5 for first molars, 3.5 to 4.1 for seconds, and 2.1 to 2.8 for thirds (Table 7.40). There was no consistent temporal pattern in mean molar wear scores. Both ANOVA and box plots failed to identify

significant differences in first and second mean molar wear scores (Figure 7.52). Notched box plots did identify Pre-structural Gallinazo phase third molars as significantly less worn than Structural Gallinazo phase third molars.

High status mesial ratio values displayed little range for first and second molars. However, Structural Gallinazo phase third molars displayed a larger ratio than third molars of other phases (Table 7.40). This difference was statistically significant (ANOVA $p = .001$). The Sheffé test identified Structural Gallinazo phase third molars as characterized by a greater angle of wear than either Salinar or Pre-structural Gallinazo phase third molars ($p = .004$ and $.008$, respectively). Box plots did not identify statistically significant temporal differences in the angle of wear among high status molars (Figure 7.53).

Low status individuals were characterized by a temporal pattern in anterior tooth wear with Salinar phase teeth consistently the most worn and Structural Gallinazo phase teeth often the least worn (Table 7.41). Although the ANOVA identified significant differences among anterior teeth of various phases ($p = .034$), the Sheffé test did not identify the teeth of any one phase as unique. Notched box plots identified Structural Gallinazo phase anterior teeth as significantly less worn than the those of other phases (Figure 7.54).

Mean premolar wear scores of low status individuals ranged from 3.3 to 3.8 for first premolars and 2.9 to 3.6 for second premolars (Table 7.42). There was no pattern of temporal variation, and no significant differences were detected by ANOVA or in the notched box plot (Figure 7.55).

Mean molar wear scores for low status individuals ranged from 4.9 to 5.4 for first molars, 3.6 to 4.0 for second molars, and 2.1 to 3.5 for third molars (Table 7.43).

Consistently, mean wear scores were the lowest for Structural Gallinazo phase molars. This difference was not found to be statistically significant for first or second molars, but was for third molars (ANOVA $p = 0.15$). The Sheffé test identified Structural Gallinazo phase third molars as less worn than those of the Pre-structural Gallinazo phase ($p = 0.19$). Box plots of first and second mean molar wear scores supported a lack of significant temporal variation (Figure 7.56). The box plot for third molar wear also identified Structural Gallinazo phase third molars as significantly less worn than those of Pre-structural Gallinazo phase individuals as well as third molars of Salinar phase individuals.

Mesial ratio values of low status molars showed a consistent temporal pattern that contrasts with that of mean wear scores. The molars of Structural Gallinazo phase individuals were consistently worn at a greater angle than the molars of individuals from other phases, particularly the molars of Salinar and Pre-structural Gallinazo phase individuals (Table 7.43). These differences were not found to be statistically significant by either calculation of the ANOVA or by inspection of notched box plots (Figure 7.57).

Although there were few consistent patterns in the wear data, these preliminary analyses suggest that sex and social status might have affected the amount and angle of dental wear among Cerro Orejaños. To more fully analyze the patterns identified above, the author also analyzed the wear of anterior teeth and premolars using an ordered logistic regression model. An ordered logistic regression model was more appropriate than a simple logistic regression model because wear data were collected using an ordinal scale. Because mean molar wear scores and mesial ratio values were calculated and thus not simply ordered, the author used a linear regression model to further analyze these data. Both sets of models

included the following predictor variables: age, phase, sex, and social status. In addition, the author ran two iterations of these models so that she could test the significance of different interactions among the predictor variables.

The first models explored the effects of sex on wear scores by including a phase and sex interaction variable. In addition to testing for significant differences among sex and phase samples, these models generated frequency scores that were adjusted for variations in sample composition.

There were no clear temporal trends in the wear of either female or male anterior teeth (Figure 7.58). However, male anterior teeth were significantly more worn than those of females during the Post-structural Gallinazo phase (Wald $p = .044$). There were significant temporal differences in premolar wear among both females and males (Wald $p = .000$ and $.000$, respectively). Wear scores of female premolars consistently decreased (Figure 7.59). Among males the pattern was not as consistent, but showed a general increase in premolar wear. These sex differences in wear were significant during the Salinar and Post-structural Gallinazo phases (Wald $p = .003$ and $.000$, respectively).

Among males, there was a significant temporal trend toward greater mean wear score for both first and third molars (Wald $p = .043$ and $.024$, respectively) (Figures 7.60 - 7.62). Female first and third molars also differed significantly over time (Wald $p = .000$ and $.000$, respectively), but there was no clear temporal pattern to this change. Comparisons of female and male mean wear scores identified a fairly consistent pattern of sex difference. Post-structural Gallinazo phase female molars were significantly less worn than male molars (M1 p

= .000, M2 p = .003, M3 p = .006). This pattern was also found among the first and second molars of Structural Gallinazo phase females (Wald p = .000 and .022, respectively).

Mesial ratio values also displayed some consistent temporal variation. Among females the angle of wear generally increased through time (Figures 7.63 - 7.65). This pattern was significant for first, second, and third molars (Wald p = .001, .000, and .000, respectively). Female and male mesial ratio values often differed significantly from each other. The angle of second and third molar wear was greater among Salinar phase females than among males, but this difference was only significant for third molars (Wald p = .047). The molars of Post-structural Gallinazo phase females were also characterized by a significantly greater angle of wear (M1 p = .030, M2 p = .000, M3 p = .002). The wear angle of Pre-structural and Structural Gallinazo phase female second and third molars was less than that of males. This differences was significant among second molars of both phases (Wald p = .003, and .016, respectively), but only of the Pre-structural Gallinazo phase for third molars (Wald p = .002).

The second set of models, which included both social status and phase, and social status and sex interactions, was created to explore the affects of social status on dental wear. Mean wear scores of anterior teeth and premolars for both low and high status individuals displayed a consistent pattern—a decrease from the Salinar phase followed by an increase in the Post-structural Gallinazo phase (Figures 7.66 and 7.67). This temporal pattern was significant for high status individuals (anterior tooth p = .05, premolar p = .000). Although there appear to have been few social status differences in the extent of either anterior tooth or premolar wear, social status differences during the Pre-structural and Structural Gallinazo

phases were significant (anterior tooth $p = .001$ and $.039$, respectively, premolar $p = .010$ and $.000$, respectively).

Rates of mean molar wear scores displayed several consistent patterns. The teeth of high status individuals showed no significant temporal changes in molar wear (Figures 7.68-7.70). However, the teeth of low status individuals changed significantly through time. Low status first, second, and third molars were most worn during the Pre-structural Gallinazo phase, a pattern that was significant for first and third molars (Wald $p = .000$, and $.009$, respectively). Generally, the teeth of low status individuals were more worn than those of high status individuals. This difference was significant for Post-structural Gallinazo phase first molars (Wald $p = .002$), Salinar and Pre-structural and Structural Gallinazo phase second molars (Wald $p = .010$, $.001$, and $.003$, respectively), and Salinar and Pre-structural Gallinazo phase third molars (Wald $p = .001$, and $.008$, respectively).

Mesial ratio values did not display consistent patterns of temporal change (Figures 7.71 - 7.73), although the angle of wear among low status second molars changed significantly through time (Wald $p = .000$). Comparisons between low and high status teeth identified significant differences among second molars. During the Structural Gallinazo phase, second molars were worn at a significantly greater angle among low status individuals than among high status individuals (Wald $p = .016$). This pattern reversed during the Post-structural Gallinazo phase when the angle of wear was greater among high status individuals (Wald $p = .011$).

7.5 Reconstructing Non-dietary Tooth Use

7.5.1 *Localized Wear*

All adults were examined for evidence of localized (non-occlusal) tooth wear, including macroscopically visible grooves and striations, substantial wear on anterior teeth without similar wear on posterior teeth, and wear which occurred without corresponding wear on occluding teeth. These types of localized wear can result when individuals habitually take part in craft activities during which they use their teeth as tools. Because overall patterns were of interest, the author considered only adult individuals with observable anterior and posterior teeth, and maxillary and mandibular teeth. These criteria were met by 16 Salinar phase, 28 Pre-structural Gallinazo, 28 Structural Gallinazo, and 15 Post-structural Gallinazo phase individuals. The author found no cases of grooving or striation, but 18 to 25 % of adults had substantial wear on anterior teeth or at least one tooth for which the wear did not correspond with that on the occluding tooth.

There were no significant temporal changes in the number of people who had at least one tooth affected by this kind of localized wear. Females were more likely than males to have localized wear during the Salinar and Post-structural Gallinazo phases, but these differences were not statistically significant (Table 7.44). Nor were there any significant differences between high and low status individuals (Table 7.45).

Of the affected 21 individuals 12 had several affected teeth, and among these individuals, the author was able to identify three distinctive patterns. The first pattern was apparent in the dentitions of three females, two who lived during the Salinar phase and one from the Pre-structural Gallinazo phase. The teeth of these individuals were worn in a

diagonal fashion with posterior, left, maxillary and anterior, right, mandibular teeth being affected in two females, and posterior, right, maxillary and anterior, left, mandibular teeth being affected in the third female. A sample of dental calculus was taken from one of these females, and it was found to include unidentified plant stem fragments.

The second pattern was identified in the dentitions of three males, one from the Salinar phase and two from the Pre-structural Gallinazo phase. Both the maxillary and mandibular anterior teeth of these individuals were substantially worn with no clear preference for side (Figure 6.10). In one individual, the first mandibular incisors were lost antemortem. Calculus samples collected from two of these individuals were analyzed. However, they were among the samples tested using the unsuccessful method, and thus no materials were recovered.

The third pattern of wear identified was not as clearly defined. This pattern, which was seen in one Structural and two Post-structural Gallinazo phase females, affected only the lingual surfaces of anterior teeth, primarily maxillary teeth. Two of these individuals also had substantial occlusal wear on their premolars. The dental calculus of two affected females was analyzed. Unidentified fibers were recovered from one, and totora phytoliths from the other. Totora (*Scirpus sp.*) is a bulrush commonly found in Perú, and used to make matting and baskets.

There were three other individuals who also displayed lingual wear on their maxillary anterior teeth, a male from the Pre-structural Gallinazo phase, and a female and an unidentified adult from the Structural Gallinazo phase. No dental calculus samples were collected from these individuals. Because the mandibular teeth of these individuals were either

lost antemortem or were highly fragmentary, it was unclear if this pattern was the same as the third pattern.

7.5.2 Dental Trauma

Rates of dental trauma as indicated by enamel chipping were calculated separately for deciduous and permanent teeth. Total chipping rates for deciduous teeth were slightly lower than for permanent teeth: 17 to 28 percent and 17 to 33 percent, respectively (Table 7.46). Structural Gallinazo phase teeth were least often affected among both samples. Among the deciduous teeth, those of Pre-structural Gallinazo phase individuals were most often affected, whereas among permanent teeth, those of Post-structural Gallinazo phase individuals were most often affected. Temporal differences in rates of enamel chipping were statistically significant for both deciduous (chi square $p = .022$) and permanent (chi square $p = .034$) teeth. Both deciduous and permanent posterior teeth were more often chipped than were anterior teeth.

When the author examined the percentage of individuals who displayed at least one chipped tooth, rates were higher: 50 to 61 percent of individuals with deciduous teeth, and 47 to 66 of individuals with permanent teeth were affected (Table 7.47). Among individuals with deciduous teeth, those of the Post-structural Gallinazo phase were least often affected, and those of the Salinar phase were most often affected. Among individuals with permanent teeth the Post-structural Gallinazo phase individuals were most often affected and Pre-structural Gallinazo phase individuals least often. Neither of these patterns was statistically significant.

Comparisons of dental trauma rates were also calculated separately for all adults, females, and males. Rates of chipping among all teeth ranged from 25 to 31 percent among adults, 22 to 35 percent among females, and 29 to 52 percent among males (Table 7.48). Again, posterior teeth were more often chipped than anterior teeth. The rate of chipped adult teeth was highest during the Salinar phase and lowest during the Pre-structural Gallinazo phase. Among the female subsample Salinar phase teeth were the least affected and Post-structural Gallinazo phase the most. Teeth from males representing the Post-structural Gallinazo phase were also most often affected, but those representing the Pre-structural Gallinazo phase were least affected. Temporal changes in the adult and male samples were significant (chi square $p = .034$, and $.034$, respectively).

The percentage of adults who had at least one traumatized tooth was also examined. Among adults 56 to 68 percent of individuals were affected. Among females chipping rates ranged from 56 to 100 percent, and among males 60 to 100 percent (Table 7.49). No statistically significant differences were identified.

Rates of enamel chipping were also analyzed by social status (Table 7.50). Among the permanent teeth of low status individuals, rates of affected teeth ranged from 16 to 36 percent, and among high status individuals from 18 to 31 percent. In both social status samples, teeth from the Structural Gallinazo phase were least often affected, but this pattern was statistically significant only among low status individuals (chi square $p = .000$). Additionally, the author analyzed the differences in rates of dental trauma within each phase. There was no consistent pattern in whether teeth of low status or of high status individuals

were more often affected. However, during the Salinar phase the difference between low and high status chipping rates was statistically significant (chi square $p = .024$).

Among the deciduous teeth of low status individuals, rates of chipped teeth ranged from 18 to 26 percent and among high status individuals from 17 to 30 percent (Table 7.51). Rates of chipping did not significantly change through time among either the teeth of low or high status individuals. Additionally, during no period was there a significant difference between low and high status teeth.

The author also conducted an analysis of social status differences in enamel chipping at the scale of the individual (Tables 7.52 and 7.53). Only one pattern was identified. Among individuals with permanent teeth, those of low status had at least one chipped tooth more often than did those of high status. This pattern was not, however, statistically significant.

These preliminary analyses suggest that both phase and sex had more affect on a Cerro Oreja resident's chance of traumatizing a tooth than did social status. In order to more fully analyze the patterns identified above, the author also used a logistic regression model. The model included the following predictor variables: age, tooth type, phase, sex (for adults), and social status. As with the previous analyses, the author ran two iterations of this model to test for significant interactions among predictor variables.

The first model explored the effects of phase on enamel chipping. The analysis of adult teeth also included a phase and sex interaction. In addition to testing for significant differences among sex and phase samples, this model generated frequency rates that were adjusted for variations in sample composition. The number of teeth with chipped enamel increased through time among both females and males, but neither temporal change was statistically significant

(Figure 7.74). Female teeth were consistently less often chipped than the teeth of males, but this difference was not found to be significant during any phase. Among subadults there was no clear pattern of temporal change or significant difference in the frequency of dental trauma (Figure 7.75).

The second model, which included both social status and phase, was created to explore the affects of social status on the frequency of traumatized teeth. In the analysis of adult teeth, the author also included a social status and sex interaction. Among adults, there was a general pattern of temporal increase as well as a consistent pattern of difference between low and high status teeth in the rate of enamel chipping. Neither pattern was found to be statistically significant (Figure 7.76). Among subadults there was no consistent temporal pattern in rates of enamel chipping. Although the teeth of low status subadults were slightly more likely to be chipped, this difference was not significant during any phase (Figure 7.77).

7.5.3 *Coca Use Indicators*

In addition to the microfossils of food plants and those associated with craft activities, several fragments of coca-like plants were recovered from the 18 dental calculus samples. Leaf epidermis, leaf parenchyma, sclerenchyma, and polygonal phytoliths fragments were those most specific to coca, whereas fibers and vascular bundles were the least specific. Long cell phytoliths identical to those found in coca were also recovered, but these phytoliths may also occur in other plants. Taken together these remains are suggestive of coca use.

Coca-like plant fragments were recovered from the dental calculus of nearly all individuals examined (Table 7.54). All females and males who lived during the Salinar phase

and whose calculus was tested had coca-like fragments in their dental calculus. Coca-like fragments were commonly recovered from the calculus of both females and males representing Gallinazo phases, but such fragments were most common in the Post-structural Gallinazo phase sample and least common in the Structural Gallinazo phase sample, particularly among low status males.

Specific patterns of dental pathological conditions are also suggestive of coca chewing. As Indriati and Buikstra (2001) demonstrated, a combination of molar periodontal disease and carious molar roots are strong indicators of coca use. As noted previously, the preservation of the teeth and jaws of Cerro Orejaños was highly variable. In particular, tooth roots were almost never preserved. As a result, Indriati and Buikstra's method for identifying coca use from patterns of oral health could not be applied. However, the author believes that patterns of periodontal disease are suggestive of coca use. Of the 14 individuals whose dental calculus contained coca-like plant fragments, 10 also had posterior teeth affected by periodontal disease (Table 7.54). Additionally, rates of periodontal disease follow the same pattern identified by coca-like microplant remains recovered from calculus (Figure 7.70). Periodontal disease was common during the Salinar phase, and all Salinar phase individuals had coca-like remains in their calculus. During the Structural Gallinazo phase, periodontal disease rates were the lowest and coca-like remains were least often found in Structural Gallinazo phase calculus. Finally, during the Post-structural Gallinazo phase periodontal disease rates increased again (at least among males) and calculus samples often contained coca-like plant remains.

7.6 Conclusion

The skeletal remains of 750 individuals recovered from the largest cemetery associated with the site of Cerro Oreja were examined. These individuals represented the Cupisnique, Salinar, Pre-structural Gallinazo, Structural Gallinazo, and Post-structural Gallinazo, and Early Moche phase occupations. Analyses of sex distributions and age-at-death estimations suggest that the Salinar and Gallinazo phase samples do not suffer from under representation of any demographic group. The analysis of the grave goods of these individuals indicate that either the access of los Cerro Orejaños to such items decreased through time, or that an increasing proportion of low status individuals were interred in the cemetery. This suggests that there was change along the axis of social status during the use-life of the cemetery.

Several indicators were investigated to provide data for reconstructing diet (for a summary see Table 7.55). The analyses of stable isotopes indicate a change in diet between the Salinar and Gallinazo phases. Specifically, apatite $\delta^{13}\text{C}$ values were significantly less negative during all three Gallinazo phases than during the previous Salinar phase. The change in enamel $\delta^{13}\text{C}$ was more gradual with Pre-structural Gallinazo phase values intermediate between Salinar and Structural and Post-structural Gallinazo phase values. Changes in the microplant remains recovered from dental calculus also indicated a dietary shift at the Salinar—Gallinazo transition. Salinar phase samples included fruit remains and did not include manioc remains. Gallinazo phase remains did not contain fruit but did contain manioc.

The analysis of dental carious lesions also identified a temporal shift in diet, but also indicate differences in the timing and magnitude of change depending on an individual's sex, and to a lesser extent, age. Among females (and to a lesser extent children), the carious lesion

rate increased through time. Male rates showed no pattern of change. Thus by the Structural Gallinazo phase female and male carious lesion rates were significantly different.

The rate of dental abscessing also changed through time. Male rates increased from the Salinar phase to the Pre-structural Gallinazo phase, but then decreased during the Structural Gallinazo Phase. Female rates did not change significantly. Dental calculus data also supported sex differences in diet, as maize was recovered from all Post-structural Gallinazo phase females sampled but from only one third of males.

Both sex and social status differences were identified patterns of periodontal disease, antemortem tooth loss, and generalized occlusal wear. Periodontal disease was significantly more common among male than among females during the Post-structural Gallinazo phase. Additionally, it was more common among low status individuals than among high status individuals during the Salinar phase and again during the Structural and Post-structural Gallinazo phases. Antemortem tooth loss increased among males from the Salinar phase to the Pre-structural Gallinazo phase. This was followed by a Structural Gallinazo phase decrease. During all phases, however, high status individuals were significantly more likely to have lost teeth before they died than low status individuals.

The anterior teeth of females were characterized by greater wear scores than were those of males during the Post-structural Gallinazo phase. Female premolar wear scores significantly decreased from the Salinar phase to the Post-structural Gallinazo phase, but male scores generally increased through time. Female premolar wear scores were significantly higher than male scores during the Salinar phase and lower then during the Post-structural Gallinazo phase.

Molar wear was characterized in two ways, through the mean wear score and the mesial ratio. The mean wear of female first and third molar significantly increased from the Salinar phase to the Pre-Structural Gallinazo phase, decreased during the Structural Gallinazo phase, and then increased again in the Post-structural Gallinazo phase. Among males, the mean wear values of first and third molar generally increased through time. All Female mean molar wear values were significantly lower than male values during the Structural and Post-structural Gallinazo phases. Mesial ratio values also showed sex differences. Female mesial ratios generally increased through time for all molars, but male mesial ratios did not. Additionally, female mesial ratios were significantly higher than male mesial ratios during the Post-structural Gallinazo phase. Male mesial ratios were significantly higher during the Pre-structural and Structural Gallinazo phase.

Among high status individuals anterior and premolar wear scores generally increased through time. Low status anterior wear scores were higher during Pre-structural Gallinazo phase but high status scores were significantly higher during Structural Gallinazo phase. The reverse was true for premolars—high status scores higher during the Pre-structural Gallinazo phase and low status scores higher during the Structural Gallinazo phase.

Low status mean molar wear values increased significantly from the Salinar phase to the Pre-Structural Gallinazo phase, decreased during the Structural Gallinazo phase, and then increased again during the Post-structural Gallinazo phase. This is the same pattern of temporal variation identified among female molars. Overall, low status mean wear values were generally greater than high status mean wear values.

Several data sets that speak to non-dietary tooth use were analyzed. Changes in the pattern of localized wear suggest that females used their teeth as tools differently during the Salinar and Pre-structural Gallinazo phases than during the later Gallinazo phases. Additionally, male patterns of localized wear indicate that during the Salinar and Pre-structural Gallinazo phases they were engaged in different activities than females.

The previously describe patterns of periodontal disease suggest that there were sex and temporal changes in coca use. This assertion is supported by the recovery of coca-like microplant remains from the dental calculus of all Salinar phase individuals sampled but not from all Gallinazo phase individuals.

Table 7.1: Cerro Oreja Total Sample, Age-at-Death

Age Range	Cupisnique	Salinar	Pre-structural	Structural	Gallinazo	Post-structural	Moch	Chim	Unident
fetal			5		8				
birth - 4.9	3	24	110		90	49	4	1	21
5 - 9.9 yrs		11	21		12	9			5
10 - 14.9 yrs	1	3	12		4	3	1		1
15 - 19.9 yrs		5	10		11	7			3
20 - 24.9 yrs		2	9		4	5			2
25 - 29.9 yrs			9		7	11			
30 - 34.9 yrs	1	6	6		10	7			1
35 - 39.9 yrs	1	8	10		10	3			5
40 - 44.9 yrs		5	10		8	4			4
45 - 49.9 yrs		4	5		5	2			1
50 - 54.9 yrs					2				
55 - 59.9 yrs	1	1							
60 - 64.9 yrs									
> 18 yrs		2	5		1	5			
> 20 yrs		3	20		28	26			8
> 30 yrs	1	2	11		10	13		1	1
> 40 yrs			2		5	1			1
50 +						1			
total	8	76	245		215	146	5	2	53

Table 7.2: Cerro Oreja Mean Ages-at-Death

Phase	Complete Sample	Individuals with Deciduous Teeth	Individuals with Permanent Teeth	Adults	Adult Females	Adult Males
Salinar	12.8 yrs	3.0 yrs	17.1 yrs	36.7 yrs	35.7 yrs	35.2 yrs
Pre-structural Gallinazo	13.8 yrs	2.1 yrs	10.8 yrs	33.2 yrs	34.7 yrs	35.7 yrs
Structural Gallinazo	16.6 yrs	1.8 yrs	11.7 yrs	34.6 yrs	34.9 yrs	34.6 yrs
Post-structural Gallinazo	15.1 yrs	2.5 yrs	12.8 yrs	36.7 yrs	33.2 yrs	28.6 yrs

Table 7.3: Cerro Oreja Sex Identifications

Sex	Total	Salinar	Pre-structural Gallinazo	Structural Gallinazo	Post-structural Gallinazo
female	43	7	12	16	8
probable female	21	3	5	6	7
possible female	25	6	9	6	4
male	33	6	11	10	6
probable male	23	3	11	5	4
possible male	12		4	6	2
unidentified	118	6	30	40	42
total	275	31	82	89	73

Table 7.4: Grave Goods in the Cerro Oreja Burial Sample

Phase	No Grave Goods	Grave Goods	Unknown
Salinar	11	62	3
Pre-structural Gallinazo	151	94	
Structural Gallinazo	150	65	
Post-structural Gallinazo	111	35	
Total	423	256	3

Table 7.5: Non-human Bone Collagen Stable Isotopic Data

Animal	Valley	$\delta^{13}\text{C}_{\text{coll}}$				$\delta^{14}\text{N}_{\text{coll}}$		
		N	min	max	mean	min	max	mean
sea mammal	Chicama	4	-9.3	-11.0	10.5	14.6	17.8	16.5
bird	Moche	1			-12.9			7.4
camelid	Moche	1			-14.1			6.6

Table 7.6: Cerro Oreja Adult Bone Carbonate and Tooth Enamel Stable Isotopic Data

Period										
sample	$\delta^{13}\text{C}_{\text{carb}}$					$\delta^{13}\text{C}_{\text{enamel}}$				
	N	min	max	mean	st dev	N	min	max	mean	st
Salinar										
all individuals	8	-11.4	-7.4	-10.0	1.2	4	-11.8	-6.4	-9.6	2.3
females	3	-10.4	-9.9	-10.2	0.2	1			-10.0	
males	2	-11.4	-9.3	-10.4	1.5	2	-11.8	10.2	-11.0	1.1
high status	8	-11.4	-7.4	-10.0	1.2	3	-11.8	-6.4	-9.4	2.8
low status	0					1			-10.2	
Pre-structural Gallinazo										
all individuals	12	-11.0	-6.1	-7.5	1.2	4	-12.1	-5.9	-8.3	2.8
females	5	-11.0	-6.9	-8.0	0.7	2	-12.1	-6.5	-9.3	4.0
males	2	-7.5	-6.8	-7.2	0.5	0				
high status	6	-7.6	-6.1	-6.9	0.6	2	-8.7	-5.9	-7.3	2.0
low status	6	-11.0	-7.0	-8.0	1.5	2	-12.1	-6.5	-9.3	4.0
Structural Gallinazo										
all individuals	13	-9.7	-5.8	-7.3	1.0	3	-8.7	-5.0	-6.4	2.0
females	9	-9.7	-5.8	-7.4	1.2	1			-5.5	
males	3	-7.3	-6.8	-7.0	0.3	1			-8.7	
high status	4	-7.2	-5.9	-6.7	0.6	1			-5.5	
low status	9	-9.7	-5.8	-7.5	1.0	2	-8.7	-5.0	-6.9	2.6
Post-structural Gallinazo										
all individuals	7	-7.9	-6.4	-7.3	0.6	3	-7.8	-5.3	-6.2	1.4
females	4	-7.9	-6.7	-7.4	0.6	2	-7.8	-5.3	-6.6	1.8
males	2	-7.7	-6.4	-7.1	0.9	1			-5.6	
high status	4	-7.9	-6.4	-7.5	0.7	1			-5.6	
low status	3	-7.5	-6.7	-7.0	0.4	2	-7.8	-5.3	-6.5	1.8

Table: 7.7: Plant Microfossils Recovered from Cerro Oreja Calculus Samples

Period							
Sample							
	N	maize starch	manioc starch	potato? starch	unident starch	fruit cells	stem, fiber, phytolith, leaf
Salinar							
female	3	2			1	1	2
male	2	1		1	2		2
Pre-structural Gallinazo							
female	3	2	1		1		3
male	0						
Structural Gallinazo							
female	2	1			1		2
male	3	2	2		1		2
Post-structural Gallinazo							
female	2	2	1		1		2
male	3	1			1		3

Table 7.8: Cerro Oreja Permanent Teeth Observable for Carious Lesions

Tooth	Salinar			Pre-structural			Structural			Post-structural		
	N	carious	%	N	carious	%	N	carious	%	N	carious	%
I ¹	17	2	11.8	24	3	12.5	21	2	9.3	11	0	0.0
I ²	21	4	19.1	26	5	19.2	21	1	4.8	10	1	10.0
C*	25	4	16.0	36	2	5.6	31	5	16.1	12	5	41.7
P ¹	22	2	9.1	37	4	10.8	26	7	26.9	7	2	28.6
P ²	24	4	16.7	35	6	17.1	31	9	29.3	11	4	36.4
M ¹	35	6	17.1	42	6	14.3	43	11	25.6	18	1	5.7
M ²	27	4	14.8	42	16	38.1	33	14	42.4	15	5	3.3
M ³	22	11	50.0	31	10	32.3	24	9	37.5	7	2	28.6
I ₁ *	22	0	0.0	19	0	0.0	16	3	18.8	7	2	28.6
I ₂	27	2	7.4	35	1	2.9	25	2	8.0	13	3	23.1
C	29	1	3.5	38	5	13.2	32	4	12.5	23	3	13.0
P ₁	30	1	3.3	36	5	13.9	36	5	13.9	18	5	27.8
P ₂	32	2	6.3	43	6	14.0	33	7	21.2	21	3	14.3
M ₁	43	11	25.6	66	15	22.7	49	8	16.3	20	6	30.0
M ₂	37	14	37.8	39	19	48.7	33	15	45.5	19	9	47.4
M ₃ *	22	5	22.7	31	14	45.2	29	12	41.4	11	8	72.7
total*	435	73	16.8	580	117	20.2	482 ⁺	114	23.7	223	59	26.5

* Chi square statistic $p \leq .05$. ⁺ One tooth was observable but not identifiable as to jaw.

Table: 7.9: Cerro Oreja Deciduous Teeth Observable for Carious Lesions

Tooth	Salinar			Pre-structural Gallinazo			Structural Gallinazo			Post-structural Gallinazo		
	N	carious	%	N	carious	%	N	carious	%	N	carious	%
dI ¹	23	1	4.3	33	5	15.2	28	6	3.6	8	2	25.0
dI ²	21	2	9.5	29	2	6.9	22	5	22.7	11	1	9.1
dC	25	2	8.0	32	2	6.3	27	5	18.5	8	1	12.3
dM ¹	34	4	11.8	31	6	19.4	35	8	22.9	10	2	20.0
dM ²	32	3	9.4	43	11	25.6	37	9	24.3	24	6	25.0
dI ₁	18	1	5.6	30	0	0.0	22	2	9.1	6	0	0.0
dI ₂ [*]	26	0	0.0	41	0	0.0	34	4	11.8	12	0	0.0
dC	27	0	0.0	35	1	28.6	32	2	6.3	12	0	0.0
dM ₁	38	1	2.6	43	6	14.0	40	4	10.0	15	2	13.3
dM ₂ [*]	41	3	7.3	49	9	18.4	39	1	2.6	19	0	0.0
total*	285	17	6.0	366	42	11.5	316	46	14.6	125	14	11.2

* Chi square statistic $p \leq .05$.

Table 7.10: Cerro Oreja Individuals⁺ Observable for Carious Lesions

Period									
Sample	All Teeth			Anterior Teeth			Posterior Teeth		
	N	carious	%	N	carious	%	N	carious	%
Salinar									
deciduous	30	7	23.3	24	3	12.5	27	6	22.2
permanent	37	28	75.7	23	7	30.4	37	28	75.7
Pre-structural Gallinazo									
deciduous	62	20	32.3	54	8	14.8	44	15	34.1
permanent	78	44	56	45	9	20.0	75	43	57.3
Structural Gallinazo									
deciduous	42	17	40.5	35	10	28.6	33	12	36.4
permanent	57	37	64.9	38	9	23.7	57	36	63.2
Post-structural Gallinazo									
deciduous	25	7	28.0	20	2	10.0	17	6	35.3
permanent	28	20	71.4	22	7	31.8	28	19	67.9

⁺ Several subadult individuals are recorded twice because they have both deciduous and permanent teeth.

Table 7.11: Cerro Oreja Adult Teeth Observable for Carious Lesions

Period									
sample	All Teeth			Anterior Teeth			Posterior Teeth		
	N	carious	%	N	carious	%	N	carious	%
Salinar									
all	258	50	19.4*	79	11	13.9	179	39	21.8*
female	107	18	16.8*	38	3	7.9*	69	15	21.7*
male	11	24	21.6	31	6	19.4	80	18	22.5
Pre-structural Gallinazo									
all	360	90	25.0*	110	16	14.5	250	74	29.6*
female	109	35	32.1*	41	4	9.8*	68	31	45.6*
male	13	34	27.6	40	9	22.5	83	25	30.1
Structural Gallinazo									
all	39	100	32.4*	89	17	19.1	220	83	37.7*
female	16	54	42.9*	38	10	26.3*	88	44	50.0*
male	54	8	14.8	19	3	15.8	35	5	14.3
Post-structural Gallinazo									
all	168	49	29.2*	61	13	21.3	107	36	33.6*
female	59	31	52.5*	23	9	39.1*	36	22	61.1*
male	54	7	13.0	8	1	5.6	36	6	16.7

* Chi square statistic $p \leq .05$.

Table 7.12: Cerro Oreja Adults Observable for Carious Lesions

Period									
sample	All Teeth			Anterior Teeth			Posterior Teeth		
	N	carious	%	N	carious	%	N	carious	%
Salinar									
all	22	18	82	16	6	38	22	18	82
female	9	7	78	8	2	33	9	7	78
male	7	6	86	5	2	40	7	6	86
Pre-structural Gallinazo									
all	47	30	64	30	9	30	45	29	64
female	12	10	83	11	3	27	11	9	82
male	16	10	63	11	4	36	15	10	67
Structural Gallinazo									
all	41	31	76	28	9	32	41	30	73
female	15	14	93	11	5	45	15	14	93
male	7	4	57	4	2	50	7	3	43
Post-structural Gallinazo									
all	22	15	68	18	6	33	21	14	67
female	7	6	86	5	3	60	7	6	86
male	4	2	50	3	1	33	4	2	50

Table 7.13: Permanent Teeth Observable for Carious Lesions by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo*		Post-structural Gallinazo	
	N	%	N	%	N	%	N	%
low	81	12.3	293	56	323	67	154	35
high*	350	18.0	287	61	159	47	69	24

* Chi square statistic $p \leq .05$.

Table 7.14: Deciduous Teeth Observable for Carious Lesions by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	%	N	%	N	%	N	%
low	15	0.0	216	20	255	38	96	3
high	257	6.6	150	22	61	8	29	3

Table 7.15: Individuals with Permanent Teeth Observable for Carious Lesions by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	%	N	%	N	%	N	%
low	5	100	42	21	50.0	36	22	61.1
							18	12
								66.7
high	31	74.2	36	23	63.9	21	15	71.4
							11	8
								72.7

Table 7.16: Individuals with Deciduous Teeth Observable for Carious Lesions by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	%	N	%	N	%	N	%
low	2	0.0	35	10	28.6	32	14	43.8
							6	28.6
high	28	25.0	27	10	37.0	10	3	30.0
							4	1
								25.0

Table 7.17: Cerro Oreja Adult Alveoli Observable for Abscesses

Sample	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	affected	%	N	affected	%	N	affected
all	323	31	9.6*	448	74	16.5*	338	37
						10.9*	257	20
female	150	15	1.0	148	21	14.2	152	19
						12.5	85	7
male	130	8	6.2*	161	37	23.0*	83	5
						6.0*	44	1
								2.3*

* Chi square statistic $p \leq .05$.

Table 7.18: Cerro Oreja Adult Alveoli Observable for Abscesses by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	affected	%	N	affected	%	N	affected
high*	360	24	6.7	281	35	12.5	170	20
						11.8	75	5
low*	113	8	7.0	310	41	13.2	260	18
						6.9	217	17
								7.8

Table 7.19: Cerro Oreja Adults Observable for Abscesses

Sample	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	%	N	%	N	%	N	%
all	22	12	55	25	45	19	35	15
		54.5		45.5		42.2		42.9
female	9	5	14	6	17	6	10	4
		55.6		42.9		35.3		40.0
male	7	2	19	11	10	3	6	1
		28.6		57.9		30.0		16.7

Table 7.20: Cerro Oreja Adults Observable for Abscesses by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	%	N	%	N	%	N	%
high	17	8	21	9	15	8	6	1
		47.1		42.9		53.3		16.7
low	3	2	15	7	20	7	11	5
		66.7		46.7		35.0		45.5

Table 7.21: Cerro Oreja Adult Alveoli Observable for Periodontal Disease

Sample	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo					
	N	affected	%	N	affected	%	N	affected	%			
all	201	103	51.2	116	64	55.2	100	39	39.0	73	38	52.1
female	82	44	53.7*	45	34	75.6*	45	20	44.4*	32	11	34.4*
male	90	41	45.6*	45	29	64.4*	31	13	41.9*	13	10	76.9*

* Chi square statistic $p \leq .05$.

Table 7.22: Cerro Oreja Adult Alveoli Observable for Periodontal Disease by Status

Status	Salinar		Pre-structural Gallinazo*		Structural Gallinazo*		Post-structural Gallinazo*				
	N	affected	%	N	affected	%	N	affected	%		
high*	236	9	39.0	62	15	24.2	47	21	44.7	16	72.7
low*	69	21	30.4	116	52	44.8	92	18	19.6	54	40.7

* Chi square statistic $p \leq .05$.

Table 7.23: Cerro Oreja Adults Observable for Periodontal Disease

Sample	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo					
	N	% affected	N	%	N	% affected	N	% affected				
all	18	16	18	88.9	13	72.2	23	16	69.6	18	14	77.8
female	7	6	6	85.6	6	100.0	10	8	80.0	8	6	75.0
male	7	6	7	85.6	6	85.6	7	6	85.7	3	2	66.7

Table 7.24: Cerro Oreja Adults Observable for Periodontal Disease by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo		
	N	% affected	N	%	N	% affected	N	%	
high	14	12	6	85.7	7	6	85.7	4	100.0
low	3	3	7	100.0	12	8	66.7	3	42.9

Table 7.25: Cerro Oreja Adult Alveoli Observable for Antemortem Tooth Loss

Sample	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo					
	N	affected	%	N	affected	%	N	affected	%			
all	554	85	15.3*	1046	159	15.2*	829	87	10.5*	574	79	13.8*
female	233	30	12.9	284	51	18.0	351	51	14.5	184	32	17.4
male	199	13	6.5*	367	62	16.9*	176	17	9.7*	96	6	6.3*

* Chi square statistic $p \leq .05$.

Table 7.26: Cerro Oreja Adult Alveoli Observable for Antemortem Tooth Loss by Status

Status	Salinar*			Pre-structural Gallinazo			Structural Gallinazo*			Post-structural Gallinazo*		
	N	affected	%	N	affected	%	N	affected	%	N	affected	%
high*	616	80	13.0	683	76	11.1	409	44	2.7	196	45	23.0
low*	159	5	3.1	717	85	11.9	627	43	6.9	478	53	11.1

* Chi square statistic $p \leq .05$.

Table 7.27: Cerro Oreja Adults Observable for Antemortem Tooth Loss

Sample	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	affected	%	N	affected	%	N	affected
all	24	16	66.7	58	36	62.1	54	30
						55.6	37	22
female	9	8	88.9	14	12	85.7	20	15
						75.0	10	7
male	7	3	42.9	20	13	65.0	11	7
						63.6	6	3
								50.0

Table 7.28: Cerro Oreja Adults Observable for Antemortem Tooth Loss by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	affected	%	N	affected	%	N	affected
high	19	13	68.4	22	13	59.1	16	10
						62.5	6	4
low	3	1	33.3	16	11	68.8	24	14
						58.3	11	6
								54.5

Table 7.29: Cerro Oreja Adult Anterior Teeth Observable for Wear. Maxillary and Mandibular Teeth Pooled

Period	tooth	mean wear score				
		N	min	max	mean	st dev
Salinar						
	I1	17	2.0	8.0	4.8	1.8
	I2	25	1.0	8.0	4.8	1.9
	C	32	2.0	9.0	5.3*	2.0
Pre-structural Gallinazo						
	I1	19	3.0	7.0	5.6	1.5
	I2	34	2.0	8.0	4.7	1.8
	C	42	1.0	8.0	4.2*	1.7
Structural Gallinazo						
	I1	14	2.0	8.0	5.4	1.5
	I2	19	1.0	8.0	4.6	1.7
	C	44	1.0	6.0	4.2*	1.3
Post-structural Gallinazo						
	I1	16	3.0	6.0	5.3	1.0
	I2	16	2.0	6.0	4.7	1.1
	C	30	2.0	7.0	4.5*	1.5

* ANOVA statistic $p \leq .05$.

Table 7.30: Cerro Oreja Adult Premolars Observable for Wear. Maxillary and Mandibular Teeth Pooled

Period		tooth	mean wear score			
		N	min	max	mean	st dev
Salinar						
	P1	32	1.0	8.0	4.3*	1.9
	P2	34	2.0	8.0	4.1	1.8
Pre-structural Gallinazo						
	P1	49	1.0	8.0	3.4*	1.6
	P2	51	1.0	7.0	3.3	1.7
Structural Gallinazo						
	P1	40	1.0	8.0	3.5*	1.5
	P2	46	1.0	6.0	3.2	1.3
Post-structural Gallinazo						
	P1	18	1.0	6.0	3.9*	1.4
	P2	24	2.0	6.0	3.5	1.5

* ANOVA statistic $p \leq .05$.

Table 7.31: Cerro Oreja Adult Molars Observable for Wear, Maxillary and Mandibular Teeth Pooled

Period											
	tooth	mean wear score					mesial ratio values				
		N	min	max	mean	st dev	N	min	max	mean	st dev
Salinar											
	M1	27	3.8	9.3	5.5	1.4	29	0.7	2.0	1.3	0.3
	M2	35	1.5	8.5	3.9	1.4	37	0.7	2.0	1.3	0.3
	M3*	29	1.0	7.0	2.8	1.5	29	0.3	2.0	1.1	0.4
Pre-structural Gallinazo											
	M1	34	2.8	9.0	5.0	1.6	43	0.5	2.5	1.3	0.4
	M2	35	1.0	7.8	3.6	1.2	44	0.6	4.0	1.4	0.7
	M3*	53	1.0	10.0	2.7	1.7	54	0.5	3.0	1.2	0.4
Structural Gallinazo											
	M1	31	2.8	9.5	5.1	1.5	32	0.5	2.0	1.3	0.3
	M2	33	1.3	6.5	3.9	1.0	37	1.0	3.0	1.2	0.5
	M3*	39	1.0	4.3	2.4	1.1	40	0.7	4.0	1.6	0.8
Post-structural Gallinazo											
	M1	21	3.0	7.8	5.2	1.2	21	0.8	1.6	1.2	0.2
	M2	20	2.0	8.0	4.0	1.3	24	0.3	3.0	1.3	0.5
	M3*	15	1.0	4.0	2.4	1.1	16	0.5	2.0	1.3	0.4

* ANOVA statistic $p \leq .05$.

Table 7.32: Cerro Oreja Female Anterior Teeth Observable for Wear, Maxillary and Mandibular Teeth Pooled

Period						
	tooth			mean wear score		
		N	min	max	mean	st dev
Salinar*						
	I1	8	4.0	8.0	5.0	1.3
	I2	13	3.0	8.0	5.3	1.5
	C	16	2.0	8.0	5.4	1.8
Pre-structural Gallinazo*						
	I1	8	3.0	7.0	5.9	1.6
	I2	13	2.0	7.0	5.2	1.6
	C	14	3.0	6.0	4.2	1.3
Structural Gallinazo*						
	I1	6	2.0	6.0	4.5	1.6
	I2	10	1.0	6.0	3.8	1.7
	C	16	1.0	6.0	3.8	1.6
Post-structural Gallinazo*						
	I1	6	4.0	6.0	5.3	1.0
	I2	9	2.0	6.0	4.3	1.2
	C	10	2.0	6.0	4.0	1.3

* ANOVA statistic $p \leq .05$.

Table 7.33: Cerro Oreja Female Premolars Observable for Wear, Maxillary and Mandibular Teeth Pooled

Period	tooth	mean wear score				
		N	min	max	mean	st dev
Salinar*						
	P1	15	2.0	8.0	4.7	1.8
	P2	11	2.0	8.0	4.0	2.0
Pre-structural Gallinazo*						
	P1	16	2.0	7.0	3.4	1.6
	P2	16	2.0	7.0	3.6	1.7
Structural Gallinazo*						
	P1	17	1.0	6.0	3.0	1.3
	P2	21	1.0	6.0	2.8	1.4
Post-structural Gallinazo*						
	P1	6	2.0	5.0	3.5	1.2
	P2	8	2.0	4.0	2.8	0.9

* ANOVA $p \leq .05$.

Table 7.34: Cerro Oreja Female Molars Observable for Wear, Maxillary and Mandibular Teeth Pooled

Period											
	tooth	mean wear score					mesial ratio value				
		N	min	max	mean	st dev	N	min	max	mean	st dev
Salinar											
	M1	7	4.8	7.0	5.5*	0.8	8	1.0	1.0	1.4	0.3
	M2	15	1.8	8.5	4.0	1.6	16	1.0	2.0	1.2	0.3
	M3	12	1.8	7.0	3.5*	1.8	12	0.3	1.3	0.9*	0.3
Pre-structural Gallinazo											
	M1	8	4.8	7.8	6.5*	1.2	12	0.5	2.5	1.2	0.5
	M2	8	2.3	5.5	4.0	0.9	9	0.6	2.0	1.2	0.4
	M3	15	2.5	5.0	3.7*	0.7	16	0.8	1.3	1.1*	0.2
Structural Gallinazo											
	M1	9	2.8	4.5	3.8*	0.6	10	0.5	2.0	1.3	0.4
	M2	13	1.3	4.8	3.5	1.0	14	1.0	3.0	1.4	0.6
	M3	13	1.0	4.0	2.6*	1.0	14	1.0	4.0	1.6*	0.9
Post-structural Gallinazo											
	M1	10	3.0	6.8	5.0*	1.2	10	0.9	1.6	1.1	0.2
	M2	4	2.3	4.5	3.5	1.0	4	0.3	2.0	1.1	0.7
	M3	6	1.0	3.5	2.2*	1.1	6	1.0	2.0	1.6*	0.5

* ANOVA statistic $p \leq .05$.

Table 7.35: Cerro Oreja Male Anterior Teeth Observable for Wear, Maxillary and Mandibular Teeth Pooled

Period	tooth	mean wear score				
		N	min	max	mean	st dev
Salinar						
	I1	8	2.0	8.0	4.3	2.1
	I2	9	1.0	8.0	3.8	2.4
	C	11	2.0	9.0	5.0	2.6
Pre-structural Gallinazo						
	I1	8	3.0	7.0	5.8	1.4
	I2	12	2.0	8.0	5.0	1.9
	C	14	3.0	8.0	5.3	1.8
Structural Gallinazo						
	I1	2	5.0	5.0	5.0	0.0
	I2	5	4.0	6.0	5.0	0.7
	C	10	3.0	6.0	4.0	1.2
Post-structural Gallinazo						
	I1	2	6.0	6.0	6.0	0.0
	I2	4	4.0	6.0	5.0	0.8
	C	9	4.0	6.0	5.0	0.7

Table 7.36: Cerro Oreja Male Premolars Observable for Wear. Maxillary and Mandibular Teeth Pooled

Period	tooth	mean wear score				
		N	min	max	mean	st dev
Salinar*						
	P1	12	1.0	8.0	3.3	1.9
	P2	18	2.0	5.0	3.1	1.2
Pre-structural Gallinazo*						
	P1	17	1.0	8.0	3.9	1.9
	P2	18	1.0	7.0	4.1	2.0
Structural Gallinazo*						
	P1	6	2.0	4.0	2.5	0.8
	P2	8	2.0	4.0	2.8	1.0
Post-structural Gallinazo*						
	P1	6	2.0	5.0	4.2	1.2
	P2	21	1.0	6.0	2.8	1.4

* ANOVA statistic $p \leq .05$.

Table 7.37: Cerro Oreja Male Molars Observable for Wear, Maxillary and Mandibular Teeth Pooled

Period											
	tooth	mean wear score					mesial ratio value				
		N	min	max	mean	st dev	N	min	max	mean	st dev
Salinar											
	M1	12	3.8	6.3	4.7	0.8	13	0.8	1.8	1.3	0.3
	M2	17	1.5	4.5	3.5	0.7	18	0.7	2.0	1.3	0.4
	M3	12	1.0	3.8	2.1*	0.9	12	0.5	2.0	1.2	0.4
Pre-structural Gallinazo											
	M1	10	3.8	9.0	5.2	1.6	12	0.8	2.5	1.4	0.5
	M2	11	2.0	7.8	4.2	1.5	16	1.0	3.0	1.5	0.6
	M3	16	1.0	5.3	2.2*	1.3	16	0.5	3.0	1.3	0.7
Structural Gallinazo											
	M1	7	3.8	7.8	5.6	1.5	7	1.4	2.0	1.5	0.3
	M2	4	3.8	4.5	4.2	0.4	5	1.3	2.5	1.8	0.6
	M3	9	1.8	4.0	3.2*	0.8	9	0.7	4.0	1.7	1.1
Post-structural Gallinazo											
	M1	6	5.5	7.8	6.2	1.0	6	1.1	1.6	1.3	0.2
	M2	8	3.8	4.8	4.5	0.3	9	0.8	1.7	1.2	0.3
	M3	4	2.3	4.0	3.4*	0.8	4	1.0	1.5	1.1	0.3

* ANOVA statistic $p \leq .05$.

Table 7.38: Cerro Oreja High Status Anterior Teeth Observable for Wear, Maxillary and Mandibular Teeth Pooled

Period	tooth		mean wear score			
		N	min	max	mean	st dev
Salinar						
	I1	15	2.0	8.0	4.6	1.8
	I2	21	1.0	8.0	4.7	2.0
	C	27	2.0	9.0	5.2	2.0
Pre-structural Gallinazo						
	I1	8	3.0	7.0	5.3	1.6
	I2	15	2.0	8.0	4.5	1.7
	C	21	2.0	8.0	4.2	1.8
Structural Gallinazo						
	I1	4	5.0	8.0	6.3	1.5
	I2	8	4.0	8.0	5.5	1.2
	C	16	3.0	6.0	4.3	1.1
Post-structural Gallinazo						
	I1	9	3.0	6.0	5.2	1.1
	I2	4	4.0	6.0	5.5	1.0
	C	8	4.0	7.0	5.9	0.8

Table 7.39: Cerro Oreja High Status Premolars Observable for Wear. Maxillary and Mandibular Teeth Pooled

Period	tooth		mean wear			
		N	min	max	mean	st dev
Salinar*						
	P1	29	1.0	8.0	4.4	1.9
	P2	27	2.0	8.0	4.2	1.8
Pre-structural Gallinazo*						
	P1	23	1.0	8.0	3.1	1.8
	P2	26	1.0	7.0	3.7	2.0
Structural Gallinazo*						
	P1	17	2.0	6.0	2.9	1.0
	P2	21	2.0	6.0	3.2	1.1
Post-structural Gallinazo*						
	P1	27	2.0	6.0	4.2	1.2
	P2	6	2.0	6.0	4.0	1.4

* ANOVA statistic $p \leq .05$.

Table 7.40: Cerro Oreja High Status Molars Observable for Wear. Maxillary and Mandibular Teeth Pooled

Period											
	tooth	mean wear score					mesial ratio value				
		N	min	max	mean	st dev	N	min	max	mean	st dev
Salinar											
	M1	21	3.8	9.3	5.5	1.5	22	0.7	2.0	1.3	0.3
	M2	30	1.5	8.5	4.0	1.5	32	0.7	2.0	1.2	0.3
	M3	26	1.0	7.0	2.7	1.6	26	0.3	2.0	1.1*	0.4
Pre-structural Gallinazo											
	M1	18	3.5	9.0	5.0	1.5	21	1.0	2.5	1.4	0.4
	M2	24	1.3	5.5	3.5	0.9	30	0.6	4.0	1.5	0.9
	M3	31	1.0	5.3	2.1	1.2	31	0.5	3.0	1.2*	0.5
Structural Gallinazo											
	M1	12	3.8	9.5	5.3	1.4	12	0.7	1.7	1.3	0.3
	M2	15	2.3	6.5	4.1	1.1	17	1.0	3.0	1.6	0.5
	M3	15	1.3	4.3	2.8	1.0	16	0.8	4.0	1.9*	1.1
Post-structural Gallinazo											
	M1	6	3.0	5.5	4.6	0.9	6	1.0	1.3	1.2	0.1
	M2	7	2.0	8.0	4.1	2.0	10	0.3	2.0	1.2	0.5
	M3	7	1.0	4.0	2.1	1.2	8	0.5	2.0	1.2*	0.4

* ANOVA statistic $p \leq .05$.

Table 7.41: Cerro Oreja Low Status Anterior Teeth Observable for Wear. Maxillary and Mandibular Teeth Pooled

Period		tooth	mean wear score			
		N	min	max	mean	st dev
Salinar*						
	I1	2	5.0	7.0	6.0	1.4
	I2	4	4.0	7.0	5.5	1.3
	C	5	3.0	8.0	5.8	1.9
Pre-structural Gallinazo*						
	I1	11	3.0	7.0	5.8	1.5
	I2	19	2.0	8.0	4.8	2.0
	C	21	1.0	8.0	4.1	1.7
Structural Gallinazo*						
	I1	10	2.0	6.0	5.0	1.4
	I2	11	1.0	6.0	4.0	1.7
	C	28	1.0	6.0	4.1	1.4
Post-structural Gallinazo*						
	I1	7	4.0	6.0	5.3	1.0
	I2	12	2.0	6.0	4.4	1.1
	C	22	2.0	6.0	4.0	1.3

* ANOVA statistic $p \leq .05$.

Table 7.42: Cerro Oreja Low Status Premolars Observable for Wear, Maxillary and Mandibular Teeth Pooled

Period		tooth	mean wear score			
		N	min	max	mean	st dev
Salinar						
	P1	3	2.0	5.0	3.3	1.5
	P2	7	2.0	6.0	3.6	1.8
Pre-structural Gallinazo						
	P1	26	2.0	7.0	3.6	1.4
	P2	25	1.0	6.0	2.9	1.3
Structural Gallinazo						
	P1	23	1.0	8.0	3.8	1.7
	P2	25	1.0	6.0	3.2	1.5
Post-structural Gallinazo						
	P1	11	1.0	5.0	3.6	1.4
	P2	18	2.0	6.0	3.3	1.5

Table 7.43: Cerro Oreja Low Status Molars Observable for Wear, Maxillary and Mandibular Teeth Pooled

Period											
	tooth	mean wear score					mesial ratio value				
		N	min	max	mean	st dev	N	min	max	mean	st dev
Salinar											
	M1	6	4.3	7.3	5.4	1.2	7	0.8	1.5	1.2	0.3
	M2	5	3.3	4.5	4.0	0.5	5	0.8	2.0	1.3	0.4
	M3	3	3.3	3.5	3.4*	0.1	3	1.0	1.3	1.1	0.2
Pre-structural Gallinazo											
	M1	16	2.8	7.8	4.9	1.7	22	0.5	2.0	1.2	0.4
	M2	11	1.0	7.8	3.8	1.8	14	0.6	2.0	1.3	0.4
	M3	22	1.0	10.0	3.5*	1.9	23	0.8	2.0	1.1	0.3
Structural Gallinazo											
	M1	19	2.8	7.8	4.9	1.5	20	0.5	2.0	1.3	0.4
	M2	18	1.3	4.8	3.6	0.9	20	1.0	2.5	1.5	0.5
	M3	24	1.0	4.0	2.1*	1.1	24	0.7	3.0	1.4	0.6
Post-structural Gallinazo											
	M1	15	3.5	7.8	5.4	1.3	15	0.8	1.6	1.2	0.2
	M2	13	2.0	4.8	3.9	0.8	14	0.8	3.0	1.4	0.6
	M3	8	1.0	4.0	2.6*	1.1	8	1.0	2.0	1.4	0.4

* ANOVA statistic $p \leq .05$.

Table: 7.44: Cerro Oreja Adults Observable for Localized Wear by Sex

Sample	Salinar			Pre-structural Gallinazo			Structural Gallinazo			Post-structural Gallinazo		
	N	affected	%	N	affected	%	N	affected	%	N	affected	%
all	16	4	25.0	28	6	21.4	28	8	28.6	17	3	17.6
female	8	3	37.5	10	2	20.0	11	4	36.4	5	2	40.0
male	5	1	20.0	10	3	30.0	4	3	75.0	3	1	33.3

Table: 7.45: Cerro Oreja Adults Observable for Localized Wear by Status

Status	Salinar			Pre-structural Gallinazo			Structural Gallinazo			Post-structural Gallinazo		
	N	affected	%	N	affected	%	N	affected	%	N	affected	%
high	13	3	23.0	14	2	14.3	9	2	22.2	6	0	0.00
low	3	0	00.0	14	3	21.4	19	6	31.6	11	3	27.3

Table 7.46: Cerro Oreja Teeth Observable for Enamel Chipping

Period									
sample	All Teeth			Anterior Teeth			Posterior Teeth		
	N	affected	%	N	affected	%	N	affected	%
Salinar									
deciduous	266	60	22.6*	133	20	15.0*	133	40	30.0
permanent	396	99	25.0*	126	23	18.3*	270	76	28.1*
Pre-structural Gallinazo									
deciduous	330	91	27.6*	181	48	26.5*	149	43	28.9
permanent	519	97	18.7*	146	31	21.2*	373	66	17.7*
Structural Gallinazo									
deciduous	301 ⁺	52	17.3*	155	17	11.0*	145	35	24.1
permanent	430	74	17.2*	126	12	9.5*	304	62	20.4*
Post-structural Gallinazo									
deciduous	114 ⁺	25	21.9*	52	9	17.3*	61	16	26.2
permanent	207	68	32.8*	65	22	33.8*	142	46	32.4*

* Chi square statistic $p \leq .05$.

⁺ One tooth could only be identified as deciduous.

Table 7.47: Cerro Oreja Individuals Observable for Enamel Chipping

Sample	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo					
	N	% affected	%	N	% affected	%	N	% affected	%			
deciduous	28	17	60.7	60	32	53.3	43	26	60.5	22	11	50.0
permanent	37	21	56.8	73	34	46.6	57	30	52.6	29	19	65.5

Table 7.48: Cerro Oreja Adult Teeth Observable for Enamel Chipping

Period									
sample	All Teeth			Anterior Teeth			Posterior Teeth		
	N	affected	%	N	affected	%	N	affected	%
Salinar									
all	222	77	34.7*	63	11	17.5*	159	66	41.5*
female	82	18	22.0*	27	2	7.4	55	16	29.1
male	105	39	37.1*	28	6	21.4	77	33	42.9*
Pre-structural Gallinazo									
all	315	79	25.1*	83	9	10.8*	232	53	22.8*
female	105	34	32.4*	30	9	30.0	75	25	33.3
male	96	28	29.2*	26	10	38.5	70	18	25.7*
Structural Gallinazo									
all	255	68	26.7*	68	12	17.6*	187	56	30.0*
female	105	30	28.6*	30	5	16.7	75	25	33.3
male	53	23	43.4*	17	4	23.5	36	19	52.8*
Post-structural Gallinazo									
all	153	52	34.0*	49	17	34.7*	104	35	33.7*
female	55	19	34.5*	20	6	30.0	35	13	37.1
male	52	27	51.9*	17	9	52.9	35	18	51.4*

* Chi square statistic $p \leq .05$.

Table 7.49: Cerro Oreja Adults Observable for Enamel Chipping

Sample	Salinar			Pre-structural Gallinazo			Structural Gallinazo			Post-structural Gallinazo		
	N	affected	%	N	affected	%	N	affected	%	N	affected	%
all	22	15	68.2	45	25	55.6	40	25	62.5	22	15	68.2
female	9	5	55.6	12	8	66.7	14	9	64.3	7	7	100.0
male	7	7	100.0	15	9	60.0	7	5	71.4	4	3	75.0

Table 7.50: Permanent Teeth Observable for Enamel Chipping by Status

Status	Salinar*		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo				
	N	affected	%	N	affected	%	N	affected	%		
low*	73	26	35.6	262	47	17.9	298	49	16.4	50	33.8
high	319	73	22.9	258	50	19.4	131	24	18.3	18	31.0

* Chi square statistic $p \leq .05$.

Table 7.51: Deciduous Teeth Observable for Enamel Chipping by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	affected	%	N	affected	%	N	affected
low	15	3	20.0	199	51	25.6	243	43
high	238	53	22.2	131	40	30.5	58	9
							25	5
								20.0

Table 7.52: Individuals with Permanent Teeth Observable for Enamel Chipping by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo	
	N	affected	%	N	affected	%	N	affected
low	5	4	80.0	39	19	48.7	36	22
high	31	17	54.8	34	15	44.1	21	8
							11	7
								63.6

Table 7.53: Individuals with Deciduous Teeth Observable for Enamel Chipping by Status

Status	Salinar		Pre-structural Gallinazo		Structural Gallinazo		Post-structural Gallinazo				
	N	affected	%	N	affected	%	N	affected	%		
low	1	1	100.0	35	17	48.6	32	19	59.4	19	57.9
high	26	15	57.7	25	15	60.0	11	4	36.4	3	100.0

Table: 7.54: Coca-like Plant Microfossils Recovered from Cerro Oreja Calculus Samples

Phase	sex	status	posterior	periodontal	most specific	least specific	long cell
Salinar	f	h	yes		x		
	f	h				x	x
	f	h	yes		x	x	x
	m	h			x	x	x
	m	l	yes		x		
Pre-structural Gallinazo	f	h			x	x	
	f	l	yes		x	x	
	f	l	yes				
Structural Gallinazo	f	l	yes				x
	f	l	yes			x	
	m	h	yes		x	x	
	m	h	yes				
	m?	h	yes				
Post-structural Gallinazo	f	h	not observable		x	x	x
	f	l	yes			x	x
	m	l				x	x
	m	l	yes			x	
	m	h	yes				

Table 7.55: Summary of Patterns Identified among Study Indicators

Indicator	Significant Patterns of Change
stable isotopes apatite enamel	Salinar $\delta^{13}\text{C}$ values were less negative than all Gallinazo values. Salinar $\delta^{13}\text{C}$ values were less negative than Struct & Post-struct values.
dental calculus*	Salinar samples contained fruit but no manioc. Gallinazo samples contained manioc but no fruit. All Post-struct female samples contained maize but only 1/3 of Post-struct male samples did. Coca-like remains recovered from all Salinar samples, and from 2/3 Pre-struct, 3/5 Struct, and 4/5 Post-struct samples.
carious lesions	Female rates increased from the Salinar to the Post-struct. Female rates differed from males during the Struct & Post-struct.
dental abscesses	Male rates increased from the Salinar to the Pre-struct, then decreased during the Struct.
periodontal disease	Post-struct females were less often affected than males. Low status individuals were more often affected than high status individuals during the Salinar & the Struct & Post-struct.
antemortem tooth loss	Male rates increased from the Salinar to the Pre-struct, then decreased during the Struct. High status individuals were more often affected than low status individuals during all phases.
generalized wear anterior teeth	Female scores were lower than male cores during the Post-struct. High status scores generally increased through time. Low status scores were higher during Pre-struct, but high status scores were higher during Struct.
premolars	Female scores decreased from the Salinar to the Post-struct. Male scores generally increased through time. Female scores were higher than male scores in the Salinar, & lower than male scores in the Post-struct. High status scores generally increased through time. High status scores were higher during Pre-struct but low status scores were higher during Struct.

Table 7.55: Dietary Indicators continued

Indicator	Significant Patterns of Change
generalized wear mean molar	<p>Female 1st & 3rd molar values increased from the Salinar to the Pre-Struct, decreased during the Struct, & increased again in the Post-struct. Male 1st & 3rd molar values generally increased through time.</p> <p>All Post-struct female values were lower than male values during the Post-struct, & female 1st & 2nd molar values were lower during the Struct.</p> <p>Low status 1st & 3rd molar values increased from the Salinar to the Pre-Struct, decreased during the Struct, & increased again in the Post-struct (same pattern as identified among female 1st & 3rd molars).</p> <p>Low status molar values were generally greater than high status values.</p>
mesial ratio	<p>Female ratios generally increased through time for all molars.</p> <p>All female ratios higher were than male ratios during Post-struct. Female 3rd molar ratio higher than male during Salinar. Male 2nd molar ratio higher than female during Pre-struct & Struct. Male 3rd molar ratio higher during Pre-struct.</p> <p>Low status 2nd molar ratio increased from the Salinar to the Pre-Struct, decreased during the Struct, & increased again in the Post-struct.</p> <p>Low status 2nd molar ratio was greater than high status ratio during the Struct, but lower than high status ratio during the Post-struct.</p>
localized wear*	<p>Female pattern change from the Salinar and Pre-struct to the Struct and Post-Struct.</p> <p>Differing patterns identified among female and males during the Salinar and Pre-struct.</p>
dental trauma	none

* samples were too small for statistical analysis

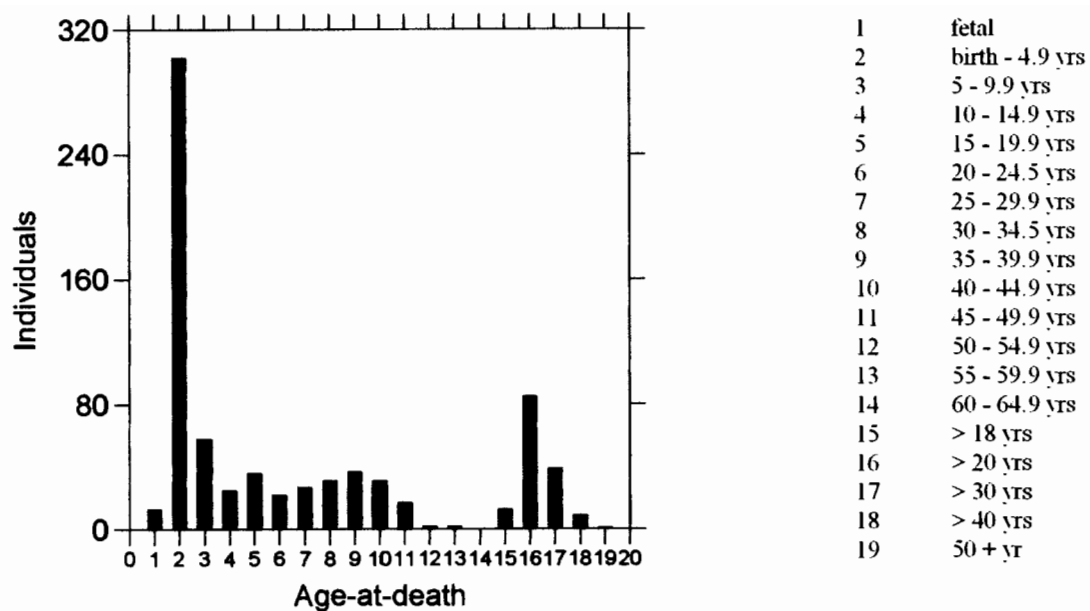


Figure 7.1: Cerro Oreja total sample age profile

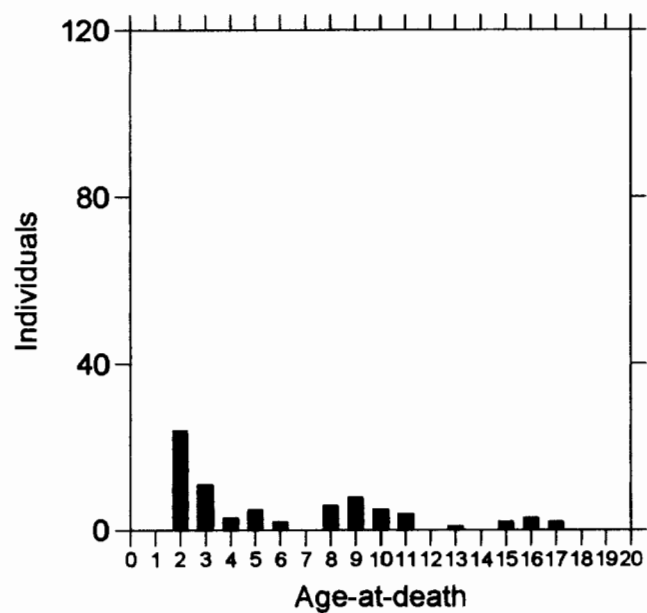


Figure 7.2: Salinar sample age profile

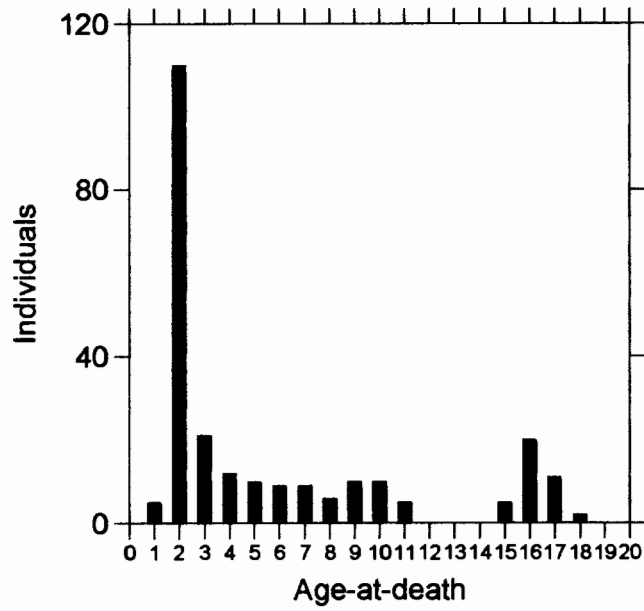


Figure 7.3: Pre-structural sample age profile

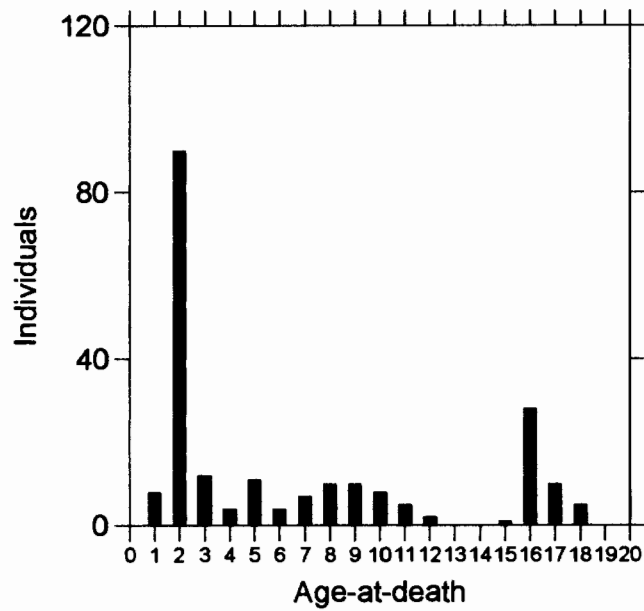


Figure 7.4: Structural sample age profile

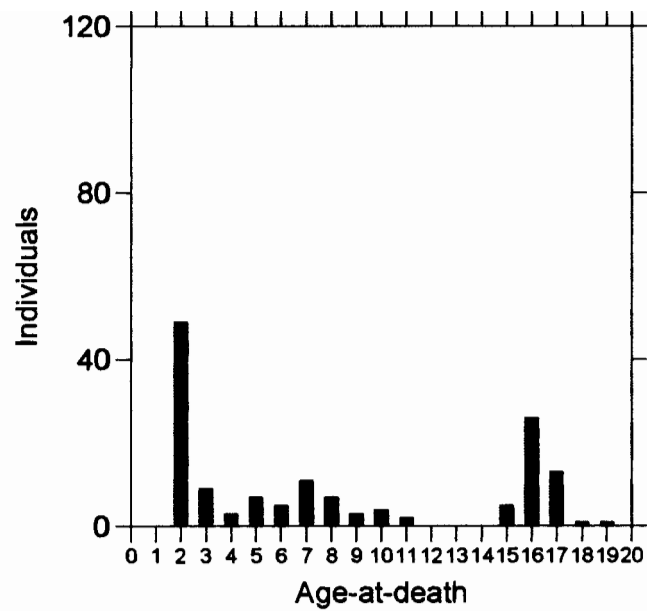


Figure 7.5: Post-structural sample age profile

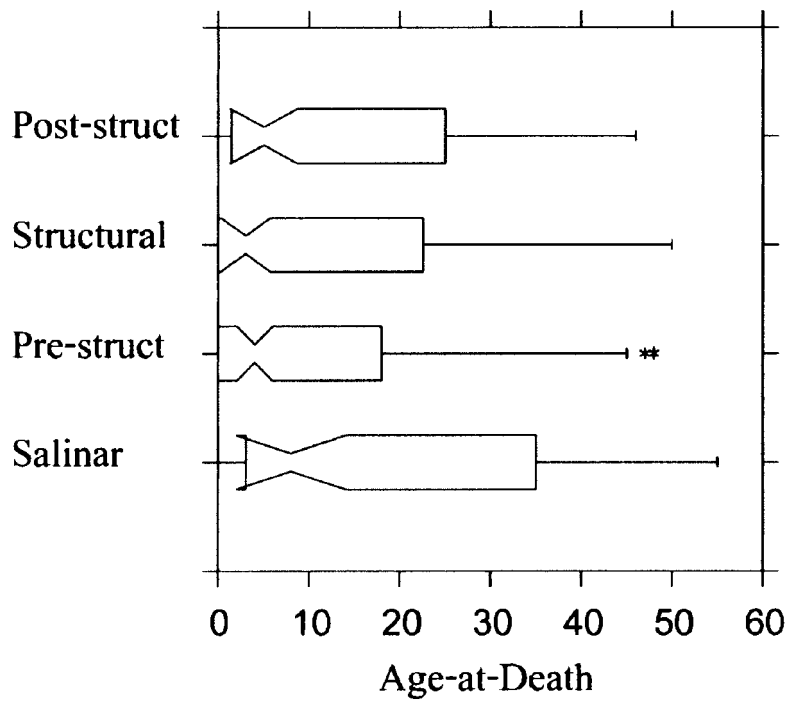


Figure 7.6: Notched Box Plot of Ages-at-Death

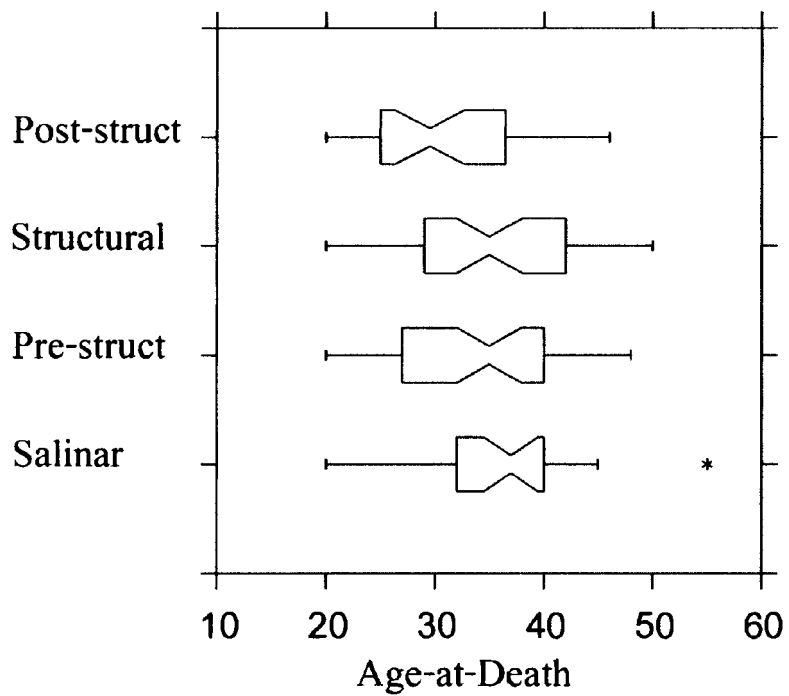


Figure 7.7: Notched Box Plot of Adult Ages-at-Death

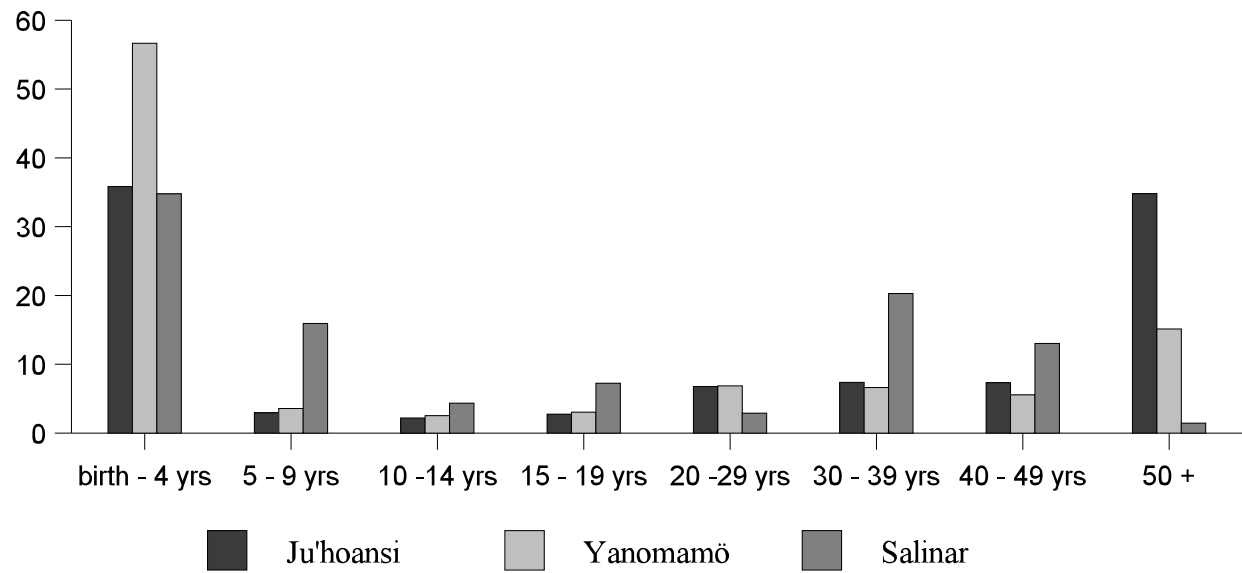


Figure 7.8: Salinar Comparative Mortality

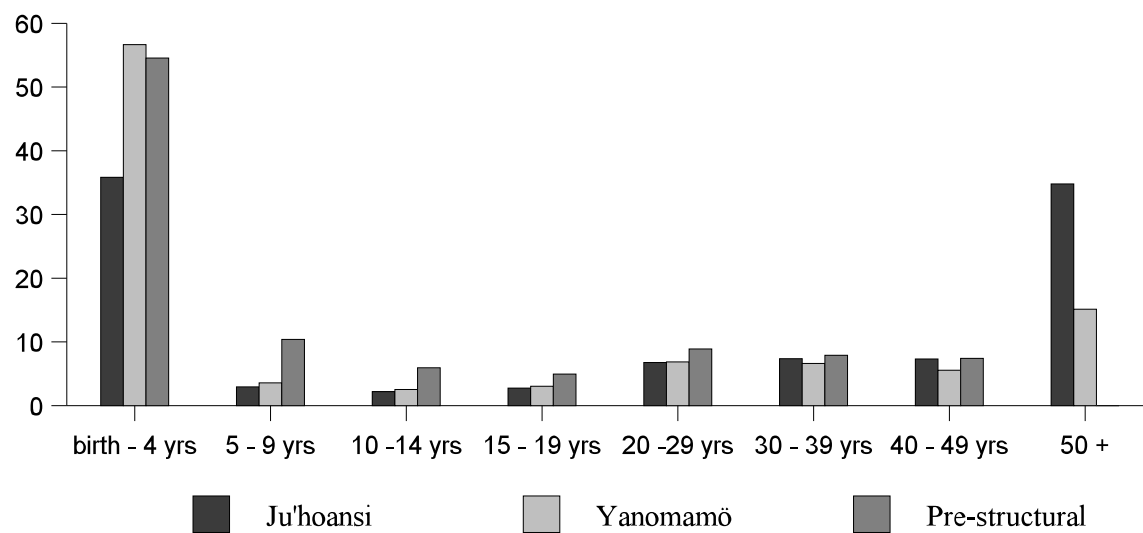


Figure 7.9: Pre-structural Comparative Mortality

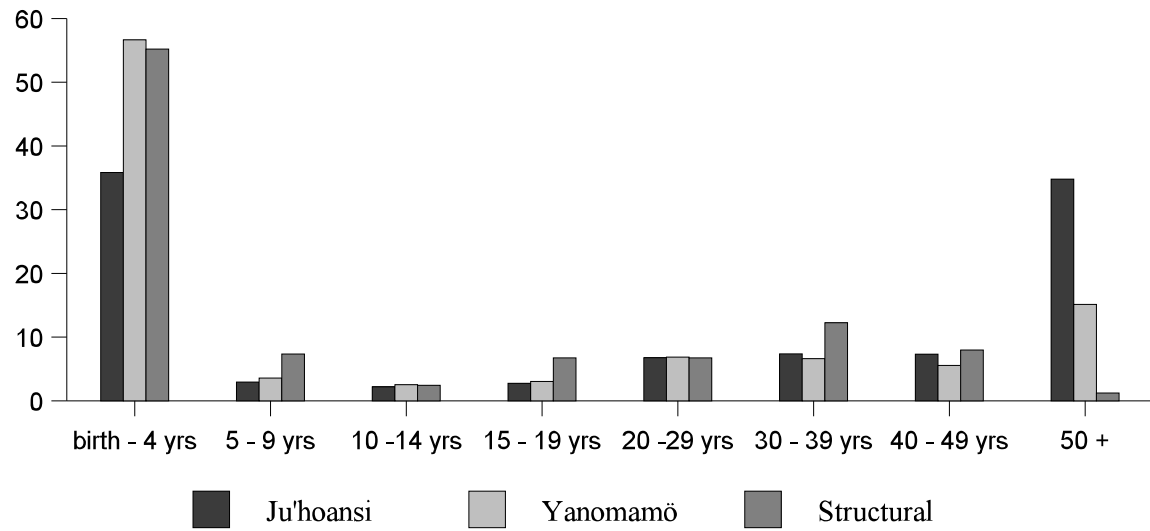


Figure 7.10: Structural Comparative Mortality

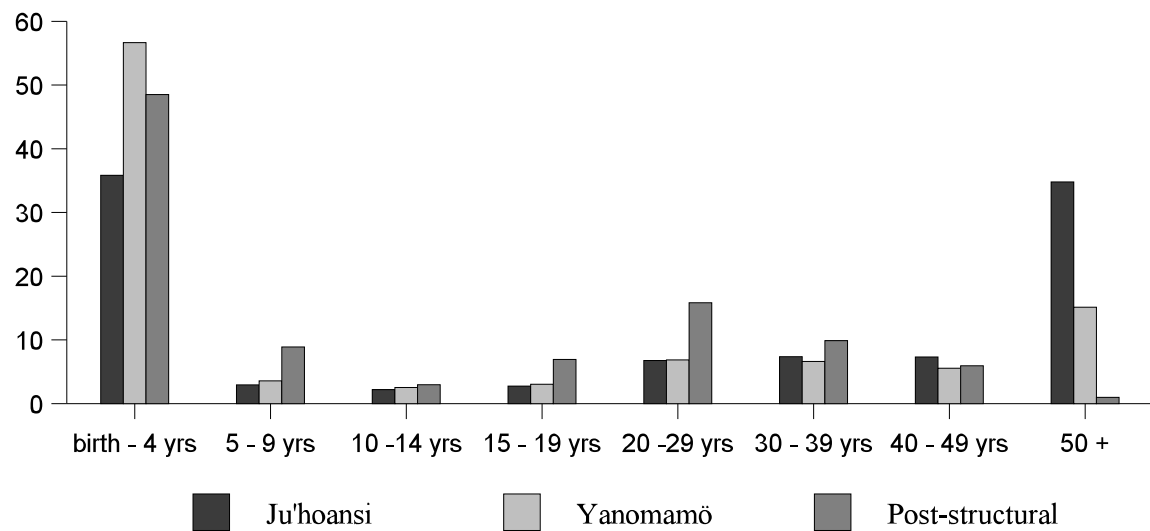


Figure 7.11: Post-structural Comparative Mortality

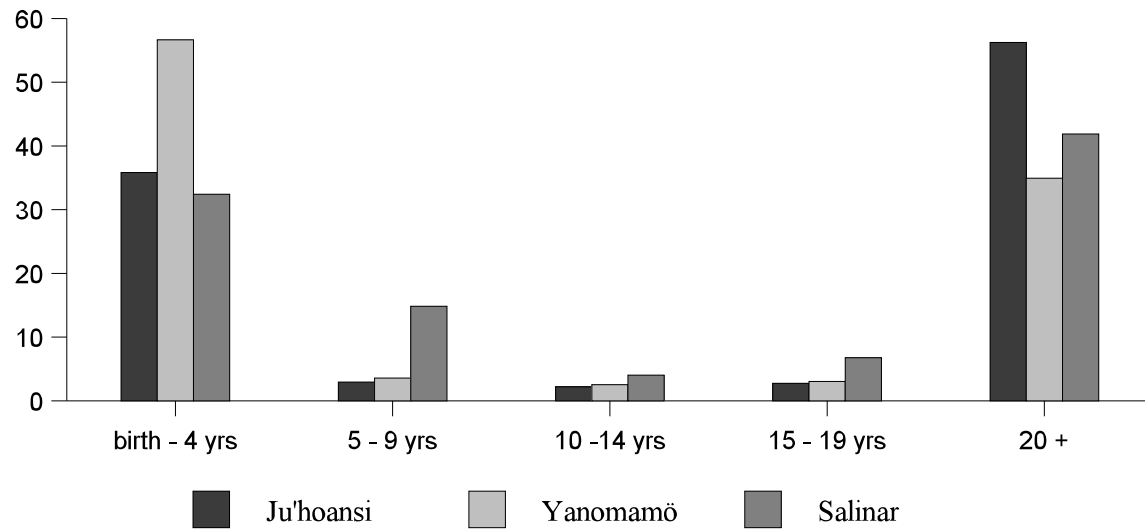


Figure 7.12: Modified Salinar Comparative Mortality

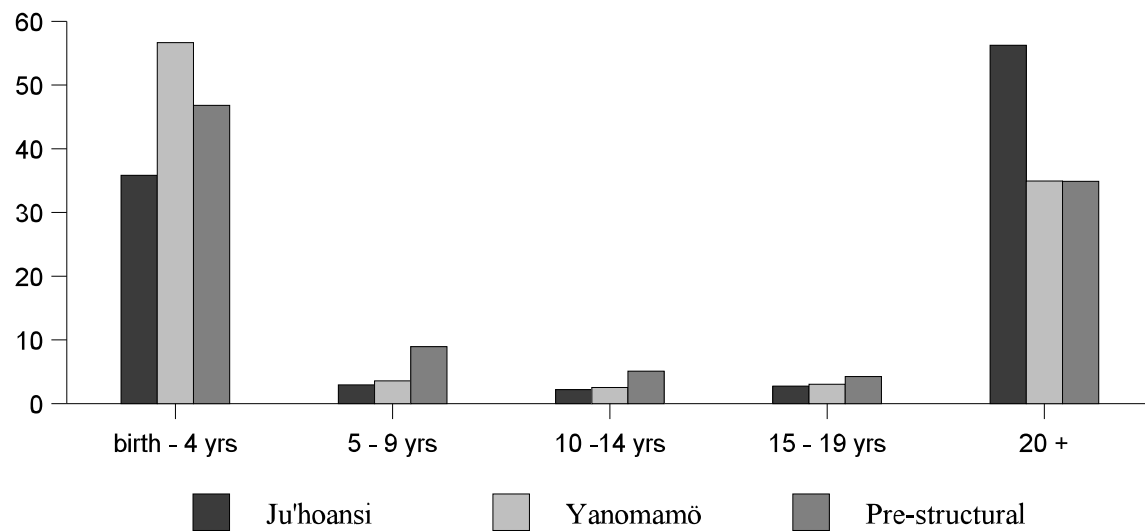


Figure 7.13: Modified Pre-structural Comparative Mortality

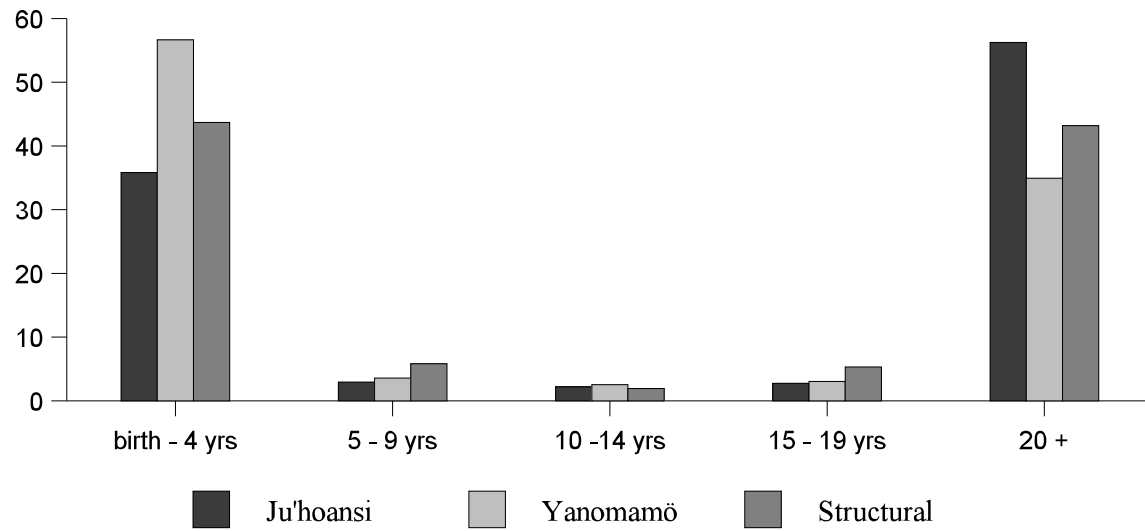


Figure 7.14: Modified Structural Comparative Mortality

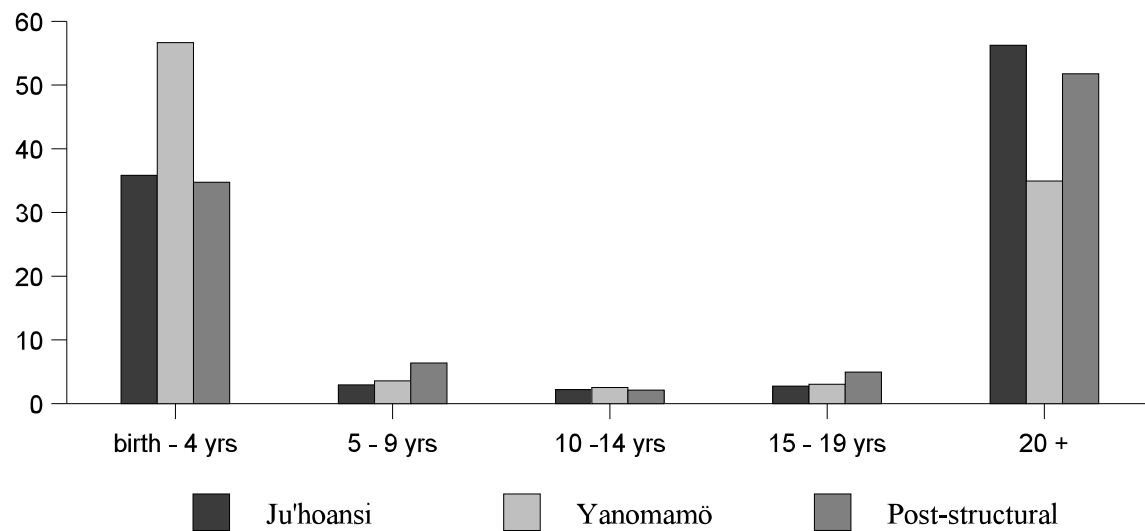


Figure 7.15: Modified Post-structural Comparative Mortality

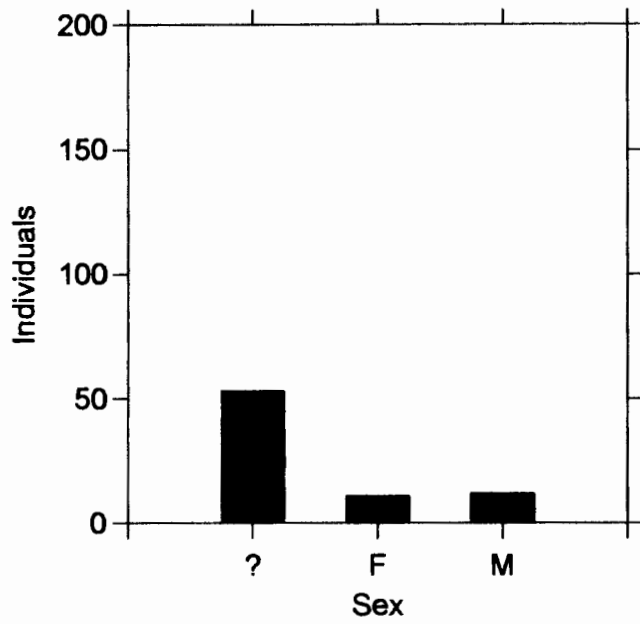


Figure 7.16: Salinar sample sex profile

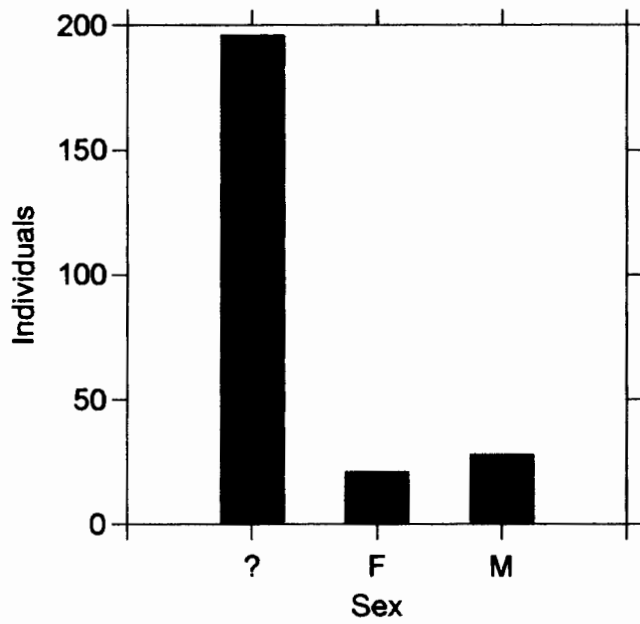


Figure 7.17: Pre-structural sample sex profile

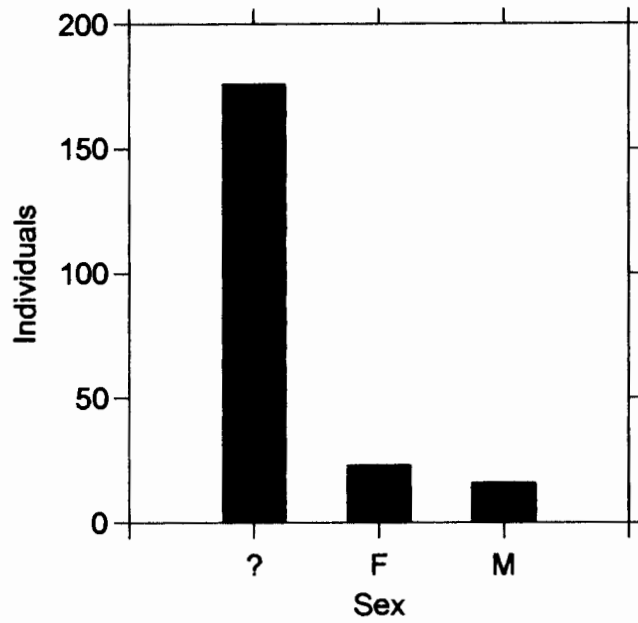


Figure 7.18: Structural sample sex profile

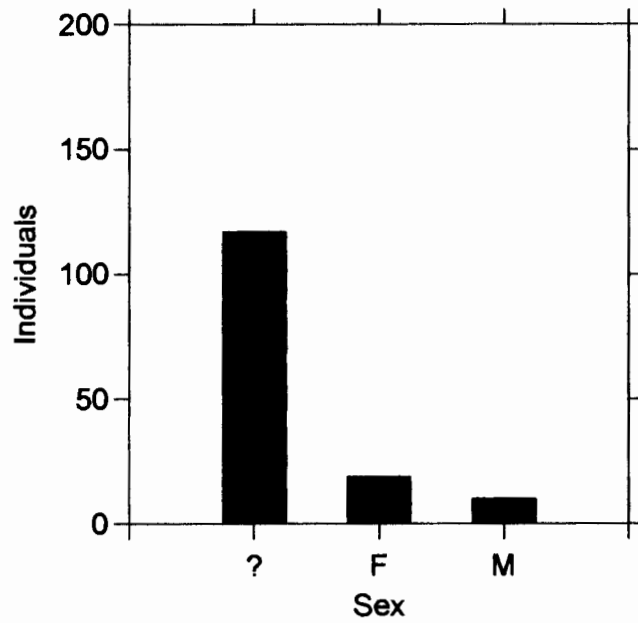


Figure 7.19: Post-structural sample sex profile

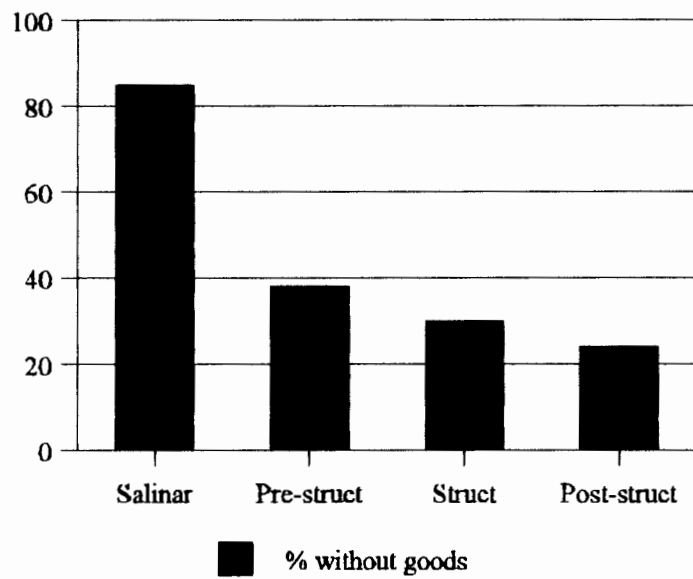


Figure 7.20: Proportion of burials containing grave goods

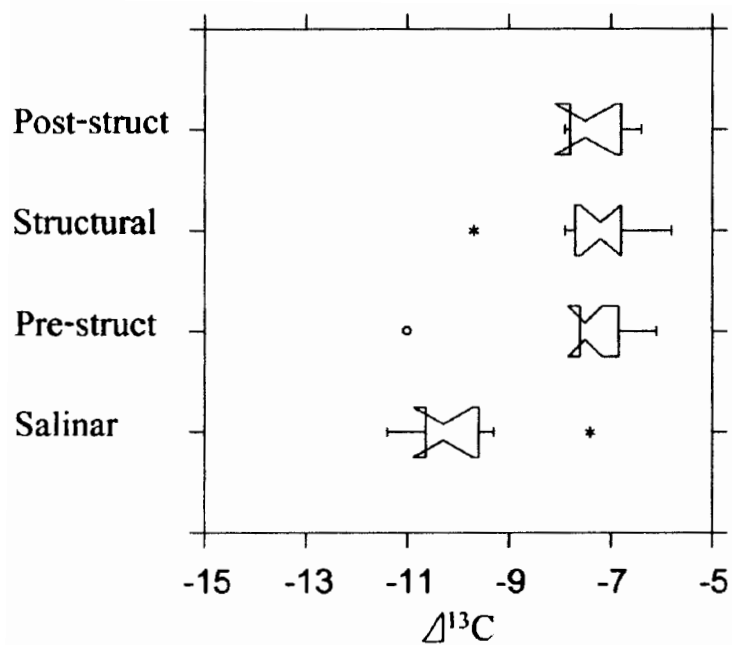


Figure 7.21: Notched Box Plot of Bone Apatite $\delta^{13}\text{C}$ Values

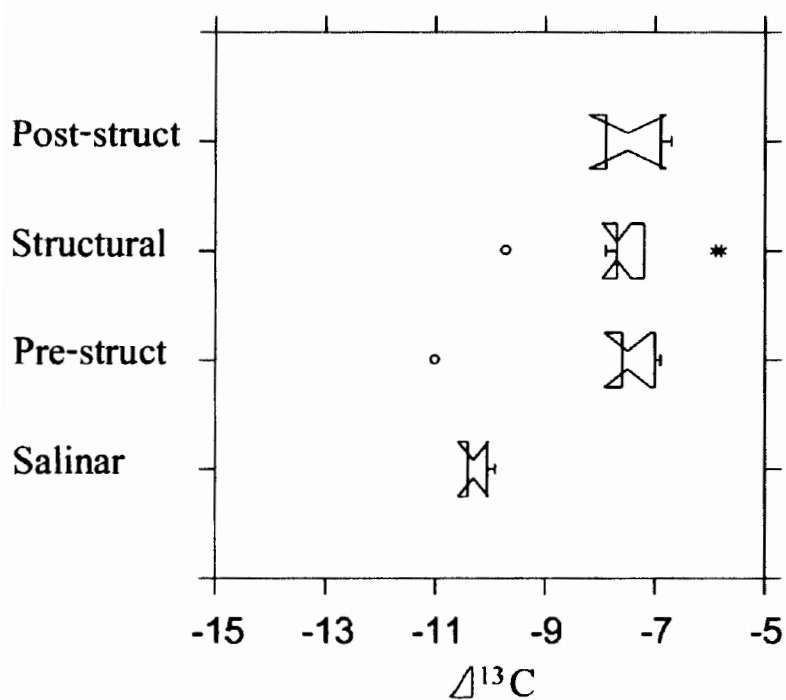


Figure 7.22: Notched Box Plot of Female Bone Apatite $\delta^{13}\text{C}$ Values

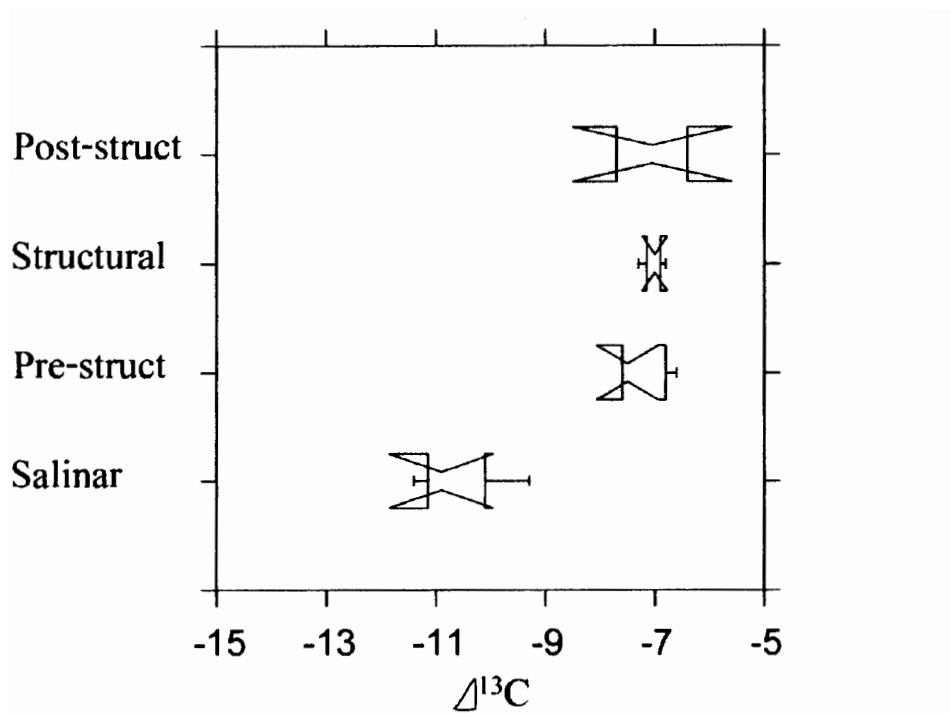


Figure 7.23: Notched Box Plot of Male Bone Apatite $\delta^{13}\text{C}$ Values

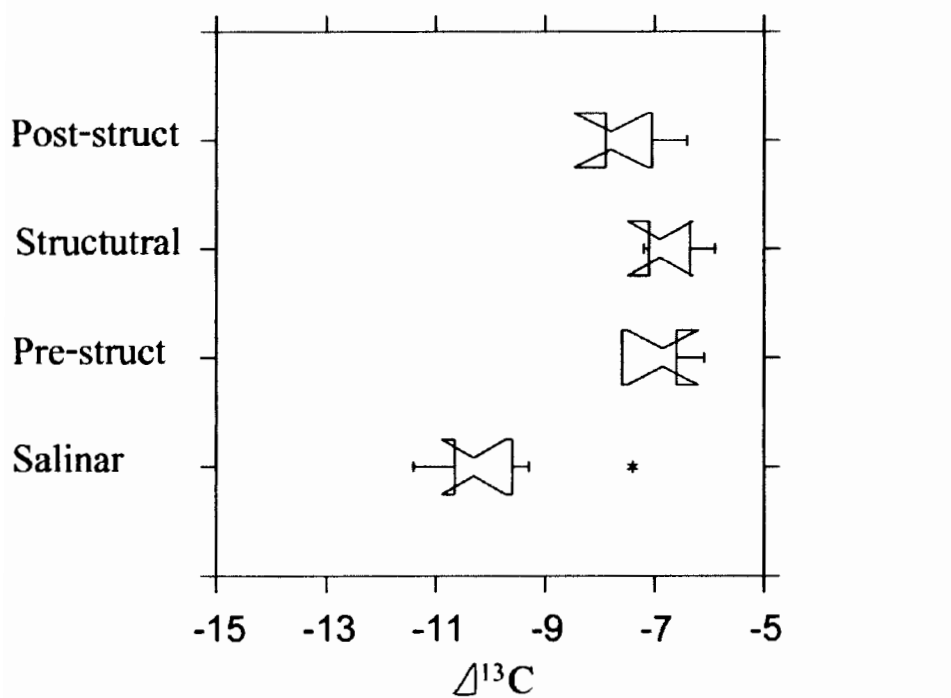


Figure 7.24: Notched Box Plot of High Status Bone Apatite $\delta^{13}\text{C}$ Values

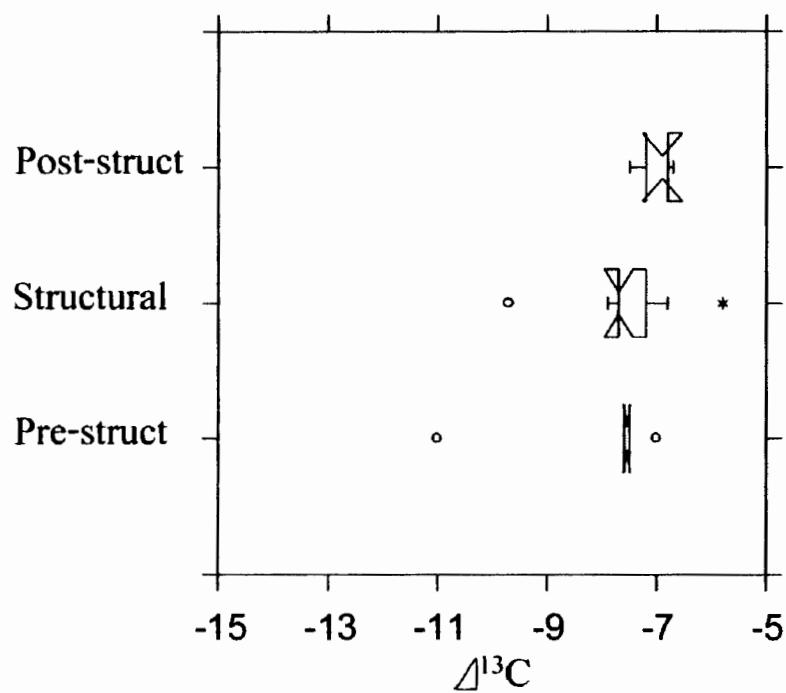


Figure 7.25: Notched Box Plot of Low Status Bone Apatite $\delta^{13}\text{C}$ Values

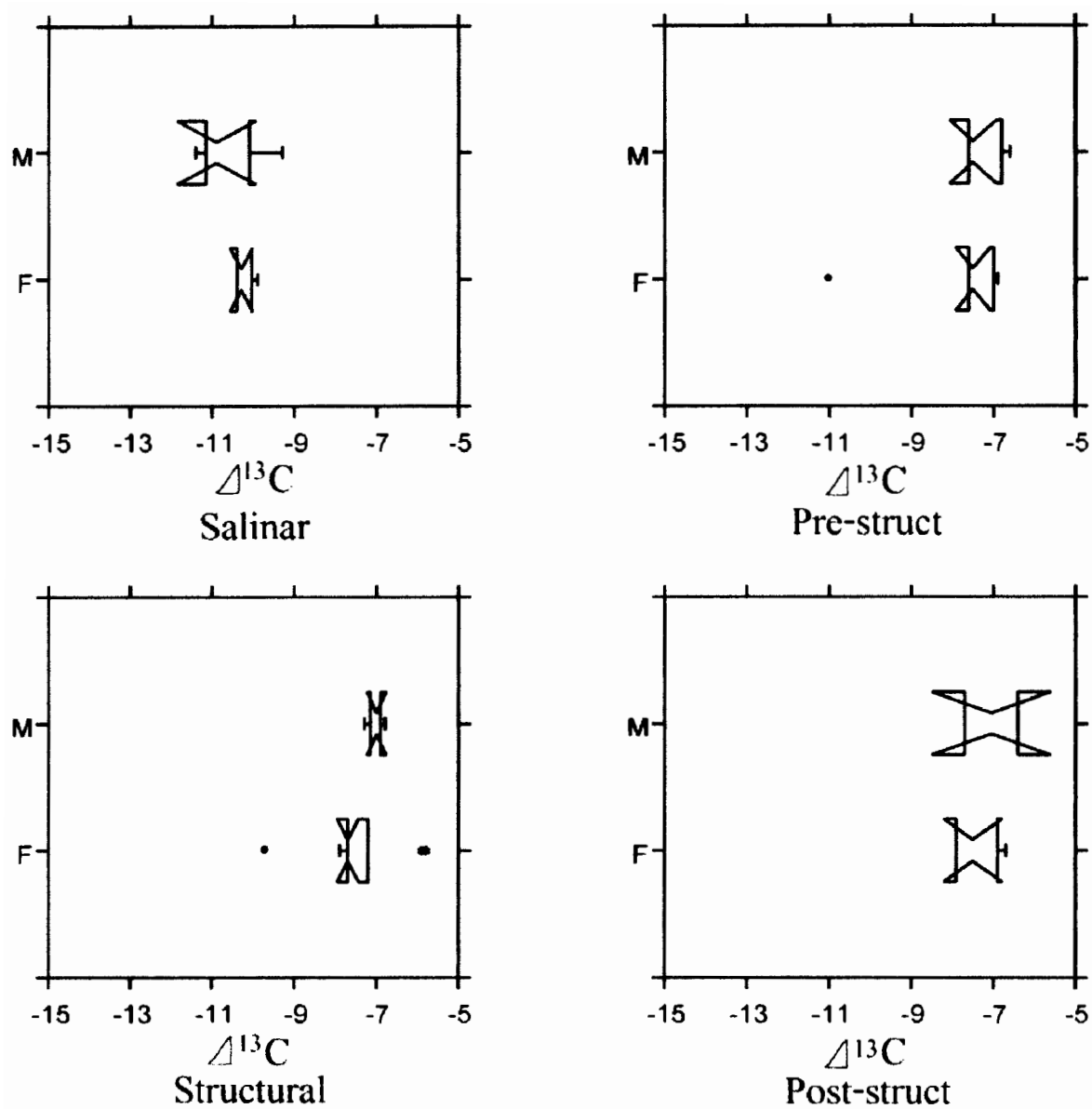


Figure 7.26: Notched Box Plots Comparing Bone Apatite $\delta^{13}C$ Values by Sex for each Phase

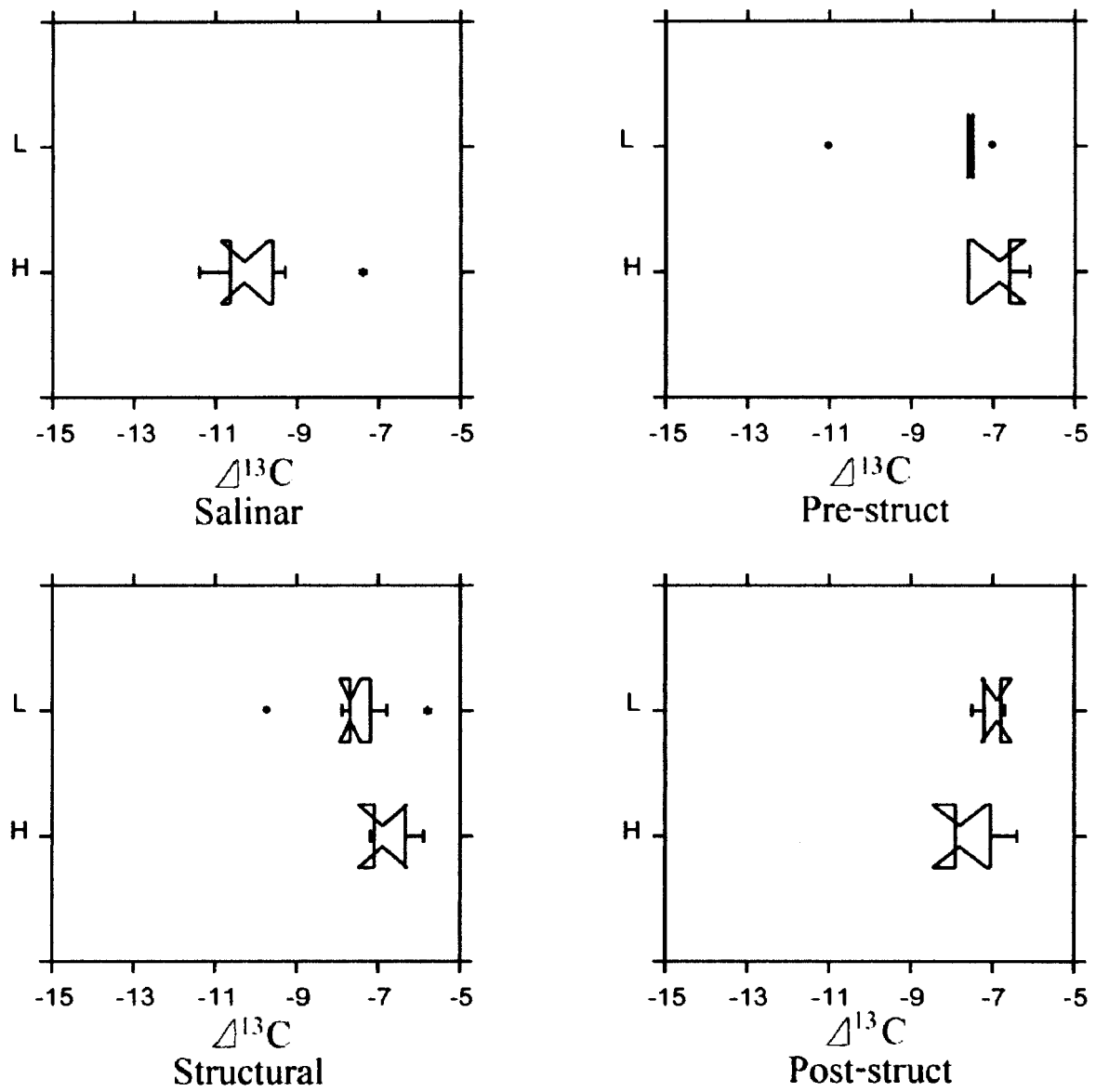


Figure 7.27: Notched Box Plots Comparing Bone Apatite $\delta^{13}\text{C}$ Values by Status for each Phase

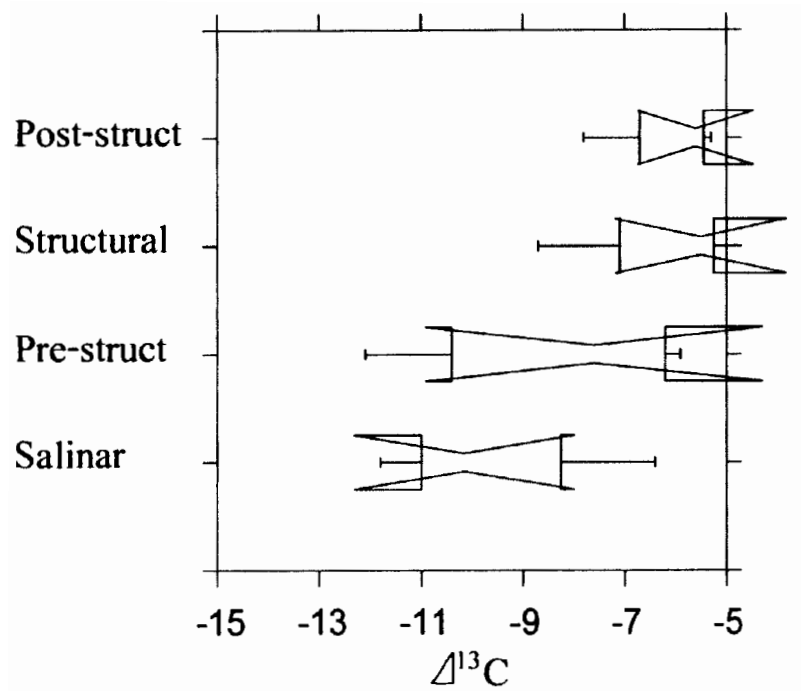


Figure 7.28: Notched Box Plot of Enamel Apatite $\delta^{13}\text{C}$ value

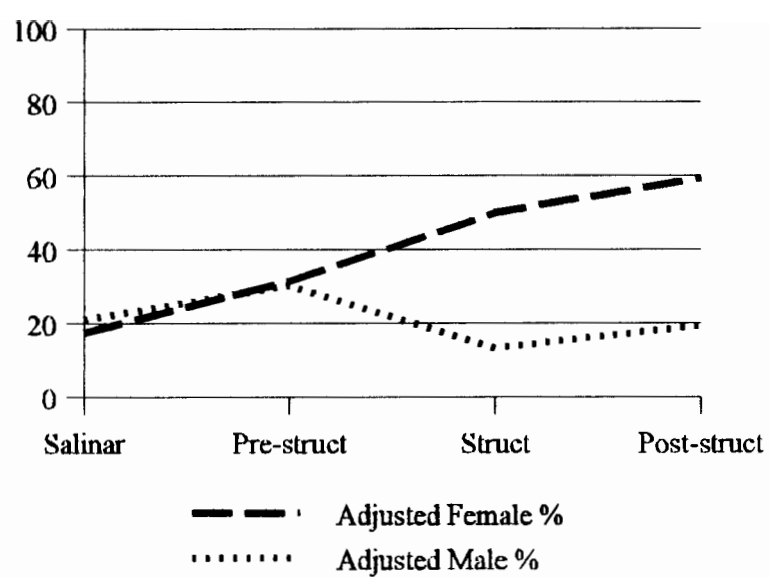


Figure 7.29: Logistic Regression Modeled Rates of Carious Lesions for Adults by Phase

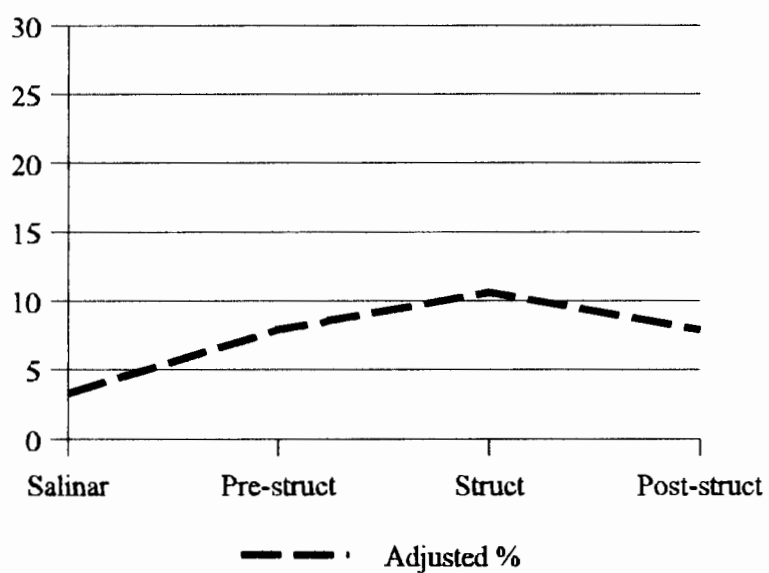


Figure 7.30: Logistic Regression Modeled Rates of Carious Lesions for Subadults by Phase

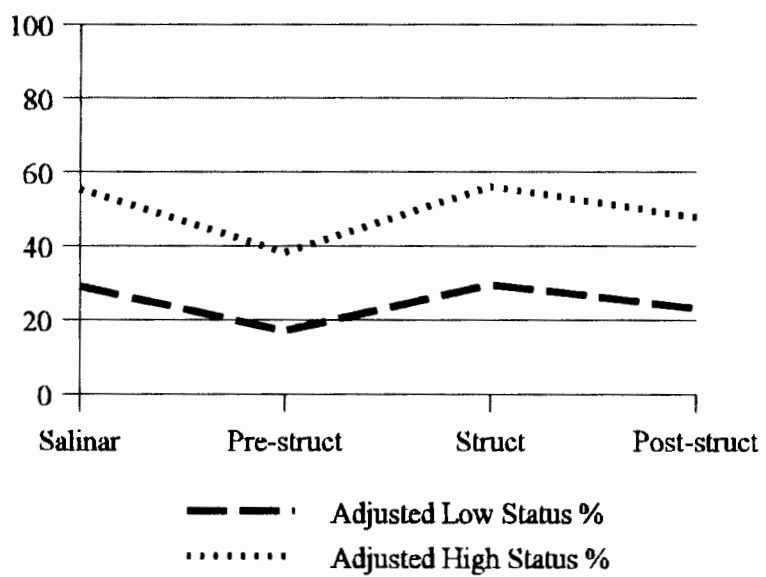


Figure 7.31: Logistic Regression Modeled Rates of Carious Lesions for Adults by Status

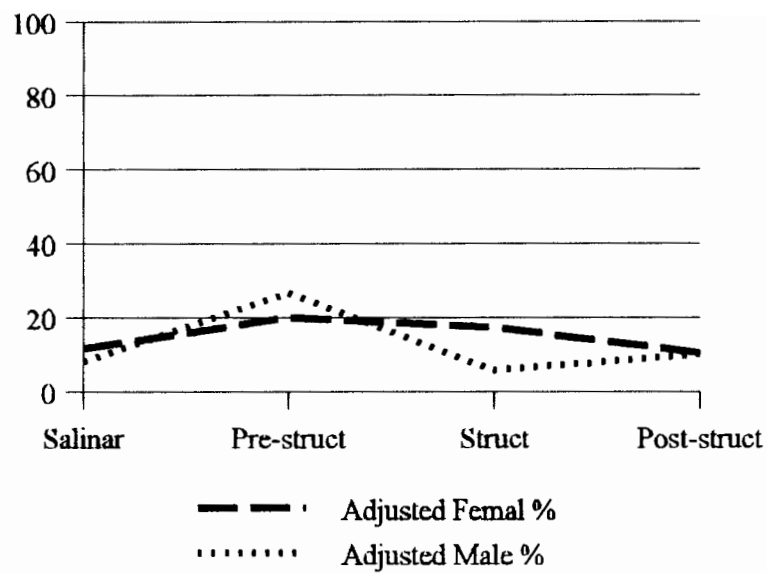


Figure 7.32: Logistic Regression Modeled Rates of Dental Abscesses for Adults by Phase

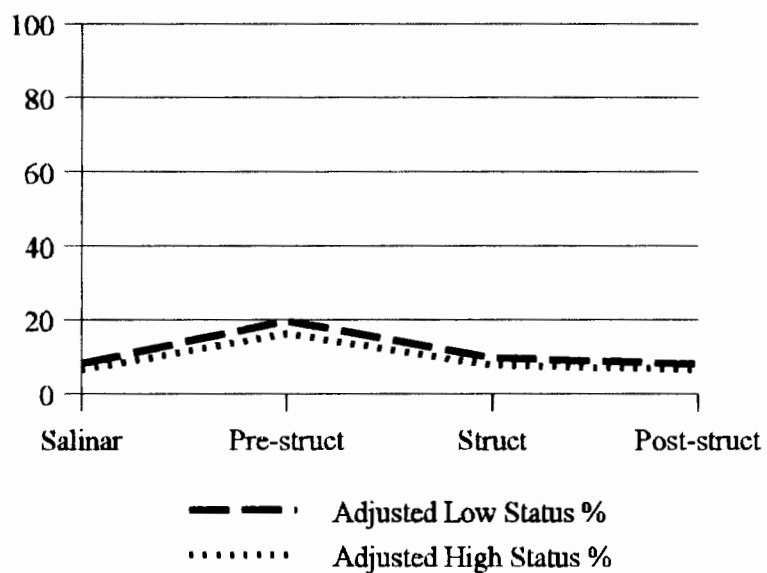


Figure 7.33: Logistic Regression Modeled Rates of Dental Abscesses for Adults by Status

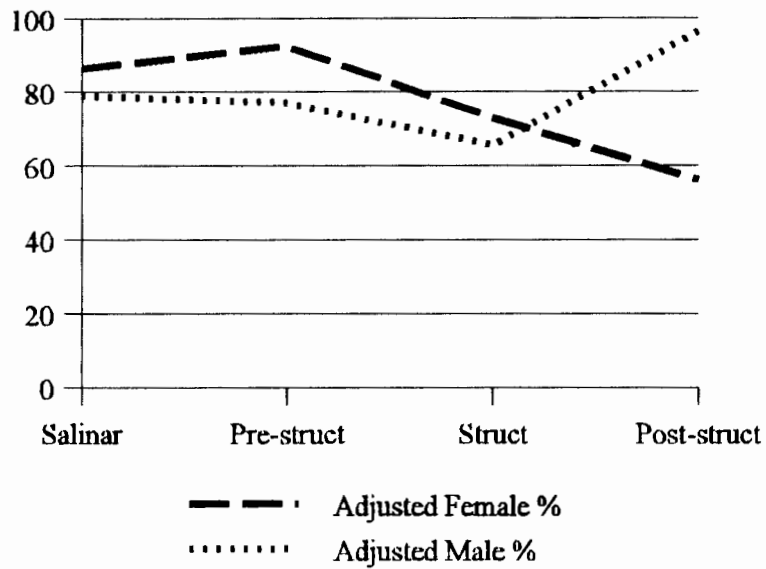


Figure 7.34: Logistic Regression Modeled Rates of Periodontal Disease for Adults by Phase

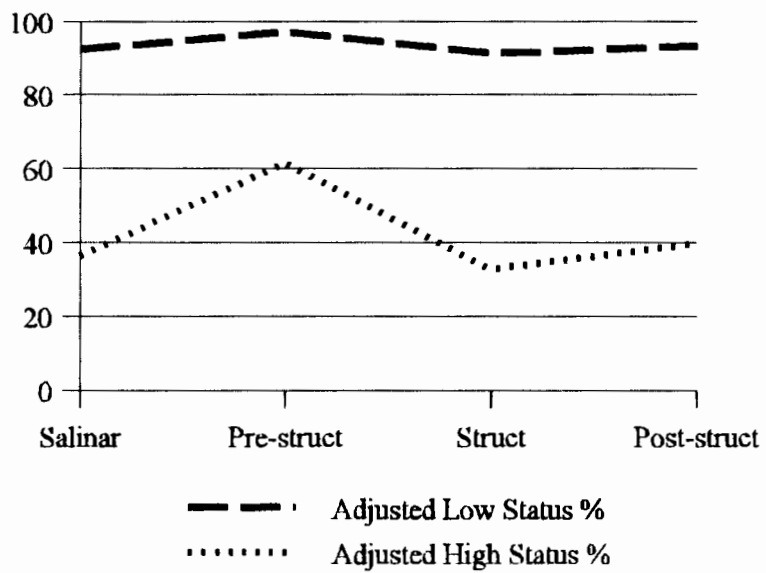


Figure 7.35: Logistic Regression Modeled Rates of Periodontal Disease for Adults by Status

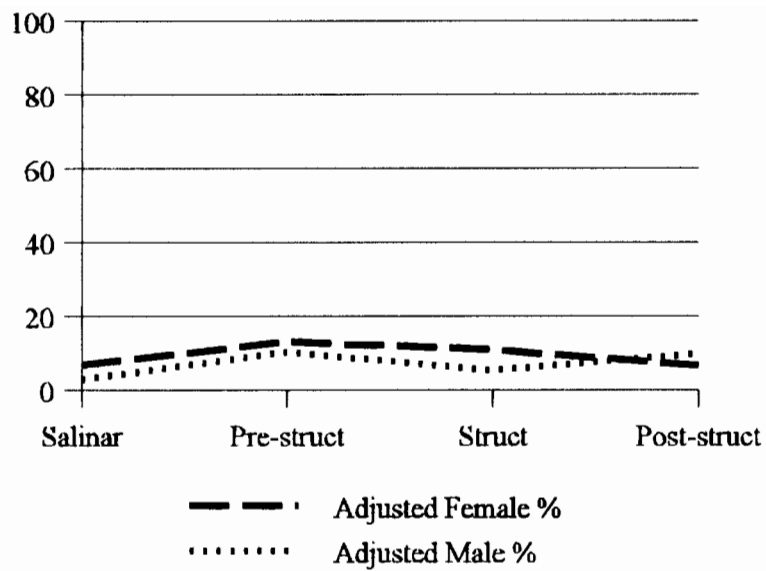


Figure 7.36: Logistic Regression Modeled Rates of Antemortem Tooth Loss for Adults by Phase

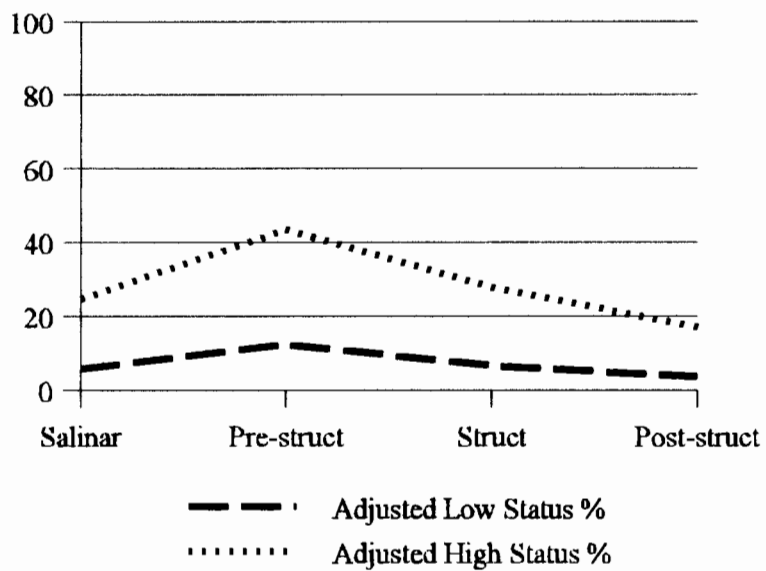


Figure 7.37: Logistic Regression Modeled Rates of Antemortem Tooth Loss for Adults by Status

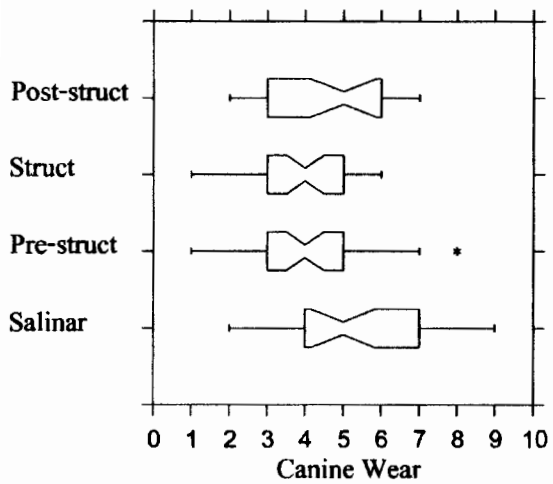
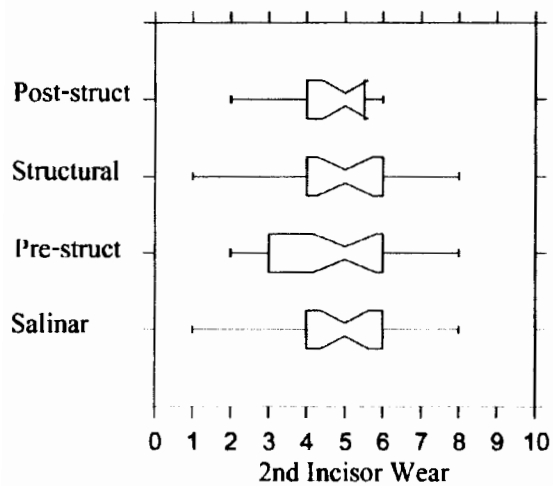
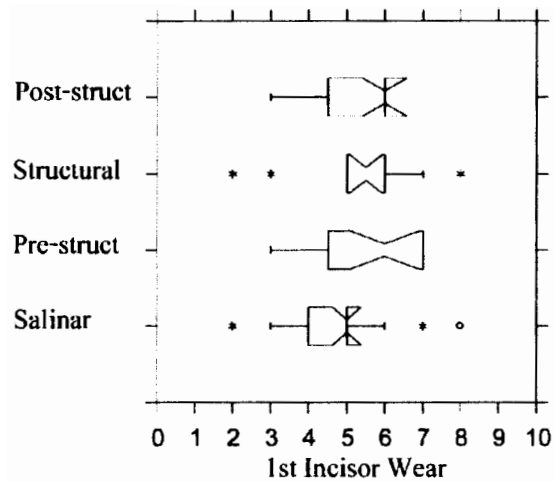


Figure 7.38: Notched Box Plots of Wear Scores for Adult Anterior Teeth

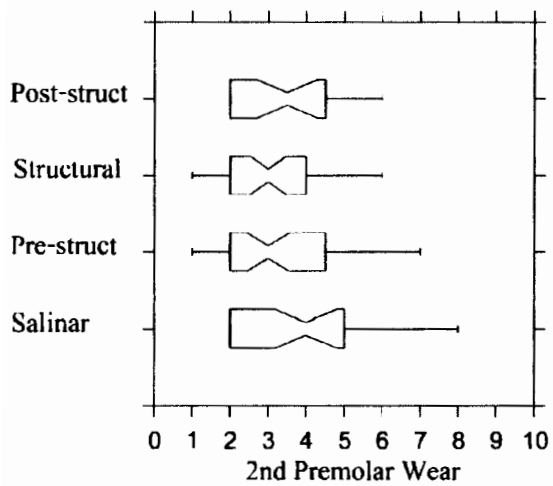
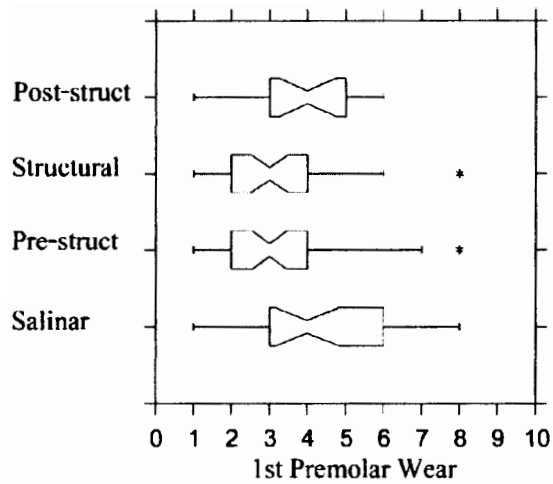


Figure 7.39: Notched Box Plots of Wear Scores for Adult Premolars

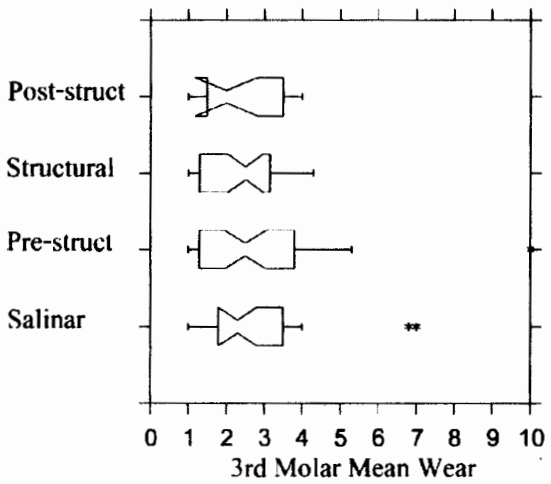
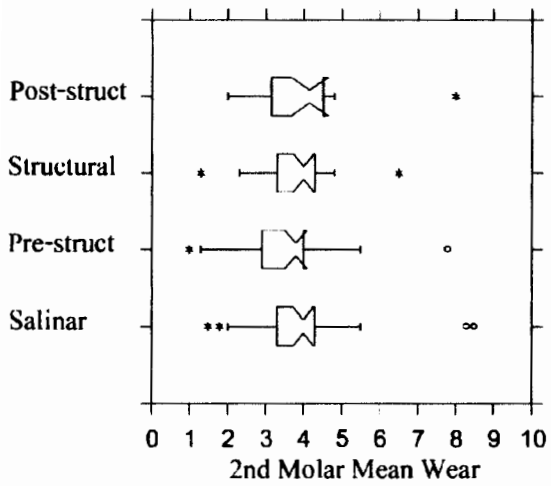
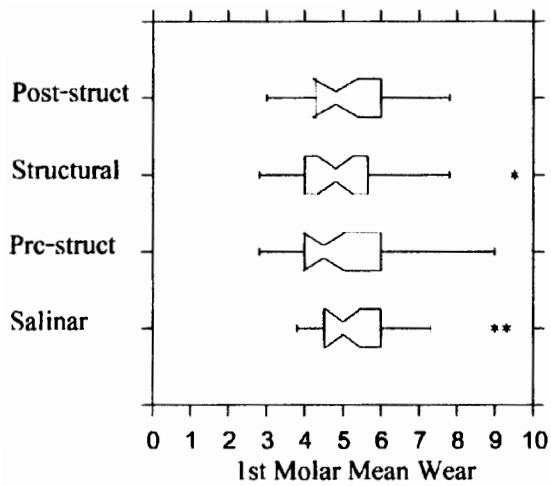


Figure 7.40: Notched Box Plots of Mean Wear Scores for Adult Molars

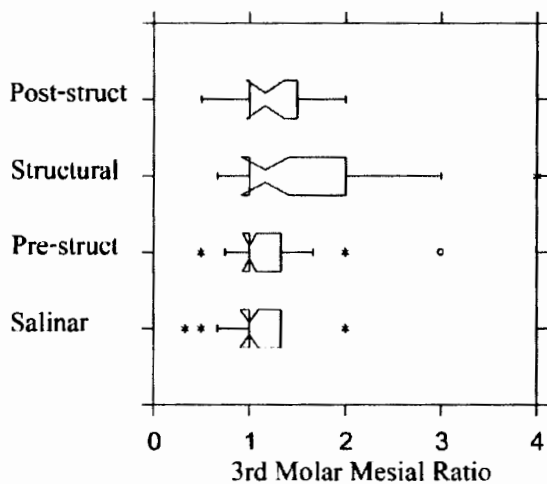
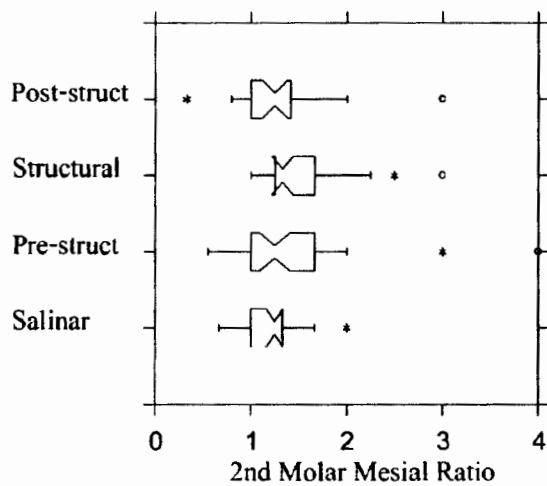
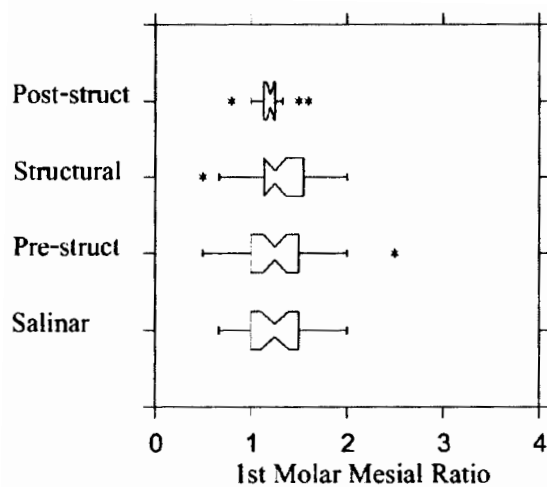


Figure 7.41: Notched Box Plots of Mesial Ratio Values for Adult Molars

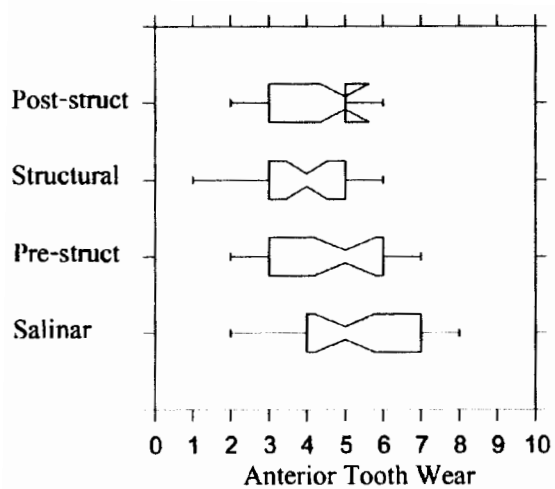


Figure 7.42: Notched Box Plots of Wear Scores for Female Anterior Teeth

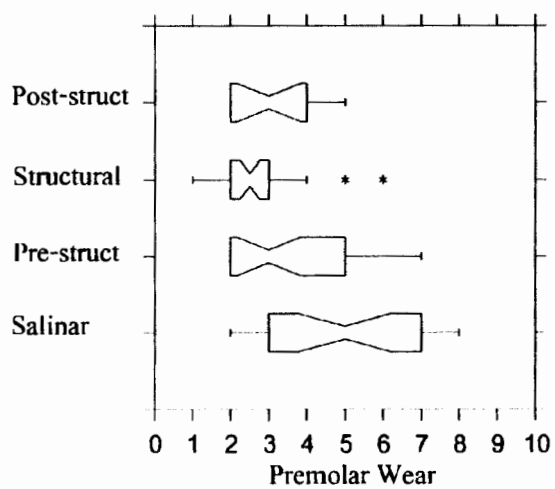


Figure 7.43: Notched Box Plots of Wear Scores for Female Premolars

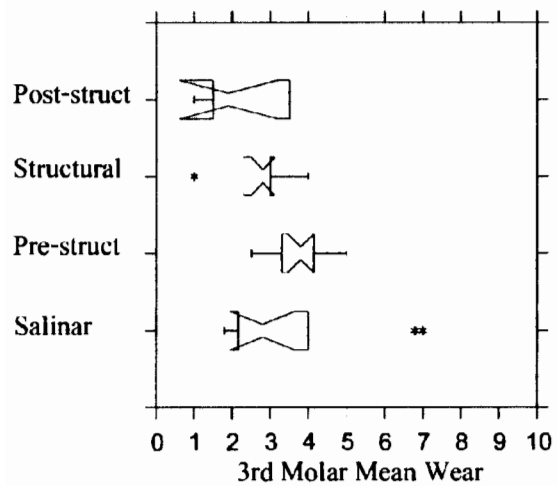
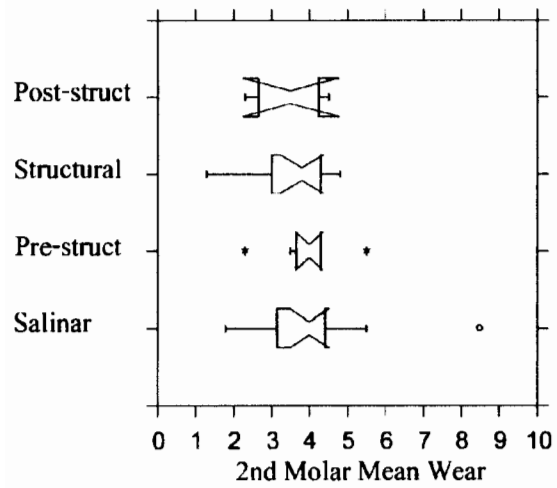
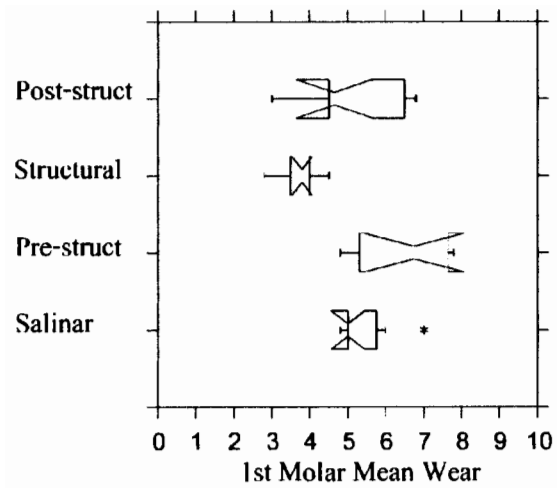


Figure 7.44: Notched Box Plots of Mean Wear Scores for Female Molars

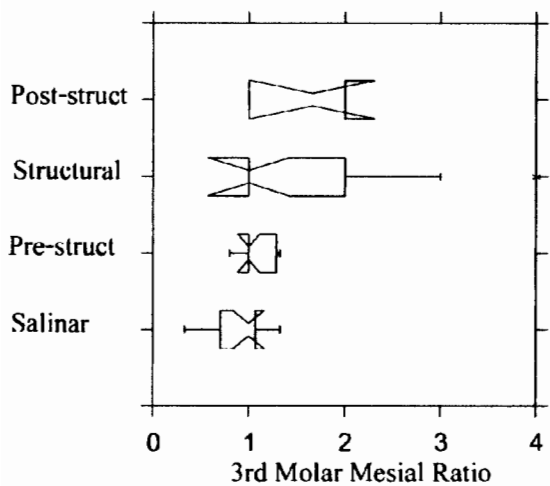
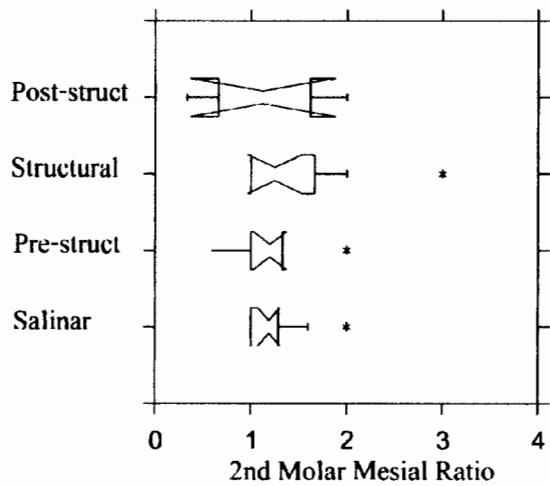
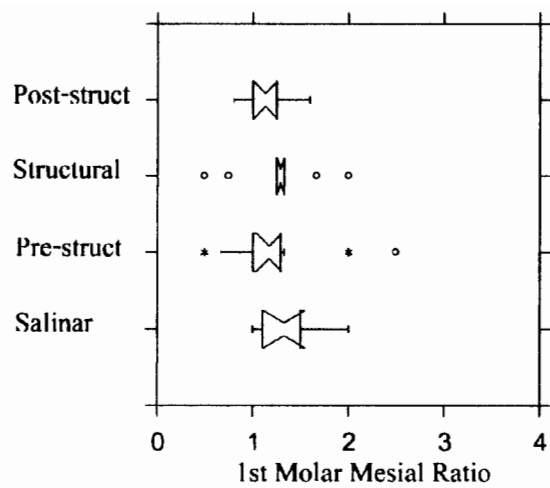


Figure 7.45: Notched Box Plots of Mesial Ratio Values for Female Molars

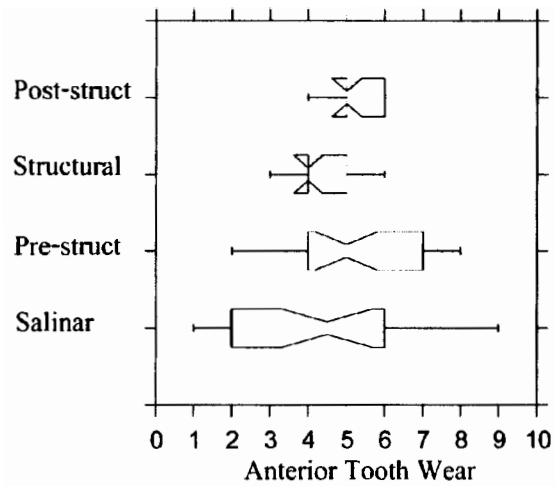


Figure 7.46: Notched Box Plots of Wear Scores for Male Anterior Teeth

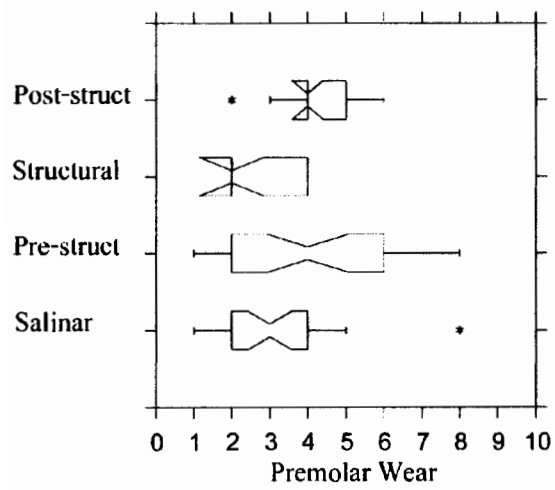


Figure 7.47: Notched Box Plots of Wear Scores for Male Premolars

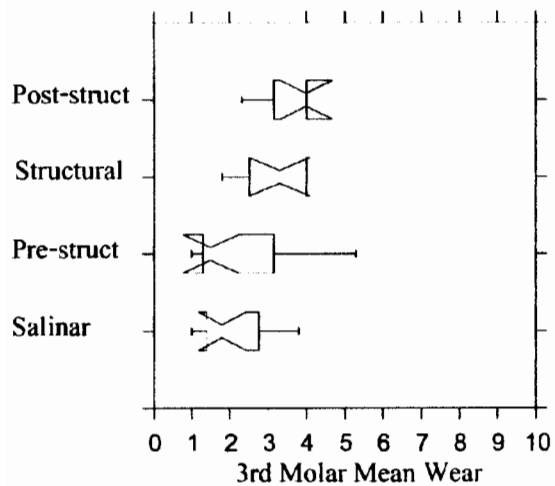
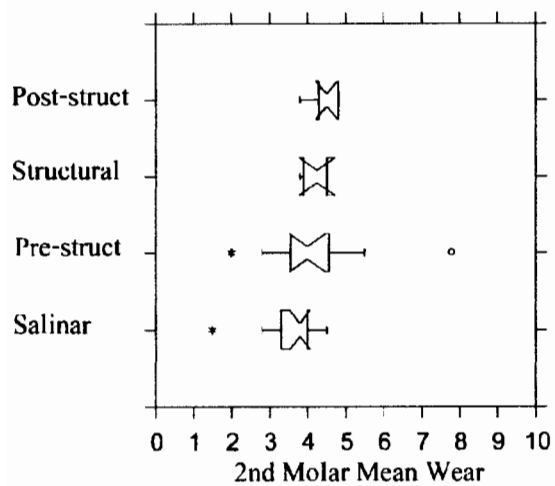
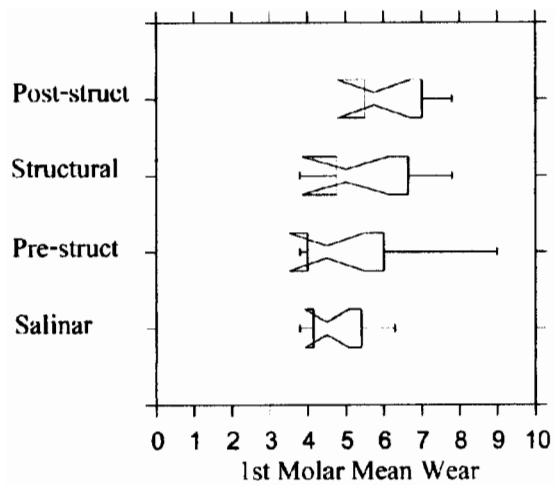


Figure 7.48: Notched Box Plots of Mean Wear Scores for Male Molars

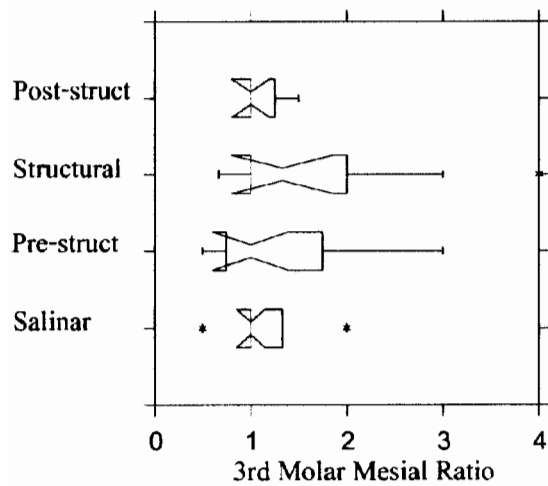
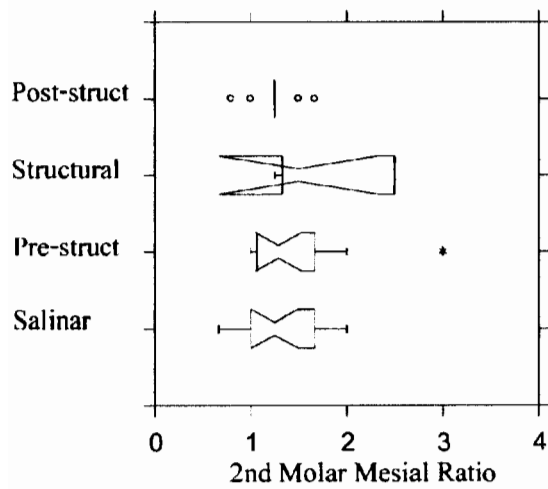
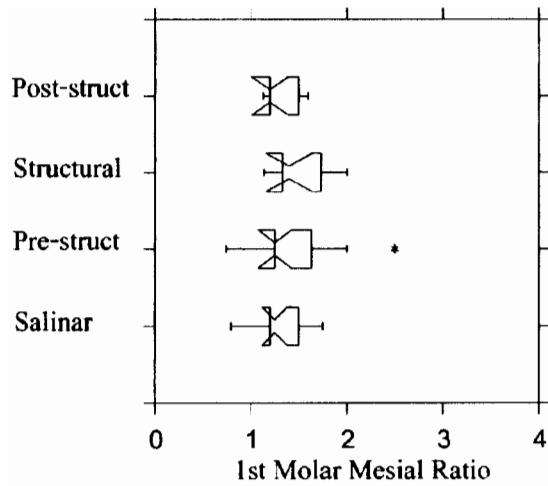


Figure 7.49: Notched Box Plots of Mesial Ratio Values for Male Molars

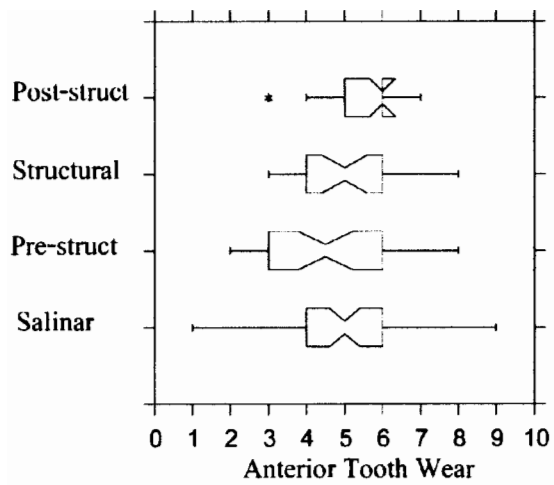


Figure 7.50: Notched Box Plots of Wear Scores for High Status Anterior Teeth

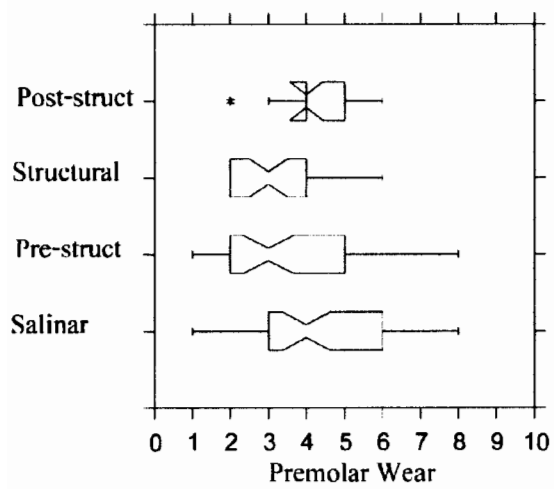


Figure 7.51: Notched Box Plots of Wear Scores for High Status Premolars

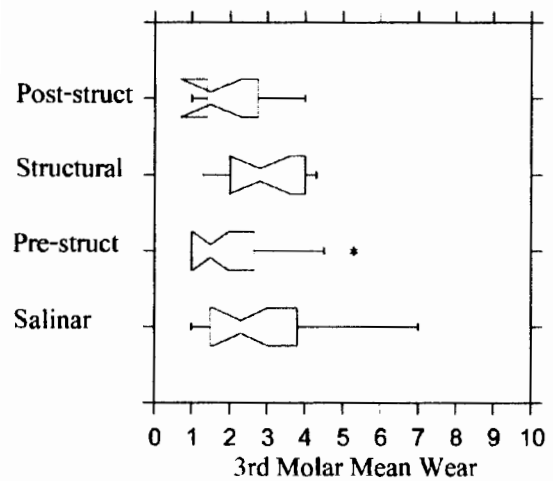
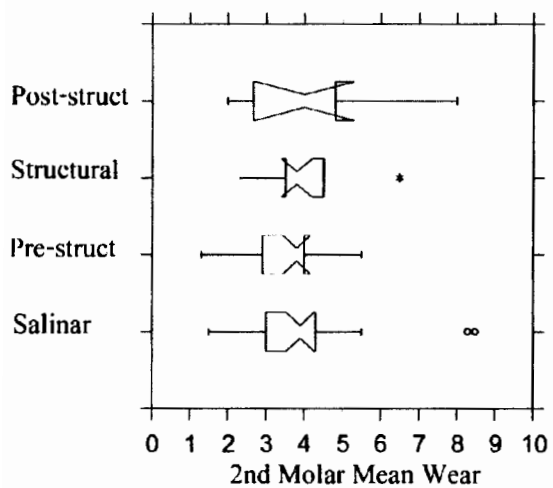
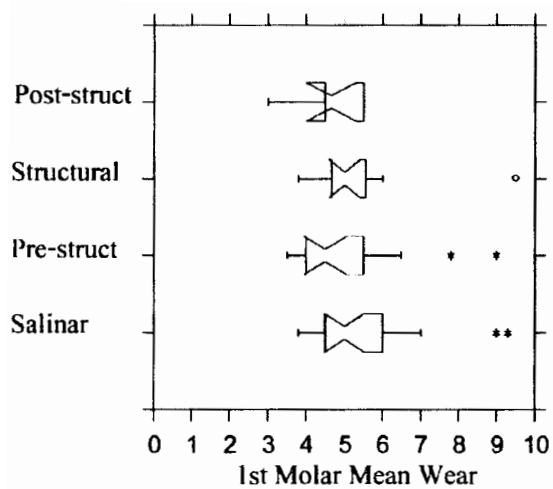


Figure 7.52: Notched Box Plots of Mean Wear Scores for High Status Molars

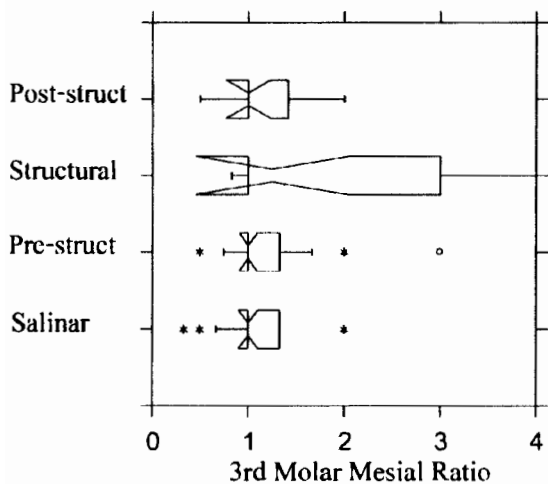
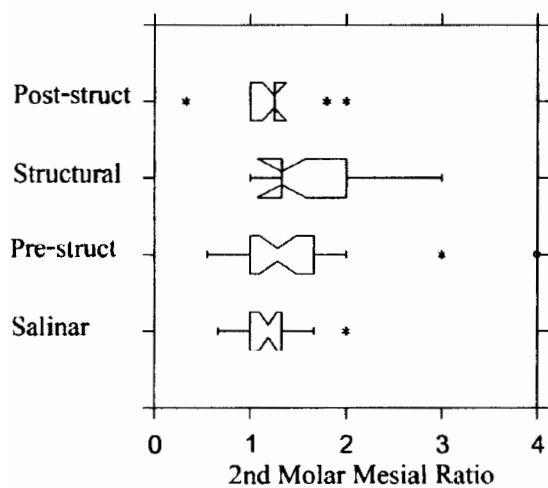
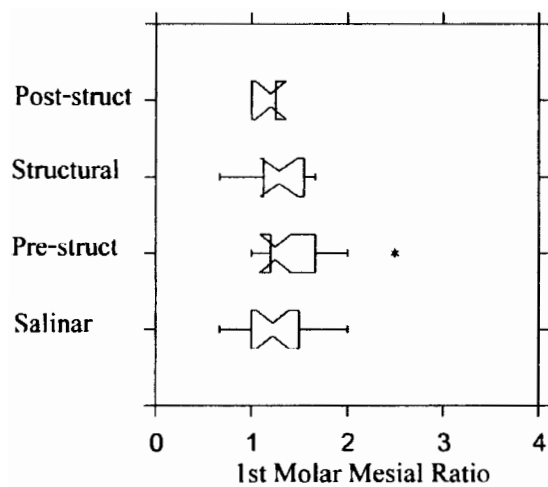


Figure 7.53: Notched Box Plots of Mesial Ratio Values for High Status Molars

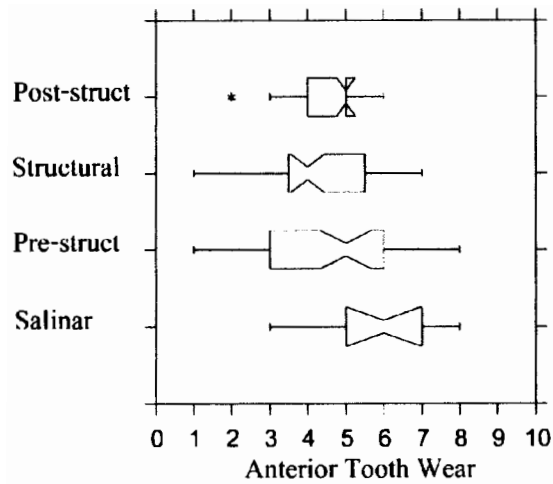


Figure 7.54: Notched Box Plots of Wear Scores for Low Status Anterior Teeth

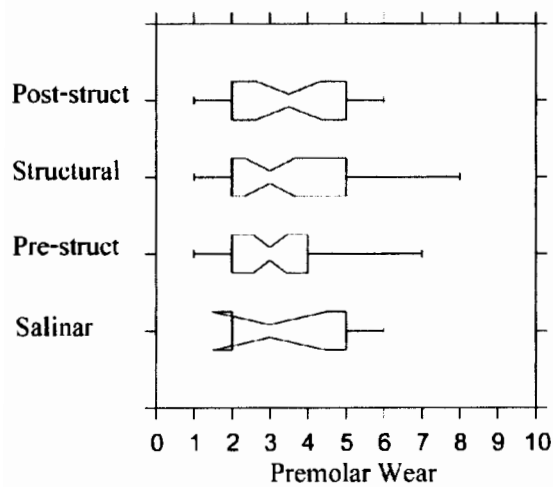


Figure 7.55: Notched Box Plots of Wear Values for Low Status Premolars

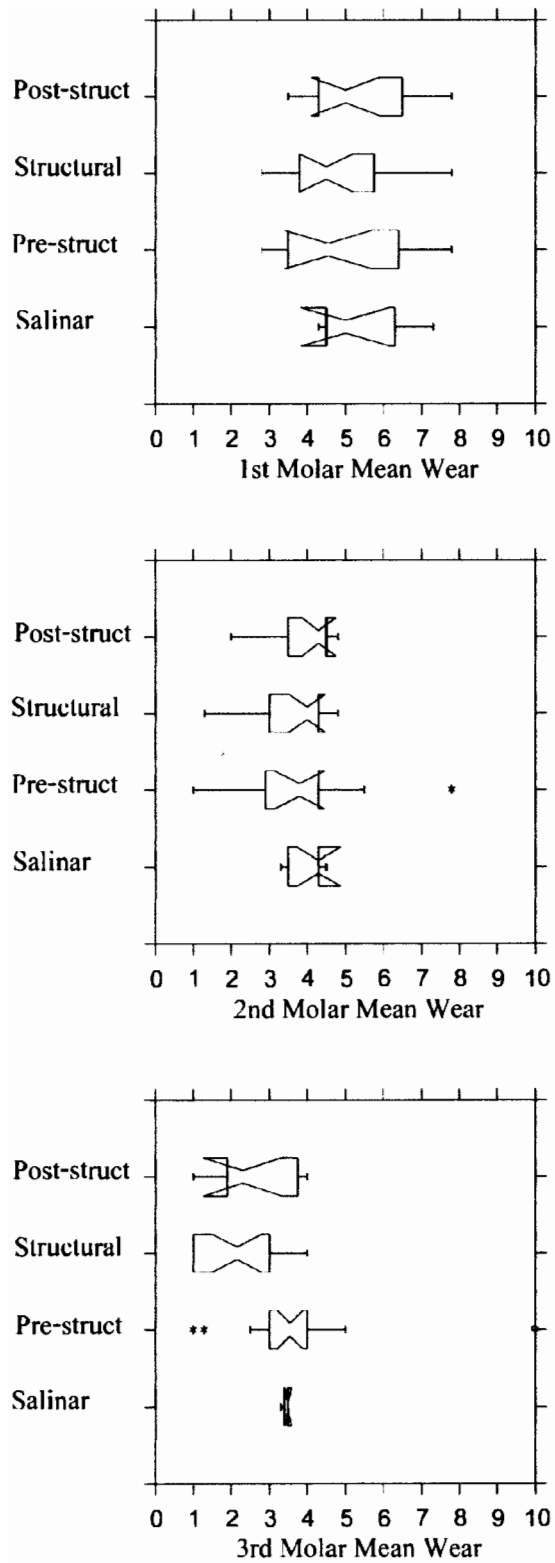


Figure 7.56: Notched Box Plots of Mean Wear Scores for Low Status Molars

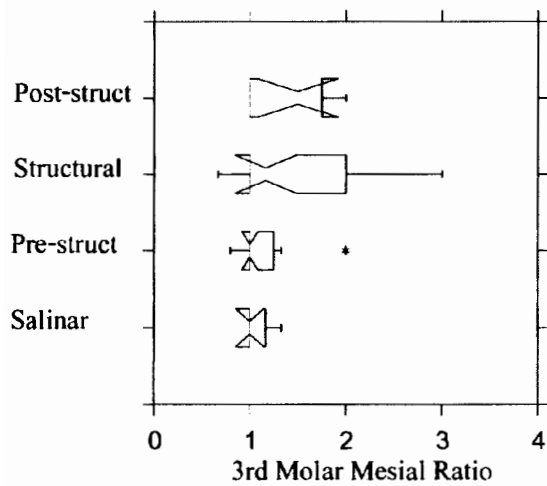
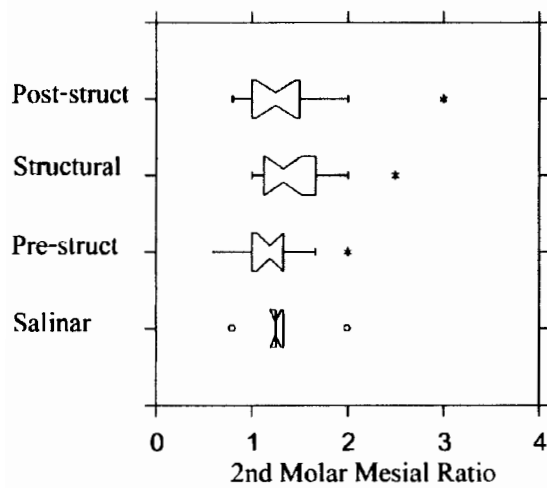
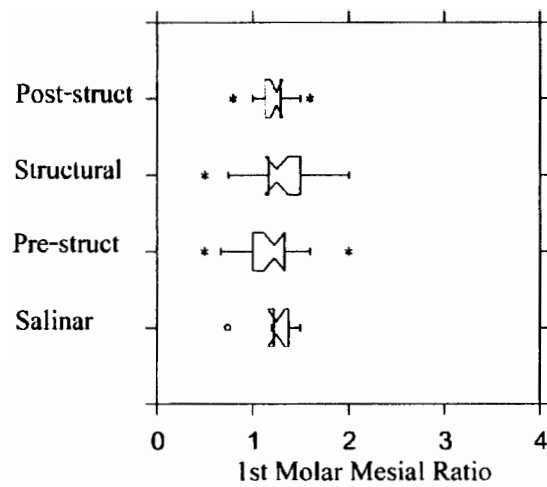


Figure 7.57: Notched Box Plots of Mesial Ratio Values for Low Status Molars

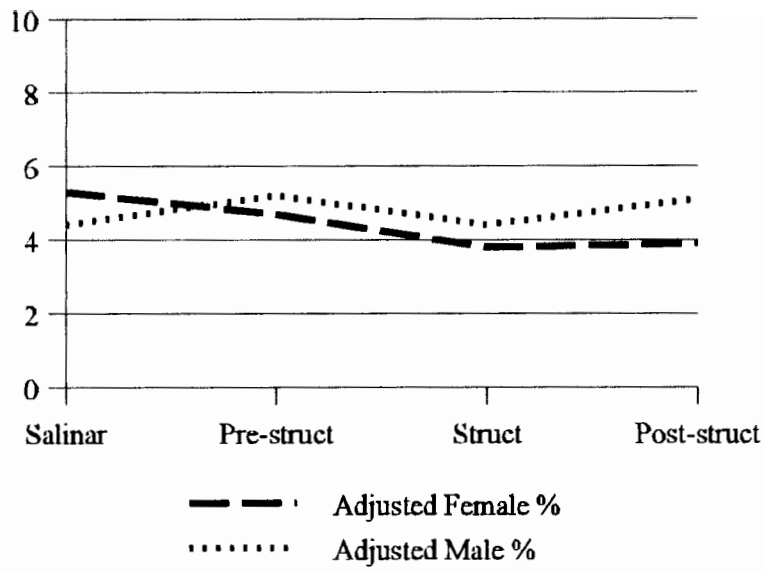


Figure 7.58: Logistic Regression Modeled Anterior Tooth Mean Wear Scores for Adults by Phase

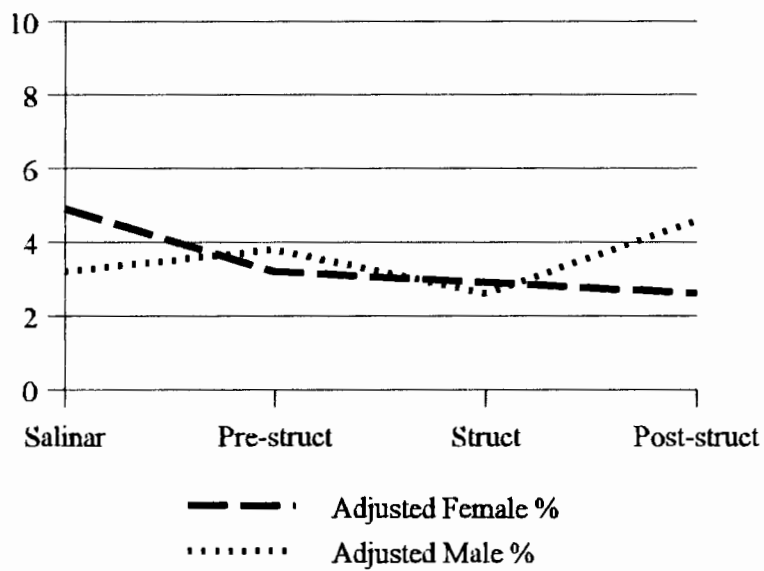


Figure 7.59: Logistic Regression Modeled Premolar Mean Wear Scores for Adults by Phase

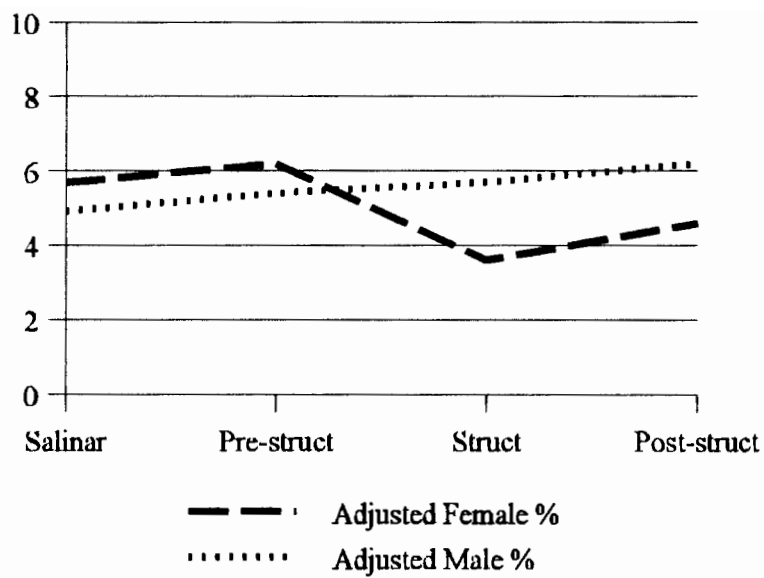


Figure 7.60: Logistic Regression Modeled First Molar Mean Wear Scores for Adults by Phase

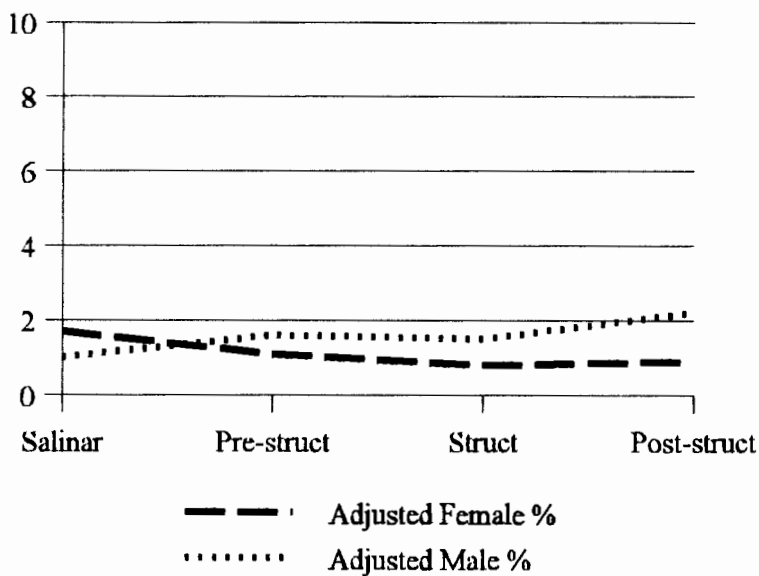


Figure 7.61: Logistic Regression Modeled Second Molar Mean Wear Scores for Adults by Phase

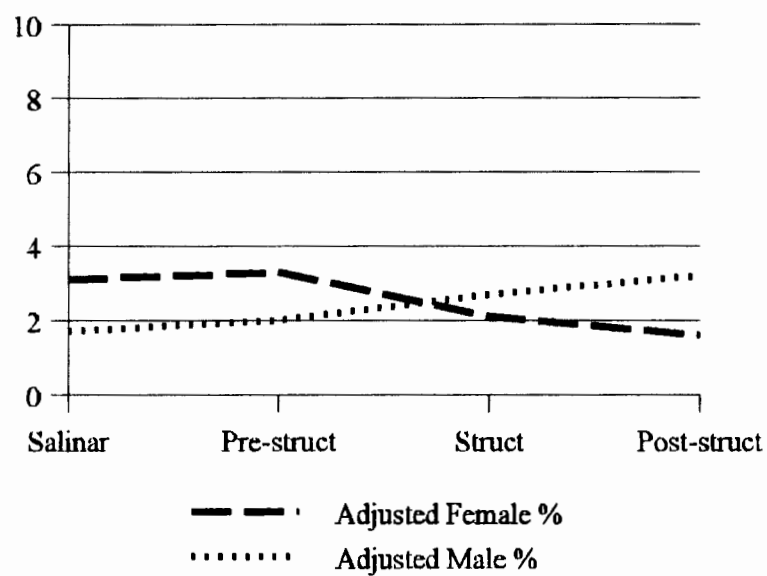


Figure 7.62: Logistic Regression Modeled Third Molar Mean Wear Scores for Adults by Phase

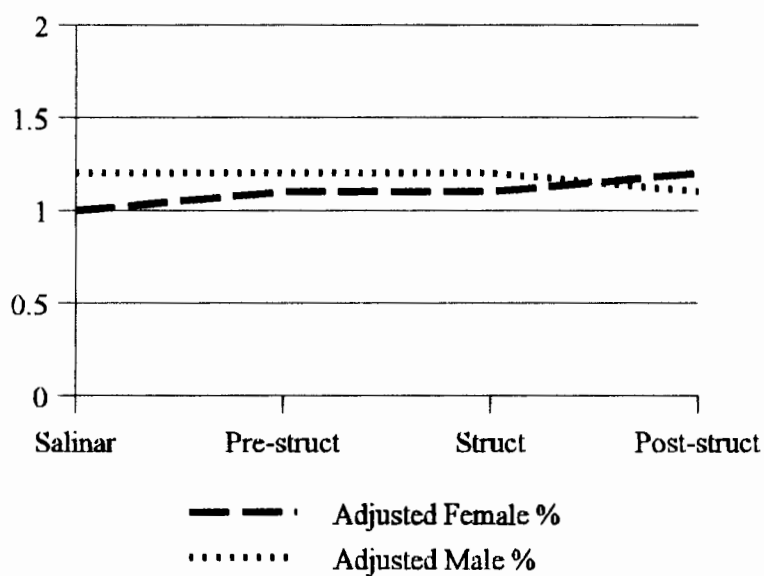


Figure 7.63: Logistic Regression Modeled First Molar Mesial Ratio Values Adults by Phase

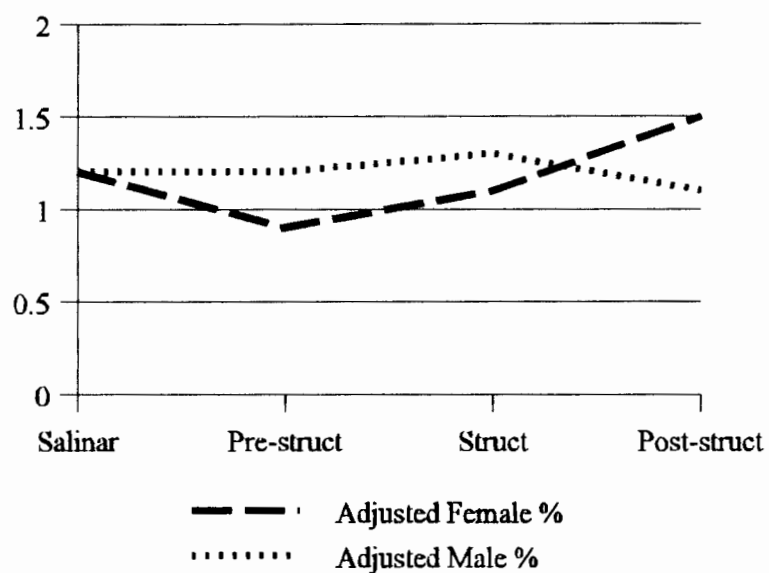


Figure 7.64: Logistic Regression Modeled Second Molar Mesial Ratio Values Adults by Phase

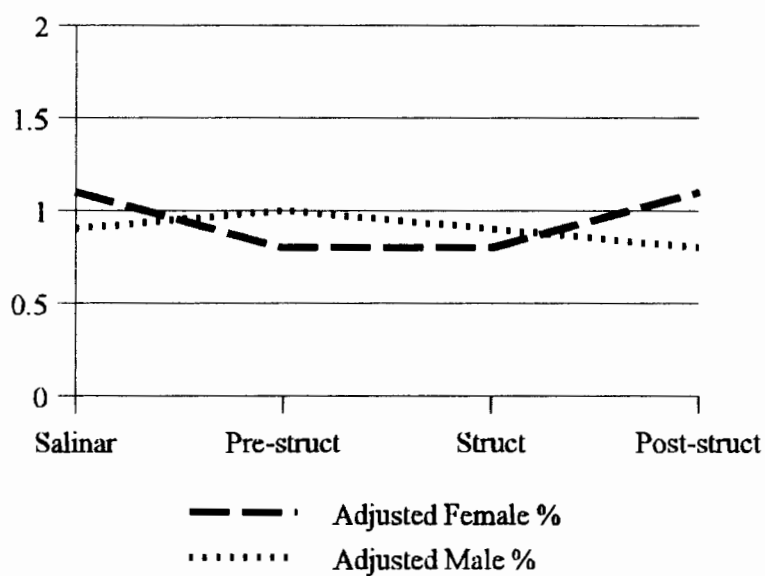


Figure 7.65: Logistic Regression Modeled Third Molar Mesial Ratio Values Adults by Phase

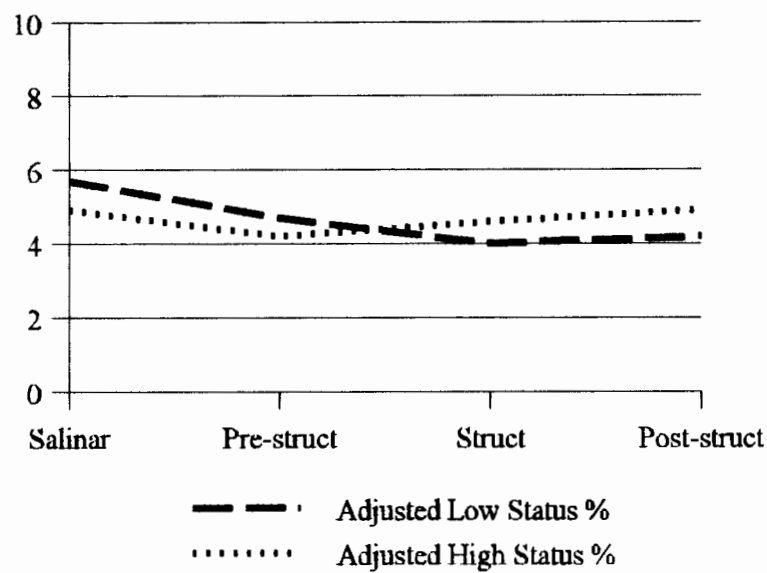


Figure 7.66: Logistic Regression Modeled Anterior Tooth Mean Wear Scores for Adults by Status

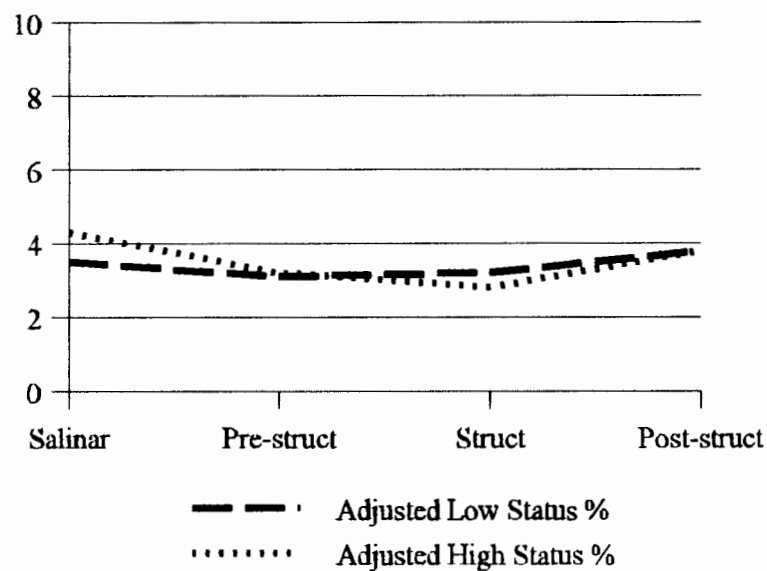


Figure 7.67: Logistic Regression Modeled Premolar Mean Wear Scores for Adults by Status

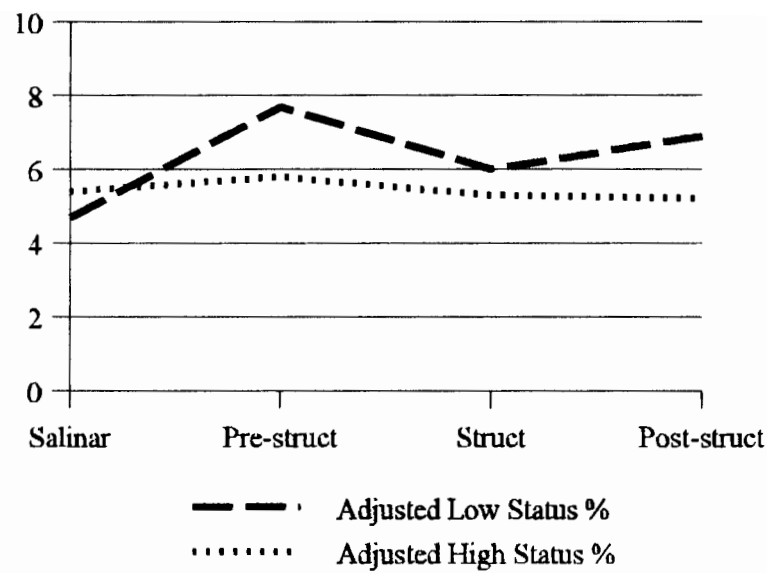


Figure 7.68: Logistic Regression Modeled First Molar Mean Wear Scores for Adults by Status

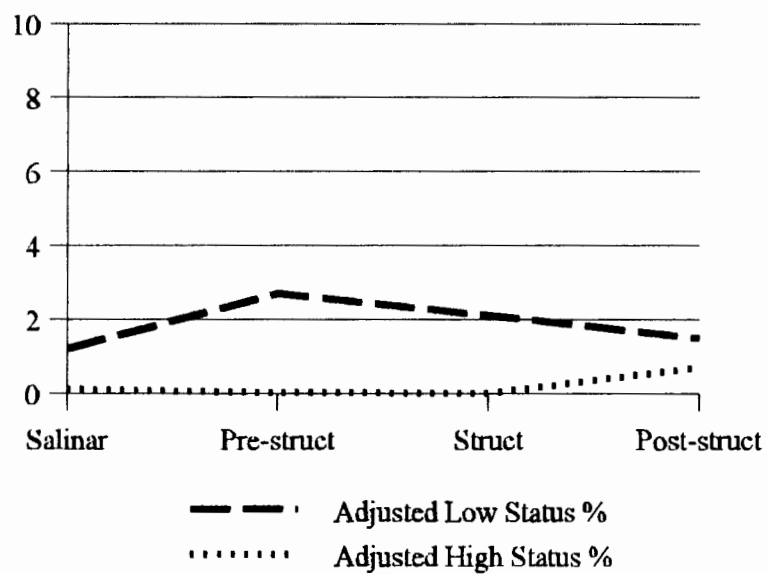


Figure 7.69: Logistic Regression Modeled Second Molar Mean Wear Scores for Adults by Status

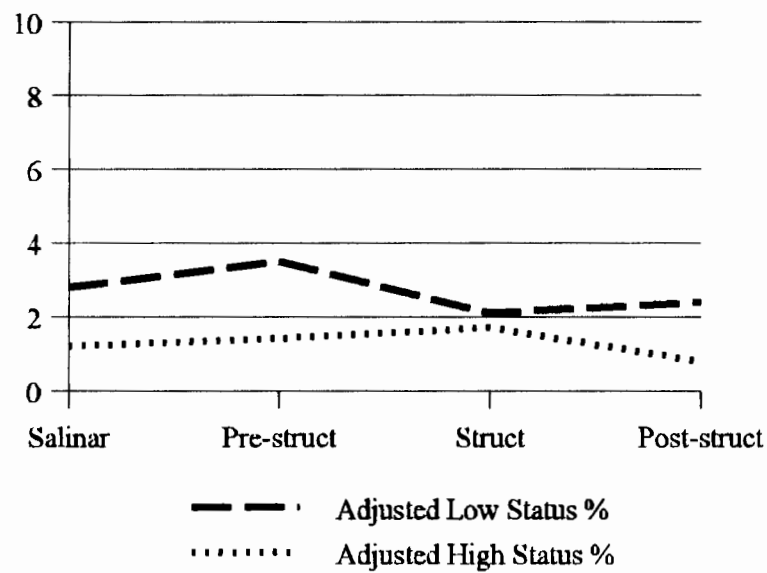


Figure 7.70: Logistic Regression Modeled Third Molar Mean Wear Scores for Adults by Status

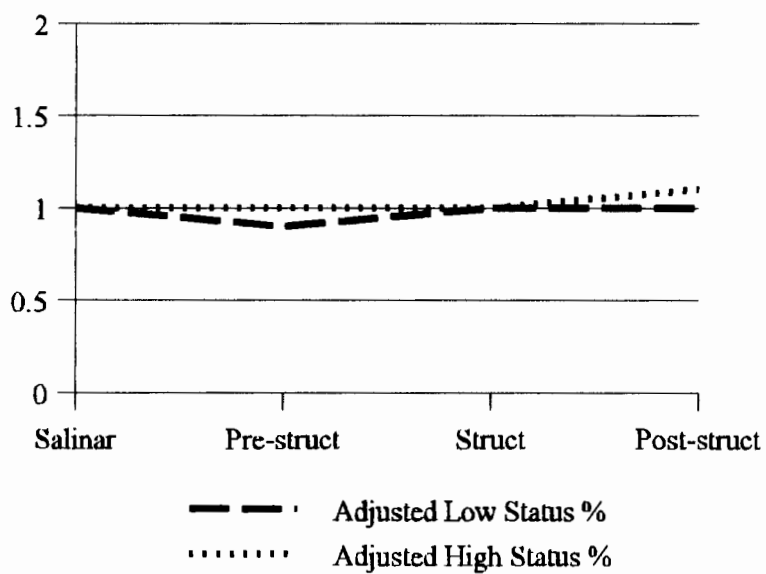


Figure 7.71: Logistic Regression Modeled First Mesial Ratio Values for Adults by Status

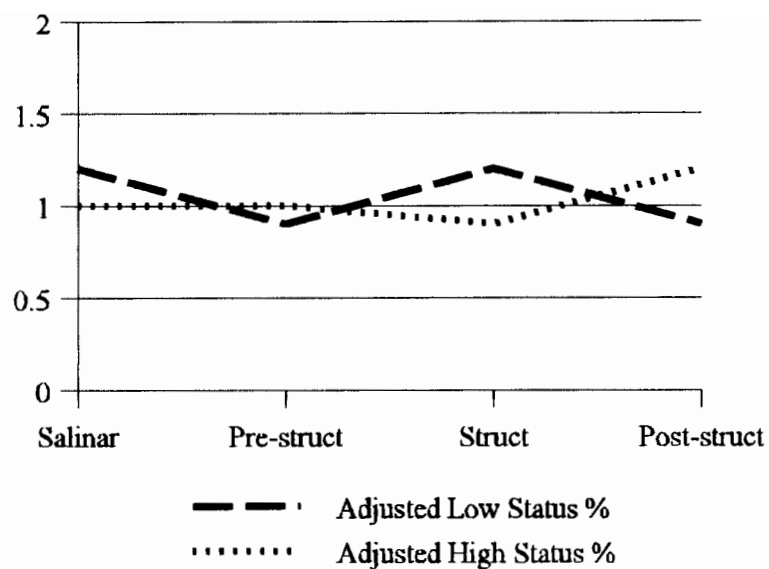


Figure 7.72: Logistic Regression Modeled Second Molar Mesial Ratio Values for Adults by Status

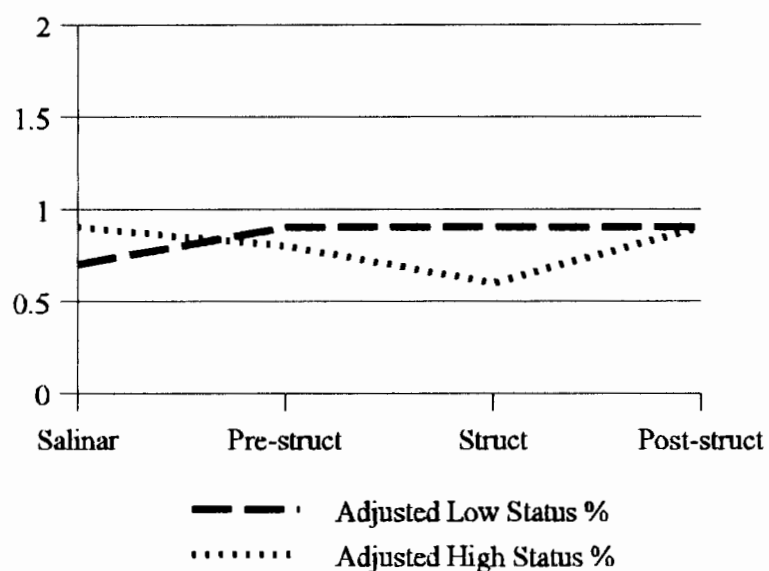


Figure 7.73: Logistic Regression Modeled Third Mesial Ratio Values for Adults by Status

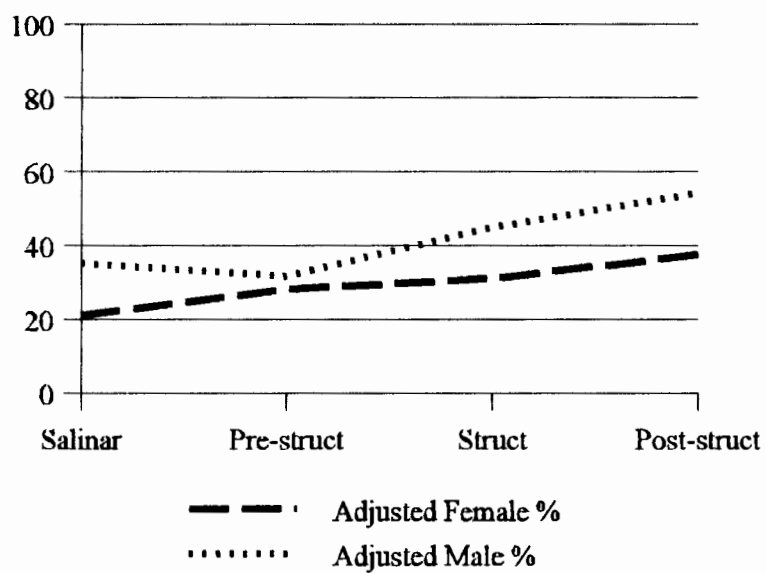


Figure 7.74: Logistic Regression Modeled Rates of Enamel Chipping Rates for Adults by Phase

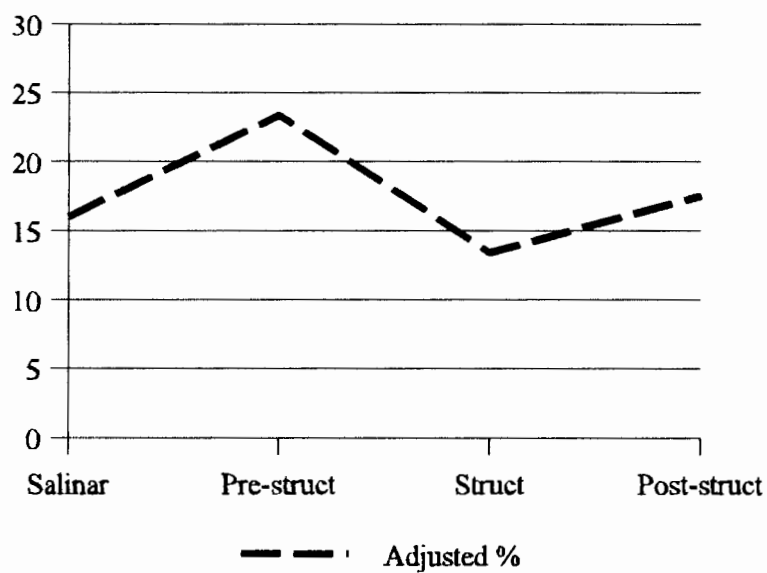


Figure 7.75: Logistic Regression Modeled Rates of Enamel Chipping Rates for Subadults by Phase

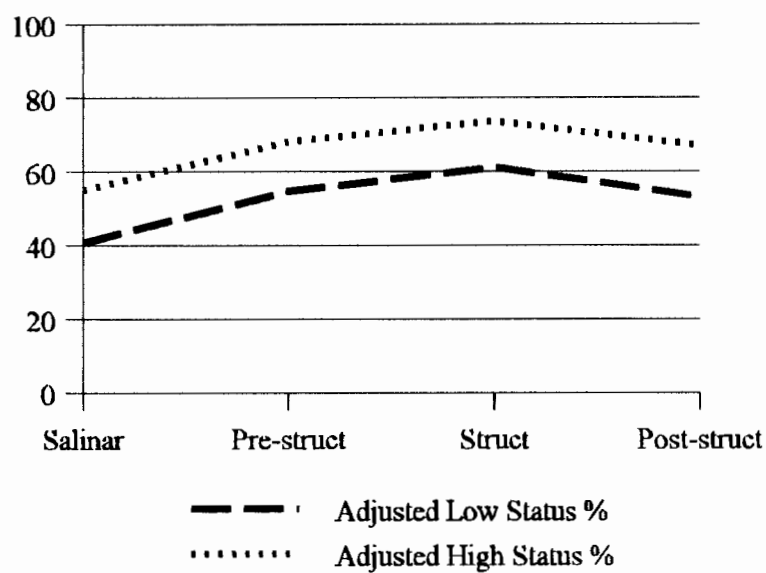


Figure 7.76: Logistic Regression Modeled Rates of Enamel Chipping Rates for Adults by Status

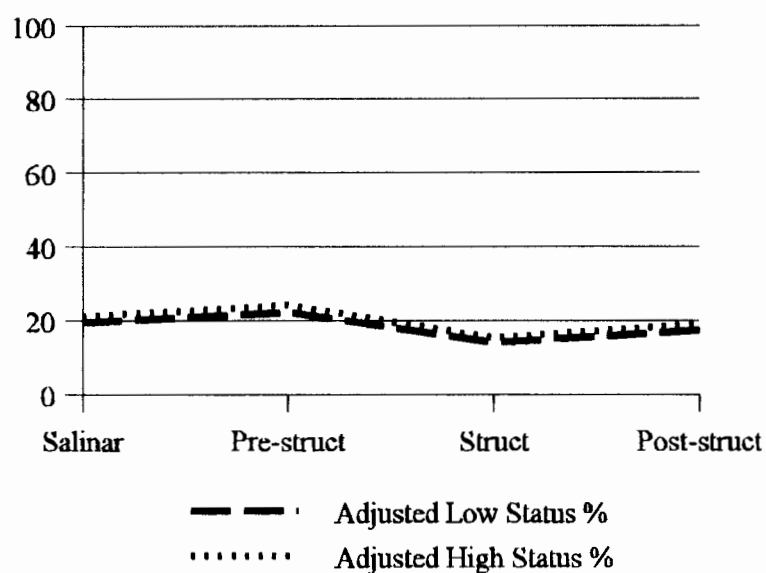


Figure 7.77: Logistic Regression Modeled Rates of Enamel Chipping Rates for Subadults by Status

Chapter 8 BIOARCHAEOLOGICAL PERSPECTIVES ON STATE DEVELOPMENT

8.1 Introduction

Researchers have linked prehistoric state formation in Perú and elsewhere to increasing centralization of political, social, and economic resources, a process which resulted in significant control by elites of previously dispersed daily activities of production, distribution, and consumption (Haas 1982; Brumfiel and Earle 1987a; Bawden 1996; Earle 1997; Billman 1999). Because these everyday activities were arenas of social negotiations, which led to the transformation of egalitarian societies into states, these activities are where we must look for clues to the development of social inequality (Brumfiel 1992). Therefore, the author examined human remains recovered from Cerro Oreja, a large prehistoric urban center in the Moche valley (Figure 5.1) for evidence of changes in daily life. The site was continuously occupied from the beginning of irrigation agriculture through the formation of the Southern Moche state (Billman 1996), and residents buried their dead in the site's cemeteries throughout this period (INC report). The remains examined in this dissertation represent the Salinar (400–1 BC), and Pre-structural, Structural, and Post-structural Gallinazo (AD 1–200) phases.

Most archaeologists agree that both agricultural intensification and craft specialization were important facets of state formation (Haas 1982; Brumfiel and Earle 1997b). Thus, the author investigates changes in diet and industrial activities. In addition to these widely cited factors of state development, she examines two activities specific to the Andes and potentially

central to Peruvian state development: the consumption of chicha and the chewing of coca leaves. Both of these activities have been shown to be important elements in the creation and maintenance of various types of social relationships in this region (Morris 1997; Rostworoski 1988; Isbell 1978; Plowman 1985; Allen 1985 and 1988; Weismantel 1988). Furthermore, gender and social status were central axes of social difference upon which inequalities could have been created. As the author discussed in the fourth chapter, neither of these social constructions are clearly visible in human skeletal remains. However, biological sex can provided us with a window into gender differences (Walker and Cook 1998), while mortuary practices can provided us with a similar entrée to social status (Parker Pearson 1999). To address the author's questions about the development of inequality and the state in the Moche valley, four hypotheses were developed to be tested with the Cerro Oreja bioarchaeological data. The first two hypotheses require data relevant to dietary reconstruction and the second two, data concerning non-dietary tooth use.

Agricultural intensification: If the subsistence economy was an important basis of economic power for the developing Moche valley elite, then the consumption of agricultural products would have increased through time. If food consumption was a site of social differentiation, then the increasing distinction between elites and non-elites could have resulted in a greater consumption of agricultural products by non-elites in each phases, while elites consumed more highly valued animal products such as llama, deer, and fish.

Chicha consumption: The creation of canals might have afforded emergent elite, who organized their construction, greater control over irrigated fields and the crops produced in those fields. If so, chicha production could have been monopolized and access to chicha would have decreased early in the Gallinazo phase. If chicha production was centralized and used to "pay" men for laboring on monumental architecture and canal construction, then gender differences in chicha consumption would have become observable later in the Gallinazo phase and during the Early Moche phase.

Craft specialization: If wealth finance was a source of economic power, then elites might have controlled trade and used craft goods as part of their strategy to increase their economic and ideological power. Additionally, individuals might have been pressured to increase production of particular items, resulting in the creation of distinct occupational groups in the period preceding the development of the Southern Moche state.

Coca use: If access to coca was restricted as a result of highland control of producing areas, the bioarchaeological data would then show a dramatic decrease in coca use early in the Gallinazo phase. Reclaiming access to these areas might have been an important tool used by the elite to gain non-elite compliance. If so, then the displacement or elimination or absorption of the highlanders would have allowed the elite to monopolize coca and restrict its use.

What follows is a discussion of what the results tell us about agricultural intensification, chicha consumption, craft specialization, and coca use, and what changes in these daily activities tell us about the development of the social inequality in the Moche valley.

8.2 Reconstructing Diet

To reconstruct the diet of Cerro Orejaños and so track agricultural intensification and the use of chicha, the author examined their remains for several biological indicators of general carbohydrate consumption. Isotopic signatures of bone and teeth, rates of dental pathological conditions, and changes in occlusal wear and dental trauma all provide data related to consumption patterns. Thus can tell us about the intensification of agriculture and use of chicha in the Moche valley during the Salinar and Gallinazo phases.

8.2.1 *Agricultural Intensification*

The author expected to see the following changes in the teeth and bone of non-elite Cerro Orejaños as a consequence of an increase in dietary carbohydrates, resulting from increased agricultural production:

- 1) Increasingly positive $\delta^{13}\text{C}$ and decreasing $\delta^{15}\text{N}$ values of bones and teeth, reflecting a dietary shift from terrestrial animals and marine resources to maize.
- 2) A dramatic increase in dental caries, abscesses, periodontal disease, antemortem tooth loss and a decrease in overall oral health, as all of these conditions are associated with carbohydrate consumption.
- 3) An increase in the angle of generalized dental wear of molars (as indicated by the mesial ratio), and a decrease in the amount of dental trauma (particularly enamel chipping), resulting from the soft, carbohydrate rich diet of agriculturalists.

Bone apatite $\delta^{13}\text{C}$ values indicate that there was a temporal shift in diet. People who lived during the Gallinazo phase had significantly less negative apatite $\delta^{13}\text{C}$ values than did those who lived during the Salinar phase (Figure 7.21). Enamel $\delta^{13}\text{C}$ values suggest a similar, but slower paced, temporal shift in diet. Structural and Post-structural Gallinazo phase individuals displayed significantly less negative $\delta^{13}\text{C}$ values than Salinar phase individuals (Figure 7.28). However, the diets of Pre-structural Gallinazo phase individuals did not differ significantly from people who lived earlier (during the Salinar phase) or later (during the Gallinazo phase). Enamel signatures reflect an individual's diet during the period of tooth formation (Tykot and Staller 2002). Therefore, the differences seen in apatite and enamel $\delta^{13}\text{C}$ values suggest that people were more conservative about changing their children's diets than they were about changing their own diets.

If this dietary change was the result of an increase in maize in the diet, then these data offer some support for the expectation that individuals intensified their production of maize during the process of state development. They also suggest that this intensification occurred as a rather dramatic event during the Pre-structural Gallinazo phase.

Further support for a Gallinazo phase shift in diet was found in the dental calculus. Manioc starch granules were identified in the dental calculus of Gallinazo phase individuals but not in the calculus of Salinar phase individuals (Table 7.7). Additionally, Salinar phase calculus samples contained fruit cells and possibly potato starch, two microplant remains that were not found in the calculus of Gallinazo phase individuals. Therefore, it might be that Gallinazo phase agricultural production was characterized by a shift from fruits and potatoes to maize and manioc.

However, because there was no collagen preserved, and because apatite $\delta^{13}\text{C}$ values reflect the diet as a whole, it is not clear what changes resulted in the increase in $\delta^{13}\text{C}$ in the diet of the Cerro Orejaños during the Gallinazo phase. Harrison and Katzenberg (2003) argued that similar shifts in apatite $\delta^{13}\text{C}$ values among Iroquoian groups of Ontario indicated an increase in maize consumption. They also argued that a lack of change in apatite $\delta^{13}\text{C}$ values among Californian Channel Island groups indicated a lack of change in the use of marine resources. Therefore, the significantly less negative apatite $\delta^{13}\text{C}$ values of Gallinazo phase Cerro Orejaños, could have been the result of an increase in maize consumption, an increase in consumption of marine resources, or some combination of both.

There are no archaeological data to clarify the nature of the Salinar–Gallinazo phase dietary shift. No plant or animal remains have been recovered from the Cerro Oreja domestic

contexts. Although Cerro Oreja was approximately 20 km from the coast, excavations at Caballo Muerto, a Cupisnique phase (1800 – 400 BC) site located across the Río Moche (Figure 3.2), yielded remains of 15 genera of mollusks, as well as fish, crab, and barnacle (S. Pozorski and T. Pozorski 1979). The Pozorskis estimated that marine resources could have provided as much as 50% of the protein consumed by the residents of Caballo Muerto. This level of marine resource consumption was possible because of the exchange relationship between the residents of Caballo Muerto and Gamalote on the coast. Bawden (1996:78–79) has suggested that fishing was an economic speciality during the height of the Southern Moche state. To the north, in the Lambayeque Valley, Shimada (1987) detailed extensive trade between the coast, interior, and highlands as well as between valleys during the Moche and later phases. It is therefore possible that an increase in the consumption of marine resources is indicated by the shift in isotopic signatures.

Comparisons of apatite $\delta^{13}\text{C}$ values of females and males in each phase identified only one significant dietary difference. During the Structural Gallinazo phase, female $\delta^{13}\text{C}$ values were more negative than those of males (Figure 7.26). High and low status individual comparisons did not identify any significant differences. This suggests that the diets of women and men (as measured by bone chemistry) as well as those of high and low status people were generally similar in each phases. Gender and social status then do not appear to have been central axes of variation in diet as observed in stable isotopes.

Dental pathological conditions can provide us with additional information about diet because high rates of such conditions have been linked to the consumption of starchy agricultural products. In his survey of 31 populations, Turner (1979) identified 10.4 % carious

teeth as a average for agriculturalists worldwide. The percentage of carious teeth in the Cerro Oreja collection ranged from 16.8 during the Salinar to 26.5 during the Post-structural Gallinazo phase, suggesting that Cerro Orejaños consumed a diet rich in agricultural foods (Table 7.7). However, the frequency with which individuals were affected by dental caries did not remain consistent through time. Among those with deciduous dentitions, there was a steady increase in the number carious teeth from the Salinar through the Structural Gallinazo phases (Figure 7.30). During the Post-structural Gallinazo phase, carious lesion rates returned to a rate similar to that which characterized the Pre-structural Gallinazo phase. Although this temporal trend was not statistically significant, these data suggest that children increasingly consumed more carbohydrates in the form of agricultural crops. The author identified a similar and statistically significant pattern of increasing carious lesion rates among adult females (Figure 7.29).

Adult male carious lesion rates showed no consistent or significant temporal pattern. This suggests that unlike women, and to a lesser extent children, men did not increasingly focus their diets on agricultural products. The differences seen in the female and male consumption patterns became even clearer when caries rates were compared within each phase. During the Salinar and Pre-structural Gallinazo phases, the differences in caries rates were not significant. However, Structural and Post-structural Gallinazo phase sex differences were significant. This is in contrast to the lack of significant temporal change in caries rates among either high and low status individuals, and a lack of significant differences between high and low status individuals in each phase (Figure 7.31).

Interestingly, Cerro Orejaños appear to have had fewer starchy items in their diets than did the people of southern Perú. In the Nasca region of Perú, the development of social inequality occurred during the period AD 1–750 (Kellner 2002). As with the population of Cerro Oreja, the people of Nasca experienced a general increase in caries rates through time. The carious lesion rate among Nasca females ranged from 33.3 percent during the Early Nasca to 52.8% during the Middle Horizon. Among Nasca males, it ranged from 50.0 to 66.7%. These rates were not only higher than those identified for Cerro Oreja's adults (females: 16.8 - 52.5% and males: 21.6 - 13.0 %, Table 7.11), but they also followed a different pattern. Nasca males had higher rates than Nasca females, whereas the males of Cerro Oreja had increasingly lower caries rates.

The increase in the consumption of starchy or sugary agricultural products by women and children throughout the study period suggests that there was an intensification of agricultural production. However, men's consumption did not follow this pattern. Rather, it appears that men consumed fewer agricultural products in amounts that did not consistently change through time. These data, considered in light of the similarities in female and male $\delta^{13}\text{C}$ values suggest, that the diet of men might have included more marine resources while that of women was centered on maize. This assertion is further supported by the analysis of dental calculus. Although maize starch was identified in both female and male samples, during the Post-structural phase all females sampled yielded maize starch, but only a third of males did (Table 7.7).

An increasingly different male diet compared to females and children suggests increasingly differentiated gender roles in society. As a point of comparison we can look to

the Inka state's policy of mit'a labor, in which men were required to work on large-scale, state-sponsored projects. While involved in these work parties, men were supplied with specialized foods (D'Altroy and Earle 1985; Hastorf 1990, 1991 and 1993). Similarly, the men of Cerro Oreja might have been increasingly drafted by the elite into work parties where they were provisioned with marine resources, while women and children continued to tend the agricultural fields and consume the fruits of their labor. These differences in work resulted in the divergent diets we see in the Moche valley as indicated by the carious lesion data.

The substantial construction of monumental ceremonial architecture in the Moche valley throughout the study period (Table 3.2) would have required elites to marshal a sizable work force. We know that later, during the Middle Moche phase, such work parties were mobilized. Architectural studies of Huaca del Sol, the largest adobe structure in the Americas, indicated that this monument was built by work parties in several large construction events (Hastings and Moseley 1975).

Given the stable isotopic data indicate a change in diet from the Salinar to the Gallinazo phase, a change that might have result from an increase in marine resources or chicha (which is specifically discussed in the next section), men might have chosen to join these work parties in order to gain access to limited marine foods. It appears that elite motivations for organizing large construction projects might have changed through time. The largest construction projects carried out during the Salinar phase were those associated with increasing agricultural production. In contrast, construction that dates to the Gallinazo and Early Moche phases was limited to ceremonial architecture, construction efforts that certainly benefitted the elite, but which did not produce more food.

Dental caries is only one of the dental pathological conditions that has been linked to carbohydrate consumption. The author also investigated patterns of dental abscesses, periodontal disease, and antemortem tooth loss. Dental abscessing is not a primary condition, but the result of untreated dental caries, periodontal disease, or wear. The females of Cerro Oreja had a relatively consistent rate of dental abscessing (Figure 7.32). Male rates varied significantly, and in a pattern that mirrored the changes in their caries rates. However, there were no significant differences between females and males in any phase. As with the carious lesion data, there were no significant temporal changes in the rate of dental abscessing among either high or low status individuals, nor were there any significant differences between social status categories during any phase (Figure 7.33)

Patterns of periodontal disease varied temporally for both females and males (Figure 7.7). Rates among women were nearly consistent during the Salinar and Pre-structural Gallinazo phases, after which they fell rather dramatically. Male rates followed the same pattern through the Structural Gallinazo phase. However, male rates rose dramatically during the Post-structural Gallinazo phase. As with carious lesion rates, the difference between females and males during the Post-structural Gallinazo phase was significant. Although both carious lesions and periodontal disease data showed a trend of increasing differences between females and males, these pathological conditions displayed different patterns of change. As female carious lesion rates were increasing, their periodontal disease rates were decreasing. Male rates of dental carious lesions remained consistent while their rates of periodontal disease increased.

There were also social status differences in the rate of periodontal disease. Low status individuals were more often affected by periodontal disease than high status individuals in each period (Figure 7.35). These differences were significant during the Salinar, and Structural and Post-structural Gallinazo phases. This was in contrast to higher (although not significantly so) rate of carious lesions among high status individuals. These differing patterns suggest that periodontal disease in the Cerro Oreja sample was not as closely linked to the consumption of agricultural products as were carious lesion rates. This finding is unusual, because all dental pathological conditions (dental caries, periodontal disease, abscesses and antemortem tooth loss) are the result of poor oral health. Although seemingly contradictory, the changing pattern of periodontal disease tells us about coca chewing in the Moche valley, a point to which the author will return.

Antemortem tooth loss, like dental abscessing, is not a primary condition, but the result of dental abscesses or periodontal disease. Therefore, the author interprets tooth loss in light of the pathological condition patterns discussed above. Among both females and males rates of tooth loss remained relatively consistent through time (Figure 7.36). Additionally, there were no significant differences between females and males in any phase. However high status individuals lost significantly more teeth than did low status individuals during each phase. The pattern of antemortem tooth loss did not follow that of either carious lesions or periodontal disease. Because antemortem tooth loss can be the ultimate result of either of these primary conditions, the author suggests that the unique pattern of tooth loss was the result of an averaging of the effects of carious lesions and periodontal disease. This pattern may also suggest changes in coca use (see discussion below).

Occlusal wear is affected by diet, and so patterns of change can be used to track changes in diet (Smith 1984). Although the wear data were highly variable, there were a few consistent and significant patterns in the wear of the teeth of Cerro Orejaños. Female premolars and molars showed a general temporal trend of decreasing wear (Figures 7.59 to 7.62). However, the angle of female molar wear (as measured by the mesial ratio) generally increased through time (Figures 7.63 to 7.65). Male patterns of wear were generally opposite those that characterized females. Through time, male premolars and molars were generally more worn, and their mesial ratio decreased. These sex differences were most significant during the Post-structural Gallinazo phase. These contrasting patterns also suggest that through time women increasingly ate fewer tough foods like those consumed by foragers (such as marine resources), while they increased their consumption of soft, starchy agricultural products. Men, however, increasingly consumed more tough foods and fewer starchy plants. These patterns mirror the changes in the diets of women and men suggested by the combination of carious lesion and stable isotopic data.

Social status differences in wear showed few consistent patterns. Among both high and low status individuals, anterior tooth and premolar wear decreased from the Salinar to the Gallinazo phase (Figures 7.66 and 7.67). In both cases there was also a slight increase in wear during the Post-structural Gallinazo phase. Molars showed no clear temporal change in either the overall level or angle of wear (Figures 7.68 to 7.73). It appeared that the molar of low status individuals were slightly more worn than those of high status individuals, suggesting some social status differences in diet.

Dental trauma can also provide information related to diet, because chewing tough foods which contain a large amount of grit (such as shellfish) increases a person's risk of chipping a tooth (Turner and Cadien 1969; Milner and Larsen 1991). There was no statistically significant pattern of change in enamel chipping among either permanent or deciduous teeth (Figures 7.74 and 7.75). Additionally, there were no significant differences in the rate of dental trauma between females and males, or between high and low status individuals (Figures 7.76 and 7.77).

Within each phase there were no differences in the rate of enamel chipping among females and males. There were, however, significant differences in the extent to which females and males were affected by dental pathological conditions and dental wear. These data suggest that the diets of women and men were increasingly different. Although the only differences in the stable isotopic signatures of females and males were identified during the Structural Gallinazo phase, similar bone apatite and enamel $\delta^{13}\text{C}$ values could have resulted from different diets. These data suggest that women and children ate increasing amounts of maize in porridge or bread form, but men ate more marine resources or drank more chicha.

8.2.2 *Chicha Consumption*

To chart changes in access to chicha the author brings together the dental pathological data and stable isotopic analyses. If $\delta^{13}\text{C}$ values suggest an increase in maize consumption but the dental pathological data do not, then chicha consumption can be inferred (Hastorf 1990 and 1991; Ubelaker and Katzenberg 1995). This is because sticky and chewy foods, such as maize porridge or bread, are more likely to be cariogenic than liquids such as chicha (Kelley et

al. 1991; Hillson 1996). If maize was consumed primarily as chicha by Moche valley elites, the author expected to find:

- 1) Stable patterns of, or a slight increase in, dental caries, abscesses, periodontal disease, and antemortem tooth loss among elites, contrasting with a pattern of increase in these conditions among non-elites.
- 2) Increasingly less negative $\delta^{13}\text{C}$ signature in the bones and teeth of elites, reflecting the consumption of maize, a C_4 plant.

Patterns discussed above in $\delta^{13}\text{C}$ values and carious lesion data did present contrasting pictures of consumption, and thus indicate a possible increase in chicha consumption.

However, it does not appear that chicha consumption was the purview of Moche valley elites as there were no statistically significant differences in $\delta^{13}\text{C}$ values or carious lesions between high and low status individuals. There was a significant temporal change in $\delta^{13}\text{C}$ values from the Salinar to the Gallinazo phase, indicating that the diets of both females and males changed during the Gallinazo phase. Carious lesion rates suggest females diets, and to a lesser extent children's diets, included increasing amounts of sticky carbohydrates (such as maize porridge), but males' diets did not. Because the origin of the shift in bone apatite $\delta^{13}\text{C}$ values is unclear, it is also possible that men's diets also included chicha during the Gallinazo phase. Such gender differences in access to chicha could have been the result of men's work on elite-sponsored construction projects.

8.2.3 Summary

Stable isotopes, dental caries, and dental wear data clearly indicate that there was an increase in the proportion of carbohydrates in the diet of Cerro Orejaños from the Salinar to

the Post-structural Gallinazo phase. These changes suggest that agricultural intensification was an important factor in the development of the social inequality associated with the Southern Moche state (Figure 8.1). Perhaps more interestingly, this change did not affect everyone equally. The author expected non-elites to have increased their consumption of agricultural foods and for elites to have had continued access to protein sources and chicha. This expectation was not supported by the data, suggesting that the social differentiation of elite and non-elite status did not result in differential access to highly valued foods. Similarly, Yoshida (2004) did not identify any significant differences in the health status of high and low status groups. The author's data do not however, suggest that all people were equal. Rather, the diets of women and to a lesser extent children, regardless of their social status, changed most dramatically to include ever-increasing amounts of agricultural products. Men's diets, on the other hand, appear to have included increasing amounts of marine resources, chicha, or both (Figure 8.2). Because the analysis of social status among Cerro Orejaños is preliminary, the author will have to reevaluate this finding once the mortuary analysis is completed.

This finding is in contrast with isotopic reconstructions of other Pre-Columbian diets. Among the residents of Mayan states, White and colleagues (Cucina and Tiesler 2003; White and Schwarcz 1989; White et al. 1993) identified social status differences in maize consumption as well as gender differences in the consumption of marine resources. In the Ecuadorian Andes, Ubelaker and Katzenberg (1995) also identified social status differences in maize consumption, but they found no sex differences in diet. The Moche valley case appears to have been most similar to changes in consumption that resulted from later Inka state expansion. In the Central Andes, Hastorf (1990, 1991 and 1993) found sex differences among

the Wanka in the consumption of meat and chicha (maize). The differences appeared after the area came under the control of the Inka state. Hastorf also interpreted these gendered diets as the result of changes in work patterns as Wanka men were drawn into the Inka mit'a labor system.

8.3 Reconstructing Non-Dietary Tooth Use

To reconstruct the non-dietary tooth use of Cerro Orejaños, and thus track craft specialization and coca use, the author analyzes their teeth for evidence of changes in localized wear and dental trauma. She also examines dental calculus for preserved remains of non-food plants, and looked for specific patterns in oral health that are indicative of coca use.

8.3.1 *Craft Specialization*

The author expected to see the following changes in the teeth of some Cerro Orejaños as a result of increased participation in craft activities:

- 1) An increase in the amount of localized wear and in the number of anterior teeth affected by dental trauma, resulting from people increasingly using their teeth for specialized craft activities.
- 2) An increase in the differences between patterns of childhood and adult dental trauma, adults increasingly used their teeth as tools.
- 3) An increase in the inclusion of craft related fibers in the calculus of individuals.

Because patterns in localized wear were of interest, only individuals with observable anterior and posterior teeth, and maxillary and mandibular teeth were considered. No

statistically significant temporal differences, sex differences, or social status differences were identified in the number of people who had at least one tooth modified by localized wear. This lack of change suggests stability in the number or type of people participating in craft activities that affected their teeth (Tables 7.44 and 7.45). The author was, however, able to identify three temporally distinct patterns of localized wear. As these patterns varied by sex, it appears that the craft activities in which women and men participated in changed through time.

During the Salinar and Pre-structural Gallinazo phases, three females displayed a localized pattern characterized by posterior-maxillary to anterior-mandibular wear. This pattern of wear, might have resulted from the participation in a craft activity that required asymmetrical processing of plant fibers. It appears that these women placed unidentified plant materials in their mouths and then pulled the material forward and downward with one hand while using their tongues to provide pressure. In two cases the wear was oriented from left to right and in a third from right to left, indicating handedness. Three men who lived during these phases seem to have engaged in a different activity, which resulted in symmetrical wear of both the maxillary and mandibular anterior teeth. Because no materials were recovered from the dental calculus of the affected individuals, it is unclear what activity could have caused this pattern.

Later, during the Structural and Post-structural Gallinazo phases, no clear patterns of wear were identified among males. The localized wear pattern identified in three females from these phases was distinct from that identified in the earlier phases. This pattern was characterized by symmetrical wear that primarily affected the lingual surfaces of the anterior

teeth. Tortora phytoliths were recovered from the dental calculus of one of the affected individuals. In her analysis of plant microfossils, G. Nelson (1997) recovered totora phytoliths from the dental calculus of several females as well as from several samples of matting. The author suggests that this pattern of wear resulted when women processed totora in their mouths for use in matting or basketry.

This wear pattern might also have been the result of processing manioc, as it was similar to the LSAMAT pattern first identified by Turner and Machado (1983) in Brazilian remains. Similar wear patterns have been identified among prehistoric Central American manico producers, including groups from Panama (Irish and Turner 1987) and the U.S. Virgin Islands (Larsen et al. 1998). The identification in the Cerro Oreja sample of this pattern as LSAMAT is further supported by the presence of manioc starch in the dental calculus of one of the two sampled females.

The analyses of dental trauma focused on changes in the frequency of enamel chipping. Among both deciduous and permanent teeth, posterior teeth were more often chipped than anterior teeth (Tables 7.46 and 7.48). This suggests that enamel chipping was more often the result eating food that contained grit, than the result of using teeth as tools (Milner and Larsen 1991; Hutchinson 2002). No statistically significant temporal, sex, or social status patterns in enamel chipping were identified (Figures 7.74 to 7.77).

The lack of temporal changes in enamel chipping and in the number of individuals displaying localized wear suggest that there was not a dramatic change in the number of Cerro Orejaños participating in craft activities in which they would have routinely used their teeth. This assertion is supported by the lack of change the number of females and males from whose

dental calculus non-food plant remains were recovered (Table 7.7). The apparent lack of social status differences and temporal stability in the numbers of individuals involved in craft activities and in their level of involvement is in contrast to the temporal and sex differences previously identified in diet.

8.3.2 *Coca Use*

The author traced coca use through patterns of oral health indicative of coca leaf chewing (Langsjoen 1996; Indriati 1997; Indriati and Buikstra 2001). The presence of coca-like plant remains in dental calculus provided supporting data. If coca use changed as a result of the in-migration of highlanders and then their later displacement by elites, she expected find:

- 1) An early decrease in the number of tooth roots affected by dental caries and in rates of periodontal disease and antemortem tooth loss.
- 2) A decrease in the presence of coca phytoliths in the dental calculus.
- 3) A later increase in these indicators of coca use among some individuals.

Curation procedures resulted in pervasive fragmentation of tooth roots, and thus rates of root lesions could not be examined. However, it has been shown that chewing coca leaves also results in increased levels of alveolar resorption and periodontal disease (Langsjoen 1996; Indriati 1997; Indriati and Buikstra 2001). Thus, changes in periodontal disease and antemortem tooth loss can speak to coca use. As discussed above, periodontal disease rates did not follow the same pattern as carious lesion rates for either females or males (Figure 7.34). The author therefore suggests that periodontal disease among Cerro Orejaños was the

result of coca chewing. It is also possible that the consistent social status differences seen in antemortem tooth loss were the result of differences in access to coca.

The decrease in periodontal disease identified among both females and males during the Pre-structural and Structural Gallinazo phases (Figure 7.34) might have been linked to the occupation by highlanders of the coca growing regions of the Moche valley during the Gallinazo phase (Billman 1999). It appears that this occupation reduced Cerro Orejaños access to and use of coca and that this reduction affected low status individuals to a greater extent than high status individuals (Figures 7.35 and 7.37). By the end of the Gallinazo and Early Moche phases, the highland immigrants had abandoned these sites (Billman 1999) and coca was again available to valley residents. However, the gendered changes in labor indicated by the dental caries lesion data, resulted in men, not women, having access to coca in the Post-structural Gallinazo phase (Figure 7.34).

Because coca chewing increases work capacity, the increased use of coca by men might be another example of Moche elites provisioning those who labored on construction projects. Sooner and Little (1969) noted that cocaine (a coca alkaloid) is a peripheral vasoconstrictor, which could decrease heat loss. They suggested that this effect of coca chewing might explain why Andeans, who experience cold stress in high-altitude environments, chew coca. Fuchs (1978) noted that cold stress alone could not account for patterns of coca chewing, and suggested that hypoxia was the most important stressor in determining coca use. The body's response to hypoxic conditions is polycythemia, an increase in red blood cell production, which increases oxygen transfer (Hurtado 1966). Polycythemia also increases blood viscosity, the less beneficial results of which are fatigue and headache

(Weinreb and Shih 1975). Fuchs' (1978) study of hematocrit values in a sample of Andeans suggested that coca chewing decreased red blood cell counts and blood viscosity, and thus alleviated the effects of chronic polycythemia.

Neither cold nor hypoxia would have been stresses experienced by Cerro Orejaños, who lived at low altitudes. However, Bolton (1979) suggested that it is coca's regulatory effect on blood glucose levels that explains its use among Andean people. Environmental stresses at lower altitudes include heat and disease load (rather than cold and hypoxia). People experiencing these stresses coupled with inadequate nutrition, are likely to have higher rates of hypoglycemia, a condition that would be alleviated by chewing coca. Many researchers have documented that coca chewing among Andean groups is associated with work (see Plowman 1986). Chewers report that coca gives them "vigor and strength and assuages feelings of hunger, thirst, cold and fatigue." (Plowman 1986:8). Certainly increased work loads among the men of Cerro Oreja involved in large-scale construction projects were likely to add to their risk of hypoglycemia. In addition to alkaloids, coca leaves contain calcium, phosphorus, iron, vitamin A, and riboflavin (Duke, Aullik, and Plowman 1975). Because it is likely that some amount of coca leaf was ingested by the men of Cerro Oreja as they chewed their quids, coca used might also have provided them with supplemental vitamins and minerals.

It might also have been that men chose to become participants in state-building projects to gain access to coca because it had important religious and social significance. Among modern Andeans, traditional coca chewing—*hallpay*—follows a ceremonial pattern (Allen 1986, 1988). Before chewing coca, the leaves are arranged in a *k'intu*, an organized bundle. The chewer then blows over the *k'intu* and offers an invocation that identifies "the

recipients of the coca's fortifying essence."(Allen 1988:127). The list of recipients always includes the earth, the scared places, and the chewer's community. Through hallpay, the relationships between coca chewers, their land, and the spirits of their world are established and reinforced. Hallpay also creates and reflects social status. The order in which k'intu are shared is informed by the various status positions of the participants, thus each session requires

...each participant to organize the situation in hierarchical terms and place him or herself within this hierarchy... The k'intu exchanges, which commit each participant...to group membership, and which situate him or her relative to the others thus defines any gathering of individuals as a social group. (Allen 1986:39)

The establishment of this social group, is a central component to most types of group activities.

Although we cannot assume that practices and contexts of coca chewing have remained unchanged for the past 4000 years, ethnohistorical research (Rostworowski 1988), and analyses of Moche iconography (Bawden 1996) have suggested that coca was ritually important in the past. Therefore, it could have been an important a resource, access to which was worth some sacrifice.

8.3.3 *Summary*

Localized wear, dental trauma, and dental calculus data suggest a lack of change from the Salinar to the Post-structural Gallinazo phase in who was engaged in craft activities among Cerro Orejaños, at least those activities during which people would have used their teeth as tools. Although there was a change in the activities in which women took part, the

stability in the numbers as well as the sex and social status break down of who was performing such activities suggests that large-scale craft specialization of the types of items that people used their teeth to manufacture was not an important factor in the development of social inequality in the Moche valley (Figure 8.3). Clearly craft specialization was important during the period of state hegemony (De Marrais et al. 1996; Bawden 1996; Russell and Jackson 2001). The skeletal remains of Cerro Orejaños and the grave goods with which they were buried suggest however, that this type of economic change might have been a tool of state maintenance, rather than one of state development.

To date, no other researchers have used bioarchaeological data to reconstruct patterns of craft specialization in Pre-Hispanic state societies. However, there have been studies that used spindle whorls and other weaving tools to examine the role of craft activities in state finance systems. In the Central Andes among the Wanka, Costin (1993 and 1996) examined cloth production. She found that before the Inka state expanded into the region, elite women produced twice as much cloth as non-elite women, although all women produced cloth for household use. During the period of Inka hegemony, labor was reorganized such that the women of some communities produced cloth for both family and state consumption. In other communities women were drawn into agricultural or ceramic production activities for the state and so no longer engaged in even the production of cloth for household consumption.

Similar changes in women's work were found in Central Mexico as part of the development of the Aztec state (Brumfiel 1991). In Valley of Mexico, the Aztec heartland, women's participation in weaving decreased as they became increasingly engaged in producing food for both tribute and market exchange. Outside the valley, women's production

of cloth increased. Given these findings, it may be that future analyses of the spindle whorls and other weaving implements, as well as the textiles buried with the Cerro Orejaños will reveal temporal changes in craft specialization in the Moche valley.

Coca-like microplant remains recovered from the dental calculus indicate that coca was used by Cerro Orejaños during the Salinar and Gallinazo phases. Changes in periodontal disease and to a lesser extent antemortem tooth loss, suggest that use of coca varied over time. It appears that the occupation of the coca producing areas in the Moche valley by highlanders, beginning in the Gallinazo phase (Billman 1999), did decrease coca use by all Cerro Orejaños. These sites were abandoned by the end of the Gallinazo phase, and access to coca again increased. The gender changes associated with state formation affected coca use as well. Men, and not women, became the primary chewers of coca. It might also be that, although these changes similarly affected both high and low status individuals, elite Cerro Orejaños enjoyed greater access to coca throughout the period (Figure 8.4). Coca appears to have been important in state development as well as marker of social status and gender in the Moche valley.

8.4 Conclusions

The author examined the place of agricultural intensification, chicha consumption, craft specialization, and coca use in the development of social inequality and the Southern Moche state. She found that changes in diet and coca use were part of state development, but that specialization of craft activities that involved teeth, was not. This suggests that staple items (D'Altroy and Earle 1985; Earle 1997), were the most important sources of finance

during the emergence of the Southern Moche state. The Moche elite might have begun a long tradition in the Andes of using food as a medium for consolidating power (Costin and Earle 1989; Gero 1992; J. Moore 1989; Morris 1979, Murra 1960; Rostworowski 1988). This is because “foods are not only linked to economic value but also to their associated ideological importance” (Hastorf 2003:545).

In addition to identifying food as central to the development of inequality, this study provides us with a window into the processes by which Cerro Orejaños—women, men, and children, elite and non-elite—effected this change. Haas (1982) and Dietler and Hayden (2001) offered ways in which all people participated in such dramatic changes. In Haas’s view, the elite could have affected the costs to others of compliance and resistance by manipulating the bases and manifestations of power. In these modified circumstances, non-elites made choices which either brought them in line with the wishes of the elites, pitted them against the power structure, or more likely, resulted in a complex of conformity and counteraction. Feasting, as Dietler and Hayden noted, could have been an arena of the kind of manipulation of which Haas spoke.

These models well describe the changes the author details. By providing common men with coca and chicha or marine resources, perhaps in feasting events associated with work on construction projects, emergent elites increased the attractiveness of such work. Rather than being forced to work for the aggrandizement of the elites, non-elite men were enticed into doing so. An increase in men’s access to these high valued consumables might have resulted in an increase in access to such items for the women with whom they shared their households. Even if this increase in women’s access was insubstantial, it could have provided sufficient

motivation for women to have supported the choice of men to join such activities. This would have left women to compensate for the loss of labor in the production of basic agricultural foods.

In this way, we can see how negotiations within households resulted in small changes in labor distribution that had dramatic effects on the valley-wide economy. People increased their prestige by organizing and supporting the construction of ever-increasingly impressive construction projects that modified the landscape. Men were increasingly drawn away from familiar, agricultural work by the promise of access to limited and socially significant products. Women and their children intensified their agricultural production and became increasingly dependent on these less nutritious and highly ranked food sources. It is likely that not all families engaged in these new activities, a fact testified to by variations in the numerous indicators the author examined in this research. It is likely too, that the needs of women and men sharing households were continually redefined in ways that supported and contested wider economic, social, and political changes (H. Moore 1992). However, individuals who made these choices changed the economic, social, and political contexts in which all future negotiations occurred (Brumfiel 1992). Similar changes in daily household work and consumption patterns have been documented by Mintz (1985) as part of the dramatic economic transformations of the British and American states during industrialization. In the Moche valley the author has documented analogous processes at the origins of the state.

Finally, the author identified gender not social status as a basis for restricting access to important food items. Sex differences in diet resulted poorer oral health among females. Differences in oral health, in access to vitamin and mineral rich coca, and possibly access to

protein rich foods, might have decreased the work capacity and overall health status of women, which would have affected their ability to fulfill their social obligations. Given these findings it might be that the dramatic social hierarchy associated with the Southern Moche state was not constructed from an increase in the inequality that distinguished elites from non-elites. Rather it may be that the transformation of gender differences into gender inequalities provided the foundation upon which the state was built and that later dramatic inequalities were modeled. This is not surprising “since women’s status emerges as a central issue in all efforts to extend state power” (Brumfiel 1991:245), a point supported by Gailey (1987) and Gero (1992).

Once again the Inka provide a model of the role that gender differences played in state development. Drawing on a wealth of ethnohistorical data, Silverblatt (1987) described how the Inka translated Andean concepts of gender complementarity and parallelism into gender hierarchies by privileging male activities. These hierarchies, intertwined with an ideology of conquest, informed the practices by which conquered groups were incorporated into the state. Bray (2003) further explored the role of gendered activities in maintenance of Inka hegemony. She identified three ceramic forms associated with three different elite foods: chicha, meat, and maize stew. Of these ceramic forms, the pots used to store and transport chicha were the most common forms found outside the state heartland, indicating that chicha was an important tool of state expansion. Because, as documented during the colonial period, Inka women were the brewers of chicha, women’s labor was used by the Inka elite to materialize class differences.

This research suggests that in the Moche valley similar transformations of gender roles provided the building blocks for the structured social inequality most notably visible during the Middle Moche (Bawden 1996; DeMarrais, Castillo and Earle 1996; Moseley 1992; Quilter 2002). The author suggests that by providing socially charged resources to men in exchange for their labor, emergent elites created a system in which the work of men (work that occurred away from home) became increasingly valued over the work of women. This transformed the sexual division of labor into a stratified system of labor, and thus created gender inequality. This gender inequality then became the model for dramatic inequalities based on social status that later characterized the Southern Moche state.

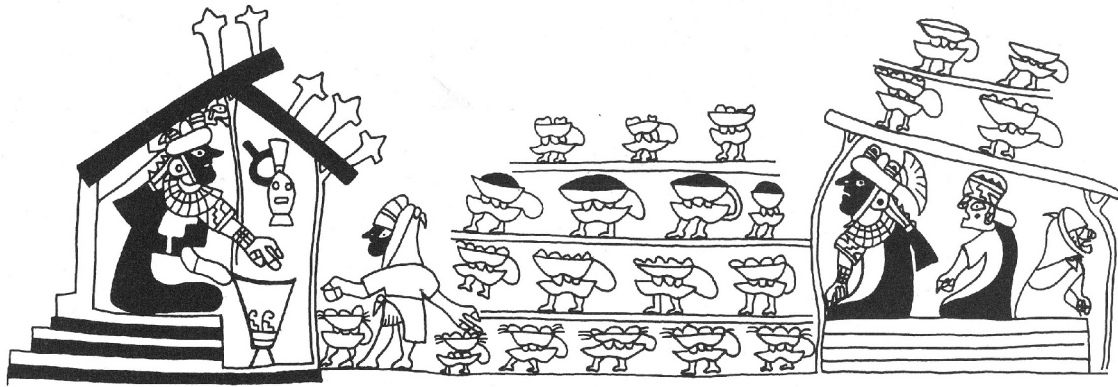


Figure 8.1: Food as Tribute in Moche Iconography, from Donnan 1978



Figure 8.2: Sea Lion Hunt, from Donnan 1978

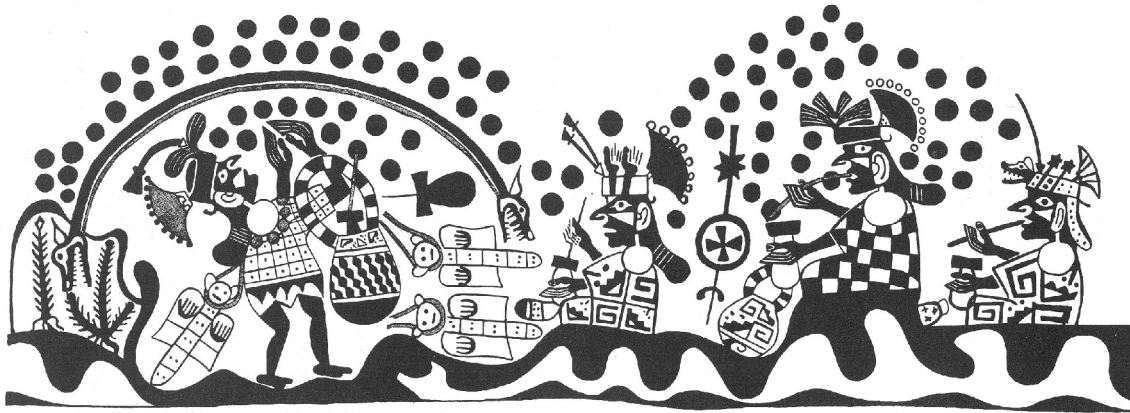


Figure 8.4: Moche Elite Chewing Coca, from Donnan 1978

Chapter 9 CONCLUSIONS: QUESTIONS REVISITED

In this dissertation, the author explores what could be learned about the development of social inequality from a small-scale analysis. The people on whom this dissertation is focused inhabited the Moche valley of north coastal of Perú and were one of the earliest New World groups to develop a state-level political organization (Bawden 1996; Billman 1996; Moseley 1992). Prior to this development, Moche valley residents lived in societies that were far less politically centralized and socially differentiated. Because human skeletal remains provide us with a wealth of information at the individual scale, the author uses bioarchaeological data to investigate changes in the activities of prehistoric, north coastal Peruvians. She interprets patterns of change in daily activities within the wider archaeological context and in light of other studies of state societies to explore how people, through their daily actions, effected and reflected large-scale economic, social, and political change.

To address these issues, the author examines the remains of 750 individuals recovered from Cerro Oreja, a large prehistoric urban center in the Moche valley of Perú. Cerro Oreja was continuously occupied from the beginning of irrigation agriculture through the formation of the Southern Moche state (1800 BC–AD 400), and residents buried their dead in the site's cemeteries throughout this period (Carcelen personal comm 1999). The remains of the individuals who are the subject of this study represent women, men, and children of both high and low status.

This dissertation begins with a brief review of the state formation literature. Through this review the author identifies several issues of central importance to tracing the development of social inequality. For socially stratified societies to have developed, some individuals or groups of individuals must have had the power to limit access to particular economically important and ideologically charged resources. It was only when such individuals capitalized on this kind of power that they could have created systems of staple and wealth production and modified the distribution of such products to their benefit. Additionally, such elite individuals might have co-opted and modified local ideologies to legitimate these social changes.

Several researchers have suggested ways by which this consolidation of influence and power could have occurred. Carneiro (1970) stated that non-elites had no power to resist such social changes, but Service (1975) suggested that non-elites participated in this consolidation because it benefitted society. Dietler and Hayden 2001, and Haas 1982 explored an intermediate position, by examining what non-elites gained through their participation in the activities that changes their societies. Informed by their research, the author investigates what daily life was like in the Moche valley, and how it changed with the rise of structural social inequality. This information provides some answers for why both elite and non-elite people allowed their societies to change, and how they effected these changes.

The author then turns to the environmental and archaeological context of the Moche valley. Archaeological research has indicated that the first agriculturalists in the valley lived on the coast during the Cotton Preceramic period (3000–1800 BC) (Moseley 1992). By the Cupisnique phase (1800–400 BC) some Costeños had moved inland and began the

construction of a valley-wide irrigation system (S. Pozorski and T. Pozorski 1979; T. Pozorski 1982). It was also during this time that they constructed the first public monuments. People abandoned their coastal settlements, expanded into the coca producing areas of the middle valley, and began to engage in warfare during the Salinar phase (400–1 BC) (Billman 1997, 1999; Topic and Topic 1978). At this time, the irrigation system was greatly expanded (Billman 2002). In the Gallinazo phase (AD 1–200) Cerro Oreja became the largest, urban center in the valley. Costeños abandoned the coca producing areas of the valley. These areas were then inhabited by highland immigrants (Billman 1999). By the end of the Early Moche phase (AD 200–400) Costeños regained control of the coca producing areas of the valley and began to create the institutions of the Southern Moche state. During the Middle Moche phase (AD 400–700) the site of Moche, down river from Cerro Oreja, became the state center (Bawden 1996; Billman 1999; Moseley 1992). The hegemony of the Southern Moche state started to wane in AD 700, and by AD 900, it had collapsed (Bawden 1996).

Literature on state development and Moche valley prehistory together suggest four areas of daily life that might have been important loci in the development of social inequality in the Moche valley. Archaeologists agree that both agricultural intensification and craft specialization were important facets of state formation (Brumfiel and Earle 1997b; Haas 1982). With this in mind, the author investigates general changes in diet and industrial activities. In addition to these widely cited factors of state development, she examines two activities specific to the Andes and potentially central to Peruvian state development: the consumption of chicha and the chewing of coca leaves. Both of these activities have been shown to be important elements in the creation and maintenance of various types of social

relationships in this region (Allen 1985 and 1988; Isbell 1978; Morris 1997; Plowman 1985; Rostworoski 1988; Weismantel 1988). These four areas of investigation, two of global importance and two of local concern, have biological impacts, and thus they can be addressed with bioarchaeological data. Specifically the author tests the following general hypotheses:

Agricultural intensification: If the subsistence economy was an important basis of economic power for the developing Moche valley elite, then the consumption of agricultural products would have increased through time. If food consumption was a site of social differentiation, then the increasing distinction between elites and non-elites could have resulted in a greater consumption of agricultural products by non-elites in each phases, while elites consumed more highly valued animal products such as llama, deer, and fish.

Chicha consumption: The creation of canals might have afforded emergent elite, who organized their construction, greater control over irrigated fields and the crops produced in those fields. If so, chicha production could have been monopolized and access to chicha would have decreased early in the Gallinazo phase. If chicha production was centralized and used to “pay” men for laboring on monumental architecture and canal construction, then gender differences in chicha consumption would have become observable later in the Gallinazo phase and during the Early Moche phase.

Craft specialization: If wealth finance was a source of economic power, then elites might have controlled trade and used craft goods as part of their strategy to increase their economic and ideological power. Additionally, individuals might have been pressured to increase production of particular items, resulting in the creation of distinct occupational groups in the period preceding the development of the Southern Moche state.

Coca use: If access to coca was restricted as a result of highland control of producing areas, the bioarchaeological data would then show a dramatic decrease in coca use early in the Gallinazo phase. Reclaiming access to these areas might have been an important tool used by the elite to gain non-elite compliance. If so, then the displacement or elimination or absorption of the highlanders would have allowed the elite to monopolize coca and restrict its use.

Armed with these hypotheses, the author examines the bioarchaeological literature for examples of how human skeletal remains can tell us about inequality in hierarchical societies. Studies of Southeastern Native Americans (Bridges 1989, 1991; Goodman and Armelagos 1988; Larsen and Ruff 1991, 1994; Ruff and Larsen 1990; Powell 1989, 1991), Native Californians (Lambert and Walker 1991), Maya (Cucina and Tiesler 2003; White et al. 1993; White and Schwarcz 1989), and Native South Americans (Hastorf 1990, 1991, 1993; Kellner 2002; Ubelaker and Katzenberg 1995) all provide comparisons. In some cases gender was the most important axis of social differentiation, in others social status differences were central. The specific differences researchers identified between gender and social status groups were not consistent, as would be expected of people with unique histories who lived at different times and in different environments. However, these differences commonly included varying access to particular foods, exposure to and risk of contracting infectious disease, and variations in work load.

The bioarchaeological research of the Moche valley generally focused on life during the period of Moche state supremacy (Donnan 1995; A. Nelson 1998; Verano 1996, 1997b, 1997c, 1997d). This leaves open many questions about how the Southern Moche state came to be. Taking inspiration from the comparative bioarchaeology literature, the author examines gender, social status, and age differences in diet and work in the Cero Oreja skeletal collection. Although archaeological excavations of Cerro Oreja have been limited, and the mortuary analysis is preliminary, research suggests that a substantial population inhabited Cerro Oreja during the Salinar and Gallinazo phases, and that the recovered individuals represent both high and low status groups (Carcelen personal comm 1999).

The author examined each of these individuals for dental caries, wear, abscesses, periodontal disease, antemortem tooth loss, and dental trauma. Additionally, the bones and teeth of several individuals were sampled for stable isotopic and dental calculus analyses. These data provide me with the evidence to reconstruct diet and non-dietary tooth use at Cerro Oreja. However, these data alone could not address my questions about the development of social inequality. They need to be combined with the age-at-death and sex estimations and social status assessments. To this end, the author created several specific hypotheses about agricultural intensification, chicha consumption, craft specialization, and coca use in the Moche valley, and identified what combinations of data and analyses could speak to each specific hypothesis.

The author finds that agricultural intensification, chicha consumption, and coca use were all important activities in the development of social inequality in the Moche valley. Furthermore, changes in these daily activities did not uniformly affect the lives of Cerro Orejaños. The author anticipated that differences in daily activities would have closely followed status lines, but the data do not support this assumption. Rather, she identifies the diets of women and children but not men, as increasingly reflecting the intensification of agriculture, regardless of status. Men had access to chicha or marine resources throughout the period of study. Coca use might have been more affected by status than diet, but the most dramatic patterns of change are not linked to status. The early decline in coca use appears to have been related to the immigration of highlanders into the coca producing regions of the Moche valley. Later, after these areas were abandoned by highland groups, coca was again available, but was used primarily by men.

The author links these gender differences to change in labor in the Moche valley, describing the transition from gender differences to gender inequality. A change similar to that which characterized the later Inka state. It is clear then, that the “payments” individuals received in exchange for their labor on projects that primarily benefitted the elite varied based on gender. These gender inequalities provided a model for the construction of dramatic differences in social status that characterized the Southern Moche state during its height.

APPENDIX A: STUDY INDIVIDUALS

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-001	839	1		Salinar	11.0	0.0	2.5	0.0	4 ?	?	?	high
P-002	842	1		Salinar	5.0	0.0	1.3	0.0	3	?	?	high
P-003	828	1		Salinar	6.0	0.0	2.0	0.0	3 ?	?	?	high
P-004	829	1		Pre-structural	0.0	6.0	0.0	3.0	2	?	?	low
P-005	823	1		Salinar	12.0	0.0	3.0	0.0	4 ?	?	?	low
P-006	840	1		Pre-structural	7.0	0.0	2.0	0.0	3	?	?	high
P-007	812	1		Salinar	43.0	0.0	5.0	0.0	10 F?	F	F	low
P-008	800	1		unknown	40.0	0.0	10.0	0.0	10 M?	M	M	low
P-009	863	1		Salinar	37.0	0.0	5.0	0.0	9 M	M	M	high
P-010	848	1		Pre-structural	4.0	0.0	1.0	0.0	2	?	?	high
P-011	871	1		Pre-structural	0.0	8.0	0.0	3.0	2	?	?	high
P-012	879	1		Pre-structural	16.0	0.0	3.0	0.0	5 F	F	F	low
P-013	862	1		Pre-structural	22.5	0.0	2.5	0.0	6 M?	M	M	high
P-014	813	1		unknown	21.0	0.0	3.0	0.0	6 M	M	M	low
P-015	861	1		Salinar	30.0	0.0	5.0	0.0	8 F	F	F	high
P-016	866	1		Salinar	3.0	0.0	1.0	0.0	2	?	?	high
P-017	872	1		Salinar	19.0	0.0	3.0	0.0	5 M	M	M	high
P-018	771	1		Pre-structural	25.0	0.0	5.0	0.0	7 F	F	F	low
P-019	849	1		Salinar	37.0	0.0	7.0	0.0	9 F	F	F	high
P-020	849	2		Salinar	6.0	0.0	2.5	0.0	3 ?	?	?	high
P-021	864	1		Salinar	17.0	0.0	2.0	0.0	5 M?	M	M	low
P-022	770	1		Structural	42.0	0.0	7.0	0.0	10 M	M	M	high
P-023	768	1		Structural	0.0	0.0	0.0	2.0	2	?	?	high
P-024	774	1		Structural	0.0	9.0	0.0	3.0	2	?	?	low
P-025	793	1		Pre-structural	19.0	0.0	2.0	0.0	5 F	F	F	high
P-026	743	1		Structural	32.0	0.0	5.0	0.0	8 M	M	M	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-027	782	1		Pre-structural	6.0	0.0	2.0	0.0	3	?	?	low
P-028	767	1		Pre-structural	2.0	0.0	0.0	8.0	2	?	?	high
P-029	788	1		Pre-structural	0.0	0.0	0.0	0.0	17 F?	F	F	high
P-030	660	1		Salinar	33.0	0.0	5.0	0.0	8 M	M	M	high
P-031	632	1		Pre-structural	27.0	0.0	3.0	0.0	7 M	M	M	high
P-032	758	1		unknown	19.0	0.0	2.0	0.0	5 M	M	M	high
P-033	445	1		Structural	36.0	0.0	5.0	0.0	9 M	M	M	high
P-034	532	1		unknown	35.0	0.0	5.0	0.0	9 F	F	F	low
P-035	532	2		unknown	3.0	0.0	1.0	0.0	2 ?	?	?	low
P-036	841	1		Salinar	0.0	9.0	0.0	3.0	2	?	?	high
P-037	198	1		Pre-structural	48.0	0.0	6.0	0.0	11 F	F	F	low
P-038	362	1		Salinar	32.0	0.0	5.0	0.0	8 M	M	M	high
P-039	307	1		Pre-structural	4.0	0.0	1.0	0.0	2	?	?	high
P-040	308	1		Pre-structural	39.0	0.0	5.0	0.0	9 F	F	F	low
P-041	674	1		Salinar	40.0	0.0	5.0	0.0	10 M	M	M	high
P-042	690	1		Pre-structural	13.0	0.0	2.0	0.0	4 M?	M	M	high
P-043	691	1		Pre-structural	12.0	0.0	2.5	0.0	4 ?	?	?	high
P-044	273	1		Structural	32.0	0.0	5.0	0.0	8 F	F	F	low
P-045	356	1		Structural	44.0	0.0	6.0	0.0	10 F	F	F	low
P-046	186	1		Structural	30.0	0.0	5.0	0.0	8 M	M	M	low
P-047	694	1		Structural	0.0	8.0	0.0	2.0	1	?	?	low
P-048	635	1		Structural	0.0	9.0	0.0	3.0	2	?	?	high
P-049	685	1		Structural	25.0	0.0	5.0	0.0	7 F	F	F	low
P-050	657	1		Salinar	5.0	0.0	1.3	0.0	3	?	?	high
P-051	854	1		Salinar	30.0	0.0	5.0	0.0	8 F	F	F	high
P-052	874	1		Salinar	0.0	6.0	0.0	3.0	2	?	?	high
P-053	907	1		unknown	35.0	0.0	5.0	0.0	9 F	F	F	unknown
P-054	144	1		unknown	18.0	0.0	3.0	0.0	5 F?	F	F	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-055	104	1		Pre-structural	0.0	9.0	0.0	0.0	3.0	2	?	low
P-056	131	1		Pre-structural	0.0	9.0	0.0	0.0	3.0	2	?	low
P-057	497	1		Pre-structural	47.0	0.0	7.0	0.0	0.0	11 F	F	low
P-058	573	1		Pre-structural	28.0	0.0	5.0	0.0	0.0	7 F	F	low
P-059	617	1		Pre-structural	0.0	0.0	0.0	0.0	0.0	15 F	F	high
P-060	639	1		Pre-structural	2.0	0.0	0.0	0.0	8.0	2	?	low
P-061	696	1		Pre-structural	42.0	0.0	7.0	0.0	0.0	10 M?	M	high
P-062	705	1		Pre-structural	1.3	0.0	0.0	0.0	6.0	2 ?	?	high
P-063	706	1		Pre-structural	1.0	0.0	0.0	0.0	4.0	2	?	high
P-064	723	1		Pre-structural	7.5	0.0	2.0	0.0	0.0	3	?	high
P-065	746	1		Pre-structural	17.0	0.0	3.0	0.0	0.0	5 M?	M	low
P-066	876	1		Pre-structural	4.0	0.0	1.0	0.0	0.0	2	?	low
P-067	892	1		Pre-structural	38.0	0.0	10.0	0.0	0.0	9 M?	M	high
P-068	695	1		Pre-structural	0.0	0.0	0.0	0.0	0.0	15 ?	?	low
P-069	92	1		Structural	0.0	6.0	0.0	0.0	3.0	2	?	low
P-070	95	1		Structural	15.0	0.0	3.0	0.0	0.0	5 ?	?	low
P-071	113	1		Structural	45.0	0.0	5.0	0.0	0.0	11 M	M	high
P-072	114	1 a		Structural	11.0	0.0	2.5	0.0	0.0	4	?	low
P-073	125	1		Structural	25.0	0.0	5.0	0.0	0.0	9 M	M	high
P-074	163	1		Structural	1.5	0.0	0.0	0.0	6.0	2	?	low
P-075	187	1		Structural	40.0	0.0	10.0	0.0	0.0	10 F	F	high
P-076	368	1		Structural	0.0	0.0	0.0	0.0	2.0	2 ?	?	low
P-077	584	1		Structural	4.0	0.0	1.0	0.0	0.0	2	?	low
P-078	588	1		Structural	0.0	8.0	0.0	0.0	3.0	2	?	low
P-079	640	1		Structural	35.0	0.0	10.0	0.0	0.0	9 F	F	low
P-080	645	1		Structural	0.0	5.0	0.0	0.0	3.0	2 ?	?	low
P-081	658	1		Structural	45.0	0.0	7.0	0.0	0.0	11 M	M	low
P-082	727	1		Structural	6.0	0.0	2.0	0.0	0.0	3	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-083	727	2		Structural	2.5	0.0	0.0	10.0	2	?	?	low
P-084	16	1		Post-structural	36.0	0.0	6.0	0.0	9 M	M		high
P-085	23	1		Post-structural	0.0	9.0	0.0	3.0	2 ?	?		low
P-086	26	1		Post-structural	0.0	10.0	0.0	3.0	2 ?	?		high
P-087	45	1		Post-structural	9.0	0.0	2.0	0.0	3 ?	?		low
P-088	57	1		Post-structural	45.0	0.0	7.0	0.0	11 F?	F		low
P-089	58	1		Post-structural	0.0	0.0	0.0	0.0	18 F?	F		low
P-090	60	1		Post-structural	27.0	0.0	7.0	0.0	7 M?	M		high
P-091	61	1		Post-structural	32.0	0.0	8.0	0.0	8 F	F		high
P-092	64	1		Post-structural	5.0	0.0	1.5	0.0	3 ?	?		low
P-093	65	1		Post-structural	27.0	0.0	7.0	0.0	7 F	F		low
P-094	66	1		Post-structural	18.0	0.0	3.0	0.0	5 F	F		low
P-095	69	1		Post-structural	3.5	0.0	1.0	0.0	2 ?	?		high
P-096	70	1		Post-structural	18.0	0.0	3.0	0.0	5 ?	?		high
P-097	73	1		Post-structural	4.0	0.0	1.0	0.0	2 ?	?		low
P-098	76	1		Post-structural	16.0	0.0	3.0	0.0	5 ?	?		low
P-099	99	1		Post-structural	1.0	0.0	0.0	4.0	2	?		low
P-100	100	1		Post-structural	1.5	0.0	0.0	6.0	2 ?	?		low
P-101	101	1		Post-structural	0.0	0.0	0.0	0.0	17 F?	F		high
P-102	103	1		Post-structural	40.0	0.0	6.0	0.0	10 F	F		low
P-103	117	1		Post-structural	4.5	0.0	1.2	0.0	2 ?	?		low
P-104	869	1		Cupisnique	31.0	0.0	5.0	0.0	8 F	F		high
P-105	143	1		Post-structural	3.0	0.0	1.0	0.0	2 ?	?		high
P-106	149	1		Post-structural	3.5	0.0	1.0	0.0	2 ?	?		low
P-107	151	1		Post-structural	27.0	0.0	7.0	0.0	7 F?	F		low
P-108	156	1		Post-structural	0.0	0.0	0.0	0.0	17 M	M		high
P-109	199	1 b		Post-structural	46.0	0.0	5.0	0.0	11 F	F		low
P-110	199	2 b		Post-structural	3.0	0.0	1.0	0.0	2 ?	?		low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-111	199	4	b	Post-structural	20.0	0.0	3.0	0.0	6 ?	?	?	low
P-112	199	5	b	Post-structural	0.0	0.0	0.0	0.0	15 ?	?	?	low
P-113	292	1		Post-structural	10.0	0.0	2.5	0.0	4	?	?	low
P-114	294	2		Post-structural	0.0	6.0	0.0	3.0	2 ?	?	?	high
P-115	301	1		Post-structural	27.0	0.0	7.0	0.0	7 F?	F	F	high
P-116	302	1		Post-structural	3.0	0.0	1.0	0.0	2	?	?	low
P-117	314	1		Post-structural	3.0	0.0	1.0	0.0	2	?	?	low
P-118	314	2		Post-structural	1.5	0.0	0.0	6.0	2 ?	?	?	low
P-120	325	1		unknown	9.0	0.0	3.0	0.0	3 ?	?	?	high
P-121	650	1		unknown	40.0	0.0	5.0	0.0	10 F	F	F	high
P-122	906	1		unknown	3.5	0.0	1.0	0.0	2 ?	?	?	unknown
P-123	794	1		Pre-structural	40.0	0.0	5.0	0.0	10 M	M	M	high
P-124	245	1		Structural	19.0	0.0	2.0	0.0	5 F	F	F	low
P-125	228	2		Post-structural	3.0	0.0	1.0	0.0	2 ?	?	?	low
P-126	653	2		Structural	7.0	0.0	2.0	0.0	3 ?	?	?	low
P-127	112	1		unknown	40.0	0.0	5.0	0.0	10 F	F	F	high
P-128	626	1		Structural	30.0	0.0	7.0	0.0	8 F	F	F	low
P-129	886	1		Salinar	4.5	0.0	1.2	0.0	2	?	?	high
P-130	739	1		Salinar	19.0	0.0	3.0	0.0	5 M	M	M	high
P-131	753	1		Salinar	2.5	0.0	0.0	10.0	2	?	?	low
P-132	890	1		Salinar	45.0	0.0	10.0	0.0	11 F	F	F	high
P-133	831	1		Salinar	0.0	1.0	0.0	2.0	2	?	?	low
P-134	847	1		Salinar	1.3	0.0	0.0	6.0	2	?	?	high
P-135	878	1		Cupisnique	10.0	0.0	2.5	0.0	4	?	?	high
P-136	748	1		Pre-structural	42.0	0.0	5.0	0.0	10 F	F	F	low
P-137	747	1		Pre-structural	12.0	0.0	3.0	0.0	4 ?	?	?	high
P-138	885	1		Salinar	5.0	0.0	1.3	0.0	3	?	?	high
P-139	484	1		Pre-structural	28.0	0.0	5.0	0.0	7 F	F	F	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-140	482	1		Pre-structural	33.0	0.0	0.0	10.0	0.0	8 M?	M	high
P-141	646	1 b		Cupisnique	1.0	0.0	0.0	0.0	4.0	2	?	high
P-142	873	1		Cupisnique	1.3	0.0	0.0	0.0	4.0	2 ?	?	high
P-143	651	1		Cupisnique	35.0	0.0	10.0	0.0	0.0	9 M	M	low
P-144	318	1		Pre-structural	32.0	0.0	8.0	0.0	0.0	8 M	M	high
P-145	320	1		Pre-structural	13.0	0.0	2.0	0.0	0.0	4 M?	M	low
P-146	459	1		Structural	0.0	8.0	0.0	0.0	0.5	1	?	low
P-147	108	1		unknown	39.0	0.0	5.0	0.0	0.0	9 M	M	low
P-148	556	1		Structural	37.0	0.0	5.0	0.0	0.0	9 F	F	low
P-149	500	1		Structural	1.0	0.0	0.0	0.0	3.0	2	?	low
P-150	761	1		Structural	28.0	0.0	10.0	0.0	0.0	7 M?	M	low
P-151	779	1		Structural	4.5	0.0	1.0	0.0	0.0	2 ?	?	low
P-152	779	2		Structural	5.0	0.0	1.0	0.0	0.0	3	?	low
P-153	757	1		Structural	1.0	0.0	0.0	0.0	4.0	2	?	low
P-154	808	1		Pre-structural	42.0	0.0	5.0	0.0	0.0	10 M	M	low
P-155	807	1		Pre-structural	42.0	0.0	5.0	0.0	0.0	10 F	F	high
P-156	668	1		Structural	20.0	0.0	3.0	0.0	0.0	6 F	F	low
P-157	667	1		Structural	32.0	0.0	10.0	0.0	0.0	8 F	F	low
P-158	692	1		unknown	38.0	0.0	5.0	0.0	0.0	9 M	M	low
P-159	789	1		Pre-structural	3.0	0.0	0.0	0.0	6.0	2 ?	?	high
P-160	789	2		Pre-structural	3.5	0.0	0.0	0.0	6.0	2	?	high
P-161	153	1		unknown	0.0	3.0	0.0	0.0	3.0	2	?	low
P-162	858	1		Salinar	17.0	0.0	3.0	0.0	0.0	5 F	F	high
P-163	859	1		Salinar	45.0	0.0	10.0	0.0	0.0	11 M	M	high
P-164	483	1		Structural	29.0	0.0	5.0	0.0	0.0	7 F	F	high
P-165	89	1		Structural	0.0	0.0	0.0	0.0	2.0	2	?	low
P-166	90	1		Structural	0.0	3.0	0.0	0.0	3.0	2	?	low
P-167	487	1		Structural	2.5	0.0	0.0	0.0	10.0	2	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-168	446	1		Structural	1.8	0.0	0.0	0.0	7.0	2	?	low
P-169	672	1		Pre-structural	0.0	0.0	0.0	0.0	0.0	17 M	M	high
P-170	128	1		Structural	1.5	0.0	0.0	0.0	6.0	2 ?	?	high
P-171	130	1		Structural	0.0	0.0	0.0	0.0	2.0	2 ?	?	low
P-172	683	1		Pre-structural	3.0	0.0	1.0	0.0	0.0	2	?	low
P-173	613	1		Pre-structural	35.0	0.0	7.0	0.0	0.0	9 M	M	low
P-174	133	1		Pre-structural	12.0	0.0	3.0	0.0	0.0	4 M?	M	low
P-175	121	1		Pre-structural	40.0	0.0	7.0	0.0	0.0	10 M?	M	high
P-176	199	3 b		Post-structural	5.0	0.0	2.0	0.0	0.0	3	?	low
P-177	803	1		Pre-structural	38.0	0.0	5.0	0.0	0.0	9 M?	M	high
P-178	423	1		Structural	21.0	0.0	3.0	0.0	0.0	6 F	F	low
P-180	676	1		Pre-structural	40.0	0.0	5.0	0.0	0.0	10 F	F	low
P-181	784	1		Structural	43.0	0.0	8.0	0.0	0.0	10 M	M	high
P-182	778	1		Structural	6.0	0.0	2.0	0.0	0.0	3	?	low
P-183	801	1		Structural	1.5	0.0	0.0	0.0	6.0	2	?	low
P-184	115	1		Post-structural	1.0	0.0	0.0	0.0	4.0	2	?	low
P-185	590	1		Structural	0.0	0.0	0.0	0.0	2.0	2	?	low
P-186	647	1		Structural	1.0	0.0	0.0	0.0	4.0	2	?	low
P-187	592	1		Structural	50.0	0.0	8.0	0.0	0.0	12 F	F	high
P-188	609	1		Structural	27.0	0.0	7.0	0.0	0.0	7 ?	?	low
P-189	702	1		Salinar	0.0	0.0	0.0	0.0	0.0	16 ?	?	high
P-190	850	1 B*		Salinar	18.0	0.0	3.0	0.0	0.0	5 ?	?	high
P-191	382	1		Salinar	1.0	0.0	0.0	0.0	4.0	2	?	high
P-192	894	1		Salinar	40.0	0.0	10.0	0.0	0.0	10 F??	?	low
P-193	351	1		Salinar	5.0	0.0	1.5	0.0	0.0	3	?	high
P-194	745	1		Salinar	35.0	0.0	8.0	0.0	0.0	9 F??	?	high
P-195	628	1		Salinar	40.0	0.0	8.0	0.0	0.0	10 M?	M	high
P-196	629	1		Salinar	0.0	6.0	0.0	0.0	3.0	2	?	high

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-197	670	1		Salinar	45.0	0.0	5.0	0.0	11 ?	?	?	high
P-198	832	1		Salinar	55.0	0.0	8.0	0.0	13 F??	?	?	high
P-199	851	1		Salinar	0.0	0.0	0.0	0.0	17 F??	?	?	high
P-200	680	1		Salinar	1.5	0.0	0.0	6.0	2	?	?	high
P-201	627	1		Salinar	2.0	0.0	0.0	8.0	2	?	?	high
P-202	856	1		Salinar	3.5	0.0	1.0	0.0	2	?	?	high
P-203	893	1		Salinar	35.0	0.0	7.0	0.0	9 ?	?	?	high
P-204	857	1		Salinar	5.0	0.0	1.5	0.0	3	?	?	high
P-205	889	1		Salinar	35.0	0.0	5.0	0.0	9 F?	F	?	high
P-206	901	1		Pre-structural	1.2	0.0	0.0	6.0	2 ?	?	?	low
P-207	455	1 a		unknown	2.5	0.0	0.0	8.0	2 ?	?	?	high
P-208	671	1		Salinar	3.0	0.0	1.0	0.0	2	?	?	high
P-209	852	1		unknown	12.0	0.0	2.5	0.0	4	?	?	low
P-210	809	1		Pre-structural	3.0	0.0	1.0	0.0	2	?	?	low
P-211	811	1		Pre-structural	40.0	0.0	7.0	0.0	10 M	M	?	high
P-212	855	1		Salinar	2.0	0.0	0.0	8.0	2	?	?	high
P-213	834	1		Salinar	3.5	0.0	1.0	0.0	2	?	?	high
P-214	836	1		Salinar	30.0	0.0	10.0	0.0	8 ?	?	?	high
P-215	836	2		Salinar	8.0	0.0	2.0	0.0	3	?	?	high
P-216	837	1		Salinar	37.0	0.0	3.0	0.0	9 F	F	?	high
P-217	897	1		Salinar	21.0	0.0	3.0	0.0	6 M	M	?	low
P-218	882	1		Salinar	3.0	0.0	1.0	0.0	2	?	?	high
P-219	883	1		Salinar	7.0	0.0	2.0	0.0	3	?	?	high
P-220	880	1		Cupisnique	56.0	0.0	10.0	0.0	13 F?	F	?	high
P-221	865	1		Cupisnique	0.0	0.0	0.0	0.0	17 F	F	?	high
P-222	177	1		Chimú	0.0	0.0	0.0	0.0	17 ?	?	?	low
P-223	6	1		unknown	8.0	0.0	2.0	0.0	3 ?	?	?	high
P-224	111	1		unknown	18.0	0.0	3.0	0.0	5 ?	?	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-225	141	1		unknown	5.5	0.0	2.0	0.0	3	?	?	low
P-226	158	1		Post-structural	0.0	0.0	0.0	0.0	16 F??	?	?	high
P-227	161	1 a		Post-structural	3.0	0.0	2.0	0.0	2	?	?	low
P-228	2	1		Post-structural	1.0	0.0	0.0	4.0	2	?	?	low
P-229	19	1		Post-structural	0.0	9.0	0.0	3.0	2 ?	?	?	low
P-230	193	1		Post-structural	0.0	0.0	0.0	0.0	17 ?	?	?	low
P-231	200	1		Post-structural	0.0	6.0	0.0	3.0	2	?	?	low
P-232	152	1		unknown	3.5	0.0	1.0	0.0	2 ?	?	?	high
P-233	209	1		unknown	0.0	9.0	0.0	3.0	2	?	?	high
P-234	315	1		unknown	0.0	9.0	0.0	3.0	2 ?	?	?	high
P-235	172	1		Pre-structural	22.0	0.0	3.0	0.0	6 F??	?	?	high
P-236	242	1		Pre-structural	0.0	0.0	0.0	0.0	17 F??	?	?	high
P-237	196	1		Pre-structural	35.0	0.0	7.0	0.0	9 M	M	?	high
P-238	428	1		Pre-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
P-239	350	1		Pre-structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
P-240	391	1		Pre-structural	3.0	0.0	1.0	0.0	2	?	?	high
P-241	392	1		Pre-structural	0.0	8.0	0.0	2.0	1	?	?	low
P-242	394	1		Pre-structural	4.5	0.0	1.5	0.0	2 ?	?	?	low
P-243	398	1		Pre-structural	0.0	6.0	0.0	3.0	2	?	?	low
P-244	399	1		Pre-structural	0.0	0.0	0.0	2.0	2	?	?	low
P-245	472	1		Pre-structural	4.0	0.0	1.0	0.0	2	?	?	low
P-246	406	1		Pre-structural	0.0	0.0	0.0	2.0	2	?	?	low
P-247	410	1		Pre-structural	4.5	0.0	1.0	0.0	2	?	?	high
P-248	411	1		Pre-structural	0.0	6.0	0.0	3.0	2	?	?	low
P-249	415	1		Pre-structural	6.0	0.0	2.0	0.0	3	?	?	high
P-250	655	1		Pre-structural	7.0	0.0	2.0	0.0	3	?	?	low
P-251	737	1		Pre-structural	7.0	0.0	2.0	0.0	3	?	?	low
P-252	614	1		Pre-structural	1.0	0.0	0.0	4.0	2 ?	?	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-253	620	3		Pre-structural	7.0	0.0	2.0	0.0	3	?	?	low
P-254	659	1		Pre-structural	24.0	0.0	3.0	0.0	6 M??	?	?	high
P-255	669	1		Pre-structural	1.5	0.0	0.0	6.0	2 ?	?	?	low
P-256	687	1		Pre-structural	14.0	0.0	2.0	0.0	4 ?	?	?	high
P-257	693	1		Pre-structural	0.0	6.0	0.0	3.0	2	?	?	high
P-258	697	1		Pre-structural	2.0	0.0	0.0	8.0	2	?	?	low
P-259	698	1		Pre-structural	3.5	0.0	1.0	0.0	2 ?	?	?	high
P-260	699	1		Pre-structural	0.0	6.0	0.0	3.0	2	?	?	high
P-261	703	1		Pre-structural	4.0	0.0	1.0	0.0	2	?	?	high
P-262	704	1		Pre-structural	4.0	0.0	2.0	0.0	2	?	?	low
P-263	780	1		Pre-structural	30.0	0.0	5.0	0.0	8 F??	?	?	high
P-264	755	1		Pre-structural	40.0	0.0	10.0	0.0	10 M?	M		high
P-265	899	1		Salinar	0.0	7.0	0.0	3.0	2	?	?	low
P-266	900	1		Pre-structural	1.0	0.0	0.0	6.0	2 ?	?	?	low
P-267	795	1		Pre-structural	32.0	0.0	10.0	0.0	8 F	F		high
P-268	796	1		Pre-structural	3.0	0.0	1.0	0.0	2	?	?	low
P-269	243	1		Pre-structural	3.5	0.0	1.0	0.0	2	?	?	low
P-270	339	1		Pre-structural	27.0	0.0	3.0	0.0	7 F	F		low
P-271	732	1		Pre-structural	2.0	0.0	0.0	8.0	2	?	?	low
P-272	751	1		Pre-structural	0.0	9.0	0.0	3.0	2	?	?	low
P-273	760	1		Pre-structural	3.5	0.0	1.0	0.0	2	?	?	high
P-274	814	1		Pre-structural	3.5	0.0	1.0	0.0	2 ?	?	?	low
P-275	843	1		Pre-structural	0.0	0.0	0.0	0.0	16 F??	?	?	low
P-276	844	1		Pre-structural	0.0	0.0	0.0	0.0	17 M?	M		high
P-277	79	1		Structural	5.5	0.0	1.5	0.0	3	?	?	high
P-278	118	1		Structural	0.0	0.0	0.0	0.0	16 M??	?	?	low
P-279	119	1 a		Structural	3.5	0.0	1.0	0.0	2 ?	?	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-280	261	1		Structural	0.0	6.0	0.0	0.0	3.0	2	?	high
P-281	290	1		Structural	27.0	0.0	5.0	0.0	0.0	7 F?	F	high
P-282	236	1		Structural	2.0	0.0	0.0	0.0	8.0	2	?	high
P-283	237	1		Structural	10.0	0.0	2.5	0.0	0.0	4	?	high
P-284	246	1		Structural	15.0	0.0	3.0	0.0	0.0	5	?	low
P-285	281	1		Structural	38.0	0.0	6.0	0.0	0.0	9 ?	?	low
P-286	381	1		Structural	35.0	0.0	5.0	0.0	0.0	9 F	F	low
P-287	521	1		Structural	2.0	0.0	0.0	0.0	8.0	2	?	low
P-288	319	1		Structural	1.0	0.0	0.0	0.0	3.0	2	?	low
P-289	365	1		Structural	0.0	0.0	0.0	0.0	0.0	16 F??	?	high
P-290	375	1		Structural	7.0	0.0	2.0	0.0	0.0	3	?	high
P-291	390	1		Structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	low
P-292	460	1		Structural	40.0	0.0	10.0	0.0	0.0	10 F?	F	low
P-293	422	1		Structural	40.0	0.0	7.0	0.0	0.0	10 ?	?	low
P-294	468	1		Structural	42.0	0.0	7.0	0.0	0.0	10 F	F	low
P-295	479	1		Structural	4.0	0.0	1.0	0.0	0.0	2	?	low
P-296	486	1		Structural	0.0	6.0	0.0	0.0	3.0	2	?	low
P-297	496	1		Structural	2.0	0.0	1.0	0.0	0.0	2	?	high
P-298	688	1		Structural	37.0	0.0	10.0	0.0	0.0	9 F?	F	high
P-299	506	1		Structural	3.5	0.0	1.5	0.0	0.0	2 ?	?	high
P-300	523	1		Structural	13.0	0.0	3.0	0.0	0.0	4 ?	?	high
P-301	524	1		Structural	6.0	0.0	2.0	0.0	0.0	3	?	high
P-302	505	1		Structural	2.0	0.0	0.0	0.0	8.0	2	?	high
P-303	509	1		Structural	3.0	0.0	1.0	0.0	0.0	2	?	low
P-304	511	1		Structural	4.5	0.0	1.0	0.0	0.0	2 ?	?	low
P-305	515	1		Structural	25.0	0.0	5.0	0.0	0.0	7 ?	?	low
P-306	529	1		Structural	0.0	0.0	0.0	0.0	2.0	2	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-307	533	1		Structural	5.5	0.0	1.5	0.0	3 ?	?	?	low
P-308	538	1		Structural	0.0	9.0	0.0	3.0	2 ?	?	?	low
P-309	553	1		Structural	0.0	6.0	0.0	3.0	2	?	?	low
P-310	554	1		Structural	32.0	0.0	5.0	0.0	8 ?	?	?	high
P-311	565	1		Structural	18.0	0.0	3.0	0.0	5 ?	?	?	low
P-312	582	1		Structural	1.5	0.0	0.0	6.0	2 ?	?	?	high
P-313	581	1		Structural	4.0	0.0	1.0	0.0	2 ?	?	?	high
P-314	654	1		Structural	42.0	0.0	5.0	0.0	10 F	F	F	high
P-315	642	1		Structural	1.5	0.0	0.0	6.0	2	?	?	low
P-316	644	1		Structural	0.0	6.0	0.0	3.0	2	?	?	low
P-317	666	1 a		Pre-structural	45.0	0.0	10.0	0.0	11 M?	M	M	high
P-318	457	1		Structural	15.0	0.0	3.0	0.0	5 ?	?	?	low
P-319	458	1		Structural	0.0	3.0	0.0	2.0	2	?	?	low
P-320	677	1		Structural	0.0	8.0	0.0	3.0	2 ?	?	?	low
P-321	724	1		Structural	45.0	0.0	10.0	0.0	11 F?	F	F	low
P-322	765	1		Structural	4.5	0.0	1.0	0.0	2	?	?	low
P-323	267	1		Pre-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
P-324	268	1		Pre-structural	0.0	0.0	0.0	0.0	16 M?	M	M	low
P-325	278	1		Pre-structural	0.0	9.0	0.0	3.0	2	?	?	low
P-326	409	1		Pre-structural	25.0	0.0	6.0	0.0	7 M	M	M	low
P-327	416	1		Pre-structural	6.0	0.0	2.0	0.0	3	?	?	low
P-328	417	1		Pre-structural	0.0	9.0	0.0	3.0	2	?	?	low
P-329	418	1		Pre-structural	0.0	3.0	0.0	3.0	2	?	?	low
P-330	419	1		Pre-structural	0.0	3.0	0.0	3.0	2	?	?	low
P-331	491	1		Pre-structural	0.0	0.0	0.0	2.0	2	?	?	low
P-332	520	1		Pre-structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
P-333	525	1		Pre-structural	0.0	4.0	0.0	3.0	2	?	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-334	544	1		Pre-structural	0.0	6.0	0.0	0.0	3.0	2	?	low
P-335	546	1		Pre-structural	0.0	9.0	0.0	0.0	3.0	2	?	low
P-336	558	1		Pre-structural	1.0	0.0	0.0	0.0	4.0	2 ?	?	high
P-337	560	1		Pre-structural	1.5	0.0	0.0	0.0	6.0	2	?	high
P-338	597	1		Pre-structural	16.5	0.0	2.0	2.0	0.0	5 ?	?	low
P-339	184	1		unknown	0.0	0.0	0.0	0.0	0.0	16 ?	?	high
P-340	305	1		unknown	0.0	10.0	0.0	0.0	4.0	2	?	low
P-341	405	1		unknown	33.0	0.0	5.0	5.0	0.0	8 M	M	high
P-342	420	1		unknown	0.0	6.0	0.0	0.0	3.0	2 ?	?	low
P-343	631	1		unknown	1.5	0.0	0.0	0.0	6.0	2	?	low
P-344	853	1		Salinar	2.5	0.0	1.0	1.0	0.0	2	?	high
P-345	137	1		Pre-structural	1.0	0.0	0.0	0.0	4.0	2 ?	?	high
P-346	223	1		Pre-structural	5.0	0.0	1.5	1.5	0.0	3 ?	?	high
P-347	240	1		Pre-structural	20.0	0.0	3.0	3.0	0.0	6 ?	?	low
P-348	249	1		Pre-structural	0.0	9.0	0.0	0.0	3.0	2 ?	?	low
P-349	306	1		Pre-structural	12.0	0.0	4.0	4.0	0.0	4 ?	?	low
P-350	326	1		Pre-structural	23.0	0.0	3.0	3.0	0.0	6 ?	?	high
P-351	327	1		Pre-structural	3.0	0.0	1.0	1.0	0.0	2	?	low
P-352	328	1		Pre-structural	4.0	0.0	1.0	1.0	0.0	2	?	low
P-353	329	1		Pre-structural	0.0	0.0	0.0	0.0	2.0	2	?	low
P-354	335	1		Pre-structural	0.0	0.0	0.0	0.0	2.0	2 ?	?	high
P-355	344	1		Pre-structural	17.0	0.0	3.0	3.0	0.0	5 M?	M	low
P-356	346	1		Pre-structural	4.0	0.0	1.0	1.0	0.0	2	?	low
P-357	352	1		Pre-structural	11.0	0.0	3.0	3.0	0.0	4	?	low
P-358	372	1		Pre-structural	1.5	0.0	0.0	0.0	6.0	2	?	low
P-359	374	1		Pre-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	low
P-360	377	1		Pre-structural	0.0	0.0	0.0	0.0	2.0	2	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-361	387	1		Pre-structural	0.0	6.0	0.0	3.0	2	?	?	high
P-362	388	1		Pre-structural	3.5	0.0	1.0	0.0	2 ?	?	?	high
P-363	402	1		Pre-structural	10.0	0.0	2.5	0.0	4 ?	?	?	low
P-364	403	1		Pre-structural	7.0	0.0	2.0	0.0	3 ?	?	?	high
P-365	421	1		Pre-structural	0.0	6.0	0.0	3.0	2 ?	?	?	high
P-366	485	1		Pre-structural	1.0	0.0	0.0	8.0	2	?	?	low
P-367	490	1		Pre-structural	20.0	0.0	3.0	0.0	6 F??	?	?	low
P-368	596	1		Pre-structural	0.0	6.0	0.0	3.0	2	?	?	low
P-369	641	2 b		Pre-structural	0.0	6.0	0.0	3.0	2 ?	?	?	high
P-370	656	1		Pre-structural	1.3	0.0	0.0	6.0	2	?	?	low
P-371	673	1		Pre-structural	0.0	0.0	0.0	2.0	2	?	?	low
P-372	682	1		Pre-structural	3.0	0.0	1.0	0.0	2	?	?	low
P-373	730	1		Pre-structural	5.0	0.0	1.5	0.0	3	?	?	high
P-374	731	1		Pre-structural	7.5	0.0	2.5	0.0	3 ?	?	?	high
P-375	738	1		Pre-structural	1.5	0.0	0.0	6.0	2	?	?	low
P-376	783	1		Pre-structural	0.0	0.0	0.0	2.0	2	?	?	high
P-377	786	1		Pre-structural	0.0	9.0	0.0	3.0	2	?	?	low
P-378	797	1		Pre-structural	1.5	0.0	0.0	6.0	2	?	?	high
P-379	806	1		Pre-structural	30.0	0.0	10.0	0.0	8 M?	M	?	high
P-380	75	1 a		Structural	0.0	3.0	0.0	3.0	2	?	?	high
P-381	190	1		Structural	3.0	0.0	1.0	0.0	2 ?	?	?	low
P-382	211	1		Structural	35.0	0.0	8.0	0.0	9 ?	?	?	high
P-383	232	1		Structural	24.0	0.0	5.0	0.0	6 M	M	?	low
P-384	250	1		Structural	0.0	3.0	0.0	3.0	2	?	?	low
P-385	274	1		Structural	0.0	0.0	0.0	0.0	17 ?	?	?	high
P-386	280	1		Structural	50.0	0.0	10.0	0.0	12 F??	?	?	high
P-387	286	1		Structural	0.0	6.0	0.0	3.0	2	?	?	high

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-388	304	1		Structural	0.0	0.0	0.0	0.0	0.0	16 M??	?	high
P-389	373	1		Structural	0.0	6.0	0.0	0.0	3.0	2	?	high
P-390	380	1		Structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	low
P-391	434	1		Structural	10.0	0.0	2.5	0.0	0.0	4 ?	?	low
P-392	440	1		Structural	0.0	6.0	0.0	0.0	3.0	2 ?	?	low
P-393	441	1		Structural	0.0	7.0	0.0	0.0	4.0	2	?	low
P-394	488	1		Structural	1.5	0.0	0.0	0.0	8.0	2 ?	?	low
P-395	502	1		Structural	3.0	0.0	1.0	0.0	0.0	2 ?	?	low
P-396	514	1		Structural	0.0	6.0	0.0	0.0	3.0	2	?	low
P-397	527	1		Structural	0.0	0.0	0.0	0.0	2.0	2	?	low
P-398	536	1		Structural	2.5	0.0	1.0	0.0	0.0	2	?	low
P-399	537	1		Structural	0.0	0.0	0.0	0.0	0.0	17 ?	?	low
P-400	539	1		Structural	1.0	0.0	0.0	0.0	6.0	2	?	low
P-401	548	1		Structural	3.0	0.0	1.0	0.0	0.0	2	?	high
P-402	551	1		Structural	0.0	6.0	0.0	0.0	3.0	2 ?	?	low
P-403	552	1		Structural	1.5	0.0	0.0	0.0	6.0	2	?	low
P-404	559	1		Structural	2.0	0.0	0.0	0.0	8.0	2	?	low
P-405	566	1		Structural	2.0	0.0	0.0	0.0	8.0	2 ?	?	high
P-406	572	1		Structural	0.0	6.0	0.0	0.0	3.0	2 ?	?	low
P-407	578	1		Structural	0.0	6.0	0.0	0.0	3.0	2	?	low
P-408	600	1		Structural	0.0	8.0	0.0	0.0	3.0	1	?	low
P-409	618	1		Structural	0.0	8.0	0.0	0.0	3.0	2	?	low
P-410	689	1		Structural	0.0	10.0	0.0	0.0	3.0	2 ?	?	low
P-411	725	1		Structural	0.0	6.0	0.0	0.0	3.0	2 ?	?	low
P-412	726	1		Structural	45.0	0.0	15.0	0.0	0.0	11 ?	?	low
P-413	802	1		Structural	0.0	0.0	0.0	0.0	2.0	2	?	low
P-414	44	1		Post-structural	30.0	0.0	7.0	0.0	0.0	8 ?	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-415	46	1		Post-structural	0.0	0.0	0.0	0.0	17 ?	?	?	high
P-416	47	1		Post-structural	0.0	6.0	0.0	0.0	2 ?	?	?	low
P-417	48	1		Post-structural	17.0	0.0	3.0	0.0	5 ?	?	?	low
P-418	50	1		Post-structural	0.0	0.0	0.0	0.0	17 ?	?	?	high
P-419	63	1		Post-structural	2.0	0.0	0.0	8.0	2	?	?	low
P-420	74	1		Post-structural	37.0	0.0	10.0	0.0	9 ?	?	?	high
P-421	82	1		Post-structural	25.0	0.0	7.0	0.0	7 M?	M	M	high
P-422	105	1		Post-structural	27.0	0.0	7.0	0.0	7 M?	M	M	low
P-423	167	1		Post-structural	0.0	3.0	0.0	3.0	2 ?	?	?	low
P-424	194	1		Post-structural	3.0	0.0	0.0	2.0	2	?	?	high
P-425	195	1		Post-structural	25.0	0.0	5.0	0.0	7 M	M	M	low
P-426	217	1		Post-structural	0.0	0.0	0.0	0.0	17 F	F	F	low
P-427	296	1		Post-structural	0.0	0.0	0.0	0.0	17 ?	?	?	low
P-428	300	1		Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
P-429	334	2		Post-structural	4.0	0.0	1.0	0.0	2 ?	?	?	low
P-430	637	1		Post-structural	43.0	0.0	7.0	0.0	10 ?	?	?	low
P-431	264	1		Moché	1.5	0.0	0.0	8.0	2 ?	?	?	high
P-432	1	1		Moché	12.0	0.0	2.5	0.0	4 ?	?	?	high
P-433	3	2		unknown	0.0	0.0	0.0	2.0	2	?	?	high
P-434	34	1		unknown	3.5	0.0	1.0	0.0	2	?	?	high
P-435	41	1		unknown	0.0	6.0	0.0	3.0	2	?	?	high
P-436	59	1		unknown	0.0	0.0	0.0	0.0	16 ?	?	?	low
P-437	215	1		unknown	47.0	0.0	12.0	0.0	11 M??	?	?	low
P-438	216	1		unknown	0.0	6.0	0.0	3.0	2	?	?	low
P-439	291	1		unknown	4.0	0.0	1.0	0.0	2	?	?	high
P-440	413	1		unknown	0.0	6.0	0.0	3.0	2	?	?	high
P-441	449	1		unknown	0.0	0.0	0.0	0.0	16 ?	?	?	high

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-442	777	1	a	unknown	4.0	0.0	2.0	0.0	2	?	?	low
P-443	822	1		Salinar	4.0	0.0	1.0	0.0	2	?	?	high
P-444	825	1		unknown	5.0	0.0	2.0	0.0	3	?	?	low
P-445	898	1		unknown	0.0	0.0	0.0	0.0	18 F?	F	F	low
P-446	905	1	a	Salinar	5.5	0.0	2.0	0.0	3	?	?	unknown
P-447	471	1		Salinar	20.0	0.0	3.0	0.0	6 F	F	F	high
P-448	826	1		Salinar	1.5	0.0	0.0	6.0	2	?	?	high
P-449	830	1		Salinar	0.0	9.0	0.0	3.0	2	?	?	high
P-450	838	1		Salinar	5.0	0.0	1.5	0.0	3	?	?	high
P-451	868	1		Salinar	45.0	0.0	10.0	0.0	11 F?	F	F	low
P-452	896	1		Salinar	2.5	0.0	0.0	8.0	2	?	?	high
P-453	903	1	a	Salinar	0.0	2.0	0.0	6.0	2	?	?	high
P-454	903	2		Salinar	35.0	0.0	5.0	0.0	9 F	F	F	high
P-455	109	1		Pre-structural	2.0	0.0	0.0	8.0	2	?	?	low
P-456	230	1		Pre-structural	0.0	9.0	0.0	3.0	2	?	?	high
P-457	256	1		Pre-structural	0.0	0.0	0.0	0.0	17 F??	?	?	high
P-458	309	1		Pre-structural	0.0	0.0	0.0	0.0	16	?	?	low
P-459	309	2		Pre-structural	7.0	0.0	2.0	0.0	3	?	?	low
P-460	310	1		Pre-structural	0.0	0.0	0.0	0.0	16	?	?	low
P-461	311	1		Pre-structural	0.0	0.0	0.0	0.0	16 F??	?	?	low
P-462	330	1		Pre-structural	17.0	0.0	3.0	0.0	5 M?	M	M	high
P-463	336	1		Pre-structural	0.0	0.0	0.0	0.0	18 F?	F	F	low
P-464	338	1		Pre-structural	11.0	0.0	3.0	0.0	4	?	?	low
P-465	343	1		Pre-structural	40.0	0.0	10.0	0.0	10 F?	F	F	high
P-466	371	1		Pre-structural	0.0	0.0	0.0	0.0	18	?	?	low
P-467	414	1		Pre-structural	18.0	0.0	3.0	0.0	5	?	?	low
P-468	431	1		Pre-structural	0.0	8.0	0.0	2.0	1	?	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-469	432	1		Pre-structural	0.0	9.0	0.0	0.0	3.0	2	?	high
P-470	433	1		Pre-structural	0.0	3.0	0.0	0.0	3.0	2	?	low
P-471	450	1		Pre-structural	4.0	0.0	1.0	0.0	0.0	2 ?	?	low
P-472	451	1		Pre-structural	6.0	0.0	2.0	0.0	0.0	3 ?	?	low
P-473	453	1		Pre-structural	6.0	0.0	2.0	0.0	0.0	3	?	low
P-474	454	1		Pre-structural	0.0	6.0	0.0	0.0	3.0	2	?	high
P-475	492	1		Pre-structural	8.0	0.0	2.0	0.0	0.0	3	?	low
P-476	498	1		Pre-structural	20.0	0.0	3.0	0.0	0.0	6 ?	?	low
P-477	504	1		Pre-structural	27.0	0.0	10.0	0.0	0.0	7 ?	?	high
P-478	518	1		Pre-structural	0.0	0.0	0.0	0.0	0.0	17 ?	?	low
P-479	641	1 a		Pre-structural	2.5	0.0	1.0	0.0	0.0	2	?	high
P-480	666	2 b		Pre-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	high
P-481	701	1		Pre-structural	2.0	0.0	0.0	0.0	8.0	2	?	high
P-482	769	1		Pre-structural	3.0	0.0	1.0	0.0	0.0	2 ?	?	low
P-483	776	1		Pre-structural	0.0	6.0	0.0	0.0	3.0	2 ?	?	low
P-484	787	1		Pre-structural	3.0	0.0	1.0	0.0	0.0	2	?	high
P-485	792	1		Pre-structural	45.0	0.0	10.0	0.0	0.0	11 F??	?	low
P-486	817	1		Pre-structural	0.0	0.0	0.0	0.0	0.0	17 M??	?	low
P-487	820	1		Pre-structural	0.0	6.0	0.0	0.0	3.0	2 ?	?	high
P-488	821	1		Pre-structural	9.0	0.0	3.0	0.0	0.0	3 ?	?	high
P-489	845	1		Pre-structural	12.0	0.0	2.5	0.0	0.0	4	?	low
P-490	81	1		Structural	4.5	0.0	1.5	0.0	0.0	2	?	low
P-491	95	2		Structural	4.5	0.0	1.0	0.0	0.0	2	?	low
P-492	106	1		Structural	0.0	9.0	0.0	0.0	3.0	2	?	low
P-494	205	1		Structural	0.0	0.0	0.0	0.0	2.0	2	?	low
P-495	208	1		Structural	0.0	9.0	0.0	0.0	9.0	2	?	low
P-496	252	1		Structural	3.0	0.0	3.0	0.0	0.0	2	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-497	257	1		Structural	15.0	0.0	5.0	0.0	5 ?	?	?	low
P-498	262	1		Structural	25.0	0.0	5.0	0.0	7 M??	?	?	low
P-499	378	1		Structural	0.0	0.0	0.0	0.0	16 F??	?	?	low
P-500	464	1		Structural	8.0	0.0	2.0	0.0	3 ?	?	?	low
P-501	501	1		Structural	0.0	0.0	0.0	0.0	18 F?	F	?	high
P-502	522	1		Structural	21.0	0.0	3.0	0.0	6 M??	?	?	high
P-503	576	1		Structural	0.0	0.0	0.0	0.0	17 M??	?	?	high
P-504	604	1		Structural	18.0	0.0	5.0	0.0	5 ?	?	?	low
P-505	662	1		Structural	0.0	3.0	0.0	3.0	2 ?	?	?	low
P-506	663	1		Structural	0.0	0.0	0.0	2.0	2	?	?	low
P-507	763	1		Structural	35.0	0.0	10.0	0.0	9 M	M	?	high
P-508	775	1		Structural	0.0	8.0	0.0	1.0	1	?	?	low
P-509	781	1		Structural	4.0	0.0	1.0	0.0	2	?	?	high
P-510	785	1		Structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
P-511	785	2		Structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
P-512	799	1		Structural	0.0	0.0	0.0	0.0	18 F??	?	?	high
P-513	8	1		Post-structural	0.0	0.0	0.0	2.0	2	?	?	low
P-514	10	1		Post-structural	3.0	0.0	1.0	0.0	2	?	?	low
P-515	13	1		Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
P-516	14	1		Post-structural	22.0	0.0	5.0	0.0	6 ?	?	?	low
P-517	15	1		Post-structural	0.0	0.0	0.0	0.0	17 F??	?	?	low
P-518	17	1		Post-structural	3.0	0.0	1.0	0.0	2 ?	?	?	low
P-519	18	1		Post-structural	0.0	6.0	0.0	3.0	2 ?	?	?	low
P-520	20	1		Post-structural	1.0	0.0	1.0	0.0	2	?	?	low
P-521	21	1		Post-structural	0.0	0.0	0.0	2.0	2	?	?	high
P-522	27	1		Post-structural	3.0	0.0	1.0	0.0	2 ?	?	?	low
P-523	28	2		Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	high

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
P-524	30	1		Post-structural	3.0	0.0	1.0	0.0	2 ?	?	?	high
P-525	31	1		Post-structural	0.0	0.0	0.0	0.0	17 M??	?	?	low
P-526	32	2		Post-structural	15.0	0.0	5.0	0.0	5 ?	?	?	low
P-527	42	1		Post-structural	3.5	0.0	1.0	0.0	2	?	?	low
P-528	43	1		Post-structural	0.0	9.0	0.0	3.0	2 ?	?	?	low
P-529	52	1		Post-structural	0.0	0.0	0.0	0.0	16 F??	?	?	low
P-530	77	1		Post-structural	0.0	9.0	0.0	3.0	2 ?	?	?	low
P-531	78	1		Post-structural	3.0	0.0	2.0	0.0	2 ?	?	?	low
P-532	96	1		Post-structural	5.0	0.0	1.5	0.0	3	?	?	low
P-533	160	1		Post-structural	3.0	0.0	1.0	0.0	2 ?	?	?	low
P-534	178	1		Post-structural	0.0	0.0	0.0	0.0	17 ?	?	?	low
P-535	199	7 a		Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
P-536	199	8 a		Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
P-537	199	9 a		Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
P-538	220	1		Post-structural	0.0	0.0	0.0	0.0	19 ?	?	?	low
P-539	145	1 a		Chimú	1.0	0.0	0.0	6.0	2	?	?	low
	1	2		Moche	2.0	0.0	2.0	0.0	2	?	?	high
	3	1		unknown	0.0	6.0	0.0	3.0	2 ?	?	?	high
	4	1		Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
	5	1		Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
	7	1		Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
	9	1		Post-structural	0.0	6.0	0.0	3.0	2 ?	?	?	low
	11	1		Post-structural	0.0	0.0	0.0	2.0	2 ?	?	?	low
	12	1		Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
	22	1		unknown	0.0	0.0	0.0	0.0	16 ?	?	?	low
	24	1		Post-structural	40.0	0.0	10.0	0.0	10 F?	F	F	high

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
24	2			Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
25	1			Post-structural	8.0	0.0	4.0	0.0	3 ?	?	?	low
28	1			Post-structural	27.0	0.0	7.0	0.0	7 M?	M		high
29	1			Post-structural	0.0	0.0	0.0	0.0	15 F?	F		high
32	1			Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
33	1			Post-structural	0.0	9.0	0.0	3.0	2 ?	?	?	low
38	1			Post-structural	29.0	0.0	5.0	0.0	7 M	M		low
40	1			Post-structural	0.0	1.0	0.0	3.0	2 ?	?	?	low
49	1			Post-structural	18.0	0.0	3.0	0.0	5 ?	?	?	low
49	2			Post-structural	0.0	0.0	0.0	0.0	15 ?	?	?	low
53	1			Post-structural	32.0	0.0	10.0	0.0	8 ?	?	?	low
54	1			Post-structural	44.0	0.0	14.0	0.0	10 ?	?	?	high
55	1			unknown	38.0	0.0	8.0	0.0	9 F?	F		low
67	1			Post-structural	9.0	0.0	3.0	0.0	3 ?	?	?	low
67	2			Post-structural	19.0	0.0	3.0	0.0	5 F	F		low
68	1			Post-structural	13.0	0.0	4.0	0.0	4 ?	?	?	low
75	1 b			Structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
83	1			Post-structural	10.0	0.0	4.0	0.0	4 ?	?	?	low
84	1			Structural	0.0	6.0	0.0	0.5	1 ?	?	?	high
91	1			Structural	0.0	3.0	0.0	3.0	2 ?	?	?	low
94	1			unknown	9.5	0.0	4.0	0.0	3 ?	?	?	high
119	1 b			Structural	0.0	0.0	0.0	0.0	16 M?	M		low
132	1			Pre-structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
133	2			Pre-structural	0.0	6.0	0.0	3.0	2 ?	?	?	low
136	1			Structural	0.0	0.0	0.0	0.0	17 M?	M		high
136	2			Structural	47.0	0.0	10.0	0.0	11 ?	?	?	high

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
147	1			Post-structural	0.0	0.0	0.0	0.0	16 F??	?	?	low
148	1			Post-structural	0.0	6.0	0.0	0.0	2 ?	?	?	low
150	1			Post-structural	0.0	0.0	0.0	0.0	2 ?	?	?	low
154	1			Post-structural	1.0	0.0	0.0	0.0	2 ?	?	?	high
155	1			Post-structural	25.0	0.0	5.0	0.0	7 F	F	F	low
157	1			unknown	0.0	0.0	0.0	0.0	2 ?	?	?	low
161	1 b			Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
162	1			Structural	3.0	0.0	3.0	0.0	2 ?	?	?	low
164	1			Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
165	1			Structural	2.0	0.0	2.0	0.0	2 ?	?	?	low
166	1			Pre-structural	4.5	0.0	2.0	0.0	2 ?	?	?	high
168	1			Post-structural	30.0	0.0	5.0	0.0	8 F	F	F	low
169	1			Post-structural	20.0	0.0	3.0	0.0	6 F?	F	F	low
170	1			Pre-structural	17.0	0.0	2.0	0.0	5 F?	F	F	low
171	1			Pre-structural	35.0	0.0	5.0	0.0	9 M	M	M	low
173	1			Pre-structural	20.0	0.0	3.0	0.0	6 F?	F	F	low
175	1			Post-structural	30.0	0.0	10.0	0.0	8 ?	?	?	low
179	1			Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
180	1			Post-structural	0.0	0.0	0.0	0.0	17 M	M	M	low
181	1			Post-structural	21.0	0.0	3.0	0.0	6 ?	?	?	low
188	1			Structural	0.0	0.0	0.0	0.0	16 F??	?	?	low
189	1			Structural	0.0	0.0	0.0	0.0	18 ?	?	?	low
191	1			Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
193	2			Post-structural	20.0	0.0	3.0	0.0	6 ?	?	?	low
193	3			Post-structural	1.5	0.0	1.0	0.0	2 ?	?	?	low
193	4			Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
193	5			Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
199	6 a			Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
201	1			Post-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
202	1			Post-structural	30.0	0.0	10.0	0.0	8 ?	?	?	low
215	1 a			unknown	0.0	0.0	0.0	0.0	16 ?	?	?	low
218	1			Post-structural	9.5	0.0	4.0	0.0	3 ?	?	?	low
224	1			Pre-structural	0.0	0.0	0.0	2.0	2 ?	?	?	low
226	1			Pre-structural	35.0	0.0	10.0	0.0	9 ?	?	?	low
227	1			Post-structural	0.0	0.0	0.0	0.0	15 ?	?	?	low
228	1			Post-structural	39.0	0.0	5.0	0.0	9 F	F	?	low
229	1			Structural	1.0	0.0	1.0	0.0	2 ?	?	?	high
231	1			Structural	3.0	0.0	3.0	0.0	2 ?	?	?	high
234	1			Post-structural	3.0	0.0	3.0	0.0	2 ?	?	?	low
235	1			Post-structural	0.0	0.0	0.0	2.0	2 ?	?	?	low
238	1			Structural	0.0	0.0	0.0	0.0	17 ?	?	?	high
244	1			unknown	0.0	0.0	0.0	0.0	17 ?	?	?	low
247	1			Structural	30.0	0.0	10.0	0.0	8 ?	?	?	low
253	1			unknown	0.0	0.0	0.0	0.0	16 ?	?	?	high
260	1			Pre-structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
263	1 b			Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
263	1 a			Structural	16.0	0.0	3.0	0.0	5 M?	M	?	low
266	1			Structural	30.0	0.0	10.0	0.0	8 ?	?	?	high
270	1			Pre-structural	2.5	0.0	0.0	8.0	2 ?	?	?	low
279	1			Pre-structural	0.0	3.0	0.0	3.0	2 ?	?	?	high
282	1			Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
283	1			Structural	0.0	0.0	0.0	0.0	17 ?	?	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
285	1		Structural	0.0	7.0	0.0	0.0	2.0	1 ?	?	?	low
288	1		Structural	0.0	0.0	0.0	0.0	0.0	17 ?	?	?	low
289	1		Structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	low
293	1		Post-structural	0.0	0.0	0.0	0.0	0.0	15 F?	F	F	low
294	1		Post-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	high
295	1		Post-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	low
295	2		Post-structural	9.5	0.0	4.0	0.0	0.0	3 ?	?	?	low
297	1		Post-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	high
298	1		Post-structural	0.0	0.0	0.0	0.0	0.0	17 ?	?	?	high
299	1		Post-structural	0.0	0.0	0.0	0.0	0.0	17 M??	?	?	high
306	2		Pre-structural	0.0	0.0	0.0	0.0	0.0	17 F?	F	F	low
310	2		Pre-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	low
310	3		Pre-structural	7.0	0.0	3.0	0.0	0.0	3 ?	?	?	low
310	4		Pre-structural	1.5	0.0	2.0	0.0	0.0	2 ?	?	?	low
313	1		Post-structural	5.0	0.0	2.0	0.0	0.0	3 ?	?	?	low
323	1		Moche	0.0	5.0	0.0	0.0	7.0	2 ?	?	?	high
324	1		Moche	0.0	6.0	0.0	0.0	3.0	2 ?	?	?	high
332	1		Post-structural	3.0	0.0	1.5	0.0	0.0	2 ?	?	?	high
334	1		Post-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	low
336	2		Pre-structural	5.0	0.0	2.0	0.0	0.0	3 ?	?	?	low
337	1		Pre-structural	28.0	0.0	3.0	0.0	0.0	7 F	F	F	low
340	1		Structural	0.0	0.0	0.0	0.0	0.0	17 F??	?	?	high
341	1		Structural	0.0	9.0	0.0	0.0	3.0	2 ?	?	?	low
342	1		Pre-structural	0.0	0.0	0.0	0.0	0.0	17 ?	?	?	low
345	1		Pre-structural	25.0	0.0	5.0	0.0	0.0	7 ?	?	?	low
347	1		Post-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	high

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
348	1			Pre-structural	37.0	0.0	10.0	0.0	9 M??	?	?	low
357	1			Pre-structural	0.0	9.0	0.0	3.0	2 ?	?	?	low
364	1			Structural	0.0	0.0	0.0	0.0	17 ?	?	?	low
366	1			Structural	0.0	0.0	0.0	0.0	17 F	F	?	high
367	1			Post-structural	25.0	0.0	5.0	0.0	7 ?	?	?	low
369	1			unknown	0.0	0.0	0.0	0.0	16 ?	?	?	low
376	1			Structural	9.0	0.0	2.5	0.0	3 ?	?	?	low
379	1			Pre-structural	2.5	0.0	1.5	0.0	2 ?	?	?	low
383	1			Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
384	1			Structural	5.5	0.0	2.0	0.0	3 ?	?	?	low
389	1			Salinar	0.0	0.0	0.0	0.0	15 ?	?	?	high
393	1			Pre-structural	2.5	0.0	0.0	8.0	2 ?	?	?	low
395	1			Pre-structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
397	1			Pre-structural	0.0	0.0	0.0	0.0	15 ?	?	?	low
401	1			Pre-structural	0.0	6.0	0.0	3.0	2 ?	?	?	low
407	1			Structural	0.0	0.0	0.0	0.0	18 ?	?	?	low
408	1			Pre-structural	1.0	0.0	0.0	6.0	2 ?	?	?	low
427	1			Structural	0.0	0.0	0.0	0.0	16 M??	?	?	low
429	1			Structural	1.5	0.0	0.0	8.0	2 ?	?	?	high
430	1			Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
435	1			Structural	0.0	6.0	0.0	3.0	2 ?	?	?	high
436	1			Structural	3.0	0.0	1.0	0.0	2 ?	?	?	low
452	1			Pre-structural	0.0	0.0	0.0	0.0	17 ?	?	?	low
459	2			Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
465	1			Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
474	1			Structural	17.0	0.0	2.0	0.0	5 ?	?	?	low

SPEC	BURIAL	IND OTHER PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
475	1	Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
476	1	Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
477	1	Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
493	1	Pre-structural	0.0	8.0	0.0	2.0	1 ?	?	?	low
494	1	Pre-structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
495	1	Pre-structural	2.0	0.0	1.5	0.0	2 ?	?	?	low
499	1	Pre-structural	0.0	0.0	0.0	0.0	17 ?	?	?	high
503	1 b	Structural	0.0	0.0	0.0	0.0	16 ?	?	?	low
510	1	Structural	0.0	0.0	0.0	0.0	18 F?	F	?	high
512	1	Structural	30.0	0.0	5.0	0.0	8 M?	M	?	high
516	1 b	Pre-structural	3.0	0.0	2.0	0.0	2 ?	?	?	high
520	2	Pre-structural	0.0	6.0	0.0	3.0	2 ?	?	?	high
545	1	Pre-structural	1.5	0.0	1.0	0.0	2 ?	?	?	low
557	1	Structural	2.0	0.0	2.0	0.0	2 ?	?	?	low
562	1	Pre-structural	0.0	0.0	0.0	2.0	2 ?	?	?	low
567	1	Pre-structural	5.0	0.0	2.0	0.0	3 ?	?	?	low
569	1	Pre-structural	37.0	0.0	10.0	0.0	9 ?	?	?	low
571	1	Structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
579	1	Structural	0.0	0.0	0.0	0.0	16 ?	?	?	high
579	2	Structural	15.0	0.0	5.0	0.0	5 ?	?	?	high
580	1	Structural	0.0	6.0	0.0	2.0	1 ?	?	?	low
585	1 b	Pre-structural	5.0	0.0	2.0	0.0	3 ?	?	?	high
591	1	Structural	1.0	0.0	0.0	6.0	2 ?	?	?	high
599	1	Structural	0.0	8.0	0.0	3.0	1 ?	?	?	low
608	1	Pre-structural	0.0	3.0	0.0	3.0	2 ?	?	?	low
615	1	Pre-structural	2.0	0.0	2.0	0.0	2 ?	?	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
619	1		Structural	32.0	0.0	7.0	0.0	0.0	8 ?	?	?	low
620	1		Pre-structural	47.0	0.0	10.0	0.0	0.0	11 M??	?	?	low
620	2		Pre-structural	0.0	0.0	0.0	0.0	0.0	15 ?	?	?	low
621	1		Pre-structural	20.0	0.0	5.0	0.0	0.0	6 ?	?	?	low
623	2		Pre-structural	10.0	0.0	10.0	0.0	0.0	4 ?	?	?	low
624	1		Structural	0.0	0.0	0.0	2.0	2.0	2 ?	?	?	low
633	1		Structural	0.0	0.0	0.0	0.0	0.0	15 ?	?	?	low
634	1		Structural	35.0	0.0	7.0	0.0	0.0	9 M?	M	?	high
636	1		Pre-structural	31.0	0.0	6.0	0.0	0.0	8 F??	?	?	low
646	1 a		Cupisnique	0.0	6.0	0.0	3.0	3.0	2 ?	?	?	high
648	1		Structural	1.0	0.0	1.0	0.0	0.0	2 ?	?	?	low
652	1		Pre-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	low
653	1		Post-structural	33.0	0.0	5.0	0.0	0.0	8 M	M	?	low
653	3		Structural	16.0	0.0	2.0	0.0	0.0	5 ?	?	?	low
674	2		Salinar	1.5	0.0	1.5	0.0	0.0	2 ?	?	?	high
679	1		Pre-structural	0.0	9.0	0.0	3.0	3.0	2 ?	?	?	low
700	1		Pre-structural	0.0	6.0	0.0	6.0	6.0	2 ?	?	?	high
704	2		Pre-structural	0.0	6.0	0.0	3.0	3.0	2 ?	?	?	low
733	1		Pre-structural	38.0	0.0	5.0	0.0	0.0	9 M	M	?	low
734	1		Pre-structural	0.0	6.0	0.0	3.0	3.0	2 ?	?	?	high
740	1		Pre-structural	1.5	0.0	1.0	0.0	0.0	2 ?	?	?	low
748	2		Pre-structural	0.0	6.0	0.0	3.0	3.0	2 ?	?	?	low
766	1		Pre-structural	0.0	0.0	0.0	2.0	2.0	2 ?	?	?	high
777	1		unknown	2.0	0.0	2.0	0.0	0.0	2 ?	?	?	low
789	3		Pre-structural	0.0	8.0	0.0	2.0	2.0	1 ?	?	?	high
790	1		Pre-structural	3.0	0.0	2.0	0.0	0.0	2 ?	?	?	low

SPEC	BURIAL	IND	OTHER	PHASE	AGEYR	AGEMON	ERRORYR	ERRORMON	AGECAT	SEX	SEXCAT	STATUS
791	1		Pre-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	low
791	2		Pre-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	low
810	1		Pre-structural	0.0	3.0	0.0	0.0	3.0	2 ?	?	?	high
816	1		Pre-structural	18.0	0.0	0.0	2.0	0.0	5 ?	?	?	low
824	1		unknown	0.0	0.0	0.0	0.0	2.0	2 ?	?	?	low
836	3		Salinar	10.0	0.0	4.0	0.0	0.0	4 ?	?	?	high
848	2		Pre-structural	0.0	0.0	0.0	0.0	0.0	15 ?	?	?	high
850	1		Salinar	0.0	0.0	0.0	0.0	0.0	15 ?	?	?	high
850	2 B*		Salinar	40.0	0.0	10.0	0.0	0.0	10 ?	?	?	high
852	2		unknown	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	low
875	1		Pre-structural	0.0	7.0	0.0	0.0	2.0	1 ?	?	?	low
877	1		Salinar	37.0	0.0	5.0	0.0	0.0	9 M?	M	?	high
881	1		unknown	22.0	0.0	3.0	0.0	0.0	6 ?	?	?	low
884	1		Pre-structural	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	high
888	1		Salinar	32.0	0.0	5.0	0.0	0.0	8 M?	M	?	low
892	2		Pre-structural	18.0	0.0	4.0	0.0	0.0	5 ?	?	?	high
902	1		Salinar	0.0	0.0	0.0	0.0	0.0	16 F??	?	?	low
904	1		Salinar	0.0	0.0	0.0	0.0	0.0	16 ?	?	?	unknown
905	1 b		Salinar	0.0	0.0	0.0	0.0	0.0	17 F??	?	?	unknown

Individuals identified by SPEC (specimen number) had observable dental remains and are included in the following appendices. Individuals not identified by SPEC were only included in the demographic portion of this study.

APPENDIX B: DENTAL PATHOLOGICAL CONDITIONS

888 and N/A = not applicable, 999 and N/OB = not observable

O = occlusal, B = buccal, M = mesial, D = distal, L = lingual, LAB = labial, INTER = interproximal

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCCESS	ABSTATE	CALCULUS
P-001 LFMANC	ERUPT	0	N/OB	999		NO
P-001 LFMANDM2	ERUPT	0	N/OB	0		NO
P-001 LFMANI1	ERUPT	0	N/OB	0		NO
P-001 LFMANI2	ERUPT	0	N/OB	0		NO
P-001 LFMANM1	ERUPT	1	N/OB	0		NO
P-001 LFMANM2	ERUPT	0	NO	0		NO
P-001 LFMAXDC	ERUPT	1	N/OB	999		NO
P-001 LFMAXI1	ERUPT	999	N/OB	999		NO
P-001 LFMAXI2	ERUPT	0	NO	0		NO
P-001 LFMAXM1	ERUPT	0	NO	0		NO
P-001 LFMAXM2	ERUPT	0	NO	0		NO
P-001 RTMANC	ERUPT	0	N/OB	999		NO
P-001 RTMANDM2	ERUPT	999	N/OB	0		N/OB
P-001 RTMANI1	ERUPT	0	N/OB	999		NO
P-001 RTMANI2	ERUPT	0	N/OB	999		NO
P-001 RTMANM1	ERUPT	0	NO	0		NO
P-001 RTMANM2	ERUPT	0	NO	0		NO
P-001 RTMANP1	ERUPT	0	NO	999		NO
P-001 RTMAXDC	ERUPT	0	N/OB	999		NO
P-001 RTMAXDM1	ERUPT	1	N/OB	999		NO
P-001 RTMAXI1	ERUPT	0	NO	0		NO
P-001 RTMAXI2	ERUPT	0	N/OB	999		NO
P-001 RTMAXM1	ERUPT	0	NO	0		NO
P-001 RTMAXM2	ERUPT	0	NO	0		NO
P-001 RTMAXSUP	ERUPT	0	N/A	999		NO
P-002 LFMANDM1	ERUPT	999	N/OB	999		N/OB
P-002 LFMANDM2	ERUPT	0	N/OB	0		YES
P-002 LFMANM1	ERUPT	0	N/OB	0		NO
P-002 RTMANDC	ERUPT	0	N/OB	999		YES
P-002 RTMANDI1	ERUPT	0	N/OB	999		NO
P-002 RTMANDI2	ERUPT	0	N/OB	999		NO
P-002 RTMANDM1	ERUPT	0	N/OB	999		NO
P-002 RTMANDM2	ERUPT	1	N/OB	999		NO
P-002 RTMANM1	ERUPT	0	N/OB	888		NO
P-002 RTMAXDC	ERUPT	0	N/OB	999		NO
P-002 RTMAXDI2	ERUPT	0	N/OB	999		YES
P-002 RTMAXDM1	ERUPT	1	N/OB	999		NO

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-002 RTMAXM1	ERUPT	0 N/OB		999		NO
P-003 LFMANDC	ERUPT	999 N/OB		999		N/OB
P-003 LFMANDI2	ERUPT	0 N/OB		999		NO
P-003 LFMANDM1	ERUPT	0 N/OB		999		N/OB
P-003 LFMANDM2	ERUPT	999 N/OB		0		N/OB
P-003 LFMANM1	ERUPT	1 NO		0		NO
P-003 LFMAXDC	ERUPT	999 N/OB		999		N/OB
P-003 LFMAXDI1	ERUPT	0 N/OB		999		NO
P-003 LFMAXDI2	ERUPT	0 N/OB		999		NO
P-003 RTMANDI2	ERUPT	0 N/OB		999		NO
P-003 RTMAXDC	ERUPT	1 N/OB		999		NO
P-003 RTMAXDM1	ERUPT	0 N/OB		999		NO
P-003 RTMAXDM1	ERUPT	0 NO		0		NO
P-003 RTMAXDM2	ERUPT	0 N/OB		999		NO
P-003 RTMAXDM2	ERUPT	0 NO		0		NO
P-003 RTMAXM1	ERUPT	0 NO		0		NO
P-005 LFMANC	MISS	999 N/OB		0		N/OB
P-005 LFMANI1	ERUPT	0 N/OB		0		YES
P-005 LFMANI2	MISS	999 N/OB		0		N/OB
P-005 LFMANM1	ERUPT	0 NO		0		YES
P-005 LFMANM2	ERUPT	1 NO		0		NO
P-005 LFMANP1	ERUPT	0 NO		0		YES
P-005 LFMANP2	ERUPT	0 NO		0		YES
P-005 LFMAXC	ERUPT	0 N/OB		0		YES
P-005 LFMAXI1	MISS	999 NO		0		N/OB
P-005 LFMAXI2	MISS	999 NO		0		N/OB
P-005 LFMAXM1	ERUPT	0 N/OB		999		YES
P-005 LFMAXM2	ERUPT	0 N/OB		999		NO
P-005 LFMAXP1	MISS	999 NO		0		N/OB
P-005 LFMAXP2	ERUPT	0 NO		0		NO
P-005 RTMANC	ERUPT	0 N/OB		0		NO
P-005 RTMANI1	ERUPT	0 N/OB		0		YES
P-005 RTMANI2	ERUPT	0 N/OB		0		YES
P-005 RTMANM1	ERUPT	0 NO		0		YES
P-005 RTMANM2	ERUPT	1 NO		0		NO
P-005 RTMANP1	ERUPT	0 NO		0		YES
P-005 RTMANP2	ERUPT	0 NO		0		NO
P-005 RTMAXM2	ERUPT	0 N/OB		999		NO
P-006 LFMANDC	ERUPT	0 N/OB		888		NO
P-006 LFMANDM1	ERUPT	0 N/OB		888		NO
P-006 LFMANDM2	ERUPT	1 N/OB		0		NO
P-006 LFMANI1	ERUPT	0 N/OB		999		YES

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-006 LFMANI2	ERUPT	0 N/OB		999		NO
P-006 LFMANM1	ERUPT	1 NO		0		NO
P-006 LFMAXDC	ERUPT	0 N/OB		0		NO
P-006 LFMAXDI2	MISS	999 N/OB		0		N/OB
P-006 LFMAXDM1	ERUPT	0 NO		0		N/OB
P-006 LFMAXDM2	ERUPT	2 NO		0		NO
P-006 LFMAXM1	ERUPT	0 N/OB		999		NO
P-006 RTMANDM1	ERUPT	999 N/OB		888		N/OB
P-006 RTMANDM2	ERUPT	1 N/OB		0		YES
P-006 RTMANI1	ERUPT	0 N/OB		999		YES
P-006 RTMANI2	ERUPT	0 N/OB		999		YES
P-006 RTMANM1	ERUPT	1 NO		0		YES
P-006 RTMAXDC	ERUPT	0 N/OB		999		NO
P-006 RTMAXDM1	ERUPT	0 N/OB		999		N/OB
P-006 RTMAXDM2	ERUPT	1 N/OB		999		YES
P-006 RTMAXM1	ERUPT	0 N/OB		999		YES
P-008 LFMANM1	LOST	888 N/A		888		N/A
P-008 LFMANM2	LOST	888 N/A		888		N/A
P-008 LFMANM3	MISS	999 N/OB		0		N/OB
P-008 RTMANM1	MISS	999 N/OB		999		N/OB
P-008 RTMANM2	LOST	888 N/A		888		N/A
P-008 RTMANM3	MISS	999 YES		0		N/OB
P-009 LFMANC	ERUPT	0 N/OB		0		YES
P-009 LFMANI1	ERUPT	0 YES		0		A LOT
P-009 LFMANI2	ERUPT	0 N/OB		0		YES
P-009 LFMANM1	ERUPT	0 NO		0		YES
P-009 LFMANM2	ERUPT	1 YES		0		N/OB
P-009 LFMANM3	ERUPT	2 YES		0		YES
P-009 LFMANP1	ERUPT	0 N/OB		0		YES
P-009 LFMANP2	ERUPT	0 NO		0		YES
P-009 LFMAXC	MISS	999 N/OB		999		N/OB
P-009 LFMAXI1	ERUPT	0 N/OB		0		YES
P-009 LFMAXI2	ERUPT	0 N/OB		999		YES
P-009 LFMAXM1	ERUPT	0 NO		0		YES
P-009 LFMAXM2	ERUPT	0 NO		0		YES
P-009 LFMAXM3	ERUPT	2 NO		0		YES
P-009 LFMAXP1	ERUPT	0 NO		0		YES
P-009 LFMAXP2	ERUPT	0 NO		0		YES
P-009 RTMANC	ERUPT	0 NO		0		YES
P-009 RTMANI1	ERUPT	0 YES		0		YES
P-009 RTMANI2	ERUPT	0 YES		0		A LOT
P-009 RTMANM1	ERUPT	1 NO		0		YES

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCCESS	ABSTATE	CALCULUS
P-009 RTMANM2	LOST	888	N/A	888		N/A
P-009 RTMANM3	ERUPT	1	NO	0		YES
P-009 RTMANP1	ERUPT	0	NO	0		NO
P-009 RTMANP2	ERUPT	0	NO	0		YES
P-009 RTMAXC	ERUPT	0	N/OB	0		YES
P-009 RTMAXI1	ERUPT	0	N/OB	0		YES
P-009 RTMAXI2	ERUPT	0	N/OB	0		YES
P-009 RTMAXM1	ERUPT	0	YES	0		YES
P-009 RTMAXM2	ERUPT	0	NO	0		YES
P-009 RTMAXM3	ERUPT	0	NO	999		YES
P-009 RTMAXP1	ERUPT	0	NO	0		YES
P-009 RTMAXP2	ERUPT	0	YES	0		YES
P-010 LFMANDM2	ERUPT	2	N/OB	0		NO
P-010 LFMAXDI2	ERUPT	0	N/OB	999		NO
P-010 RTMANDC	ERUPT	1	N/OB	0		NO
P-010 RTMANDM1	ERUPT	999	NO	0		N/OB
P-010 RTMANDM2	ERUPT	1	NO	0		N/OB
P-010 RTMAXDC	ERUPT	0	NO	0		NO
P-010 RTMAXDI2	MISS	999	NO	0		N/OB
P-010 RTMAXDM1	ERUPT	999	NO	0		N/OB
P-010 RTMAXDM2	ERUPT	1	NO	0		NO
P-011 LFMANDI1	ERUPT	0	N/A	888		NO
P-011 LFMANDI2	ERUPT	0	N/A	888		NO
P-011 LFMAXDI1	ERUPT	0	N/OB	999		NO
P-011 LFMAXDI2	ERUPT	0	N/OB	999		NO
P-011 RTMANDI1	ERUPT	0	N/A	888		NO
P-011 RTMANDI2	ERUPT	0	N/A	888		N/A
P-011 RTMAXDI1	ERUPT	0	N/OB	999		NO
P-011 RTMAXDI2	ERUPT	0	N/OB	999		NO
P-012 LFMANC	MISS	999	N/OB	0		N/OB
P-012 LFMANI1	MISS	999	N/OB	0		N/OB
P-012 LFMANI2	MISS	999	N/OB	0		N/OB
P-012 LFMANM1	MISS	999	N/OB	0		N/OB
P-012 LFMANM2	MISS	999	NO	0		N/OB
P-012 LFMANP1	MISS	999	N/OB	0		N/OB
P-012 LFMANP2	MISS	999	N/OB	0		N/OB
P-012 LFMAXI2	MISS	999	N/OB	999		N/OB
P-012 LFMAXM1	MISS	999	YES	1	ACTIVE	N/OB
P-012 LFMAXM2	MISS	999	YES	999		N/OB
P-012 LFMAXP1	MISS	999	N/OB	0		N/OB
P-012 LFMAXP2	MISS	999	N/OB	0		N/OB
P-012 RTMANI1	MISS	999	N/OB	0		N/OB

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-012 RTMANM1	MISS	999 NO		0		N/OB
P-012 RTMANM2	MISS	999 NO		0		N/OB
P-012 RTMANP1	MISS	999 NO		0		N/OB
P-012 RTMANP2	MISS	999 NO		0		N/OB
P-012 RTMAXC	MISS	999 N/OB		0		N/OB
P-012 RTMAXI1	MISS	999 N/OB		0		N/OB
P-012 RTMAXI2	ERUPT	0 N/OB		0		YES
P-012 RTMAXM1	MISS	999 N/OB		0		N/OB
P-012 RTMAXM2	MISS	999 N/OB		0		N/OB
P-012 RTMAXP1	MISS	999 N/OB		0		N/OB
P-012 RTMAXP2	MISS	999 NO		0		N/OB
P-013 LFMANC	MISS	999 N/OB		999		N/OB
P-013 LFMANI2	MISS	999 N/OB		0		N/OB
P-013 LFMANM1	ERUPT	999 N/OB		0		N/OB
P-013 LFMANM2	MISS	999 N/OB		0		N/OB
P-013 LFMANP1	ERUPT	0 N/OB		0		NO
P-013 LFMANP2	ERUPT	0 N/OB		0		NO
P-013 LFMAXI2	ERUPT	0 N/OB		999		YES
P-013 LFMAXP1	ERUPT	0 N/OB		999		NO
P-013 LFMAXP2	ERUPT	0 N/OB		999		NO
P-013 RTMANC	MISS	999 N/OB		999		N/OB
P-013 RTMANI2	MISS	999 N/OB		0		N/OB
P-013 RTMANM1	MISS	999 N/OB		999		N/OB
P-013 RTMANM2	MISS	999 N/OB		999		N/OB
P-013 RTMANP1	MISS	999 N/OB		999		N/OB
P-013 RTMANP2	MISS	999 N/OB		999		N/OB
P-013 RTMAXC	ERUPT	0 N/OB		999		NO
P-013 RTMAXI1	ERUPT	0 N/OB		0		NO
P-013 RTMAXI2	ERUPT	0 N/OB		0		NO
P-014 LFMANC	MISS	999 N/OB		999		N/OB
P-014 LFMANI1	MISS	999 N/OB		999		N/OB
P-014 LFMANI2	MISS	999 N/OB		999		N/OB
P-014 LFMANM1	ERUPT	1 N/OB		0		NO
P-014 LFMANM2	LOST	888 N/A		888		N/A
P-014 LFMANM3	MISS	999 NO		0		N/OB
P-014 LFMANP1	MISS	999 N/OB		999		N/OB
P-014 LFMANP2	ERUPT	0 N/OB		999		NO
P-014 LFMAXC	ERUPT	0 N/OB		999		NO
P-014 LFMAXI1	ERUPT	0 N/OB		999		NO
P-014 LFMAXI2	ERUPT	0 N/OB		999		NO
P-014 LFMAXM1	MISS	999 N/OB		1 ACTIVE		N/OB
P-014 LFMAXM2	LOST	888 N/A		888		N/A

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCCESS	ABSTATE	CALCULUS
P-014 LFMAXM3	MISS	999 N/OB		999		N/OB
P-014 LFMAXP1	MISS	999 N/OB		999		N/OB
P-014 LFMAXP2	ERUPT	0 N/OB		0		NO
P-014 M3	ERUPT	1 N/OB		888		NO
P-014 RTMANC	ERUPT	0 N/OB		999		YES
P-014 RTMANI1	MISS	999 N/OB		999		N/OB
P-014 RTMANI2	MISS	999 N/OB		999		N/OB
P-014 RTMANM1	ERUPT	999 N/OB		1 ACTIVE		YES
P-014 RTMANM2	MISS	999 N/OB		999		N/OB
P-014 RTMANP1	MISS	999 N/OB		999		N/OB
P-014 RTMANP2	MISS	999 NO		0		N/OB
P-014 RTMAXC	ERUPT	0 N/OB		999		YES
P-014 RTMAXI1	MISS	999 NO		0		N/OB
P-014 RTMAXI2	MISS	999 N/OB		0		N/OB
P-014 RTMAXM3	ERUPT	3 N/OB		999		YES
P-015 LFMANC	MISS	999 N/OB		0		N/OB
P-015 LFMANI1	MISS	999 N/OB		0		N/OB
P-015 LFMANI2	ERUPT	1 N/OB		0		YES
P-015 LFMANM1	ERUPT	999 NO		0		N/OB
P-015 LFMANM2	ERUPT	0 NO		0		NO
P-015 LFMANM3	ERUPT	0 NO		0		NO
P-015 LFMANP1	ERUPT	0 NO		0		YES
P-015 LFMANP2	ERUPT	999 NO		0		N/OB
P-015 LFMAXC	ERUPT	0 N/OB		0		YES
P-015 LFMAXI1	MISS	999 N/OB		999		N/OB
P-015 LFMAXI2	ERUPT	0 NO		0		YES
P-015 LFMAXM1	ERUPT	0 NO		0		YES
P-015 LFMAXM2	ERUPT	0 NO		0		NO
P-015 LFMAXM3	IMPAC	888 N/A		888		N/A
P-015 LFMAXP1	ERUPT	0 NO		0		NO
P-015 LFMAXP2	ERUPT	1 NO		0		NO
P-015 RTMANC	ERUPT	0 N/OB		0		YES
P-015 RTMANI1	MISS	999 N/OB		0		N/OB
P-015 RTMANI2	MISS	999 N/OB		0		N/OB
P-015 RTMANM1	LOST	888 N/A		888		N/A
P-015 RTMANM2	ERUPT	0 NO		0		NO
P-015 RTMANM3	ERUPT	0 NO		0		YES
P-015 RTMANP1	ERUPT	0 NO		0		YES
P-015 RTMANP2	ERUPT	0 NO		0		YES
P-015 RTMAXC	MISS	999 NO		0		N/OB
P-015 RTMAXI1	ERUPT	0 NO		0		NO

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCCESS	ABSTATE	CALCULUS
P-015 RTMAXI2	MISS	999 NO		0		N/OB
P-015 RTMAXM1	ERUPT	999 N/OB		0		YES
P-015 RTMAXM2	ERUPT	0 NO		0		NO
P-015 RTMAXM3	IMPAC	888 N/A		888		N/A
P-015 RTMAXP2	MISS	999 NO		0		N/OB
P-016 LFMANDC	ERUPT	0 N/OB		0		NO
P-016 LFMANDI1	ERUPT	0 N/OB		999		NO
P-016 LFMANDI2	ERUPT	0 N/OB		999		NO
P-016 LFMANDM1	ERUPT	0 N/OB		0		NO
P-016 LFMANDM2	ERUPT	0 NO		0		NO
P-016 LFMAXDM1	ERUPT	0 N/OB		999		NO
P-016 LFMAXDM2	ERUPT	999 N/OB		999		N/OB
P-016 RTMANDC	ERUPT	0 NO		0		NO
P-016 RTMANDI1	ERUPT	0 N/OB		0		NO
P-016 RTMANDI2	ERUPT	0 N/OB		0		NO
P-016 RTMANDM1	ERUPT	0 NO		0		NO
P-016 RTMANDM2	ERUPT	0 NO		0		NO
P-016 RTMAXDI1	ERUPT	0 N/OB		999		NO
P-016 RTMAXDM1	ERUPT	0 N/OB		999		NO
P-016 RTMAXDM2	ERUPT	0 N/OB		999		NO
P-017 LFMANC	ERUPT	0 N/OB		999		YES
P-017 LFMANM1	ERUPT	0 N/OB		999		N/OB
P-017 LFMANM2	ERUPT	1 N/OB		0		YES
P-017 LFMANM3	ERUPT	0 N/OB		0		NO
P-017 LFMANP1	ERUPT	0 N/OB		999		NO
P-017 LFMANP2	ERUPT	0 N/OB		0		NO
P-017 RTMANC	ERUPT	999 N/OB		999		YES
P-017 RTMANI1	ERUPT	0 N/OB		999		YES
P-017 RTMANI2	ERUPT	0 N/OB		999		YES
P-017 RTMANM1	ERUPT	0 NO		0		N/OB
P-017 RTMANM2	ERUPT	0 N/OB		999		YES
P-017 RTMANP1	ERUPT	0 NO		0		NO
P-017 RTMANP2	ERUPT	0 NO		0		NO
P-017 RTMAXM3	ERUPT	0 N/OB		999		NO
P-018 LFMANC	ERUPT	0 N/OB		999		YES
P-018 LFMANI1	ERUPT	0 N/OB		999		YES
P-018 LFMANI2	ERUPT	0 N/OB		999		YES
P-018 LFMANM1	ERUPT	0 N/OB		0		YES
P-018 LFMANM2	LOST	888 N/A		888		N/A

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-018 LFMANM3	ERUPT	999 NO		0		N/OB
P-018 LFMANP1	ERUPT	999 N/OB		0		N/OB
P-018 LFMANP2	ERUPT	999 YES		0		N/OB
P-018 LFMAXC	MISS	999 N/OB		999		N/OB
P-018 LFMAXI1	ERUPT	0 N/OB		999		YES
P-018 LFMAXI2	ERUPT	0 N/OB		999		YES
P-018 LFMAXM1	ERUPT	999 N/OB		0		YES
P-018 LFMAXM2	ERUPT	999 N/OB		0		YES
P-018 LFMAXM3	ERUPT	0 N/OB		0		YES
P-018 LFMAXP1	MISS	999 N/OB		1 ACTIVE		N/OB
P-018 LFMAXP2	MISS	999 YES		0		N/OB
P-018 RTMANC	ERUPT	999 N/OB		999		YES
P-018 RTMANI1	ERUPT	0 N/OB		0		YES
P-018 RTMANI2	ERUPT	0 N/OB		0		YES
P-018 RTMANM1	ERUPT	0 N/OB		0		NO
P-018 RTMANM2	LOST	888 N/A		888		N/A
P-018 RTMANM3	LOST	888 N/A		888		N/A
P-018 RTMANP1	ERUPT	0 N/OB		999		YES
P-018 RTMANP2	ERUPT	0 YES		0		YES
P-018 RTMAXC	ERUPT	0 N/OB		0		YES
P-018 RTMAXI1	ERUPT	0 N/OB		999		YES
P-018 RTMAXI2	ERUPT	0 N/OB		0		NO
P-018 RTMAXM1	ERUPT	0 N/OB		0		YES
P-018 RTMAXM2	ERUPT	0 N/OB		999		YES
P-018 RTMAXM3	ERUPT	2 N/OB		999		YES
P-018 RTMAXP1	ERUPT	0 N/OB		0		YES
P-018 RTMAXP2	ERUPT	0 YES		0		YES
P-019 LFMANC	ERUPT	0 N/OB		0		NO
P-019 LFMANI1	MISS	999 N/OB		0		N/OB
P-019 LFMANI2	MISS	999 N/OB		0		N/OB
P-019 LFMANM1	LOST	888 N/A		888		N/A
P-019 LFMANM2	LOST	888 N/A		888		N/A
P-019 LFMANM3	LOST	888 N/A		888		N/A
P-019 LFMANP1	ERUPT	0 N/OB		0		NO
P-019 LFMANP2	LOST	888 N/A		888		N/A
P-019 LFMAXC	ERUPT	0 N/OB		0		NO
P-019 LFMAXI1	MISS	999 N/OB		999		N/OB
P-019 LFMAXI2	MISS	999 N/OB		0		N/OB
P-019 LFMAXM2	ERUPT	0 N/OB		999		NO

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-019 LFMAXP1	ERUPT	0 N/OB		999		NO
P-019 RTMANI1	ERUPT	0 N/OB		999		NO
P-019 RTMANM1	ERUPT	0 N/OB		999		NO
P-019 RTMANM2	MISS	999 N/OB		999		N/OB
P-019 RTMANM3	MISS	999 N/OB		999		N/OB
P-019 RTMANP1	ERUPT	0 N/OB		0		NO
P-019 RTMANP2	ERUPT	0 N/OB		0		NO
P-019 RTMAXC	MISS	999 N/OB		0		N/OB
P-019 RTMAXI1	MISS	999 N/OB		999		N/OB
P-019 RTMAXI2	ERUPT	0 N/OB		999		NO
P-019 RTMAXM1	LOST	888 N/A		888		N/A
P-019 RTMAXP1	LOST	888 N/A		888		N/A
P-019 RTMAXP2	LOST	888 N/A		888		N/A
P-020 LFMANC	MISS	999 NO		0		N/OB
P-020 LFMANDM1	ERUPT	0 NO		0		N/OB
P-020 LFMANDM2	ERUPT	1 NO		0		N/OB
P-020 LFMANM1	ERUPT	0 NO		0		NO
P-021 LFMANC	ERUPT	0 NO		0		YES
P-021 LFMANI1	ERUPT	0 NO		0		YES
P-021 LFMANI2	ERUPT	0 NO		0		YES
P-021 LFMANM1	ERUPT	1 N/OB		1 N/OB		NO
P-021 LFMANM2	ERUPT	0 NO		0		NO
P-021 LFMANP1	ERUPT	0 NO		0		YES
P-021 LFMANP2	ERUPT	0 NO		0		NO
P-021 LFMAXC	ERUPT	0 N/OB		999		YES
P-021 LFMAXI1	ERUPT	0 N/OB		999		YES
P-021 LFMAXI2	ERUPT	0 N/OB		999		YES
P-021 LFMAXM1	ERUPT	999 N/OB		999		N/OB
P-021 LFMAXM2	ERUPT	999 N/OB		999		NO
P-021 LFMAXM3	ERUPT	0 N/OB		999		NO
P-021 LFMAXP1	MISS	999 N/OB		999		N/OB
P-021 LFMAXP2	ERUPT	0 N/OB		999		N/OB
P-021 RTMANC	ERUPT	0 NO		0		YES
P-021 RTMANI1	ERUPT	0 NO		0		YES
P-021 RTMANI2	ERUPT	0 NO		0		YES
P-021 RTMANM1	ERUPT	0 NO		0		N/OB
P-021 RTMANM2	ERUPT	0 NO		0		NO
P-021 RTMAXC	ERUPT	0 N/OB		999		NO
P-021 RTMAXI1	ERUPT	0 NO		0		YES

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-021 RTMAXI2	MISS	999 NO		0		N/OB
P-021 RTMAXM1	ERUPT	999 N/OB		999		N/OB
P-021 RTMAXM2	ERUPT	999 N/OB		999		N/OB
P-021 RTMAXM3	ERUPT	0 N/OB		999		NO
P-021 RTMAXP1	ERUPT	0 N/OB		999		N/OB
P-021 RTMAXP2	MISS	999 N/OB		999		N/OB
P-022 LFMANC	ERUPT	0 NO		0		YES
P-022 LFMANI1	ERUPT	0 N/OB		0		YES
P-022 LFMANI2	ERUPT	0 N/OB		0		YES
P-022 LFMANM1	ERUPT	0 N/OB		0		YES
P-022 LFMANM2	ERUPT	0 NO		0		YES
P-022 LFMANM3	ERUPT	0 NO		0		YES
P-022 LFMANP1	ERUPT	0 NO		0		YES
P-022 LFMANP2	ERUPT	0 NO		0		YES
P-022 LFMAXC	ERUPT	0 N/OB		999		YES
P-022 LFMAXI1	ERUPT	0 N/OB		999		YES
P-022 LFMAXI2	ERUPT	0 N/OB		999		YES
P-022 LFMAXM1	ERUPT	0 NO		0		YES
P-022 LFMAXM2	ERUPT	0 NO		0		YES
P-022 LFMAXM3	ERUPT	1 N/OB		0		NO
P-022 LFMAXP1	ERUPT	0 YES		0		YES
P-022 LFMAXP2	ERUPT	0 NO		0		YES
P-022 RTMANC	ERUPT	0 N/OB		0		YES
P-022 RTMANI1	MISS	999 N/OB		0		N/OB
P-022 RTMANI2	ERUPT	0 N/OB		0		YES
P-022 RTMANM1	ERUPT	0 NO		0		YES
P-022 RTMANM2	ERUPT	0 NO		0		YES
P-022 RTMANM3	ERUPT	0 NO		0		YES
P-022 RTMANP1	ERUPT	0 NO		0		YES
P-022 RTMANP2	ERUPT	0 NO		0		YES
P-022 RTMAXC	ERUPT	0 N/OB		0		YES
P-022 RTMAXI1	LOST	888 N/A		888		N/A
P-022 RTMAXI2	ERUPT	0 N/OB		0		YES
P-022 RTMAXM1	ERUPT	0 N/OB		0		A LOT
P-022 RTMAXM2	ERUPT	2 NO		0		YES
P-022 RTMAXM3	ERUPT	0 NO		0		YES
P-022 RTMAXP1	ERUPT	0 NO		0		YES
P-022 RTMAXP2	ERUPT	0 NO		0		YES
P-024 LFMAXDI1	ERUPT	0 N/OB		999		NO

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-024 LFMAXDI2	ERUPT	0 N/OB		999		N/OB
P-025 LFMANC	ERUPT	0 N/OB		0		YES
P-025 LFMANI1	ERUPT	0 N/OB		999		A LOT
P-025 LFMANI2	ERUPT	0 N/OB		999		A LOT
P-025 LFMANM1	ERUPT	0 NO		0		YES
P-025 LFMANM2	ERUPT	1 NO		0		YES
P-025 LFMANM3	ERUPT	0 NO		0		NO
P-025 LFMANP1	ERUPT	0 NO		0		YES
P-025 LFMANP2	ERUPT	0 NO		0		YES
P-025 LFMAXC	ERUPT	0 NO		0		YES
P-025 LFMAXI1	MISS	999 N/OB		0		N/OB
P-025 LFMAXI2	MISS	999 N/OB		0		N/OB
P-025 LFMAXM1	ERUPT	0 N/OB		999		YES
P-025 LFMAXM2	ERUPT	0 N/OB		999		N/OB
P-025 LFMAXP1	ERUPT	0 NO		0		YES
P-025 LFMAXP2	ERUPT	0 NO		0		YES
P-025 RTMANC	ERUPT	0 NO		0		YES
P-025 RTMANI1	ERUPT	999 N/OB		999		A LOT
P-025 RTMANI2	ERUPT	999 N/OB		999		A LOT
P-025 RTMANM1	ERUPT	1 NO		0		YES
P-025 RTMANM2	ERUPT	0 NO		0		YES
P-025 RTMANM3	ERUPT	0 N/OB		0		YES
P-025 RTMANP1	ERUPT	0 NO		0		YES
P-025 RTMANP2	ERUPT	0 NO		0		YES
P-025 RTMAXC	ERUPT	0 NO		0		YES
P-025 RTMAXI1	ERUPT	0 NO		0		YES
P-025 RTMAXI2	ERUPT	0 NO		0		YES
P-025 RTMAXM1	ERUPT	0 NO		0		YES
P-025 RTMAXM2	ERUPT	0 NO		0		YES
P-025 RTMAXM3	ERUPT	0 N/OB		999		NO
P-025 RTMAXP1	ERUPT	0 NO		0		YES
P-025 RTMAXP2	ERUPT	0 NO		0		YES
P-026 LFMANC	MISS	999 N/OB		999		N/OB
P-026 LFMANI1	MISS	999 N/OB		999		N/OB
P-026 LFMANI2	MISS	999 N/OB		999		N/OB
P-026 LFMANM1	MISS	999 N/OB		0		N/OB
P-026 LFMANM2	MISS	999 N/OB		0		N/OB
P-026 LFMANM3	MISS	999 N/OB		0		N/OB
P-026 LFMANP1	MISS	999 N/OB		999		N/OB

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-026 LFMANP2	MISS	999 N/OB		999		N/OB
P-026 RTMANC	MISS	999 N/OB		999		N/OB
P-026 RTMANI1	MISS	999 N/OB		999		N/OB
P-026 RTMANI2	MISS	999 N/OB		999		N/OB
P-026 RTMANM1	MISS	999 N/OB		0		N/OB
P-026 RTMANM2	MISS	999 N/OB		0		N/OB
P-026 RTMANM3	MISS	999 NO		0		N/OB
P-026 RTMANP1	MISS	999 N/OB		999		N/OB
P-026 RTMANP2	MISS	999 N/OB		999		N/OB
P-027 LFMANDI1	ERUPT	0 N/OB		999		NO
P-027 LFMANDM2	ERUPT	999 N/OB		999		NO
P-027 LFMAXDI1	ERUPT	0 N/OB		999		NO
P-027 RTMANDI1	ERUPT	0 N/OB		999		NO
P-027 RTMANDM1	ERUPT	1 N/OB		999		NO
P-027 RTMANDM2	ERUPT	999 N/OB		999		N/OB
P-027 RTMAXDM1	ERUPT	1 N/OB		999		YES
P-027 RTMAXDM2	ERUPT	1 N/OB		999		YES
P-028 LFMANDC	ERUPT	0 N/OB		999		NO
P-028 LFMAXDM2	ERUPT	0 N/OB		999		NO
P-028 RTMANDC	ERUPT	0 N/OB		999		NO
P-028 RTMAXDI1	ERUPT	0 N/OB		999		NO
P-028 RTMAXDM2	ERUPT	0 N/OB		999		N/OB
P-029 LFMANC	ERUPT	0 N/OB		0		NO
P-029 LFMANI1	ERUPT	0 N/OB		0		NO
P-029 LFMANI2	ERUPT	0 N/OB		0		YES
P-029 LFMANM1	ERUPT	2 N/OB		999		NO
P-029 LFMANM2	ERUPT	4 N/OB		999		NO
P-029 LFMANM3	ERUPT	3 N/OB		999		NO
P-029 LFMANP2	ERUPT	1 N/OB		999		NO
P-029 LFMAXP	ERUPT	2 N/OB		999		NO
P-029 RTMANC	ERUPT	0 YES		0		NO
P-029 RTMANI1	ERUPT	999 N/OB		0		NO
P-029 RTMANI2	ERUPT	0 YES		0		NO
P-029 RTMANM1	ERUPT	2 N/OB		999		NO
P-029 RTMANM2	ERUPT	3 N/OB		999		NO
P-029 RTMANM3	MISS	999 N/OB		999		N/OB
P-029 RTMANP1	ERUPT	2 N/OB		0		NO
P-029 RTMANP2	ERUPT	1 N/OB		999		NO
P-030 LFMANC	MISS	999 N/OB		999		N/OB

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCCESS	ABSTATE	CALCULUS
P-030 LFMANI1	MISS	999 YES		0		N/OB
P-030 LFMANI2	MISS	999 YES		0		N/OB
P-030 LFMANM1	ERUPT	999 N/OB		999		N/OB
P-030 LFMANM2	ERUPT	0 N/OB		999		YES
P-030 LFMANM3	ERUPT	0 N/OB		999		NO
P-030 LFMAXC	MISS	999 N/OB		999		N/OB
P-030 LFMAXI1	MISS	999 N/OB		0		N/OB
P-030 LFMAXI2	MISS	999 N/OB		0		N/OB
P-030 LFMAXM1	ERUPT	0 N/OB		999		YES
P-030 LFMAXM2	ERUPT	0 N/OB		0		YES
P-030 LFMAXM3	ERUPT	0 N/OB		0		NO
P-030 LFMAXP1	ERUPT	0 NO		0		A LOT
P-030 LFMAXP2	ERUPT	0 NO		0		A LOT
P-030 RTMANC	MISS	999 N/OB		999		N/OB
P-030 RTMANI1	MISS	999 YES		0		N/OB
P-030 RTMANI2	MISS	999 YES		0		N/OB
P-030 RTMANM1	ERUPT	0 N/OB		999		YES
P-030 RTMANM2	ERUPT	0 NO		0		YES
P-030 RTMANM3	ERUPT	0 NO		0		YES
P-030 RTMANP1	MISS	999 N/OB		999		N/OB
P-030 RTMANP2	ERUPT	0 N/OB		999		YES
P-030 RTMAXC	ERUPT	0 NO		0		A LOT
P-030 RTMAXI1	MISS	999 N/OB		0		N/OB
P-030 RTMAXI2	MISS	999 N/OB		0		N/OB
P-030 RTMAXM1	ERUPT	0 N/OB		0		YES
P-030 RTMAXM2	ERUPT	999 N/OB		0		YES
P-030 RTMAXM3	MISS	999 N/OB		0		N/OB
P-030 RTMAXP1	ERUPT	999 NO		0		YES
P-030 RTMAXP2	ERUPT	0 NO		0		A LOT
P-031 LFMANC	MISS	999 N/OB		999		N/OB
P-031 LFMANI1	MISS	999 N/OB		999		N/OB
P-031 LFMANI2	MISS	999 N/OB		999		N/OB
P-031 LFMANM1	MISS	999 N/OB		0		N/OB
P-031 LFMANM2	ERUPT	2 N/OB		0		N/OB
P-031 LFMANM3	ERUPT	1 N/OB		0		YES
P-031 LFMANP1	MISS	999 N/OB		0		N/OB
P-031 LFMANP2	ERUPT	0 N/OB		0		YES
P-031 LFMAXM2	ERUPT	1 N/OB		999		N/OB
P-031 RTMANC	MISS	999 N/OB		999		N/OB

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-031 RTMANI1	MISS	999 N/OB		999		N/OB
P-031 RTMANI2	MISS	999 N/OB		999		N/OB
P-031 RTMANM1	ERUPT	999 N/OB		0		N/OB
P-031 RTMANM2	LOST	888 N/A		888		N/A
P-031 RTMANM3	ERUPT	1 N/OB		0		NO
P-031 RTMANP1	ERUPT	0 N/OB		999		YES
P-031 RTMANP2	ERUPT	1 N/OB		0		YES
P-031 RTMAXM3	ERUPT	2 N/OB		999		NO
P-032 LFMANC	ERUPT	999 N/OB		999		N/OB
P-032 LFMANI1	ERUPT	999 N/OB		999		YES
P-032 LFMANI2	ERUPT	0 N/OB		999		YES
P-032 LFMANM2	ERUPT	1 N/OB		999		NO
P-032 LFMANP1	ERUPT	0 N/OB		999		YES
P-032 LFMANP2	ERUPT	0 N/OB		999		YES
P-032 LFMAXC	ERUPT	999 N/OB		999		N/OB
P-032 LFMAXI1	ERUPT	999 N/OB		999		NO
P-032 LFMAXM1	ERUPT	0 N/OB		999		NO
P-032 LFMAXM3	ERUPT	1 N/OB		999		NO
P-032 LFMAXP1	ERUPT	0 N/OB		999		N/OB
P-032 LFMAXP2	ERUPT	0 N/OB		999		N/OB
P-032 MANM3	ERUPT	0 N/OB		999		NO
P-032 MANM3	ERUPT	0 N/OB		999		NO
P-032 RTMANC	ERUPT	0 N/OB		999		YES
P-032 RTMANI1	ERUPT	999 N/OB		999		N/OB
P-032 RTMANI2	ERUPT	999 N/OB		999		N/OB
P-032 RTMANM1	ERUPT	0 N/OB		999		YES
P-032 RTMANP1	ERUPT	0 N/OB		999		YES
P-032 RTMANP2	ERUPT	0 N/OB		999		YES
P-032 RTMAXI1	ERUPT	0 N/OB		999		NO
P-032 RTMAXI2	ERUPT	0 N/OB		999		NO
P-032 RTMAXM1	ERUPT	0 N/OB		999		YES
P-032 RTMAXM3	ERUPT	1 N/OB		999		YES
P-032 RTMAXP2	ERUPT	0 N/OB		999		N/OB
P-033 LFMANC	ERUPT	0 N/OB		999		YES
P-033 LFMANI1	LOST	888 N/A		888		N/A
P-033 LFMANI2	MISS	999 N/OB		999		N/OB
P-033 LFMANM1	MISS	999 N/OB		999		N/OB
P-033 LFMANM2	MISS	999 N/OB		999		N/OB
P-033 LFMANM3	MISS	999 N/OB		999		N/OB

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCCESS	ABSTATE	CALCULUS
P-033 LFMANP2	MISS	999 N/OB		999		N/OB
P-033 LFMAXC	ERUPT	3 N/OB		0		YES
P-033 LFMAXI1	MISS	999 N/OB		0		N/OB
P-033 LFMAXI2	MISS	999 N/OB		1 ACTIVE		N/OB
P-033 LFMAXM1	LOST	888 N/A		888		N/A
P-033 LFMAXM2	LOST	888 N/A		888		N/A
P-033 LFMAXM3	MISS	999 N/OB		999		N/OB
P-033 LFMAXP1	MISS	999 N/OB		0		N/OB
P-033 LFMAXP2	ERUPT	0 YES		0		YES
P-033 RTMANC	MISS	999 N/OB		999		N/OB
P-033 RTMANI1	ERUPT	1 N/OB		0		N/OB
P-033 RTMANI2	MISS	999 N/OB		999		N/OB
P-033 RTMANM1	LOST	888 N/A		888		N/A
P-033 RTMANM2	MISS	999 N/OB		999		N/OB
P-033 RTMANM3	LOST	888 N/A		888		N/A
P-033 RTMANP1	MISS	999 N/OB		999		N/OB
P-033 RTMANP2	MISS	999 N/OB		999		N/OB
P-033 RTMAXC	ERUPT	0 N/OB		0		YES
P-033 RTMAXI1	MISS	999 N/OB		0		N/OB
P-033 RTMAXI2	MISS	999 N/OB		0		N/OB
P-034 LFMANC	MISS	999 NO		0		N/OB
P-034 LFMANI1	MISS	999 N/OB		0		N/OB
P-034 LFMANI2	ERUPT	999 N/OB		0		YES
P-034 LFMANM1	MISS	999 N/OB		999		N/OB
P-034 LFMANM2	LOST	888 N/A		888		N/A
P-034 LFMANM3	LOST	888 N/A		888		N/A
P-034 LFMANP1	MISS	999 NO		0		N/OB
P-034 LFMANP2	ERUPT	999 N/OB		0		N/OB
P-034 LFMAXC	MISS	999 N/OB		1 NOT ACTIVE		N/OB
P-034 LFMAXI1	MISS	999 N/OB		0		N/OB
P-034 LFMAXI2	ERUPT	999 YES		0		N/OB
P-034 LFMAXM1	MISS	999 N/OB		0		N/OB
P-034 LFMAXM2	MISS	999 N/OB		0		N/OB
P-034 LFMAXM3	MISS	999 N/OB		1 ACTIVE		N/OB
P-034 LFMAXP1	MISS	999 N/OB		1 ACTIVE		N/OB
P-034 LFMAXP2	ERUPT	2 NO		1 ACTIVE		N/OB
P-034 RTMANC	ERUPT	1 N/OB		0		YES
P-034 RTMANI1	ERUPT	1 N/OB		1 ACTIVE		N/OB
P-034 RTMANI2	MISS	999 N/OB		0		N/OB

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-034 RTMANM1	LOST	888	N/A	888		N/A
P-034 RTMANM2	ERUPT	999	N/OB	0		N/OB
P-034 RTMANM3	ERUPT	2	NO	0		YES
P-034 RTMANP1	MISS	999	N/OB	0		N/OB
P-034 RTMANP2	MISS	999	N/OB	0		N/OB
P-034 RTMAXC	MISS	999	N/OB	0		N/OB
P-034 RTMAXI1	ERUPT	999	N/OB	999		YES
P-034 RTMAXI2	MISS	999	N/OB	999		N/OB
P-034 RTMAXM1	ERUPT	1	N/OB	1	ACTIVE	N/OB
P-034 RTMAXM2	MISS	999	N/OB	1	ACTIVE	N/OB
P-034 RTMAXM3	MISS	999	N/OB	1	ACTIVE	N/OB
P-034 RTMAXP1	MISS	999	YES	1	ACTIVE	N/OB
P-034 RTMAXP2	ERUPT	999	NO	0		N/OB
P-035 LFMAXDI1	ERUPT	0	N/OB	999		NO
P-035 RTMAXDM1	ERUPT	999	N/OB	999		N/OB
P-035 RTMAXDM2	ERUPT	0	N/OB	999		NO
P-036 LFMANDM1	ERUPT	0	NO	0		NO
P-036 RTMANDM1	ERUPT	0	N/OB	0		NO
P-037 LFMANI1	ERUPT	0	N/OB	999		YES
P-037 LFMANI2	ERUPT	999	N/OB	999		YES
P-037 LFMANM2	LOST	888	N/A	888		N/A
P-037 LFMANM3	MISS	999	N/OB	0		N/OB
P-037 LFMAXM	ERUPT	2	N/OB	999		YES
P-037 LFMAXM3	MISS	999	N/OB	999		N/OB
P-037 RTMANC	ERUPT	0	N/OB	999		YES
P-037 RTMANI1	ERUPT	0	N/OB	999		YES
P-037 RTMANI2	ERUPT	0	N/OB	999		YES
P-037 RTMANM1	ERUPT	999	N/OB	999		N/OB
P-037 RTMANP2	ERUPT	0	N/OB	0		YES
P-037 RTMAXC	MISS	999	N/OB	999		N/OB
P-037 RTMAXP1	MISS	999	N/OB	999		N/OB
P-038 LFMANC	MISS	999	N/OB	999		N/OB
P-038 LFMANI1	MISS	999	N/OB	999		N/OB
P-038 LFMANI2	MISS	999	N/OB	999		N/OB
P-038 LFMANM1	MISS	999	N/OB	999		N/OB
P-038 LFMANM2	ERUPT	0	N/OB	999		YES
P-038 LFMANP1	MISS	999	N/OB	999		N/OB
P-038 LFMANP2	MISS	999	N/OB	999		N/OB
P-038 LFMAXC	MISS	999	NO	999		N/OB

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-038 LFMAXI1	MISS	999 NO		0		N/OB
P-038 LFMAXI2	MISS	999 NO		0		N/OB
P-038 LFMAXM1	ERUPT	999 N/OB		0		YES
P-038 LFMAXM2	ERUPT	999 NO		0		N/OB
P-038 LFMAXM3	MISS	999 N/OB		999		N/OB
P-038 LFMAXP1	MISS	999 NO		0		N/OB
P-038 LFMAXP2	MISS	999 N/OB		0		N/OB
P-038 RTMANC	MISS	999 N/OB		999		N/OB
P-038 RTMANI1	MISS	999 N/OB		999		N/OB
P-038 RTMANI2	MISS	999 N/OB		999		N/OB
P-038 RTMANM1	MISS	999 N/OB		999		N/OB
P-038 RTMANM2	ERUPT	1 NO		0		YES
P-038 RTMANM3	ERUPT	0 NO		0		NO
P-038 RTMANP1	MISS	999 N/OB		0		N/OB
P-038 RTMANP2	ERUPT	0 N/OB		0		YES
P-038 RTMAXC	MISS	999 N/OB		999		N/OB
P-038 RTMAXI1	MISS	999 NO		0		N/OB
P-038 RTMAXI2	MISS	999 N/OB		999		N/OB
P-038 RTMAXM1	MISS	999 N/OB		0		N/OB
P-038 RTMAXM2	ERUPT	1 N/OB		999		NO
P-038 RTMAXP1	MISS	999 NO		0		N/OB
P-038 RTMAXP2	MISS	999 NO		0		N/OB
P-039 RTMANDM2	ERUPT	0 N/OB		0		NO
P-039 RTMAXDM2	ERUPT	1 N/OB		999		NO
P-040 LFMANC	MISS	999 NO		0		N/OB
P-040 LFMANI1	MISS	999 N/OB		0		N/OB
P-040 LFMANI2	MISS	999 N/OB		0		N/OB
P-040 LFMANM1	LOST	888 N/A		888		N/A
P-040 LFMANM2	LOST	888 N/A		888		N/A
P-040 LFMANM3	ERUPT	2 NO		0		NO
P-040 LFMANP1	ERUPT	1 NO		0		NO
P-040 LFMANP2	ERUPT	0 N/OB		0		NO
P-040 LFMAXM1	ERUPT	0 YES		0		YES
P-040 LFMAXM3	ERUPT	1 N/OB		999		YES
P-040 LFMAXP1	MISS	999 N/OB		0		N/OB
P-040 LFMAXP2	ERUPT	0 NO		0		YES
P-040 RTMANC	ERUPT	1 NO		0		N/OB
P-040 RTMANI1	MISS	999 N/OB		0		N/OB
P-040 RTMANI2	MISS	999 N/OB		0		N/OB

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-040 RTMANM1	LOST	888 N/A		888		N/A
P-040 RTMANM2	LOST	888 N/A		888		N/A
P-040 RTMANM3	MISS	999 N/OB		999		N/OB
P-040 RTMANP1	ERUPT	1 NO		0		NO
P-040 RTMANP2	MISS	999 N/OB		0		N/OB
P-040 RTMAXC	MISS	999 N/OB		0		N/OB
P-040 RTMAXM1	MISS	999 N/OB		1 NOT ACTIVE		N/OB
P-040 RTMAXM2	ERUPT	1 N/OB		0		YES
P-040 RTMAXM3	ERUPT	1 YES		0		NO
P-040 RTMAXP1	ERUPT	1 YES		0		NO
P-040 RTMAXP2	ERUPT	1 YES		1 ACTIVE		NO
P-041 LFMANC	MISS	999 N/OB		0		N/OB
P-041 LFMANI1	MISS	999 N/OB		0		N/OB
P-041 LFMANM1	ERUPT	999 N/OB		999		N/OB
P-041 LFMANM2	ERUPT	1 NO		0		NO
P-041 LFMANM3	ERUPT	0 YES		0		NO
P-041 LFMANP1	ERUPT	0 NO		0		YES
P-041 LFMANP2	ERUPT	0 NO		0		NO
P-041 RTMANC	MISS	999 N/OB		0		N/OB
P-041 RTMANI1	MISS	999 N/OB		0		N/OB
P-041 RTMANI2	MISS	999 N/OB		0		N/OB
P-041 RTMANM1	ERUPT	0 YES		0		N/OB
P-041 RTMANM2	ERUPT	0 YES		0		NO
P-041 RTMANM3	MISS	999 YES		0		N/OB
P-041 RTMANP1	MISS	999 N/OB		0		N/OB
P-041 RTMANP2	ERUPT	999 YES		0		N/OB
P-041 RTMAXC	ERUPT	999 N/OB		999		N/OB
P-041 RTMAXI1	ERUPT	999 N/OB		999		N/OB
P-041 RTMAXI2	MISS	999 N/OB		999		N/OB
P-041 RTMAXM1	ERUPT	0 YES		0		N/OB
P-041 RTMAXM2	ERUPT	0 YES		0		YES
P-041 RTMAXM3	ERUPT	0 NO		0		NO
P-041 RTMAXP1	ERUPT	0 N/OB		0		NO
P-041 RTMAXP2	ERUPT	0 YES		0		YES
P-042 LFMANC	ERUPT	0 N/OB		0		YES
P-042 LFMANI1	MISS	999 N/OB		0		N/OB
P-042 LFMANI2	MISS	999 N/OB		0		N/OB
P-042 LFMANM1	ERUPT	0 NO		0		NO
P-042 LFMANM2	ERUPT	0 NO		0		NO

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCESS	ABSTATE	CALCULUS
P-042 LFMANP1	ERUPT	999 NO		999		N/OB
P-042 RTMANC	MISS	999 N/OB		0		N/OB
P-042 RTMANI1	MISS	999 N/OB		0		N/OB
P-042 RTMANI2	MISS	999 N/OB		0		N/OB
P-042 RTMANM1	ERUPT	1 NO		0		YES
P-042 RTMANM2	ERUPT	1 NO		0		N/OB
P-042 RTMANP1	ERUPT	0 N/OB		0		YES
P-042 RTMANP2	ERUPT	999 NO		0		N/OB
P-042 RTMAXM	ERUPT	0 N/OB		999		NO
P-043 LFMANC	MISS	999 N/OB		999		N/OB
P-043 LFMANI1	ERUPT	0 N/OB		0		YES
P-043 LFMANI2	ERUPT	0 N/OB		0		YES
P-043 LFMANM1	ERUPT	0 N/OB		0		YES
P-043 LFMANM2	ERUPT	0 N/OB		0		NO
P-043 LFMANP2	ERUPT	0 N/OB		0		NO
P-043 LFMAXC	ERUPT	0 N/OB		999		NO
P-043 LFMAXI1	ERUPT	0 N/OB		999		YES
P-043 LFMAXI2	ERUPT	999 N/OB		999		N/OB
P-043 LFMAXM1	ERUPT	0 N/OB		999		YES
P-043 LFMAXM2	ERUPT	0 N/OB		999		YES
P-043 LFMAXP1	ERUPT	0 N/OB		999		YES
P-043 LFMAXP2	ERUPT	0 N/OB		0		NO
P-043 RTMANC	ERUPT	0 N/OB		999		NO
P-043 RTMANI1	ERUPT	0 N/OB		0		NO
P-043 RTMANI2	ERUPT	0 N/OB		0		YES
P-043 RTMANM1	ERUPT	0 N/OB		0		YES
P-043 RTMANM2	ERUPT	0 N/OB		0		NO
P-043 RTMANP1	ERUPT	0 N/OB		0		NO
P-043 RTMANP2	ERUPT	0 N/OB		0		NO
P-043 RTMAXC	ERUPT	0 N/OB		999		NO
P-043 RTMAXI1	ERUPT	0 N/OB		999		YES
P-043 RTMAXI2	ERUPT	0 N/OB		999		YES
P-043 RTMAXM1	ERUPT	0 N/OB		999		YES
P-043 RTMAXP2	ERUPT	0 N/OB		999		YES
P-044 LFMANM1	LOST	888 N/A		888		N/A
P-044 LFMANM2	ERUPT	0 N/OB		999		NO
P-044 LFMANM3	ERUPT	1 N/OB		999		NO
P-044 LFMAXI1	MISS	999 N/OB		999		N/OB
P-044 LFMAXM1	MISS	999 N/OB		999		N/OB

SPEC TOOTH	STATE	CARIES	PERIODONT	ABSCCESS	ABSTATE	CALCULUS
P-044 LFMAXM2	MISS	999	N/OB	999		N/OB

APPENDIX C DENTAL WEAR AND TRAUMA

SPEC TOOTH	SMITH	SCOTTM	B SCOTTM	L SCOTTD	B SCOTTD	L SCOTTD	OTHERWEAR	CHIPPING
P-001 LFMANC	1	888	888	888	888	888	NO	NO
P-001 LFMANDM2	888	8	5	8	3	NO	M,D	
P-001 LFMANI1	2	888	888	888	888	NO	NO	
P-001 LFMANI2	2	888	888	888	888	NO	D	
P-001 LFMANM1	888	5	2	4	2	NO	NO	
P-001 LFMANM2	888	1	1	1	1	NO	NO	
P-001 LFMAXDC	5	888	888	888	888	NO	M-O	
P-001 LFMAXI1	2	888	888	888	888	NO	NO	
P-001 LFMAXI2	2	888	888	888	888	NO	NO	
P-001 LFMAXM1	888	4	5	4	4	NO	NO	
P-001 LFMAXM2	888	1	1	1	1	NO	NO	
P-001 RTMANC	1	888	888	888	888	NO	NO	
P-001 RTMANDM2	888	8	5	999	4	N/A	M,D	
P-001 RTMANI1	3	888	888	888	888	NO	NO	
P-001 RTMANI2	1	888	888	888	888	NO	NO	
P-001 RTMANM1	888	4	1	4	1	NO	INTER-M	
P-001 RTMANM2	888	1	1	1	1	NO	NO	
P-001 RTMANP1	1	888	888	888	888	NO	NO	
P-001 RTMAXDC	5	888	888	888	888	NO	NO	
P-001 RTMAXDM1	7	888	888	888	888	NO	M-O	
P-001 RTMAXI1	1	888	888	888	888	O-D	D-O	
P-001 RTMAXI2	1	888	888	888	888	NO	NO	
P-001 RTMAXM1	888	4	4	4	3	NO	NO	
P-001 RTMAXM2	888	1	1	1	1	NO	NO	
P-001 RTMAXSUP	888	888	888	888	888	NO	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-002 LFMANDM1	999	999	999	999	999	N/OB	N/OB
P-002 LFMANDM2	888	4	3	4	3 NO	NO	NO
P-002 LFMANM1	888	1	1	1	1 NO	NO	NO
P-002 RTMANDC	999	888	888	888	888 NO	NO	NO
P-002 RTMANDI1	4	888	888	888	888 NO	NO	NO
P-002 RTMANDI2	4	888	888	888	888 NO	NO	NO
P-002 RTMANDM1	3	888	888	888	888 NO	NO	NO
P-002 RTMANDM2	888	5	2	5	1 NO	INTER-M,D-O	INTER-M,D-O
P-002 RTMANM1	888	1	1	1	1 NO	NO	NO
P-002 RTMAXDC	4	888	888	888	888 NO	NO	NO
P-002 RTMAXDI2	1	888	888	888	888 NO	NO	NO
P-002 RTMAXDM1	2	888	888	888	888 NO	INTER-M	INTER-M
P-002 RTMAXM1	888	1	1	1	1 NO	NO	NO
P-003 LFMANDC	999	999	999	999	999 N/OB	N/OB	N/OB
P-003 LFMANDI2	5	888	888	888	888 NO	NO	NO
P-003 LFMANDM1	3	888	888	888	888 N/OB	N/OB	N/OB
P-003 LFMANDM2	888	999	999	999	999 N/OB	N/OB	N/OB
P-003 LFMANM1	888	1	1	1	1 NO	NO	NO
P-003 LFMAXDC	4	888	888	888	888 NO	NO	NO
P-003 LFMAXDI1	5	888	888	888	888 NO	INTER-M	INTER-M
P-003 LFMAXDI2	4	888	888	888	888 NO	INTER-M	INTER-M
P-003 RTMANDI2	4	888	888	888	888 NO	INTER-M,L-O	INTER-M,L-O
P-003 RTMAXDC	3	888	888	888	888 NO	NO	NO
P-003 RTMAXDM1	3	888	888	888	888 NO	INTER-D	INTER-D
P-003 RTMAXDM1	3	888	888	888	888 NO	NO	NO
P-003 RTMAXDM2	888	4	4	4	3 NO	B-O	B-O
P-003 RTMAXDM2	888	4	5	4	1 NO	INTER-D	INTER-D

SPEC TOOTH	SMITH	SCOTTMB	SCOTTM	SCOTTL	SCOTTD	SCOTTD	OTHERWEAR	CHIPPING
P-005 LFMANI1	2	888	888	888	888	888	NO	LAB
P-005 LFMANM1	888	4	1	4	2	NO	NO	
P-005 LFMANM2	888	3	1	3	1	NO	NO	
P-005 LFMANP1	1	888	888	888	888	NO	NO	
P-005 LFMANP2	1	888	888	888	888	NO	NO	
P-005 LFMAXC	1	888	888	888	888	NO	NO	
P-005 LFMAXM1	888	999	1	4	2	NO	NO	
P-005 LFMAXM2	888	2	2	2	1	NO	NO	
P-005 LFMAXP2	1	888	888	888	888	NO	NO	
P-005 RTMANC	1	888	888	888	888	NO	NO	
P-005 RTMANI1	2	888	888	888	888	NO	NO	
P-005 RTMANI2	1	888	888	888	888	NO	NO	
P-005 RTMANM1	888	4	1	4	1	NO	NO	
P-005 RTMANM2	888	2	1	2	1	NO	NO	
P-005 RTMANP1	1	888	888	888	888	NO	NO	
P-005 RTMANP2	1	888	888	888	888	NO	NO	
P-005 RTMAXM2	888	2	2	1	1	NO	NO	
P-006 LFMANDC	2	888	888	888	888	NO	NO	
P-006 LFMANDM1	6	888	888	888	888	NO	B-O	
P-006 LFMANDM2	888	4	1	5	3	NO	NO	
P-006 LFMANI1	1	888	888	888	888	NO	NO	
P-006 LFMANI2	1	888	888	888	888	NO	NO	
P-006 LFMANM1	888	2	1	2	1	NO	NO	
P-006 LFMAXDC	3	888	888	888	888	NO	NO	
P-006 LFMAXDM1	7	888	888	888	888	N/OB	N/OB	
P-006 LFMAXDM2	888	999	999	999	999	N/OB	N/OB	
P-006 LFMAXM1	888	2	1	1	1	NO	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-006 RTMANDM1	999	888	888	888	888	N/OB	N/OB
P-006 RTMANDM2	888	4	1	4	1 NO	L-O	L-O
P-006 RTMANI1	1	888	888	888	888 NO	NO	NO
P-006 RTMANI2	1	888	888	888	888 NO	NO	NO
P-006 RTMANM1	888	2	1	3	1 NO	NO	NO
P-006 RTMAXDC	3	888	888	888	888 NO	NO	NO
P-006 RTMAXDM1	7	888	888	888	888 N/OB	N/OB	N/OB
P-006 RTMAXDM2	888	999	999	999	999 NO	NO	NO
P-006 RTMAXM1	888	2	2	2	2 NO	NO	NO
P-009 LFMANC	2	888	888	888	888 NO	NO	NO
P-009 LFMANI1	3	888	888	888	888 NO	NO	NO
P-009 LFMANI2	2	888	888	888	888 NO	NO	NO
P-009 LFMANM1	888	5	3	4	4 NO	NO	NO
P-009 LFMANM2	888	999	999	999	999 N/OB	N/OB	N/OB
P-009 LFMANM3	888	4	3	4	4 NO	NO	NO
P-009 LFMANP1	2	888	888	888	888 NO	NO	NO
P-009 LFMANP2	2	888	888	888	888 NO	NO	NO
P-009 LFMAXI1	2	888	888	888	888 NO	NO	NO
P-009 LFMAXI2	1	888	888	888	888 NO	NO	NO
P-009 LFMAXM1	888	4	5	4	4 NO	NO	NO
P-009 LFMAXM2	888	3	2	3	3 NO	O	O
P-009 LFMAXM3	888	4	999	3	3 NO	NO	NO
P-009 LFMAXP1	1	888	888	888	888 NO	NO	NO
P-009 LFMAXP2	2	888	888	888	888 NO	NO	NO
P-009 RTMANC	2	888	888	888	888 NO	NO	NO
P-009 RTMANI1	3	888	888	888	888 NO	NO	NO
P-009 RTMANI2	2	888	888	888	888 NO	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-009 RTMANM1	888	5	3	4	3 NO	NO	NO
P-009 RTMANM3	888	2	2	3	2 NO	NO	NO
P-009 RTMANP1	2	888	888	888	888 NO	NO	NO
P-009 RTMANP2	2	888	888	888	888 NO	NO	NO
P-009 RTMAXC	2	888	888	888	888 NO	NO	NO
P-009 RTMAXI1	2	888	888	888	888 NO	NO	NO
P-009 RTMAXI2	1	888	888	888	888 NO	NO	NO
P-009 RTMAXM1	888	5	4	4	3 NO	NO	NO
P-009 RTMAXM2	888	1	1	2	2 NO	NO	NO
P-009 RTMAXM3	888	1	2	2	2 NO	NO	NO
P-009 RTMAXP1	2	888	888	888	888 NO	NO	NO
P-009 RTMAXP2	2	888	888	888	888 NO	NO	NO
P-010 LFMANDM2	888	2	1	999	1 NO	B-O	B-O
P-010 LFMAXDI2	2	888	888	888	888 NO	NO	NO
P-010 RTMANDC	2	888	888	888	888 NO	NO	NO
P-010 RTMANDM1	999	888	888	888	888 NO	NO	NO
P-010 RTMANDM2	888	999	999	999	999 N/OB	N/OB	N/OB
P-010 RTMAXDC	2	888	888	888	888 NO	NO	NO
P-010 RTMAXDM1	999	999	999	999	999 N/OB	N/OB	N/OB
P-010 RTMAXDM2	888	1	1	1	2 NO	NO	NO
P-011 LFMANDI1	1	888	888	888	888 NO	NO	NO
P-011 LFMANDI2	1	888	888	888	888 NO	NO	NO
P-011 LFMAXDI1	1	888	888	888	888 NO	O	O
P-011 LFMAXDI2	1	888	888	888	888 NO	O	O
P-011 RTMANDI1	1	888	888	888	888 NO	NO	NO
P-011 RTMANDI2	1	888	888	888	888 N/A	N/A	N/A
P-011 RTMAXDI1	1	888	888	888	888 NO	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-011 RTMAXDI2	1	888	888	888	888 NO	D-O	
P-012 RTMAXI2	1	888	888	888	888 B-M	NO	
P-013 LFMANNM1	888	999	999	999	999 N/OB	N/OB	
P-013 LFMANP1	2	888	888	888	888 NO	NO	
P-013 LFMANP2	2	888	888	888	888 NO	NO	
P-013 LFMAXI2	2	888	888	888	888 NO	NO	
P-013 LFMAXP1	1	888	888	888	888 NO	NO	
P-013 LFMAXP2	1	888	888	888	888 NO	NO	
P-013 RTMAXC	3	888	888	888	888 NO	NO	
P-013 RTMAXI1	3	888	888	888	888 NO	NO	
P-013 RTMAXI2	3	888	888	888	888 NO	NO	
P-014 LFMANNM1	888	5	6	5	4 NO	NO	
P-014 LFMANP2	3	888	888	888	888 NO	NO	
P-014 LFMAXC	4	888	888	888	888 NO	O	
P-014 LFMAXI1	5	888	888	888	888 NO	NO	
P-014 LFMAXI2	4	888	888	888	888 NO	NO	
P-014 LFMAXP2	3	888	888	888	888 D-INTER	NO	
P-014 M3	888	1	1	1	1 NO	NO	
P-014 RTMANC	2	888	888	888	888 NO	NO	
P-014 RTMANM1	888	4	999	4	4 N/OB	N/OB	
P-014 RTMAXC	3	888	888	888	888 NO	NO	
P-014 RTMAXM3	888	1	1	1	1 NO	NO	
P-015 LFMANI2	3	888	888	888	888 NO	NO	
P-015 LFMANNM1	888	999	999	8	999 N/OB	N/OB	
P-015 LFMANNM2	888	5	4	4	5 NO	D-O	
P-015 LFMANNM3	888	3	4	1	1 NO	NO	
P-015 LFMANP1	4	888	888	888	888 NO	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-015 LFMANP2	999	999	999	999	999	N/OB	N/OB
P-015 LFMAXC	5	888	888	888	888 NO	NO	NO
P-015 LFMAXI2	5	888	888	888	888 NO	NO	NO
P-015 LFMAXM1	888	5	10	4	9 O-M&L	NO	NO
P-015 LFMAXM2	888	4	4	3	4 NO	NO	NO
P-015 LFMAXP1	5	888	888	888	888 NO	M-O	M-O
P-015 LFMAXP2	5	888	888	888	888 NO	M-O	M-O
P-015 RTMANC	4	888	888	888	888 B	B-O	B-O
P-015 RTMANM2	888	999	4	5	4 NO	NO	NO
P-015 RTMANM3	888	4	3	1	1 NO	NO	NO
P-015 RTMANP1	3	888	888	888	888 NO	M-O	M-O
P-015 RTMANP2	2	888	888	888	888 NO	M-O	M-O
P-015 RTMAXI1	4	888	888	888	888 NO	NO	NO
P-015 RTMAXM1	888	999	999	999	999 NO	N/OB	N/OB
P-015 RTMAXM2	888	3	6	4	4 NO	NO	NO
P-016 LFMANDC	1	888	888	888	888 NO	O	O
P-016 LFMANDI1	2	888	888	888	888 NO	NO	NO
P-016 LFMANDI2	1	888	888	888	888 NO	O	O
P-016 LFMANDM1	1	888	888	888	888 NO	NO	NO
P-016 LFMANDM2	888	1	1	1	1 NO	NO	NO
P-016 LFMAXDM1	1	888	888	888	888 NO	NO	NO
P-016 LFMAXDM2	888	999	999	999	999 N/OB	N/OB	N/OB
P-016 RTMANDC	1	888	888	888	888 NO	O	O
P-016 RTMANDI1	3	888	888	888	888 NO	NO	NO
P-016 RTMANDI2	1	888	888	888	888 NO	D	D
P-016 RTMANDM1	1	888	888	888	888 NO	NO	NO
P-016 RTMANDM2	888	1	1	1	1 NO	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-016 RTMAXDI1	2	888	888	888	888 NO	D-L	
P-016 RTMAXDM1	1	888	888	888	888 NO	L-O	
P-016 RTMAXDM2	888	1	1	1	1 NO	NO	
P-017 LFMANC	2	888	888	888	888 NO	NO	
P-017 LFMANM1	888	6	5	6	5 NO	NO	
P-017 LFMANM2	888	4	2	4	3 NO	NO	
P-017 LFMANM3	888	1	1	1	1 NO	NO	
P-017 LFMANP1	2	888	888	888	888 NO	NO	
P-017 LFMANP2	1	888	888	888	888 NO	NO	
P-017 RTMANC	2	888	888	888	888 N/OB	N/OB	
P-017 RTMANI1	5	888	888	888	888 NO	NO	
P-017 RTMANI2	3	888	888	888	888 NO	NO	
P-017 RTMANM1	888	6	5	6	5 N/OB	N/OB	
P-017 RTMANM2	888	4	3	4	4 NO	NO	
P-017 RTMANP1	2	888	888	888	888 NO	NO	
P-017 RTMANP2	1	888	888	888	888 NO	NO	
P-017 RTMAXM3	888	1	1	1	1 NO	NO	
P-018 LFMANC	5	888	888	888	888 NO	NO	
P-018 LFMANI1	7	888	888	888	888 N/OB	N/OB	
P-018 LFMANI2	7	888	888	888	888 NO	NO	
P-018 LFMANM1	888	8	7	8	5 O	L-O,INTER-M	
P-018 LFMANM3	888	999	999	999	999 N/OB	N/OB	
P-018 LFMANP1	999	888	888	888	888 N/OB	N/OB	
P-018 LFMANP2	999	888	888	888	888 N/OB	N/OB	
P-018 LFMAXI1	7	888	888	888	888 N/OB	N/OB	
P-018 LFMAXI2	6	888	888	888	888 NO	NO	
P-018 LFMAXM1	888	999	999	8	8 O	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-018 LFMAXM2	888	3	4	999	NO	NO
P-018 LFMAXM3	888	4	4	4 O	NO	NO
P-018 RTMANC	5	888	888	888 NO	NO	NO
P-018 RTMANI1	7	888	888	888 N/OB	N/OB	N/OB
P-018 RTMANI2	6	888	888	888 NO	NO	NO
P-018 RTMANM1	888	8	4	10 O	L-O	L-O
P-018 RTMANP1	3	888	888	888 NO	D-O	D-O
P-018 RTMANP2	3	888	888	888 NO	NO	NO
P-018 RTMAXC	5	888	888	888 NO	M-O	M-O
P-018 RTMAXI1	7	888	888	888 N/OB	N/OB	N/OB
P-018 RTMAXI2	6	888	888	888 NO	NO	NO
P-018 RTMAXM1	888	7	999	9 NO	B-O	B-O
P-018 RTMAXM2	888	0	3	2 NO	NO	NO
P-018 RTMAXM3	888	4	4	4 O	NO	NO
P-018 RTMAXP1	5	888	888	888 NO	NO	NO
P-018 RTMAXP2	5	888	888	888 NO	M-O	M-O
P-019 LFMANC	7	888	888	888 L,D	N/OB	N/OB
P-019 LFMANP1	7	888	888	888 L,D	N/OB	N/OB
P-019 LFMAXC	7	888	888	888 N/OB	N/OB	N/OB
P-019 LFMAXM2	888	5	8	5 NO	NO	NO
P-019 LFMAXP1	8	888	888	888 NO	N/OB	N/OB
P-019 RTMANI1	8	888	888	888 L,D	N/OB	N/OB
P-019 RTMANM1	888	999	8	6 NO	NO	NO
P-019 RTMANP1	7	888	888	888 L,L,LAB	N/OB	N/OB
P-019 RTMANP2	6	888	888	888 O	M-O	M-O
P-019 RTMAXI2	8	888	888	888 NO	N/OB	N/OB
P-020 LFMANDM1	2	888	888	888 NO	D-O	D-O

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-020	LFMANDM2	888	4	5	4	4 NO		M-O
P-020	LFMANM1	888	1	1	1	1 NO		NO
P-021	LFMANC	1	888	888	888	888 NO		NO
P-021	LFMANI1	3	888	888	888	888 NO		NO
P-021	LFMANI2	3	888	888	888	888 NO		NO
P-021	LFMANM1	888	5	999	5	999 N/OB		N/OB
P-021	LFMANM2	888	2	1	4	4 NO		NO
P-021	LFMANP1	2	888	888	888	888 NO		O
P-021	LFMANP2	1	888	888	888	888 NO		NO
P-021	LFMAXC	1	888	888	888	888 NO		O
P-021	LFMAXI1	3	888	888	888	888 NO		B-O
P-021	LFMAXI2	1	888	888	888	888 NO		NO
P-021	LFMAXM1	888	999	6	4	4 NO		B-O
P-021	LFMAXM2	888	4	4	4	4 NO		NO
P-021	LFMAXM3	888	1	1	1	1 NO		NO
P-021	LFMAXP2	2	888	888	888	888 N/OB		N/OB
P-021	RTMANC	3	888	888	888	888 NO		NO
P-021	RTMANI1	3	888	888	888	888 NO		NO
P-021	RTMANI2	3	888	888	888	888 L		NO
P-021	RTMANM1	888	5	5	4	4 NO		B-O
P-021	RTMANM2	888	2	1	4	3 NO		NO
P-021	RTMAXC	2	888	888	888	888 NO		O
P-021	RTMAXI1	3	888	888	888	888 NO		NO
P-021	RTMAXM1	888	5	6	999	4 N/OB		N/OB
P-021	RTMAXM2	888	999	4	999	4 N/OB		N/OB
P-021	RTMAXM3	888	1	1	1	1 NO		NO
P-021	RTMAXP1	2	888	888	888	888 N/OB		N/OB

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-022 LFMANC	4	888	888	888	888 O-B	NO	NO
P-022 LFMANI1	5	888	888	888	888 NO	B-O,D	B-O,D
P-022 LFMANI2	4	888	888	888	888 NO	D-O	D-O
P-022 LFMANM1	888	5	3	5	5 NO	M-O,D	M-O,D
P-022 LFMANM2	888	5	4	5	4 NO	NO	NO
P-022 LFMANM3	888	4	4	4	4 NO	NO	NO
P-022 LFMANP1	2	888	888	888	888 NO	NO	NO
P-022 LFMANP2	2	888	888	888	888 NO	NO	NO
P-022 LFMAXC	3	888	888	888	888 NO	NO	NO
P-022 LFMAXI1	5	888	888	888	888 NO	NO	NO
P-022 LFMAXI2	5	888	888	888	888 NO	NO	NO
P-022 LFMAXM1	888	7	8	4	5 NO	M-O	M-O
P-022 LFMAXM2	888	4	6	4	4 NO	NO	NO
P-022 LFMAXM3	888	4	4	4	4 NO	NO	NO
P-022 LFMAXP1	3	888	888	888	888 NO	NO	NO
P-022 LFMAXP2	4	888	888	888	888 NO	NO	NO
P-022 RTMANC	4	888	888	888	888 NO	NO	NO
P-022 RTMANI2	5	888	888	888	888 NO	M-O,D,B	M-O,D,B
P-022 RTMANM1	888	4	3	4	4 NO	D-O	D-O
P-022 RTMANM2	888	4	3	4	4 NO	D-O	D-O
P-022 RTMANM3	888	4	4	4	4 NO	NO	NO
P-022 RTMANP1	2	888	888	888	888 NO	NO	NO
P-022 RTMANP2	2	888	888	888	888 NO	NO	NO
P-022 RTMAXC	3	888	888	888	888 NO	NO	NO
P-022 RTMAXI2	5	888	888	888	888 NO	B	B
P-022 RTMAXM1	888	5	7	4	4 NO	M-O,L,B	M-O,L,B
P-022 RTMAXM2	888	999	999	4	4 NO	M-O	M-O

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-022	RTMAXM3	888	1	4	2	4 NO	NO	NO
P-022	RTMAXP1	2	888	888	888	888 NO	B-O	B-O
P-022	RTMAXP2	4	888	888	888	888 NO	B-O	B-O
P-024	LFMAXDI1	1	888	888	888	888 NO	NO	NO
P-024	LFMAXDI2	1	888	888	888	888 N/OB	N/OB	N/OB
P-025	LFMANC	1	888	888	888	888 NO	NO	NO
P-025	LFMANI1	4	888	888	888	888 NO	NO	NO
P-025	LFMANI2	3	888	888	888	888 O-L	B-O	B-O
P-025	LFMANM1	888	5	4	5	4 NO	NO	NO
P-025	LFMANM2	888	4	3	4	3 NO	NO	NO
P-025	LFMANM3	888	2	1	1	1 NO	NO	NO
P-025	LFMANP1	2	888	888	888	888 NO	NO	NO
P-025	LFMANP2	2	888	888	888	888 NO	NO	NO
P-025	LFMAXC	1	888	888	888	888 NO	NO	NO
P-025	LFMAXM1	888	4	6	4	4 NO	B-O	B-O
P-025	LFMAXM2	888	999	4	999	1 N/OB	N/OB	N/OB
P-025	LFMAXP1	1	888	888	888	888 NO	NO	NO
P-025	LFMAXP2	2	888	888	888	888 NO	NO	NO
P-025	RTMANC	2	888	888	888	888 O-M	NO	NO
P-025	RTMANI1	4	888	888	888	888 NO	M-O	M-O
P-025	RTMANI2	3	888	888	888	888 O-L	NO	NO
P-025	RTMANM1	888	5	4	5	4 NO	D-O	D-O
P-025	RTMANM2	888	4	3	4	3 NO	M-O	M-O
P-025	RTMANM3	888	2	1	1	1 NO	NO	NO
P-025	RTMANP1	2	888	888	888	888 NO	NO	NO
P-025	RTMANP2	3	888	888	888	888 NO	NO	NO
P-025	RTMAXC	2	888	888	888	888 L	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-025 RTMAXI1	3	888	888	888	888 O-L	NO	NO
P-025 RTMAXI2	2	888	888	888	888 O-B	NO	NO
P-025 RTMAXM1	888	4	6	4	3 NO	NO	NO
P-025 RTMAXM2	888	4	4	4	4 NO	B-O	B-O
P-025 RTMAXM3	888	2	1	1	1 NO	NO	NO
P-025 RTMAXP1	1	888	888	888	888 NO	NO	NO
P-025 RTMAXP2	3	888	888	888	888 NO	D-O	D-O
P-027 LFMANDI1	6	888	888	888	888 NO	D&M-O	D&M-O
P-027 LFMANDM2	888	2	1	2	1 N/OB	N/OB	N/OB
P-027 LFMAXDI1	5	999	999	999	999 L	NO	NO
P-027 RTMANDI1	6	888	888	888	888 NO	M-O	M-O
P-027 RTMANDM1	1	888	888	888	888 N/OB	N/OB	N/OB
P-027 RTMANDM2	888	999	999	999	999 N/OB	N/OB	N/OB
P-027 RTMAXDM1	2	999	999	999	999 NO	B&L-O	B&L-O
P-027 RTMAXDM2	888	1	1	1	2 NO	B&L-O	B&L-O
P-028 LFMANDC	3	888	888	888	888 B	O	O
P-028 LFMAXDM2	888	1	1	1	2 NO	NO	NO
P-028 RTMANDC	3	888	888	888	888 B	O	O
P-028 RTMAXDI1	1	888	888	888	888 NO	NO	NO
P-028 RTMAXDM2	888	999	1	1	1 N/OB	N/OB	N/OB
P-029 LFMANC	6	888	888	888	888 NO	M	M
P-029 LFMANI1	7	888	888	888	888 NO	D	D
P-029 LFMANI2	6	888	888	888	888 NO	D	D
P-029 LFMANM1	888	8	6	8	9 see form	D,M	D,M
P-029 LFMANM2	888	6	5	6	5 M-INTER	NO	NO
P-029 LFMANM3	888	4	4	4	4 NO	NO	NO
P-029 LFMANP2	6	888	888	888	888 NO	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-029	LFMAXP	5	888	888	888	888 NO	NO	NO
P-029	RTMANC	6	888	888	888	888 D-INTER	D-O	D-O
P-029	RTMANI1	999	888	888	888	888 N/OB	N/OB	N/OB
P-029	RTMANI2	7	888	888	888	888 NO	D-O	D-O
P-029	RTMANM1	888	9	9	4	4 D&M-INTER	NO	NO
P-029	RTMANM2	888	4	4	5	4 D&M-INTER	NO	NO
P-029	RTMANP1	6	888	888	888	888 D-INTER	NO	NO
P-029	RTMANP2	7	888	888	888	888 D&M-INTER	M-O	M-O
P-030	LFMANM1	888	999	999	999	999 N/OB	N/OB	N/OB
P-030	LFMANM2	888	5	4	4	3 NO	O	O
P-030	LFMANM3	888	2	2	1	1 NO	NO	NO
P-030	LFMAXM1	888	4	7	5	6 NO	B&M-O	B&M-O
P-030	LFMAXM2	888	2	4	4	4 NO	O	O
P-030	LFMAXM3	888	1	2	2	2 NO	NO	NO
P-030	LFMAXP1	3	888	888	888	888 NO	NO	NO
P-030	LFMAXP2	4	888	888	888	888 NO	B-O	B-O
P-030	RTMANM1	888	7	5	7	5 NO	D-O	D-O
P-030	RTMANM2	888	5	4	4	3 NO	NO	NO
P-030	RTMANM3	888	3	3	4	2 NO	NO	NO
P-030	RTMANP2	2	888	888	888	888 NO	M-O	M-O
P-030	RTMAXC	3	999	999	999	999 NO	NO	NO
P-030	RTMAXM1	888	999	8	6	7 N/OB	M-O	M-O
P-030	RTMAXM2	888	4	5	999	999 N/OB	M-O	M-O
P-030	RTMAXP1	4	999	999	999	999 N/OB	N/OB	N/OB
P-030	RTMAXP2	4	999	999	999	999 NO	NO	NO
P-031	LFMANM2	888	3	1	999	4 NO	NO	NO
P-031	LFMANM3	888	999	999	999	999 NO	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-031 LFMANP2	2	999	999	999	999 NO	NO	NO
P-031 LFMAXM2	888	4	999	4	4 N/OB	N/OB	N/OB
P-031 RTMANM1	888	5	4	5	4 NO	NO	NO
P-031 RTMANM3	888	4	4	4	4 NO	NO	NO
P-031 RTMANP1	2	888	888	888	888 N/OB	N/OB	N/OB
P-031 RTMANP2	2	888	888	888	888 NO	NO	NO
P-031 RTMAXM3	888	2	4	1	1 NO	NO	NO
P-032 LFMANC	999	888	888	888	888 N/OB	N/OB	N/OB
P-032 LFMANI1	2	888	888	888	888 N/OB	N/OB	N/OB
P-032 LFMANI2	2	888	888	888	888 NO	O	O
P-032 LFMANM2	888	2	1	1	1 NO	B-O	B-O
P-032 LFMANP1	1	888	888	888	888 B	NO	NO
P-032 LFMANP2	1	888	888	888	888 NO	O	O
P-032 LFMAXC	999	888	888	888	888 N/OB	N/OB	N/OB
P-032 LFMAXI1	3	888	888	888	888 L	M&D-O	M&D-O
P-032 LFMAXM1	888	4	3	1	1 NO	INTER-M	INTER-M
P-032 LFMAXM3	888	1	1	1	1 NO	NO	NO
P-032 LFMAXP1	2	888	888	888	888 N/OB	N/OB	N/OB
P-032 LFMAXP2	2	888	888	888	888 N/OB	N/OB	N/OB
P-032 MANM3	888	1	1	1	1 NO	NO	NO
P-032 MANM3	888	1	999	1	999 NO	NO	NO
P-032 RTMANC	2	888	888	888	888 NO	NO	NO
P-032 RTMANI1	2	888	888	888	888 N/OB	O	O
P-032 RTMANI2	2	888	888	888	888 N/OB	O	O
P-032 RTMANM1	888	999	999	3	4 N/OB	N/OB	N/OB
P-032 RTMANP1	2	888	888	888	888 N/OB	N/OB	N/OB
P-032 RTMANP2	2	888	888	888	888 N/OB	N/OB	N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTDDL	OTHERWEAR	CHIPPING
P-032	RTMAXI1	3	888	888	888	888 L		INTER-B,L
P-032	RTMAXI2	2	888	888	888	888 NO		B-O
P-032	RTMAXM1	888	4	4	3	999 NO		M-O
P-032	RTMAXM3	888	1	999	1	1 NO		NO
P-032	RTMAXP2	2	888	888	888	888 N/OB		N/OB
P-033	LFMANC	3	888	888	888	888 NO		NO
P-033	LFMAXC	4	888	888	888	888 NO		NO
P-033	LFMAXP2	4	888	888	888	888 NO		NO
P-033	RTMANI1	999	888	888	888	888 N/OB		N/OB
P-033	RTMAXC	4	888	888	888	888 NO		NO
P-034	LFMANI2	5	888	888	888	888 N/OB		N/OB
P-034	LFMANP2	999	888	888	888	888 N/OB		N/OB
P-034	LFMAXI2	5	888	888	888	888 N/OB		N/OB
P-034	LFMAXP2	999	888	888	888	888 N/OB		N/OB
P-034	RTMANC	999	888	888	888	888 N/OB		N/OB
P-034	RTMANI1	999	888	888	888	888 N/OB		N/OB
P-034	RTMANM2	888	999	999	999	999 N/OB		N/OB
P-034	RTMANM3	888	999	4	3	4 NO		NO
P-034	RTMAXI1	5	888	888	888	888 N/OB		B-O
P-034	RTMAXM1	888	999	999	999	999 N/OB		N/OB
P-034	RTMAXP2	999	888	888	888	888 N/OB		N/OB
P-035	LFMAXDI1	3	888	888	888	888 NO		L
P-035	RTMAXDM1	999	888	888	888	888 N/OB		D&M-O
P-035	RTMAXDM2	888	1	1	1	1 NO		NO
P-036	LFMANDM1	888	888	888	888	888 NO		NO
P-036	RTMANDM1	888	888	888	888	888 NO		NO
P-037	LFMANI1	999	888	888	888	888 N/OB		N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-037	LFMANI2	999	888	888	888	888	N/OB	N/OB
P-037	LFMAXM	888	4	3	4	4 NO	M&B-O	M&B-O
P-037	RTMANC	3	888	888	888	888 NO	NO	NO
P-037	RTMANI1	3	888	888	888	888 NO	M-O	M-O
P-037	RTMANI2	2	888	888	888	888 NO	NO	NO
P-037	RTMANM1	888	5	4	999	999 NO	M&L-O	M&L-O
P-037	RTMANP2	2	888	888	888	888 NO	D-O	D-O
P-038	LFMANM2	888	4	2	4	4 NO	NO	NO
P-038	LFMAXM1	888	4	999	4	999 NO	B-O	B-O
P-038	LFMAXM2	888	999	999	999	999 N/OB	N/OB	N/OB
P-038	RTMANM2	888	5	3	4	4 NO	D&M-O	D&M-O
P-038	RTMANM3	888	4	3	2	1 NO	NO	NO
P-038	RTMANP2	2	888	888	888	888 NO	NO	NO
P-038	RTMAXM2	888	4	4	3	4 NO	B&M-O	B&M-O
P-039	RTMANDM2	888	5	4	5	4 NO	B&M-O	B&M-O
P-039	RTMAXDM2	888	3	5	2	2 NO	NO	NO
P-040	LFMANM3	888	4	5	4	4 NO	NO	NO
P-040	LFMANP1	4	888	888	888	888 NO	NO	NO
P-040	LFMANP2	3	888	888	888	888 NO	NO	NO
P-040	LFMAXM1	888	5	6	4	4 NO	NO	NO
P-040	LFMAXM3	888	3	4	4	4 NO	NO	NO
P-040	LFMAXP2	3	888	888	888	888 NO	D&M-O	D&M-O
P-040	RTMANC	3	888	888	888	888 N/OB	N/OB	N/OB
P-040	RTMANP1	3	888	888	888	888 NO	NO	NO
P-040	RTMAXM2	888	1	2	3	3 NO	NO	NO
P-040	RTMAXM3	888	2	2	4	2 NO	NO	NO
P-040	RTMAXP1	3	888	888	888	888 NO	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-040 RTMAXP2	2	888	888	888	888 NO	NO	NO
P-041 LFMANM1	888	999	999	999	999 N/OB	N/OB	N/OB
P-041 LFMANM2	888	4	4	4	4 NO	M-O	M-O
P-041 LFMANM3	888	1	2	1	1 NO	NO	NO
P-041 LFMANP1	3	888	888	888	888 NO	NO	NO
P-041 LFMANP2	4	888	888	888	888 NO	M-O	M-O
P-041 RTMANM1	888	999	999	8	6 N/OB	D-O	D-O
P-041 RTMANM2	888	4	3	4	4 NO	NO	NO
P-041 RTMANP2	999	888	888	888	888 N/OB	N/OB	N/OB
P-041 RTMAXC	999	888	888	888	888 N/OB	N/OB	N/OB
P-041 RTMAXI1	999	888	888	888	888 N/OB	N/OB	N/OB
P-041 RTMAXM1	888	999	999	6	9 NO	D&B-O	D&B-O
P-041 RTMAXM2	888	3	5	4	4 NO	M-O	M-O
P-041 RTMAXM3	888	2	2	1	1 NO	NO	NO
P-041 RTMAXP1	5	888	888	888	888 NO	B-O	B-O
P-041 RTMAXP2	4	888	888	888	888 NO	L&B-O	L&B-O
P-042 LFMANC	2	888	888	888	888 NO	NO	NO
P-042 LFMANM1	888	4	2	4	2 NO	L-O	L-O
P-042 LFMANM2	888	2	1	2	2 NO	NO	NO
P-042 LFMANP1	1	888	888	888	888 N/OB	N/OB	N/OB
P-042 RTMANM1	888	4	5	4	3 NO	NO	NO
P-042 RTMANM2	888	999	999	999	999 N/OB	N/OB	N/OB
P-042 RTMANP1	2	888	888	888	888 NO	NO	NO
P-042 RTMANP2	1	888	888	888	888 NO	NO	NO
P-042 RTMAXM	888	1	2	3	2 NO	NO	NO
P-043 LFMANI1	2	888	888	888	888 NO	NO	NO
P-043 LFMANI2	1	888	888	888	888 NO	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-043	LFMANM1	888	4	1	4	1 NO	M-O
P-043	LFMANM2	888	1	1	1	1 NO	NO
P-043	LFMANP2	1	888	888	888	888 NO	NO
P-043	LFMAXC	1	888	888	888	888 NO	NO
P-043	LFMAXI1	1	888	888	888	888 L-M	NO
P-043	LFMAXI2	999	888	888	888	888 N/OB	N/OB
P-043	LFMAXM1	888	1	3	2	3 NO	NO
P-043	LFMAXM2	888	1	1	1	1 NO	NO
P-043	LFMAXP1	1	888	888	888	888 NO	NO
P-043	LFMAXP2	1	888	888	888	888 NO	NO
P-043	RTMANC	1	888	888	888	888 NO	NO
P-043	RTMANI1	2	888	888	888	888 NO	NO
P-043	RTMANI2	1	888	888	888	888 NO	O
P-043	RTMANM1	888	4	1	4	1 NO	NO
P-043	RTMANM2	888	1	1	1	1 NO	NO
P-043	RTMANP1	1	888	888	888	888 O-M	NO
P-043	RTMANP2	1	888	888	888	888 NO	NO
P-043	RTMAXC	1	888	888	888	888 NO	NO
P-043	RTMAXI1	1	888	888	888	888 L-M	NO
P-043	RTMAXI2	1	888	888	888	888 NO	NO
P-043	RTMAXM1	888	1	4	2	3 NO	NO
P-043	RTMAXP2	1	888	888	888	888 NO	NO
P-044	LFMANM2	888	5	4	4	4 NO	NO
P-044	LFMANM3	888	3	3	2	3 NO	NO
P-044	RTMAXC	1	888	888	888	888 NO	NO
P-045	LFMANM2	888	4	4	4	4 NO	L-O
P-049	LFMANM1	888	1	999	2	999 N/OB	N/OB

SPEC	TOOTH	SMITH	SCOTTM	B SCOTTML	SCOTTD	B SCOTTD	L OTHERWEAR	CHIPPING
P-049	LFMAXC	1	888	888	888	888	NO	NO
P-049	LFMAXI2	1	888	888	888	888	NO	NO
P-049	LFMAXM1	888	2	4	2	3	NO	B-O
P-049	LFMAXM2	888	1	2	1	1	NO	NO
P-049	MAXDC	4	888	888	888	888	NO	NO
P-049	RTMANM1	888	1	2	2	999	N/OB	N/OB
P-049	RTMANP2	1	888	888	888	888	NO	NO
P-049	RTMAXI1	2	888	888	888	888	NO	NO
P-049	RTMAXM2	888	999	2	999	2	N/OB	N/OB
P-049	RTMAXM3	888	1	1	1	1	NO	NO
P-049	RTMAXP2	2	888	888	888	888	NO	B-O
P-050	LFMANDC	999	888	888	888	888	N/OB	N/OB
P-050	LFMANDM1	999	888	888	888	888	N/OB	N/OB
P-050	LFMANDM2	888	4	2	2	1	L-D	L-D
P-050	LFMAXDC	3	888	888	888	888	NO	NO
P-050	LFMAXDM1	999	888	888	888	888	N/OB	N/OB
P-050	LFMAXDM2	888	2	3	2	3	M,D	M,D
P-050	RTMANDC	999	888	888	888	888	N/OB	N/OB
P-050	RTMANDM1	999	888	888	888	888	N/OB	N/OB
P-050	RTMANDM2	888	999	999	4	2	L-D	L-D
P-050	RTMAXDM1	3	888	888	888	888	B,L	B,L
P-050	RTMAXDM2	888	2	3	2	2	M,D	M,D
P-051	LFMANC	5	888	888	888	888	NO	NO
P-051	LFMANI1	4	888	888	888	888	NO	NO
P-051	LFMANI2	4	888	888	888	888	NO	NO
P-051	LFMANM1	888	6	5	6	5	M	M
P-051	LFMANM3	888	4	4	4	4	N/OB	N/OB

SPEC TOOTH	SMITH	SCOTTM	SCOTTML	SCOTTD	SCOTDL	OTHERWEAR	CHIPPING
P-051 LFMANP2	999	888	888	888	888	N/OB	
P-051 LFMAXC	4	888	888	888	888	NO	
P-051 LFMAXI1	999	888	888	888	888	N/OB	
P-051 LFMAXM1	888	4	6	4	5	M	
P-051 LFMAXM2	888	3	3	4	999	N/OB	
P-051 LFMAXM3	888	4	4	4	4	NO	
P-051 LFMAXP1	3	888	888	888	888	NO	
P-051 RTMANC	5	888	888	888	888	NO	
P-051 RTMANI1	4	888	888	888	888	NO	
P-051 RTMANI2	4	888	888	888	888	NO	
P-051 RTMANM1	888	999	999	4	4	L-O	
P-051 RTMANM3	888	4	4	4	4	O	
P-051 RTMANP1	4	888	888	888	888	NO	
P-051 RTMANP2	3	888	888	888	888	NO	
P-051 RTMAXC	999	888	888	888	888	N/OB	
P-051 RTMAXI1	999	888	888	888	888	N/OB	
P-051 RTMAXM2	888	2	2	2	2	NO	
P-052 LFMAXDI1	1	888	888	888	888	NO	
P-052 LFMAXDI2	1	888	888	888	888	NO	
P-052 RTMAXDI1	1	888	888	888	888	NO	
P-052 RTMAXDI2	1	888	888	888	888	NO	
P-053 LFMANC	4	888	888	888	888	NO	
P-053 LFMANI2	5	888	888	888	888	NO	
P-053 LFMANM1	888	6	5	6	4	L-D	
P-053 LFMANM2	888	4	3	4	3	NO	
P-053 LFMANP1	4	888	888	888	888	B	
P-053 LFMANP2	3	888	888	888	888	NO	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-053	LFMAXC	999	888	888	888	888	N/OB	
P-053	LFMAXM1	888	5	6	4	6	M-O	
P-053	LFMAXM2	888	3	6	3	5	B-O	
P-053	LFMAXM3	888	1	2	1	2	NO	
P-053	LFMAXP1	6	888	888	888	888	NO	
P-053	LFMAXP2	5	888	888	888	888	NO	
P-053	RTMANC	4	888	888	888	888	NO	
P-053	RTMANI1	5	888	888	888	888	NO	
P-053	RTMANI2	5	888	888	888	888	NO	
P-053	RTMANM1	888	4	6	4	6	NO	
P-053	RTMANM2	888	3	4	3	4	NO	
P-053	RTMANM3	888	2	3	2	3	NO	
P-053	RTMANP1	4	888	888	888	888	NO	
P-053	RTMANP2	3	888	888	888	888	M	
P-053	RTMAXM1	888	6	5	6	4	M-O	
P-053	RTMAXP1	6	0	0	0	0	NO	
P-054	LFMANC	1	888	888	888	888	NO	
P-054	LFMANM1	888	4	2	4	2	NO	
P-054	LFMANM2	888	1	1	1	1	M	
P-054	LFMANP1	1	888	888	888	888	NO	
P-054	LFMAXC	1	888	888	888	888	NO	
P-054	LFMAXM1	888	2	3	2	2	NO	
P-054	LFMAXM2	888	1	2	1	2	NO	
P-054	LFMAXP1	1	888	888	888	888	N/OB	
P-054	LFMAXP2	1	888	888	888	888	NO	
P-054	RTMANC	1	888	888	888	888	NO	
P-054	RTMANM1	888	4	2	4	2	D-O	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-054 RTMANM2	888	1	1	1	1	NO
P-054 RTMANP1	999	888	888	888	888	N/A
P-054 RTMANP2	1	888	888	888	888	NO
P-054 RTMAXC	1	888	888	888	888	NO
P-054 RTMAXM1	888	2	2	2	2	NO
P-054 RTMAXM2	888	1	1	1	1	NO
P-054 RTMAXP1	1	888	888	888	888	NO
P-054 RTMAXP2	1	888	888	888	888	NO
P-055 LFMANDI2	1	888	888	888	888	NO
P-055 LFMANDM1	1	888	888	888	888	NO
P-055 RTMANDI2	1	888	888	888	888	NO
P-055 RTMANDM1	1	888	888	888	888	NO
P-055 RTMAXDI2	1	888	888	888	888	NO
P-056 LFMAXDI1	1	888	888	888	888	NO
P-056 RTMAXDI1	1	888	888	888	888	NO
P-058 LFMANC	999	4	888	888	888	M
P-058 LFMAXI1	999	888	888	888	888	N/OB
P-058 LFMAXM1	888	4	5	999	5	L,M
P-058 LFMAXM2	888	999	999	3	4	L
P-058 LFMAXP1	4	888	888	888	888	NO
P-058 LFMAXP2	3	888	888	888	888	NO
P-058 RTMANM3	888	5	5	5	5	D
P-058 RTMAXM1	888	999	4	999	4	NO
P-058 RTMAXM2	888	999	4	999	4	NO
P-058 RTMAXM3	888	4	5	2	2	NO
P-058 RTMAXP2	2	888	888	888	888	NO
P-059 LFMANC	2	888	888	888	888	N/OB

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-059 LFMANI2	999	888	888	888	888	N/OB	
P-059 LFMANM1	888	4	999	3	2	NO	
P-059 LFMANP2	1	888	888	888	888	NO	
P-059 RTMANC	2	888	888	888	888	NO	
P-059 RTMANM1	888	4	3	4	3	NO	
P-059 RTMANP2	999	888	888	888	888	N/OB	
P-060 LFMANDM1	1	888	888	888	888	NO	
P-060 LFMAXDC	999	888	888	888	888	N/OB	
P-060 LFMAXDI1	2	888	888	888	888	NO	
P-060 LFMAXDI2	1	888	888	888	888	NO	
P-060 RTMAXDC	1	888	888	888	888	NO	
P-060 RTMAXDI2	999	888	888	888	888	N/OB	
P-060 RTMAXDM1	999	888	888	888	888	N/OB	
P-061 LFMANI2	5	888	888	888	888	M	
P-061 LFMANP1	4	888	888	888	888	NO	
P-062 LFMANDM1	999	888	888	888	888	N/OB	
P-062 LFMAXDI1	1	888	888	888	888	NO	
P-062 LFMAXDM2	888	999	999	999	999	N/OB	
P-062 RTMANDM1	999	999	999	999	999	N/OB	
P-062 RTMAXDI1	2	888	888	888	888	NO	
P-063 LFMANDM1	999	888	888	888	888	N/OB	
P-063 RTMAXDI1	1	888	888	888	888	NO	
P-064 LFMANI2	1	888	888	888	888	N/OB	
P-064 LFMANM1	888	1	2	1	3	NO	
P-064 LFMAXDM1	3	888	888	888	888	L-D	
P-064 LFMAXDM2	888	4	4	3	4	NO	
P-064 LFMAXM1	888	1	1	3	4	NO	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-064	RTMANI1	1	888	888	888	888	NO	NO
P-064	RTMANI2	1	888	888	888	888	NO	NO
P-064	RTMANM1	888	1	1	1	2	NO	NO
P-065	LFMAXC	3	888	888	888	888	O	O
P-065	LFMAXM3	888	1	1	1	1	NO	NO
P-065	RTMANC	3	888	888	888	888	NO	NO
P-065	RTMANM2	888	2	4	4	4	NO	NO
P-065	RTMANM3	888	2	1	1	1	NO	NO
P-065	RTMANP1	1	888	888	888	888	NO	NO
P-065	RTMAXC	3	888	888	888	888	N/OB	N/OB
P-065	RTMAXM3	888	1	1	1	1	NO	NO
P-066	LFMANDC	999	888	888	888	888	N/OB	N/OB
P-066	LFMANDM2	888	999	999	999	999	N/OB	N/OB
P-066	LFMAXDI1	3	888	888	888	888	M	M
P-066	RTMANDC	4	888	888	888	888 B	D	D
P-066	RTMANDI2	3	888	888	888	888 D	NO	NO
P-066	RTMANDM2	888	999	999	999	888	N/OB	N/OB
P-066	RTMAXDC	4	888	888	888	888 L	NO	NO
P-068	RTMAXM1	888	9	9	4	5 M	B,M	B,M
P-070	LFMANC	1	888	888	888	888	NO	NO
P-070	LFMANI1	999	888	888	888	888	N/OB	N/OB
P-070	LFMANI2	2	888	888	888	888	NO	NO
P-070	LFMANM1	888	999	1	3	2	NO	NO
P-070	LFMANM2	888	4	2	3	1	NO	NO
P-070	LFMANP1	1	888	888	888	888	NO	NO
P-070	LFMANP2	1	888	888	888	888	NO	NO
P-070	LFMAXC	2	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-070	LFMAXI1	4	888	888	888	888	NO	NO
P-070	LFMAXI2	3	888	888	888	888	NO	NO
P-070	LFMAXM2	888	2	1	1	1	NO	NO
P-070	LFMAXP1	2	888	888	888	888	NO	NO
P-070	LFMAXP2	888	888	888	888	888	NO	NO
P-070	RTMANC	1	888	888	888	888	NO	NO
P-070	RTMANI1	3	888	888	888	888	NO	NO
P-070	RTMANI2	2	888	888	888	888	NO	NO
P-070	RTMANM1	888	4	3	4	3	NO	NO
P-070	RTMANM2	888	4	3	4	3	NO	NO
P-070	RTMANM3	888	999	999	999	999	NO	NO
P-070	RTMANP1	1	888	888	888	888	NO	NO
P-070	RTMANP2	1	888	888	888	888	NO	NO
P-070	RTMAXI1	3	888	888	888	888	NO	NO
P-070	RTMAXM1	888	4	3	3	4	NO	NO
P-070	RTMAXM2	888	3	2	1	1	M	M
P-070	RTMAXP1	2	888	888	888	888	NO	NO
P-070	RTMAXP2	1	888	888	888	888	NO	NO
P-071	LFMANM3	888	3	1	2	1 B	NO	NO
P-072	LFMANP1	1	888	888	888	888	NO	NO
P-072	LFMANP2	1	888	888	888	888	NO	NO
P-072	LFMAXM1	888	3	3	2	1	NO	NO
P-072	RTMANI2	2	888	888	888	888	NO	NO
P-072	RTMANM1	888	1	3	1	3	NO	NO
P-072	RTMANP1	1	888	888	888	888	NO	NO
P-072	RTMANP2	1	888	888	888	888	NO	NO
P-072	RTMAXC	1	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-072	RTMAXI1	2	888	888	888	888	NO	NO
P-072	RTMAXM2	888	1	1	1	1	NO	NO
P-072	RTMAXP1	1	888	888	888	888	NO	NO
P-072	RTMAXP2	1	888	888	888	888	NO	NO
P-073	LFMANM1	888	999	4	999	999	N/OB	N/OB
P-073	LFMAXP2	2	888	888	888	888	B	B
P-074	LFMANDI2	1	888	888	888	888	NO	NO
P-074	LFMANDM2	888	1	1	1	1	NO	NO
P-074	LFMAXDI1	1	888	888	888	888	NO	NO
P-074	LFMAXDI2	1	888	888	888	888	NO	NO
P-074	LFMAXDMI1	1	888	888	888	888	NO	NO
P-074	RTMANDI2	1	888	888	888	888	NO	NO
P-074	RTMAXDI1	1	888	888	888	888	NO	NO
P-075	LFMANC	999	888	888	888	888	N/OB	N/OB
P-075	LFMANP1	3	888	888	888	888	NO	NO
P-075	LFMAXM1	888	999	999	999	999	N/OB	N/OB
P-075	LFMAXM2	888	1	3	2	3	NO	NO
P-075	MAXM1	888	888	888	888	888	N/OB	N/OB
P-075	RTMANC	6	888	888	888	888	N/OB	N/OB
P-075	RTMANP1	3	888	888	888	888	NO	NO
P-075	RTMAXM2	888	999	999	3	4	NO	NO
P-075	RTMAXM3	888	3	3	999	4	NO	NO
P-077	LFMANDC	2	888	888	888	888	NO	NO
P-077	LFMANDI2	2	888	888	888	888	NO	NO
P-077	LFMANDM1	2	888	888	888	888	N/OB	N/OB
P-077	LFMANDM2	888	1	1	2	1	NO	NO
P-077	LFMAXDC	1	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-077 LFMAXDM1	2	888	888	888	NO	NO
P-077 LFMAXDM2	888	1	2	1	1	D-O
P-077 RTMANDC	2	888	888	888	888	NO
P-077 RTMANDM1	3	888	888	888	888	NO
P-077 RTMANDM2	888	2	1	2	1	NO
P-077 RTMAXDC	1	888	888	888	888	NO
P-077 RTMAXDM1	888	888	888	888	888	M-O
P-077 RTMAXDM2	888	2	2	2	2	M-O
P-078 LFMANDI1	1	888	888	888	888	NO
P-078 LFMAXDI1	999	888	888	888	888	N/OB
P-078 LFMAXDI2	999	888	888	888	888	N/OB
P-078 RTMANDI1	1	888	888	888	888	NO
P-078 RTMAXDI1	1	888	888	888	888	NO
P-078 RTMAXDI2	1	888	888	888	888	NO
P-079 LFMANP1	6	888	888	888	888 L	O
P-079 LFMAXC	4	888	888	888	888 L	NO
P-079 LFMAXI1	6	888	888	888	888 L	M
P-079 LFMAXP1	6	888	888	888	888	NO
P-079 LFMAXP2	6	888	888	888	888	M,D
P-079 RTMANP2	5	888	888	888	888	NO
P-079 RTMAXC	6	888	888	888	888 L	NO
P-079 RTMAXI2	6	888	888	888	888 L	D
P-079 RTMAXP1	999	888	888	888	888	N/OB
P-082 LFMANDC	5	888	888	888	888	NO
P-082 LFMANDC	4	888	888	888	888	NO
P-082 LFMANDM1	4	888	888	888	888	NO
P-082 LFMANDM2	888	5	4	5	4	D-O

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-082	LFMANM1	888	1	1	1	1		NO
P-082	LFMAXDI1	5	888	888	888	888		N/OB
P-082	LFMAXDM1	5	888	888	888	888		NO
P-082	LFMAXDM2	888	4	5	4	5		NO
P-082	LFMAXM1	888	2	1	2	1		L-O
P-082	RTMANDC	4	888	888	888	888		NO
P-082	RTMANDI2	4	888	888	888	888		NO
P-082	RTMANDM1	4	888	888	888	888		NO
P-082	RTMANDM2	888	5	4	5	4		NO
P-082	RTMANM1	888	1	1	1	1		NO
P-082	RTMAXDI1	5	888	888	888	888		N/OB
P-082	RTMAXDI2	6	888	888	888	888		M-O
P-082	RTMAXDM1	5	888	888	888	888		NO
P-082	RTMAXDM2	888	4	5	4	5		NO
P-082	RTMAXM1	888	1	1	1	1		NO
P-083	LFMANDC	1	888	888	888	888		NO
P-083	LFMANDI1	2	888	888	888	888		NO
P-083	LFMANDI2	1	888	888	888	888		NO
P-083	LFMANDM1	1	888	888	888	888		O
P-083	LFMANDM2	888	1	1	999	999		NO
P-083	LFMAXDC	2	888	888	888	888		NO
P-083	LFMAXDM1	1	888	888	888	888		NO
P-083	LFMAXDM2	888	1	1	1	1		NO
P-083	RTMANDC	1	888	888	888	888		NO
P-083	RTMANDI1	2	888	888	888	888		NO
P-083	RTMANDI2	1	888	888	888	888		NO
P-083	RTMANDM1	1	888	888	888	888		NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-083	RTMANDM2	888	2	1	1	1	NO	NO
P-083	RTMAXDM1	1	888	888	888	888	NO	NO
P-083	RTMAXDM2	888	1	1	1	1	NO	NO
P-085	RTMAXDI2	1	888	888	888	888	NO	NO
P-086	LFMANDC	1	888	888	888	888	NO	NO
P-086	LFMANDI1	1	888	888	888	888	NO	NO
P-086	LFMANDI2	1	888	888	888	888	NO	NO
P-086	LFMANDM1	1	888	888	888	888	NO	NO
P-086	RTMANDC	1	888	888	888	888	NO	NO
P-086	RTMANDI1	1	888	888	888	888	O	NO
P-086	RTMANDI2	1	888	888	888	888	NO	NO
P-086	RTMANDM1	1	888	888	888	888	NO	NO
P-086	RTMAXDI2	999	888	888	888	888	N/OB	N/OB
P-088	LFMANC	999	888	888	888	888	N/OB	N/OB
P-088	LFMANI1	999	888	888	888	888	N/OB	N/OB
P-088	LFMANI2	999	888	888	888	888	N/OB	N/OB
P-088	LFMANP1	999	888	888	888	888	N/OB	N/OB
P-088	LFMANP2	999	888	888	888	888	N/OB	N/OB
P-090	LFMANC	4	888	888	888	888	NO	NO
P-090	LFMANI2	4	888	888	888	888	M-O	M-O
P-090	LFMANM1	888	6	5	6	5	D-O	D-O
P-090	LFMANM2	888	5	4	5	5	D-O	D-O
P-090	LFMANP1	4	888	888	888	888	NO	NO
P-090	LFMANP2	3	888	888	888	888	NO	NO
P-090	RTMANM1	888	6	5	6	5	M,L-O	M,L-O
P-090	RTMANM2	888	5	4	5	5	M,D-O	M,D-O
P-090	RTMAXI1	999	888	888	888	888	B-O	B-O

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-090 RTMAXM2	888	4	5	999	999	NO	NO
P-090 RTMAXM3	888	4	4	4	4	M	M
P-091 LFMANC	6	888	888	888	888	M-O	M-O
P-091 LFMANI1	6	888	888	888	888	N/OB	N/OB
P-091 LFMANI2	6	888	888	888	888	D, M-O	D, M-O
P-091 LFMANP1	4	888	888	888	888	M-O	M-O
P-091 LFMANP2	4	888	888	888	888	NO	NO
P-091 RTMANI1	6	888	888	888	888	NO	NO
P-091 RTMANM1	888	5	4	5	4	M-O	M-O
P-091 RTMANM3	888	4	3	4	3	D,B-O	D,B-O
P-092 LFMAXDI1	4	888	888	888	888	N/OB	N/OB
P-092 RTMANDM2	888	999	999	999	999	N/OB	N/OB
P-094 LFMANM1	888	5	4	5	4	NO	NO
P-094 LFMANP1	999	888	888	888	888	N/OB	N/OB
P-095 LFMANDC	2	888	888	888	888	NO	NO
P-095 LFMANDM1	3	888	888	888	888	NO	NO
P-095 LFMANDM2	888	1	0	1	0	NO	NO
P-095 LFMAXDI1	2	888	888	888	888	L	L
P-095 LFMAXDI2	2	888	888	888	888	O	O
P-095 LFMAXDM1	999	888	888	888	888	N/OB	N/OB
P-095 LFMAXDM2	888	1	2	1	1	NO	NO
P-095 RTMANDC	2	888	888	888	888	NO	NO
P-095 RTMANDI2	4	888	888	888	888	NO	NO
P-095 RTMANDM1	2	888	888	888	888	NO	NO
P-095 RTMANDM2	888	1	0	1	0	NO	NO
P-095 RTMAXDI1	2	888	888	888	888	NO	NO
P-095 RTMAXDI2	2	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-095	RTMAXDM1	999	888	888	888	888	N/OB	
P-095	RTMAXDM2	888	1	2	1	1	B-O	
P-096	LFMANC	3	888	888	888	888	NO	
P-096	LFMANM1	888	5	4	5	4	NO	
P-096	LFMANM2	888	3	2	3	2	NO	
P-096	LFMANM3	888	1	2	1	1	NO	
P-096	LFMANP1	2	888	888	888	888	NO	
P-096	LFMANP2	2	888	888	888	888	NO	
P-096	RTMANM1	888	1	1	1	1	NO	
P-096	RTMANM2	888	1	2	1	2	NO	
P-096	RTMANP1	2	888	888	888	888	NO	
P-096	RTMANP2	1	888	888	888	888	NO	
P-096	RTMAXI1	999	888	888	888	888	N/OB	
P-096	RTMAXM1	888	1	1	1	2	NO	
P-096	RTMAXM2	888	2	2	1	2	O	
P-098	LFMANI2	2	888	888	888	888	O	
P-098	LFMANP1	2	888	888	888	888	O	
P-098	LFMAXC	1	888	888	888	888 L	NO	
P-098	LFMAXI1	1	888	888	888	888 L	NO	
P-098	LFMAXI2	2	888	888	888	888 L	O	
P-098	LFMAXM1	888	2	3	2	2	O,M	
P-098	LFMAXM2	888	1	2	2	2	O	
P-098	LFMAXP1	2	888	888	888	888	M,O	
P-098	RTMANC	888	888	888	888	888	O	
P-098	RTMANI1	2	888	888	888	888	O	
P-098	RTMANI2	999	888	888	888	888	N/OB	
P-098	RTMANM1	888	4	4	4	4 D-INTER	NO	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-098	RTMANP1	2	888	888	888	888	NO	NO
P-098	RTMANP2	2	888	888	888	888	D	D
P-098	RTMAXC	1	888	888	888	888 L	NO	NO
P-098	RTMAXI1	1	888	888	888	888 L	NO	NO
P-098	RTMAXI2	1	888	888	888	888 L	O	O
P-098	RTMAXM1	888	3	2	3	2	NO	NO
P-098	RTMAXM2	888	2	1	2	2	NO	NO
P-098	RTMAXP2	2	888	888	888	888	O	O
P-099	LFMAXDI1	1	888	888	888	888	NO	NO
P-099	RTMANDI2	1	888	888	888	888	NO	NO
P-099	RTMAXDI1	1	888	888	888	888	NO	NO
P-099	RTMAXDI2	1	888	888	888	888	NO	NO
P-100	LFMANDI2	999	888	888	888	888	N/OB	N/OB
P-100	LFMANDM2	888	999	999	999	999	N/OB	N/OB
P-100	LFMAXDM1	999	888	888	888	888	N/OB	N/OB
P-100	RTMANDI2	1	888	888	888	888	O	O
P-101	RTMAXM1	888	3	3	3	3	B	B
P-102	LFMANC	5	888	888	888	888	NO	NO
P-102	LFMANI1	6	888	888	888	888	NO	NO
P-102	LFMANI2	5	888	888	888	888	NO	NO
P-102	LFMANI2	5	888	888	888	888	NO	NO
P-102	LFMANP1	4	888	888	888	888	NO	NO
P-102	LFMANP2	4	888	888	888	888	M-O	M-O
P-102	RTMANC	5	888	888	888	888	NO	NO
P-102	RTMANI1	6	888	888	888	888	N/OB	N/OB
P-102	RTMANI2	5	888	888	888	888	NO	NO
P-102	RTMANM1	888	4	4	4	4	D-O	D-O

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-102 RTMANM2	888	4	4	4	4	NO
P-102 RTMANP1	4	888	888	888	888	N/OB
P-102 RTMANP2	3	888	888	888	888	NO
P-102 RTMAXC	5	888	888	888	888	M-O
P-102 RTMAXI2	5	888	888	888	888	N/OB
P-103 LFMANDM1	2	888	888	888	888	NO
P-103 LFMANDM2	888	999	999	999	999	N/OB
P-103 LFMAXDI2	2	888	888	888	888	NO
P-103 LFMAXDM2	888	999	999	999	999	N/OB
P-103 MANDI2	3	888	888	888	888	NO
P-103 RTMANDM1	999	888	888	888	888	N/OB
P-103 RTMANDM2	888	999	999	999	999	N/OB
P-103 RTMAXDM2	888	1	1	1	0	NO
P-104 LFMANP2	3	888	888	888	888	NO
P-104 LFMAXM2	888	2	999	4	4	N/OB
P-104 MAXM1	888	999	999	999	999	N/OB
P-104 RTMANC	4	888	888	888	888	N/OB
P-104 RTMANM2	888	999	999	5	4	NO
P-104 RTMANM3	888	4	3	3	2	NO
P-104 RTMANP2	3	888	888	888	888	NO
P-104 RTMAXI2	999	888	888	888	888	N/OB
P-104 RTMAXM3	888	2	999	3	3	N/OB
P-104 RTMAXP	3	888	888	888	888	NO
P-105 LFMAXDM2	888	999	999	999	1	N/OB
P-105 RTMANDM1	999	888	888	888	888	N/OB
P-105 RTMANDM2	888	999	1	999	1	N/OB
P-105 RTMANDM2	888	999	999	999	999	N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-107	LFMANC	3	888	888	888	NO	NO
P-107	LFMANM3	888	2	1	2	NO	NO
P-107	LFMANP1	999	888	888	888	NO	NO
P-107	LFMANP2	2	888	888	888	NO	NO
P-107	RTMANC	3	888	888	888	NO	NO
P-107	RTMANI2	4	888	888	888	M	M
P-107	RTMANP2	999	888	888	888	N/OB	N/OB
P-108	LFMANP1	2	888	888	888	NO	NO
P-108	RTMANP2	2	888	888	888	NO	NO
P-109	LFMANI2	3	888	888	888	N/OB	N/OB
P-109	LFMANP1	999	888	888	888	N/OB	N/OB
P-109	LFMANP2	2	888	888	888	NO	NO
P-109	LFMAXC	2	888	888	888	NO	NO
P-109	LFMAXI1	4	888	888	888	N/OB	N/OB
P-109	LFMAXI2	2	888	888	888	NO	NO
P-109	LFMAXM1	888	5	5	4 INTER	M	M
P-109	LFMAXP1	2	888	888	888 INTER	NO	NO
P-109	LFMAXP2	2	888	888	888 INTER	NO	NO
P-109	RTMANC	3	888	888	888	D	D
P-109	RTMANI1	4	888	888	888	NO	NO
P-109	RTMANI2	4	888	888	888	M	M
P-109	RTMANP1	2	888	888	888	NO	NO
P-109	RTMANP2	2	888	888	888	NO	NO
P-109	RTMAXC	3	888	888	888	NO	NO
P-109	RTMAXM1	888	5	4	4 INTER	M	M
P-109	RTMAXP2	3	888	888	888 INTER	NO	NO
P-110	LFMAXDM2	888	1	2	1	L,M	L,M

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-110 RTMAXDI2	3	888	888	888	888	NO	NO
P-110 RTMAXDM1	2	888	888	888	888	B,M,D	B,M,D
P-110 RTMAXDM2	888	2	1	2	1	M,B	M,B
P-112 RTMANM1	888	5	4	4	3	M	M
P-112 RTMANM2	888	4	2	4	1	NO	NO
P-113 LFMANDM2	888	4	3	4	3	NO	NO
P-113 LFMANI2	1	888	888	888	888	NO	NO
P-113 LFMANM1	888	2	1	2	1	NO	NO
P-113 LFMAXDM2	888	999	4	3	4	NO	NO
P-113 LFMAXI2	1	888	888	888	888	NO	NO
P-113 LFMAXM1	888	1	1	1	1	NO	NO
P-113 RTMANM1	888	1	1	2	2	NO	NO
P-113 RTMAXDM2	888	999	999	999	999	NO	NO
P-113 RTMAXI1	1	888	888	888	888	NO	NO
P-113 RTMAXI2	1	888	888	888	888	NO	NO
P-113 RTMAXM1	888	1	2	1	2	NO	NO
P-115 LFMANM1	888	5	4	5	4	D	D
P-115 LFMANM2	888	4	2	4	2	M	M
P-115 LFMANM3	888	2	2	1	1	NO	NO
P-115 LFMAXM3	888	1	1	1	1	NO	NO
P-115 RTMANM3	888	2	1	2	3	NO	NO
P-115 RTMAXM2	888	3	1	3	2	NO	NO
P-115 RTMAXM3	888	999	2	1	2	NO	NO
P-116 LFMANDC	1	888	888	888	888	O	O
P-116 LFMANDM1	999	888	888	888	888	N/OB	N/OB
P-116 LFMANDM2	888	2	1	1	1	NO	NO
P-116 LFMAXDC	2	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-116	LFMAXDM2	888	2	1	1	1	NO	NO
P-116	RTMANDM1	2	888	888	888	888	O	O
P-116	RTMANDM2	888	2	1	1	1	O	O
P-116	RTMAXDM2	888	2	1	1	1	NO	NO
P-118	RTMANDI2	1	888	888	888	888	NO	NO
P-119	LFMANC	4	888	888	888	888	NO	NO
P-119	LFMANI1	6	888	888	888	888	N/OB	N/OB
P-119	LFMANI2	6	888	888	888	888	M,D	M,D
P-119	RTMANI1	6	888	888	888	888	N/OB	N/OB
P-119	RTMANI2	5	888	888	888	888	M,D	M,D
P-119	RTMANM2	888	999	4	999	4	M,D	M,D
P-119	RTMANP2	999	888	888	888	888	N/OB	N/OB
P-119	RTMAXI1	5	888	888	888	888	N/OB	N/OB
P-120	LFMANM1	888	999	999	999	999	NO	NO
P-120	LFMAXM1	888	1	3	2	2	NO	NO
P-121	RTMAXP	7	888	888	888	888	N/OB	N/OB
P-122	LFMANDI2	3	888	888	888	888	NO	NO
P-122	RTMANDC	3	888	888	888	888 B	NO	NO
P-122	RTMANDM1	4	888	888	888	888	O	O
P-122	RTMANDM2	888	3	1	2	3	NO	NO
P-123	LFMANC	999	888	888	888	888	N/OB	N/OB
P-123	LFMANI2	8	888	888	888	888	N/OB	N/OB
P-123	LFMANM2	888	7	6	999	6	NO	NO
P-123	LFMANM3	888	6	4	6	5	M	M
P-123	LFMAXC	5	888	888	888	888	B-M	B-M
P-123	LFMAXI1	6	888	888	888	888	M,B	M,B
P-123	LFMAXI2	999	888	888	888	888	N/OB	N/OB

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTDDL	OTHERWEAR	CHIPPING
P-123 LFMAXM1	888	8	10	8	10 see form	B,B-M	
P-123 LFMAXP1	4	888	888	888	888	M-O	
P-123 LFMAXP2	999	888	888	888	888	N/OB	
P-123 RTMANC	7	888	888	888	888	D	
P-123 RTMANP1	8	888	888	888	888	N/OB	
P-123 RTMANP2	5	888	888	888	888	NO	
P-123 RTMAXC	4	888	888	888	888	NO	
P-123 RTMAXI1	5	888	888	888	888	NO	
P-123 RTMAXI2	5	888	888	888	888	M,D	
P-123 RTMAXM1	888	5	999	5	999	B	
P-123 RTMAXM2	888	999	4	999	4	NO	
P-123 RTMAXM3	888	1	1	1	1	NO	
P-123 RTMAXP1	999	888	888	888	888	N/OB	
P-123 RTMAXP2	7	888	888	888	888 see form	M,D	
P-124 LFMANM3	888	1	1	1	1	NO	
P-124 LFMANP	2	888	888	888	888	NO	
P-124 LFMAXI2	2	888	888	888	888	NO	
P-124 LFMAXM1	888	4	999	999	999	NO	
P-124 LFMAXM2	888	1	4	3	4	NO	
P-124 LFMAXM3	888	1	1	1	1	NO	
P-124 LFMAXP2	2	888	888	888	888	NO	
P-124 RTMANM1	888	999	999	999	999	N/OB	
P-124 RTMANM3	888	2	1	1	1	NO	
P-124 RTMAXI1	999	888	888	888	888	NO	
P-124 RTMAXI2	2	888	888	888	888	NO	
P-124 RTMAXM2	888	999	999	3	4	NO	
P-124 RTMAXM3	888	1	1	1	1	NO	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-124	RTMAXP2	2	888	888	888	888	NO	NO
P-125	LFMAXDC	2	888	888	888	888 L	NO	NO
P-125	LFMAXDM2	888	1	3	2	2	M,O	
P-125	RTMANDM1	2	888	888	888	888	NO	NO
P-125	RTMAXDC	2	888	888	888	888	NO	NO
P-125	RTMAXDM2	888	2	3	2	4	B,L	
P-126	RTMANM1	888	1	999	1	1	M-O	
P-127	LFMANC	999	888	888	888	888	N/OB	
P-127	LFMANI1	999	888	888	888	888	N/OB	
P-127	LFMANM2	888	4	4	5	4	NO	
P-127	LFMANM3	888	4	4	5	4	D	
P-127	LFMANP2	3	888	888	888	888	NO	
P-127	LFMAXC	3	888	888	888	888	NO	
P-127	LFMAXI1	4	888	888	888	888 INTER	NO	
P-127	LFMAXP1	999	888	888	888	888	N/OB	
P-127	LFMAXP2	999	888	888	888	888	N/OB	
P-127	RTMANC	999	888	888	888	888	N/OB	
P-127	RTMANI2	4	888	888	888	888	NO	
P-127	RTMANM2	888	4	3	4	999	NO	
P-127	RTMANM3	888	999	999	999	999	N/OB	
P-127	RTMANP1	999	888	888	888	888 INTER	N/OB	
P-127	RTMANP2	5	888	888	888	888	N/OB	
P-127	RTMAXC	4	888	888	888	888	NO	
P-127	RTMAXI1	3	888	888	888	888 INTER	NO	
P-127	RTMAXI2	3	888	888	888	888	N/OB	
P-127	RTMAXP1	5	888	888	888	888	N/OB	
P-127	RTMAXP2	4	888	888	888	888 INTER	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-128 LFMANM1	888	999	4	4	4	N/OB	
P-129 LFMANDI2	5	888	888	888	888	D	
P-129 LFMANDM1	5	888	888	888	888	M	
P-129 LFMANDM2	888	7	5	7	5	D	
P-129 LFMAXDC	999	888	888	888	888	N/OB	
P-129 LFMAXDM1	8	888	888	888	888	D	
P-129 LFMAXDM2	888	999	999	6	999	N/OB	
P-129 RTMANDC	4	888	888	888	888	NO	
P-129 RTMANDI2	6	888	888	888	888	M	
P-129 RTMANDM1	7	888	888	888	888	B	
P-129 RTMANDM2	888	5	6	4	5	L	
P-129 RTMAXDC	6	888	888	888	888	B	
P-129 RTMAXDM1	7	888	888	888	888	M	
P-129 RTMAXDM2	888	8	9	6	8	M	
P-130 LFMANC	1	888	888	888	888	NO	
P-130 LFMANI1	2	888	888	888	888	NO	
P-130 LFMANI2	1	888	888	888	888	NO	
P-130 LFMANM1	888	4	2	4	3	M	
P-130 LFMANM2	888	3	2	4	2	NO	
P-130 LFMANM3	888	1	1	1	1	NO	
P-130 LFMANP1	2	888	888	888	888	NO	
P-130 LFMANP2	2	888	888	888	888	NO	
P-130 LFMAXC	2	888	888	888	888	NO	
P-130 LFMAXI1	2	888	888	888	888	NO	
P-130 LFMAXI2	1	888	888	888	888	NO	
P-130 LFMAXM1	888	3	4	3	4	NO	
P-130 LFMAXM2	888	1	0	3	4	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-130 LFMAXM3	888	1	2	1	0	NO	NO
P-130 LFMAXP1	2	888	888	888	888	NO	NO
P-130 LFMAXP2	999	888	888	888	888	L, 1/2 sheared off	
P-130 RTMANI1	2	888	888	888	888	M-O	
P-130 RTMANI2	1	888	888	888	888	M-O	
P-130 RTMANM1	888	4	3	4	4	NO	
P-130 RTMANM2	888	2	3	2	4	NO	
P-130 RTMANM3	888	1	3	1	1	NO	
P-130 RTMANP1	1	888	888	888	888	NO	
P-130 RTMANP2	2	888	888	888	888	NO	
P-130 RTMAXC	2	888	888	888	888	NO	
P-130 RTMAXI1	3	888	888	888	888	NO	
P-130 RTMAXI2	2	888	888	888	888	NO	
P-130 RTMAXM1	888	4	4	3	4	L	
P-130 RTMAXM2	888	3	4	3	4	NO	
P-130 RTMAXM3	888	1	2	1	1	NO	
P-130 RTMAXP1	2	888	888	888	888	NO	
P-130 RTMAXP2	1	888	888	888	888	NO	
P-131 LFMANDC	2	888	888	888	888	NO	
P-131 LFMANDI	999	888	888	888	888	N/OB	
P-131 LFMANDM1	2	888	888	888	888	NO	
P-131 LFMANDM2	888	2	1	1	1	NO	
P-131 LFMAXDC	2	888	888	888	888	O	
P-131 LFMAXDI1	2	888	888	888	888	M	
P-131 LFMAXDI2	999	888	888	888	888	N/OB	
P-131 LFMAXDMI1	999	888	888	888	888	N/OB	
P-131 LFMAXDM2	888	1	1	1	1	NO	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTD B	SCOTTD L	OTHERWEAR	CHIPPING
P-131	RTMANDC	2	888	888	888	888	NO	NO
P-131	RTMANDI1	4	888	888	888	888	NO	NO
P-131	RTMANDI2	2	888	888	888	888	NO	NO
P-131	RTMANDM1	3	888	888	888	888	NO	NO
P-131	RTMANDM2	888	3	1	2	1	O	O
P-131	RTMAXDC	1	888	888	888	888	NO	NO
P-131	RTMAXDI1	2	888	888	888	888	NO	NO
P-131	RTMAXDI2	1	888	888	888	888	NO	NO
P-131	RTMAXDM1	999	888	888	888	888	N/OB	N/OB
P-131	RTMAXDM2	888	1	1	1	2	NO	NO
P-132	LFMANC	8	888	888	888	888	N/OB	N/OB
P-132	LFMANI2	8	888	888	888	888	N/OB	N/OB
P-132	LFMANM1	888	999	999	9	9	L,B	L,B
P-132	LFMANM2	888	999	999	999	999	N/OB	N/OB
P-132	LFMANM3	888	8	8	5	7	M	M
P-132	LFMANP2	7	888	888	888	888	M	M
P-132	LFMAXI1	5	888	888	888	888	N/OB	N/OB
P-132	LFMAXI2	5	888	888	888	888	M	M
P-132	LFMAXM1	888	999	999	999	999	N/OB	N/OB
P-132	MAXP	8	888	888	888	888	N/OB	N/OB
P-132	RTMANC	8	888	888	888	888	N/OB	N/OB
P-132	RTMANM1	888	999	999	999	999	N/OB	N/OB
P-132	RTMANM2	888	9	8	9	8	M,L	M,L
P-132	RTMANM3	888	8	7	7	5	NO	NO
P-132	RTMANP2	7	888	888	888	888	M,D	M,D
P-132	RTMAXM1	888	10	999	999	999	N/OB	N/OB
P-132	RTMAXP2	8	888	888	888	888	N/OB	N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-134	LFMANDM1	1	888	888	888	888	NO	NO
P-134	LFMAXDM1	1	888	888	888	888	NO	NO
P-134	RTMANDM1	1	888	888	888	888	NO	NO
P-134	RTMAXDM1	1	888	888	888	888	NO	NO
P-135	LFMANC	1	888	888	888	888	NO	NO
P-135	LFMANI1	2	888	888	888	888	NO	NO
P-135	LFMANI2	2	888	888	888	888	NO	NO
P-135	LFMANM1	888	1	1	2	2	D	D
P-135	LFMANP1	1	888	888	888	888	NO	NO
P-135	LFMAXDM2	888	4	4	4	3	NO	NO
P-135	LFMAXI1	1	888	888	888	888	NO	NO
P-135	LFMAXI2	1	888	888	888	888	NO	NO
P-135	LFMAXM1	888	2	1	1	1	NO	NO
P-135	LFMAXP1	1	888	888	888	888	NO	NO
P-135	RTMANC	1	888	888	888	888	NO	NO
P-135	RTMANDM1	3	888	888	888	888	NO	NO
P-135	RTMANDM2	888	5	3	6	5	M	M
P-135	RTMANI1	2	888	888	888	888	D	D
P-135	RTMANI2	1	888	888	888	888	NO	NO
P-135	RTMANM1	888	4	3	4	4	NO	NO
P-135	RTMAXI1	1	888	888	888	888	NO	NO
P-135	RTMAXI2	1	888	888	888	888	NO	NO
P-135	RTMAXM1	888	3	4	2	2	NO	NO
P-135	RTMAXP1	1	888	888	888	888	NO	NO
P-136	LFMANP1	3	888	888	888	888	L	L
P-136	RTMANC	999	888	888	888	888	N/OB	N/OB
P-136	RTMAXI2	999	888	888	888	888	N/OB	N/OB

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-136 RTMAXM3	888	3	3	3	3	NO	NO
P-137 LFMANM1	888	999	1	999	1	N/OB	N/OB
P-137 LFMANM2	888	2	1	1	1	NO	NO
P-137 LFMANP1	1	888	888	888	888	NO	NO
P-137 LFMANP2	1	888	888	888	888	NO	NO
P-137 LFMAXM2	888	1	1	1	1	NO	NO
P-137 LFMAXP2	1	888	888	888	888	NO	NO
P-137 RTMANM1	888	999	1	999	1	N/OB	N/OB
P-137 RTMANM2	888	2	1	2	1	NO	NO
P-137 RTMANP1	1	888	888	888	888	NO	NO
P-137 RTMAXM2	888	2	999	1	1	NO	NO
P-137 RTMAXP1	999	888	888	888	888	N/OB	N/OB
P-137 RTMAXP2	1	888	888	888	888	NO	NO
P-138 LFMANDC	2	888	888	888	888	NO	NO
P-138 LFMANDI1	4	888	888	888	888	NO	NO
P-138 LFMANDI2	3	888	888	888	888	NO	NO
P-138 LFMANDM1	2	888	888	888	888	NO	NO
P-138 LFMANDM2	888	5	3	5	3	NO	NO
P-138 LFMAXDI2	3	888	888	888	888	NO	NO
P-138 LFMAXDM1	2	888	888	888	888	NO	NO
P-138 LFMAXDM2	888	3	4	2	4	NO	NO
P-138 RTMANDC	3	888	888	888	888	NO	NO
P-138 RTMANDI1	4	888	888	888	888	NO	NO
P-138 RTMANDI2	3	888	888	888	888	NO	NO
P-138 RTMANDM1	3	888	888	888	888	NO	NO
P-138 RTMANDM2	888	5	3	5	3	NO	NO
P-138 RTMAXDI1	4	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-138	RTMAXDI2	3	888	888	888	888	NO	NO
P-138	RTMAXDM1	3	888	888	888	888	NO	NO
P-138	RTMAXDM2	888	4	4	2	3	NO	NO
P-139	LFMANC	3	888	888	888	888	NO	NO
P-139	LFMANI1	5	888	888	888	888	NO	NO
P-139	LFMANI2	3	888	888	888	888	NO	NO
P-139	LFMANM1	888	888	888	888	888	M,D	NO
P-139	LFMANM3	888	4	5	4	6	NO	NO
P-139	LFMANP1	2	888	888	888	888	L	NO
P-139	LFMANP2	2	888	888	888	888	NO	NO
P-139	LFMAXC	3	888	888	888	888	NO	NO
P-139	LFMAXI2	4	888	888	888	888	NO	NO
P-139	LFMAXM1	888	4	4	999	999	L	NO
P-139	LFMAXM2	888	3	4	5	4	B	NO
P-139	LFMAXM3	888	4	4	4	0	NO	NO
P-139	LFMAXP1	2	888	888	888	888	NO	NO
P-139	LFMAXP2	3	888	888	888	888	NO	NO
P-139	RTMANC	3	888	888	888	888	NO	NO
P-139	RTMANI1	999	888	888	888	888	N/A	NO
P-139	RTMANI2	4	888	888	888	888	NO	NO
P-139	RTMANM1	888	4	8	4	5	M	NO
P-139	RTMANM2	888	3	5	4	5	M	NO
P-139	RTMANM3	888	4	3	4	4	NO	NO
P-139	RTMANP1	2	888	888	888	888	NO	NO
P-139	RTMANP2	2	888	888	8	888	M	NO
P-139	RTMAXC	3	888	888	888	888	NO	NO
P-139	RTMAXI1	4	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTM B	SCOTTML	SCOTTD B	SCOTTD L	OTHERWEAR	CHIPPING
P-139 RTMAXI2	4	888	888	888	888	NO	NO
P-139 RTMAXM1	888	4	4	7	6	M&D-O	
P-139 RTMAXM2	888	3	3	4	5	NO	NO
P-139 RTMAXM3	888	3	4	4	4	NO	NO
P-139 RTMAXP1	2	888	888	888	888	L	
P-139 RTMAXP2	4	888	888	888	888	M,D	
P-140 LFMANP2	2	888	888	888	888	N/OB	
P-141 LFMANDC	1	888	888	888	888	NO	
P-141 LFMANDI1	1	888	888	888	888	NO	
P-141 LFMANDM1	1	888	888	888	888	NO	
P-141 LFMAXDC	1	888	888	888	888	O	
P-141 LFMAXDI1	1	888	888	888	888	NO	
P-141 LFMAXDI2	1	888	888	888	888	NO	
P-141 LFMAXDMI1	1	888	888	888	888	NO	
P-141 RTMANDC	1	888	888	888	888	NO	
P-141 RTMANDI2	1	888	888	888	888 B	NO	
P-141 RTMANDM1	1	888	888	888	888	NO	
P-141 RTMAXDI1	1	888	888	888	888	NO	
P-141 RTMAXDI2	1	888	888	888	888	NO	
P-142 LFMANDC	1	888	888	888	888	NO	
P-142 LFMANDI1	1	888	888	888	888	O	
P-142 LFMANDI2	2	888	888	888	888	NO	
P-142 LFMAXDC	1	888	888	888	888	O	
P-142 LFMAXDI2	1	888	888	888	888	O	
P-142 LFMAXDMI1	999	888	888	888	888	N/OB	
P-142 RTMANDC	1	888	888	888	888	NO	
P-142 RTMANDI1	1	888	888	888	888	O	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-142	RTMANDI2	1	888	888	888	888	NO	NO
P-142	RTMANDM1	1	888	888	888	888	NO	NO
P-142	RTMAXDI1	1	888	888	888	888	O	O
P-142	RTMAXDI2	2	888	888	888	888	NO	NO
P-142	RTMAXDM1	1	888	888	888	888	N/OB	N/OB
P-143	LFMANI2	999	888	888	888	888	N/OB	N/OB
P-143	LFMAXC	3	888	888	888	888 N/OB	N/OB	N/OB
P-143	LFMAXI1	999	888	888	888	888 N/OB	N/OB	N/OB
P-143	RTMANC	999	888	888	888	888	N/OB	N/OB
P-143	RTMANM3	888	999	1	999	1	NO	NO
P-143	RTMAXI1	4	888	888	888	888 N/OB	N/OB	N/OB
P-145	LFMAXI1	999	888	888	888	888	N/OB	N/OB
P-145	LFMAXI2	2	888	888	888	888	NO	NO
P-145	LFMAXM1	888	999	4	999	1	N/OB	N/OB
P-145	LFMAXM2	888	999	1	999	1	N/OB	N/OB
P-145	LFMAXP1	1	888	888	888	888	NO	NO
P-145	LFMAXP2	1	888	888	888	888	NO	NO
P-145	RTMAXI1	999	888	888	888	888	N/OB	N/OB
P-145	RTMAXP	999	888	888	888	888	N/OB	N/OB
P-147	RTMANM3	888	999	999	3	4	N/OB	N/OB
P-148	LFMANC	4	888	888	888	888	M	M
P-148	LFMANI1	5	888	888	888	888	NO	NO
P-148	LFMANI2	4	888	888	888	888	NO	NO
P-148	LFMANP2	2	888	888	888	888	D	D
P-148	RTMANC	3	888	888	888	888	NO	NO
P-148	RTMANI1	5	888	888	888	888	NO	NO
P-148	RTMANI2	4	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-148 RTMANM2	888	4	999	5	4	B,D
P-148 RTMANP1	3	888	888	888	888	NO
P-148 RTMANP2	2	888	888	888	888	NO
P-149 LFMANDI1	1	888	888	888	888 L	NO
P-149 LFMANDI2	1	888	888	888	888	NO
P-149 LFMANDM1	999	888	888	888	888	N/OB
P-149 LFMAXDC	999	888	888	888	888	N/OB
P-149 LFMAXDI1	1	888	888	888	888	NO
P-149 LFMAXDI2	1	888	888	888	888	O
P-149 LFMAXDM1	1	888	888	888	888	NO
P-149 LFMAXDM1	1	888	888	888	888	NO
P-149 RTMANDC	1	888	888	888	888	NO
P-149 RTMANDI1	1	888	888	888	888 L	NO
P-149 RTMANDI2	1	888	888	888	888	NO
P-149 RTMANDM1	999	888	888	888	888	N/OB
P-150 LFMANP2	2	888	888	888	888	D
P-150 RTMANM1	888	8	6	8	7 see form	M,B
P-150 RTMANM2	888	999	999	999	4	D,L
P-150 RTMANM3	888	4	2	3	1	NO
P-150 RTMAXC	3	888	888	888	888	NO
P-150 RTMAXP1	4	888	888	888	888	B,D
P-154 LFMANC	999	888	888	888	888 B	N/OB
P-154 LFMANI2	7	888	888	888	888 B	N/OB
P-154 LFMANP1	6	888	888	888	888 B-INTER	NO
P-154 LFMANP2	999	888	888	888	888	N/OB
P-154 LFMAXC	7	888	888	888	888 L	N/OB
P-154 LFMAXI1	7	888	888	888	888 L	N/OB

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-154 LFMXMI	888	4	3	5	4	NO	NO
P-154 RTMANC	8	888	888	888	888 B	N/OB	N/OB
P-154 RTMANI2	8	888	888	888	888 B	N/OB	N/OB
P-154 RTMANM2	888	9	8	8	6	NO	NO
P-154 RTMAXC	999	888	888	888	888 D-ROOT	N/OB	N/OB
P-154 RTMAXI1	7	888	888	888	888 L	N/OB	N/OB
P-154 RTMAXMI	888	8	999	999	4 D-INTER	N/OB	N/OB
P-154 RTMAXP1	5	888	888	888	888 M	N/OB	N/OB
P-155 LFMAXC	3	888	888	888	888	NO	NO
P-155 LFMAXM2	888	3	4	3	4	NO	NO
P-155 LFMAXM3	888	2	2	4	2	NO	NO
P-155 LFMAXP1	2	888	888	888	888	NO	NO
P-155 RTMAXP1	2	888	888	888	888	NO	NO
P-156 LFMANM1	888	999	999	999	999	N/OB	N/OB
P-156 LFMANM2	888	999	999	999	999	N/OB	N/OB
P-156 LFMANM3	888	1	1	1	1	NO	NO
P-156 LFMANP1	2	888	888	888	888	D,B	D,B
P-156 LFMANP2	2	888	888	888	888	D	D
P-156 LFMAXC	4	888	888	888	888	NO	NO
P-156 LFMAXI1	3	888	888	888	888	NO	NO
P-156 LFMAXI2	2	888	888	888	888	NO	NO
P-156 LFMAXMI	888	3	5	3	4 INTER	B	B
P-156 LFMAXM2	888	2	999	4	999 INTER	N/OB	N/OB
P-156 LFMAXP1	1	888	888	888	888 INTER	NO	NO
P-156 LFMAXP2	2	888	888	888	888 INTER	NO	NO
P-156 RTMANC	3	888	888	888	888	NO	NO
P-156 RTMANI2	4	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTDDL	OTHERWEAR	CHIPPING
P-156	RTMANM2	888	3	3	3	3	NO	NO
P-156	RTMANP1	999	888	888	888	888	N/OB	N/OB
P-156	RTMANP2	999	888	888	888	888	N/OB	N/OB
P-156	RTMAXC	3	888	888	888	888	B	B
P-156	RTMAXI2	2	888	888	888	888	NO	NO
P-156	RTMAXM1	888	4	3	5	4 INTER	O	O
P-156	RTMAXM2	888	3	3	4	4 INTER	D	D
P-156	RTMAXM3	888	1	1	1	1	NO	NO
P-156	RTMAXP1	3	888	888	888	888	NO	NO
P-156	RTMAXP2	2	888	888	888	888 INTER	M	M
P-159	LFMANDC	3	888	888	888	888	L	L
P-159	LFMANDI1	4	888	888	888	888	M	M
P-159	LFMANDI2	2	888	888	888	888	M	M
P-159	LFMANDM1	999	888	888	888	888	NO	NO
P-159	LFMANDM2	888	2	999	3	1	B	B
P-159	LFMAXDC	3	888	888	888	888	O	O
P-159	LFMAXDI2	3	888	888	888	888	L	L
P-159	LFMAXDM1	4	888	888	888	888	NO	NO
P-159	LFMAXDM2	888	1	3	1	2	NO	NO
P-159	RTMANDC	3	888	888	888	888	L	L
P-159	RTMANDI1	4	888	888	888	888	M,D,B	M,D,B
P-159	RTMANDI2	3	888	888	888	888	NO	NO
P-159	RTMANDM2	888	2	1	2	1	NO	NO
P-159	RTMAXDC	999	888	888	888	888	N/OB	N/OB
P-159	RTMAXDI1	3	888	888	888	888	L	L
P-159	RTMAXDI2	3	888	888	888	888	L	L
P-159	RTMAXDM1	2	888	888	888	888	NO	NO

SPEC TOOTH		SMITH		SCOTTMB		SCOTTML		SCOTTDL		OTHERWEAR		CHIPPING	
P-159	RTMAXDM2	888	1	2	1	1	1	1	NO				
P-160	LFMANDC	3	888	888	888	888	888	888	O				
P-160	LFMANDI2	2	888	888	888	888	888	888	NO				
P-160	LFMANDM1	4	888	888	888	888	888	888	NO				
P-160	LFMANDM2	888	4	1	2	1	1	1	D-O				
P-160	LFMAXDC	3	888	888	888	888	888	888	O				
P-160	LFMAXDM1	3	888	888	888	888	888	888	N/OB				
P-160	LFMAXDM2	888	2	4	4	2	2	2	NO				
P-160	RTMANDC	3	888	888	888	888	888	888	O				
P-160	RTMANDM1	4	888	888	888	888	888	888	NO				
P-160	RTMANDM2	888	3	1	4	1	1	1	NO				
P-160	RTMAXDM1	3	888	888	888	888	888	888	NO				
P-160	RTMAXDM2	888	2	4	2	2	2	2	M				
P-162	LFMANC	1	888	888	888	888	888	888	NO				
P-162	LFMANI1	4	888	888	888	888	888	888	D				
P-162	LFMANI2	2	888	888	888	888	888	888	NO				
P-162	LFMANM1	888	5	3	999	999	999	999	N/OB				
P-162	LFMANM2	888	4	2	3	3	3	3	L				
P-162	LFMANP1	1	888	888	888	888	888	888	NO				
P-162	LFMANP2	2	888	888	888	888	888	888	NO				
P-162	LFMAXC	1	888	888	888	888	888	888	NO				
P-162	LFMAXI1	3	888	888	888	888	888	888	NO				
P-162	LFMAXI2	1	888	888	888	888	888	888	NO				
P-162	LFMAXM1	888	4	5	4	4	4	4	B				
P-162	LFMAXM2	888	2	2	1	1	1	1	NO				
P-162	LFMAXP1	1	888	888	888	888	888	888	NO				
P-162	LFMAXP2	1	888	888	888	888	888	888	NO				

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-162 RTMANC	2	888	888	888	888	NO	NO
P-162 RTMANI1	3	888	888	888	888	NO	NO
P-162 RTMANI2	2	888	888	888	888	NO	NO
P-162 RTMANM1	888	4	2	4	3	NO	NO
P-162 RTMANM2	888	2	1	3	3	NO	NO
P-162 RTMANP1	2	888	888	888	888	NO	NO
P-162 RTMANP2	2	888	888	888	888	NO	NO
P-162 RTMAXC	1	888	888	888	888	NO	NO
P-162 RTMAXI1	888	888	888	888	888	NO	NO
P-162 RTMAXI2	1	888	888	888	888	NO	NO
P-162 RTMAXM1	888	4	4	5	4	M	M
P-162 RTMAXM2	888	1	2	1	1	NO	NO
P-162 RTMAXP1	1	888	888	888	888	NO	NO
P-162 RTMAXP2	2	888	888	888	888	NO	NO
P-163 LFMANC	7	888	888	888	888	D	D
P-163 LFMAXC	8	888	888	888	888	NO	NO
P-163 LFMAXI1	5	888	888	888	888	M	M
P-163 LFMAXI2	8	888	888	888	888	NO	NO
P-163 LFMAXM1	888	4	4	9	8	O-B	O-B
P-163 LFMAXM2	888	3	3	3	3	O-B	O-B
P-163 LFMAXM3	888	1	1	1	1	O	O
P-163 LFMAXP2	5	888	888	888	888	O	O
P-163 RTMANC	9	888	888	888	888	NO	NO
P-163 RTMANI2	6	888	888	888	888 M-INTER	D	D
P-163 RTMAXC	7	888	888	888	888	NO	NO
P-163 RTMAXI1	8	888	888	888	888	NO	NO
P-163 RTMAXM1	888	4	4	5	8	B	B

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-163	RTMAXM2	888	3	3	3	3	NO	NO
P-163	RTMAXM3	888	1	1	1	1	NO	NO
P-163	RTMAXP1	8	888	888	888	888 D-INTER	B	B
P-163	RTMAXP2	5	888	888	888	888 M-INTER	NO	NO
P-164	LFMANM3	888	4	4	4	4	M	M
P-164	LFMANP1	2	888	888	888	888	NO	NO
P-164	LFMANP2	2	888	888	888	888	O	O
P-164	RTMANP1	3	888	888	888	888	M	M
P-164	RTMAXM2	888	2	4	3	4	NO	NO
P-164	RTMAXM3	888	1	4	1	4	NO	NO
P-164	RTMAXP2	2	888	888	888	888	M	M
P-167	LFMANDC	2	888	888	888	888 B-M	O	O
P-167	LFMANDI1	2	888	888	888	888	NO	NO
P-167	LFMANDI2	1	888	888	888	888 B	NO	NO
P-167	RTMANDC	999	888	888	888	888	N/OB	N/OB
P-167	RTMANDI1	2	888	888	888	888 B	NO	NO
P-167	RTMANDI2	1	888	888	888	888	NO	NO
P-167	RTMANDM1	1	888	888	888	888	NO	NO
P-168	LFMANDM2	888	2	1	2	1	NO	NO
P-168	LFMAXDC	1	888	888	888	888	NO	NO
P-168	LFMAXDM1	2	888	888	888	888	D	D
P-168	LFMAXDM2	888	1	1	1	1	NO	NO
P-168	RTMANDI2	1	888	888	888	888	NO	NO
P-168	RTMANDM1	1	888	888	888	888	NO	NO
P-168	RTMANDM2	888	1	1	1	1	NO	NO
P-168	RTMAXDM1	3	888	888	888	888	M	M
P-168	RTMAXDM2	888	1	1	999	999	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-169	LFMAXM1	888	9	9	9	999	O-D	
P-169	LFMAXP2	6	888	888	888	888	N/OB	
P-169	RTMAXC	8	888	888	888	888	N/OB	
P-169	RTMAXP2	7	888	888	888	888	N/OB	
P-172	LFMANDC	1	888	888	888	888	O	
P-172	LFMANDI2	1	888	888	888	888	NO	
P-172	LFMANDM1	4	888	888	888	888	NO	
P-172	LFMANDM2	888	4	1	4	4	NO	
P-172	LFMAXDC	2	888	888	888	888	NO	
P-172	LFMAXDI1	999	888	888	888	888	N/OB	
P-172	LFMAXDI2	2	888	888	888	888	N/OB	
P-172	LFMAXDM1	3	888	888	888	888	B	
P-172	LFMAXDM2	888	1	2	1	2	NO	
P-172	RTMANDC	2	888	888	888	888	NO	
P-172	RTMANDM1	4	888	888	888	888	NO	
P-172	RTMANDM2	888	4	1	4	2	NO	
P-172	RTMAXDC	888	888	888	888	888	NO	
P-172	RTMAXDI2	888	888	888	888	888	NO	
P-172	RTMAXDM1	999	888	888	888	888	N/OB	
P-172	RTMAXDM2	888	1	2	2	2	NO	
P-173	LFMANM3	888	4	4	1	3	NO	
P-173	LFMAXP1	999	888	888	888	888	N/OB	
P-173	LFMAXP2	3	888	888	888	888	NO	
P-173	RTMANM2	888	5	5	999	4	N/OB	
P-174	LFMANM1	888	4	1	4	2	NO	
P-174	LFMANM2	888	5	2	5	2	NO	
P-174	LFMAXC	1	888	888	888	888	N/OB	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-174	LFMAXI2	1	888	888	888	888	NO	NO
P-174	LFMAXM2	888	1	3	2	3	NO	NO
P-174	LFMAXP1	2	888	888	888	888	NO	NO
P-174	RTMANC	2	888	888	888	888	NO	NO
P-174	RTMANM1	888	999	999	4	1	D	D
P-174	RTMANM2	888	2	999	2	2	NO	NO
P-174	RTMANP1	1	888	888	888	888	NO	NO
P-174	RTMANP2	1	888	888	888	888	NO	NO
P-174	RTMAXC	1	888	888	888	888	NO	NO
P-174	RTMAXI2	1	888	888	888	888	NO	NO
P-174	RTMAXM1	888	4	3	5	2	B-O,M	B-O,M
P-174	RTMAXM2	888	999	999	1	2	N/OB	N/OB
P-175	LFMANP2	999	888	888	888	888	N/OB	N/OB
P-175	LFMAXC	6	888	888	888	888	N/OB	N/OB
P-175	LFMAXI1	999	888	888	888	888	N/OB	N/OB
P-175	LFMAXP1	999	888	888	888	888	N/OB	N/OB
P-175	LFMAXP2	6	888	888	888	888	N/OB	N/OB
P-175	RTMANC	999	888	888	888	888	N/OB	N/OB
P-175	RTMAXI1	7	888	888	888	888	B	B
P-175	RTMAXP1	6	888	888	888	888	N/OB	N/OB
P-175	RTMAXP2	6	888	888	888	888	NO	NO
P-177	LFMANC	999	888	888	888	888	N/OB	N/OB
P-177	LFMANM1	888	8	5	8	5	NO	NO
P-177	LFMANM2	888	5	3	4	4	NO	NO
P-177	LFMANP2	4	888	888	888	888	NO	NO
P-177	LFMAXI1	5	888	888	888	888	M,D	M,D
P-177	LFMAXM1	888	999	999	999	999	N/OB	N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-177	LFMAXM2	888	5	5	4	5	M	
P-177	LFMAXM3	888	2	2	1	1	NO	
P-177	LFMAXP1	4	888	888	888	888	NO	
P-177	RTMANC	3	888	888	888	888	NO	
P-177	RTMANM1	888	5	2	5	3	NO	
P-177	RTMANM2	888	3	1	3	1	NO	
P-177	RTMANM3	888	2	1	2	1	O	
P-177	RTMANP2	999	888	888	888	888	N/OB	
P-177	RTMAXC	3	888	888	888	888	O	
P-177	RTMAXI2	4	888	888	888	888	NO	
P-177	RTMAXM2	888	2	3	4	2	O	
P-177	RTMAXM3	888	1	2	1	2	O	
P-177	RTMAXP1	2	888	888	888	888	O,B	
P-177	RTMAXP2	2	888	888	888	888	O	
P-178	LFMANM1	888	4	3	4	3	NO	
P-178	LFMANP2	1	888	888	888	888	NO	
P-178	LFMAXC	999	888	888	888	888	N/OB	
P-178	LFMAXM1	888	3	4	2	4	NO	
P-178	LFMAXP1	999	888	888	888	888	N/OB	
P-178	LFMAXP2	999	888	888	888	888	L	
P-178	RTMANM1	888	5	4	5	4 B, INTER	D	
P-178	RTMANM2	888	3	2	3	2 B	O	
P-178	RTMANP2	2	888	888	888	888 INTER	D	
P-178	RTMAXC	2	888	888	888	888	NO	
P-178	RTMAXI2	4	888	888	888	888	NO	
P-178	RTMAXM1	888	4	5	3	4	M,D	
P-178	RTMAXP1	2	888	888	888	888	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-179 LFMAXDM2	888	999	999	999	999	B,O	
P-179 RTMANM1	888	4	2	4	2	NO	
P-179 RTMAXM1	888	999	4	999	2	NO	
P-180 LFMANP2	6	888	888	888	888	NO	
P-180 LFMAXC	5	888	888	888	888	B	
P-180 RTMANM1	888	6	9	6	9	NO	
P-180 RTMANP1	5	888	888	888	888	NO	
P-180 RTMANP2	5	888	888	888	888	D	
P-180 RTMAXI2	7	888	888	888	888	N/OB	
P-180 RTMAXP1	7	888	888	888	888	N/OB	
P-182 LFMANDC	4	888	888	888	888	NO	
P-182 LFMANDI2	4	888	888	888	888	M	
P-182 LFMANDM1	4	888	888	888	888	D	
P-182 LFMANDM2	888	5	1	5	1	B	
P-182 LFMANM1	888	1	2	2	1	NO	
P-182 LFMAXDC	4	888	888	888	888	NO	
P-182 LFMAXDI2	5	888	888	888	888	M	
P-182 LFMAXDM2	888	3	6	3	4	B,L	
P-182 LFMAXM1	888	2	1	1	1	NO	
P-182 RTMANDM2	888	6	2	5	1	O	
P-182 RTMANM1	888	2	1	2	1	NO	
P-182 RTMAXDM1	4	888	888	888	888	NO	
P-182 RTMAXDM2	888	3	6	3	5	B,L	
P-182 RTMAXM1	888	1	2	2	1	NO	
P-183 LFMANDC	1	888	888	888	888	NO	
P-183 LFMANDI1	2	888	888	888	888	NO	
P-183 LFMANDI2	1	888	888	888	888	B	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-183	LFMANDM1	1	888	888	888	888	NO	NO
P-183	LFMAXDC	1	888	888	888	888	NO	NO
P-183	LFMAXDI1	1	888	888	888	888	NO	NO
P-183	LFMAXDI2	1	888	888	888	888 L	L	NO
P-183	LFMAXDM1	1	888	888	888	888	NO	NO
P-183	RTMANDC	1	888	888	888	888	NO	NO
P-183	RTMANDI1	2	888	888	888	888 B	B	NO
P-183	RTMANDI2	1	888	888	888	888	NO	NO
P-183	RTMANDM1	1	888	888	888	888	NO	NO
P-183	RTMAXDC	1	888	888	888	888	NO	NO
P-183	RTMAXDI1	2	888	888	888	888	NO	NO
P-183	RTMAXDI2	1	888	888	888	888 L	NO	NO
P-183	RTMAXDM1	1	888	888	888	888	NO	NO
P-188	LFMANC	4	888	888	888	888	NO	NO
P-188	LFMANM1	888	6	5	6	5	L-O	NO
P-188	LFMANM2	888	5	999	4	5	NO	NO
P-188	LFMANP1	4	888	888	888	888	NO	NO
P-188	RTMAXP2	3	888	888	888	888	NO	NO
P-189	LFMANM	888	999	999	999	999	N/OB	NO
P-189	LFMANP1	6	888	888	888	888	NO	NO
P-189	RTMANP1	6	888	888	888	888	NO	NO
P-190	LFMANC	4	888	888	888	888	O	NO
P-190	LFMANI1	999	888	888	888	888	N/OB	NO
P-190	LFMANI2	4	888	888	888	888	NO	NO
P-190	LFMANM1	888	5	3	4	2	NO	NO
P-190	LFMANM2	888	3	1	3	1	NO	NO
P-190	LFMANM3	888	0	0	0	0	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-190 LFMANP1	3	888	888	888	888	NO	NO
P-190 LFMANP2	2	888	888	888	888	NO	NO
P-190 LFMAXC	3	888	888	888	888	L	NO
P-190 LFMAXI1	4	888	888	888	888	NO	NO
P-190 LFMAXI2	3	888	888	888	888	NO	NO
P-190 LFMAXM1	888	4	5	4	4	NO	NO
P-190 LFMAXM2	888	3	4	3	3	NO	NO
P-190 LFMAXM3	888	1	1	1	1	NO	NO
P-190 LFMAXP1	3	888	888	888	888	NO	NO
P-190 LFMAXP2	999	888	888	888	888	N/OB	NO
P-190 RTMANC	3	888	888	888	888	NO	NO
P-190 RTMANI1	4	888	888	888	888	M-O	NO
P-190 RTMANI2	3	888	888	888	888	NO	NO
P-190 RTMANM1	888	5	4	4	2	NO	NO
P-190 RTMANM2	888	3	2	3	1	NO	NO
P-190 RTMANM3	888	0	0	0	0	NO	NO
P-190 RTMANP1	2	888	888	888	888	NO	NO
P-190 RTMANP2	2	888	888	888	888	NO	NO
P-190 RTMAXC	2	888	888	888	888	NO	NO
P-190 RTMAXI1	4	888	888	888	888	NO	NO
P-190 RTMAXI2	1	888	888	888	888	NO	NO
P-190 RTMAXM1	888	5	4	4	4	NO	NO
P-190 RTMAXM2	888	2	3	3	3	NO	NO
P-190 RTMAXM3	888	1	1	1	1	NO	NO
P-190 RTMAXP1	2	888	888	888	888	NO	NO
P-190 RTMAXP2	2	888	888	888	888	NO	NO
P-191 LFMAXDI1	1	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-191	LFMAXDI2	1	888	888	888	888	NO	NO
P-192	LFMANM1	888	6	5	6	5	M,D	M,D
P-192	LFMANM2	888	5	4	5	4	M	M
P-192	LFMANM3	888	4	4	3	2	NO	NO
P-192	LFMANP2	4	888	888	888	888	M	M
P-192	LFMAXI2	5	888	888	888	888	NO	NO
P-192	LFMAXM1	888	6	9	5	9	M,D	M,D
P-192	LFMAXP1	5	888	888	888	888	M	M
P-192	LFMAXP2	6	888	888	888	888	M	M
P-192	RTMANC	5	888	888	888	888	NO	NO
P-192	RTMANI1	7	888	888	888	888	NO	NO
P-192	RTMANM1	888	6	8	5	6	M,D	M,D
P-192	RTMANM2	888	4	5	4	4	D	D
P-192	RTMANM3	888	4	4	3	3	NO	NO
P-192	RTMANP2	6	888	888	888	888	D	D
P-192	RTMAXC	6	888	888	888	888	M	M
P-192	RTMAXI1	999	888	888	888	888	N/OB	N/OB
P-192	RTMAXI2	6	888	888	888	888	D	D
P-192	RTMAXM1	888	999	9	7	9	M	M
P-192	RTMAXP1	999	888	888	888	888	N/OB	N/OB
P-192	RTMAXP2	999	888	888	888	888	N/OB	N/OB
P-193	LFMANDM2	888	999	1	4	1	N/OB	N/OB
P-193	LFMANM1	888	1	1	1	1	NO	NO
P-194	LFMANM1	888	4	4	4	4	M-O	M-O
P-194	LFMAXM3	888	1	1	3	1	O	O
P-194	RTMANM1	888	5	4	6	5	M	M
P-194	RTMANM3	888	4	4	4	4	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDLB	SCOTDDL	OTHERWEAR	CHIPPING
P-194 RTMAXC	6	888	888	888	888	NO	NO
P-194 RTMAXM1	888	6	4	9	4	B-O,M	
P-195 LFMANC	999	888	888	888	888	N/OB	
P-195 LFMANI1	6	888	888	888	888	NO	
P-195 LFMANI2	5	888	888	888	888	NO	
P-195 LFMANM1	888	999	999	999	999	N/OB	
P-195 LFMANM2	888	4	4	5	5	NO	
P-195 LFMANP1	999	888	888	888	888	N/OB	
P-195 LFMANP2	5	888	888	888	888	M	
P-195 LFMAXC	999	888	888	888	888	N/OB	
P-195 LFMAXI2	999	888	888	888	888	N/OB	
P-195 LFMAXP1	999	888	888	888	888	N/OB	
P-195 LFMAXP2	999	888	888	888	888	N/OB	
P-195 RTMANC	6	888	888	888	888	NO	
P-195 RTMANM1	888	6	5	4	3	M	
P-195 RTMANM2	888	4	4	4	4	NO	
P-195 RTMANP1	5	888	888	888	888	D	
P-195 RTMANP2	4	888	888	888	888	NO	
P-195 RTMAXC	6	888	888	888	888	N/OB	
P-195 RTMAXI2	5	888	888	888	888	NO	
P-195 RTMAXM	888	4	4	4	4	NO	
P-197 LFMAXM1	888	999	999	9	9	N/OB	
P-197 LFMAXM3	888	1	2	1	2	NO	
P-197 RTMAXM3	888	999	999	1	1	N/OB	
P-199 MAXM	888	4	4	5	4	NO	
P-199 RTMAXM3	888	999	999	999	999	N/OB	
P-200 LFMANDC	1	888	888	888	888	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-200 LFMANDI2	2	888	888	888	888	NO	NO
P-200 LFMANDM1	1	888	888	888	888 O-D	NO	NO
P-200 LFMANDM2	888	1	1	1	1	NO	NO
P-200 LFMAXDC	1	888	888	888	888	NO	NO
P-200 LFMAXDI1	2	888	888	888	888 L	O	O
P-200 LFMAXDI2	1	888	888	888	888 L	NO	NO
P-200 LFMAXDM1	1	888	888	888	888 B-O	NO	NO
P-200 LFMAXDM2	888	1	1	1	1	NO	NO
P-200 RTMANDC	1	888	888	888	888	NO	NO
P-200 RTMANDI1	2	888	888	888	888	NO	NO
P-200 RTMANDI2	999	888	888	888	888	N/OB	N/OB
P-200 RTMANDM1	1	888	888	888	888	B-O	B-O
P-200 RTMANDM2	888	1	1	1	1	NO	NO
P-200 RTMAXDC	1	888	888	888	888	NO	NO
P-200 RTMAXDI1	2	888	888	888	888 L-DENTIN	NO	NO
P-200 RTMAXDI2	1	888	888	888	888	NO	NO
P-200 RTMAXDM1	1	888	888	888	888	NO	NO
P-200 RTMAXDM2	888	999	999	999	999	N/OB	N/OB
P-201 LFMANDM2	888	1	1	999	999	N/OB	N/OB
P-201 LFMAXDM2	888	999	1	999	1	N/OB	N/OB
P-201 RTMANDM2	888	1	1	1	1	N/OB	N/OB
P-201 RTMAXDM2	888	1	1	1	999	N/OB	N/OB
P-202 LFMANDC	3	888	888	888	888	NO	NO
P-202 LFMANDI1	4	888	888	888	888	NO	NO
P-202 LFMANDI2	3	888	888	888	888	NO	NO
P-202 LFMANDM1	2	888	888	888	888	NO	NO
P-202 LFMANDM2	888	1	1	1	1	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-202	LFMAXDC	2	888	888	888	888	NO	NO
P-202	LFMAXDM1	2	888	888	888	888	NO	NO
P-202	LFMAXDM2	888	1	1	1	1	NO	NO
P-202	RTMANDC	3	888	888	888	888	NO	NO
P-202	RTMANDI1	4	888	888	888	888	NO	NO
P-202	RTMANDI2	3	888	888	888	888	NO	NO
P-202	RTMANDM1	2	888	888	888	888	D-O	NO
P-202	RTMANDM2	888	1	1	1	1	NO	NO
P-202	RTMAXDC	2	888	888	888	888	NO	NO
P-202	RTMAXDI1	3	888	888	888	888	NO	NO
P-202	RTMAXDM1	2	888	888	888	888	NO	NO
P-202	RTMAXDM2	888	1	1	1	1	NO	NO
P-204	LFMANDM2	888	4	1	4	1	NO	NO
P-204	LFMANM1	888	1	1	1	1	NO	NO
P-204	LFMAXDM1	2	888	888	888	888	M-O	NO
P-204	LFMAXDM2	888	2	3	2	2	NO	NO
P-204	LFMAXM1	888	1	1	1	1	NO	NO
P-204	RTMANDM2	888	4	1	4	1	M	NO
P-204	RTMANM1	888	1	1	1	1	NO	NO
P-204	RTMAXDC	3	888	888	888	888	NO	NO
P-204	RTMAXDM1	2	888	888	888	888	M	NO
P-204	RTMAXDM2	888	2	3	2	1	NO	NO
P-204	RTMAXM1	888	1	1	1	1	NO	NO
P-205	LFMANP1	7	888	888	888	888	M	NO
P-206	LFMANDI1	1	888	888	888	888	NO	NO
P-206	RTMANDI1	1	888	888	888	888	NO	NO
P-206	RTMANDI2	1	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-207 LFMANDC	2	888	888	888	888	NO	NO
P-207 LFMANDI1	999	888	888	888	888	O	O
P-207 LFMANDI2	2	888	888	888	888	NO	NO
P-207 LFMANDM1	1	888	888	888	888	O	O
P-207 LFMANDM2	888	1	1	1	1	NO	NO
P-207 LFMAXDC	1	888	888	888	888	NO	NO
P-207 LFMAXDI1	3	888	888	888	888	NO	NO
P-207 LFMAXDI2	1	888	888	888	888	NO	NO
P-207 LFMAXDMI1	1	888	888	888	888	NO	NO
P-207 LFMAXDM2	888	1	1	1	1	NO	NO
P-207 RTMANDC	2	888	888	888	888	NO	NO
P-207 RTMANDI1	3	888	888	888	888	NO	NO
P-207 RTMANDI2	2	888	888	888	888	NO	NO
P-207 RTMANDM1	1	888	888	888	888	NO	NO
P-207 RTMANDM2	888	1	1	1	1	NO	NO
P-207 RTMAXDC	2	888	888	888	888	NO	NO
P-207 RTMAXDI1	2	888	888	888	888	NO	NO
P-207 RTMAXDI2	2	888	888	888	888	NO	NO
P-207 RTMAXDMI1	1	888	888	888	888	NO	NO
P-207 RTMAXDM2	888	1	1	1	1	B-O	B-O
P-208 LFMANDC	1	888	888	888	888	NO	NO
P-208 LFMANDM1	999	888	888	888	888	N/OB	N/OB
P-208 LFMANDM2	888	0	0	0	0	N/OB	N/OB
P-208 LFMAXDM2	888	999	999	999	999	N/OB	N/OB
P-208 RTMANDC	999	888	888	888	888	NO	NO
P-208 RTMANDM1	1	888	888	888	888	NO	NO
P-208 RTMANDM2	888	1	2	1	1	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-208 RTMANDM2	888	1	1	2	1	NO	NO
P-208 RTMAXDC	3	888	888	888	888	NO	NO
P-208 RTMAXDM1	1	888	888	888	888	NO	NO
P-209 LFMANC	2	888	888	888	888	NO	NO
P-209 LFMANI1	4	888	888	888	888	NO	NO
P-209 LFMANI2	3	888	888	888	888	NO	NO
P-209 LFMANM1	888	2	1	1	1	NO	NO
P-209 LFMANM2	888	4	1	4	2	NO	NO
P-209 LFMANP1	1	888	888	888	888	NO	NO
P-209 LFMANP2	1	888	888	888	888	NO	NO
P-209 LFMAXC	1	888	888	888	888	NO	NO
P-209 LFMAXI1	3	888	888	888	888	NO	NO
P-209 LFMAXI2	2	888	888	888	888	NO	NO
P-209 LFMAXM1	888	3	4	1	4	NO	NO
P-209 LFMAXM2	888	1	999	1	999	NO	NO
P-209 LFMAXP1	999	888	888	888	888	N/OB	NO
P-209 LFMAXP2	1	888	888	888	888	NO	NO
P-209 RTMANC	1	888	888	888	888	NO	NO
P-209 RTMANI1	4	888	888	888	888	NO	NO
P-209 RTMANI2	2	888	888	888	888	NO	NO
P-209 RTMANM1	888	4	2	4	3	NO	NO
P-209 RTMANM2	888	1	1	2	1	NO	NO
P-209 RTMANP1	1	888	888	888	888	NO	NO
P-209 RTMANP2	1	888	888	888	888	NO	NO
P-209 RTMAXI1	2	888	888	888	888	NO	NO
P-209 RTMAXM1	888	3	4	2	4	NO	NO
P-209 RTMAXM2	888	1	1	1	1	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-209 RTMAXP1	1	888	888	888	888	NO	NO
P-209 RTMAXP2	1	888	888	888	888	NO	NO
P-210 LFMANDC	2	888	888	888	888	O	O
P-210 LFMANDI2	2	888	888	888	888	NO	NO
P-210 LFMANDM1	2	888	888	888	888	D-O	D-O
P-210 LFMANDM2	888	2	1	1	1	M-O	M-O
P-210 LFMAXDC	2	888	888	888	888	NO	NO
P-210 LFMAXDI1	3	888	888	888	888	NO	NO
P-210 LFMAXDI2	1	888	888	888	888	D	D
P-210 LFMAXDM1	4	888	888	888	888	NO	NO
P-210 LFMAXDM2	888	1	1	1	1	M-O	M-O
P-210 RTMANDC	2	888	888	888	888	O	O
P-210 RTMANDI1	5	888	888	888	888	O	O
P-210 RTMANDI2	2	888	888	888	888	O	O
P-210 RTMANDM1	2	888	888	888	888	D-O	D-O
P-210 RTMANDM2	888	1	1	1	1	M-O	M-O
P-210 RTMAXDC	2	888	888	888	888	NO	NO
P-210 RTMAXDI1	4	888	888	888	888	O	O
P-210 RTMAXDM1	3	888	888	888	888	B-O	B-O
P-210 RTMAXDM2	888	1	1	1	1	M-O	M-O
P-211 MAXM	888	1	1	1	1	O	O
P-212 LFMANDC	1	888	888	888	888	NO	NO
P-212 LFMANDI2	2	888	888	888	888	NO	NO
P-212 LFMANDM2	888	1	1	1	1	NO	NO
P-212 LFMAXDC	1	888	888	888	888	NO	NO
P-212 LFMAXDI2	999	888	888	888	888	N/OB	N/OB
P-212 LFMAXDM1	999	888	888	888	888	N/OB	N/OB

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-214 LFMANM1	888	9	9	9	9	M	M
P-214 LFMANP1	6	888	888	888	888	M	M
P-214 LFMANP2	6	888	888	888	888	NO	NO
P-214 RTMANC	5	888	888	888	888	N/OB	N/OB
P-214 RTMANM1	888	9	9	10	9	NO	NO
P-214 RTMANM2	888	9	6	9	9	NO	NO
P-214 RTMANP1	6	888	888	888	888	MD	MD
P-214 RTMANP2	6	888	888	888	888	NO	NO
P-215 LFMANDM1	3	888	888	888	888	NO	NO
P-215 LFMANDM2	888	4	3	4	3	NO	NO
P-215 LFMAXM1	888	1	1	1	1	NO	NO
P-215 RTMANDM1	3	888	888	888	888	NO	NO
P-215 RTMANDM2	888	4	1	4	2	NO	NO
P-215 RTMANM1	888	1	1	2	1	NO	NO
P-215 RTMAXM1	888	999	999	999	999	N/OB	N/OB
P-216 LFMAN12	5	888	888	888	888	NO	NO
P-216 LFMANP1	999	888	888	888	888	N/OB	N/OB
P-216 LFMANP2	999	888	888	888	888	N/OB	N/OB
P-216 LFMAXC	4	888	888	888	888	NO	NO
P-216 LFMAXI1	999	888	888	888	888	N/OB	N/OB
P-216 LFMAXI2	999	888	888	888	888	N/OB	N/OB
P-216 LFMAXM2	888	3	4	3	5	NO	NO
P-216 LFMAXM3	888	3	4	2	2	NO	NO
P-216 LFMAXP2	4	888	888	888	888	N/OB	N/OB
P-216 RTMANI1	999	888	888	888	888	N/OB	N/OB
P-216 RTMANI2	999	888	888	888	888	N/OB	N/OB
P-216 RTMANM2	888	5	4	6	5	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-216	RTMAXC	999	888	888	888	888	N/OB	N/OB
P-216	RTMAXM1	888	4	6	4	6	N/OB	N/OB
P-216	RTMAXM2	888	4	999	3	999	N/OB	N/OB
P-216	RTMAXM3	888	3	1	4	3	NO	NO
P-216	RTMAXP1	999	888	888	888	888	N/OB	N/OB
P-217	LFMANI2	4	888	888	888	888	O	O
P-217	LFMANM1	888	5	4	5	4	D	D
P-217	LFMANM2	888	4	2	4	3	NO	NO
P-217	LFMANP2	2	888	888	888	888	NO	NO
P-217	LFMAXC	999	888	888	888	888	B	B
P-217	LFMAXI2	999	888	888	888	888	N/OB	N/OB
P-217	LFMAXM1	888	4	6	5	999	N/OB	N/OB
P-217	LFMAXM2	888	3	4	3	4	NO	NO
P-217	LFMAXM3	888	3	4	3	4	O	O
P-217	LFMAXP1	3	888	888	888	888	NO	NO
P-217	LFMAXP2	2	888	888	888	888	NO	NO
P-217	RTMANC	3	888	888	888	888	NO	NO
P-217	RTMANI1	5	888	888	888	888	M	M
P-217	RTMANM1	888	5	4	5	4	M,L	M,L
P-217	RTMANM2	888	999	999	999	999	N/OB	N/OB
P-217	RTMANP1	2	888	888	888	888	NO	NO
P-217	RTMANP2	2	888	888	888	888	NO	NO
P-217	RTMAXC	999	888	888	888	888	N/OB	N/OB
P-217	RTMAXM1	888	4	5	4	4	O	O
P-217	RTMAXP1	999	888	888	888	888	N/OB	N/OB
P-217	RTMAXP2	3	888	888	888	888	NO	NO
P-218	LFMANDC	3	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-218 LFMANDI1	4	888	888	888	888	NO	NO
P-218 LFMANDI2	3	888	888	888	888	NO	NO
P-218 LFMANDM1	999	888	888	888	888	N/OB	N/OB
P-218 LFMANDM2	888	2	1	2	1	NO	NO
P-218 LFMAXDC	4	888	888	888	888	NO	NO
P-218 LFMAXDI1	5	888	888	888	888	NO	NO
P-218 LFMAXDI2	5	888	888	888	888	NO	NO
P-218 LFMAXDM2	888	999	1	999	1	NO	NO
P-218 RTMANDI1	3	888	888	888	888	N/OB	N/OB
P-218 RTMANDM1	999	888	888	888	888	N/OB	N/OB
P-218 RTMANDM2	888	2	1	1	1	NO	NO
P-218 RTMAXDC	3	888	888	888	888	NO	NO
P-218 RTMAXDM1	2	888	888	888	888	NO	NO
P-218 RTMAXDM2	888	999	999	999	999	N/OB	N/OB
P-219 LFMANDM2	888	999	999	999	999	N/OB	N/OB
P-219 RTMANDM2	888	999	999	999	999	N/OB	N/OB
P-219 RTMANM1	888	2	1	2	1	NO	NO
P-220 LFMANM	888	999	999	4	2	N/OB	N/OB
P-220 LFMANP	3	888	888	888	888	NO	NO
P-220 RTMANM	888	4	999	3	999	N/OB	N/OB
P-220 RTMANM	888	999	3	999	999	N/OB	N/OB
P-220 RTMAXC	3	888	888	888	888	NO	NO
P-221 LFMANC	999	888	888	888	888	NO	NO
P-221 LFMANI1	999	888	888	888	888	N/OB	N/OB
P-221 LFMANI2	999	888	888	888	888	N/OB	N/OB
P-221 LFMANM1	888	5	2	5	3	NO	NO
P-221 LFMANM2	888	999	999	3	3	N/OB	N/OB

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTDDL	OTHERWEAR	CHIPPING
P-221 LFMANM3	888	999	999	999	999	NO	NO
P-221 LFMANP1	2	888	888	888	888	NO	NO
P-221 LFMANP2	3	888	888	888	888	NO	NO
P-221 LFMAXC	2	888	888	888	888	NO	NO
P-221 LFMAXI1	3	888	888	888	888	M	NO
P-221 LFMAXI2	2	888	888	888	888	NO	NO
P-221 LFMAXM1	888	4	999	3	4	NO	NO
P-221 LFMAXM2	888	4	4	3	999	N/OB	NO
P-221 LFMAXP1	2	888	888	888	888	NO	NO
P-221 LFMAXP2	3	888	888	888	888	NO	NO
P-221 RTMANC	2	888	888	888	888	O	NO
P-221 RTMANI1	3	888	888	888	888	NO	NO
P-221 RTMANI2	2	888	888	888	888	NO	NO
P-221 RTMANM1	888	999	999	5	3	NO	NO
P-221 RTMANM2	888	4	2	5	2	NO	NO
P-221 RTMANM3	888	999	999	999	999	N/OB	N/OB
P-221 RTMANP1	1	888	888	888	888	NO	NO
P-221 RTMANP2	999	888	888	888	888	N/OB	N/OB
P-221 RTMAXC	2	888	888	888	888	NO	NO
P-221 RTMAXI1	3	888	888	888	888	NO	NO
P-221 RTMAXI2	999	888	888	888	888	N/OB	N/OB
P-221 RTMAXM1	888	5	5	3	4	N/OB	N/OB
P-221 RTMAXM2	888	2	5	2	3	NO	NO
P-221 RTMAXM3	888	3	2	2	1	NO	NO
P-221 RTMAXP1	2	888	888	888	888	NO	NO
P-221 RTMAXP2	2	888	888	888	888	NO	NO
P-222 LFMAXC	999	888	888	888	888	N/OB	N/OB

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-222 LFMAXI1	999	888	888	888	888		N/OB
P-222 LFMAXI2	999	888	888	888	888		N/OB
P-222 LFMAXM1	888	999	999	999	999		N/OB
P-222 LFMAXP1	999	888	888	888	888		N/OB
P-222 LFMAXP2	999	888	888	888	888		N/OB
P-222 RTMAXC	999	888	888	888	888		N/OB
P-222 RTMAXI1	999	888	888	888	888		N/OB
P-222 RTMAXI2	999	888	888	888	888		N/OB
P-222 RTMAXM1	888	999	999	999	999		N/OB
P-222 RTMAXP1	999	888	888	888	888		N/OB
P-222 RTMAXP2	999	888	888	888	888		N/OB
P-223 LFMANM1	888	999	999	999	999		N/OB
P-223 LFMAXI1	1	888	888	888	888		NO
P-223 LFMAXI2	1	888	888	888	888		NO
P-223 RTMANM1	888	2	1	2	1		NO
P-223 RTMAXI1	1	888	888	888	888		NO
P-223 RTMAXM1	888	1	2	1	1		NO
P-224 LFMANC	3	888	888	888	888		NO
P-224 LFMANM1	888	5	4	5	4		D
P-224 LFMANM2	888	4	3	4	3		NO
P-224 LFMANM3	888	999	999	999	999		NO
P-224 LFMANP1	3	888	888	888	888		NO
P-224 LFMANP2	3	888	888	888	888		NO
P-224 LFMAXM1	888	4	6	4	5		NO
P-224 LFMAXP2	999	888	888	888	888		N/OB
P-224 RTMANM1	888	4	5	999	5		D
P-224 RTMANM2	888	4	2	4	3		NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-224	RTMANM3	888	2	2	2	1		NO
P-224	RTMANP2	3	888	888	888	888		NO
P-224	RTMAXC	2	888	888	888	888		NO
P-224	RTMAXM1	888	4	5	4	4		D-O
P-224	RTMAXM2	888	3	2	3	2		NO
P-224	RTMAXP1	2	888	888	888	888		NO
P-225	LFMANDC	1	888	888	888	888		NO
P-225	LFMANDI1	2	888	888	888	888		NO
P-225	LFMANDI1	2	888	888	888	888		NO
P-225	LFMANDI2	1	888	888	888	888		NO
P-225	LFMANDI2	1	888	888	888	888		NO
P-225	LFMANDM1	1	888	888	888	888		O
P-225	LFMANDM1	1	888	888	888	888		O
P-225	LFMANDM2	888	1	1	1	1		NO
P-226	LFMANC	6	888	888	888	888		N/OB
P-226	LFMANM1	888	999	999	5	4		N/OB
P-226	LFMAXI1	999	888	888	888	888		N/OB
P-226	RTMANC	999	888	888	888	888		N/OB
P-226	RTMANI1	6	888	888	888	888		N/OB
P-226	RTMANI2	999	888	888	888	888		N/OB
P-226	RTMANP2	999	888	888	888	888		N/OB
P-226	RTMAXC	6	888	888	888	888		N/OB
P-226	RTMAXI1	999	888	888	888	888		N/OB
P-226	RTMAXM1	888	999	4	3	3		L
P-226	RTMAXM2	888	2	2	2	2		NO
P-226	RTMAXM3	888	2	2	1	1		NO
P-227	RTMAXDI1	3	888	888	888	888		NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTM	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-229	LFMANDI1	1	888	888	888	888	NO	NO
P-229	LFMANDI2	1	888	888	888	888	NO	NO
P-229	RTMAXDI2	1	888	888	888	888	NO	NO
P-231	RTMANDI1	1	888	888	888	888	NO	NO
P-232	LFMANDC	999	888	888	888	888	N/OB	N/OB
P-232	LFMANDI2	999	888	888	888	888	N/OB	N/OB
P-232	LFMANDM2	888	4	999	4	999	N/OB	N/OB
P-232	LFMAXDI2	999	888	888	888	888	N/OB	N/OB
P-232	LFMAXDM1	3	888	888	888	988	N/OB	N/OB
P-232	LFMAXDM2	888	2	999	999	999	N/OB	N/OB
P-232	RTMANDI2	999	888	888	888	888	N/OB	N/OB
P-232	RTMANDM2	888	4	999	4	999	N/OB	N/OB
P-232	RTMAXDM1	999	888	888	888	888	N/OB	N/OB
P-232	RTMAXDM2	888	999	999	3	4	N/OB	N/OB
P-235	LFMANM3	888	1	1	1	1	NO	NO
P-235	LFMAXM2	888	1	1	2	1	NO	NO
P-235	LFMAXM3	888	1	1	1	1	NO	NO
P-235	RTMANP2	3	888	888	888	888	N/OB	N/OB
P-235	RTMAXM1	888	999	999	999	999	N/OB	N/OB
P-238	LFMAXM3	888	4	5	5	4	M,D	M,D
P-239	RTMAXM2	888	999	999	999	999	NO	NO
P-239	RTMAXM3	888	999	999	999	999	NO	NO
P-240	RTMANDM2	888	1	1	1	1	NO	NO
P-245	LFMANDC	2	888	888	888	888	NO	NO
P-245	LFMANDM1	1	888	888	888	888	NO	NO
P-245	LFMANDM2	888	3	1	1	1	O	O
P-245	LFMAXDM1	888	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-245 LFMAXDM2	888	2	3	2	2	O
P-245 RTMANDM1	1	888	888	888	888	NO
P-245 RTMANDM2	888	3	1	3	1	NO
P-245 RTMAXDM1	3	888	888	888	888	NO
P-245 RTMAXDM2	888	2	3	2	2	NO
P-247 LFMAXDM2	888	999	999	999	2	N/OB
P-247 RTMAXDM2	888	1	2	1	1	D-O
P-249 LFMANDC	2	888	888	888	888	N/OB
P-249 LFMANDI1	5	888	888	888	888	O
P-249 LFMANDI2	3	888	888	888	888	NO
P-249 LFMANDM2	888	4	1	4	3	NO
P-249 LFMANM1	888	2	1	2	1	NO
P-249 RTMANDI1	5	888	888	888	888	D-O
P-249 RTMANDI2	999	888	888	888	888	N/OB
P-249 RTMANDM2	888	2	1	999	999	N/OB
P-249 RTMANM1	888	999	999	999	999	N/OB
P-249 RTMAXDM2	888	999	999	999	999	N/OB
P-250 LFMANDM1	999	888	888	888	888	N/OB
P-250 LFMANDM2	888	999	1	999	2	NO
P-250 LFMANI1	1	888	888	888	888	NO
P-250 LFMANM1	888	1	1	1	1	NO
P-250 LFMAXDM2	888	3	5	3	3	B&M-O
P-250 LFMAXI1	1	888	888	888	888	O
P-250 LFMAXM1	888	1	1	1	1	NO
P-250 RTMANDC	5	888	888	888	888	M
P-250 RTMANDM2	888	999	1	3	2	N/OB
P-250 RTMANM1	888	1	1	1	1	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDLB	SCOTTDL	OTHERWEAR	CHIPPING
P-251	RTMANM1	888	1	1	1	1	NO	NO
P-251	RTMAXM1	888	1	1	1	1	NO	NO
P-252	LFMANDI1	999	888	888	888	888	NO	NO
P-252	LFMANDI2	1	888	888	888	888	O	O
P-252	RTMAXDI1	999	888	888	888	888	N/OB	N/OB
P-253	LFMANM1	888	2	999	2	999	NO	NO
P-254	LFMANC	3	888	888	888	888	NO	NO
P-254	LFMANI2	3	888	888	888	888	M-O	M-O
P-254	LFMANM1	888	5	4	5	4	NO	NO
P-254	RTMANM1	888	5	5	4	5	D-O	D-O
P-254	RTMANM2	888	4	4	4	4	NO	NO
P-254	RTMANM3	888	3	4	1	1	NO	NO
P-254	RTMANP1	3	888	888	888	888	NO	NO
P-254	RTMANP2	3	888	888	888	888	NO	NO
P-254	RTMAXM1	888	5	6	4	4	M-O	M-O
P-254	RTMAXM3	888	3	3	1	1	NO	NO
P-254	RTMAXP2	999	888	888	888	888	N/OB	N/OB
P-255	LFMAXDC	1	888	888	888	888	NO	NO
P-255	RTMAXDMI	2	888	888	888	888	NO	NO
P-256	LFMANM1	888	999	999	999	999	N/OB	N/OB
P-256	LFMANP1	1	888	888	888	888	NO	NO
P-256	LFMAXC	999	888	888	888	888	N/OB	N/OB
P-256	LFMAXI1	3	888	888	888	888	NO	NO
P-256	LFMAXM2	888	1	1	1	2	NO	NO
P-256	RTMANC	1	888	888	888	888	NO	NO
P-256	RTMANI2	1	888	888	888	888	NO	NO
P-256	RTMAXC	1	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-256	RTMAXI1	1	888	888	888	888	NO	NO
P-256	RTMAXM1	888	2	3	1	2	NO	NO
P-256	RTMAXM2	888	999	999	999	999	N/OB	N/OB
P-256	RTMAXP2	1	888	888	888	888	NO	NO
P-258	LFMANDI2	2	888	888	888	888	NO	NO
P-258	RTMANDM1	1	888	888	888	888	NO	NO
P-259	RTMAXDI1	2	888	888	888	888	NO	NO
P-261	LFMANDC	999	888	888	888	888	N/OB	N/OB
P-261	LFMANDM1	999	888	888	888	888	N/OB	N/OB
P-261	LFMANDM1	999	888	888	888	888	N/OB	N/OB
P-261	LFMANDM2	888	3	1	3	1	NO	NO
P-261	LFMAXDI2	999	888	888	888	888	N/OB	N/OB
P-261	MANDI1	999	888	888	888	888	N/OB	N/OB
P-261	RTMANDC	999	888	888	888	888	N/OB	N/OB
P-261	RTMANDM2	888	3	1	2	1	NO	NO
P-263	LFMANC	2	888	888	888	888	NO	NO
P-263	LFMANI2	4	888	888	888	888	D-O	D-O
P-263	LFMANM3	888	1	1	1	1	NO	NO
P-263	LFMAXC	2	888	888	888	888	NO	NO
P-263	LFMAXM1	888	4	4	3	4	M-O	M-O
P-263	LFMAXM2	888	4	4	1	1	NO	NO
P-263	LFMAXP2	1	888	888	888	888	NO	NO
P-263	RTMANM1	888	999	3	4	4	N/OB	N/OB
P-263	RTMANM2	888	4	3	4	4	NO	NO
P-263	RTMANM3	888	1	1	1	1	NO	NO
P-263	RTMANP2	3	888	888	888	888	NO	NO
P-263	RTMAXC	3	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-263 RTMAXI1	3	888	888	888	888	NO
P-263 RTMAXI2	2	888	888	888	888	NO
P-263 RTMAXM2	888	3	4	3	4	NO
P-263 RTMAXP1	2	888	888	888	888	NO
P-266 LFMAXDI1	1	888	888	888	888	NO
P-266 LFMAXDI2	1	888	888	888	888	NO
P-266 RTMAXDI1	1	888	888	888	888	NO
P-266 RTMAXDI2	1	888	888	888	888	NO
P-267 LFMANC	6	888	888	888	888	N/OB
P-267 LFMANI2	6	888	888	888	888	N/OB
P-267 LFMAXM2	888	4	4	4	4	NO
P-267 RTMAXC	999	888	888	888	888	N/OB
P-267 RTMAXM2	888	4	4	4	4	NO
P-267 RTMAXM3	888	4	5	4	5	NO
P-268 LFMANDC	1	888	888	888	888	B-O
P-268 LFMANDC	1	888	888	888	888	O
P-268 LFMANDI1	2	888	888	888	888	NO
P-268 LFMANDI2	1	888	888	888	888	NO
P-268 LFMANDM1	999	888	888	888	888	N/OB
P-268 LFMANDM2	888	1	999	1	999	NO
P-268 LFMANDM2	888	1	1	1	1	NO
P-268 RTMANDC	2	888	888	888	888 L	NO
P-268 RTMANDM1	2	888	888	888	888	B-O
P-268 RTMANDM2	888	1	1	1	1	NO
P-268 RTMAXDC	1	888	888	888	888	L
P-268 RTMAXDM1	2	888	888	888	888	B-O
P-268 RTMAXDM2	888	1	1	1	1	NO
P-268 RTMAXDM2	888	1	1	1	1	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-269 LFMANDM2	888	2	1	2	1	NO	NO
P-270 RTMANI1	999	888	888	888	888	NO	NO
P-270 RTMANI2	999	888	888	888	888	NO	NO
P-271 LFMANDC	2	888	888	888	888	NO	NO
P-271 LFMANDI2	1	888	888	888	888	O	O
P-271 LFMANDM1	1	888	888	888	888	O	O
P-271 LFMANDM2	888	1	1	1	1	NO	NO
P-271 LFMAXDC	1	888	888	888	888 L	O	O
P-271 LFMAXDI2	2	888	888	888	888 L	O	O
P-271 LFMAXDM1	1	888	888	888	888	NO	NO
P-271 LFMAXDM2	888	1	1	1	1	NO	NO
P-271 RTMANDC	1	888	888	888	888 LAB	NO	NO
P-271 RTMANDI2	1	888	888	888	888	O	O
P-271 RTMANDM1	1	888	888	888	888	NO	NO
P-271 RTMANDM2	888	1	1	1	1	NO	NO
P-271 RTMAXDC	4	888	888	888	888 L	O	O
P-271 RTMAXDI2	2	888	888	888	888	M	M
P-271 RTMAXDM1	1	888	888	888	888	NO	NO
P-271 RTMAXDM2	888	1	1	1	1	NO	NO
P-273 RTMANDM1	1	888	888	888	888	NO	NO
P-273 RTMANDM2	888	1	1	1	1	B-O	B-O
P-273 RTMAXDM2	888	1	1	1	1	NO	NO
P-274 LFMANDC	1	888	888	888	888	NO	NO
P-274 LFMANDI2	4	888	888	888	888	NO	NO
P-274 LFMANDM1	2	888	888	888	888	NO	NO
P-274 LFMANDM2	888	1	1	1	1	NO	NO
P-274 LFMAXDM1	2	888	888	888	888	N/OB	N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-274	LFMAXDM2	888	1	1	1	1	NO	NO
P-274	RTMANDC	1	888	888	888	888	NO	NO
P-274	RTMANDI1	5	888	888	888	888	NO	NO
P-274	RTMANDI2	3	888	888	888	888	NO	NO
P-274	RTMANDM1	1	888	888	888	888	NO	NO
P-274	RTMANDM2	888	1	1	1	1	NO	NO
P-274	RTMAXDM1	1	888	888	888	888	NO	NO
P-274	RTMAXDM2	888	1	1	1	1	NO	NO
P-275	LFMAXP1	3	888	888	888	888	N/OB	N/OB
P-275	RTMANM3	888	2	1	1	1	NO	NO
P-276	LFMANM1	888	5	4	5	4	NO	NO
P-276	LFMANM2	888	4	3	4	4	NO	NO
P-276	LFMANM3	888	1	2	1	1	NO	NO
P-276	LFMAXC	5	888	888	888	888 L	NO	NO
P-276	LFMAXI1	999	888	888	888	888 L	N/OB	N/OB
P-276	LFMAXI2	999	888	888	888	888 L	N/OB	N/OB
P-276	LFMAXM3	888	2	1	1	1	NO	NO
P-276	RTMANM1	888	5	4	999	4	N/OB	N/OB
P-276	RTMANM2	888	4	4	4	999	M-O	M-O
P-276	RTMANM3	888	1	2	1	2	NO	NO
P-276	RTMANP1	3	888	888	888	888	NO	NO
P-276	RTMANP2	999	888	888	888	888	N/OB	N/OB
P-276	RTMAXC	999	888	888	888	888	N/OB	N/OB
P-276	RTMAXM3	888	2	1	1	1	NO	NO
P-277	LFMANM1	888	1	1	1	1	NO	NO
P-277	LFMAXM1	888	1	1	1	1	NO	NO
P-277	RTMANDM2	888	4	2	4	2	N/OB	N/OB

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-277 RTMANM1	888	999	1	1	1	NO	NO
P-277 RTMAXDI1	999	888	888	888	888	N/OB	N/OB
P-277 RTMAXM1	888	999	1	999	1	NO	NO
P-278 LFMANM	888	999	999	5	9	B-O	B-O
P-278 LFMANP1	8	888	888	888	888	N/OB	N/OB
P-278 RTMANI	7	888	888	888	888	N/OB	N/OB
P-278 RTMANM1	888	999	8	999	9	NO	NO
P-279 LFMANDM1	1	888	888	888	888	NO	NO
P-279 LFMANDM2	888	4	1	4	1	NO	NO
P-279 RTMANDC	3	888	888	888	888	NO	NO
P-279 RTMAXDM2	888	2	2	1	1	NO	NO
P-282 LFMANDC	1	888	888	888	888	NO	NO
P-282 LFMANDM1	2	888	888	888	888	NO	NO
P-282 LFMANDM2	888	1	1	1	1	NO	NO
P-282 LFMAXDI1	2	888	888	888	888	NO	NO
P-282 LFMAXDM1	2	888	888	888	888	N/OB	N/OB
P-282 LFMAXDM2	888	1	1	1	1	NO	NO
P-282 RTMANDM1	2	888	888	888	888	N/OB	N/OB
P-282 RTMANDM2	888	1	1	1	1	NO	NO
P-282 RTMAXDI1	2	888	888	888	888	NO	NO
P-282 RTMAXDM2	888	1	1	1	1	NO	NO
P-283 LFMANI1	2	888	888	888	888	NO	NO
P-283 LFMANI2	2	888	888	888	888	NO	NO
P-283 LFMANM1	888	4	3	3	2	NO	NO
P-283 LFMANM2	888	1	1	1	1	NO	NO
P-283 LFMANP1	1	888	888	888	888	NO	NO
P-283 LFMAXI1	1	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-283	LFMAXI2	1	888	888	888	888	NO	NO
P-283	LFMAXM1	888	3	4	3	4	NO	NO
P-283	LFMAXM2	888	1	1	1	1	NO	NO
P-283	LFMAXP1	1	888	888	888	888	NO	NO
P-283	RTMANC	1	888	888	888	888	NO	NO
P-283	RTMANI1	1	888	888	888	888	NO	NO
P-283	RTMANI2	1	888	888	888	888	NO	NO
P-283	RTMANM1	888	999	999	999	999	NO	NO
P-283	RTMANM2	888	1	1	1	1	NO	NO
P-283	RTMANP1	1	888	888	888	888	NO	NO
P-283	RTMAXI1	2	888	888	888	888	NO	NO
P-283	RTMAXI2	1	888	888	888	888	NO	NO
P-283	RTMAXM1	888	3	4	3	3	NO	NO
P-283	RTMAXM2	888	1	1	1	1	NO	NO
P-283	RTMAXP1	1	888	888	888	888	NO	NO
P-284	LFMANC	1	888	888	888	888	NO	NO
P-284	LFMANM1	888	4	3	4	3	D&L-O	D&L-O
P-284	LFMANM2	888	3	2	3	2	NO	NO
P-284	LFMANP1	1	888	888	888	888	NO	NO
P-284	LFMANP2	1	888	888	888	888	NO	NO
P-284	LFMAXC	1	888	888	888	888	NO	NO
P-284	LFMAXI1	1	888	888	888	888	NO	NO
P-284	LFMAXI2	1	888	888	888	888	NO	NO
P-284	LFMAXM1	888	3	4	3	4	NO	NO
P-284	LFMAXM2	888	2	3	3	4	NO	NO
P-284	LFMAXP1	1	888	888	888	888	NO	NO
P-284	LFMAXP2	2	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-284 RTMANC	3	888	888	888	888	NO	NO
P-284 RTMANI2	2	888	888	888	888	NO	NO
P-284 RTMANM1	888	3	4	4	3	M-O	M-O
P-284 RTMANM2	888	2	1	3	2	NO	NO
P-284 RTMANP1	1	888	888	888	888	NO	NO
P-284 RTMANP2	1	888	888	888	888	NO	NO
P-284 RTMAXC	1	888	888	888	888	NO	NO
P-284 RTMAXI1	1	888	888	888	888	NO	NO
P-284 RTMAXI2	1	888	888	888	888	NO	NO
P-284 RTMAXM1	888	3	4	3	4	NO	NO
P-284 RTMAXM2	888	1	2	999	999	NO	NO
P-284 RTMAXP1	1	888	888	888	888	NO	NO
P-284 RTMAXP2	2	888	888	888	888	NO	NO
P-285 MAXM3	888	2	4	2	4	NO	NO
P-285 RTMANM3	888	3	3	3	3	NO	NO
P-285 RTMANP	3	888	888	888	888	D-O	D-O
P-286 LFMANM3	888	999	999	999	999	N/OB	N/OB
P-286 LFMANP1	999	888	888	888	888	N/OB	N/OB
P-286 LFMAXC	6	888	888	888	888	N/OB	N/OB
P-286 RTMANM2	888	5	4	5	4	NO	NO
P-286 RTMANM3	888	5	3	4	4	NO	NO
P-286 RTMANP2	5	888	888	888	888	NO	NO
P-287 LFMANDC	1	888	888	888	888	NO	NO
P-287 LFMANDI2	1	888	888	888	888	NO	NO
P-287 LFMANDM1	1	888	888	888	888	NO	NO
P-287 LFMANDM1	1	888	888	888	888	NO	NO
P-287 LFMAXDC	999	888	888	888	888	N/OB	N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-287	LFMAXDI1	1	888	888	888	888	NO	NO
P-287	RTMANDC	1	888	888	888	888	NO	NO
P-287	RTMANDI1	2	888	888	888	888	NO	NO
P-287	RTMANDI2	2	888	888	888	888	NO	NO
P-287	RTMANDM1	1	888	888	888	888	NO	NO
P-287	RTMAXDC	1	888	888	888	888	NO	NO
P-287	RTMAXDI1	2	888	888	888	888	NO	NO
P-287	RTMAXDI2	2	888	888	888	888	O	O
P-287	RTMAXDM1	1	888	888	888	888	NO	NO
P-288	LFMANDI1	1	888	888	888	888	N/OB	N/OB
P-288	LFMANDI2	999	888	888	888	888	NO	NO
P-288	RTMANDI1	1	888	888	888	888	N/OB	N/OB
P-288	RTMANDI2	999	888	888	888	888	N/OB	N/OB
P-288	RTMAXDI1	1	888	888	888	888	NO	NO
P-288	RTMAXDI2	1	888	888	888	888	NO	NO
P-290	LFMANM1	888	3	1	4	1	NO	NO
P-290	LFMAXDM2	888	999	5	999	4	M-O	M-O
P-290	LFMAXM1	888	2	3	2	1	NO	NO
P-290	RTMANDM2	888	3	1	3	1	NO	NO
P-290	RTMANM1	888	999	3	999	4	N/OB	N/OB
P-290	RTMAXM1	888	999	3	1	1	NO	NO
P-291	LFMAXM3	888	999	2	999	2	NO	NO
P-291	RTMAXP2	999	888	888	888	888	N/OB	N/OB
P-292	LFMANC	4	888	888	888	888	NO	NO
P-292	LFMANI2	999	888	888	888	888	N/OB	N/OB
P-292	LFMANM1	888	4	3	4	3	NO	NO
P-292	LFMANM2	888	5	5	4	5	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-292	LFMANP1	3	888	888	888	888	NO	NO
P-292	LFMANP2	2	888	888	888	888	NO	NO
P-292	LFMAXC	4	888	888	888	888	O	O
P-292	LFMAXI1	6	888	888	888	888	O	NO
P-292	RTMANM2	888	999	4	999	3	N/OB	N/OB
P-292	RTMAXC	5	888	888	888	888	NO	NO
P-292	RTMAXM3	888	3	4	2	4	NO	NO
P-292	RTMAXP1	4	888	888	888	888	NO	NO
P-292	RTMAXP2	5	888	888	888	888	N/OB	N/OB
P-293	LFMANI1	999	888	888	888	888	N/OB	N/OB
P-293	LFMANI2	999	888	888	888	888	N/OB	N/OB
P-293	LFMANP2	3	888	888	888	888	NO	NO
P-293	LFMAXM2	888	999	4	999	8	NO	NO
P-293	LFMAXP2	5	888	888	888	888	NO	NO
P-293	M3	888	999	999	999	999	N/OB	N/OB
P-293	RTMANC	5	888	888	888	888	NO	NO
P-293	RTMANI1	999	888	888	888	888	N/OB	N/OB
P-293	RTMANP1	2	888	888	888	888	NO	NO
P-293	RTMAXC	5	888	888	888	888	NO	NO
P-293	RTMAXM3	888	2	999	2	2	NO	NO
P-294	LFMANC	999	888	888	888	888	N/OB	N/OB
P-294	LFMANI1	999	888	888	888	888	N/OB	N/OB
P-294	LFMANM2	888	999	999	999	999	N/OB	N/OB
P-294	LFMANM3	888	4	4	2	1	NO	NO
P-294	RTMANC	999	888	888	888	888	N/OB	N/OB
P-294	RTMANM1	888	999	999	999	999	N/OB	N/OB
P-294	RTMANM3	888	3	3	2	1	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTDDL	OTHERWEAR	CHIPPING
P-294	RTMAXM1	888	999	999	4	4	N/OB	
P-294	RTMAXM3	888	1	2	4	4	NO	
P-295	LFMANDC	3	888	888	888	888	NO	
P-295	LFMANDI1	5	888	888	888	888	O	
P-295	LFMANDM1	3	888	888	888	888	NO	
P-295	LFMANDM2	888	4	1	2	2	NO	
P-295	LFMAXDI1	999	888	888	888	888	O	
P-295	LFMAXDM1	2	888	888	888	888	B&M-O	
P-295	LFMAXDM2	888	1	2	1	1	NO	
P-295	RTMANDI2	3	888	888	888	888	N/OB	
P-295	RTMANDM1	2	888	888	888	888	NO	
P-295	RTMANDM2	888	4	1	3	2	NO	
P-295	RTMAXDC	3	888	888	888	888	NO	
P-295	RTMAXDM1	3	888	888	888	888	NO	
P-295	RTMAXDM2	888	2	3	1	1	NO	
P-299	RTMANDM2	888	999	1	999	1	NO	
P-301	LFMANDM2	888	4	1	999	999	N/OB	
P-301	LFMAXDC	3	888	888	888	888	NO	
P-301	LFMAXDM2	888	2	5	2	3	M&D-O	
P-301	RTMANDC	4	888	888	888	888	NO	
P-301	RTMANDI1	999	888	888	888	888	N/OB	
P-301	RTMANDI2	6	888	888	888	888	NO	
P-301	RTMANDM2	888	5	3	5	4	M&L-O	
P-301	RTMAXDI1	6	888	888	888	888	N/OB	
P-301	RTMAXDM1	4	888	888	888	888	NO	
P-301	RTMAXDM2	888	2	5	1	2	NO	
P-302	RTMANDM1	3	888	888	888	888	D-O	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-305 LFMANM3	888	999	999	999	999	N/OB	
P-305 LFMAXC	6	888	888	888	888	O	
P-305 RTMANC	999	888	888	888	888	N/OB	
P-305 RTMANM2	888	999	999	999	999	N/OB	
P-307 LFMANDC	4	888	888	888	888	NO	
P-307 LFMANDM1	4	888	888	888	888	NO	
P-307 LFMANDM2	888	4	2	4	1	D-O	
P-307 LFMANM1	888	1	1	2	1	NO	
P-307 LFMAXDC	5	888	888	888	888 L	NO	
P-307 LFMAXDM1	999	888	888	888	888	M-O	
P-307 LFMAXDM2	888	2	4	1	2	M&D-O,B	
P-307 LFMAXM1	888	1	1	1	1	NO	
P-307 RTMANDM1	4	888	888	888	888	NO	
P-307 RTMANDM2	888	4	2	4	3	NO	
P-307 RTMANM1	888	1	1	2	1	NO	
P-307 RTMAXDM1	5	888	888	888	888	M-O	
P-307 RTMAXDM2	888	999	999	1	2	N/OB	
P-307 RTMAXM1	888	1	1	1	1	NO	
P-308 RTMANDI2	1	888	888	888	888	NO	
P-310 LFMANM2	888	5	4	4	4	NO	
P-310 LFMANM3	888	3	3	1	1	O	
P-310 LFMAXP1	4	888	888	888	888	N/OB	
P-310 LFMAXP2	4	888	888	888	888	N/OB	
P-310 RTMANP2	3	888	888	888	888	NO	
P-310 RTMAXM3	888	2	2	1	1	NO	
P-310 RTMAXP2	999	888	888	888	888	N/OB	
P-311 LFMANI2	2	888	888	888	888	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-311 LFMANM1	888	4	3	4	2		NO
P-311 LFMANM2	888	2	1	2	1		NO
P-311 LFMANP2	1	888	888	888	888		NO
P-311 LFMAXI1	3	888	888	888	888 B		NO
P-311 LFMAXM1	888	2	4	1	4		NO
P-311 LFMAXM2	888	1	2	1	1		NO
P-311 LFMAXP2	1	888	888	888	888		NO
P-311 RTMANI2	2	888	888	888	888 B		NO
P-311 RTMANM1	888	3	2	4	1		NO
P-311 RTMANM2	888	1	1	999	1		NO
P-311 RTMANP1	1	888	888	888	888		NO
P-311 RTMANP2	1	888	888	888	888		NO
P-311 RTMAXI2	2	888	888	888	888		NO
P-311 RTMAXM1	888	1	4	1	4		B-O
P-311 RTMAXM2	888	1	2	1	1		NO
P-312 LFMANDC	1	888	888	888	888		NO
P-312 LFMANDI1	3	888	888	888	888		NO
P-312 LFMANDI2	2	888	888	888	888		NO
P-312 LFMANDM1	1	888	888	888	888		NO
P-312 RTMAXDC	1	888	888	888	888		O
P-312 RTMAXDM1	1	888	888	888	888		NO
P-313 LFMAXDC	4	888	888	888	888		N/OB
P-313 LFMAXDM1	999	888	888	888	888		N/OB
P-313 LFMAXDM1	3	888	888	888	888		NO
P-313 LFMAXDM2	888	2	2	1	2		B-O
P-313 LFMAXDM2	888	2	1	999	999		NO
P-313 RTMAXDC	3	888	888	888	888		NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-313 RTMAXDC	4	888	888	888	888	O	888
P-313 RTMAXDI1	4	888	888	888	888	NO	888
P-313 RTMAXDI2	2	888	888	888	888	NO	888
P-313 RTMAXDMI	3	888	888	888	888	NO	888
P-313 RTMAXDMI	1	888	888	888	888	NO	888
P-313 RTMAXDM2	888	1	2	1	2	NO	888
P-313 RTMAXDM2	888	2	1	2	1	NO	888
P-314 LFMANNM2	888	5	4	5	4	D-O	888
P-314 LFMANNM3	888	3	999	999	999	N/OB	888
P-314 LFMANP1	3	888	888	888	888	NO	888
P-314 LFMANP2	3	888	888	888	888	M-O	888
P-314 LFMAXI1	999	888	888	888	888	N/OB	888
P-314 LFMAXM2	888	3	4	4	4	B&M-O	888
P-314 LFMAXM3	888	2	4	2	4	NO	888
P-314 LFMAXP1	3	888	888	888	888	NO	888
P-314 LFMAXP2	3	888	888	888	888	NO	888
P-315 LFMANDM1	1	888	888	888	888	NO	888
P-315 LFMAXDM1	1	888	888	888	888	NO	888
P-315 RTMANDM1	1	888	888	888	888	NO	888
P-315 RTMAXDC	1	888	888	888	888	NO	888
P-317 LFMANP2	999	888	888	888	888	N/OB	888
P-317 LFMAXM2	888	4	5	4	999	N/OB	888
P-317 LFMAXP2	6	888	888	888	888	NO	888
P-317 RTMANP1	999	888	888	888	888	N/OB	888
P-317 RTMANP2	999	888	888	888	888	N/OB	888
P-318 LFMANC	2	888	888	888	888	NO	888
P-318 MAXC	1	888	888	888	888	N/OB	888

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-318 RTMANC	2	888	888	888	888	NO	NO
P-318 RTMANM1	888	5	999	4	4	N/OB	N/OB
P-318 RTMANM2	888	3	2	4	3	NO	NO
P-318 RTMANP1	2	888	888	888	888	NO	NO
P-318 RTMANP2	1	888	888	888	888	N/OB	N/OB
P-318 RTMAXM1	888	999	4	999	3	N/OB	N/OB
P-318 RTMAXP2	2	888	888	888	888	NO	NO
P-320 LFMANDI1	1	888	888	888	888	O	O
P-320 LFMAXDI1	1	888	888	888	888	NO	NO
P-320 RTMAXDI1	1	888	888	888	888	NO	NO
P-322 LFMANDC	3	888	888	888	888	NO	NO
P-322 LFMANDI1	3	888	888	888	888	NO	NO
P-322 LFMANDM1	2	888	888	888	888	NO	NO
P-322 LFMANDM2	888	1	1	1	1	NO	NO
P-322 LFMAXDI1	3	888	888	888	888	NO	NO
P-322 LFMAXDM2	888	999	999	1	1	N/OB	N/OB
P-322 RTMANDC	3	888	888	888	888	NO	NO
P-322 RTMANDI1	3	888	888	888	888	NO	NO
P-322 RTMANDI2	2	888	888	888	888	NO	NO
P-322 RTMANDM2	888	888	888	888	888	NO	NO
P-322 RTMANDM2	888	2	1	1	1	NO	NO
P-322 RTMAXDC	1	888	888	888	888	NO	NO
P-322 RTMAXDM2	888	999	999	999	999	O	O
P-324 LFMANC	6	888	888	888	888	NO	NO
P-324 LFMANI2	5	888	888	888	888	NO	NO
P-324 LFMANM1	888	7	5	7	5	NO	NO
P-324 LFMANM2	888	5	5	6	6	L-O	L-O

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTDDL	OTHERWEAR	CHIPPING
P-324 LFMANP1	5	888	888	888	888	NO	NO
P-324 LFMANP2	5	888	888	888	888	D	D
P-324 RTMANC	999	888	888	888	888	N/OB	N/OB
P-324 RTMANM1	888	999	999	4	3	N/OB	N/OB
P-324 RTMANM2	888	5	4	5	3	NO	NO
P-324 RTMANM3	888	4	4	3	2	NO	NO
P-324 RTMANP1	4	888	888	888	888	NO	NO
P-325 LFMAXDI2	1	888	888	888	888	NO	NO
P-325 RTMAXDI2	1	888	888	888	888	NO	NO
P-326 LFMANI1	999	888	888	888	888	NO	NO
P-327 LFMANDM2	888	2	1	3	1	NO	NO
P-327 LFMANM1	888	1	1	1	1	NO	NO
P-327 RTMANM1	888	1	1	1	1	NO	NO
P-328 LFMANDI1	1	888	888	888	888	NO	NO
P-328 LFMANDI2	1	888	888	888	888	N/OB	N/OB
P-328 RTMANDI2	1	888	888	888	888	NO	NO
P-335 LFMAXDI1	1	888	888	888	888	NO	NO
P-335 LFMAXDI2	1	888	888	888	888	NO	NO
P-336 RTMANDI1	1	888	888	888	888	N/OB	N/OB
P-336 RTMANDI2	1	888	888	888	888	N/OB	N/OB
P-337 LFMANDI1	1	888	888	888	888	NO	NO
P-337 LFMANDM1	1	888	888	888	888	NO	NO
P-337 LFMAXDI1	1	888	888	888	888	NO	NO
P-337 RTMANDI1	1	888	888	888	888	NO	NO
P-337 RTMANDM1	1	888	888	888	888	N/OB	N/OB
P-337 RTMAXDM1	1	888	888	888	888	NO	NO
P-338 LFMANC	2	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTDDL	OTHERWEAR	CHIPPING
P-338	LFMANI2	3	888	888	888	888	NO	NO
P-338	LFMANM1	888	5	3	4	3	NO	NO
P-338	LFMANM2	888	2	1	2	1	NO	NO
P-338	LFMANP1	1	888	888	888	888	NO	NO
P-338	LFMANP2	1	888	888	888	888	NO	NO
P-338	LFMAXI1	3	888	888	888	888	NO	NO
P-338	LFMAXI2	2	888	888	888	888	NO	NO
P-338	LFMAXM1	888	4	5	4	4	NO	NO
P-338	LFMAXM2	888	3	2	2	1	NO	NO
P-338	LFMAXP1	2	888	888	888	888	NO	NO
P-338	RTMANC	1	888	888	888	888	NO	NO
P-338	RTMANI1	3	888	888	888	888	N/OB	N/OB
P-338	RTMANI2	2	888	888	888	888	NO	NO
P-338	RTMANM1	888	4	2	4	2	NO	NO
P-338	RTMANM2	888	2	1	2	1	NO	NO
P-338	RTMANP1	1	888	888	888	888	NO	NO
P-338	RTMANP2	1	888	888	888	888	NO	NO
P-338	RTMAXC	1	888	888	888	888	NO	NO
P-338	RTMAXI1	3	888	888	888	888	NO	NO
P-338	RTMAXI2	2	888	888	888	888	NO	NO
P-338	RTMAXM1	888	4	5	3	4	NO	NO
P-338	RTMAXM2	888	3	2	2	2	NO	NO
P-338	RTMAXP1	2	888	888	888	888	NO	NO
P-338	RTMAXP2	1	888	888	888	888	NO	NO
P-339	LFMANM2	888	4	3	4	3	NO	NO
P-339	LFMANM3	888	999	999	999	999	N/OB	N/OB
P-339	LFMAXP	5	888	888	888	888 rounded	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTM	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-339	RTMAXM1	888	6	999	5	999		N/OB
P-339	RTMAXM2	888	3	3	3	3		NO
P-339	RTMAXP1	6	888	888	888	888	M	NO
P-339	RTMAXP2	4	888	888	888	888		M
P-341	LFMANC	999	888	888	888	888		N/OB
P-341	LFMANI1	7	888	888	888	888		N/OB
P-341	LFMANI2	6	888	888	888	888		O
P-341	LFMANM1	888	5	5	6	5		N/OB
P-341	LFMANM2	888	5	4	6	5		N/OB
P-341	LFMANM3	888	999	999	999	999		N/OB
P-341	LFMANP1	4	888	888	888	888		NO
P-341	LFMANP2	3	888	888	888	888		N/OB
P-341	RTMANC	5	888	888	888	888		NO
P-341	RTMANI1	7	888	888	888	888		N/OB
P-341	RTMANI2	6	888	888	888	888		N/OB
P-341	RTMANM3	888	5	5	4	4		B
P-341	RTMANP1	999	888	888	888	888		N/OB
P-341	RTMANP2	4	888	888	888	888		B
P-341	RTMAXC	4	0	0	0	0		O
P-341	RTMAXM1	888	999	999	999	999		N/OB
P-341	RTMAXM2	888	999	999	999	999		N/OB
P-341	RTMAXM3	888	999	999	999	999		N/OB
P-343	LFMANDC	1	888	888	888	888	LAB	NO
P-343	LFMANDI1	999	888	888	888	888		N/OB
P-343	LFMANDI2	2	888	888	888	888		NO
P-343	LFMANDM1	1	888	888	888	888		NO
P-343	LFMAXDC	1	888	888	888	888		NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-343 LFMAXDI1	1	888	888	888	888 L	NO	NO
P-343 LFMAXDI2	1	888	888	888	888	N/OB	N/OB
P-343 LFMAXDM1	888	888	888	888	888	N/OB	N/OB
P-343 RTMANDC	1	888	888	888	888 LAB	NO	NO
P-343 RTMANDI1	2	888	888	888	888	NO	NO
P-343 RTMANDI2	2	888	888	888	888	NO	NO
P-343 RTMAXDI1	1	888	888	888	888	O	O
P-343 RTMAXDI2	1	888	888	888	888	NO	NO
P-344 LFMANDC	3	888	888	888	888	NO	NO
P-344 LFMANDI1	4	888	888	888	888	NO	NO
P-344 LFMANDI2	2	888	888	888	888	N/OB	N/OB
P-344 LFMANDM1	2	888	888	888	888	NO	NO
P-344 LFMANDM2	888	1	1	1	1	NO	NO
P-344 LFMAXDC	2	888	888	888	888	NO	NO
P-344 LFMAXDI1	3	888	888	888	888	NO	NO
P-344 LFMAXDM1	2	888	888	888	888	NO	NO
P-344 LFMAXDM2	888	1	1	1	1	NO	NO
P-344 RTMANDC	3	888	888	888	888	NO	NO
P-344 RTMANDI1	4	888	888	888	888	NO	NO
P-344 RTMANDI2	3	888	888	888	888	NO	NO
P-344 RTMANDM1	2	888	888	888	888	O-B	O-B
P-344 RTMANDM2	888	1	1	1	1	NO	NO
P-344 RTMAXDI1	3	888	888	888	888	NO	NO
P-344 RTMAXDM1	2	888	888	888	888	O	O
P-344 RTMAXDM2	888	1	1	1	1	NO	NO
P-345 LFMANDI2	1	888	888	888	888	NO	NO
P-345 RTMANDI2	1	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-347	LFMANC	999	888	888	888	888	N/OB	N/OB
P-347	LFMANM1	888	5	999	5	999	N/OB	N/OB
P-347	LFMANP2	2	888	888	888	888	NO	NO
P-347	LFMAXM1	888	5	999	5	999	O-B	O-B
P-347	LFMAXP1	2	888	888	888	888	NO	NO
P-347	LFMAXP1	2	888	888	888	888	NO	NO
P-347	RTMANC	4	888	888	888	888	NO	NO
P-347	RTMANM1	888	5	4	5	999	NO	NO
P-347	RTMANP1	2	888	888	888	888	NO	NO
P-347	RTMANP2	1	888	888	888	888	NO	NO
P-349	LFMANI2	999	888	888	888	888	N/OB	N/OB
P-349	LFMANM1	888	4	1	4	2	M	M
P-349	LFMANM2	888	3	1	2	2	NO	NO
P-349	LFMANP2	1	888	888	888	888	NO	NO
P-349	LFMAXC	2	888	888	888	888	N/OB	N/OB
P-349	LFMAXM1	888	4	4	2	3	M	M
P-349	LFMAXM2	888	2	2	999	2	NO	NO
P-349	LFMAXP1	1	888	888	888	888	NO	NO
P-349	RTMANC	2	888	888	888	888	NO	NO
P-349	RTMANI1	2	888	888	888	888	N/OB	N/OB
P-349	RTMANI2	2	888	888	888	888	NO	NO
P-349	RTMANM1	888	4	1	4	2	NO	NO
P-349	RTMANM2	888	999	1	999	2	N/OB	N/OB
P-349	RTMANP1	1	888	888	888	888	NO	NO
P-349	RTMANP2	1	888	888	888	888	NO	NO
P-349	RTMAXC	2	888	888	888	888	N/OB	N/OB
P-349	RTMAXM1	888	4	5	2	3	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-349 RTMAXP1	1	888	888	888	888	NO	NO
P-349 RTMAXP2	1	888	888	888	888	NO	NO
P-350 LFMANC	3	888	888	888	888	NO	NO
P-350 LFMANM1	888	4	3	4	3	NO	NO
P-350 LFMANM2	888	3	1	4	2	NO	NO
P-350 LFMANM3	888	1	1	1	1	NO	NO
P-350 LFMANP1	2	888	888	888	888	NO	NO
P-350 LFMANP2	1	888	888	888	888	NO	NO
P-350 LFMAXM3	888	1	1	1	1	NO	NO
P-350 RTMANC	2	888	888	888	888	NO	NO
P-350 RTMANM1	888	999	3	999	999	N/OB	N/OB
P-350 RTMANM2	888	4	1	4	2	NO	NO
P-350 RTMANM3	888	1	1	1	1	NO	NO
P-350 RTMANP1	2	888	888	888	888	NO	NO
P-350 RTMANP2	2	888	888	888	888	NO	NO
P-350 RTMAXM3	888	1	1	1	1	NO	NO
P-351 LFMAXDM1	999	888	888	888	888	N/OB	N/OB
P-351 LFMAXDM2	888	2	2	1	1	NO	NO
P-352 LFMANDC	4	888	888	888	888	NO	NO
P-352 LFMANDM2	888	5	2	5	2	NO	NO
P-352 RTMANDM1	4	888	888	888	888	O	O
P-352 RTMANDM2	888	4	2	4	2	NO	NO
P-352 RTMAXDC	7	888	888	888	888 L	NO	NO
P-352 RTMAXDM2	888	2	4	2	2	O-M	O-M
P-355 RTMANM1	888	4	3	999	2	N/OB	N/OB
P-356 LFMANDC	3	888	888	888	888	NO	NO
P-356 LFMANDM1	3	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTM	SCOTTML	SCOTTD	SCOTTDL	OTHERWEAR	CHIPPING
P-356 LFMANDM2	888	4	3	4	2	M	
P-356 LFMAXDM2	888	2	3	4	2	M	
P-356 RTMANDC	2	888	888	888	888	NO	
P-356 RTMANDM1	3	888	888	888	888	NO	
P-356 RTMANDM2	888	4	2	4	1	NO	
P-356 RTMAXDM2	888	1	2	2	2	NO	
P-358 LFMANDC	1	888	888	888	888	NO	
P-358 LFMANDM1	999	888	888	888	888	N/OB	
P-358 LFMAXDI1	1	888	888	888	888	NO	
P-358 LFMAXDI2	1	888	888	888	888	NO	
P-358 RTMANDI2	999	888	888	888	888	N/OB	
P-359 LFMAXM2	888	999	999	999	999	N/OB	
P-359 RTMANM3	888	4	2	4	3	NO	
P-359 RTMAXM2	888	999	999	999	999	N/OB	
P-362 LFMAXDC	999	888	888	888	888	N/OB	
P-363 LFMANDM2	888	999	999	5	4	O-D	
P-363 LFMANM1	888	4	1	2	1	NO	
P-363 LFMAXDC	7	888	888	888	888	N/OB	
P-363 RTMANM1	888	4	1	2	1	NO	
P-364 LFMANM1	888	999	2	2	1	N/OB	
P-364 LFMAXM1	888	2	999	2	999	N/OB	
P-364 RTMANDM2	888	4	3	999	2	N/OB	
P-367 LFMANM1	888	4	2	4	2	NO	
P-367 LFMAXI1	999	888	888	888	888	O-L	
P-367 LFMAXM1	888	3	4	3	2	M	
P-367 LFMAXM2	888	2	2	2	1	NO	
P-367 RTMANM1	888	4	2	4	2	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-367 RTMAXC	1	888	888	888	888	NO
P-367 RTMAXM1	888	3	4	2	2	N/OB
P-367 RTMAXP2	1	888	888	888	888	NO
P-370 LFMANDI2	1	888	888	888	888	NO
P-370 LFMANDM1	1	888	888	888	888	NO
P-370 RTMANDM1	1	888	888	888	888	O
P-373 LFMANDC	3	888	888	888	888	NO
P-373 LFMANDI1	999	888	888	888	888	N/OB
P-373 LFMANDI2	4	888	888	888	888	N/OB
P-373 LFMANDM1	2	888	888	888	888	NO
P-373 LFMANDM2	888	4	1	4	1	NO
P-373 LFMAXDC	4	888	888	888	888 L	NO
P-373 LFMAXDI1	6	888	888	888	888 L	NO
P-373 LFMAXDI2	6	888	888	888	888 L	L
P-373 LFMAXDM1	999	888	888	888	888	N/OB
P-373 LFMAXDM2	888	1	4	2	2	NO
P-373 RTMANDC	5	888	888	888	888	NO
P-373 RTMANDI1	5	888	888	888	888	NO
P-373 RTMANDI2	5	888	888	888	888	NO
P-373 RTMANDM1	3	888	888	888	888	NO
P-373 RTMANDM2	888	4	1	5	2	O-M
P-373 RTMAXDC	4	888	888	888	888	NO
P-373 RTMAXDI2	6	888	888	888	888	N/OB
P-373 RTMAXDM1	4	888	888	888	888	B
P-373 RTMAXDM2	888	4	5	4	4	B&M
P-374 LFMAXM1	888	1	1	1	1	NO
P-375 LFMANDC	999	888	888	888	888	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-375	LFMANDI2	999	888	888	888	888	NO	NO
P-375	LFMANDM1	999	888	888	888	888	NO	NO
P-375	LFMAXDI1	999	888	888	888	888	N/OB	
P-375	LFMAXDI2	1	888	888	888	888	NO	NO
P-375	LFMAXDM1	1	888	888	888	888	NO	NO
P-375	RTMANDC	999	888	888	888	888	NO	NO
P-375	RTMANDI2	999	888	888	888	888	NO	NO
P-375	RTMANDM1	999	888	888	888	888	NO	NO
P-375	RTMAXDC	1	888	888	888	888	NO	NO
P-375	RTMAXDI2	1	888	888	888	888	NO	NO
P-375	RTMAXDM1	1	888	888	888	888	NO	NO
P-377	LFMANDI1	1	888	888	888	888	NO	NO
P-377	LFMANDI2	1	888	888	888	888	NO	NO
P-377	LFMAXDI1	1	888	888	888	888	NO	NO
P-377	LFMAXDI2	1	888	888	888	888	NO	NO
P-377	RTMANDI1	1	888	888	888	888	NO	NO
P-377	RTMANDI2	1	888	888	888	888	NO	NO
P-377	RTMAXDI1	1	888	888	888	888	NO	NO
P-377	RTMAXDI2	1	888	888	888	888	NO	NO
P-378	LFMANDI1	1	888	888	888	888	NO	NO
P-378	LFMANDI2	1	888	888	888	888	NO	NO
P-378	LFMANDM1	1	888	888	888	888	NO	NO
P-378	RTMANDI2	1	888	888	888	888	NO	NO
P-378	RTMANDM1	1	888	888	888	888	NO	NO
P-379	LFMANI2	5	888	888	888	888	NO	NO
P-379	LFMANM1	888	5	4	5	4	D	
P-379	LFMANM2	888	4	2	4	3	NO	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-379	LFMANM3	888	1	1	2	1		NO
P-379	LFMANP1	2	888	888	888	888		NO
P-379	LFMAXC	5	888	888	888	888	B NOTCH	NO
P-379	LFMAXI1	6	888	888	888	888		NO
P-379	LFMAXM1	888	4	8	4	6		M
P-379	LFMAXM2	888	3	5	4	4		NO
P-379	LFMAXM3	888	2	3	4	4		NO
P-379	LFMAXP1	3	888	888	888	888		NO
P-379	LFMAXP2	4	888	888	888	888		NO
P-379	RTMANI2	4	888	888	888	888		D
P-379	RTMANM1	888	5	3	4	3		D
P-379	RTMANM2	888	999	999	4	4		N/OB
P-379	RTMANM3	888	3	1	4	2		NO
P-379	RTMAXC	4	888	888	888	888		O
P-379	RTMAXI2	4	888	888	888	888		NO
P-379	RTMAXM1	888	999	999	4	6		N/OB
P-379	RTMAXM2	888	3	5	3	5		NO
P-379	RTMAXP1	6	888	888	888	888		N/OB
P-379	RTMAXP2	3	888	888	888	888		NO
P-381	RTMANDM2	888	1	1	1	1		NO
P-383	LFMANM1	888	6	3	8	3		O-L
P-383	LFMANM2	888	5	2	5	4		D
P-383	LFMANM3	888	4	3	4	4		O-D
P-383	RTMANM1	888	9	5	9	8		N/OB
P-383	RTMANM2	888	5	2	999	2		NO
P-383	RTMANM3	888	2	3	4	4		L
P-383	RTMANP1	2	888	888	888	888		O-D

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTTDB	SCOTTTDL	OTHERWEAR	CHIPPING
P-385 RTMAXM2	888	999	2	3	3	NO	NO
P-388 LFMAXM2	888	3	4	4	4	O-D	O-D
P-388 RTMAXC	4	888	888	888	888	N/OB	N/OB
P-391 LFMANDM2	888	5	3	5	4	O-M	O-M
P-391 LFMANI2	1	888	888	888	888	NO	NO
P-391 LFMANNM1	888	3	2	3	1	NO	NO
P-391 LFMAXI1	1	888	888	888	888	NO	NO
P-391 LFMAXI2	1	888	888	888	888	NO	NO
P-391 LFMAXM1	888	1	3	2	2	NO	NO
P-391 RTMANDM2	888	999	999	5	4	N/OB	N/OB
P-391 RTMANI1	2	888	888	888	888	NO	NO
P-391 RTMANI2	1	888	888	888	888	NO	NO
P-391 RTMANM1	888	3	1	3	1	NO	NO
P-391 RTMAXDM2	888	4	999	4	999	NO	NO
P-391 RTMAXI1	1	888	888	888	888	NO	NO
P-391 RTMAXI2	1	888	888	888	888	NO	NO
P-391 RTMAXM1	888	2	3	2	2	NO	NO
P-395 RTMANDI2	1	888	888	888	888	NO	NO
P-395 RTMANDM1	1	888	888	888	888	O	O
P-395 RTMANDM2	888	1	1	1	1	O	O
P-398 LFMANDC	1	888	888	888	888	O	O
P-398 LFMANDI1	4	888	888	888	888	NO	NO
P-398 LFMANDI2	3	888	888	888	888	NO	NO
P-398 LFMANDM1	1	888	888	888	888	NO	NO
P-398 LFMANDM2	888	1	1	1	1	NO	NO
P-398 LFMAXDC	1	888	888	888	888	NO	NO
P-398 LFMAXDI1	2	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-398	LFMAXDI2	2	888	888	888	888	NO	NO
P-398	LFMAXDM1	2	888	888	888	888	NO	NO
P-398	LFMAXDM2	888	1	1	1	1	NO	NO
P-398	RTMANDI1	4	888	888	888	888	NO	NO
P-398	RTMANDM1	1	888	888	888	888	NO	NO
P-398	RTMANDM2	888	1	1	1	1	NO	NO
P-398	RTMAXDC	1	888	888	888	888	NO	NO
P-398	RTMAXDI1	2	888	888	888	888	L	NO
P-398	RTMAXDI2	3	888	888	888	888	NO	NO
P-398	RTMAXDM1	2	888	888	888	888	NO	NO
P-398	RTMAXDM2	888	1	1	1	1	NO	NO
P-399	LFMANM1	888	5	5	5	4	NO	NO
P-399	LFMANM2	888	5	3	4	4	O-L	NO
P-399	LFMANP1	4	888	888	888	888	N/OB	MD
P-399	LFMAXM1	888	9	9	4	6	N/OB	MD
P-399	LFMAXP2	999	888	888	888	888	N/OB	N/OB
P-399	RTMANI1	999	888	888	888	888	N/OB	N/OB
P-399	RTMANM1	888	6	5	5	5	NO	NO
P-399	RTMANM2	888	5	3	5	5	NO	NO
P-399	RTMANM3	888	4	3	4	3	O-D	N/OB
P-399	RTMANP2	999	888	888	888	888	N/OB	N/OB
P-399	RTMAXI1	6	888	888	888	888	NO	NO
P-399	RTMAXP2	999	888	888	888	888	N/OB	N/OB
P-401	LFMANDM1	1	888	888	888	888	NO	NO
P-401	LFMANDM2	888	1	1	1	1	NO	NO
P-401	LFMAXDM1	2	888	888	888	888	NO	NO
P-401	LFMAXDM2	888	1	1	1	1	NO	NO

SPEC TOOTH	SMITH	SCOTTM	SCOTTML	SCOTTD	SCOTTDL	OTHERWEAR	CHIPPING
P-401 RTMANDM1	1	888	888	888	888	NO	NO
P-401 RTMANDM2	888	1	1	1	1	NO	NO
P-401 RTMAXDM1	2	888	888	888	888	NO	NO
P-401 RTMAXDM2	888	1	1	1	1	NO	NO
P-403 LFMANDI2	1	888	888	888	888	NO	NO
P-403 LFMAXDI1	1	888	888	888	888	NO	NO
P-403 LFMAXDI2	1	888	888	888	888	NO	NO
P-403 RTMANDI2	1	888	888	888	888	NO	NO
P-403 RTMAXDI1	1	888	888	888	888	NO	NO
P-403 RTMAXDI2	1	888	888	888	888	NO	NO
P-404 LFMANDI2	999	888	888	888	888	NO	NO
P-404 LFMANDM1	999	888	888	888	888	NO	NO
P-404 LFMANDM2	888	1	1	1	1	NO	NO
P-404 LFMAXDC	1	888	888	888	888	NO	NO
P-404 LFMAXDI2	1	888	888	888	888	NO	NO
P-404 LFMAXDI2	1	888	888	888	888	NO	NO
P-404 LFMAXDM1	999	888	888	888	888	N/OB	N/OB
P-404 LFMAXDM2	888	1	1	1	1	NO	NO
P-404 RTMANDC	999	888	888	888	888	NO	NO
P-404 RTMANDI2	999	888	888	888	888	NO	NO
P-404 RTMANDM1	999	888	888	888	888	NO	NO
P-404 RTMANDM2	888	1	1	1	1	NO	NO
P-404 RTMAXDC	999	888	888	888	888	N/OB	N/OB
P-404 RTMAXDI1	1	888	888	888	888	NO	NO
P-404 RTMAXDI2	1	888	888	888	888	NO	NO
P-404 RTMAXDM1	999	888	888	888	888	N/OB	N/OB
P-404 RTMAXDM2	888	1	1	1	1	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-405 LFMANDJ2	1	888	888	888	888	NO	NO
P-405 LFMANDM1	1	888	888	888	888	NO	NO
P-405 LFMAXDC	1	888	888	888	888	NO	NO
P-405 LFMAXDI2	1	888	888	888	888	NO	NO
P-405 LFMAXDI2	2	888	888	888	888	NO	NO
P-405 LFMAXDM1	1	888	888	888	888	O	O
P-405 RTMANDC	1	888	888	888	888	NO	NO
P-405 RTMANDM1	1	888	888	888	888	NO	NO
P-405 RTMAXDM1	1	888	888	888	888	NO	NO
P-410 LFMANDI1	2	888	888	888	888	NO	NO
P-410 LFMANDI2	1	888	888	888	888	NO	NO
P-410 LFMAXDI1	1	888	888	888	888	NO	NO
P-412 LFMANNM2	888	4	4	5	3	NO	NO
P-412 LFMANNM3	888	3	1	1	1	NO	NO
P-412 LFMANP1	3	888	888	888	888	NO	NO
P-412 LFMANP2	3	888	888	888	888	N/OB	N/OB
P-412 LFMAXC	5	888	888	888	888	NO	NO
P-412 LFMAXM2	888	3	4	3	999	NO	NO
P-412 LFMAXM3	888	1	2	1	1	NO	NO
P-412 LFMAXP1	5	888	888	888	888	N/OB	N/OB
P-412 MANI	5	888	888	888	888	O-M&D	O-M&D
P-412 RTMANC	5	888	888	888	888	N/OB	N/OB
P-412 RTMANM3	888	3	2	2	1	NO	NO
P-412 RTMANP1	5	888	888	888	888	NO	NO
P-412 RTMANP2	5	888	888	888	888	N/OB	N/OB
P-412 RTMAXC	5	888	888	888	888	NO	NO
P-412 RTMAXI1	6	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTM B	SCOTTML	SCOTTD B	SCOTTD L	OTHERWEAR	CHIPPING
P-412 RTMAXI2	6	888	888	888	888	NO	NO
P-412 RTMAXM2	888	3	4	3	3	NO	NO
P-412 RTMAXM3	888	999	2	999	2	NO	NO
P-412 RTMAXP1	5	888	888	888	888	O-M	O-M
P-412 RTMAXP2	3	888	888	888	888	N/OB	N/OB
P-414 LFMAXI1	999	888	888	888	888	N/OB	N/OB
P-415 LFMANC	7	888	888	888	888	M-O	M-O
P-415 RTMANP2	999	888	888	888	888	N/OB	N/OB
P-417 LFMANM1	888	4	2	4	4	L-O	L-O
P-417 LFMANP1	1	888	888	888	888	O	O
P-417 LFMAXM1	888	4	5	3	2	B-O	B-O
P-417 RTMANM1	888	5	2	999	999	N/OB	N/OB
P-417 RTMANM2	888	4	2	3	3	NO	NO
P-417 RTMANP2	1	888	888	888	888	NO	NO
P-417 RTMAXP2	2	888	888	888	888	NO	NO
P-418 LFMANC	6	888	888	888	888	N/OB	N/OB
P-418 LFMANI1	6	888	888	888	888	N/OB	N/OB
P-418 LFMANI2	6	888	888	888	888	NO	NO
P-418 LFMANP1	5	888	888	888	888	NO	NO
P-418 LFMANP2	5	888	888	888	888	N/OB	N/OB
P-418 RTMANC	6	888	888	888	888	N/OB	N/OB
P-418 RTMANI1	6	888	888	888	888	N/OB	N/OB
P-418 RTMANI2	6	888	888	888	888	N/OB	N/OB
P-418 RTMANM1	888	999	999	9	999	N/OB	N/OB
P-418 RTMANM2	888	9	5	9	9	NO	NO
P-418 RTMANM3	888	6	4	999	3	NO	NO
P-418 RTMANP1	6	888	888	888	888	N/OB	N/OB

SPEC	TOOTH	SMITH	SCOTTM	B	SCOTTML	SCOTTD	B	SCOTTDL	OTHERWEAR	CHIPPING
P-418	RTMANP2	6	888		888		888		888	NO
P-418	RTMAXM3	888		2		1		1		NO
P-419	LFMANDC	1	888		888		888		888	NO
P-419	LFMANDI1	3	888		888		888		888	NO
P-419	LFMANDI2	3	888		888		888		888	NO
P-419	LFMANDM1	2	888		888		888		888	NO
P-419	LFMANDM2	888		1		1		1		NO
P-419	LFMAXDC	1	888		888		888		888	O
P-419	LFMAXDI2	1	888		888		888		888 M&D	NO
P-419	LFMAXDM1	2	888		888		888		888	O
P-419	LFMAXDM2	888		1		1		1		NO
P-419	RTMANDM1	2	888		888		888		888	NO
P-419	RTMANDM2	888		1		1		1		NO
P-419	RTMAXDI1	1	888		888		888		888	NO
P-419	RTMAXDI2	2	888		888		888		888	NO
P-419	RTMAXDM1	1	888		888		888		888	N/OB
P-419	RTMAXDM2	888		1		1		1		NO
P-420	LFMANI1	4	888		888		888		888	N/OB
P-420	LFMANM1	888		999		5		999	4	N/OB
P-420	LFMANM2	888		5		4		999	4	NO
P-420	LFMAXI1	5	888		888		888		888	NO
P-420	LFMAXI2	999		888		888		888	888	N/OB
P-420	RTMANI1	3	888		888		888		888	N/OB
P-420	RTMANI2	999		888		888		888	888	N/OB
P-420	RTMANM1	888		5		5		5	4	NO
P-420	RTMANM2	888		5		4		999	999	NO
P-420	RTMANP1	4	888		888		888		888	N/OB

SPEC TOOTH	SMITH	SCOTTM	SCOTTM	SCOTTD	OTHERWEAR	CHIPPING
P-420 RTMANP2	4	888	888	888	888	NO
P-420 RTMAXI1	5	888	888	888	888	NO
P-422 LFMANC	5	888	888	888	888	NO
P-422 LFMANP2	4	888	888	888	888	NO
P-422 LFMAXC	5	888	888	888	888	NO
P-422 LFMAXI2	5	888	888	888	888	D
P-422 LFMAXM2	888	4	5	4	4	NO
P-422 LFMAXM3	888	4	4	4	4	NO
P-422 LFMAXP2	6	888	888	888	888	NO
P-422 RTMANC	5	888	888	888	888	M
P-422 RTMANI1	6	888	888	888	888	NO
P-422 RTMANM3	888	4	4	4	4	NO
P-422 RTMANP2	6	888	888	888	888	NO
P-422 RTMAXC	5	888	888	888	888	NO
P-422 RTMAXI2	5	888	888	888	888	M,D
P-422 RTMAXM1	888	5	8	4	7	M
P-422 RTMAXM2	888	4	5	4	4	M
P-422 RTMAXP1	5	888	888	888	888	NO
P-422 RTMAXP2	999	888	888	888	888	N/OB
P-425 LFMANC	5	888	888	888	888 L	NO
P-425 LFMANM1	888	6	5	6	5	M-O
P-425 LFMANM2	888	5	5	4	5	L-O
P-425 LFMANP1	999	888	888	888	888	N/OB
P-425 LFMANP2	4	888	888	888	888	B-O
P-425 LFMAXC	6	888	888	888	888 L	N/OB
P-425 LFMAXI1	999	888	888	888	888	N/OB
P-425 LFMAXI2	6	888	888	888	888 O-L GROOVE	B

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-425 LFMAXM1	888	8	9	5	9		B,M-O
P-425 LFMAXM2	888	4	6	4	4		M-O
P-425 LFMAXM3	888	2	3	1	3		NO
P-425 LFMAXP1	5	888	888	888	888		NO
P-425 LFMAXP2	5	888	888	888	888		M
P-425 MANI	5	888	888	888	888 L		NO
P-425 RTMANC	4	888	888	888	888 L		NO
P-425 RTMANM2	888	4	5	5	4		NO
P-425 RTMANM3	888	999	999	4	4		O
P-425 RTMANP1	4	888	888	888	888		O
P-425 RTMANP2	4	888	888	888	888		NO
P-425 RTMAXC	6	888	888	888	888 L		B
P-425 RTMAXI1	6	888	888	888	888 L		B
P-425 RTMAXI2	999	888	888	888	888 L		B
P-425 RTMAXM1	888	6	9	5	8		B&M-O
P-425 RTMAXM2	888	3	5	3	4		B-O
P-425 RTMAXP1	5	88	888	888	888		M
P-425 RTMAXP2	5	888	888	888	888		NO
P-426 LFMANM1	888	8	5	8	5		NO
P-426 LFMAXC	5	888	888	888	888		NO
P-426 LFMAXM1	888	8	9	4	5		M
P-426 LFMAXP1	5	888	888	888	888		NO
P-426 RTMANM1	888	5	4	6	5		M
P-426 RTMANM2	888	5	4	5	4		NO
P-426 RTMANM3	888	4	2	4	4		NO
P-426 RTMAXM1	888	8	9	4	6 MGROOVE		M
P-431 LFMANDI1	2	888	888	888	888		NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-431	LFMANDM1	2	888	888	888	888	NO	NO
P-431	LFMAXDC	1	888	888	888	888	O	O
P-431	LFMAXDI2	1	888	888	888	888	O	O
P-431	RTMANDC	1	888	888	888	888	O	O
P-431	RTMANDI1	1	888	888	888	888	O	O
P-431	RTMANDM1	888	888	888	888	888	NO	NO
P-431	RTMAXDC	999	888	888	888	888	N/OB	N/OB
P-431	RTMAXDI1	2	888	888	888	888	NO	NO
P-431	RTMAXDI2	1	888	888	888	888	O	O
P-431	RTMAXDM1	1	888	888	888	888	O	O
P-432	LFMANC	2	888	888	888	888	NO	NO
P-432	LFMANI1	1	888	888	888	888	NO	NO
P-432	LFMANI2	1	888	888	888	888	NO	NO
P-432	LFMANM1	888	1	1	1	1	NO	NO
P-432	LFMANM2	888	4	2	4	2	NO	NO
P-432	LFMANP1	1	888	888	888	888	NO	NO
P-432	LFMANP2	1	888	888	888	888	NO	NO
P-432	LFMAXC	2	888	888	888	888	NO	NO
P-432	LFMAXI1	2	888	888	888	888	NO	NO
P-432	LFMAXM1	888	2	2	2	3	NO	NO
P-432	LFMAXM2	888	1	1	1	1	NO	NO
P-432	LFMAXP1	1	888	888	888	888	NO	NO
P-432	LFMAXP2	1	888	888	888	888	NO	NO
P-432	RTMANI1	1	888	888	888	888	NO	NO
P-432	RTMANM1	888	3	1	4	2	NO	NO
P-432	RTMANM2	888	1	1	1	1	NO	NO
P-432	RTMAXC	2	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTD B	SCOTTD L	OTHERWEAR	CHIPPING
P-432 RTMAXI1	2	888	888	888	888	NO	NO
P-432 RTMAXI2	1	888	888	888	888	NO	NO
P-432 RTMAXMI	888	2	2	2	3	NO	NO
P-434 LFMANDMI	999	888	888	888	888	N/OB	N/OB
P-434 LFMANDM2	888	2	1	3	1	NO	NO
P-434 RTMAXDC	2	888	888	888	888	O-B	O-B
P-434 RTMAXDMI	999	888	888	888	888	N/OB	N/OB
P-434 RTMAXDM2	888	2	2	1	1	NO	NO
P-436 LFMANMI	888	5	4	4	3	O-B	O-B
P-436 LFMANM2	888	999	999	999	999	N/OB	N/OB
P-436 LFMAXC	3	888	888	888	888	NO	NO
P-436 LFMAXI1	3	888	888	888	888	NO	NO
P-436 LFMAXI2	4	888	888	888	888	NO	NO
P-436 LFMAXMI	888	4	999	4	999	NO	NO
P-436 LFMAXP1	3	888	888	888	888	O-M	O-M
P-436 LFMAXP2	3	888	888	888	888	NO	NO
P-436 RTMANM2	888	3	2	2	2	NO	NO
P-436 RTMAXI1	5	888	888	888	888	NO	NO
P-437 LFMAXC	6	888	888	888	888	B,O	B,O
P-437 LFMAXI1	6	888	888	888	888	B,O	B,O
P-437 LFMAXI2	6	888	888	888	888	B,O	B,O
P-437 LFMAXMI	888	999	999	999	999	N/OB	N/OB
P-437 LFMAXM2	888	5	8	4	6	NO	NO
P-437 RTMAXC	5	888	888	888	888	B	B
P-437 RTMAXMI	888	4	5	5	9	NO	NO
P-437 RTMAXM2	888	6	9	4	4	NO	NO
P-437 RTMAXP1	6	888	888	888	888	M,D	M,D

SPEC TOOTH	SMITH	SCOTTM	B SCOTTM	L SCOTTD	B SCOTTD	SCOTTDL	OTHERWEAR	CHIPPING
P-441 LFMANP1	2	888	888	888	888	888	N/OB	N/OB
P-441 LFMANP2	2	888	888	888	888	888	NO	NO
P-441 LFMAXC	2	888	888	888	888	888	NO	NO
P-441 LFMAXI2	2	888	888	888	888	888	NO	NO
P-441 LFMAXP1	999	888	888	888	888	888	N/OB	N/OB
P-441 RTMANM3	888	999	999	999	999	999	N/OB	N/OB
P-441 RTMAXM2	888	999	999	999	4	4	N/OB	N/OB
P-441 RTMAXM3	888	3	3	3	3	999	NO	NO
P-441 RTMAXP1	2	888	888	888	888	888	NO	NO
P-442 LFMANDM1	999	888	888	888	888	888	N/OB	N/OB
P-442 LFMANDM2	888	999	999	999	999	999	N/OB	N/OB
P-443 LFMANDM2	888	4	1	999	999	999	N/OB	N/OB
P-443 LFMAXDC	4	888	888	888	888	888	B	B
P-443 LFMAXDI2	4	888	888	888	888	888	NO	NO
P-443 LFMAXDM1	4	888	888	888	888	888	B-D	B-D
P-443 LFMAXDM2	888	4	5	4	4	4	B,L,D	B,L,D
P-443 RTMANDM1	999	888	888	888	888	888	NO	NO
P-443 RTMANDM2	888	4	1	4	1	1	N/A	N/A
P-443 RTMAXDM1	4	888	888	888	888	888	D,B	D,B
P-443 RTMAXDM2	888	999	999	999	999	999	N/OB	N/OB
P-444 LFMANDM1	999	888	888	888	888	888	N/OB	N/OB
P-444 LFMANDM2	888	999	999	999	999	999	N/OB	N/OB
P-444 RTMANDC	999	888	888	888	888	888	N/OB	N/OB
P-444 RTMANDM1	3	888	888	888	888	888	NO	NO
P-444 RTMANDM2	888	2	1	2	1	1	NO	NO
P-444 RTMAXDC	999	888	888	888	888	888	N/OB	N/OB
P-444 RTMAXDI2	999	888	888	888	888	888	N/OB	N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-445	LFMANC	999	888	888	888	888	N/OB	N/OB
P-445	LFMANI1	999	888	888	888	888	N/OB	N/OB
P-445	LFMANM3	888	10	10	9	9	N/OB	N/OB
P-445	LFMANP1	999	888	888	888	888	N/OB	N/OB
P-445	LFMAXM1	888	5	5	6	5	NO	NO
P-445	LFMAXM2	888	10	10	10	10	N/OB	N/OB
P-445	LFMAXP1	8	888	888	888	888	N/OB	N/OB
P-445	LFMAXP2	999	888	888	888	888	N/OB	N/OB
P-445	RTMANM1	888	999	8	9	8	NO	NO
P-445	RTMANP2	7	888	888	888	888	N/OB	N/OB
P-445	RTMAXC	7	888	888	888	888	N/OB	N/OB
P-445	RTMAXP1	8	888	888	888	888	N/OB	N/OB
P-446	LFMANDM1	5	888	888	888	888	NO	NO
P-446	LFMANDM2	888	5	2	5	2	NO	NO
P-446	LFMANM1	888	1	1	1	1	NO	NO
P-446	LFMAXDC	5	888	888	888	888	NO	NO
P-446	LFMAXDI1	6	888	888	888	888	O	O
P-446	LFMAXDI2	5	888	888	888	888	NO	NO
P-446	LFMAXDM1	4	888	888	888	888	NO	NO
P-446	LFMAXDM2	888	3	4	2	2	O-B	O-B
P-446	LFMAXM1	888	1	1	1	1	NO	NO
P-446	RTMANDC	5	888	888	888	888	NO	NO
P-446	RTMANDI2	6	888	888	888	888	O	O
P-446	RTMANDM1	5	888	888	888	888	NO	NO
P-446	RTMANDM2	888	5	1	5	3	M	M
P-446	RTMANM1	888	1	1	1	1	NO	NO
P-446	RTMAXDM1	4	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-446 RTMAXDM2	888	3	4	3	2	NO	NO
P-446 RTMAXMI	888	1	1	1	1	NO	NO
P-447 LFMANC	2	888	888	888	888	NO	NO
P-447 LFMANMI	888	999	999	999	999	N/OB	N/OB
P-447 LFMANM2	888	3	3	2	1	NO	NO
P-447 LFMANP2	2	888	888	888	888	NO	NO
P-447 LFMAXM2	888	2	2	2	1	NO	NO
P-447 LFMAXP2	999	888	888	888	888	N/OB	N/OB
P-447 RTMANI2	999	888	888	888	888	N/OB	N/OB
P-447 RTMANMI	888	999	999	999	999	N/OB	N/OB
P-447 RTMANM2	888	4	3	4	2	NO	NO
P-447 RTMANP1	2	888	888	888	888	NO	NO
P-447 RTMANP2	999	888	888	888	888	N/OB	N/OB
P-447 RTMAXMI	888	3	4	999	999	N/OB	N/OB
P-448 LFMANDC	1	888	888	888	888	NO	NO
P-448 LFMANDI1	1	888	888	888	888	NO	NO
P-448 LFMANDI2	1	888	888	888	888	NO	NO
P-448 LFMANDMI	1	888	888	888	888	NO	NO
P-448 LFMAXDC	999	888	888	888	888	N/OB	N/OB
P-448 LFMAXDI1	1	888	888	888	888	NO	NO
P-448 LFMAXDI2	1	888	888	888	888	NO	NO
P-448 RTMANDC	1	888	888	888	888	NO	NO
P-448 RTMANDI1	1	888	888	888	888	NO	NO
P-448 RTMANDI2	1	888	888	888	888	NO	NO
P-448 RTMANDMI	1	888	888	888	888	NO	NO
P-448 RTMAXDC	999	888	888	888	888	N/OB	N/OB
P-448 RTMAXDI1	1	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-449	LFMANDI1	1	888	888	888	888	NO	NO
P-449	RTMAXDI1	1	888	888	888	888	NO	NO
P-450	LFMANDC	2	888	888	888	888	NO	NO
P-450	LFMANDI1	999	888	888	888	888	N/OB	N/OB
P-450	LFMANDI2	2	888	888	888	888	NO	NO
P-450	LFMANDM1	2	888	888	888	888	NO	NO
P-450	LFMANDM2	888	4	2	4	1	NO	NO
P-450	LFMAXDC	3	888	888	888	888	NO	NO
P-450	LFMAXDI2	3	888	888	888	888	N/OB	N/OB
P-450	LFMAXDM1	2	888	888	888	888	NO	NO
P-450	LFMAXDM2	888	2	3	1	1	NO	NO
P-450	RTMANDI2	2	888	888	888	888	NO	NO
P-450	RTMANDM1	2	888	888	888	888	NO	NO
P-450	RTMANDM2	888	4	2	4	1	NO	NO
P-450	RTMAXDI1	4	888	888	888	888	NO	NO
P-450	RTMAXDI2	3	888	888	888	888	NO	NO
P-450	RTMAXDM1	3	888	888	888	888	O-M	O-M
P-450	RTMAXDM2	888	1	3	1	1	NO	NO
P-451	LFMANI2	7	888	888	888	888	NO	NO
P-451	LFMAXC	8	888	888	888	888	N/OB	N/OB
P-451	RTMANC	7	888	888	888	888	NO	NO
P-451	RTMANM2	888	5	4	5	3	NO	NO
P-452	LFMANDC	1	888	888	888	888	NO	NO
P-452	LFMANDI1	999	888	888	888	888	N/OB	N/OB
P-452	LFMANDI2	2	888	888	888	888	O	O
P-452	LFMANDM1	2	888	888	888	888	NO	NO
P-452	LFMAXDC	2	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTTDL	OTHERWEAR	CHIPPING
P-452 LFMAXDI1	2	888	888	888	888	O	
P-452 LFMAXDI2	1	888	888	888	888	NO	
P-452 LFMAXDMI	2	888	888	888	888	NO	
P-452 LFMAXDM2	888	2	2	2	2	NO	
P-452 RTMANDC	1	888	888	888	888	NO	
P-452 RTMANDI2	1	888	888	888	888	NO	
P-452 RTMANDM1	3	888	888	888	888	NO	
P-452 RTMANDM2	888	2	1	2	1	NO	
P-452 RTMAXDMI	3	888	888	888	888	NO	
P-452 RTMAXDM2	888	2	2	2	2	NO	
P-454 LFMANI1	999	888	888	888	888	N/OB	
P-454 LFMANI2	5	888	888	888	888	NO	
P-454 LFMANM1	888	5	5	5	5	NO	
P-454 LFMANM2	888	4	4	4	4	NO	
P-454 LFMANM3	888	2	3	1	2	NO	
P-454 LFMANP1	4	888	888	888	888	N/OB	
P-454 LFMAXC	4	888	888	888	888	NO	
P-454 LFMAXI1	5	888	888	888	888	NO	
P-454 LFMAXI2	5	888	888	888	888	NO	
P-454 LFMAXPI	3	888	888	888	888	NO	
P-454 LFMAXSUP	999	888	888	888	888	N/OB	
P-454 RTMANC	4	888	888	888	888	NO	
P-454 RTMANI1	5	888	888	888	888	NO	
P-454 RTMANI2	5	888	888	888	888	NO	
P-454 RTMANM1	888	5	5	5	5	NO	
P-454 RTMANM2	888	3	3	3	3	NO	
P-454 RTMANM3	888	2	2	2	1	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-454 RTMANP1	5	888	888	888	888	NO	NO
P-454 RTMANP2	5	888	888	888	888	NO	NO
P-454 RTMAXC	5	888	888	888	888	NO	NO
P-454 RTMAXI1	5	888	888	888	888	N/OB	N/OB
P-454 RTMAXI2	5	888	888	888	888	NO	NO
P-454 RTMAXM1	888	6	8	5	5	N/OB	N/OB
P-454 RTMAXM2	888	4	5	4	4	NO	NO
P-454 RTMAXM3	888	3	2	1	1	NO	NO
P-454 RTMAXP1	5	888	888	888	888	NO	NO
P-454 RTMAXP2	5	888	888	888	888	NO	NO
P-455 LFMANDI1	1	888	888	888	888	NO	NO
P-455 LFMANDM1	1	888	888	888	888	NO	NO
P-455 LFMANDM2	888	1	1	1	1	NO	NO
P-455 LFMAXDC	1	888	888	888	888	NO	NO
P-455 LFMAXDM2	888	1	1	1	1	NO	NO
P-455 RTMANDC	1	888	888	888	888	NO	NO
P-455 RTMANDI1	1	888	888	888	888	NO	NO
P-455 RTMANDM1	1	888	888	888	888	NO	NO
P-455 RTMANDM2	888	1	1	1	1	NO	NO
P-457 LFMANM2	888	5	9	5	999	N/OB	N/OB
P-457 LFMAXM2	888	5	999	8	999	N/OB	N/OB
P-457 LFMAXM3	888	3	5	4	4	NO	NO
P-457 RTMANM2	888	5	9	999	999	N/OB	N/OB
P-458 LFMAXC	4	888	888	888	888	O	O
P-458 LFMAXI2	6	888	888	888	888	O-B	O-B
P-458 LFMAXM2	888	999	999	999	999	N/OB	N/OB
P-458 LFMAXP1	3	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-458 LFMAXP2	3	888	888	888	888	NO	NO
P-458 RTMAXC	5	888	888	888	888	NO	NO
P-458 RTMAXI1	6	888	888	888	888	M	M
P-458 RTMAXI2	6	888	888	888	888	O-B,O-M	O-B,O-M
P-458 RTMAXM1	888	5	8	4	10	O-M	O-M
P-458 RTMAXM2	888	999	999	999	999	N/OB	N/OB
P-458 RTMAXM3	888	1	1	1	1	NO	NO
P-458 RTMAXP1	4	888	888	888	888	NO	NO
P-459 LFMANDM1	4	888	888	888	888	NO	NO
P-459 LFMANDM2	888	4	3	4	999	O-M	O-M
P-459 LFMAXDC	4	888	888	888	888	NO	NO
P-459 LFMAXDM2	888	999	2	999	3	N/OB	N/OB
P-459 RTMANDM1	3	888	888	888	888	NO	NO
P-459 RTMANDM2	888	5	4	5	4	O-M	O-M
P-459 RTMANM1	888	1	1	1	1	NO	NO
P-459 RTMAXDM1	4	888	888	888	888	N/OB	N/OB
P-459 RTMAXDM2	888	999	999	1	2	O-B	O-B
P-460 LFMANC	5	888	888	888	888	NO	NO
P-460 LFMANI2	5	888	888	888	888	NO	NO
P-460 LFMANP1	5	888	888	888	888	NO	NO
P-460 LFMAXI1	999	888	888	888	888	N/OB	N/OB
P-460 LFMAXM1	888	4	5	4	4	NO	NO
P-460 LFMAXM2	888	1	1	1	1	NO	NO
P-460 LFMAXP2	3	888	888	888	888	NO	NO
P-460 RTMANI1	4	888	888	888	888	NO	NO
P-460 RTMANP1	999	888	888	888	888	N/OB	N/OB
P-460 RTMAXC	5	888	888	888	888 L	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-460	RTMAXP1	5	888	888	888	888	NO	NO
P-460	RTMAXP2	999	888	888	888	888	N/OB	N/OB
P-462	LFMANP2	2	888	888	888	888	NO	NO
P-462	LFMAXP2	2	888	888	888	888	NO	NO
P-462	RTMANP2	2	888	888	888	888	NO	NO
P-464	RTMANM2	888	1	1	1	1	NO	NO
P-465	LFMANM1	888	5	2	999	2	NO	NO
P-465	LFMANM2	888	999	999	999	999	N/OB	N/OB
P-465	LFMANM3	888	4	3	4	2	NO	NO
P-465	LFMAXM1	888	999	5	4	3	N/OB	N/OB
P-465	RTMANM1	888	999	3	999	2	N/OB	N/OB
P-465	RTMANM2	888	999	999	999	999	N/OB	N/OB
P-465	RTMANP2	999	888	888	888	888	N/OB	N/OB
P-467	LFMAXC	3	888	888	888	888	N/OB	N/OB
P-467	LFMAXM1	888	2	999	2	999	N/OB	N/OB
P-467	RTMANM3	888	999	999	1	1	N/OB	N/OB
P-467	RTMAXI2	999	888	888	888	888	N/OB	N/OB
P-469	LFMANDI1	1	888	888	888	888	NO	NO
P-469	LFMANDI2	1	888	888	888	888	NO	NO
P-469	LFMAXDI1	1	888	888	888	888	NO	NO
P-469	RTMANDI1	1	888	888	888	888	NO	NO
P-469	RTMANDI2	1	888	888	888	888	NO	NO
P-469	RTMAXDI1	1	888	888	888	888	NO	NO
P-469	RTMAXDI2	1	888	888	888	888	NO	NO
P-473	LFMANDC	1	888	888	888	888	NO	NO
P-473	LFMANDI1	2	888	888	888	888	NO	NO
P-473	LFMANDI2	1	888	888	888	888	NO	NO

SPEC	TOOTH	SMITH SCOTTMB SCOTTML SCOTTDL SCOTTDL				OTHERWEAR	CHIPPING
P-473	LFMANDM1	999	888	888	888	888	N/OB
P-473	LFMANDM2	888	4	1	4	2	NO
P-473	LFMANM1	888	1	1	1	1	NO
P-473	LFMAXDC	2	888	888	888	888	NO
P-473	LFMAXDI2	1	888	888	888	888	NO
P-473	LFMAXDM1	2	888	888	888	888	NO
P-473	LFMAXDM2	888	2	4	2	3	M,D
P-473	LFMAXM1	888	1	1	1	1	NO
P-473	RTMANDM1	1	888	888	888	888	NO
P-473	RTMANDM2	888	4	1	4	1	NO
P-473	RTMANM1	888	1	1	1	1	NO
P-473	RTMAXDC	2	888	888	888	888	NO
P-473	RTMAXDM1	2	888	888	888	888	N/OB
P-473	RTMAXDM2	888	2	2	1	2	NO
P-473	RTMAXM1	888	1	1	1	1	NO
P-475	LFMANDM2	888	8	999	7	3	N/OB
P-475	LFMANI2	1	888	888	888	888	NO
P-475	LFMANM1	888	3	2	2	1	NO
P-475	LFMAXDC	6	888	888	888	888	N/OB
P-475	LFMAXDM1	5	888	888	888	888	N/OB
P-475	LFMAXDM2	888	5	6	4	5	O-M
P-475	LFMAXI1	1	888	888	888	888	NO
P-475	LFMAXI2	1	888	888	888	888	NO
P-475	LFMAXM1	888	1	2	1	1	NO
P-475	RTMANDM2	888	7	999	8	4	N/OB
P-475	RTMANM1	888	4	2	3	1	NO
P-475	RTMAXDC	5	888	888	888	888	N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-475	RTMAXDM2	888	4	6	4	5	N/OB	
P-475	RTMAXI2	1	888	888	888	888	NO	NO
P-475	RTMAXM1	888	1	3	1	2	NO	NO
P-475	RTMAXP1	1	888	888	888	888	NO	NO
P-476	LFMANI2	2	888	888	888	888	NO	NO
P-476	LFMANM2	888	2	1	2	999	NO	NO
P-476	LFMANP2	2	888	888	888	888	NO	NO
P-476	RTMANC	2	888	888	888	888	NO	NO
P-476	RTMANI2	2	888	888	888	888	NO	NO
P-476	RTMANM1	888	4	4	4	4	NO	NO
P-476	RTMANP2	2	888	888	888	888	NO	NO
P-476	RTMAXC	2	888	888	888	888	NO	NO
P-476	RTMAXI2	2	888	888	888	888	NO	NO
P-476	RTMAXM1	888	4	4	4	4	NO	NO
P-476	RTMAXP1	2	888	888	888	888	NO	NO
P-476	RTMAXP2	999	888	888	888	888	N/OB	
P-477	LFMANM2	888	3	4	2	3	NO	NO
P-477	LFMAXM2	888	2	4	3	4	NO	NO
P-477	RTMANM1	888	5	3	4	4	NO	NO
P-477	RTMAXM1	888	4	4	4	4	NO	NO
P-477	RTMAXP1	1	888	888	888	888	NO	NO
P-478	LFMANM1	888	5	5	999	5	NO	NO
P-478	LFMANM2	888	4	3	4	3	NO	NO
P-478	LFMANM3	888	4	4	4	4	NO	NO
P-478	LFMANP2	3	888	888	888	888	NO	NO
P-478	LFMAXM2	888	3	5	3	4	O-B	
P-478	LFMAXM3	888	4	4	2	2	NO	NO

SPEC TOOTH	SMITH	SCOTTM	SCOTTM	SCOTTD	SCOTTD	OTHERWEAR	CHIPPING
P-478 RTMANM1	888	5	5	5	999	N/OB	
P-478 RTMANM3	888	1	1	1	1	NO	NO
P-478 RTMANP2	3	888	888	888	888	NO	NO
P-479 LFMAXDM1	2	888	888	888	888	NO	NO
P-479 LFMAXDM2	888	1	1	1	1	NO	NO
P-479 RTMANDC	1	888	888	888	888	NO	NO
P-479 RTMANDI2	1	888	888	888	888	NO	NO
P-479 RTMANDM2	888	1	1	1	1	O	O
P-479 RTMAXDI1	2	888	888	888	888	NO	NO
P-479 RTMAXDM2	888	1	1	1	1	NO	NO
P-480 LFMANM1	888	999	4	4	4	NO	NO
P-480 LFMANM2	888	4	3	4	4	NO	NO
P-480 LFMANM3	888	4	3	2	2	NO	NO
P-480 LFMANP1	3	888	888	888	888	N/OB	N/OB
P-480 LFMANP2	3	888	888	888	888	N/OB	N/OB
P-480 LFMAXM2	888	4	4	3	4	B	B
P-480 RTMANM1	888	5	3	4	4	NO	NO
P-480 RTMANM3	888	3	3	2	1	NO	NO
P-480 RTMANP1	2	888	888	888	888	NO	NO
P-480 RTMANP2	3	888	888	888	888	N/OB	N/OB
P-480 RTMAXM2	888	5	4	3	4	B	B
P-481 RTMANDI1	3	888	888	888	888	NO	NO
P-481 RTMANDI2	2	888	888	888	888	NO	NO
P-481 RTMAXDC	1	888	888	888	888	NO	NO
P-481 RTMAXDI2	1	888	888	888	888	O	O
P-481 RTMAXDM1	2	888	888	888	888	NO	NO
P-481 RTMAXDM2	888	1	1	1	1	NO	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-482	LFMAXDC	4	888	888	888	888	NO	NO
P-482	LFMAXDI1	5	888	888	888	888	O	O
P-482	LFMAXDI2	4	888	888	888	888	O	O
P-482	LFMAXDM1	5	888	888	888	888	NO	NO
P-482	LFMAXDM2	888	4	2	2	1	NO	NO
P-482	RTMAXDI1	4	888	888	888	888	NO	NO
P-484	LFMANDM1	3	888	888	888	888	NO	NO
P-484	LFMANDM2	888	3	1	2	1	O-B	O-B
P-484	LFMAXDC	3	888	888	888	888	O	O
P-484	LFMAXDI2	3	888	888	888	888	O	O
P-484	LFMAXDM2	888	2	3	2	3	O-M	O-M
P-484	RTMANDM1	3	888	888	888	888	NO	NO
P-484	RTMANDM2	888	3	1	2	1	NO	NO
P-484	RTMAXDC	3	888	888	888	888	O	O
P-484	RTMAXDI1	4	888	888	888	888	NO	NO
P-484	RTMAXDM2	888	2	3	2	2	NO	NO
P-485	LFMAXM3	888	1	1	1	1	NO	NO
P-486	RTMAXM3	888	10	10	10	10	N/OB	N/OB
P-488	LFMAXDI1	1	888	888	888	888	NO	NO
P-488	RTMANDI1	1	888	888	888	888	NO	NO
P-488	RTMAXDI1	1	888	888	888	888	NO	NO
P-489	LFMANC	1	888	888	888	888	NO	NO
P-489	LFMANI1	3	888	888	888	888	NO	NO
P-489	LFMANI2	2	888	888	888	888	NO	NO
P-489	LFMANM1	888	5	2	4	2	NO	NO
P-489	LFMANM2	888	2	1	1	1	NO	NO
P-489	LFMANP1	1	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-489 LFMANP2	999	888	888	888	888	N/OB
P-489 LFMAXC	999	888	888	888	888	N/OB
P-489 LFMAXM1	888	4	5	2	4	NO
P-489 LFMAXM2	888	1	999	1	999	NO
P-489 LFMAXP1	1	888	888	888	888	NO
P-489 LFMAXP2	1	888	888	888	888	NO
P-489 RTMANC	2	888	888	888	888	NO
P-489 RTMANI2	3	888	888	888	888	N/OB
P-489 RTMANM1	888	4	1	999	999	N/OB
P-489 RTMANM2	888	2	1	1	1	NO
P-489 RTMANP1	1	888	888	888	888	NO
P-489 RTMANP2	1	888	888	888	888	NO
P-489 RTMAXC	999	888	888	888	888	N/OB
P-489 RTMAXI2	1	888	888	888	888	NO
P-489 RTMAXM1	888	4	999	3	999	N/OB
P-489 RTMAXP1	999	888	888	888	888	N/OB
P-490 LFMANDC	3	888	888	888	888	NO
P-490 LFMANDM1	999	888	888	888	888	N/OB
P-490 LFMANDM2	888	5	999	4	999	N/OB
P-490 LFMAXDM1	2	888	888	888	888	O-B
P-490 LFMAXDM2	888	1	3	1	2	O-M
P-490 RTMANDC	5	888	888	888	888	NO
P-490 RTMANDM1	3	888	888	888	888	NO
P-490 RTMANDM2	888	5	4	4	2	NO
P-491 LFMANDC	3	888	888	888	888	NO
P-491 LFMANDI2	4	888	888	888	888	B
P-491 LFMAXDC	3	888	888	888	888	NO

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-491 LFMAXDM1	3	888	888	888	O-B	
P-491 LFMAXDM2	888	3	4	2	NO	
P-491 RTMANDC	2	888	888	888	NO	
P-491 RTMANDM1	3	888	888	888	NO	
P-491 RTMANDM2	888	4	2	2	O-M&D	
P-491 RTMAXDM1	3	888	888	888	O-B	
P-491 RTMAXDM2	888	3	4	2	O-B	
P-492 LFMANDI1	1	888	888	888	NO	
P-492 LFMANDI2	1	888	888	888	NO	
P-492 LFMAXDI1	1	888	888	888	NO	
P-492 LFMAXDI2	1	888	888	888	NO	
P-492 RTMANDI2	1	888	888	888	NO	
P-492 RTMAXDI1	1	888	888	888	NO	
P-492 RTMAXDI2	1	888	888	888	NO	
P-493 LFMANC	4	888	888	888	NO	
P-493 LFMANI1	999	888	888	888	N/OB	
P-493 LFMANI2	999	888	888	888	N/OB	
P-493 LFMANM2	888	5	4	4	N/OB	
P-493 LFMANM3	888	2	1	1	NO	
P-493 LFMAXC	999	888	888	888	N/OB	
P-493 LFMAXI2	999	888	888	888	N/OB	
P-493 LFMAXM1	888	999	999	999	N/OB	
P-493 LFMAXM2	888	3	5	4	O-M	
P-493 LFMAXM3	888	1	1	1	N/OB	
P-493 LFMAXP1	6	888	888	888	NO	
P-493 LFMAXP2	999	888	888	888	N/OB	
P-493 RTMANC	999	888	888	888	N/OB	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDDB	SCOTDDL	OTHERWEAR	CHIPPING
P-493	RTMANI1	999	888	888	888	888	N/OB	
P-493	RTMANI2	999	888	888	888	888	N/OB	
P-493	RTMANM3	888	1	1	1	1	NO	
P-493	RTMAXC	5	888	888	888	888 L	NO	
P-493	RTMAXI1	6	888	888	888	888 L	N/OB	
P-493	RTMAXI2	6	888	888	888	888 L	N/OB	
P-493	RTMAXM1	888	8	9	5	8	O-D	
P-493	RTMAXM2	888	4	5	3	4	O-M	
P-493	RTMAXM3	888	1	2	1	1	NO	
P-493	RTMAXP1	5	888	888	888	888	N/OB	
P-493	RTMAXP2	5	888	888	888	888	NO	
P-498	LFMAXC	3	888	888	888	888	M-L	
P-498	LFMAXI2	999	888	888	888	888	N/OB	
P-498	LFMAXM1	888	3	5	3	4	NO	
P-498	LFMAXM2	888	2	4	2	4	NO	
P-498	LFMAXM3	888	1	1	1	1	NO	
P-498	LFMAXP1	2	888	888	888	888	NO	
P-498	LFMAXP2	3	888	888	888	888	O	
P-498	RTMAXC	4	888	888	888	888	NO	
P-498	RTMAXM1	888	4	5	3	4	NO	
P-498	RTMAXM2	888	2	3	2	3	NO	
P-498	RTMAXM3	888	1	1	1	1	NO	
P-498	RTMAXP1	999	888	888	888	888	N/OB	
P-498	RTMAXP2	999	888	888	888	888	N/OB	
P-498	RTMAXM1	999	888	888	888	888	NO	
P-498	RTMAXM2	999	888	888	888	888	NO	
P-498	RTMAXM3	999	888	888	888	888	NO	
P-498	RTMAXP1	999	888	888	888	888	N/OB	
P-498	RTMAXP2	999	888	888	888	888	N/OB	
P-499	LFMANC	4	888	888	888	888	NO	
P-499	LFMANI2	5	888	888	888	888	NO	
P-499	LFMANM1	888	6	5	6	7	NO	

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-499 LFMANP1	3	888	888	888	888	NO	NO
P-499 LFMANP2	4	888	888	888	888	NO	NO
P-499 RTMANC	6	888	888	888	888	NO	NO
P-499 RTMANI1	5	888	888	888	888	NO	NO
P-499 RTMANP2	4	888	888	888	888	NO	NO
P-500 LFMANDC	4	888	888	888	888	NO	NO
P-500 LFMANDM2	888	999	2	5	1	NO	NO
P-500 LFMANI1	1	888	888	888	888	NO	NO
P-500 LFMANI2	1	888	888	888	888	NO	NO
P-500 LFMANM1	888	999	1	3	1	NO	NO
P-500 LFMAXDC	5	888	888	888	888	NO	NO
P-500 LFMAXDM2	888	999	999	999	999	N/OB	N/OB
P-500 LFMAXI1	1	888	888	888	888	N/OB	N/OB
P-500 LFMAXI2	1	888	888	888	888	NO	NO
P-500 LFMAXM1	888	2	999	2	2	NO	NO
P-500 RTMANDC	4	888	888	888	888	NO	NO
P-500 RTMANDM2	888	5	3	5	4	O-B	O-B
P-500 RTMANI1	1	888	888	888	888	NO	NO
P-500 RTMANI2	1	888	888	888	888	NO	NO
P-500 RTMANM1	888	4	1	3	1	NO	NO
P-500 RTMAXDC	7	888	888	888	888	NO	NO
P-500 RTMAXI1	1	888	888	888	888	NO	NO
P-500 RTMAXM1	888	3	3	2	2	NO	NO
P-501 LFMANC	5	888	888	888	888	NO	NO
P-501 LFMANI2	5	888	888	888	888	NO	NO
P-501 LFMANM1	888	999	4	999	999	N/OB	N/OB
P-501 LFMANM2	888	4	4	999	4	N/OB	N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-501	LFMANP1	2	888	888	888	888	NO	NO
P-501	LFMAXM1	888	4	5	4	5	NO	NO
P-501	LFMAXM2	888	3	5	4	4	NO	NO
P-501	LFMAXP2	4	888	888	888	888	NO	NO
P-501	RTMANM3	888	3	1	4	4	NO	NO
P-501	RTMANP2	3	888	888	888	888	NO	NO
P-501	RTMAXI2	6	888	888	888	888	NO	NO
P-501	RTMAXM1	888	4	999	999	999	N/OB	N/OB
P-501	RTMAXP1	2	888	888	888	888	N/OB	N/OB
P-501	RTMAXP2	2	888	888	888	888	NO	NO
P-502	LFMANC	5	888	888	888	888	NO	NO
P-502	LFMANM1	888	6	4	6	4	L	L
P-502	LFMANM2	888	4	2	4	3	NO	NO
P-502	RTMANM1	888	4	6	3	6	NO	NO
P-502	RTMANM2	888	4	2	999	3	NO	NO
P-503	LFMANC	999	888	888	888	888	N/OB	N/OB
P-503	LFMANI1	7	888	888	888	888	N/OB	N/OB
P-503	LFMANI2	999	888	888	888	888	N/OB	N/OB
P-503	LFMANM1	888	9	999	9	8	N/OB	N/OB
P-503	LFMANM2	888	8	5	8	5	N/OB	N/OB
P-503	LFMANM3	888	5	6	4	2	NO	NO
P-503	LFMANP1	6	888	888	888	888	NO	NO
P-503	LFMANP2	6	888	888	888	888	NO	NO
P-503	LFMAXM1	888	9	10	9	10	N/OB	N/OB
P-503	LFMAXM2	888	4	9	4	9	N/OB	N/OB
P-503	LFMAXM3	888	4	999	3	999	N/OB	N/OB
P-503	LFMAXP2	999	888	888	888	888	N/OB	N/OB

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-503	RTMANC	5	888	888	888	888	NO	NO
P-503	RTMANI1	8	888	888	888	888	N/OB	N/OB
P-503	RTMANI2	8	888	888	888	888	N/OB	N/OB
P-503	RTMANM1	888	5	4	6	5	NO	NO
P-503	RTMANM3	888	3	1	3	1	NO	NO
P-503	RTMANP1	3	888	888	888	888	NO	NO
P-503	RTMANP2	4	888	888	888	888	NO	NO
P-503	RTMAXM2	888	4	999	4	999	N/OB	N/OB
P-504	LFMANC	3	888	888	888	888	NO	NO
P-504	LFMANI2	3	888	888	888	888	NO	NO
P-504	LFMANM1	888	5	2	4	3	NO	NO
P-504	LFMANM2	888	2	1	999	1	NO	NO
P-504	LFMANP1	1	888	888	888	888	NO	NO
P-504	LFMANP2	1	888	888	888	888	NO	NO
P-504	LFMAXC	2	888	888	888	888	NO	NO
P-504	LFMAXM2	888	1	2	2	2	NO	NO
P-504	RTMANC	3	888	888	888	888	NO	NO
P-504	RTMANM1	888	5	3	4	3	NO	NO
P-504	RTMANM2	888	3	1	3	2	NO	NO
P-504	RTMANP2	1	888	888	888	888	NO	NO
P-504	RTMAXM1	888	4	5	3	3	NO	NO
P-507	LFMANM1	888	999	5	999	5	M	M
P-507	LFMANP1	999	888	888	888	888	N/OB	N/OB
P-507	LFMANP2	999	888	888	888	888	N/OB	N/OB
P-507	LFMAXC	999	888	888	888	888	N/OB	N/OB
P-507	LFMAXM3	888	999	999	2	1	N/OB	N/OB
P-507	RTMANC	6	888	888	888	888	NO	NO

SPEC TOOTH	SMITH	SCOTTM	SCOTTML	SCOTTD	SCOTTDL	OTHERWEAR	CHIPPING
P-507 RTMANI2	6	888	888	888	888	NO	NO
P-507 RTMANP1	999	888	888	888	888	N/OB	N/OB
P-507 RTMAXC	6	888	888	888	888	NO	NO
P-507 RTMAXM3	888	2	3	2	2	NO	NO
P-507 RTMAXP2	2	888	888	888	888	N/OB	N/OB
P-509 LFMANDM1	1	888	888	888	888	NO	NO
P-509 LFMANDM2	888	1	1	1	1	NO	NO
P-509 LFMAXDM2	888	2	2	2	2	NO	NO
P-509 RTMANDM1	1	888	888	888	888	NO	NO
P-510 LFMAXM1	888	5	8	4	6	NO	NO
P-510 LFMAXM2	888	3	4	3	4	NO	NO
P-510 LFMAXM3	888	1	2	1	1	NO	NO
P-510 RTMANP	5	888	888	888	888	NO	NO
P-510 RTMAXM1	888	999	6	4	5	N/OB	N/OB
P-510 RTMAXM1	888	999	999	1	2	N/OB	N/OB
P-510 RTMAXM2	888	3	4	3	4	NO	NO
P-511 LFMANM1	888	5	5	5	4	NO	NO
P-511 LFMANP1	4	888	888	888	888	NO	NO
P-511 LFMANP2	3	888	888	888	888	NO	NO
P-511 LFMAXM1	888	5	8	3	5	NO	NO
P-511 RTMANM1	888	999	5	999	5	N/OB	N/OB
P-511 RTMANP1	3	888	888	888	888	NO	NO
P-511 RTMANP2	4	888	888	888	888	NO	NO
P-511 RTMAXM1	888	999	999	8	5	N/OB	N/OB
P-511 RTMAXP2	5	888	888	888	888	NO	NO
P-512 LFMANC	3	888	888	888	888	NO	NO
P-512 RTMANM3	888	999	999	999	1	N/OB	N/OB

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDB	SCOTTDL	OTHERWEAR	CHIPPING
P-512 RTMAXC	4	888	888	888	888	N/OB	
P-514 LFMANDC	1	888	888	888	888	NO	
P-514 LFMANDM1	2	888	888	888	888	NO	
P-514 LFMANDM2	888	1	1	1	1	NO	
P-514 LFMAXDM2	888	1	1	1	1	NO	
P-514 RTMANDC	1	888	888	888	888	NO	
P-514 RTMANDM1	999	888	888	888	888	NO	
P-514 RTMANDM2	888	1	1	1	1	NO	
P-514 RTMAXDM1	2	888	888	888	888	N/OB	
P-515 LFMAXC	4	888	888	888	888	NO	
P-515 LFMAXM1	888	3	4	3	4	O-M	
P-515 LFMAXP1	3	888	888	888	888	NO	
P-515 LFMAXP2	2	888	888	888	888	NO	
P-515 RTMAXP2	2	888	888	888	888	NO	
P-516 LFMANC	2	888	888	888	888	NO	
P-516 LFMANM2	888	999	4	4	3	NO	
P-516 LFMANM3	888	3	2	2	1	NO	
P-516 RTMANC	2	888	888	888	888	NO	
P-517 LFMANM2	888	2	2	3	3	NO	
P-517 LFMAXM1	888	4	5	4	4	NO	
P-518 LFMANDM2	888	2	1	2	999	N/OB	
P-522 LFMANDM2	888	2	1	1	1	NO	
P-522 LFMAXDM2	888	1	1	1	1	NO	
P-522 RTMANDM1	2	888	888	888	888	O	
P-522 RTMANDM2	888	1	1	1	1	NO	
P-522 RTMAXDM2	888	1	1	1	1	NO	
P-523 LFMANC	6	888	888	888	888	NO	

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTMML	SCOTTDL	OTHERWEAR	CHIPPING
P-523	LFMANP1	5	888	888	888	888	N/OB
P-523	RTMAXM2	888	4	4	4	4	NO
P-524	LFMANDI2	2	888	888	888	888	N/OB
P-524	LFMAXDM1	2	888	888	888	888	NO
P-524	LFMAXDM2	888	2	999	2	999	O-B
P-524	RTMANDM1	999	888	888	888	888	N/OB
P-524	RTMANDM2	888	2	1	2	1	NO
P-524	RTMAXDM2	888	2	999	2	999	NO
P-526	LFMANC	999	888	888	888	888	N/OB
P-526	LFMANM2	888	3	2	3	0	NO
P-526	LFMANP2	2	888	888	888	888	NO
P-526	RTMANC	2	888	888	888	888	NO
P-526	RTMANM1	888	999	4	5	3	N/OB
P-526	RTMANM2	888	3	2	3	1	NO
P-526	RTMANP2	2	888	888	888	888	NO
P-526	RTMAXI1	3	888	888	888	888	NO
P-527	LFMANDC	3	888	888	888	888	NO
P-527	LFMANDM1	1	888	888	888	888	NO
P-527	LFMANDM2	888	2	1	2	1	NO
P-527	LFMAXDM1	999	888	888	888	888	N/OB
P-527	LFMAXDM2	888	3	2	1	1	NO
P-527	RTMANDC	1	888	888	888	888	NO
P-527	RTMANDM1	2	888	888	888	888	N/OB
P-527	RTMANDM2	888	3	1	2	1	O-M
P-527	RTMAXDC	3	888	888	888	888	NO
P-527	RTMAXDM1	3	888	888	888	888	N/OB
P-527	RTMAXDM2	888	2	3	1	2	NO

SPEC	TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	SCOTTDL	OTHERWEAR	CHIPPING
P-531	LFMAXDM1	3	888	888	888	888	NO	NO
P-531	RTMAXDM1	3	888	888	888	888	NO	NO
P-532	LFMANDC	4	888	888	888	888	NO	NO
P-532	LFMANDI2	999	888	888	888	888	N/OB	N/OB
P-532	LFMANDM1	4	888	888	888	888	N/OB	N/OB
P-532	LFMANDM2	888	5	2	5	1	NO	NO
P-532	LFMAXDC	4	888	888	888	888	O	O
P-532	LFMAXDI2	5	888	888	888	888	O	O
P-532	LFMAXDM1	5	888	888	888	888	NO	NO
P-532	LFMAXDM2	888	3	5	3	4	O-B,O-M	O-B,O-M
P-532	RTMANDC	4	888	888	888	888	NO	NO
P-532	RTMANDI1	7	888	888	888	888	NO	NO
P-532	RTMANDI2	6	888	888	888	888	NO	NO
P-532	RTMANDM1	4	888	888	888	888	NO	NO
P-532	RTMANDM2	888	5	1	5	2	O-M,L	O-M,L
P-532	RTMAXDC	4	888	888	888	888	O	O
P-532	RTMAXDI1	4	888	888	888	888 L	NO	NO
P-532	RTMAXDM1	3	888	888	888	888	O-M	O-M
P-532	RTMAXDM2	888	3	5	2	4	O-M,O-B	O-M,O-B
P-533	LFMANDM1	999	888	888	888	888	N/OB	N/OB
P-533	LFMANDM2	888	1	1	999	999	N/OB	N/OB
P-533	LFMAXDC	2	888	888	888	888	NO	NO
P-533	RTMANDM2	888	1	1	1	1	NO	NO
P-533	RTMAXDM2	888	2	2	1	999	NO	NO
P-535	LFMAXM2	888	4	5	4	999	NO	NO
P-535	LFMAXP	2	888	888	888	888	NO	NO
P-535	RTMAXI1	5	888	888	888	888	O	O

SPEC TOOTH	SMITH	SCOTTMB	SCOTTML	SCOTTDL	OTHERWEAR	CHIPPING
P-535 RTMAXM1	888	999	999	4	5	O-D
P-535 RTMAXM2	888	4	5	4	4	NO
P-535 RTMAXM3	888	1	1	1	1	NO
P-536 LFMANM1	888	5	4	5	3	NO
P-536 LFMANM2	888	4	3	4	2	NO
P-536 LFMAXM1	888	4	5	4	4	O-M
P-536 LFMAXM2	888	2	4	4	4	NO
P-536 LFMAXP2	2	888	888	888	888	NO
P-536 RTMANC	2	888	888	888	888	NO
P-536 RTMANP1	1	888	888	888	888	NO
P-536 RTMAXI2	4	888	888	888	888	NO
P-536 RTMAXM1	888	4	999	4	999	N/OB
P-536 RTMAXM2	888	1	3	2	2	NO
P-536 RTMAXP2	2	888	888	888	888	NO
P-538 LFMANC	4	888	888	888	888	NO
P-538 RTMANM3	888	3	2	3	1	NO
P-539 LFMANDI1	1	888	888	888	888	NO
P-539 LFMANDI2	1	888	888	888	888	NO
P-539 LFMAXDI2	1	888	888	888	888	NO
P-539 RTMANDI1	1	888	888	888	888	NO
P-539 RTMANDI2	1	888	888	888	888	NO
P-539 RTMAXDI1	1	888	888	888	888	NO
P-539 RTMAXDI2	1	888	888	888	888	NO

APPENDIX D: STABLE ISOTOPIC DATA

SPEC	PHASE	AGECAT	SEXCAT	STATUS	MATERIAL	LAB	d13C
P-015	Salinar	8	F	high	bone apatite	USF	-9.9
P-018	Pre-structural	7	F	low	bone apatite	USF	-7.6
P-018	Pre-structural	7	F	low	tooth enamel	USF	-6.5
P-022	Structural	10	M	high	bone apatite	USF	-6.8
P-030	Salinar	8	M	high	tooth enamel	USF	-11.8
P-032	Pre-structural	5	M	high	bone apatite	USF	-7.6
P-032	Pre-structural	5	M	high	tooth enamel	USF	-8.7
P-033	Structural	9	M	high	bone apatite	USF	-7.0
P-037	Pre-structural	11	F	low	bone apatite	USF	-7.5
P-038	Salinar	8	M	high	bone apatite	USF	-11.4
P-040	Pre-structural	9	F	low	bone apatite	USF	-7.0
P-042	Pre-structural	4	M	high	bone apatite	USF	-6.6
P-044	Structural	8	F	low	bone apatite	USF	-5.8
P-053	Moche	9	F	unknown	bone apatite	USF	-7.1
P-054	unknown	5	F	low	bone apatite	USF	-6.6
P-058	Pre-structural	7	F	low	tooth enamel	USF	-12.1
P-090	Post-structural	7	M	high	bone apatite	USF	-6.4
P-090	Post-structural	7	M	high	tooth enamel	USF	-5.6
P-091	Post-structural	8	F	high	bone apatite	USF	-7.9
P-093	Post-structural	7	F	low	bone apatite	USF	-6.7
P-093	Post-structural	7	F	low	tooth enamel	USF	-5.3
P-094	Post-structural	5	F	low	bone apatite	USF	-7.5
P-104	Cupisnique	8	F	high	bone apatite	UCalgary	-10.9
P-108	Post-structural	17	M	high	bone apatite	USF	-7.7
P-109	Post-structural	11	F	low	bone apatite	USF	-6.9
P-109	Post-structural	11	F	low	tooth enamel	USF	-7.8
P-115	Post-structural	7	F	high	bone apatite	USF	-7.9
P-130	Salinar	5	M	high	bone apatite	UCalgary	-10.9
P-132	Salinar	11	F	high	bone apatite	USF	-10.2
P-137	Pre-structural	4	?	high	bone apatite	UCalgary	-7.6
P-139	Pre-structural	7	F	low	bone apatite	UCalgary	-11.0
P-143	Cupisnique	9	M	low	bone apatite	USF	-11.1
P-143	Cupisnique	9	M	low	tooth enamel	USF	-11.4
P-145	Pre-structural	4	M	low	bone apatite	UCalgary	-7.6
P-147	unknown	9	M	unknown	bone apatite	UCalgary	-6.5
P-148	Structural	9	F	low	bone apatite	UCalgary	-7.9
P-150	Structural	7	M	low	bone apatite	USF	-7.3
P-150	Structural	7	M	low	tooth enamel	USF	-8.7
P-155	Pre-structural	10	F	high	bone apatite	UCalgary	-6.9
P-156	Structural	6	F	low	bone apatite	UCalgary	-7.7

SPEC	PHASE	AGECAT	SEXCAT	STATUS	MATERIAL	LAB	d13C
P-157	Structural	8	F	low	bone apatite	UCalgary	-7.7
P-158	unknown	9	M	low	bone apatite	UCalgary	-11.1
P-162	Salinar	5	F	high	bone apatite	UCalgary	-10.4
P-163	Salinar	11	M	high	bone apatite	UCalgary	-9.3
P-164	Structural	7	F	high	bone apatite	UCalgary	-7.2
P-173	Pre-structural	9	M	low	bone apatite	UCalgary	-7.5
P-178	Structural	6	F	low	bone apatite	UCalgary	-7.7
P-194	Salinar		?	high	bone apatite	USF	-7.4
P-194	Salinar	9	?	high	tooth enamel	USF	-6.4
P-216	Salinar	9	F	high	bone apatite	USF	-10.4
P-216	Salinar	9	F	high	tooth enamel	USF	-10.1
P-217	Salinar	6	M	low	tooth enamel	USF	-10.2
P-220	Cupisnique	13	F	high	bone apatite	USF	-10.4
P-220	Cupisnique	13	F	high	tooth enamel	USF	-11.8
P-221	Cupisnique	17	F	high	bone apatite	USF	-8.6
P-221	Cupisnique	17	F	high	tooth enamel	USF	-12.2
P-254	Pre-structural	6	?	high	bone apatite	USF	-6.1
P-254	Pre-structural	6	?	high	tooth enamel	USF	-5.9
P-264	Pre-structural	10	M	high	bone apatite	USF	-6.8
P-278	Structural	16	?	low	bone apatite	USF	-6.8
P-278	Structural	16	?	low	tooth enamel	USF	-5.0
P-286	Structural	9	F	low	bone apatite	USF	-9.7
P-292	Structural	10	F	low	bone apatite	USF	-7.2
P-314	Structural	10	F	high	bone apatite	USF	-5.9
P-314	Structural	10	F	high	tooth enamel	USF	-5.5

APPENDIX E: DENTAL CALCULUS DATA

SPEC	PHASE	SEXCAT	AGECAT	STATUS	SAMPLE WT	TEST METHOD	MATERIAL RECOVERED
P-015	Salinar	F	8	high	5.00	3rd	maize, manioc, plant stem, coca
P-018	Pre-structural	F	7	low	<0.01	4th	maize, plant stem, coca
P-022	Structural	M	10	high	0.08	3rd	maize or manioc, plant stem, coca
P-025	Pre-structural	F	5	high	0.07	2nd	manioc, coca
P-030	Salinar	M	8	high	0.04	2nd	maize, plant fiber, coca
P-033	Structural	M	9	high	2.00	4th	maize, manioc, plant stem
P-051	Salinar	F	8	high	0.02	2nd	fruit residue, coca
P-090	Post-structural	M	7	high	1.00	4th	plant stem
P-101	Post-structural	F	17	high	0.06	2nd	coca
P-104	Cupisnique	F	8	high	0.22	2nd	leaf, coca
P-109	Post-structural	F	11	low	0.05	2nd	maize, manioc, totora, coca
P-123	Pre-structural	M	10	high	11.00	first	unsuccessful
P-139	Pre-structural	F	7	low	1.00	4th	plant stem
P-148	Structural	F	9	low	1.00	3rd	maize, plant fiber, coca
P-163	Salina	M	11	high	18.00	first	unsuccessful
P-178	Structural	F	6	low	3.00	3rd	maize or manioc, plant stem, coca
P-216	Salina	F	9	high	<0.01	3rd	plant tissue, coca
P-217	Salina	M	6	low	0.05	2nd	potato?, leaf, flower?, coca
P-226	Post-structural	? (F)	16	high	4.00	first	unsuccessful
P-292	Structural	F	10	low	2.00	3rd	no plant remains
P-317	Pre-structural	M	11	high	4.00	first	unsuccessful
P-379	Pre-structural	M	8	high	2.00	3rd	no plant remains
P-422	Post-structural	M	7	low	2.00	3rd	plant fiber, coca
P-425	Post-structural	M	7	low	0.02	2nd	maize, plant fiber, coca
P-503	Structural	? (M)	17	high	4.00	4th	manioc

SPEC PHASE	SEXCAT	AGECAT	STATUS	METHOD	COCA-LIKE MATERIAL RECOVERED
P-101 Post-structural	F	17	high	2-1	long cell phytolith, leaf epidermis, vascular bundle, fiber
P-425 Post-structural	M	7	low	2-2	long cell phytolith, fiber
P-030 Salinar	M	8	high	2-3	sclerenchyma, long cell phytolith, fiber
P-109 Post-structural	F	11	low	2-4	long cell phytolith, fiber
P-025 Pre-structural	F	5	high	2-5	polygonal phytolith, sclerenchyma, leaf epidermis, fiber
P-051 Salinar	F	8	high	2-6	sclerenchyma
P-104 Cupisnique	F	8	high	2-7	leaf parenchyma and epidermis, fiber
P-217 Salinar	M	6	low	2-8	leaf parenchyma and epidermis
P-022 Structural	M	10	high	3-1	sclerenchyma, fiber
P-148 Structural	F	9	low	3-2	long cell phytolith
P-015 Salinar	F	8	high	3-3	long cell phytolith, vascular bundle
P-178 Structural	F	6	low	3-4	vascular bundle
P-216 Salinar	F	9	high	3-5	sclerenchyma, long cell phytolith, fiber
P-292 Structural	F	10	low	3-6	none
P-379 Pre-structural	M	8	high	3-7	none
P-422 Post-structural	M	7	low	3-8	fiber
P-018 Pre-structural	F	7	low	4-1	leaf epidermis, vascular bundle, fiber
P-033 Structural	M	9	high	4-2	none
P-503 Structural	? (M)	17	high	4-3	none
P-090 Post-structural	M	7	high	4-4	none
P-139 Pre-structural	F	7	low	4-5	none

APPENDIX F LOGISTIC REGRESSION MODELS

Following are the models programed in SAS V8.2. File and variable names are indicated in italics the first time they appear in each model. By default, SAS alphabetizes variable names and establishes the last variable as the intercept. For example, in the fourth line of the first model the following tooth types are listed: *tootha* (permanent incisor or canine), *toothm* (permanent first or second molar), and *toothl* (third molar), but *toothp* (premolar) is not. *Toothp* is the intercept. The following is a key to other variable included in the models:

spec (individual)
sexf (female), *sexm* (male – intercept)
agecat (age category, see Appendix A)
toothda (deciduous incisor or canine), *toothdm* (deciduous second molar), *toothdp* (deciduous first molar – intercept)
toothcat = *A* (permanent anterior tooth), *toothcat* = *P* (permanent premolar)
tcat = *st* (permanent first molar), *tcat* = *nd* (permanent second molar), *tcat* = *rd* (third molar)
t2 (Salinar), *t3* (Pre-structural), *t4* (Structural) *t5* (Post-structural – intercept)
statush (high status), *statusl* (low status – intercept)
sexf_t2 (female-Salinar interaction) *sexm_t2* (male-Salinar interaction – intercept),
sexf_t3 (female-Pre-structural) *sexm_t3* (male-Pre-structural interaction – intercept),
sexf_t4 (female-Structural interaction) *sexm_t4* (male-Structural interaction – intercept),
sexf_t5 (female-Salinar interaction – intercept) *sexm_t2* (male-Salinar interaction – intercept)
statush_sexf (high status-female interaction), *statush_sexm* (high status-male interaction – intercept)
statush_t2 (high status-Salinar interaction) *statusl_t2* (low status-Salinar interaction – intercept)
statush_t3 (high status-Pre-structural interaction) *statusl_t3* (low status-Pre-structural interaction – intercept)
statush_t4 (high status-Structural interaction) *statusl_t4* (low status-Structural interaction – intercept)
statush_t5 (high status-Post-structural interaction – intercept) *statusl_t5* (low status-Post-structural interaction – intercept)

Model 1 was used to analyze dental caries, periodontal disease, dental abscesses, antemortem tooth loss, and enamel chipping of permanent teeth of individuals of known age and sex. This model included sex-phase interaction variables.

Model 1

```
proc genmod data=alias.permdat;
ods output estimates=ests(keep=label estimate);
class spec;
model caries=tootha toothm toothl agecat sexf t2 t3 t4 statush sexf_t2 sexf_t3
    sexf_t4/dist=bin link=logit;
repeated subject=spec;

estimate 'age=9 sex=f time=2' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 sexf 1
    t2 1 sexf_t2 1;
estimate 'age=9 sex=m time=2' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t2 1;
estimate 'age=9 sex=f time=3' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 sexf 1
    t3 1 sexf_t3 1;
estimate 'age=9 sex=m time=3' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t3 1;
estimate 'age=9 sex=f time=4' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 sexf 1
    t4 1 sexf_t4 1;
estimate 'age=9 sex=m time=4' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t4 1;
estimate 'age=9 sex=f time=5' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 sexf 1;
estimate 'age=9 sex=m time=5' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9;

estimate 'male vs female t=2' sexf 1 sexf_t2 1;
estimate 'male vs female t=3' sexf 1 sexf_t3 1;
estimate 'male vs female t=4' sexf 1 sexf_t4 1;
estimate 'male vs female t=5' sexf 1;

contrast 'sex*time' sexf_t2 1, sexf_t3 1, sexf_t4 1/wald;
contrast 'time within males' t2 1, t3 1, t4 1/wald;
contrast 'time within females' t2 1 sexf_t2 1, t3 1 sexf_t3 1, t4 1 sexf_t4 1/wald;
run;
data ests;
set ests;
probability=1/(1+exp(estimate));
label probability="percent carious";
run;
proc print data=ests label;
var label probability;
run;
```

Model 2 was used to analyze dental caries and enamel chipping of deciduous teeth of individuals of known age. This model does not include any interaction variables.

Model 2

```
proc genmod data=alias.decdat;  
ods output estimates=ests(keep=label estimate);  
class spec;  
model caries=toothda toothdm statush agecat t2 t3 t4/dist=bin link=logit;  
repeated subject=spec;  
  
estimate 'age=2 time=2' intercept 1 toothda .6 toothdm .2 agecat 2 t2 1;  
estimate 'age=2 time=3' intercept 1 toothda .6 toothdm .2 agecat 2 t3 1;  
estimate 'age=2 time=4' intercept 1 toothda .6 toothdm .2 agecat 2 t4 1;  
estimate 'age=2 time=5' intercept 1 toothda .6 toothdm .2 agecat 2;  
  
contrast 'time' t2 1 toothda .6 toothdm .2, t3 1 toothda .6 toothdm .2, t4 1 toothda .6 toothdm  
  .2/wald;  
run;  
data ests;  
set ests;  
probability=1/(1+exp(estimate));  
label probability="percent carious";  
run;  
proc print data=ests label;  
var label probability;  
run;
```

Model 3 was used to analyze dental caries, antemortem tooth loss, and enamel chipping of permanent teeth of individuals of known age and sex. This model included sex-phase, status-sex, and status-phase interaction variables.

Model 3

```
proc genmod data=alias permdat;
ods output estimates=ests(keep=label estimate);
class spec;
model caries=tootha toothl toothm agecat statush sexf t2 t3 t4 statush_t2 statush_t3
statush_t4 statush_sexf/dist=bin link=logit;
repeated subject=spec;

estimate 'age=9 status=h time=2' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t2 1
statush 1;
estimate 'age=9 status=l time=2' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t2 1;
estimate 'age=9 status=h time=3' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t3 1
statush 1;
estimate 'age=9 status=l time=3' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t3 1;
estimate 'age=9 status=h time=4' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t4 1
statush 1;
estimate 'age=9 status=l time=4' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t4 1;
estimate 'age=9 status=h time=5' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9
statush 1;
estimate 'age=9 status=l time=5' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9;
estimate 'low vs high t=2' t2 1 statush 1;
estimate 'low vs high t=3' t3 1 statush 1;
estimate 'low vs high t=4' t4 1 statush 1;
estimate 'low vs high t=5' statush 1;

contrast 'status*time' statush_t2 1, statush_t3 1, statush_t4 1;
contrast 'status*sex' statush_sexf 1;
run;
data ests;
set ests;
probability=1/(1+exp(estimate));
label probability="percent carious";
run;
proc print data=ests label;
var label probability;
run;
```

Model 4 was used to analyze periodontal disease and dental abscesses of permanent teeth of individuals of known age and sex. Model 3 could not be supported for these conditions so a modified version which only included sex-phase and status-sex interaction variables was used.

Model 4

```
proc genmod data=alias.permdat;
ods output estimates=ests(keep=label estimate);
class spec;
model periodont=tootha toothl toothm agecat statush sexf t2 t3 t4 statush_sexf/dist=bin
link=logit;
repeated subject=spec;

estimate 'age=9 status=h time=2' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t2 1
statush 1;
estimate 'age=9 status=l time=2' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t2 1;
estimate 'age=9 status=h time=3' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t3 1
statush 1;
estimate 'age=9 status=l time=3' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t3 1;
estimate 'age=9 status=h time=4' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t4 1
statush 1;
estimate 'age=9 status=l time=4' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9 t4 1;
estimate 'age=9 status=h time=5' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9
statush 1;
estimate 'age=9 status=l time=5' intercept 1 tootha .375 toothm .25 toothl .125 agecat 9;

estimate 'low vs high t=2' t2 1 statush 1;
estimate 'low vs high t=3' t3 1 statush 1;
estimate 'low vs high t=4' t4 1 statush 1;
estimate 'low vs high t=5' statush 1;

contrast 'status*sex' statush_sexf 1;
run;
data ests;
set ests;
probability=1/(1+exp(estimate));
label probability="percent periodontal";
run;
proc print data=ests label;
var label probability;
run;
```

Model 5 was used to analyze dental caries and enamel chipping of deciduous teeth of individuals of known age. This model included the status-phase interaction variable.

Model 5

```
proc genmod data=alias.decdat;
ods output estimates=ests(keep=label estimate);
class spec;
model caries=toothda toothdm statush agecat t2 t3 t4 statush_t2 statush_t3
  statush_t4/dist=bin link=logit;
repeated subject=spec;

estimate 'age=2 status=h time=2' intercept 1 toothda .6 toothdm .2 agecat 2 t2 1 statush 1;
estimate 'age=2 status=l time=2' intercept 1 toothda .6 toothdm .2 agecat 2 t2 1;
estimate 'age=2 status=h time=3' intercept 1 toothda .6 toothdm .2 agecat 2 t3 1 statush 1;
estimate 'age=2 status=l time=3' intercept 1 toothda .6 toothdm .2 agecat 2 t3 1;
estimate 'age=2 status=h time=4' intercept 1 toothda .6 toothdm .2 agecat 2 t4 1 statush 1;
estimate 'age=2 status=l time=4' intercept 1 toothda .6 toothdm .2 agecat 2 t4 1;
estimate 'age=2 status=h time=5' intercept 1 toothda .6 toothdm .2 agecat 2 statush 1;
estimate 'age=2 status=l time=5' intercept 1 toothda .6 toothdm .2 agecat 2;

estimate 'low vs high t=2' t2 1 statush 1;
estimate 'low vs high t=3' t3 1 statush 1;
estimate 'low vs high t=4' t4 1 statush 1;
estimate 'low vs high t=5' statush 1;

contrast 'status*time' statush_t2 1, statush_t3 1, statush_t4 1;
run;
data ests;
set ests;
probability=1/(1+exp(estimate));
label probability="percent carious";
run;
proc print data=ests label;
var label probability;
run;
```

Model 6 was used to analyze permanent anterior tooth and premolar wear scores of individuals of known age and sex. This model included the sex-phase interaction variable.

Model 6

```
proc genmod data=alias.newstatdat;
where toothcat='A';
class spec;
ods output parameterestimates=ests(keep=parameter estimate);
model smith=agecat t2 t3 t4 sexf statush sexf_t2 sexf_t3 sexf_t4/dist=mult;
repeated subject=spec;

estimate 'male vs female t=2' sexf 1 sexf_t2 1;
estimate 'male vs female t=3' sexf 1 sexf_t3 1;
estimate 'male vs female t=4' sexf 1 sexf_t4 1;
estimate 'male vs female t=5' sexf 1;
contrast 'time within males' t2 1, t3 1, t4 1/wald;
contrast 'time within females' t2 1 sexf_t2 1, t3 1 sexf_t3 1, t4 1 sexf_t4 1/wald;
run;

proc genmod data=alias.newstatdat;
where toothcat='P';
class spec;
ods output parameterestimates=ests(keep=parameter estimate);
model smith=agecat t2 t3 t4 sexf statush sexf_t2 sexf_t3 sexf_t4/dist=mult;
repeated subject=spec;

estimate 'male vs female t=2' sexf 1 sexf_t2 1;
estimate 'male vs female t=3' sexf 1 sexf_t3 1;
estimate 'male vs female t=4' sexf 1 sexf_t4 1;
estimate 'male vs female t=5' sexf 1;
contrast 'time within males' t2 1, t3 1, t4 1/wald;
contrast 'time within females' t2 1 sexf_t2 1, t3 1 sexf_t3 1, t4 1 sexf_t4 1/wald;
run;

data contrast;
do tooth=0 to 1;
do time=2 to 5;
do sexf=0 to 1;
do statush=0 to 1;
t2=(time=2);
t3=(time=3);
t4=(time=4);
sexf_t2=sexf*t2;
```

```

        sexf_t3=sexf*t3;
        sexf_t4=sexf*t4;
        flag=1;
    agecat=9;
        toothl=0; toothm=0;
        output;
        end; end; end; end;
run;

data toothap;
set alias.newstatdat contrast;
if toothcat='A' or toothcat='P' or flag=1;
if smith=9 then smith=8;
keep smith tootha agecat t2 t3 t4 statush sexf sexf_t2 sexf_t3 sexf_t4 flag time toothcat;
run;

proc genmod data=toothap;
model smith=tootha agecat t2 t3 t4 statush sexf sexf_t2 sexf_t3 sexf_t4/dist=mult;
output out=pred pred=pred;
run;

data pred;
set pred;
if flag;
run;

proc sort data=pred out=pred;
by tootha sexf time statush sexf_t2 sexf_t3 sexf_t4 _order_;
run;

proc transpose data=pred out=pred;
by tootha sexf time statush sexf_t2 sexf_t3 sexf_t4;
var pred;
run;

data pred;
set pred;
mean=8-(sum(of col1-col7));
run;

proc print data=pred;
var tootha sexf time mean;
run;

```



```
proc sort data=toothap out=foo;  
  by tootha sexf time;  
run;
```

```
proc means data=foo noprint;  
  by tootha sexf time;  
  var smith;  
  output out=foo mean=;  
run;
```

```
proc print data=foo;  
  where sexf^=.;  
  format _all_ ;  
run;
```

Model 7 was used to analyze permanent anterior tooth and premolar wear scores of individuals of known age and sex. This model included sex-phase, status-sex, and status-phase interaction variables.

Model 7

```
proc genmod data=alias.newstatdat;
where toothcat='A';
class spec;
ods output parameterestimates=ests(keep=parameter estimate);
model smith=agecat t2 t3 t4 sexf statush statush_t2 statush_t3 statush_t4
statush_sexf/dist=mult;
repeated subject=spec;

estimate 'low vs high t=2' statush 1 statush_t2 1;
estimate 'low vs high t=3' statush 1 statush_t3 1;
estimate 'low vs high t=4' statush 1 statush_t4 1;
estimate 'low vs high t=5' statush 1;
contrast 'time within low' t2 1, t3 1, t4 1/wald;
contrast 'time within high' t2 1 statush_t2 1, t3 1 statush_t3 1, t4 1 statush_t4 1/wald;
run;

proc genmod data=alias.newstatdat;
where toothcat='P';
class spec;
ods output parameterestimates=ests(keep=parameter estimate);
model smith=agecat t2 t3 t4 sexf statush statush_t2 statush_t3 statush_t4
statush_sexf/dist=mult;
repeated subject=spec;

estimate 'low vs high t=2' statush 1 statush_t2 1;
estimate 'low vs high t=3' statush 1 statush_t3 1;
estimate 'low vs high t=4' statush 1 statush_t4 1;
estimate 'low vs high t=5' statush 1;
contrast 'time within low' t2 1, t3 1, t4 1/wald;
contrast 'time within high' t2 1 statush_t2 1, t3 1 statush_t3 1, t4 1 statush_t4 1/wald;
run;

data contrast;
do toottha=0 to 1;
do time=2 to 5;
do sexf=0 to 1;
do statush=0 to 1;
t2=(time=2);
```

```

        t3=(time=3);
        t4=(time=4);
        statush_t2=statush*t2;
        statush_t3=statush*t3;
        statush_t4=statush*t4;
        statush_sexf=statush*sexf;
        flag=1;
    agecat=9;
        toothl=0; toothm=0;
        output;
        end; end; end; end;
run;

data toothap;
set alias.newstatdat contrast;
if toothcat='A' or toothcat='P' or flag=1;
if smith=9 then smith=8;
keep smith tootha agecat t2 t3 t4 statush sexf statush_t2 statush_t3 statush_t4 statush_sexf
flag time toothcat;
run;

proc genmod data=toothap;
model smith=tootha agecat t2 t3 t4 statush sexf statush_t2 statush_t3 statush_t4
statush_sexf/dist=mult;
output out=pred pred=pred;
run;

data pred;
set pred;
if flag;
run;

proc sort data=pred out=pred;
by tootha sexf time statush statush_t2 statush_t3 statush_t4 statush_sexf_order_;
run;

proc transpose data=pred out=pred;
by tootha sexf statush time statush_t2 statush_t3 statush_t4 statush_sexf;
var pred;
run;

data pred;
set pred;

```

```

    mean=8-(sum(of col1-col7));
run;

proc print data=pred;
    var tootha time statush mean;
run;

proc sort data=toothap out=foo;
    by tootha statush time;
run;

proc means data=foo noprint;
    by tootha statush time;
    var smith;
    output out=foo mean=;
run;

proc print data=foo;
    where statush ^=.;
    format _all_;
run;

```

Model 8 was used to analyze mean molar wear scores and mesial rations for permanent first, second, and third molars of individuals of known age and sex. This model included the sex-phase interaction variable.

Model 8

```
data new;
  set alias.newstatdat;
  if 2<=time<=5 and sexcat in('M','F') and tcat in('st','rd','nd');
  sexf=(sexcat='F');
  run;
/* linear model for tcat=st */
%macro tooth(tcat);
title "Results for Tooth Type=&tcat";

proc genmod data=new;
  class spec;
  where tcat="&tcat";
  model scottmean=agecat t2 t3 t4 statush sexf sexf_t2 sexf_t3 sexf_t4;
  repeated subject=spec;
  contrast 'interactions' sexf_t2 1, sexf_t3 1, sexf_t4 1/wald;
  estimate "&tcat: t=2 sex=m" intercept 1 t2 1;
  estimate "&tcat: t=3 sex=m" intercept 1 t3 1;
  estimate "&tcat: t=4 sex=m" intercept 1 t4 1;
  estimate "&tcat: t=5 sex=m" intercept 1;
  estimate "&tcat: t=2 sex=f" intercept 1 t2 1 sexf_t2 1 sexf 1;
  estimate "&tcat: t=3 sex=f" intercept 1 t3 1 sexf_t3 1 sexf 1;
  estimate "&tcat: t=4 sex=f" intercept 1 t4 1 sexf_t4 1 sexf 1;
  estimate "&tcat: t=5 sex=f" intercept 1 sexf 1;
  estimate "&tcat time=2: male vs female" sexf -1 sexf_t2 -1;
  estimate "&tcat time=3: male vs female" sexf -1 sexf_t3 -1;
  estimate "&tcat time=4: male vs female" sexf -1 sexf_t4 -1;
  estimate "&tcat time=5: male vs female" sexf -1;
  contrast "&tcat males: time effect" t2 1, t3 1, t4 1/wald;
  contrast "&tcat females: time effect" t2 1 sexf_t2 1, t3 1 sexf_t3 1, t4 1 sexf_t4 1/wald;
run;
title;
%mend;
%tooth(st);
%tooth(nd);
%tooth(rd);
```

Model 9 was used to analyze mean molar wear scores and mesial rations for permanent first, second, and third molars of individuals of known age and sex. This model included sex-phase, status-sex, and status-phase interaction variables.

Model 9

```
data new;
  set alias.newstatdat;
  if 2<=time<=5 and sexcat in('M','F') and tcat in('st','rd','nd');
  sexf=(sexcat='F');
  run;

%macro tooth(tcat);
title "Results for Tooth Type=&tcat";
proc genmod data=new;
  class spec;
  where tcat="&tcat";
  model scottmean=agecat t2 t3 t4 statush sexf statush_t2 statush_t3 statush_t4 statush_sexf,
  repeated subject=spec;
  contrast 'interactions' statush_t2 1, statush_t3 1, statush_t4 1/wald;
  estimate "&tcat: t=2 status=l" intercept 1 t2 1;
  estimate "&tcat: t=3 status=l" intercept 1 t3 1;
  estimate "&tcat: t=4 status=l" intercept 1 t4 1;
  estimate "&tcat: t=5 status=l" intercept 1;
  estimate "&tcat: t=2 status=h" intercept 1 t2 1 statush_t2 1 statush 1;
  estimate "&tcat: t=3 status=h" intercept 1 t3 1 statush_t3 1 statush 1;
  estimate "&tcat: t=4 status=h" intercept 1 t4 1 statush_t4 1 statush 1;
  estimate "&tcat: t=5 status=h" intercept 1 statush 1;
  estimate "&tcat time=2: low vs high" statush -1 statush_t2 -1;
  estimate "&tcat time=3: low vs high" statush -1 statush_t3 -1;
  estimate "&tcat time=4: low vs high" statush -1 statush_t4 -1;
  estimate "&tcat time=5: low vs high" statush -1;
  contrast "&tcat low: time effect" t2 1, t3 1, t4 1/wald;
  contrast "&tcat high: time effect" t2 1 statush_t2 1, t3 1 statush_t3 1, t4 1 statush_t4 1/wald;
run;
title;
%mend;
%tooth(st);
%tooth(nd);
%tooth(rd);
```

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