

Kennewick Man
 Cultural Affiliation Report

Chapter 5
 Report

Cultural Affiliation Study of the Kennewick Human Remains: Review of Bio-Archaeological Information

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Introduction

Introduction	The general goals of this study are to identify, describe and summarize mortuary patterns and bio-archaeological studies within the Pacific Northwest. A major purpose is to compile this information in a form that will help address the possible cultural affiliation of Kennewick human remains with present-day Indian tribes. The specific objective is to identify continuities, discontinuities, and gaps in mortuary information and bio-archaeological data for the Middle Columbia River region from 9500 BP to the early 19th century.
Research Design	
Chronological Outline	
Studies of Mortuary Patterns	
Biological Anthropology in the Pacific Northwest	
Osteological Studies in the Pacific Northwest	This first review section of the cultural affiliation study provides an executive summary of archaeological and osteological data, and previous studies. Hackenberger is the principal author of this review. Major sources and studies are abstracted or annotated in a second section of our report. DeLeon and Shumate are the authors of the majority of these summaries. When appropriate they have added tables of data that have been retyped as part of the annotations. Other relevant tables have been copied from original sources and included in appendices. Other appendices are comprised of lists of expert contacts; written contributions from consultants; examples of original osteological data records; and spreadsheets of recently formatted osteological data. Both the review and annotation sections are supported by an extensive set of references in the bibliography compiled for the third and final section of the study.
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Research Design

Methods: Published and non-published books, reports, and articles were identified from existing studies and bibliographies, and interviews with consultants. Selected scholars and specialists have provided references as well as personal views that aid the study. The internet and electronic mail made this practical and efficient. Given time constraints, responses to questions have not always been complete, but only a

few contacts have failed to respond. Interlibrary loan services have provided the majority of references we have located within a span of one or two weeks; copies of other sources were purchased through special arrangements. These major sources are cited in review and abstracted or annotated in detail.

Inquiries with several museums and repositories resulted in critical information on the status of burial collections and human remains. Curators with Washington State University, University of Oregon, University of British Columbia, and Simon Fraser University have been especially helpful through electronic mail and postal services. Travel to the University of Idaho and the Thomas Burke Memorial Washington State Museum was timely and practical. The help of gracious staff at both institutions produced valuable information on references, archival records and collections. Within this overview key archival records are described, and the locations of significant sets of human remains are noted. However, full inventory of known burial sites, and curated collections of burial artifacts and skeletal remains fall outside the scope of this study. Most of these collections have been inventoried and described as part of NAGPRA projects and reported to the National Park Service, or have been summarized by the Smithsonian Institution Office of Repatriation, National Museum of Natural History.

Tribal officials and staff experts have/will be consulted on sources.

Analysis: Four forms of comparative analysis are presented in this review. The first analysis orders data and sources in a temporal sequence. The second approach compares various interpretations of the relationship between culture change and mortuary practices. A third review contrasts the analytical approaches of biological anthropologists and the research emphases that have developed within the Pacific Northwest. The final analysis presents a critique of osteological studies of metric and non-metric skeletal traits within the context of the Pacific Northwest in general and the Columbia Plateau in particular.

(1) A chronological outline of major burial sites and osteological data sets provides a database with which to assess mortuary practices and evaluate studies of skeletal variables. The results of this analysis indicate continuities, discontinuities, and gaps in bio-archaeological data for the Middle Columbia River region from 9500 BP to the early 19th century.

(2) A historical review of literature on burial patterns provides a useful synthesis of published and non-published interpretations on the relationships of Columbia Plateau culture change and mortuary practices. A current synthesis tentatively accounts for regional variation and sex and age differences in variables such as: burial settings, mode of disposal, modification or treatment of human remains, body orientation, funerary objects. This review supplements the synthesis of mortuary studies by Schulting (1995) which includes a valuable summary of burial patterns within the northern and southern Columbia Plateau.

(3) A review of the biological anthropology of Pacific Northwest peoples places focus on the preliminary nature of genetic, anthropometric, and osteological studies of populations within the Mid-Columbia Basin and related populations. Several significant case studies are summarized. Skeletal and dental evidence for pathologies and the general health and nutrition of individuals are outlined. Attention can be drawn to the unanalyzed data records and human remains that might be investigated in archives and repositories.

(4) A critical review of morphological studies of crania, dentition, and post-cranial remains is relevant. Although such studies suffer from limited data, regional population comparisons may reveal continuity and/or discontinuities in regional

populations. Comparative analysis of existing data sets, and reformatting records for more comprehensive analysis fall outside the scope of this study.

A summary of the more preliminary and incidental reports of disease and nutritional indicators, and taphonomic observations is possible, but may be of more limited use for this study. A separate study, including northern coastal regions, should evaluate the time depth and geographic distribution of different forms of cranial modification as they might reflect social and cultural changes.

Chronological Outline

Key archaeological sites with burials and related osteological studies are summarized in Tables 1 through 4. These tables reflect an effort to place major sites and several distinct types of burials into probable time periods and indicate the type of skeletal data that may exist from osteological descriptions. Principal investigators are listed for burial investigations and osteological studies. Readers can look up bibliographic references, annotations, and supporting appendices. A key is also provided that cross-references to maps of general site locations illustrated in Figures 1 through 4.

A question mark next to a site designation denotes an uncertain temporal assignment. Sites with multiple burial components are listed in two or more time periods. A relatively larger number of sites and burials are known from the Late Prehistoric, Protohistoric, and Historic Periods, therefore sites are grouped by sub-regions in Tables 2 through 4. Also, some burial sites are combined by vicinity.

Table 1 includes Early and Middle Period archaeological sites assigned to 2000 year intervals. Most of these sites and/or burials can only be roughly assigned to time periods. The best known and least interrupted record of burials and human remains is found at the Marmes Rockshelter (45FR50) and adjacent open sites (Fryxell and Keel 1969, Rice 1969). However, even within the Marmes Rockshelter human remains and grave features are described according to interpolated age ranges estimated from boundaries such as Mazama ash layers (ca. 6800 years ago) and a series of radiocarbon estimates (Breschini 1975, 1979; Sheppard et al. 1987). Stratigraphic interpretations are also complicated by secondary burial or re-burial, and grave intrusions.

11000-9000 BP: Krantz (1979) describes and discusses the early, fragmentary and burned human remains from inside and outside the Marmes Rockshelter. His hypothesized taphonomic and morphological interpretations stand untested. Although presumed to represent early cremation practices by various investigators (Fryxell et al. 1968), Krantz outlines evidence he suggests fits a hypothetical scenario for cooking for the purpose of cannibalism. Although adult crania are heavily modified by fire and post-depositional forces he concludes they represent relatively broad headed individuals. Dentition may be too incomplete to infer the extent of Sinodont and/or Sundadont dental traits. Human remains from the Marmes Rockshelter have been inventoried by Washington State University and remain under the control of the Walla Walla Army Corps of Engineers.

The disturbed archaeological context of Buhl could be documented by archaeologists (Green et al. 1998), although the nature of a speculated grave is uncertain. Huckleberry and Stein (1999) have interpreted the stratigraphic context of the Kennewick remains. Recent osteological analyses have been conducted for the more complete, early remains from Buhl (Green et al. 1998) and Kennewick (Chatters et al. 1999, 2000; Powell and Rose 1999). Craniometric measures for these and other individuals have been compared by Jantz and Owsley (1999a, 1999b), and Powell and Neves (1999). Although the Buhl skeleton has been

reburied studies of the morphological data for this individual continue.

9000-7000 BP: Only two incomplete sets of remains from the Marmes Rockshelter (Burial 1 and 2) may post-date the cremation features and pre-date the Mazama ash fall (ca. 6700 BP). Only one individual may be complete enough to yield significant metric and non-metric data for morphological study (Burial 8) (Breschini 1975, 1979). The individual from Burial 8 most probably post-dates the Mazama ash fall, and may be better placed in a younger time period (7000-5000 years ago). However, examination of all three sets of remains could provide valuable comparative data related to the origins of early populations in the Pacific Northwest. The potential of these remains to contribute samples for radiocarbon dating and DNA analysis has not been assessed.

The remains of an individual were published as being located below Mazama Ash near Prospect, Oregon (Cressman 1940). The remains of this man have received renewed interest due to his potential for contributing to morphological studies. Jantz and Owsley (1999a, 2000) have compared the craniometrics of this individual to a number of other early individuals including Buhl (Green et al. 1998) and Sydney (Lovvorn et al. 1999). However, as of yet, no other comparisons with early Northwest specimens have been published with similar statistical techniques. The reburial of the Prospect individual necessitates extra efforts to try to place the skeleton in some relative stratigraphic, and/or radiocarbon dated, chronology.

The partial remains of a male caught in a mudslide at Gore Creek in British Columbia are dated to 8340 \pm 1115 BP (Cybulski et al. 1981). To the extent possible the morphology of these remains has been well described. Investigators describe a relatively tall and slender man who possessed a powerful lower limb system. They interpret this to represent a parent population with well-developed adaptations to an interior region of mountains and plains. Bone samples were subject to carbon isotope analysis. This analysis provides evidence of a diet largely made up of terrestrial plants and animals as opposed to marine resources such as salmon (Chislow and Nelson 1983). The Gore Creek remains were returned to the Shuswap people, and are reported to be reburied.

Osteological studies of metric and non-metric traits will no doubt benefit from more exhaustive work with relatively early remains from California (Angel 1966; Breschini and Haversat 1980; Jantz and Owsley 1999a).

7000-5000 BP: Within the Middle Columbia region the most significant gap in burial and osteological studies appears between 7000 and 5000 years ago. With the exception of a series of disturbed pit burials in the Marmes Rockshelter (Fryxell and Keel 1969, Rice 1969; Breschini 1975, 1979), the only individuals that may fall into this time range are from sites located in Middle Snake tributary valleys and in the upper Fraser River Valley.

These sites, Braden (5790 \pm 120) and DeMoss (ca. 6000), include partial or fragmentary remains (some burned) of individuals from mass burials. Harten (1975) gives the first osteological description of both cremated and non-cremated remains from Braden. Pavesic (1985, 1992) discusses the Braden Site as a type site for the Idaho Archaic Burial Complex. Yohe and Pavesic(2000) also report that the burials from this site include the earliest known examples of dog interment with human graves in North America. Seachord (1985) provided the preliminary documentation of skeletal elements from DeMoss (see Green et al. 1986). Researchers, including Douglas Owsley, have reanalyzed human remains from both sites and are collaborating on a joint publication of results (Robert Yohe, personal communication 2000)

The remains of two adults from near Clinton, British Columbia, should be cited for this time period. An uncorrected radiocarbon date gives an age estimate of 4950+/-170 B.P. (McKendry 1983; Stjelia and Williams 1986). An adjusted radiocarbon age estimate will assign the remains a date greater than 5000 years ago. Both remains were buried in extended positions and lack grave objects. Both sets of remains and a descriptive report are held at Simon Fraser University (Appendix 29).

5000-3000 BP: Several burial features and sites within The Dalles vicinity exhibit similar mortuary practices and may originate in this Middle Prehistoric time period. Definitive temporal assignments of both burial features and specific sets of human remains are very problematic. However, a pair of unpublished radiocarbon dates may place human remains within a Middle Prehistoric Period. The most distinctive burial features are characterized by mound like caps of talus rock covering partially cremated human remains. These rock mounds, or large cairns, are documented only within this geographically unique locale. The relationships of these features with earlier cremation burials and later cairn and talus pit burials are unknown (Schulting 1995). Therefore, for all practical purposes, this period also represents a major gap in burial and osteological data for the Middle Columbia Basin.

The lowest levels of the Congdon Site, located near The Dalles, may date as early as 3500 years ago (Butler 1963). The temporal placement of this component (Congdon II) and associated burial features are uncertain, as are the stratigraphic assignments for specific sets of human remains. The osteological collection from this disturbed site has been split between the Thomas Burke Museum and Central Washington University Department of Anthropology. Both institutions are working to inventory and document their respective portions of the collection. The Burke Museum holds records from the original osteological analysis by Garner (1963); and new analyses and assessments are in progress at Central Washington University (Hackenberger et al. 1999).

Other sites with features and assemblages that resemble Congdon II are listed in Table 1. These are the Big Leap, Atlatl Valley, and Maybe sites (Strong 1958; McLeod 1958; Butler 1959; Schulting 1995). These sites are known from cursory investigations by professionals and the notes of active "avocational archaeologists." Butler (1959) estimates that between 60 and 80 individuals may have been represented in the cremated remains present in large cairns (low mounds of boulder caps) at the Big Leap Site. Schulting (1995; cf. Bergen 1989) notes relatively early primary interments may have also been present at Congdon and early partial cremations may have been present at other sites such as the Sundale Site. Given the disintegrated nature of these remains and lack of grave artifacts these burials were often exposed, but then not collected. Without radiocarbon dates of materials that may survive in collections from these sites the burials can not be given definitive age estimates (Schulting 1995). The disposition of human remains from these sites is unknown at present.

Three sites in southern British Columbia yielded relatively early burials excavated from within housepits (EdRk9, Sanger 1970; EfQu3, Sendey 1972; FiRS1, Fladmark 1976). The housepit and assemblage associations suggest they fall within a time span between 4000 and 2500 years ago. Osteological study or re-study of these burials would add valuable information to the bio-archaeological study of the Middle Prehistoric Period. A sample of forty-two human skeletons from Namu on the Central Coast of British Columbia are among the earliest burials on the coast (Curtin 1984). The earliest burials at Namu are assigned a date of between 5000 and 3000 BP. Most remains are from males. Cranial lesions and labret facets characterize some individuals. Based on dental characteristics Namu remains show closest affinity to recent remains from the Queen Charlotte Islands.

An adult burial at Yaquina Head Site may also provide comparative data (Hemphill 1987; 1991). This adult was associated with an infant, and a fragment of a whalebone artifact associated with the infant gives a radiocarbon estimate of 3400±240 BP (1991: 67).

3000-1000 BP: Most burial features assigned to this time period lack radiocarbon age estimates, and the temporal placement of sites and graves are based on associated artifact assemblages. Numerous sites that are probably correctly placed within this time period reflect the wide distribution of semi-flexed and flexed pit burials. Many burials include grave objects that may indicate ascribed or achieved status of men, women and children.

Some sites and/or burials assigned to the Late Prehistoric Period (see Table 2, 1000-400 BP) may in fact belong to a time span between 1500 to 1000 BP. Attributed age has often been based only on general notions of projectile point sequences and estimated dates given for the introduction of arrow size projectiles. Pestles, mauls, pipes, dentalium, and bone and antler tools may appear in this span of time. However, archaeologists have tended to assign burials with these objects and other exchange goods to the Late Prehistoric Period (1000-400 BP).

The burial practices reflected in the flexed pit interments in Marmes Rockshelter are thought to have continued into this period of time at the shelter and nearby open sites. Open sites with multiple flexed-pit burials along the Lower Snake and its confluence with the Columbia include AS9 (Sprague 1959); WT101 (Rodeffer and Rodeffer 1972); FR42 Combes (1968); and FR101 (Cleveland and Ubelacker 1980) (see Table 2). Some of the burial features at these sites may pre-date 1000 BP, while others may post date 1000 BP. If the majority of the burials at each site are tightly clustered in time, and reflect a particular age structure, then they might represent cemeteries of semi-sedentary or sedentary households.

The lower component at Rabbit Island (BN55) includes burials. This Rabbit Island I component deserves reevaluation. On the basis of artifact types and extended position of individuals Crabtree (1957) suggested that this level of the site might predate 2500 or 3000 BP. He assigned the superimposed burial features with flexed individuals, associated with Rabbit Island II, to a time range of between 2000 and 1000 BP. Schulting (1995) speculates about the circular arrangement of burials in Feature 1 of the Rabbit Island II. He points to parallels with the circular dog burials at Wildcat Canyon and suggests that evidence for homicide or multiple sacrifice might be gathered through re-examination of the human remains in Feature 1. Remains from Rabbit Island have been transferred from the TBMWSTM to Washington State University where they are held for the Walla Walla District of the USACE. A 1993 reburial program included other remains for this site once held at Central Washington University. A set of remains still curated at CWU from this site will soon also be transferred to WSU.

The burial site with the largest number of individuals (N=230) may have included relatively early burial features is 35UM35. Unfortunately this site near Umatilla is also one of the least well documented (Rice 1978a). An undetermined number of flexed individuals with grave objects may date back to between 2500 and 2000 years. The majority of this collection was reburied without full analysis. The University of Idaho and Washington State University retain data records for several individuals.

The best documented burial site dated to between 3000 and 1000 years ago is the Wildcat Canyon "cemetery" (35GM9 Area 3). Limited radiocarbon work combined with sufficient stratigraphic and assemblage analysis suggests that numerous flexed and semi-flexed individuals date to ca. 2000 years ago. An interesting record of

possible dog sacrifice and multiple dog burials is also documented for this site. Original notes and manuscripts (Cole and Cressman 1960) combined with a published reanalysis (Dumond and Minor 1983), and more recent detailed osteological analysis (Tasa 1997) make Wildcat Canyon a highly significant site for more sophisticated mortuary studies and bio-archaeology. Subject to repatriation policies of the University of Oregon State Anthropology Museum, the collection may continue to yield significant data on the social patterns and health of relatively early sedentary foraging, hunting and fishing peoples.

The numerous, but less investigated burial sites of the Middle Snake River could be evaluated to better identify possible mortuary patterns in this region between 3000 and 1000 years ago. The sparse osteological collections from excavated burials could be revisited to develop comparative studies of skeletal morphology. Burials described from Clearwater River (Charney 1968; Toups 1969), Salmon River (Warren and Fitzwater 1963) and Hells Canyon (Caldwell and Mallory 1967; Leonhardy et al. 1987; Hackenberger 1993) could be reevaluated such as completed for McGraw Creek (Yohe and St. Clair 1998). Burials from areas upriver might also be reexamined (Gruhn 1960 and 1961; Yohe et al. 1999).

Although the early temporal placement of Congdon II remains in doubt, Congdon III probably does date to between 2500 and 1000 years ago. This component includes partly burned/cremated human remains buried within the talus boulders of a rock mound like feature. The burial features at Indian Well, also located in the area of The Dalles may represent similar mortuary practices dating to the same time as those at Congdon (Butler 1963; Schulting 1995 cf. Bergen 1989). The large number of cremated human remains that are associated with the large rock features suggest two or more stages of deposition for the purpose of incorporating the dead into space that functioned like a cemetery for a clan and/or village. Schulting (1995) discusses the possible relationship between cremation of defleshed remains and the possible early use of mortuary sheds or open areas where families or groups of families curated the remains of their dead. The symbolic burning and secondary interment of individuals in this mixed fashion may represent the transformation of the dead into undifferentiated ancestors (Schulting 1995: 97).

Other significant sites in Oregon with burial populations that may share cultural and linguistic affiliations with Middle Columbia River people include: Fuller and Fanning Mounds of the Yamhill River (Laughlin 1941, 1956; Stepp 1984; Ferllini 1989); and the Gold Hill Site (Ferllini 1989). The archaeology and osteology of burials from these sites suggest several lines of productive comparative research in bio-archaeology.

An equally extensive archaeological literature on mortuary practices can be explored for the Upper Columbia and adjacent river drainages of British Columbia (Schulting 1995). The relatively early cairns, pit features, and cremation burials found at the Government Site (Smith 1900), and Cache Creek Site (Sanger 1968; Pokotylo et al. 1987) deserve special attention due to their apparent resemblance to features at sites on the Lower Columbia River and Lower Snake River (Schulting 1995). While important osteological studies exist for coastal British Columbia (Cybulski various) less comparison and synthesis has occurred within Interior British Columbia.

1000-200 BP: Tables 2 through 4 cover three time spans: Late Prehistoric, Protohistoric, and Historic periods. For another fairly complete listing of individual sites see tables retyped with the annotations of McClure (1984), and copies of tables from Schulting (1995). Sites are generally categorized as Late Prehistoric when burial features exhibit cists, wood and/or other perishable materials. Burials are also often assigned to this period when they include dentalium shell, pipes, mauls and bone or antler tools such as wedges, points, awls, and digging stick

handles. More often sites with these types of artifacts that also include traces of copper are most often labeled protohistoric (Stapp 1984; Schulting 1995). In some areas burials have plank covers, and these tend to be placed in Protohistoric and Historic periods. Historic burials are marked by Euroamerican trade goods, and are characterized by interment in boxes, trunks, canoes, coffins and caskets.

These types of burial classifications are defined and discussed by other researchers (Sprague 1959, 1960, 1967; Combes 1968; Sanger 1968; Rodeffer 1973a; McClure 1984; Schulting 1994). Their major purpose has been to infer the nature and rate of culture change during historic period contact with Euroamerican traders, missionaries, and settlers over the course of the 18th and 19th centuries.

Given the larger number of burials known from the protohistoric and historic periods some hypotheses about the cardinal orientation of individuals within their graves have been formulated and tested. The purpose has been to interpret the possible influence of Christian burial customs and associated religious beliefs on Native American communities. Other researchers have used the more extensive data on grave objects in all three periods to assess the nature of gender roles and status and/or possible political ranking among Columbia Plateau peoples (Rice 1978a; McClure 1984; Schulting 1995).

For the purpose of this study the sites listed in Tables 2 through 4 provide a starting point for assessing the amount of variation in burial practices across ethnic groups in more recent times. For a summary of ethnohistoric and ethnographic observations of burial practice the reader is referred to Schulting (1995). The tables also point directions for studies of genetic, dental and osteological information that might evaluate genotypic and phenotypic variations within and between populations. Studies of the larger samples of recent remains might help understand the nature and amount of variation within local populations and/or regional variation within the Columbia Basin as a whole. Some range of patterns observed in more numerous recent remains might correspond with those of earlier remains of more sparse past populations. The historic period remains may also provide base line data for comparing interregional variation (see Carino 1987, and Tasa 1997).

The data listed in Table 2 for the Late Prehistoric Period probably under-represent the frequency of burial sites and features along the Lower-Middle Columbia River. The nature of rock cairns and cremations and the probable mixing of remains from late time periods counters attempts to sequence observations of burial practices or identify collections of human remains and related osteological studies. The area is best known in terms of historic cremations, talus and cairn burial sites, and the mortuary sheds of Memaloose and Grave Islands (Cole 1958). All of these have been attributed in part to mass deaths with contact related epidemics. Recent work includes the analysis of a large sample of teeth from a pre-500 BP burial component at Crates Point (35WS221) (Minor and Hempill 1989). The burial features are talus covered secondary and multiple interments and these are interpreted as distinct from the charnel house burials of the historic Chinookan speaking Wasco, although this conclusion might be reevaluated given Schulting's (1995) discussion of secondary burials of cremated remains from mortuary sheds.

The sites listed in Table 3 reflect the extensive archaeological programs of the Middle and Upper Columbia River conducted as part of reservoir projects from the 1940's through the 1980's. The majority of these projects were designed to complete test excavations over extensive sets of sites. The Historic Period Snake River listing in Table 4 represent the Nez Perce grave removal projects by the Walla Walla District Corps of Engineers and the University of Idaho. In general the WWACE contracted Snake work by Washington State University in the late 60's and early 70's concentrated on larger scale investigations at a few major sites along the

Snake River.

Studies of Mortuary Patterns

A historical review of literature on burial patterns provides a useful summary of interpretations regarding the relationships of Columbia Plateau culture change and mortuary practices. Schulting (1995) presents the most current synthesis for regional variation and sex and age differences in variables such as: burial settings, mode of disposal, modification or treatment of human remains, body orientation, funerary objects.

From an archaeological perspective Plateau burial patterns were described, typed and sequenced in order to outline cultural historical periods in Pacific Northwest prehistory and history (Sprague various, Combes 1968; Rodeffer 1973a; Sanger 1968).

Sprague's explicit concern with historic burials was to investigate rates of acculturation and/or resistance among Nez Perce and related tribes of the Snake River (1967). Combes (1968) and Rodeffer (1973a) were interested in expanding and refining Sprague's burial types, while also identifying and explaining extra sources of variability in mortuary patterns. As graduate students continued the research started by Sprague at WSU, Sprague's three period grouping of burial patterns was confirmed. However, it became apparent that independent tests of burial age would be needed before the rate and geographic extent of changes in late prehistoric and protohistoric burial practices could be understood. Schulting (1995) has pointed out that this is especially important before cultural historical comparisons can be made between the northern and southern portions of the Columbia Plateau.

Without funding for systematic radiocarbon dating programs in the 1960's and 70's interest in mortuary studies waned. WSU faculty and student attention turned to studies of house features, subsistence, and lithic technologies of earlier archaeological phases (Leonhardy and Rice 1970). Interest in burial excavation and more rigorous osteological analysis of human remains continued at the University of Idaho under Sprague (Pullen 1970; Iverson 1976, 1977; Fielder 1979 Lynch 1976, 1977; Murillo 1979; Randolph and Boeson 1975; Rice 1978a, 1978b, 1978c; Rodeffer 1973a, 1973b, 1973c; Rodeffer et al. 1972, Rodeffer and Rodeffer 1972; Sprague and Birkby 1970; Wegars et al. 1983). Sprague (1993) presents an historical overview of this work within the eastern Columbia Plateau. He outlines changes in working relationships between university, agencies and Native American governments and their agreements about reburial projects and repatriation efforts.

From the beginning of the WSU and UI programs mental and financial investments in local field programs partitioned the mortuary literature of the Snake from the previous studies of the Lower-Middle Columbia (Strong et al. 1930; Strong 1958, Butler 1959, 1963), the Middle Columbia (Smith 1910, Smith and Fowke 1901; Garth 1952; Greengo 1982; Krieger 1928), and the Upper Columbia (Smith 1899, Smith and Fowke 1901; Smith 1900; Sanger 1968). The cremation and mass burial practices of the Lower Columbia were the subject of more cursory reports and observations of sites disturbed by artifact collectors and avocational archaeologists (Strong et al. 1930; Butler various; Garth 1952; Strong 1959, 1960; Bergen (see 1989 notes). The relatively great time span over which various types of disposal practices existed combined with the lack of absolute dating defied interpretation.

The significance of the large Middle Prehistoric Period "cemetery" at Wildcat Canyon went without attention due to delayed publication (Cressman and Cole various; Dumond and Minor 1983), and the lack of data for burial sites of comparable age

and size. This gap in the sequence of published burial research, combined with the modern socio-political divides between Washington State, Oregon and Northern California effectively prevented extensive comparative or broadly synthetic mortuary studies in the Pacific Northwest. In some ways this divide is greater than that which has existed between research in Washington State and British Columbia. Researchers seldom attempted to bridge summaries of Columbia River Basin mortuary information with burial data collected by archaeologists working in areas of Oregon and northern California. This remains the case even through it is well recognized that populations with similar languages and cultural patterns resided from the Columbia River Basin and coast of Washington and Oregon down to rivers and coasts of central California (Breschini and Haversat 1980). An emphasis on Late Prehistoric occupations of east-west tending interior river basins has fractured our conception of the obvious early importance of the north-south orientation of the Pacific Coast and related river drainages.

The survey and testing projects of Collier, Hudson and Ford (1942) provided some comparative data. However, the subsequent hiatus in work on the Upper Columbia slowed mortuary studies in the region until reports of the Lake Roosevelt investigations were published in the 1970's and early 1980's (Sprague 1971a, 1971b; Sprague and Miller 1979; Sprague and Birkby 1970; Sprague and Mulinski 1980; Mulinski 1977; Iverson 1984; Iverson et al. 1981). Also in the 1970's mortuary investigations began to accelerate in Interior British Columbia (Sanger 1968a, 1968b; Wilson 1972; Stryd 1973; Richards 1976, 1988; Rousseau and Rousseau 1978; McKendry and Skinner 1981; Cybulski 1980; Sumpter 1982; Simonsen 1984 a, 1984b; Curtin and Lawhead 1985; Copp 1986; Skinner and Copp 1986; McLeod and Skinner 1987; Skinner and Thacker 1988; Arcas Ltd. 1987; Pokotylo et al. 1987; Schulting 1995).

Schulting (1995) notes that during the early studies of burial sites and analysis of grave types, the significance of different burial forms found in the same locale were often under emphasized. This was generally true for the seminal studies in each area of the northern and southern Columbia Plateau. An exception is found in the work of Stryd (1973). Stryd recognized that alternative burial types might reflect social differentiation; otherwise comparisons of social indicators such as grave objects that might discriminate rank or status were seldom attempted.

When comparisons of graves by objects were conducted at specific burial sites no clear artifact associations or ranking were observed. Grabert (1968a) is among the first to describe the lack of evidence for sexual dichotomy in grave goods. One Sprague student, Pullen (1970), found more beads with adult historic burials than with burials of the young. Rice (1978a) also began an analysis of grave objects at 35UM35. McClure (1984) summarizes Rice's results. More "points" were found in female graves than male. Pestle and bone awls were found with both sexes. Some strong associations occur between males and atlatl weights and fishing equipment. Dumond and Minor (1983) at Wildcat Canyon found that only adults might have more objects than young.

Schulting (1995) reviews mortuary data from 47 sites in the Columbia River and Fraser River basins. Selecting sites with 10 to 63 individuals per site he analyzes burials from 22 Late Prehistoric and Protohistoric sites. Schulting's (1995) efforts provide valuable detailed summaries of burials and grave objects at many of the major burial sites in the Columbia Plateau (Cannon 1996). His statistical analysis of pooled samples failed to reveal strong relationships between artifacts and age or sex. Schulting calculates Gini indices of inequality in grave goods. Differences are observed when Middle Prehistoric, Late Prehistoric and Protohistoric burials are compared. An increasing inequality in social status is inferred from the number and type of exotic trade goods after 2000 years ago and again after 1000 years ago (see

abstract of Schulting 1995). His conclusions support the growing consensus that regional societies were transegalitarian (Cannon 1996).

In general the labor intensive nature of burial work, the inability or unwillingness to date burial remains, and the great variability in burial types and grave goods have dampened enthusiasm for mortuary studies in the Pacific Northwest.

Biological Anthropology in the Pacific Northwest

Several methodological approaches to bio-anthropology studies can be traced in the study of Pacific Northwest populations. Trends closely follow international and national developments in research methods and theories. This review is made possible by the incorporation of many historical bibliographic references provided by Dr. Roderick Sprague. Dr. Sprague has kindly shared his most current draft of an annotated bibliography that supplements a book length manuscript he is compiling with several other contributors (see Appendix 49). The concise summary and comprehensive bibliography shared by Guy Tasa was very valuable for a very brief review of current approaches to studies of skeletal morphologies and population genetics (see Appendix 54).

One major difference between the work of archaeological studies of mortuary patterns and the work of biological anthropologists and osteologists is obvious. Archaeologists have been concerned with documenting cultural changes within specific areas of the Columbia Plateau and proposing routes of diffusion for burial practices. On the other hand biological anthropologists and osteologists have focused on regional comparisons of populations that are often devoid of significant time depth due to sampling problems. When biological anthropologists have tried to address questions about long term migration, gene flow, and genetic drift on a continental scale their analyses lack adequate osteological, dental, and genetic samples even for historic Pacific Northwest populations.

Early Reports and Observations: The earliest physical anthropology studies of Pacific Northwest Peoples focused on collections of historic crania (Boas 1888) and miscellaneous crania and post-cranial remains from major sites such as coastal middens. Special attention was focused on the variety of cranial modifications practiced by coastal and interior people (Morton 1839; Virchow 1892; Simms 1873; Dorsey 1895, 1897; Hrdlicka 1905), and notes were published on more obvious trauma, pathologies of bone and teeth (Hrdlicka 1905; Kidd and Darby 1933; Congdon 1931; Leachman 1934; Cressman and Larsell 1945), and possible cases of trephination (Smith 1924; Kidd 1930, 1946; Hrdlicka 1939).

Cressman and Larsell (1945) give a relatively early detailed description of a skeleton found in a cave in the Tule Lake region. Many of the bones showed marked deformities and extensive osteomyelitis probably developed due to staphylococci infection following traumatic injury. Studies of cultural modification of bone and pathological conditions continue to the present (see below).

Cranial Modification: Evidence for the origin and diffusion of various types of cranial modification have been revisited by archaeologists and biological anthropologists in each decade of this century. For the Pacific Northwest Coast Owen Beattie (1981, 1985) concluded that cranial deformation was rare or absent in the South Coast Strait of Georgia region before 500 BC but that it had become common in the Gulf of Georgia during the Marpole Phase. Cybulski (1996) states that deformation is absent in: the 4500-3300 year-old St. Mungo phase burials at the Tsawwassen site (Arcas Consulting Archaeologists Ltd., 1988); the 3400 year-old Duke Point burials (DgRx 5) (Cybulski, 1991); the 5000-2000 year old Namu burials; the 2600-2400 year-old burials at Hardy Bay. In an unpublished report for the

Archaeology Branch of BC, Carlson (1990) dates the earliest known example of cranial modification from Pender Canal (DeRt 2) at 2620 +/- 50 years BP. Cybulski (personal communication 2000) and Carlson reviewed the evidence for cranial modification in Pender Canal sites in 1997-98. They confirmed the lack of evidence for crania older than about 2600 years ago.

No recent comparable study has been conducted for interior portions of the Pacific Northwest. Lacking such a comprehensive review of radiocarbon dates for interior cranial modification it is not possible to determine if such practices are earlier or later in the Columbia Plateau and adjacent area as compared with the coast. Current thought holds that all cases of intentional cranial modification in the Columbia River Basin post date 2500 or 2000 years ago. It is possible that some of the oldest interior examples may be identified among the varied, interior British Columbia burial collections. Alternatively the oldest examples may be found in sites along the Columbia River such as: Wildcat Canyon (35GM9), Rabbit Island II (BN15), Chiawana Park (FR101), or the Umatilla Site (35UM35). A fuller survey of the earliest dates for cranial modification in archaeological literature for coastal Oregon and California falls outside the scope of the present study.

Morphological Studies: The most well known and early study is Oettinger's craniology of samples collected by the Jesup Expedition (1928). This study is still used for comparative data on crania measurements and includes relatively large samples of unmodified skulls from coastal and interior groups. The Yakima individuals are among those sampled. Oettinger (1930) also detailed the nature and type of skull deformation found among various groups of the Pacific Northwest. Data reported by other researchers include Hrdlicka (1927, 1947), Cameron (1928); Smith (1924), and Kidd (1933). Similar data recording continues into the present with the work of Smithsonian Institution repatriation inventory and assessment projects (Bray various).

White (1962) completed a relatively early statistical comparison of metric data from two populations. He referred to these as the Salishan and Sahaptin "somatypes" (see annotation). More recently extensive comparative work has been conducted for northern Coastal populations (Haida, Kwakiutl, Nootka, and Coast Salish). Cybulski (1972) analyzed 315 crania from 18 local groups. Results show sizes distinguish the probable relationship among groups, whereas shape separates groups by modes of cranial deformation. Non-metric mean rank differences do not indicate inter-group relationships, but may reflect local groups with effective breeding populations.

A separate battery of statistical techniques have been applied to reported cranial measurements by Haversat (1982) in her efforts to distinguish historic and archaeological crania from the Puget Sound region. Hegrenes (1985) has completed studies of non-metric traits in Oregon populations and Upper Columbia River populations. Carino (1987) gives a clear report of the comparative analysis of a large sample of non-metric observations. He demonstrates distinct patterns in several genetic traits that distinguish the archaeological samples he affiliates with Colville and Nez Perce populations. Most recently Tasa (1997) has completed a comprehensive study of metric and non-metric traits for the crania, post-cranial skeleton, and dentition of populations from several archaeological sites in Oregon (see details in Tasa annotation).

Pan-regional studies of metric and non-metric traits have been used to hypothesize about the migrations of peoples into North America (Li et al. 1991; Ossenbeger 1992; Szathmary and Ossenbeger 1978; Heathcote 1986; Utermohle and Merbs 1979; Jantz and Owsley 1999a, 1999b). Very recently these traits have been examined in concert with models of divergence based on alternative assumptions of

founding populations (Powell and Neves 1999). All of these studies are severely limited by problems of sample sizes and are subject to qualification on the basis of assumptions about grouping of sub-samples by geographic and linguistic areas.

Anthropometric Studies: Extensive studies of body measurements of living subjects were conducted and supervised by Franz Boas (1891, 1892, 1896). This work is well summarized by Jantz et al. (1992). The Boas data have been used by Hall and McNair (1972) and Jantz et al. (1992) to reanalyze the huge data bases of head, face and body measurements with modern statistical techniques. Their results provide conclusions regarding physical variation among both coastal and interior populations in the Pacific Northwest. The results may generally complement similar statistical studies of metric data for cranio-facial dimensions and proportions of post-cranial elements; however, results of body measurements and measurements of the skeleton are not readily comparable in grouped data sets.

Jantz et al. (1992) distinguish Na-Dene groups (n=7) from both coastal (n=15) and interior (n=6) Salish groups. Penutian (n=4) and Wakashan (n=5) fall between these groups. Northern Na-Dene have large bodies with high noses and faces that are both more narrow. The Puget Sound Salish share broad heads and faces with wide, short noses. Some of these similarities are shared with Penutian speaking Tsimshian. Interior Salish of the Thompson and Fraser rivers are separated from coastal Salish, and distinctions also appear between the upper and lower Thompson populations. Thus in some cases groups with different languages overlap in phenetic space, while other groups with the same language have distinct phenetic space.

Dentition: Dental patterns are among the most recent type of data to be analyzed in order to answer questions regarding the genetic similarity and differences of Pacific Northwest Coast people. Turner (1985, 1990) and Ossenberg (1992) have developed the most extensive set of data on non-metric dental traits. They have used these data for comparisons of populations between major regions of North America and Asia. Tasa (1997) has the only recent study of dental non-metrics which makes comparisons among local populations in the Northwest. His study includes data from Wildcat Canyon, but best covers the Coastal Athapaskans of southern Oregon (see annotation of Tasa 1997). Tasa also analyzes odontometrics, and may soon be able to incorporate comparisons of dental metrics and non-metrics with other sample populations in this region with data from other collections and researchers (see annotation of Hemphill 1987).

Paleopathologies: The dentitions of 208 prehistoric human skeletal remains from five different regions of Oregon were analyzed by Hall (1986). The five regions were Lower Columbia Valley, Central Oregon, Klamath Basin, Coast of Oregon, and the Willamette Valley. The Willamette Valley and Klamath Basin are areas in which the heaviest dependence on soft vegetable resources produced the highest level of dental problems. People of the Lower Columbia Valley relied more on riverine resources, which causes more attrition and thus lower number of caries. Higher frequencies of abscesses were recorded for the Klamath Basin and the Lower Columbia Valley samples. Central Oregon and the Coast of Oregon samples depended on gathering and hunting equally which is exhibited in their moderate levels of attrition and pathology.

Lynch (1977) examined a sample of crania for precontact populations (n=330: 186 from the middle Columbia, 70 from the lower Snake, and 74 from the Upper Columbia) and historic populations (n=161: 135 from the lower Snake, and 26 from the upper Columbia, and none from the middle Columbia). Of the 330 precontact samples only 16 (4.8%) have one or more caries (1977:71). All three precontact populations exhibit more wear on the maxillary teeth than the mandibular teeth.

Tooth wear was greatest in the lower Snake due to the greatest amount of wind-blown silt. The lowest amount of tooth wear occurred in the upper Columbia region. Precontact males have more wear than their female counterparts, in all three regions. Overall the dental health of the upper Columbia River People was slightly poorer than was the case on the lower Snake or middle Columbia rivers. The greatest change in the dental health between precontact and historic time was a significant increase in caries and the development of more virulent periapical involvement (1977:79).

Cybulski (1977) examined 379 skulls from four ethno-linguistic divisions in museum collections and seventy-five from recent archaeological work representing Haida, Kwakwaka'wakw, Nootka, and Coast Salish. Cribra orbitalia, a sieve like expanse in the orbital plates of the frontal bone, was common in early historic period (1750-1850). Anemia, particularly iron deficiency anemia, is considered a likely cause of the condition. Cribra orbitalia is similar in manifestation and appearance to a condition referred to as porotic hyperostosis, symmetrical osteoporosis, or hyperostosis spongiosa. Greater rates of affliction in the Haida female sample points to iron deficiency anemia as a likely cause of cribra orbitalia in past populations. Weaning between two and three years of age accounts for a higher incidence in this age range. Dietary causes are unlikely; however, historic changes in diet can not be completely ruled out due to disruption in eating patterns. Malabsorption syndromes, such as parasitic infections and disease can cause iron deficiency. Both inherited and acquired forms of anemia may be implicated in the etiology of cribra orbitalia.

Beattie (1976) details the skeletal pathology of 18 burials from Crescent Beach phases (I, II, III) from near Vancouver, British Columbia. Crescent Beach I dates to 3400 BC to 1100 BC, Crescent Beach II dates to 1100 BC to 400 BC, and Crescent Beach III dates to 400 BC to AD 400. Fourteen individuals were recorded as having at least one pathological condition. No nutritional deficiencies were obvious in any of the three prehistoric phases. One trephination was performed on an individual suffering from ankylosing spondylitis. Results show that the populations represented by the eighteen burials participated in rigorous ways of life, as exemplified by arthritis and vertebral collapse.

Boyd (1996) presents the most recent survey of pathologies common to the Columbia Plateau for both pre-contact and contact periods. The majority of the evidence Boyd reviews comes from the University of Idaho osteological records compiled by Mulinski and others. Harris lines are not generally reported due to a lack of x-ray analysis. Porotic hyperostosis is not noted in osteological records from the University of Idaho; however, cribra orbitalia, osteoporosis, and enamel hypoplasias are recorded in many sites. The most prevalent paleopathology evident in the sample of remains is osteoarthritis. Females were more often affected than males. The second most common paleopathology was periostitis, a minor bone infection. Three familial conditions are identified for prehistoric and protohistoric Plateau sites: ankylosing spondylitis, spondylosis, and spina bifida. Ankylosing spondylitis is an inflammation of the spine and subsequent ossification of the spine. Spondylosis is the bilateral separation of the neural arches in the lumbar vertebrae. Spina bifida is the exposure of the spinal cord or meninges. Some fifteen cases of benign bone tumors and osteomas are identified in the Idaho collection, and these are mostly sited in the head (Boyd 1996).

Blood Type Studies: Blood samples were collected from living subjects in numerous Native American groups. Within the Northwest and neighboring regions blood typing was conducted and studies were published over three decades (Gates 1929; Gates et al. 1934; Matson 1938; Hulse 1955, 1957; Hulse and Firestone nd; Corcoran 1959; Flory 1963).

Laughlin began blood type studies and published results from a method he used to test for blood group for archaeologically excavated skeletons. He used samples of cancellous bone. His published case studies include work with Cressman on materials from the John Day area (1950) and work on the Kawumkan Springs Midden (1956). Heglár (1957) also reports results he obtained from Laughlin and tries to interpret his sample in terms of the hypothesis of a Cascade boundary and Northern Rocky Boundary between populations (cf. Hulse 1957). The accuracy and usefulness of additional work of this nature is not known.

Geneticists now use more highly informative series of genetics materials such as Immunoglobulin Gm (Szathmary 1979; Szathmary and Ossenbergr 1978, 1993; Laughlin and Harper 1988). They use comparison of Gm and other systems (ABO, RH, MNSs, Diego, Duffy, Kell, Kidd, P, Gc, Hp, ACP, AK, PGD, and PGM1) to illustrate genetic distances among populations. Others have employed serum proteins (Williams et al. 1985; Schanfield 1992; Harrison et al. 1988; Schell and Blumberg 1988). Much of this work has been completed in order to test hypotheses about migration, gene flow and genetic drift among Native American populations. The majority of work focuses on Eskimo and adjacent subarctic populations. When the Pacific Northwest is represented, the northern coastal groups are often better represented in these analyses, as opposed to interior Northwest groups. Due to the large amounts of admixture in contemporary Plateau populations, population genetics based on these types of systems may be impossible. In general, the most useful results are probably limited to comparisons of major cultural geographic and linguistic groupings (Asiatic, Amerindian, Eskimo).

DNA Studies: mtDNA has been sampled from living populations, and archaeologically recovered bone and teeth. The inheritance of mtDNA through the maternal side can make mtDNA a better tool for estimating genetic distance, and with careful sampling based on genealogical charting may partly help overcome the effects of population admixtures in recent generations. Several articles have incorporated mtDNA work in overview studies of the possible migration of people into North America (Shields et al. 1993; Szathmary and Ossenbergr 1993; Torroni et al. 1993a, 1993b; Merriwether et al. 1995; Parr et al. 1996; Stone and Stoneking 1993). A full analysis of this current literature falls outside the scope of this study, but it is relevant background in so much as several efforts to identify mtDNA lineages in the Pacific Northwest are underway. Teeth and bone from archaeological sites are yielding mtDNA.

Osteological Studies In the Pacific Northwest

More detailed review of several studies of Pacific Northwest skeletal morphology illustrate the progression of methods and statistical techniques used to assess the relatedness of past populations of the Columbia Plateau and adjacent regions. In general, results of these studies show that distinctions can be made between local populations on the basis of metric and non-metric traits. However, relatively little emphasis has been placed on the nature and magnitude of within group variation. This would appear to be a problem related to small sample sizes for local groups and the cultural historical focus of researchers who primarily wish to evaluate models of migration and social relations across ethnic boundaries.

Heglár (1957) devised what he termed a "racial analysis" of Indian skeletal material. He analyzed human remains representing a sample of populations that existed from 3000 to 200 years ago. Material for his study came from two general areas: the Plateau and Western Washington. These two areas were subdivided into Upper Columbia, Middle Columbia, Lower Columbia, Puget Sound, and Upper and Lower British Columbia. The samples were described and interpreted using various different methods: observation, blood group, metric analysis, cranial deformation,

anomalies, pathologies, fractures, and dental characteristics.

The females of the Plateau sample, when compared to males, show greater alveolar prognathism. The males have more skeletal robustness and narrower nasal apertures than the females. The Upper Columbia sample exhibited greater dental indices, broader palates, and shorter palate lengths. Male Middle Columbia crania from the Pot Holes Site exhibited greater length-breadth and maxillo-alveolar indices. Plateau and Northwest Coast crania differed in a few ways. The Coastal crania were larger and had shorter, broader faces with more prognathism and longer palates than their Plateau counterparts. Puget Sound crania exhibited a greater cranio-facial longitudinal index than any of the other Coastal samples.

Stature estimates for the Plateau sample were bimodal, which the author suggests may be due to population mixture. "However other metric data, blood groups, and observations do not support this hypothesis" (1957:72).

Upper Columbia remains exhibit a high frequency of the gene for blood group A, especially the females, which may be an influence from the neighboring Plains groups, that also have a high frequency for A. The Middle Columbia sample had a higher frequency of O, similar to Coastal frequencies. Cranial deformation occurred in both areas. Fronto-lambdoidal and fronto-occipital were common in the Plateau and Coast, although frontal and cylindrical were also common on the Northwest Coast. Plateau artificial deformation was consistent with the use of cradleboards. Dental traits between the two population samples differed. The Plateau sample exhibited more dental attrition, which in turn increased the occurrence of dental pathologies such as periapical abscesses. The occurrence of pathologies, anomalies and fractures was not significantly different.

From his limited subregional samples, Heglär(1957) concludes that Pacific Northwest populations are homogeneous in the sense of 'physical type' Observed differences were usually due to, "variations within a given range, which may be the result of population mixture to a minor degree" (1957:70). From this he infers that their geographic isolation from one another had not been long enough to lead to genetic differences.

Heglär (1957) provides all of his summary statistics for sub populations in his Appendix I- Statistical Tables. In 1990 Dr. Heglär mailed all of his original data sheets for collections in the Burke Museum back to the Museum with the intent that they be used by students of osteology (Rodger Heglär, personal communication 2000). His inventories of burial records and examples of original data records are found in Appendix 23).

Cybulski provides a (1975) descriptive and comparative study of cranial variation within and among select indigenous populations of the coast of British Columbia (1975:1). Eighteen groups were selected from within the territory of the Haida, Kwakwaka'wakw, Nootka, and Coast Salish language area. "Metric and non-metric morphology is described and compared in the context of anthropological and geographic frameworks and in the context of artificial head deformation" (1). The purpose of this study is to describe the metric and non-metric traits, describe regional variation, and describe variations in cranial deformation.

Most of the Kwakwaka'wakw, Nootka, and Coast Salish crania exhibited deformation. No individuals in the Haida sample were deformed. He concludes that, "the four ethnolinguistic divisions could be identified as discrete morphological entities owing to differences in shape influenced by variations in the cultural practice of intentional head deformation." He also notes that, "Negligible between-division variation is found in the Kwakwaka'wakw, Nootka, and Coast Salish with respect to size of crania, but

the Haida groups are distinct" (Cybulski 1975). Similarly, no variation could be found for Kwakwaka'wakw, Nootka, and Coast Salish in divergence of non-metric traits, but the Haida groups exhibit distinct frequencies of non-metric traits.

White (1962) completed comparative analysis of skeletal materials from the Columbia Plateau. The skeletal material that forms the basis of White's study comes from two areas of the Columbia Plateau. The total sample consists of 60 skeletons, many of which were incomplete. The material is late precontact or early contact in age, placing them from shortly before AD1800 on into the 1800's (White 1962:4). The Salishian data were derived from burials excavated in the Coulee Dam Reservoir by Collier, Hudson, and Ford (1942). The Sahaptin material was recovered from sites on the Snake River near the towns of Asotin and Pasco, Washington. Measurements and observations were recorded. The craniometrics and osteometrics are located on tables in White's report (see Appendix 52). Nearly all the Sahaptin crania are deformed to some degree. The crania display only fronto-lambdoidal deformation. One instance of carious teeth was found. Abscesses were rare. Incisor shoveling is common in the sample. Nearly one-half the maxillae contained tori (1962: 60). No data are provided that would enable White's observations to be matched with skeletal elements for validation and original data records are not available for his study.

Carino (1987) estimates the biological distance of historic Colville and Nez Perce populations from non-metric traits of the crania. He attempts to determine the biological relationship of Colville and Nez Perce populations. He recorded 25 non-metric traits (21 bilateral and 4 midsagittal) from 91 Colville and 119 Nez Perce crania. The crania selected for this study were chosen on the basis of age, and preservation. Nonmetric traits were selected on heritability, the inclusion of a wide range of variant classes, and the inclusion of major areas of the crania. The frequencies of nonmetric traits of females and males were combined for this study. The existence of sexual dimorphism was not great enough to divide the sample. The inclusion of bilateral traits was also justified. The mean measure of divergence, MMD, was calculated using two methods (see annotation). The MMD was calculated between the two groups. The Condtandse-Westermann (1972) procedure yielded the following results: MMD= 0.0287644, standard deviation= 0.0020683. Thus, the hypothesis of no difference is rejected.

Carino's analysis is based on data from Birkby and others that recorded both metric and non-metric traits for over 1000 individuals. The majority of the osteological records for the University of Idaho burial projects was completed by Mulinski. A proposed analysis was never completed with these data, thus the data await a number of types of tests and major synthesis. The Green, Suchey, and Gokhale method yielded these results: MMD= -0.0154168, standard deviation 0.0061441. Thus the hypothesis is rejected again. "It was concluded that the aboriginal Colville and Nez Perce Indian populations were biologically quite distinct" (1987; iii). The distance between the two groups suggests a long period of independent development.

Ferlini (1989) studied the human skeletal remains from Gold Hill, Oregon and compared them to collections representing prehistoric Modoc from Northeastern California, Paiute/Shosoni from Stillwater Marsh, Nevada, and the Athapaskan from Alaska. The groups represent the Penutian, Uto-Aztekan and Na-Dene (iii). One of the Penutian speaking groups was the ethnographic Takelma, who inhabited the interior southwestern region of Oregon. The purpose of Ferlini's research was to assess the degree of morphological correlation between the Gold Hill skeletons and skeletons from the Nightfire Island site in Modoc territory, and the presumably unrelated skeletons of Athapaskan and Paiute/Shosoni ancestry. The Gold Hill site was first occupied as early as 3000BP, abandoned, and occupied again about

1000BP. Most of the deepest burials were lying on the left side, the heads toward the south and facing west, the legs flexed with the knees flexed against the chest, the feet pulled in against the pelvis and the arms folded across the chest. The shallower burials were apparently all flexed (16). Obsidian blades were found in the deepest burials.

The statistical analysis of morphological traits from Gold Hill (prehistoric Takelma) and Nightfire Island (prehistoric Modoc) skeletal material indicates that based on the craniometric and non-metric traits the two may be genetically related. According to Ferlini the Gold Hill and the Athapascan remains also appear to be related. The Athapascans belong to a different language phylum and did not arrive in the area until about 900AD. These results are probably a result of the small sample size (35). The Paiute/Shosoni material appears genetically distant. When the same skeletal material was evaluated on non-metric traits, the results indicated a closer genetic affinity. From the available evidence it would appear that the Gold Hill population was most likely ancestral to the historic Takelma. They were also genetically related to the Modocs and did not share significant genetic material with the Paiute/Shoshoni. Results of the analysis indicate a relationship to the Athapascan, but the small sample size must be considered.

Stepp (1984) develops a descriptive analysis of remains from the Fuller and Fanning Mounds. He presents an analysis of the skeletal remains of 66 individuals recovered from mounds, located on the Yamhill River, Willamette Valley, Oregon. W. T. Edmundson and William S. Laughlin excavated the sites in 1941-1942. The literature and original field notes were analyzed. A description of burial type, side, orientation, grave type, associations, original preservation was compiled for each individual. A series of craniometric measurements, and non-metric traits, a dental analysis, and general description of obvious pathological and morphological conditions was made. The human remains from the Fuller and Fanning Mounds represent the largest well-defined skeletal population of prehistoric peoples from the Willamette Valley. According to Stepp, the Fuller and Fanning sites seem to be good representatives of Late Archaic Kalapuya occupation of the Willamette Valley. Stepp discusses Cressman's 1930-1932 fieldwork. Cressman recovered 39 individuals at the Gold Hill site along the Rogue River in southwestern Oregon in 1930-32 (Stepp 1984:27, Cressman, 1933a, 1933b). Most of these burials were so fragmentary that the remains were not saved, although Ferlini (1989) reports parts of 29 individuals were recovered.

Stepp includes craniometric information of the Gold Hill skeletal remains. The burials were always found in a flexed position, typically on the right side with the head oriented to the south, and an abundance of grave goods was usually associated with each burial including many large obsidian "wealth" blades (Stepp 1984:27). Cressman reported cranial data on 10 individuals. Ferlini (1989) remeasured the cranial remains from the site (see Ferlini annotation). Comparative summary of Ferlini's cranial data is presented in Tables 12 and 18 of Stepp's thesis. Craniometric results were compared to several known populations including the Gold Hill material. The results are shown in Tables 12, 13, 14 and 15 of Stepp's report. Craniometric results were also compared to the Kalapuya data of Franz Boas (Boas 1891, Jantz et al. 1992) and presented in Table 16.

Crania were evaluated for a series of non-metric traits. In the Yamhill population, highest nuchal lines are present in 80% of the sample. High rates for this trait are typical of Native American populations. Non-metric trait variation was compared between Fuller and Fanning sites. According to Stepp two traits showed significant differences. Lambdoid ossicles were present in 45.71%(n=35) of sites in the Fuller sample, but only 15.0% (n=20) of sites in the Fanning group. The mastoid foramen was exsutural in 77.78% (n=27) of sites from Fuller, and only 37.5% (n=8) of sites

from Fanning. Incidences of non-metrics variants were compared (chi square frequency analysis with continuity correction) between the Fuller and Fanning combined sample to the Gold Hill, Takelma. Differences were considered significant at $p < 0.05$. The Gold Hill sample was different in frequency of several traits including presence of highest nuchal line, lambdoidal ossicles, ossicles at asterion, presence of auditory torus, and exsutural (Stepp 1984:85).

Most individuals had a "broad or round skull, high in relation to length and medium height in relation to breadth, average frontal breadth in relation to vault breadth, average height to breadth ratio of face, medium breadth to height of nasal aperture and wide orbits" (Stepp 1984:96). Male and female skulls are of similar shape. According to Stepp the Gold Hill Takelma, were expected to be biologically similar to the Yamhill (Fuller/Manning/ Kalapuya?), yet the Gold Hill showed several differences in metric and nonmetric traits. The Gold Hill population was different in cranial length, cranial index, length-height index, mean height index and orbital index (Stepp 1984:77). Markedly shovel-shaped incisors are present in eight of the 20 individuals with incisors to study. Shovelings occur in all eight of the individuals in both central and lateral incisors except for Fuller # 41 in which only the central incisor is available for inspection.

Tasa (1997) completed metric and non-metric analysis of 66 Late Prehistoric and Historic skeletons that represent Pacific Coast Athapaskans (PCA) from southern Oregon. Statistical comparisons suggest that their skeletal traits resemble the Tlingit. Skeletons of the Pacific Coast Athapaskans from both northern California and southern Oregon are found to be more variable than previously assumed for a population that migrated from the Northwest Pacific Coast approximately 1000 years ago. Ten sites with 1 to 28 individuals contribute to his total sample of 66 skeletons. Tasa also reports non-metric and metric observations for approximately 75 individuals from the roughly 2000 year old cemetery population recovered at Wildcat Canyon (25GM9) located near The Dalles on the Oregon side of the Columbia River (see annotation of Dumond and Minor [1983]). Remains excavated by Cole and Cressman (1960) from some 68 burials (Burials 1-33, 35-47, 49-67, 70, 72, and 74) in this cemetery include the remains of about 75 individuals, and are curated at the Oregon State Museum of Anthropology. An informative description of measurement techniques and statistical methods precedes results for age estimations, sex determinations, sample bias, cranial metrics, cranial non-metrics, odontometrics, dental non-metrics, post cranial metrics, stature, and post-cranial non-metrics.

Cluster analysis of a subset of males and females from Tasa's samples show that Kalapuya (Fuller/Fanning/Yamhill?) and Wildcat Canyon populations are "quite dissimilar" from Pacific Coast Athapaskans. Coquille are only "slightly more similar." Non-metric traits were analysed using mean measure of divergence (MMD) and cluster analysis based on Euclidean distance, average linkage methods. Significant differences were found in estimates of stature from both skeletal samples (see Table 29) and the anthropometry of living peoples (Boas 1891). Males in the Chinook, Sahaptin and Wildcat Canyon samples represent significantly taller individuals when compared to males of all other Pacific Northwest peoples.

Non-metric cranial and sub-cranial data reveal clusters similar to metric data. Wildcat and Kalapuya samples are again distinct from Athapaskan samples which join in more related clusters. Dental non-metrics are compared with data from three lumped sample groups Aleut-Eskimo, Na-Dene, and Indian (Turner 1983, 1985, 1986). Tasa shows that PCA dental morphology deviates from the known range of other samples and that while PCA may lean toward the Sundadont pattern for some traits, a great amount of traits indicate the Sinodont pattern.

In a descriptive summary focused on the PCA, Tasa concludes that PCA

neurocrania exhibit: average or broad heads, low cranial height, and relatively flat cranial base. Most cranial non-metric traits are found in ranges "in-line" with world samples, but several traits occur in low frequencies (such as various ossicles, and the absent mastoid foramen) and some in unusual high frequency (such as nuchal lines and accessory infraorbital foramen). PCA post-crania are robust (with sexual dimorphism), and exhibit low incidence of platymeria and platycnemia. Post-crania also exhibit low frequencies of non-metric traits such as third trochanter and the acetabular crease. A similar summary of the Wildcat Canyon is in progress. Appendix 55 includes ten spreadsheets for data that combine Tasa's Wildcat Canyon observations and those from Crates Point.

Ossenberg (1994) employs MMD for 25 nonmetric cranial traits. Her sample includes 50 recent and prehistoric samples (N=2800 individuals). Plots of MMD versus Spearman's r complement cluster analysis for depicting two-dimensional relationships between groups. Significantly 15 traits discriminate between Aluets and Eskimo and show intermediate placement for Athapaskans. Aluets are hypothesized to represent a relict Paleoartic population. Remains from Namu (N=25; 5000-2000 BP) cluster with Aleut and NaDene, although the remains from Namu also exhibit unique morphological characteristics such as external occipitals protuberance in some adults. Ossenberg remarks in her footnotes that the Namu crania do resemble the crania in samples with which they cluster according to nonmetric MMD.

Ossenberg (1994) reviews previous studies of craniometrics (Howells 1973, 1989; Brace and Leonard 1989). She concludes that both types of data can be used to support Newman's (1952) older hypothesis that relatively late Aleut migrations involving a "Deneid" variety exerted profound influence on populations along the Pacific Northwest Coast, in the Southwest and on the Northern Plains. She finds that early American samples (Umnak, Kodiak Early, and Namu) are distant from Neolithic Japan and historic Ainu when compared according to nonmetric traits. However, Haida, Tlingit and Tungus might share affinity with Japan and Ainu. Ossenberg hypothesizes that the Paleo Tlingit-Haida populations might have Southeast Asian roots and could have founded a very early pebble-tool industry in the Pacific Northwest. Later Paleo Aleut-NaDene populations might have carried an 9000 year old immigrant microblade traditions to the coasts. By 5000 BP these populations are represented in the human remains from Umnak, Kodiak and Namu. Although she points to the lack of evidence for such a scenario she also remarks that the archaeological record is, "too incomplete to rule out the possibility of Proto-Mongoloid movements from Southeast Asia around the Pacific Littoral and in the New World" (1994: 106).

Work in Progress

Several sets of investigators are collaborating on bioarchaeological studies within the Pacific Northwest. Most of this work is known through personal communication and few details are available in advance of publication. At least three sets of researchers are engaged in DNA studies, and three sets of researchers are undertaking projects to develop more extensive, region-wide osteological studies.

Dr. David Smith and his graduate students at UC-Davis are continuing efforts to recover and analyze DNA samples from teeth and bone. These efforts include work on the early Braden and DeMoss remains with Yohe and Pavesic (2000), and work on Congdon remains with Chatters and Hackenberger (2000). Merriwether et al. (1995) have also attempted to extract DNA from teeth from archaeological sites in Washington State (Chatters et al. 2000). Bonnicksen and Weitzel (1998) continue to refine their approaches to archaeologically recovering animal and human hair for DNA analysis. A collaboration is also developing around re-evaluating the

bioarchaeology and osteology of the Karlo Site in Northern California (Breschini, personal communication 2000).

Loring Brace (University of Michigan) and Richard Jantz (University of Tennessee, Knoxville) are attempting to incorporate cranio-facial measurements from Pacific Northwest crania into their respective worldwide comparative databases. Jantz and Owsley (1999a) are performing multivariate analyses to explore differences between ancient crania and modern populations. They have recently argued that Buhl skeletal remains show differences between the ancient and modern populations, and that Buhl's morphometric traits are not similar to modern Native American groups; in fact they are closer to groups from the Pacific. They suggest that a source of the early migrants to America might be found in Asian Circumpacific populations. These populations are quite naturally variable, but their craniofacial morphology consists of cranial vaults that are large, long and narrow, forward projection of the face, and low faces. Polynesians and some ancestors to early California Indian populations probably came out of these populations. More recently Jantz and Owsley (2000) analyzed a sample of 11 crania (Spirit Cave, Wizards Beach, Browns Valley, Pelican Rapids, Prospect, Wet Gravel male, Wet Gravel female, Medicine Crow, Turin, Lime Creek, and Swanson Lake). The sample includes the pre-Mazama Prospect burial, from Oregon.

Each cranium was compared to 34 modern groups. Six crania (Prospect, Wet Gravel male, Wet Gravel female, Medicine Crow, Turin, and Wizards Beach) fall into the variation of modern groups; however, they do not show any particular affinity with nine modern Native American samples. When the crania are compared to each other they form three distinct groups. The first group is comprised of Browns Valley, Pelican Rapids, and Lime Creek. Turin and Medicine Crow make up the second group, and the third group consists of the Wet Gravel specimens, Swanson Lake, Prospect, Wizards Beach, and Spirit Cave. They conclude that their results are inconsistent with hypotheses of a single ancestral group and suggest that historic cranial variation is probably of recent origin.

As early as 1991 Brace and his collaborators (Brace et al. 1990) began to suggest that their multivariate analysis of the world-wide Michigan database showed that west coast Amerindian samples most closely aligned with the Jomon-Pacific samples. These ideas are cross-fertilizing with the Ossenbergs (1994) scenario involving migrations of proto-mongoloid, Paleo Tlingit-Haida populations from Southeast Asia followed by later Paleo Aleut-NaDene populations. Brace and Nelson (personal communication 2000) are further developing the Circumpacific origins of early New World migrants. In this respect, Fenton and Nelson (personal communication 2000) are further exploring the affinity for the Buhl woman. Fenton is also addressing the related significance of the Buhl woman's Harris lines and Os Acromiale.

Neves and Blum (2000) are testing the recent claim that craniofacial observations of the Buhl Paleoindian remains are similar to other North American and East Asian populations. The measurements of the Buhl skull were compared to twenty-six modern populations (Howells), and to a Paleoindian skull from Lapa Vermelha, Brazil, which shows morphological similarities with Africans and Australians. Multivariate analysis shows that there is a great difference between the Paleoindian skulls, and when compared to the modern populations the skulls belong to different clusters. They suggest that at least two populations peopled the Americas; one with characteristic "Mongoloid morphology," and another with a generalized morphology.

Guy Tasa (University of Oregon) has recently expanded his efforts to construct an osteological database for Oregon. Tasa's work includes metric and non-metric data for crania, post-cranial remains and dentition. Equivalent data records compiled by

the University of Idaho require similar computer database work in order to improve their value for comparative analysis. The TBMWSM and Central Washington University should conduct analysis of metric and non-metric records of human bone and teeth. Such analysis should be completed as part of their efforts to document cultural affiliations for NAGPRA consultations. Results from these studies should be incorporated into databases from the University of Idaho and University of Oregon.

All of the above works in progress have relevance for investigating the biological affinity and cultural affiliation of early human remains such as those of "Kennewick Man." Two works in progress have particular significance. One project involves the analysis of an early unprovenienced cranium (Chatters et al. 2000), the other involves initial comparative analysis of crania from across the Pacific Northwest (C.L. Brace, personal communication 2000) and the Columbia River Basin (Shumate and Hackenberger 2000).

CWU BOX- DO1: During the Central Washington University NAGPRA inventory, an unprovenienced neurocranium (CWU BOX- DO1) was identified to be remarkably similar to "Kennewick Man." Although the skull lacks provenience information, it may derive from eastern Washington. The corrected and uncorrected age estimates place the remains in a time range between 8000 and 9000 years ago (Chatters et al. 2000). Nuchal development, very large mastoid processes, a moderate supraorbital ridge and rounded supraorbital margin, mark this individual as male. The cranium is high, long, and narrow (cranial index 70.9, dolichocranic), with an unusually narrow cranial base and narrow, forwardly-placed face. Like the Kennewick skull (Chatters 2000) temporal lines occur high on the parietals and extend posteriorly to the lambdoidal suture. Superior and inferior nuchal lines are well developed and there is aninion hook. Morphometric analysis comparing CWU BOX -DO1 with the Howells worldwide database, shows that like most Paleoamerican skulls (e.g. Chatters et al. 1999, Jantz and Owsley 1999c), CWU-DO1 differs significantly from all modern peoples, but is most similar to Polynesians. Pending the results of additional forensic science work to determine the origin of the remains, CWU will explore possible cultural affiliation of CWU-DO1 in discussions with representatives of the region's Native American communities.

Comparative Analysis: Current studies of cranio-facial morphology are investigating patterns in measurements that may express biological affinity within and between Pacific Northwest populations. The majority of the sample of crania represent middle and late period populations, but the comparative analysis can be expanded to include earlier crania from the region and elsewhere. Different preferences for choice of measurements and statistical methods among researchers, fragmentary crania, and small sample sizes hamper definitive conclusions at this time. The conceptual ties between hypothesized biological affinities and possible cultural affiliation are also at issue.

Loring Brace (personal communication, 2000) has recently added a significant sample of cranio-facial measurements for the Pacific West and Northwest into his Michigan database. Many of these measurements are derived from crania in the Central Washington University osteological collection. His preliminary results show that a sample of undeformed crania fall near Haida and Jomon-Ainu-Polynesian samples opposite Athapascans and other Amerindian samples. D-square values are being calculated and plotted in order to determine possible levels of mixing that might be present among the Northwest samples. Such mixing is already well represented in a Patagonian sample that shows combinations of Jomon-derived and Amerindian-derived features. Most of the sample of unmodified crania lack documented archaeological contexts.

Shumate and Hackenberger (2000) have compiled data for a sample of some 70

male crania from across the Columbia Basin (see Appendix 41). The study is exploratory in nature; however, results are of potential interest to investigators studying Paleoindian crania. One interest is whether or not any middle or late period crania fall in the range of variation of the earliest sample. Another interest is if middle and later period samples from the Pacific Northwest separate into distinct subgroups.

The majority of the sample of Pacific Northwest crania in the Shumate and Hackenberger study comes from data records completed by Heglur (1957) and Mulinski and others (University of Idaho). The set of approximately 70 crania has measures for between 9 and 20 cranio-facial dimensions. A preliminary analysis using nine standard measures discriminates between a group of Polynesian-like Paleoindians and several groups of historic Amerindians (Richard Jantz, personal communication, 2000). Two Columbia Basin male crania fall near the Paleoindian cluster in the analysis (these fall on the upper right of the discriminate plots). One is from 45FR101 and one is from 45OK159. Both skulls like the Paleoindian crania are relatively long, narrow, and high vaulted. An outlier with some similar characteristics (long and narrow) is identified from the Wildcat Canyon Site (35GM9). This cranium also falls on the right side of plots and may represent a cranium with some degree of post-depositional modification. Most of the Columbia River Basin crania fall in the center of the discriminate plots; however, crania from 45FE44, 45GA110, and 45GA18 represent outliers on the opposite (left) side of the plots.

The implications of these results await detailed consideration of osteological data records, photographic records, and fuller evaluation of the archaeological contexts of the sample crania. Expanded analysis should include a larger battery of cranio-facial dimensions and enlarged samples of male and female crania. Attention should also be focused on cranial non-metric observations and dental measurements and observations. Clearly placing the "Kennewick Man" within this type of fuller regional investigation of cranial morphology and other osteological and dental traits holds promise for additional study of his possible phenotypic affinity and, based on other types of considerations, his possible cultural affiliation as interpreted under NAGPRA.

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Kennewick Man
Cultural Affiliation Report

Chapter 5
References

**Cultural Affiliation Study of the
Kennewick Human Remains: Review of
Bio-Archaeological Information**

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References

- Angel, J.
1966 Early Skeletons from Tranquility, California. *Smithsonian Institution Contributions to Anthropology*, No. 2 (1). Washington.
- Anonymous
1889 Deformation of Heads in British Columbia. *Science* 13(327):365.
- Arcas, Ltd.
1987 *Recovery of Human Skeletal Remains from Site EfQf12, Otter Lake, B.C.* Unpublished report submitted to the British Columbia Heritage Conservation Branch, Victoria.

1988 *Burial Recovery: Archaeological Site DgRs2, Tsawwassen, B.C.* Unpublished report submitted to the British Columbia Archaeology and Outdoor Recreation Branch, Victoria.
- Aronstam, Elliot M.
1975 *Human Remains from the Ozette Village Archaeological Site.* Master's thesis, Washington State University, Pullman.
- Atkinson, Reginald N.
1952 Burial Grounds of the Okanagan Indians. *Okanagan Historical Society, 16th Annual Report*, pp. 5-12. Vernon, Washington.
- Ball, Howard T.
1941 Disinterments at Grand Coulee. *Casket and Sunnyside* 71(4): 35-38.
- Barlee, N. L.
1969 Journey to the Land of Shades. *Canada West Magazine* 1(3):28-31.
- Bartel, Brad
1982 A Historical Review of Ethnological and Archaeological Analyses of Mortuary Practice. *Journal of Anthropological Archaeology* 1:32-58.
- Beattie, Owen

DOI 10357

1976 Skeletal Pathology of Prehistoric Remains from Crescent Beach. In *Current Research Reports*, edited by Roy Carlson, pp. 155-164. Publication 3, Department of Archaeology, Simon Fraser University, Burnaby.

1981 *An Analysis of Prehistoric Human Skeletal Material from the Gulf of Georgia Region of British Columbia*. Unpublished Ph.D. dissertation, Department of Archaeology, Simon Fraser University, Burnaby.

1985 A Note on Early Cranial Studies from the Gulf of Georgia Region: Long-Heads, Broad Heads and the Myth of Migration. *British Columbia Studies* 66:28-36.

Bennett, Kenneth A.

1972 Lumbo-Sacral Malformations and Spina Bifida Oculata in a Group of Proto-historic Modoc Indians. *American Journal of Physical Anthropology* 36(3):435-439.

Bergen, Harold G.

1989 *The Bergen Collection*. Ms. on file at the Burke Museum, University of Washington, Seattle.

Berlin, A. F.

1839 Relics Taken from an Ancient Tomb Recently Discovered in Washington. *The Archaeologist* 1(6):117-118.

Berreman, Joel V.

1944 *Chetco Archaeology. A Report of the Lone Ranch Creek Shell Mound on the Coast of Southern Oregon*. General Series in Anthropology, No.11. American Anthropological Association.

Boas, F.

1888 Indian Skulls from British Columbia. *Transactions of the New York Academy of Sciences*, Vol. 8.

1891 Physical Characteristics of the Indians of the North Pacific Coast.

1892 Physical Characteristics of the Tribes of the North Pacific Coast. *61st Annual Report of the British Association for the Advancement of Science for 1891*, pp. 424-449. London.

1896 Sixth Report on the Indians of British Columbia. Reprinted in 1974 in: *Northwest Anthropological Research Notes*, Vol. 8.

1905 Anthropometry of Central California. *Bulletin of the American Museum of Natural History* 27:347-380.

Boas F., and L. Farrand

1898 Physical Characteristics of the Tribes of British Columbia. Reprinted in 1974 in: *Northwest Anthropological Research Notes*, Vol. 8 (1/2).

Bonnichsen, Robson

1964 The Rattlesnake Canyon Cremation Site, Southwest Idaho. *Tebiwa* 7(1):28-30.

Bonnichsen, R., and M. Weitzel

1998 Hair from Late Holocene Open Campsites. In *Yakima Training Center Expansion Area Archaeology: Investigations in the Johnson Creek Drainage*

Basin, Kittitas County, Washington, Volume II-Appendices, edited by Stan Gough. Prepared for the U.S. Army Corps of Engineers, Seattle District.

Borden, Charles E

1960 DjRi3, An Early Site in the Fraser Canyon, British Columbia. In *Contributions to Anthropology 1957. National Museum of Canada, Bulletin* 162, pp. 101-118. Anthropological Series 45. Ottawa.

Boreson, Keo

1985 The Burials at 45-CH-296, Chelan County, Washington; with contributions by Craig Holstine, Grover S. Krantz, and Roderick Sprague. *Eastern Washington University Reports in Archaeology and History*, No. 100-40, Cheney.

Boyd, Robert

1996 Disease and Demography in the Plateau. Ms. to be published in *Physical Anthropology in the Pacific Northwest*, edited by Rick Sprague.

Brace, C.L., and W. R. Leonard

1989 Reflections on the face of Japan. *American Journal of Physical Anthropology* 78:93-113.

Brace, C.L., D.P. Tracer, and K.D. Hunt

1990 *Human Craniofacial form as Evidence for the Peopling of the Pacific*. Paper presented at the XIVth Indo-Pacific Prehistory Association Congress, Yogyakarta, Indonesia.

Bray, Tamara L., Gary P. Aronsen, and Javier Urcid

1994 *Inventory and Assessment of Human Remains from Northeastern Washington and Northern Idaho in the National Museum of Natural History*. Case Report No. 92-017. Repatriation Office, National Museum of Natural History, Smithsonian Institution. Washington, D.C.

1996 *Inventory and Assessment of Human Remains and Funerary Objects from Northwestern Oregon in the National Museum of Natural History*. Case Report No. 91-010. Repatriation Office, National Museum of Natural History, Smithsonian Institution. Washington, DC.

Brennan, Teresa M.

1981 *Inventory and Research Project done on Hall Collection, Burke Museum*. Unpublished manuscript on file at the Burke Museum, University of Washington, Seattle.

Breschini, Gary S.

1975 *The Marmes Burial Casts*. Master's research paper, Department of Anthropology, Washington State University, Pullman.

1978 Physical Anthropology of the Holiday Inn Site, CA-SCL-128, Part I: Basic Physical Anthropology and Osteometric Analysis. In *Archaeological Investigations at CA-SCL-128, the Holiday Inn Site*, edited by J.C. Winter. Redevelopment Agency of the City of San Jose, San Jose.

1979 The Marmes Burial Casts. *Northwest Anthropological Research Notes* 13(2):111-158.

Breschini, G.S., and T. Haversat

1980 *The Physical Anthropology of Central California: Part 1, Osteometric*

Data. Coyote Press, Salinas.

Brooks, S.T.

1975 Human Skeletal Remains. In West Berkeley (CA-ALA-307): A Culturally Stratified Shellmound on the East Shore of San Francisco Bay. *Contributions of the University of California Archaeological Research Facility*, No. 29. Berkeley.

Browman, David L., and David A. Munsell

1969 Columbia Plateau Prehistory: Cultural Development and Impinging Influences. *American Antiquity* 54(3):249-264.

Bryan, Alan L.

1955 Archaeology of Yale Reservoir, Lewis River, Washington. *American Antiquity* 29(3):281-283.

Butler, Robert B.

1959 Lower Columbia Valley Archaeology: A Survey and Appraisal of Some Major Archaeological Resources. *Tebiwā* 2(2):6-24.

1962 The B. Stewart and the Cradleboard Mortuary Sites: A Contribution to the Archaeology of the Dalles Region of the Lower Columbia Valley. *Tebiwā* 5(1):30-40.

1963 Further Notes on the Burials and the Physical Stratigraphy at the Congdon Site, a Multi Component Middle Period site at The Dalles on the Lower Columbia River. *Tebiwā* 6(2):16-37.

Caldwell, Warren W.

1954 An Archaeological Survey of the Okanagan and Similkameen Valleys of British Columbia. *Anthropology in British Columbia* 4:10-25.

1955 Two Cist Burials from San Juan Island, Washington. *American Antiquity* 20:383-384.

1956 *The Archaeology of Wakemap: A Stratified Site near The Dalles of the Columbia*. Unpublished Ph.D. dissertation in Anthropology, University of Washington, Seattle.

Caldwell, Warren W. and Oscar L. Mallory

1967 Hells Canyon Archeology. *Smithsonian Institution, Washington, D.C. River Basin Surveys, Publications in Salvage Archaeology*, No. 6. Washington.

Cameron, John

1928 Craniometric Studies. *American Journal of Physical Anthropology* 11(2): 259-299.

Campbell, John

1950 *Report of an Archaeological Survey- Priest Rapids Reservoir, State of Washington*. Report submitted to the National Park Service, Seattle.

Campbell, S.K.

1984a *Archaeological Investigations at Nonhabitation and Burial Sites, Chief Joseph Dam Project, Washington*. Office of Public Archaeology, University of Washington, Seattle.

1984b *Archaeological Investigations at Sites 45-OK-2 and 45-OK-2A, Chief*

Joseph Dam Project, Washington. Office of Public Archaeology, University of Washington, Seattle.

1984c *Report of Burial Relocation Projects, Chief Joseph Dam Project, Washington*. Office of Public Archaeology, University of Washington, Seattle.

Cannon, Aubrey

1996 *The early Namu Archaeofauna*. In *Early Human Occupation in British Columbia*, edited by Roy Carlson and Luke Della Bona. UBC Press, Vancouver.

Carlson, Roy

1990 *The 1986 Excavations at the Canal Site (DeRt 1 and DeRt 2)*. Unpublished report with the Archaeology Branch of British Columbia (Permit 1986-7).

Carpenter, Michael

1970 A Burial from Site 45SK56. *Washington Archaeologist* 14(3):2-3.

Carino, Raymond

1987 *Biological Distance of the Aboriginal Colville and Nez Perce Populations derived from Skull Non-metric Features*. Unpublished Master's thesis, University of Idaho, Moscow.

Caywood, Louis R.

1954 *Archaeological Excavations at Fort Spokane 1951, 1952, 1953*. Report of National Park Service, San Francisco.

Chance, David H.

1967 *Archaeological Survey of Coulee Dam National Recreation Area: Part 2: Spring Draw down of 1967*. *Washington State University, Laboratory of Anthropology, Report of Investigations*, No. 42. Pullman.

1970 *Archaeological Survey of Coulee Dam National Recreation Area: Spring and Summer, 1970*. *University of Idaho Anthropological Research Manuscript Series*, No. 2. Moscow.

Chance, David H., and Jennifer V. Chance

1977 *Kettle Falls: 1976, Salvage Archaeology in Lake Roosevelt*. *University of Idaho Anthropological Research Manuscript Series*, No. 39. Moscow.

1979 *Kettle Falls: 1977, Salvage Archaeology in and beside Lake Roosevelt*. *University of Idaho Anthropological Research Manuscript Series*, No. 53. Moscow.

Chance, David H., Jennifer V. Chance, and John L. Fagan

1977 *Kettle Falls 1972: Salvage Excavations in Lake Roosevelt*. *University of Idaho Anthropological Research Manuscript Series*, No. 31. Moscow.

Charney, Michael

1968 *Report on Skeletal Fragments from F-34*. Appendix IV (2 pages) in *The Early Prehistory of the Clearwater Valley, North-Central Idaho* by Polly A. Toups. Ph.D. dissertation, Tulane University, New Orleans.

Charney, Michael

1972 *Mistaken Early Man in Idaho*. *Tebiwa* 15(2):68-69.

- Chatters, James C.
1985 *Forensic Analysis of a Prehistoric Interment, Bonaparte Creek, Okanogan County, Washington Archaeological Report 85-1*. Central Washington Archaeological Survey, Central Washington University, Ellensburg.
- 2000 Recovery and Initial Analysis of an Early Holocene human skeleton from Kennewick, Washington. *American Antiquity* 65:291-316.
- Chatters, James C., and Steven Hackenberger
2000 *Inventory of the Congdon Site: Human Remains with Observations of Trauma and Pathology*. Ms. in possession of the authors.
- Chatters, James C., Steven Hackenberger, Thomas Stafford, Richard L. Jantz, Alan J. Busacca, Linda Scott-Cummings, and Ervin R. Taylor
2000 A Second Early Holocene Skull from Central Washington, USA. *Current Research in the Pleistocene*, in press.
- Chatters, James C., and Hartmut Krentz
1986 *The Ellisford Cremations: Archaeological Report 86-1*. Central Washington Archaeological Survey, Central Washington University, Ellensburg.
- Chatters, James C., and Matthew K. Zweifel
1987 *The Cemetery at Snt'lexwenewixwth*, Central Washington Archaeological Survey. Archaeological Report 8:7-1. Central Washington University, Ellensburg.
- Chatters, James C., W. A. Neves, and M. Blum
1999 The Kennewick Man: A First Multivariate Analysis. *Current Research in the Pleistocene* 16:87-90.
- Chatters, Roy M., and James W. Crosby, III
1962 Electrical Resistivity Probing in Archeological Research. Washington State University, Institute of Technology, Division of Industrial Research, *Research Report*, No. 62, pp.18-114. Pullman.
- Chisholm, Brian
1986 *Reconstruction of prehistoric diet in British Columbia Using Stable-Carbon Isotope Analysis*. Ph.D. dissertation, Simon Fraser University, Burnaby.
- Chisholm, Brian S., and D. Erle Nelson
1983 An Early Human Skeleton from South-Central British Columbia: Dietary Inference from Carbon Isotopic Evidence. *Canadian Journal of Archaeology* 7(1):85-86. Ottawa.
- Cleveland, Gregory C.
1976 Unpublished Field Notes, Site 45-FR-5. Ms., Laboratory of Anthropology, Washington State University, Pullman.
- Cleveland, G., and M. Uebelacker
1980 Excavation of Two Prioritized Sites, 45BN161 and 45FR101, in the McNary Reservoir. *Project Report No. 2*. Laboratory of Archaeology and History, Washington State University, Pullman.
- Coale, George L.

1956 *A Preliminary Report of Archaeological Investigations in the Mt. Sheep and Pleasant Valley Reservoir Areas*. Columbia Basin Project, River Basin Surveys. Eugene.

1956 Archaeological Survey of the Mt. Sheep and Pleasant Valley Reservoirs. *Davidson Journal of Anthropology* 2(1):11-29. Seattle.

Cole, David L.

ca. 1954 *A Contribution to the Archaeology of The Dalles Region*. Unpublished Master's thesis, University of Oregon, Eugene.

ca. 1958. *A Report on the Disinterment of Burials on Grave and Memaloose Islands in The Dalles Reservoir Area*. Eugene, Oregon. (Mimeographed.)

Cole, David L., and L.S. Cressman

1960 *Interim Report 1959-1960, John Day Reservoir Project, Columbia River*. Report prepared for the National Park Service, on file at the Department of Anthropology, University of Oregon, Eugene.

Cole, David L., and Frank C. Leonhardy

1964 Report on Survey and Excavations of Blalock Island - 1963. *Interim Report 1963-64, John Day Dam Reservoir Project, Columbia River, Part Two*. Report submitted to the National Park Service, Eugene.

Collier, Donald, Alfred E. Hudson, and Arlo Ford

1940 Field notes and photographs of 1939-1940 salvage excavation. Ms., Eastern Washington Historical Society, Spokane; also copies in Pacific Northwest Anthropological Archives, University of Idaho, Moscow.

1942 Archaeology of the Upper Columbia Region. *University of Washington Publications in Anthropology* 9:1.

Columbia Archaeological Society

1958 *Preliminary Report of Excavation at Site 45-FR-1*. [45-FR-42] Ms., Washington State Museum, Seattle. (Mimeographed)

Combes, John D.

1961 An Archaeological Survey of Pacific Gas Transmission Company's Alberta to California Pipeline System: MP 108.0 to MP 722.0, Phase II. *Washington State University, Laboratory of Anthropology, Report of Investigations*, No. 13. Pullman.

1964 Excavations at Spokane House - Fort Spokane Historic Site: 1962-1963. *Washington State University, Laboratory of Anthropology, Report Of Investigations*, No. 29. Pullman.

1968 *Burial Practices as Indicators of Cultural Change in the Lower Snake River Region*. Master's thesis, Washington State University, Pullman.

Congdon, Russell

1931 Spondylolisthesis and Vertebral Anomalies in Skeletons of American Aborigines, with Clinical Notes on Spondylolisthesis. *Journal of Bone and Joint Surgery* 14:511-524.

Copp, Stanley

1986 DqQu4: Salvage Recovery of Human Remains on the Osoyoos Indian Reserve. Unpublished report submitted to the British Columbia Heritage

Conservation Branch, Victoria.

- Corcoran, P. A., et al.
1959 Blood Groups of Alaskan Eskimos and Indians. *American Journal of Physical Anthropology* 17:187-194.
- Corruccini, R. S.
1974 An Examination of the Meaning of Cranial Discrete Traits for Human Skeletal Biological Studies. *American Journal of Physical Anthropology* 40:425-446.
- Crabtree, Robert H.
1957 *Two Burial Sites in Central Washington*. Master's thesis, University of Washington, Seattle.
- Cressman, L.S.
1933a Aboriginal burials in southwestern Oregon. *American Anthropologist* 35-116:130.

1933b Final report on the Gold Hill burial site. *Studies in Anthropology, Bulletin 1, University of Oregon Publications* 4:3.

1940 Early Man in the Northern Part of the Great Basin of South Central Oregon. In Proceedings of the Pacific Science Congress, *Bernice Pauahi Bishop Museum Special Publication*, No. 7. Honolulu.

1940 Studies of Early Man in South Central Oregon. *Carnegie Institution of Washington Yearbook* 39:300-306.

1942 Archaeological Researches in the Northern Great Basin. *Carnegie Institute of Washington, Publication No.* 538.

1950 Archaeological Researches in the John Day Region of North Central Oregon. *Proceedings of the American Philosophical Society* 94(4):369-390.
- Cressman, L. S., and O. Larsell
1945 A Case of Probable Osteomyelitis in an Indian Skeleton. *The Western Journal of Surgery, Obstetrics and Gynecology* 53:332-335.
- Cressman, L.S., David Cole, Wilbur Davis, Thomas Newman, and Daniel Scheans
1960 Cultural sequences at The Dalles, Oregon: A Contribution to Pacific Northwest Prehistory. *Transactions of the American Philosophical Society* 50(10). Philadelphia.
- Cressman, L.S., Williams Howell, and Alex D. Krieger
1940 Early Man in Oregon: Archaeological Studies in the Northern Great Basin. *University of Oregon Monographs, Studies in Anthropology*, No. 3. Eugene.
- Crithfield, June
1964 *Of Yesterday and the River*. Pullman: General Extension Service, Washington State University, Pullman. Reprinted with addendum, C. W. Hill Printing Co., Spokane.

1973 *Of Yesterday and the River*. University Bookstore, Pullman.
- Crosby, James W., III, and Roy M. Chatters

1962 Application of Seismographic Techniques to Archeological Research. *Washington State University, Institute of Technology, Division of Industrial Research, Research Report*, No. 62, pp.18-115. Pullman.

Curtin, A. Joanne

1984 *Human Skeletal Remains from NAMU (E1Sx1): A Descriptive Analysis*. Master's thesis, Simon Fraser University, Burnaby.

Curtin, A. Joanne, and Steve Lawhead

1985 Spallumcheen Heritage Inventory Project: Pinaus Lake Burial Salvage (1984). Unpublished report submitted to the British Columbia Archaeology Branch, Victoria.

Cybulski, Jerome S.

1972 Analysis of Skeletal Remains from the Prince Rupert Harbour Area of British Columbia. *Canadian Archaeological Society Bulletin* 4:87-90.

1973 The Gust Island Burial Shelter: Physical Anthropology. *Archaeological Survey of Canada*, Paper No. 9. National Museum of Man, Ottawa.

1975 Skeletal Variability in British Columbia Coastal Populations: A Descriptive and Comparative Assessment of Cranial Morphology. *Archaeological Survey of Canada*, Paper No. 30. National Museum of Man, Ottawa.

1977 Cribra Orbitalia, a Possible Sign of Anemia in Early Historic Populations of the B.C. Coast. *American Journal of Physical Anthropology* 47:31-40.

1978 An Earlier Population of Hesquiat at Harbor British Columbia. *Cultural Recovery Paper* No. 1. British Columbia Provincial Museum.

1980 Skeletal Remains from Lillooet, British Columbia, with Observations for a Possible Diagnosis of Skull Trephination. *Syesis* 13:53-59.

1991 Human Remains from Duke Point, British Columbia, and Probable Evidence for Pre-Columbian Treponematosi. Unpublished report on file, British Columbia Archaeology Branch, Victoria.

1992 A Greenville Burial Mound Human Remains and Mortuary elements in British Columbia Coast Prehistory. *Archaeological Survey of Canada, Mercury Series Paper* No. 146, Canadian Museum of Civilization, Ottawa.

1996 *Conflict and complexity on the Northwest Coast: Skeletal and Mortuary Evidence*. Paper presented at the 61st annual SAA meeting, New Orleans.

Cybulski, Jerome S., Donald E. Howes, James C. Haggarty, and Morley Eldridge
1981 An Early Human Skeleton from South-central British Columbia: Dating and Bioarchaeological Inference. *Canadian Journal of Archaeology* 5:49-59.

Daugherty, Richard D.

1952 Archeological Investigations of O'Sullivan Reservoir, Grant County, Washington. *American Antiquity* 17:374-386.

1956a An Archaeological Survey of Rocky Reach Reservoir. *Research Studies of the State College of Washington* 24:1-16.

1956b The Archaeology of the Lind Coulee site, Washington. *Proceedings of the American Philosophical Society*, Vol. 100, No.3, pp. 224-278.

1962 The Intermontane Western Tradition. *American Antiquity* 28(2):144-150.

Daugherty, Richard D., and Eugene A. Dammell

1952 Preliminary Excavations of a Burial Site on the Snake River. *Research Studies of the State College of Washington* 20(3):122-134.

Dawson, George M.

1891 Report on Burials near Lytton. *Transactions of the Royal Society of Canada*, Section 2.

Dorsey, J.

1895 The Lumbar Curve in Some American Races. *Bulletin of the Essex Institute* 27:7-12.

1897 Wormian bones in Artificially Deformed Kwakwiltl Crania. *American Anthropologist* 10(6):167-173.

Droesler, J.

1981 *Craniometry and Biological Distance: Biocultural Continuity and Change at the Late-Woodland-Mississippian Interface*. Center for American Archaeology at Northwestern University, Evanston.

Dumond, D. E., and R. Minor

1983 Archaeology in the John Day Reservoir: The Wildcat Canyon Site (35-GM-9). *University of Oregon Anthropological Papers*, No. 30. University of Oregon, Eugene.

Erickson, Kevin

1983 *Marine Shell Utilization in the Plateau Culture Area*. Unpublished Master's thesis, University of Idaho, Moscow.

Fenenga, F.

1939 Anthropometry. In *Introduction to the Archaeology of Central California* by J.B. Lillard, R.F. Heizer and F. Fenenga. Sacramento Junior College, Publications in Anthropology, Bulletin 2.

Ferllini, Roxana Felicia

1989 *Human Skeletal Remains from Gold Hill, Southwestern Oregon: Morphological comparisons with Prehistoric Modoc, Paiute/Shoshoni, and Athapaskan Assemblages*. Unpublished Master's thesis, Department of Anthropology, University of Oregon, Eugene.

Fielder, George F., Jr.

1979 *Palus Material Technology: A Technical Analysis of the Palus Burial Assemblage from 45-FR-36B*. Unpublished Master's thesis, University of Idaho, Moscow.

Finnegan, M.J.

1972 *Population Definition on the Northwest Coast by Analysis of Discrete Character Variation*. Ph.D. dissertation, University of Colorado, Boulder.

Fladmark, Knut

1976 *Punchaw: A Preliminary Report. The Archaeology of a Prehistoric*

Settlement. In *Current Research Reports*, edited by Roy Carlson, Department of Archaeology, Simon Fraser University, Burnaby.

Flory, Lynn L.

1963 Haptoglobin types of the Nez Perce Indians. *Nature* 197(4867): 577-578.

Foote, E. Barnard

1888 An Indian Burying-Ground. *The West Shore* 14(9): 471.

Fryxell, Roald, and Bennie C. Keel

1969 *Emergency Salvage Excavations for the Recovery of Early Human Remains and Related Scientific Materials from the Marmes Rockshelter Archaeological Site, Southeastern Washington, May 3--December 15, 1968*. Report to U. S. Army Corps of Engineers, Walla Walla District, Walla Walla. Laboratory of Anthropology, Washington State University, Pullman.

Fryxell, Roald, T. Bielicki, R.D. Daugherty, C.E. Gustafson, H.T. Irwin, and B.C. Keel

1968 A Human Skeleton from Sediments of Mid-Pinedale Age in Southeastern Washington. *American Antiquity* 33(4):511-514.

Garner, James C.

1956 *Report on Removal and Reinterment of Human Remains from Indian Tribal Burial Mound, Colville Indian Reservation, Washington*. Report to the U.S. Army Corps of Engineers, Portland District, Portland.

1963 Appendix. An Analysis of Cranial Material from the Congdon Site. *Tebawa* 6:33-37.

Garth, Thomas R.

1952 The Middle Columbia Cremation Complex. *American Antiquity* 18(1):40-56.

Gates, R. Ruggles

1929 Blood Groups of Canadian Indians and Eskimos. *American Journal of Physical Anthropology* 12(3):475-485.

Gates, R. Ruggles, and George Darby

1934 Blood Groups and Physiognomy of British Columbia. *Journal of the Royal Anthropological Institute* 64: 23-44.

Gibby, Lon

1979 *Echoes of Yesterday*. A 16 mm color film, Donald Ball, producer. Creative Audio and Video, Spokane.

Gifford, E. W., editor

1940 Pacific Coast Area. *American Antiquity* 5(3): 251-253.

Gifford, E.W.

1926 Californian Anthropometry. *University of California Publications in American Archaeology and Ethnology*, Vol. 22. Berkeley.

Grabert, Garland F.

1968a North Central Washington Pre-History. University of Washington, *Reports in Archaeology*, No. 1, Seattle.

1968b North-Central Washington Prehistory: A Final Report on Salvage

Archaeology in the Wells Reservoir - Part I. University of Washington, Department of Anthropology, *Reports in Archaeology* 1, Seattle.

Grady, M.A.

1967 *An Osteological Analysis of Selected Burials from the Rooney Extension of 4-Sac-127, Sacramento, California*. Unpublished Master's thesis, Sacramento State College.

Green, Thomas J., B. Cochran, T.W. Fenton, J.C. Woods, G. L. Titmus, L. Tieszen, and S. J. Miller.

1998 The Buhl Burial: A Paleoindian Woman from Southern Idaho, *American Antiquity* 63:437-456.

Green, Thomas, Max G. Pavesic, J. Woods, and G. Titmus

1986 The DeMoss Burial Locality: Preliminary Observations. *Idaho Archaeologist* 9(2):31-40.

Greengo, Robert E.

1986 *Prehistory of the Priest Rapids, Wanapum Region, Columbia River, Washington*. 3 vols. BAR International Series 290, Oxford.

Gruhn, Ruth

1960 The Mecham Site: A Rockshelter Burial in the Snake River Canyon of Southern Idaho. *Tebiwa* 3(1):3-19.

1961 Notes on Material from a Burial along the Snake River in Southwest Idaho. *Tebiwa* 4(2):37-39.

Gurcke, Karl

1985 Lower Granite Survey. Alfred W. Bowers Laboratory of Anthropology, *University of Idaho, Letter Report*, No. 85-5. Moscow.

Gurcke, Karl, Michael Bies, Thomas M. J. Mulinski, and Roderick Sprague

1981 Burial Recovery and Monitoring. In Nez Perce National Historical Park Archaeological Excavations, 1979-1980. *University of Idaho Anthropological Research Manuscript Series*, No. 70. Moscow.

Gurcke, Karl, with Robert Lee Sappington, Diana Rigg, and Ruthann Knudson

1978 Archaeological Reconnaissance of the Shoreline of Lower Granite Dam Reservoir, Washington and Idaho. *University of Idaho Anthropological Research Manuscript Series*, No. 55. Moscow.

Gustafson, Carl E.

1978 *Salvage of Human Skeletal Remains from "Knoxway Canyon," Lower Granite Reservoir*. Report to U. S. Army Corps of Engineers, Walla Walla District, Walla Walla. Laboratory of Anthropology, Washington State University, Pullman.

Hackenberger, Steven

1993 *Knight Creek (35WA767) Archaeological Investigations, Hells Canyon National Recreation Area, Wallowa County, Oregon*. Ms. on file, Wallowa Whitman National Forest, Baker, Oregon, and Central Washington Archaeological Survey, Central Washington University, Ellensburg.

Hackenberger, Steven, James Chatters, and Lourdes Henebry-DeLeon

1999 *Central Washington University NAGPRA Project*. Grant proposal submitted to the National Park Service, U.S. Department of the Interior,

Washington, D.C.

- Hall, Roberta L.
1986 Skeletal Population at 35-CS-43C. *Northwest Anthropological Research Notes* 20:171-178.
- Hall, R.L., and P. Macnair
1972 Multivariate Analysis of Anthropometric Data and Classifications of British Columbian Natives. *American Journal of Physical Anthropology* 37:401-410.
- Hall, Roberta, Robert Morrow, and J. Henry Clarke
1986 Dental Pathology of Prehistoric Residents of Oregon. *American Journal of Physical Anthropology* 69:325-334.
- Harrison, Brian
1977 A Unique Burial from the Lower Coquille River. Abstract. *Annals of the Oregon Academy of Science*, Vol. XIII.
- Harrison, G.A., J.M. Tanner, D.R. Pilbeam, and P.T. Baker
1988 *Human Biology: An Introduction to Human Evolution, Variation, Growth, and Adaptability*. Oxford University Press, Oxford.
- Harten, Lucille
1975 *The Osteology of the Human Skeletal material from the Braden site, 10wN117, in Western Idaho*. Unpublished Master's thesis, Idaho State University, Pocatello.
- Haversat, T.
1977 Analysis of Skeletal Remains from Indian Island (45JE16), Jefferson County, Washington. In *Archaeological Excavations at Site 45JE16, Indian Island, Jefferson County, Washington --Burial Report*, by A. Onat and T. Haversat. Washington Archaeological Research Center, Report No. 30. Pullman.

1982 *Multiple Discriminant Function Analysis and the Fishtown Skeletal Remains*. Unpublished Master's thesis, Washington State University, Pullman.
- Hawkes, M.G.
1984 Previous Burial Investigations. In *Archaeological Investigation at Nonhabitation, and Burial Sites Chief Joseph Dam Project, Washington*, edited by S.K. Campbell, pp. 81-86. University of Washington, Seattle.
- Hawkes, P.N.
1965 *An Application of Methods for the Determination of Age, Sex, Stature, and Pathologies Applied to the Skeletal Material from 4-SAC-29 and 4-YUB-1*. Unpublished Master's thesis, Sacramento State College, Sacramento.
- Heathcote, G.M.
1986 *Exploratory Human Craniometry of Recent Eskaleutian Regional Groups from the Western Arctic and Subarctic of North America: A New Approach to Population Reconstruction*. BAR International Series No. 301, Oxford.
- Heflin, Eugene
1963 More concerning the Pistol River site. *Screenings* 13(3).

1966 The Pistol River Site of Southwestern Oregon. *Reports of the University of California Archaeological Survey* 67:151-200.

Heglar, Rodger

1957 *A Racial Analysis of Indian Skeletal Material from the Columbia River Valley*. Master's thesis, University of Washington, Seattle.

Hegrenes, Jack R.

1955 *The Use of Discontinuous Traits in Problems of Divergence and Discrimination in American Indian Crania*. Unpublished Master's thesis, Department of Anthropology, University of Oregon, Eugene.

Hemphill, Brian E.

1987 *Data Recovery at Sites 35JA27, 35JA59, and 35JA100, Elk Creek Lake Project, Jackson County, Oregon*, Vol. 2, edited by Richard M. Pettigrew and Clayton G. Lebow. INFOTEC Research, Inc., IRI Report No. PNW87-7. Portland.

1991 Human Remains from 35KL677. In *Archaeological Investigations at the Williamson River Bridge Site: A Riverside Fishing Camp in Klamath County, Oregon* by Richard Cheatham, pp.123-124. Oregon State Museum of Anthropology, University of Oregon, OSMA Report 91-7. Eugene.

Howells, W.W.

1989 Skull Shapes and the Map: Craniometric Analyses in the Dispersion of Modern Homo. *Papers of the Peabody Museum of Archaeology and Ethnology, Harvard University*, Vol. 79, Cambridge.

Hrdlicka, A.

1905 Head deformation among the Klamath. *American Anthropologist* 7(2):360-361.

1906

Contribution to the Physical Anthropology of California. *University of California Publications in American Archaeology and Ethnology*, No.4. Berkeley.

1927 Catalogue of Human Crania in the United States National Museum Collection; The Algonkin, and Related Iroquois; Siouan, Caddoan, Salish and Sahaptin, Shoshonean and California Indians. *Proceedings of the United States National Museum* 69(3):86-90.

1939 Trepanation Among Prehistoric People, Especially in America. *Ciba Symposium* 1(6):170-77.

1947 *Practical Anthropometry*. Edited by T.D.Stewart. Wistar Insititute of Anatomy and Biology, Philadelphia.

Huckleberry, G., and J. Stein

1999 *Analysis of Sediments Associated with Human Remains found at Columbia Park, Kennewick, Wa*. Report Submitted to the National Park Service, United States Department of the Interior, Washington.

Hulse, F.S.

1955 Blood Types and Mating Patterns among Northwest Coast Indians. *Southwestern Journal of Anthropology* 11(2):93-104.

1957 Linguistic Barrier to Gene Flow. *American Journal of Physical*

Anthropology, n.s., 15.

Hulse, F.S., and M.M. Firestone

n.d. Blood Type Frequencies Among the Indians of the Quinalt Reservation. *Proceedings of the 2nd International Congress of Human Genetics*.

Iverson, Thomas M.

1976 A Report on the Salvage of an Aboriginal Burial from the Mouth of Knoxway Canyon, Lower Granite Reservoir. Alfred W. Bowers Laboratory of Anthropology, University of Idaho, *Letter Report* 7:6-13. Moscow.

1977 The Tucannon Burial Relocation Project, Columbia County, Washington. *University of Idaho Anthropological Research Manuscript Series*, No. 43. Moscow.

1984 *Lake Roosevelt Burials: A Computer Analysis*. Unpublished Master's thesis, University of Idaho, Moscow.

Iverson, Thomas M., Roderick Sprague, David H. Chance, T.J.J. Mulinski, and Saul Murillo

1981 The Recovery of Human Burials in Colville and Spokane Territory, 1939-1979. *University of Idaho Anthropological Research Manuscript Series*. Moscow.

Jantz, R. L., D. R. Hunt, A. B. Falsetti, and P. J. Key

1992 Variation among Northamerindians: Analysis of Boas Anthropometric Data. *Human Biology* 64:435-461.

Jantz, R. L., and Douglas Owsley.

1999 Variation among Early American Crania. In Press. *American Journal of Physical Anthropology*.

1999 *Circumpacific Populations and the Peopling of the New World: Part II* Paper presented at the Clovis and Beyond Symposium. Santa Fe, NM. Oct. 29-30.

1999 Databases for Paleo-American Skeletal Biology Research. In *Who Were the First Americans? Proceedings of the 58th Annual Biology Colloquial Symposium*, Oregon State University, edited by R. Bonnichsen, pp. 79-96. Center for the Study of the First Americans, Corvallis.

James, Edwin C.

1928 Cremation and preservation of the dead in North America. *American Anthropologist* 30:214-242.

Johnston, Robbin

1986 *The Archaeological Evidence for Fishing in the Columbia Plateau*. Unpublished Master's thesis, Department of Anthropology, University of Idaho, Moscow.

Keel, Bennie C., and Roald Fryxell

1969 *Recovery of Early Human Remains from the Marmes Rockshelter Archaeological Site, Southeastern Washington, May 3 - December 15, 1968*. Report to U. S. Army Corps of Engineers, Walla Walla District, Walla Walla. Laboratory of Anthropology, Washington State University, Pullman.

Kennedy, K. A. R.

1960 The Dentition of Indian Crania of the Early and Late Archaeological Horizons in Central California. *Reports of the University of California Archaeological Survey*, Vol. 50, pp. 41-50.

Key, P., and R. L. Jantz

1981 A Multivariate Analysis of Temporal Change in Arikara Craniometrics: A Methodological Approach. *American Journal of Physical Anthropology* 55(2): 247-259.

Kidd, George

1930 A Case of Primitive Trephining. *Museum and Art Notes* 5: 85-87.

1946 Trepanation among the Early Indians of British Columbia. *Canadian Medical Association Journal* 55(5): 513-516.

Kidd, George, and G. E. Darby

1933 The Teeth of the Pacific Coast Indian. *Museum and Art Notes* 7, supplement 3.

Kirk, Ron

1970 *The Oldest Man in America*. Harcourt, Brace, Jovanovich, New York.

Krantz, Grover S.

1960 Description of the Human Skeletal Remains from the Karlo Site. In *The Archaeology of the Karlo Site (Las-7), California*, edited by F. Riddell. *Reports of the University of California Archaeological Survey*, No. 53.

1969 Examination of Human Skeletal Remains. In *Emergency Salvage Excavations for the Recovery of Early Human Remains and Related Scientific Materials from the Marmes Rockshelter Archaeological Site, Southeastern Washington, May 3 - December 15, 1968*, edited by R. Fryxell and B.C. Keel, pp. 51-53. Report to U. S. Army Corps of Engineers, Walla Walla District, Walla Walla. Laboratory of Anthropology, Washington State University, Pullman.

1979 Oldest Human Remains from the Marmes Site. *Northwest Anthropological Research Notes* 13(2):159-174.

Kreiger, Herbert W.

1927 *Archaeological Investigations in the Columbia River Valley*. Smithsonian Institution, Miscellaneous Collections 7(7):187-199. Washington, D.C.

1928a A Prehistoric Pit House Village Site on the Columbia River at Wahluke, Grant County, Washington. *U.S. National Museum, Proceedings* 73:27-32.

1928b Prehistoric Inhabitants of the Columbia River Valley. *Explorations and Fieldwork of the Smithsonian Institution in 1927*, pp. 133-140. Washington, D.C.

Larrabee, Edward McM., and Susan Kardas

1966 Archaeological Survey of Grand Coulee Dam National Recreation Area Part I: Lincoln County Above Normal Pool. *Washington State University, Laboratory of Anthropology, Report of Investigations*, No. 38. Pullman.

Larsen, C. S.

DOI 10372

1987 Bioarchaeological Interpretations of Subsistence Economy and Behavior from Human Skeletal Remains. In *Advances in Archaeological Method and Theory*, edited by M. B. Schiffer, pp. 339-445. Academic Press, New York.

Laughlin, William S.

1941 Excavations in the Calapuya Mounds of the Willamette Valley, Oregon. *American Antiquity* 7:147-155.

1950 Tests for the Presence of Blood Group Substances in Skeleton 11-128. *Proceedings of the American Philosophical Society* 94(4):387-389.

1956 Human Skeletal remains from Kawumkan Springs Midden in Klamath Prehistory. *Transactions of the American Philosophical Society* 45(4):475-480. (on microfilm)

Laughlin, W. S., and A. B. Harper

1988 Peopling of the Continents: Australia and America. In *Biological Aspects of Human Migration*, edited by C. G. N. Mascie-Taylor and G. W. Lasker. *Cambridge Studies in Biological Anthropology* 2:14-40. Cambridge.

Lazenby, Richard, and Jean McKendry

1984 Results of Analysis of Human Skeletal Remains, EeR1-192. In *Archaeological Salvage and Monitoring Proceedings at Site EeR1-192*, edited by B. Wiggen. Report prepared for Heritage Conservation Branch, Victoria.

Leatherman, Kenneth E., and Alex D. Krieger

1940 Contributions to Oregon Coast Prehistory. *American Antiquity* 6(1):19-28.

Leechman, Douglas

1934 Dental Caries in Prehistoric Canadian Skulls. *Dominion Dental Journal*.

Legler, W.C.

1977 *Description, Analysis, and Origins of Crania from the Catalina Island Museum Society Collection*. Unpublished Master's thesis, California State University, Long Beach.

Leigh, R.W.

1925 Dental Pathology of Indian Tribes of Varied Environmental and Food Conditions. *American Journal of Physical Anthropology* 8(2):179-199.

1928 Dental Pathology of Aboriginal California. *University of California Publications in American Archaeology and Ethnology*, Vol. 23(10). Berkeley.

Lenkeit, D.

1970 *An Analysis of Dental Variation in Several Northern California Aboriginal Populations*. Master's thesis, San Francisco State University, San Francisco.

Leonhardy, Frank C., and David G. Rice

1970 A Proposed Typology for the Lower Snake River Region, Southeastern Washington. *Northwest Anthropological Research Notes* 4(1):1-29.

Leonhardy, Frank C., Bruce D. Cochran, and Raymond Carino

1987 An Analysis of Two Disturbed Ancestral Nez Perce Burials from the Cottonwood Creek Burial Site, 10-NP-182, Hells Canyon National Recreation

Area, Idaho. *Letter Report*, No. 87-2, Alfred W. Bowers Laboratory of Anthropology, University of Idaho, Moscow.

- Li, Yongyi, C. Loring Brace, Gao Qiang, and David P. Tracer
1991 Dimensions of Face in Asia in the Perspective of Geography and Prehistory. *American Journal of Physical Anthropology* 85:269-279.
- Littlewood, R.A.
1960 An Analysis of Skeletal Materials from the Zuma Creek Site (LAN-174). *Archaeological Survey Annual Report*, 1959-1960. University of California, Los Angeles.
- Lovell, Nancy C., Brian S. Chisholm, D. Erle Nelson, and Henry P. Schwarcz
1986 Prehistoric Salmon Consumption in Interior British Columbia. *Canadian Journal of Archaeology* 10:99-106.
- Lovvorn M.B., G.W. Gill, G.F. Carlson, J.R. Bozell, and T.L. Steinacher
1999. Microevolution and the Skeletal Traits of a Middle Archaic Burial: Metric and Multivariate Comparison to Paleoindians and Modern Amerindians. *American Antiquity* 64:527-545.
- Lynch, Alice J.
1976 An Archaeological Test of an Aboriginal Burial Site Near Richland, Washington. *Anthropological Research Manuscript Series* 28. University of Idaho, Moscow.

1977 *The Effects of Environmental Stress upon the Dentition of the Indians of the Southern Plateau of Northwestern North America*. Unpublished Master's thesis, University of Idaho, Moscow.
- Lynch, Thomas F., Kent S. Wilkinson, and Claude N. Warren
1965 Archaeological Investigations at Bruces Eddy. *Tebiwa* 8(2):33-56.
- Mackey, J.
1977 A Multivariate, Osteological Approach to Towa Culture History. *American Journal of Physical Anthropology* 46:477-482.
- Macleod, William C.
1925 Certain Mortuary Aspects of Northwest Culture. *American Anthropologist* 27:122-148.
- Mallory, Oscar L.
1961 An Archaeological Survey of Pacific Gas Transmission Company's Alberta to California Pipeline System: MP 108.0 to MP 722.0. *Washington State University, Laboratory of Anthropology, Report of Investigations*, No. 12. Pullman.

1962 Continued Archaeological Appraisal of the Lower Grand Coulee, Central Washington. *Washington State University, Laboratory of Anthropology, Report of Investigations*, No. 14. Pullman.
- Matson, G. Albin
1938 Blood Groups and Ageusia in Indians of Montana and Alberta. *American Journal of Physical Anthropology* 24(1):81-89.
- McClure, R.H., Jr.
1984 *Cultural Implications of Prehistoric Plateau Burial Practices*. Ms. in

possession of author.

McKendry, Jean, and Mark Skinner

1981 *Archaeological Skeletal Remains, H. Robinson Residence, Goloff Point, Brilliant B.C.* Unpublished report submitted to the British Columbia Heritage Conservation Branch, Victoria.

McLeod, Ann, and Mark Skinner

1987 *Analysis of Burial 86-6 from the Fountain Creek Site (EeR1 19), near Lillooet.* Unpublished report prepared for the Heritage Conservation Branch, Victoria.

McLeod, Lloyd

1958 Correlation of the Big Leap and Maybe Sites. *Screenings* 7(10).

Merriwether, D.A., F. Rothhammer, and R.E. Ferrell

1995 Distribution of the Four Founding Lineage Haplotypes in Native Americans Suggests a Single Wave of Migration for the New World. *American Journal of Physical Anthropology* 98:411-430.

Mierendorf, Robert R.

1983 Description of the Sites Tested. In *Cultural Resources of the Rocky Reach of the Columbia River*, edited by Randall F. Schalk and Robert R. Mierendorf. *Center for Northwest Anthropology Project Report Number 1*. Pullman.

Miller, Tom O., Jr.

1954 Four burials from the Coeur d'Alene Region, Idaho. *American Antiquity* 19:389-390.

Minor, Rick

1991 Yaquina Head: A Middle Archaic Settlement on the North-Central Oregon Coast. *Cultural Resource Series* No. 6. Bureau of Land Management, Portland.

Minor, Rick, and Brian E. Hemphill

1989 Archaeological Assessment of the Crates Point Site (35WS221), Wasco County, Oregon. Report to Portland District U.S. Army Corp of Engineers, Contract DACW57-89-D-0026-0006. *Heritage Research Associates Report* No. 90, Eugene.

Minor, Rick, Kathryn Anne Toepel, and Ruth Greenspan

1987 Archaeological Investigations at Yaquina Head, Central Oregon Coast. *Cultural Resource Series* No. 1. Bureau of Land Management, Portland.

Mohs, Gordon

1977 *Arrow Lakes Reservoir Region Post Inundation Studies of the Archaeological Resource.* British Columbia Archaeological Sites Advisory Board, Victoria.

Morton, Samuel G.

1839 *Crania Americana; or a Comparative View of the Various Aboriginal Nations of North and South America.* Simpkin, Marshall, and Company, London.

Mulinski, Thomas M. J.

1977 Human Skeletal Material from the Northern Lake Roosevelt Area,

Washington. In *Kettle Falls 1972: Salvage Excavations in Lake Roosevelt*, by David H. Chance, Jennifer V. Chance, and John L. Fagan, pp. 209-238. *University of Idaho Anthropological Research Manuscript Series*, No. 31. Moscow.

Murillo, Saul

1979 *Some Causes of Dental Wear on the Dentition of the Aboriginal Plateau Populations of the Northwestern United States*. Unpublished Master's thesis, University of Idaho, Moscow.

Nance, Charles

1966 *45WT2: An Archaeological Site on the Lower Snake River*. Unpublished Master's thesis, Washington State University, Pullman.

Nelson, Charles M., and David G. Rice

1969 *Archaeological Survey and Test, Asotin Dam Area, Southeastern Washington*. Report to National Park Service, San Francisco. Department of Anthropology, Washington State University, Pullman.

Neves, Walter, and Max Blum

2000 The Buhl Burial: A Comment on Green et al. *American Antiquity* 65(1):191-193.

Newman, Marshall T.

1950 *Indian Skeletal Material from the Berrian's Island Cists (45-BN-3), Lower McNary Reservoir, Wn.* U.S. National Museum, Washington, D.C.

1957 *Indian Skeletal Material from the Berrian's Island Cists (45BN3), Lower McNary Reservoir, Washington*. Appendix to *Excavations in the McNary Reservoir Basin near Umatilla, Oregon* by Douglas Osborne. Bureau of American Ethnology, River Basin Survey, Bulletin 166, No. 8. Washington, D.C.

Newman, R.W.

1949 Preliminary Report on the Skeletal Remains. In *The Archaeology of Central California: The Early Horizon* by R. F. Heizer. *University of California Anthropological Records*, Vol. 12.

1957 A Comparative Analysis of Prehistoric Skeletal Remains from the Lower Sacramento Valley. *Reports of the University of California Archaeological Survey*, No. 39. Berkeley.

Oetteking, B.

1930 Craniology of the North Pacific Coast. *Memoirs of the American Museum of Natural History*, Vol. 15, Part 1. New York.

Osborne, H. Douglas

1948 *An Appraisal of the Archeological Resources of the Ice Harbor, Lower Monumental, Little Goose and Lower Granite Reservoirs, Snake River, Washington*. Columbia Basin Project, River Basin Surveys, Smithsonian Institution, Eugene.

1957

Excavations in the McNary Reservoir Basin near Umatilla, Oregon. *Bureau of American Ethnology, River Basin Surveys*, Smithsonian Institution, Eugene.

Osborne, Douglas, Alan Bryan, and Robert H. Crabtree

1961 The Sheep Island Site and the Mid-Columbia Valley. *Bureau of American Ethnology, River Basin Survey, Bulletin 179*, No. 24. Washington, D.C.

Osborne, Douglas, and Robert H. Crabtree

1961 Two Sites in the Upper McNary Reservoir. *Tebiwa* 4(2): 19-36.

Osborne, Douglas, Robert Crabtree, and Alan Bryan

1952 Archaeological Investigations in the Chief Joseph Reservoir. *American Antiquity* 17(4):360-373.

Osborne, H.D., and J. L. Shiner

1950 *River Basin Surveys--State College of Washington Archaeological Excavations in the Lower McNary Reservoir, Oregon, 1949*. Columbia Basin Project, River Basin Surveys, Smithsonian Institution. (Mimeographed.)

1951 *The 1950 Excavations in Two McNary Sites, Washington and Oregon*. Columbia Basin Project, River Basin Surveys, Smithsonian Institution. (Mimeographed.)

Osmundson, John, and Christopher Hulse

1962 Preliminary Report on an Archaeological Survey of the Bruce's Eddy Reservoir, North-Central Idaho, 1961. *Tebiwa* 5(1):11-29.

Ossenberg, N.

1992 Native People of the American Northwest: Population History from the Perspective of Skull Morphology. In *The Evolution and Dispersal of Modern Humans in Asia*, edited by T. Akazawa, K. Aoki, and T. Kimura, pp. 493-530, Hokusensha, Tokyo, Japan.

1994 Origins and Affinities of the Native Peoples of Northwestern North America: The Evidence of Cranial Non-Metric Traits. In *Method and Theory for Investigating the Peopling of the Americas*, edited by R. Bonnicksen and D. Steele. Peopling of the Americas Publications, Center for the Study of the First Americans, Oregon State University, Corvallis.

Parr, R.L., S. W. Carlyle, and D. O'Rourke

1996 Ancient DNA Analysis of Fremont Amerindians of the Great Salt Lake Wetlands. *American Journal of Physical Anthropology* 99:507-518.

Pavesic, Max G.

1985 Cache Blades and Turkey Tails: Piecing Together the Western Idaho Archaic Burial Complex. In *Stone Tool Analysis: Essays in Honor of Don E. Crabtree*, edited by M. G. Plew, J. C. Woods, and M. G. Pavesic, pp. 55-90. University of New Mexico Press, Albuquerque.

1992 Death and Dying in the Western Idaho Archaic. In *Ancient Images, Ancient Thought: The Archaeology of Ideology*, edited by A. S. Goldsmith, S. Garvie, D. Selin, and J. Smith, pp. 289-293. Department of Archaeology, University of Calgary, Calgary.

Pavesic, Max G., and William Studebaker

1993 *Backtracking: Ancient Art of Southern Idaho*. Idaho Museum of Natural History, Pocatello.

Pavesic, Max G., Thomas F. Lynch, and Claude N. Warren

1963 *Archaeological Reconnaissance in Hells Canyon, 1963*. Pocatello.

1964 The Final Report of the Archaeological Reconnaissance at Hells Canyon on the Snake River Between Idaho and Oregon. Report on file, *Smithsonian Institution, River Basin Surveys*, Lincoln.

Perry, Jay

1939 Notes on a Type of Indian Burial Found in the Mid-Columbia River District of Central Washington. *New Mexico Anthropologist* 3(6): 80-82. Reprinted 1959 in *Screenings* 8(9).

Phillips, Iven E.

1973 A Summerland Indian Burial Story. *37th Annual Report of the Okanagan Historical Society*, pp. 79-80. Vernon.

Pokotylo, David L., Marian E. Binkley, and A. Joanne Curtin

1987 The Cache Creek Burial Site (EdRh 1), British Columbia. *Contributions to Human History (Royal British Columbia Museum)* 1:1-14.

Powell, J.F., and W.A. Neves

1999 New Craniofacial and Dental Perspectives on Native American Origins. *Yearbook of Physical Anthropology* 42:153-188.

Powell, J.F., and J.C. Rose

1999 Report on the Osteological Assessment of the "Kennewick Man" Skeleton (CENWW.97). Report submitted to the National Park Service, U.S. Department of the Interior, Washington, D.C.

Pullen, Myrick W., III

1970 *Numerical Analysis of a Palus Burial Site*. Master's thesis, University of Idaho, Moscow.

Randolph, Joseph E., and Keo Boreson

1975 *Archaeological Site and Burial Survey River Mile 115-120, Lower Granite Project*. Report to U. S. Army Corps of Engineers, Walla Walla District, Walla Walla. Washington Archaeological Research Center, Pullman.

Reagan, Michael J., Bruce Womack, and Robert Nesbitt

1981 *Proposal for Mitigation for Adverse Effects on the Court House Ranch Rock Cairn Site, USDA Forest Service, Region 6, Pacific Northwest, Wallowa-Whitman National Forest*. Enterprise, Oregon.

Remsburg, Geo. J., editor

1912 The Round Table. *Archaeological Bulletin* 3(3):88-90.

Rice, David G.

1968 Archaeological Investigations in the Coulee Dam National Recreation Area, Spring 1968. *Washington State University, Laboratory of Anthropology, Report of Investigations*, No. 45. Pullman.

1969 *Preliminary Report, Marmes Rockshelter Archaeological Site, Southern Columbia Plateau*. Reported submitted to the National Park Service by Laboratory of Anthropology, Washington State University, Pullman.

1978a Summary and Findings of Archaeological Burial Relocation Work at Old Umatilla, Oregon. In *An Archaeological Burial Relocation at Old Umatilla, Oregon*, edited by D. G. Rice, pp. 20-72. Laboratory of Anthropology, University of Idaho, Moscow.

1978b Reburial of Ancestral Skeletal Remains from Old Umatilla, Oregon. In *An Archaeological Burial Relocation at Old Umatilla, Oregon*, edited by D.G. Rice, pp. 94-102. Laboratory of Anthropology, University of Idaho, Moscow.

1978c *Removal and Reinternment (sic) of Indian Burials from Old Umatilla Townsite, John Day Project*. Laboratory of Anthropology, University of Idaho, Moscow.

1987 *Resource Protection Planning Process, Paleoindian Study Unit*. Office of Archaeology and Historic Preservation, Seattle, Washington.

Rice, Harvey S., and John A. Ross

1980 Cultural Resource Survey of the Southern and Eastern Boundaries of the Spokane Indian Reservation. Washington Archaeological Research Center, *Project Report*, No. 101. Pullman.

Richards, Thomas

1976 *Salvage Excavation of a Historic Cairn Burial Site, EeRt169, near Lillooet, British Columbia*. Unpublished report submitted to the British Columbia Heritage Conservation Branch, Victoria.

1988 A Burial Cairn near Lillooet. *The Midden* 20(4):3-5.

Rodeffer, Michael J.

1973 A Classification of Burials in the Lower Snake River Region. *Northwest Anthropological Research Notes* 7(1):101-131.

Rodeffer, Michael J.

1973a A Classification of Burials in the Lower Snake River Region. *Northwest Anthropological Research Notes* 7(1): 101-131.

1973b The Nez Perce Grave Removal Project 1972. *University of Idaho Anthropological Research Manuscript Series*, No. 8. Moscow.

1973c *The Nez Perce Grave Removal Project, 1972*. Report submitted to the U.S. Army Corps of Engineers, Moscow.

Rodeffer, Michael J., and Stephanie Holschlag Rodeffer, with Roderick Sprague

1972 Nez Perce Grave Removal Project: A Preliminary Report. *University of Idaho Anthropological Research Manuscript Series*, No. 5. Moscow.

Rodeffer, Michael J., and Stephanie Holschlag Rodeffer

1972 *The Nez Perce Grave Removal Project: A Preliminary Report*. Report submitted to the U.S. Army Corps of Engineers, Moscow.

Roll, Thomas C.

1971 *Archaeological Salvage of the Alpowa Creek Burial Site (45-AS-8)*. Report to Washington State Highway Commission, Olympia. Laboratory of Anthropology, Washington State University, Pullman.

Ross, Lester A.

1969 *Archaeological Investigations in the Coulee Dam National Recreation Area, Spring 1969*. Report submitted to National Park Service by Laboratory of Anthropology, Washington State University, Pullman.

Rousseau, Eunice, and Mike K. Rousseau

1978 *Burials from Site EiRn 15, Canoe Creek, B.C.* Report prepared for British Columbia Heritage Conservation Branch, Victoria.

Sandusky, S.

1970 *An Analysis of Prehistoric Skeletal Remains from the Ryan Site (Ala-329)*. Senior Honors thesis, Stanford University.

Sanger, David

1968a *The Chase Burial Site, EeQw1. Contributions to Anthropology 6: Archaeology and Physical Anthropology*, National Museums of Canada, Ottawa.

1968b *The Texas Creek Burial Site Assemblage, British Columbia*. Anthropology Papers National Museum of Canada.

1970 *The Archaeology of the Lochnore-Nesikep Locality, British Columbia. Syesis 3.*

Sappington, Robert Lee, and Caroline Carley

1983 *Results of Archaeological Test Excavation along the Clearwater River, North Central Idaho*. Report to Idaho Transportation Department, Boise. Laboratory of Anthropology, University of Idaho, Moscow.

1985 *Report of Excavations on U.S. 12 along the Lochsa River, North-Central Idaho*. Report to Idaho Transportation Department. Alfred W. Bowers Laboratory of Anthropology, University of Idaho, Moscow.

1987 *Archaeological Investigations at the Kooskia Bridge Site (10-IH-1395), Middle Fork, Clearwater River, North Central Idaho. University of Idaho Anthropological Reports, No. 87.* Moscow.

1989 *Archaeological Investigations at the Beaver Flat and Pete King Creek Sites, Lochsa River, North Central Idaho. University of Idaho Anthropological Reports, No. 89.* Moscow.

Sarbescu, Sam W.

ca. 1955. *The Northwest Coast and Plateau Mortuary Complex and its Cultural Background*. Unpublished Master's thesis, Indiana University, Bloomington.

Schanfield, M.S.

1992 *Immunoglobulin Allotypes (GM and KM) Indicate Multiple Founding Populations of Native Americans: Evidence of at Least Four Migrations to the New World. Human Biology 64(3):381-402.*

Schell L.M., and B.S. Blumberg

1988 *Alloalbuminemia and the Migration of Native Americans. Yearbook of Physical Anthropology 31:1-14.*

Schulting, Rick J.

1992 *Preservation of Soft Tissues by Copper in the Interior Plateau of British Columbia, Canada*. Paper presented at the First International Congress on Mummy Studies, Puerto de la Cruz, Tenerife.

1993 *A Preliminary Report on the Harlan I. Smith and James A. Teit Human Skeletal Collections in the American Museum of Natural History*. Ms., Department of Archaeology, Simon Fraser University, Burnaby.

1994 *An Investigation of Mortuary Variability and Socioeconomic Status Differentiation on the Northwest Plateau*. Master's thesis in Archaeology, Simon Fraser University, Burnaby.

1995 *Mortuary Variability and Status Differentiation on the Columbia-Fraser Plateau*. Simon Fraser University, Burnaby.

Seachord, Daniel

1985 The DeMoss Site, 10-AM-193. *Alfred W. Bowers Laboratory of Anthropology, University of Idaho, Letter Report*, No. 85-26. Moscow.

Sendey, John

1972 *Preliminary Report of Excavations at Site EfQu3, Shuswap Lake Provincial Park*. Report prepared for Heritage Conservation Branch, Victoria.

Sheppard, John D. , Peter Igard, Carl E. Gustafson, and Meyer Rubin

1987 A Reevaluation of the Marmes Rockshelter Radiocarbon Chronology. *American Antiquity* 52(1):118-125.

Shields, G. F., A.m. Schmiechen, B.L. Frazier, A. Redd, M.I. Voevoda, J.K. Reed and R.H. Ward

1993 mtDNA Sequences Suggest a Recent Evolutionary Divergence for Beringian and Northern North American Populations. *American Journal of Human Genetics* 53:549-562.

Shiner, Joel L.

1950 *An Appraisal of the Archaeological Resources of the John Day Reservoir on the Columbia River, Oregon and Washington*. Columbia Basin Project, River Basin Surveys, Smithsonian Institution. (Mimeographed.)

1951a *Hobo Cave: A Stratified Site on the Columbia River*. Ms., University of Oregon.

1951b *The Excavations at Site 35-UM-5 in the McNary Reservoir, Oregon*. Columbia Basin Project, River Basin Surveys, Smithsonian Institution. (Mimeographed.)

1951c *An Appraisal of the Archaeological Resources of Hells Canyon Reservoir, Oregon and Idaho*. Columbia Basin Project, River Basin Surveys, Smithsonian Institution, Eugene.

1952a *A Preliminary Report on the Archaeology of Site 45-WW-6 on the Columbia River, Washington*. Columbia Basin Project, River Basin Surveys, Smithsonian Institution. (Mimeographed.)

1952b The 1950 Excavations at Site 45-BN-6, McNary Reservoir, Washington. *American Antiquity* 17(4).

1953 *Excavations at Site 35-WS-5 on the Columbia River, Oregon*. Columbia River Basin Project, River Basin Surveys, Smithsonian Institution. (Mimeographed.)

ca. 1954 *The McNary Reservoir, a Study in Plateau Archaeology*. Unpublished Ph.D. dissertation, University of Arizona, Tucson.

Shumate, Erin, and Steven Hackenberger

2000 *Bioarchaeology and Osteological Analysis of the Middle Columbia River*. Paper presented at the 53rd Annual Northwest Anthropological Conference, Spokane, Washington.

Simms, Stephen

1973 The Flat-Headed Indians. *Journal of the Royal Anthropological Institute* 3(3):326-328.

Simonsen, Bjorn

1984a Results of an Investigation of Human Burial Remains from the BC Hydro Seton Generating Station, Lillooet, B.C. Appendix 1 in *Archaeological Salvage and Monitoring Procedures at site EeR1192: Seton Generating Substation Project*. Unpublished report submitted to the British Columbia Heritage Conservation Branch, Victoria.

1984b Parts IV and V: Radiocarbon Age Estimates, Seton Substation, Lillooet, B.C. In *Archaeological Salvage and Monitoring Procedures at site EeR1192: Seton Generating Substation Project*. Unpublished report submitted to the British Columbia Heritage Conservation Branch, Victoria.

Simpson, Ruth D.

1948 Indian Burials Excavated at McNary Dam Site. *The Masterkey* 22(6):194.

Skinner, Mark, and Stan Copp

1986 *The Nicoamen River Burial Site (EbRi 7), near Lytton, British Columbia*. Report prepared for Heritage Conservation Branch, Victoria.

Skinner, Mark, and Ron Thacker

1988 *Analysis of Human Skeletal Remains at Mueller Cabin Burial (DgRw20), Gabriola Island*. Unpublished report submitted to the British Columbia Archaeology and Outdoor Recreation Branch, Victoria.

Smith, Harlan I.

1899 Archaeology of Lytton, British Columbia. *Memoirs of the American Museum of Natural History* 2(3):129-161.

1900 Archaeology of the Thompson River Region, British Columbia. *Memoirs of the American Museum of Natural History* 2(6):401-454.

1910 Archeology of the Yakima Valley. *American Museum of Natural History, Anthropological Papers*, Vol. 6, No. 1. New York.

1924 Trephined Aboriginal Skulls from British Columbia and Washington. *American Journal of Physical Anthropology* 7(4):447-452.

Smith, Harlan I., and Gerard Fowke

1901 Cairns of British Columbia and Washington. In *The Jessup North Pacific Expedition. Memoirs of the American Museum of Natural History* 2(2):55-85.

Spinden, Herbert Joseph

1908 The Nez Perce Indians. *Memoirs of the American Anthropological Association* 9 (originally Vol. 2, Part 3):165-274.

Sprague, Roderick

1959 *A Comparative Cultural Analysis of an Indian Burial Site in Southeast*

Washington. Master's thesis, Washington State University, Pullman.

1960 Burial Patterns of the Lower Snake River. In *Archaeological Excavations in the Ice Harbor Reservoir, 1959: Progress Report*, by Richard D. Daugherty, pp. 4-10. Washington State University, Laboratory of Anthropology, Report of Investigations, No. 3. Pullman.

1965 *Almota Ferry Road Mounds*. Letter report to U. S. Army Corps of Engineers, Walla Walla District, Walla Walla. Laboratory of Anthropology, Washington State University, Pullman.

1965 The Descriptive Archaeology of the Palus Burial Site, Lyons Ferry, Washington. *Washington State University, Laboratory of Anthropology, Report of Investigations*, No. 32. Pullman.

1967 *Aboriginal Burial Practices in the Plateau Region of North America*. Ph.D. dissertation, University of Arizona, Tucson. University Microfilms, Ann Arbor.

1968 A Suggested Terminology and Classification for Burial Description. *American Antiquity* 33(4):479-485.

1971a Annotated Bibliography of Lake Roosevelt Archaeology. *Washington Archaeologist* 15(1):2-24.

1971b Burial Pattern Relationships between the Columbia and Canadian Plateaus. In *Aboriginal Man and Environments on the Plateau of Northwest America*, edited by A. H. Stryd and R. A. Smith, pp. 183-196. Students' Press, Calgary.

1978 Nez Perce Grave Recovery, Lower Granite Dam Reservoir 1973-78. *University of Idaho Anthropological Research Manuscript Series*, No. 47. Moscow.

1993 American Indian Burial and Repatriation on the Southern Plateau with Special Reference to Northern Idaho. *Idaho Archaeologist* 16(2):3-15.

Sprague, R., and J. Miller

1979 Chief Joseph Dam Ancestral Burial Relocation Survey, Rufus Woods Lake, Washington. *University of Idaho Anthropological Research Manuscript Series* 51. Moscow.

Sprague, R., and W. H. Birkby

1970 Miscellaneous Columbia Plateau burials. *Tebiwa* 13(1):1-32.

Sprague, Roderick, and Daniel Seachord

1985 The DeMoss Site (10-AM-193). Alfred W. Bowers Laboratory of Anthropology, University of Idaho, *Letter Report*, No. 85-26. Moscow.

Sprague, Roderick, and T. M. J. Mulinski

1980 Ancestral Burial Relocation, Chief Joseph Reservoir, 1979. *University of Idaho Anthropological Research Manuscript Series*, No. 63. Moscow.

Stallard, Bruce

1958 Preliminary Surveys for Highway Salvage in the State of Washington: A Final Report. Washington State University, Laboratory of Anthropology, *Report of Investigations* No. 2. Pullman.

- Stapp, Darby
1984 *Late Protohistoric Burials with Copper Artifacts in the Pacific Northwest*. Master's thesis, University of Idaho, Moscow.
- Steele, Harvey
1984 The Marthaller Site. *Oregon Archaeological Society Report No. 9*.
- Steen, John Carl
1974 *Utilization of Thin Sections of Exhumed Human Teeth for Paleopathological Investigation*. Ph.D. dissertation, University of Oregon, Eugene.
- Stepp, David
1984 *Descriptive Analysis of Human Remains from the Fuller and Fanning Mounds, Yamhill River, Willamette Valley, Oregon*. Unpublished Master's thesis, Department of Anthropology, Oregon State University, Corvallis.
- Stewart, T. D.
1941 Skeletal Remains from the Buena Vista Sites, California. In *Archaeological Investigations at Buena Vista Lake, Kern County, California*. *Bulletin of the Bureau of American Ethnology* 130:172-187.

1950 Report on Skeleton from Butte Creek Cave, John Day River Region, Oregon. In *Archaeological Research in the John Day Region of North Central Oregon* by L. S. Cressman. *Proceedings of the American Philosophical Society* 94(4):385-387.
- Stijelia, Maryanne, and Todd Williams
1986 *An Analysis of the Skeletal Remains of EiRm7*. Master's thesis, Department of Archaeology, Simon Fraser University, Burnaby.
- Stone, A. C., and M. L. Stoneking
1993 Ancient DNA from a Pre-Columbian Amerindian Population. *American Journal of Physical Anthropology* 92:463-471.
- Strong, Emory
1958 Evidence of the Atlatl in the Pacific Northwest. *Screenings* 7(4).

1959 Cremation on the Columbia. *Screenings* 8(1).

1959b Wakemap Mound and Nearby Sites on the Long Narrows of the Columbia River. *Oregon Archaeological Society Publication 1*.

1960 Report on a trip to the Great Basin Desert of Southern Oregon. *Screenings* 9(11).
- Strong, William Duncan, W. Egbert Schenck, and Julian H. Steward
1930 Archaeology of the Dalles-Deschutes Region. *University of California Publications in American Archaeology and Ethnology*, Vol. 29(1). Berkeley.
- Stryd, Arnoud
1973 *The Later Prehistory of the Lillooet Area, British Columbia*. Ph.D. dissertation, Department of Archaeology, University of Calgary, Calgary.
- Styles, N.
1976 Preliminary Report on the Glenrose Burials. In *The Glenrose Cannery*

Site by R. G. Matson. *Archaeological Survey of Canada, Paper No. 52.*
Mercury Series, National Museum of Man, Ottawa.

Suchey, J.M.

1975 *Biological Distance of Prehistoric Central California Populations Derived from Non-metric Traits of the Cranium.* Ph.D. dissertation, University of California, Riverside.

Sumpter, Ian

1982 Analysis of Human Skeletal Remains and Associated Cultural Material from Site DjQj1, Vallican, B.C. Appendix in *Archaeological Investigations at the Vallican Site (DjQj1), Slocan Valley, Southeastern B.C.* by Gordon Mohs. Unpublished report submitted to the British Columbia Heritage Conservation Branch, Victoria.

Swanson, Earl H.

ca. 1956. *Archaeological Studies in the Vantage Region of the Columbia Plateau, Northwest America.* Unpublished Ph.D. dissertation, University of Washington, Seattle.

Szathmary, Eموke

1979 Blood Groups of Siberians, Eskimos, Subartic and Northwest Coast Indians: The Problem of Origin and Genetic Relationships. In *The First Americans: Origins, Affinities, and Adaptations*, edited by W. S. Laughlin and A. B. Harper, pp. 185-209. Gustav Fischer, New York.

Szathmary, E., and N. Ossenberg

1978 Are the Biological Differences between North American Indians and Eskimos Truly Profound? *Current Anthropology* 19:673-701.

1993 mtDNA and the Peopling of the Americas. *American Journal of Human Genetics* 53:793-799.

Tasa, Guy L.

1992 *Human Cremation from the Island Campground Site (35DO422), Douglas County, Oregon.* Oregon State Museum of Anthropology, University of Oregon, OSMA Report 92-1. Eugene.

1997 *Cranial and Dental Variation of Pacific Coast Athapaskans: Implications for Southwestern Oregon Prehistory and Peopling of the New World.* Unpublished Ph.D. dissertation, Department of Anthropology, University of Oregon, Eugene.

Taylor, R. E., D. Kirner, J. Southon, and J. C. Chatters

1998 Radiocarbon Dates of Kennewick Man. *Science* 280:1171-1172.

Torrioni, A., T.G. Schurr, M.F. Cabell, M.D. Brown, J.V. Neet, M. Larsen, D.G. Smith, C.M. Vullo, and D.C. Wallace

1993a Asian Affinities and Continental Radiation of the Four Founding Native American mtDNAs. *American Journal of Human Genetics* 53:563-550.

1993b mtDNA Variation of Aboriginal Siberians reveals Distinct Genetic Affinities with Native Americans. *American Journal of Human Genetics* 53:591-608.

Toups, Polly A.

1969 *The Early Prehistory of the Clearwater Valley, North-Central Idaho.*

Ph.D. dissertation, Tulane University, New Orleans.

n.d. Arrow Beach Site Report. Ms., Idaho State University, Pocatello.

Turner, C.

1983 Dental Evidence for the Peopling of the Americas. In *Early Man in the New World*, edited by R. Shutler Jr., pp. 147-157. Sage Publications, Beverly Hills.

1985 The Dental Search for the Native American Origins. In *Out of Asia: Peopling of the Americas and the Pacific*, edited by R. Kirk and E. Szathmary, pp. 31-78. *Journal of Pacific History*, Canberra.

1986 The First Americans: The Dental Evidence. *National Geographic Explorer* 2: 37-46.

1990 Major Features of Sundadonty and Sinodonty, Including Suggestions about East Asian Microevolution, Population History, and Late Pleistocene Relationships with Australian Aboriginals. *American Journal of Physical Anthropology* 82:29-317.

Tyler, Donald E., and Roderick Sprague

1989 Pig Farm Bone. Alfred W. Bowers Laboratory of Anthropology, University of Idaho, *Letter Report*, No. 89-16. Moscow.

Utermohle, C. J., and C. F. Merbs

1979 Population affinities of Thule Culture Eskimos in Northwest Hudson Bay. In *Thule Eskimo Culture: An Anthropological Retrospective*, edited by A.P. McCartney, pp. 435-447. Mercury Series Paper, No. 88, National Museums of Canada, Ottawa.

Virchow, Rudolf

1892 Auserlesener Amerikanischer Schadeltypen. In *Crania Ethnica Americana*. Verlag Von A. Asher and Co., Berlin.

Warren, Claude N.

1959 *Wenas Creek: A Stratified Site on the Yakima River*. Unpublished Master's thesis, Department of Anthropology, University of Washington, Seattle.

Warren, Claude N., and Robert Fitzwater

1963 *Archaeological Survey of the Nez Perce Region--White Bird Hill, Idaho*. Report on file, Pacific Northwest Regional Office, National Park Service, Seattle.

Warren, Claude N., Robert M. Yohe, II, and Max G. Pavesic

1999 *The Archaeology of the McGraw Creek Site (35-WA-1), Hells Canyon, Oregon*. Idaho State Historical Society Special Publication.

Weatherford, Claudine

1971 *Trade Bells of the Southern Plateau: Their Use and Occurrence through Time*. Unpublished Master's thesis, Washington State University, Pullman.

1980 Trade Bells of the Southern Plateau: Their Use and Occurrence through Time. *Northwest Anthropological Research Notes* 14(1):20-84.

- Wegars, Priscilla, Roderick Sprague, and Thomas Mulinski
1983 Miscellaneous Burial Recovery in Eastern Washington, 1981.
University of Idaho Anthropological Research Manuscript Series, No. 76.
Moscow.
- White, G. Melton
1962 *Comparative Analysis of Indian Skeletal Material from the Columbia Plateau of Washington*. Master's thesis, Washington State University, Pullman.
- Whitehead, J.M.
1968 *The Physical Anthropology of the Yuki Indians*. Ph.D. dissertation, University of California, Berkeley.
- Williams, R.C, A.G. Steinberg, H. Gerschwitz, P.H. Bennett, W.C. Knowler, D.J. Pettit, and J.J. Butler
1985 Gm-Allotypes in Native Americans: Evidence for Three Distinct Migrations Across the Bering Land Bridge. *American Journal of Physical Anthropology* 66:1-19.
- Wilson, Robert L.
1972 *Report on Brocklehurst Burial Site, EeRc8, Kamloops, B.C.*
Unpublished report submitted to the Archaeological Sites Advisory Board of British Columbia, Victoria.
- Woodward J., and D. Archibald
1975 An Unusual Historic Indian Burial from the Salmon River Estuary, Lincoln Co., Oregon. *Northwest Anthropological Research Notes* 9:27-31.
- Yohe, Robert
2000 Personal communication with the author.
- Yohe, Robert M. II, and Max G. Pavesic
2000 Early Archaic Dogs from Western Idaho, U.S.A. In *Dogs Through Time: An Archaeological Perspective*, edited by Susan Crockford. Archetype Press, London.
- Yohe, Robert, and Jessica St. Clair
1998 Descriptive Analyses of two Late Prehistoric Burials from Southwestern Idaho. *Journal of California and Great Basin Anthropology* 20(2):219-251.

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Kennewick Man

Cultural Affiliation Report

Chapter 5

Annotated Bibliography

Cultural Affiliation Study of the Kennewick Human Remains: Review of Bio-Archaeological Information

Steven Hackenberger Ph.D.
with contributions by
Lourdes Henebry-DeLeon and Erin M. Shumate

Annotated Bibliography

Skeletal Pathology of Prehistoric Human Remains from Crescent Beach

Owen Beattie, 1976

This midden site is located fifteen miles south of Vancouver, British Columbia, Canada. This report details the skeletal pathology of 18 burials. Three Crescent Beach phases (I, II, III) are represented in the burials. Crescent Beach I dates to 3400 B.C. to 1100 B.C., Crescent Beach II dates to 1100 B.C. to 400 B.C., and Crescent Beach III dates to 400 B.C. to AD 400. Table 1, Appendix 1, illustrates age, sex and cultural affiliation at Crescent Beach. Table 2, Appendix 1, show pathologies associated with individual burials.

Fourteen individuals were recorded as having at least one pathological condition. No deficiency diseases were recorded. One trephination was performed on an individual suffering from ankylosing spondylitis. Results show that the populations represented by the eighteen burials participated in a rigorous lifestyle, exemplified by arthritis and vertebral collapse, and that nutritional needs were met.

(Annotated by Erin M. Shumate)

Chetco Archaeology, A Report of the Lone Ranch Creek Shell Mound on the Gulf Coast of Southern Oregon

Joel V. Berreman, 1944

The Chetco were an Athapascan-speaking people who inhabited the Chetco Valley on the coast of southern Oregon (1944:7). The Lone Ranch Creek Mound is at the mouth of a small stream known as Lone Ranch Creek, about six miles north of Brookings. Twenty-three individuals were excavated during the first summer, and eleven during the second season. The burials are found in a variety of positions, orientations, mode of burials, and associated artifacts. All but one of the burials was a north-south orientation with the head to the north. The exception was oriented west-east with the head west. Eleven of the burials lay on their backs, legs extended, with arms usually at the side. One of the burials lay extended, face down. Ten were on their back, with their legs partly flexed. Twelve burials had associated

artifacts (1944:12). Berreman states that "pipes were found with two adult males. Head scratchers occurred only with females and further were more numerous with children. Beads of Olivella shells were found with both sexes and all ages. Abalone ornaments were found only with three males; Dentalia with two females and one male if sex identification is correct (1944:15)." Berreman describes the burials as "entirely pre-Caucasian, as not a single article of white man's culture, button, glass bead, or metal was found in any burial or surrounding shell layers."

There was evidence of redwood plank over the burial and possibly on the sides. In four burials, one or more boulders lay directly over the burial. The site had multiple burials and the disturbance of older burials by intrusive later ones.

Cranial measurements are in Tables 4a, 4b, and Table 5. Pathologies discussed include tympanic osteomata present in advanced form in two of the crania. In Burial No. 25 it has resulted in almost complete closure of the auditory meatus.

Berreman describes the burials as "entirely pre-Caucasian, as not a single article of white man's culture, button, glass bead, or metal (1944:15)."

(Annotated by Lourdes Henebry-DeLeon)

Disease and Demography in the Plateau

Robert Boyd, 1996

Draft of Chapter 28, In Burial Practices in the Plateau (Roderick Sprague)

The author analyzes Plateau disease and demography using historical accounts and burial records. Most of the burial evidence is gleaned from burial records at the University of Idaho Laboratory of Anthropology. Several bone abnormalities are considered markers of nutritional stress. These include Harris lines, enamel hypoplasias, porotic hyperostosis, osteoporosis, and cribra orbitalia. Harris Lines and porotic hyperostosis are not noted in osteological records of the Plateau, cribra orbitalia, osteoporosis, and enamel hypoplasias are recorded in many sites.

The most prevalent paleopathology evident in the sample of Plateau remains is osteoarthritis. Females were more often affected than males. The second most common paleopathology was periostitis, a minor bone infection. "Three familial conditions that effect bones and muscles have been identified for pre- and protohistoric Plateau sites" (1996:21). These conditions are ankylosing spondylitis, spondylosis, and spina bifida. Ankylosing spondylitis is an inflammation of the spine and subsequent ossification of the spine. Spondylosis is the bilateral separation of the neural arches in the lumbar vertebrae. Spina bifida is the exposure of the spinal cord or meninges.

"There were fifteen cases of bone tumors and osteomas in the Idaho collection these...tended to be sited in the head. Most were probably benign" (1996:22).

(Annotated by Erin M. Shumate)

The Rattlesnake Canyon Cremation Site

Robson Bonnicksen, 1964

The site located on the Snake River in southwestern Idaho, was excavated by the author before his admission into an archaeological program. Thus, information from the site is gleaned from incomplete field notes and artifact analysis.

The cremation pit, marked by a mound of talus rock, was "8-10 feet in length, 4 feet in width, an approximately 3 feet in depth, and contained two layers of cremated human remains and associated artifacts" (1964:28). The lower of the two layers contained the cremated remains of one individual. The artifact rich upper layer contained the cremated remains of at least five individuals. Six hundred fifteen artifacts of stone, bone, shell, copper artifacts, and basketry. Analysis of the two copper artifacts, associated with each layer, suggest European origin. The cremations at the site are protohistoric or early historic.

(Annotated by Erin M. Shumate)

The Burials at 45CH296, Chelan County, Washington

Keo Boreson, 1985

The remains of 13 individuals were recovered during excavation at 45CH296, a historic cemetery identified during activity related to Washington State Department of transportation project widening of SR 151 southeast of Chelan, Washington. Seven adults, one adolescent, four children, and one fetus were found. Seven of these individuals had characteristics suggesting an American Indian racial affiliation (1985:iv). Eight of the burials contain remnants of Euro-American clothing and personal items. Ten of the eleven coffins were oriented north-northeast parallel to the river, with the head upriver. The historic and ethnographic data do not provide an identity for the individuals buried at the cemetery (1985:8). All of the burials were contained within coffins, a term defined by Sprague (1967, 1984) as applying to a rough box made in imitation of the Euro-American type of container. Osteological analysis was done by Grover Krantz and cranial and postcranial measurements were taken (see Appendix 2 for metrical data.)

Burial 1 is an adult Indian female about 45 years old. The individual appears to have been killed by at least five strikes of a thin steel knife (1985:49). These strikes show as cuts in various vertebrae.

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver.
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition: The teeth were well worn. The left lower M1 and lower right I2 had apical abscesses. The upper right canine had caries.
- c. Culturally induced skeletal modification: The skull shows some artificial deformation on the occipital. The skull is clearly flattened asymmetrically and well to the right side. There is no evidence of corresponding frontal flattening (1985:48).
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators: Arthritic surfaces occur on many joint surfaces
- f. Taphonomy:

Burial 2 is most of a skeleton of a 2 ~ year old child.

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver.
- d. Funerary objects: Roman Catholic "miraculous medal."
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition: A trace of shoveling identified on the deciduous incisors. The right M1 showed no Carabelli cusp.
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy: A piece of green gum was found while excavating the matrix from the braincase. Rodent activity was apparent along the west side of the coffin(20).

Burial 3 is a skeleton of a five year old child. It is presumed by Krantz that this was an Indian child, but European mixture is possible (50).

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver.
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition: Permanent incisors were observed as well shoveled, and M1 shows no Carabelli cusp.
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 4 is a skeleton of a child who was about 3 or 4. The skeleton was probably of European or mixed Indian ancestry.

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver.
- d. Funerary objects: Roman Catholic "miraculous medal"
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition: There is slight shoveling on the incisors. The permanent M1 has a large Carabelli cusp.

- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 5 is the nearly complete skeleton of an adult male Indian who died at about 40 years of age.

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver.
- d. Funerary objects:
- e. Variation according to age and sex: NA

Skeletal Variation

- a. Skeletal Morphology: Indian traits are noted - malars flared and set forward, orbit orientation, tooth size, prognathism, and modest nasal bridge. The skull also shows excessive development of brow ridges (1985:57).
- b. Dentition: One upper incisor exhibits shoveling.
- c. Culturally induced skeletal modification: The skull shows a slight flattening on the occipital, somewhat left of center. The foramen magnum and surrounding areas are unusually highly placed. The occipital-mastoid crests are visible. Posterior condyloid foramina are present (1985:57).
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators: Arthritic damage is found on almost all vertebral articulations below cervical 3, except for thoracic 3. There is slight arthritic damage in the distal articulation of the radius and ulna.
- f. Taphonomy:

Burial 6a is a 50 year old, apparently Indian, male individual (1985:58).

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver.
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: The mid-sagittal sinus curves to join the left sigmoid sulcus, while most skulls have it joining the right (1985:58).
- b. Dentition: Some of the incisors indicate slight shoveling. The upper premolar had an abscess and cavity. The lower M3 had a major cavity.
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 6b consists of a few bones of an adult female of indeterminate racial type.

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 6c consists of one piece, the petrous part of a temporal bone. Age could not be determined, but the bone is much smaller than that of a newborn (1985:59).

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 7 is an adult male. It is an Indian. It is longheaded .

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: The individual is longheaded with a cranial index of 75.1. The right ulna is 5mm shorter than the left, and is strongly curved in the distal one-quarter.
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy: The lid had collapsed into the coffin.

Burial 8 is an infant skeleton and about half of a skull of a 1-year-old Indian.

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver.
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy: the lid of the coffin appeared to be collapsed into the box along the west side. The skull was crushed.

Burial 9 is a partial skeleton consisting mostly of the lower parts of the body. No cranial parts are included. The characteristics of the pelvis indicate a male. There is no direct evidence to suggest anything about racial affiliation (1985:60).

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver.
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 10 is only a few bones and a mass of hair-like material. A left humerus was identified.

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north-northeast parallel to the river, with the head upriver.
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:

- e. Skeletal disease indicators:
- f. Taphonomy: The burial was largely destroyed by the slumping east bank of the knoll.

Burial 11 is a skull and skeleton of an adult female Indian. She was about 40 to 50 years old.

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: north - upriver
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: There are two infra-orbital foramina on the left side.
- b. Dentition:
- c. Culturally induced skeletal modification: The right radius was broken and healed at an earlier age.
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators: The vertebrae from thoracic 5 to lumbar 1 have additional bone built up on the posterior-superior edges of the neural canals (1985:62).
- f. Taphonomy:

(Annotated by Lourdes Henebry-DeLeon)

Inventory and Assessment of Human Remains from Northeastern Washington and Northern Idaho in the National Museum of Natural History

Tamara Bray, Javier Urcid, and Gary Aronsen, 1994

Table 3 provides a list of remains (see Appendix 3).

A total of seven sets of remains in the Physical Anthropology collections of the NMNH were identified as having come from the northeastern Washington and northern Idaho. One additional set of remains from Montana identified in the accession records as a Spokane chief is also included in this report.

SI Cat. No. P0243447: In 1868, Dr. R.B. Hitz recovered a complete cranium in Montana. The skull of a male between the ages of 25 and 35 had been cleaned before its arrival to the museum. A healed depressed fracture was located on the left parietal. The identity of the remains, supplied by Dr. Hitz, is questionable. "It is possible that the Spokane may be able to ascertain the specific identity of this individual based on tribal records or oral history" (1994:27).

SI Cat. No. P0244096: "This is the complete cranium of a female between 25 and 30 years old" (1994:27). The skull "...supposed to be one of a Coeur d' Alene Indian" was recovered near Ft. Coeur d' Alene and subsequently transferred to the museum by Assistant Surgeon William Spencer (27). The maxillary dentition was lost post-mortem. Cradleboard deformation is evident. The cranium exhibits two pathologic conditions: a button osteoma on the frontal, and a healed lytic lesion on the parietal. It is suggested that this may be a shallow subsurface burial. "The minimal amount of information available for this set of remains does not contradict

the possibility that this individual was culturally affiliated with the Coeur d' Alene" (1994:28).

SI Cat. No. P0378144: Human remains were recovered "during construction activities on the Fort George Wright Military Reservation. They were located 6 inches to three feet below the surface in a gravel deposit. The skull is that of a male 35 to 45 years old. The condition of the skull suggests a subsurface burial. "Though there is no data available on the age of the burial, the sum of the evidence suggests that it is more likely than not to be culturally affiliated with the Spokane" (1994:30).

SI Cat No. P0378145: These sets of human remains were recovered under the same circumstances as SI Cat. No. P0378144. The remains of three individuals are catalogued under this number. Individual A, represented by cranial and mandibular fragments, is an adult male. Individual B, represented by skull, mandible, and tooth fragments, is a male. Individual C, represented by a deciduous tooth, is a child 6 to 8 years old. "Though there is no data available on the age of the burial, the sum of the evidence suggests that it is more likely than not to be culturally affiliated with the Spokane" (1994:31).

SI Cat. No. P0378146 : This set of the partial remains one or two individuals were obtained in the same manner as the two previous catalogue numbers. These postcranial elements may correspond with the cranial elements from the previous catalogue number. One of the individuals is male, based on femur robusticity. The other individual cannot be sexed. "Though there is no data available on the age of the burial, the sum of the evidence suggests that it is more likely than not to be culturally affiliated with the Spokane" (1994:32).

SI Cat. No. P0384748: The remains of an adult male over 55 years old were found when expanding the Greenwood cemetery in Spokane, Washington. No previous burials were indicated in that area of the cemetery. An abnormal bone growth on the distal right humerus is the only pathologic abnormality. It is suggested that these remains represent a Native American individual, and are culturally affiliated with the Spokane.

SI Cat. No. P0385063: A set of human remains was recovered a gravel pit near Lone, Washington. They were uncovered by a backhoe. "...the remains were encountered near the center of the gravel pit at a depth ranging from two to six feet below the surface" (1994:36). "This is an incomplete skeleton of a female individual between 18 and 20 years of age (1994:37). The individual was buried on the right side with the head oriented to the south. No grave goods were present. The condition of the remains suggest a sub-surface burial.

There is no evidence of pathologies, except for slight ectocranial porosis on the posterior aspect of the cranium, a protuberance without defined boundaries in the left mandibular foramen, and a degenerative lesion in the superior margin of the body of the second lumbar vertebra. This lesion is unusual considering the age of the individual (1994:37).

" ... it is not possible to specify the cultural origins of the remains in question on the basis of the available evidence" (1994:39).

SI Cat. No. P0385064: This individual was recovered at the same time, and under the same circumstances, as SI Cat. No. P0385063. " ... it is not possible to specify the cultural origins of the remains in question on the basis of the available evidence" (1994:41). "This is the nearly complete skeleton of an adolescent, probably male, between 12 and 16 years of age" (1994:39). The individual was buried with its head oriented to the north, and without any grave goods. The condition of the remains

suggest a sub-surface burial.

Metric observations are on file at the Smithsonian Repatriation Office.

(Annotated by Erin M. Shumate)

Inventory and Assessment of Human Remains and Funerary Objects from Northwestern Oregon in the National Museum of Natural History, case Report No. 91-010

Tamara Bray, Gary Aronsen, and Javier Urcid, 1996

Par-tee Site: This site is a shell midden deposit located on the bank of the Necanicum River near Seaside Oregon. The burial component of the site dates to AD 245-915, although there is evidence that some of the burials interred disturbed even earlier burials (1996:52). The national Museum of Natural History has been able to reconstruct that there was a minimum of 51 individuals in the SW corner of the site.

According to field information, the primary interment of the individuals consisted of a flexed burial in a pit. Body orientation was in the north/south direction, and head orientation was in every direction except west. Only two burials reportedly contained any artifacts: a bone bipoint and dentalium. No evidence suggests that there was difference in burial treatment according to age or sex. The Par-tee Site burial data is located in Appendix 4.

(Annotated by Erin M. Shumate)

Marmes Burial Casts

Gary S. Breschini, 1979

Breschini's (1979) report "The Marmes Burial Casts" describes the excavation and analysis of previously unexcavated Marmes Rockshelter (45FR50) burials stored in plaster casts in the Laboratory of Anthropology at Washington State University. Data are also presented concerning several Marmes burials excavated previously at the Laboratory of Anthropology. These burials have been dated at between 4000 and 8000 BP. Because of the fragmentary condition of many of the burials, thirteen were removed from the rockshelter in plaster casts for detailed laboratory excavation and analysis. Measurements were taken. While most of the skeletal material was too disintegrated for measurements, some bones were intact. Nonmetric analysis of the skeletal material was also attempted. The burials not encased in plaster are not described by Breschini (1979:111).

Because of the fragmented conditions of the skeletal material, very few measurements or non-metric observations could be made. The minimum number of individuals represented by the skeletal material on the 14 burial casts was difficult to determine. The estimate of at least 12 individuals seemed most likely. Of the 12 individuals, two tentatively were identified as males, and three as females. The sexes of the seven other individuals could not be determined. Six of the individuals probably were adults, over 20 years of age. One was an adolescent, two were children, and one reported to be an infant. The ages of two individuals could not be determined (1979:150).

The most common burial position for the primary interments appeared to consist of an east-west vertebral alignment, with the head oriented east and lying on its left side, and the body in a semi-flexed position. At least three of these burials also had

the orbits looking toward the south and a fourth burial (10) was most likely in this position. The one exception was Burial 7. In this case the orbits were looking northeast, and the vertebra was aligned NNW-SSE. Burial 3, which was probably a ceremonial reburial, had the head oriented east, and the long bones oriented in an east-west direction. Its orbits were looking toward the north, and the head was on its right side (1979:152).

In post pumicite time five of the seven primary or secondary burials were associated with large amounts of red ochre. Four of these were also associated with a large number of Olivella beads. The most common burial would include both olivella and red ochre (1979:155).

Only one of the post pumicite skeletons appeared not to have been buried. This was Burial 8, which was found scattered over much of two pits. Two pre-pumicite burials also appeared not to have been buried, and these three individuals might have died in the rockshelter and had no one to give them a ceremonial burial.

The rockshelter appears to have been used as a burial area between 6500 and 4000 years BP. Burial 1 probably dated somewhere in the area of 6700-7500 BP.

The physical anthropology yielded few conclusions because of the fragmentary nature of the skeletons. The age at death varied. There were four full adults, one young adult, one adolescent, two children and one infant. The adolescent appeared to have suffered from malnutrition, since the two epiphyseal fusions appear to have been delayed by as much as two years (1979:154). Supraorbital notches were found on the two skulls that had at least one supraorbital area intact. This might represent a genetic trait common to the people of the area.

Only one maxillary incisor was located which was sufficiently intact to determine the degree of shovel shape development. It was only slightly shoveled. The three incisors located in the flood plain excavation were all strongly shovel-shaped (1979:154).

One characteristic which may be distinctive between the late pre-pumicite and early pumicite inhabitants of the Marmes area is the extreme thickening of the frontal area that was present in three of the skulls from the rockshelter. A skull of some antiquity from the area of the Dalles was examined, and evidenced the same degree of frontal thickening as that of Burial 8 (1979:154).

The skull of Burial 8 was dolichocranial or hyperdolichocranial with a cranial index between 67 and 70. The skull from the Dalles area also was very longheaded with a cranial index of about 63.

Three skulls that were excavated from the flood plain deposits, and dated about 10,000 years BP, were determined to be roundheaded, with cranial indices of 80 or above. This difference implies either that there was no genetic relationship between the two populations, or that there was a change through time from roundheaded to longheaded (1979:154).

In summary, the physical anthropology yielded few conclusions because of a scant intact skeletal material. Only one cranial index could be obtained, and the presence of some individuals with thickened skull bones was noted. The most frequent ages of death seem to be the very young and the old. A slight degree of shoveling was noticed on one incisor, and in two cases supraorbital notches were noticed. No pathologies were noted (1979:155) [See Appendix 5].

Annotated Description of the Burial Cast material:

DOI 10398

Burial Casts - 45FR50

Burial 1 was not a burial, but an individual who died in the rockshelter and was covered with natural sedimentation. The individual was probably 35 years old and a male. Olivella shell beads and red ochre were found in the immediate area of the burial. A date of 6700-7500 BP has been assigned to the material.

Mortuary Practices

- a. burial setting: rockshelter
- b. mode of disposal: not buried
- c. orientation: W-E
- d. funerary objects: ochre; Olivella shells
- e. variations

Skeletal Variables:

- a. Skeletal morphology: thick skull (frontal bone 12mm); longheaded.
- b. Dentition: none
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: None
- e. Taphonomy: individual probably died in the rockshelter and was covered by natural sedimentation

Burial 2 was not a deliberate internment. It consists of a hand and other bone fragments identified as ribs and teeth. The body was later covered by natural sedimentation and Mazama ash. It is dated to 6000 BP.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: not buried
- c. Orientation: NA
- d. Funerary objects: NA
- e. Variations according to sex and age :NA

Skeletal Variables:

- a. Skeletal morphology:
- b. Dentition: teeth
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: None
- e. Taphonomy: five small bones introduced by rodents

Burial 3 was a secondary internment with large amounts of red ochre and Olivella beads, and was probably a female between 16 and 18. The head was at the east end of the burial, and on its right side. The optical orbits were looking toward the north, and the vertebral orientation was probably east. Within the cast of Burial 3 were five small bones, most likely from an infant or child. They may have been introduced into the burial from nearby Burial 5 by rodents. The burial is dated to 5500-6500 BP.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: secondary internment
- c. Orientation: vertebral orientation W-E; orbital orientation North

DOI 10399

- d. Funerary objects: 80 Olivella beads; red ochre
- e. Variations according to sex and age: NA

Skeletal Variables:

- a. Skeletal morphology:
- b. Dentition: all teeth except the right medial and lateral incisors. Fifth cusps on five of the six mandibular molars, one exception is the right second molar. There was a moderate degree of malocclusion of both mandibular canines and the right mandibular third molar. The upper left medial incisor had a slight degree of shovel-shaped development. The degree of wear on the first molars was excessive considering the age and unworn third molar. (Due to Mazama ash mixed with food)
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: None
- e. Taphonomy: five small bones introduced by rodents

Burial 4 was semi-flexed, with the vertebrae aligned in an east-west direction, the head oriented east. The orbits were looking to the south. The frontal area of the skull was thickened. There was a projectile point almost in contact with the proximal end of the right femur. Based on the position, it probably was not the cause of death, and could represent grave goods.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: primary
- c. Orientation: vertebral orientation W-E; orbital orientation South
- d. Funerary objects: projectile point
- e. Variations according to sex and age :NA

Skeletal Variables:

- a. Skeletal morphology: frontal area of the skull thickened
- b. Dentition: ?
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: None
- e. Taphonomy:

Burial 5 was described in the field notes as "small limb bones of some type, with an average length of between 21/2 and 41/2 inches (57-108mm). Olivella beads, some shell and a few "food bones" were associated with the burial. It would appear that the bones were from an infant or very young child. There is some question about the original provenience of the burial in the rockshelter (144).

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: unknown
- c. Orientation: ?
- d. Funerary objects: Olivella beads
- e. Variations according to sex and age :NA

Skeletal Variables:

- a. Skeletal morphology:
- b. Dentition:

DOI 10400

- c. Culturally induced skeletal modification:
- d. Skeletal disease indicators:
- e. Taphonomy:

Burial 6 was an adult buried on its back in a semi-flexed position, oriented east and looking south. The burial was intrusive, an outline of the burial pit was found extending into the stratigraphic unit IV, the pumicite layer. Above the skeleton Olivella beads and a leaf shaped basalt projectile point were located.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: primary
- c. Orientation: vertebral W-E; orbital south
- d. Funerary objects: Olivella beads; ochre
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal disease indicators:
- e. Taphonomy: the left femur was displaced to the south by about 12 inches, possibly from another burial or cache pit excavation.

Burial 7 was an adult, probably a female. She was semi-flexed, with the vertebrae aligned in a NNW-SSE direction, with the head oriented south. The orbits were looking northeast. The body was lying on its right side. The bones were too fragmentary for measurement. The stratigraphy indicated that the burial was intrusive. Olivella shells were found in association with the burial. A layer of red ochre extended from scapula to ilium. Several obsidian flakes were found in the area of the skull and were part of the cache of more than 150 flakes found in 1962 within the rock cairn above the cranial area of the burial. A bone shaft fragment was located in the area of the second thoracic vertebrae. No estimate can be made of the time period represented by the burial, except that it is somewhat after the ash fall of 6700 BP. Two phalanges from an infant or young child were also located. These were probably intrusive through rodent activity.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: primary
- c. Orientation: vertebral NNW-SSE; orbit NE
- d. Funerary objects: Olivella beads, ochre, obsidian flakes, one bone point fragment
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: left clavicle almost complete, and was normally developed except for the rhomboid impression, which was well pronounced. The remainder of the postcranial bones were average in development.
- b. Dentition: Two teeth were located in the general area of the burial, an upper lateral incisor, well worn and the upper part of a third molar almost unworn. These suggest different ages and were not associated definitely with the burial.

- c. Culturally induced skeletal modification:
- d. Skeletal disease indicators:
- e. Taphonomy: two phalanges of a young child were located within the burial. They were probably brought into the area by rodents.

Burial 8 is an adult male (35-50). He was not buried, but probably died in the rockshelter and was covered by natural sedimentation. He is represented by a partial skeleton. The skull was relatively thick, but within the normal range of variation. The frontal bone was 12mm thick about 3cm anterior to the coronal suture at the midline. While the skull is not complete, it appears to be longheaded (dolichocranial). A date of (4000-5000 BP) has been assigned to the material.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: not buried
- c. Orientation: NA
- d. Funerary objects: NA
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: thick skull (frontal bone 12mm); longheaded.
- b. Dentition: none
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy: individual probably died in the rockshelter and was covered by natural sedimentation.

Burial 9A appeared to contain Olivella beads, scattered vertebrae, some ochre, teeth, and fragmentary human bones. Two bear teeth, one of which was grooved, were located in the area of the burial.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: ?
- c. Orientation: ?
- d. Funerary objects: bear teeth?
- e. Variations according to sex and age:

Skeletal Variables:

- a. Skeletal morphology:
- b. Dentition: teeth
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy:

Burial 9B was an individual of unknown sex, and between the ages of 6 and 8, with no obvious pathologies. It consists of the thoracic and cranial regions. The burial was oriented with its skull at the east end of the cast. The skull was lying on its left side, and the optical orbits were looking toward the south. It is most likely that the burial was semi-flexed on its left side. Three antler shafts were included with the burial. Olivella beads and red ochre were also present.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: primary
- c. Orientation: vertebral W-E; orbits south
- d. Funerary objects: Olivella beads, ochre, three bone points
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology:
- b. Dentition: the first permanent molar had erupted but was unworn.
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy:

(Annotated by Lourdes Henebry-DeLeon)

The B. Stewart and the Cradleboard Mortuary Sites: A contribution to the Archaeology of the Dalles Region of the Lower Columbia Valley.

B. Robert Butler, 1962

B. Stewart Site: "The B. Stewart Site comprised a series of cremations enclosed in an elongated sand dune resting on a gravel-covered beach overlooking the old village at Celilo Falls" (1962:30). The brief excavation of this site yielded two late prehistoric cremations and grave goods.

Each of the cremation features appeared to have been made in the following manner: a large oblong pit (up to 12 feet in length, 6-8 feet in width, and 2.5-3.0 feet in depth) was scooped out of the sand, a pyre constructed in the pit, and then the corpse laid on top of the pyre. After the cremation fire had died down, perhaps while it was still smoldering, the remains were covered with local sand (1962:31).

Cremation Feature 1: This feature was believed to represent the remains of one or two cremations. "Most of the artifacts recovered ... were associated with the burned remains in the pit; a few appeared to have been added later, after the pit had been nearly filled in with sand" (1962:31).

Cremation Feature 2: This feature was believed to also contain the remains of one or two cremations. The artifacts associated with this feature were recovered from the sand overlying the pit. "These appeared to have been arranged in a deliberate pattern around the edge of the filled pit and subsequently covered with additional sand" (1962:31).

The use of red ochre was apparent at both features. Artifacts appeared to have been doused or rubbed with ochre before burial. For example, an incised steatite pipe fragment was found covered with ochre at feature 1, and an ochre covered water-worn cobble was found at feature 2. Loose ochre was found at both sites. Additional artifacts found in the cremation features are described under "Material Culture 1" on page 32.

Considering artifact type, including the presence of copper and a lack of iron, brass, and glass items, it indicates that the cremations occurred in the mid to late 18th century (1962:32). Additional finds at the site included a horizontal slab of wood at the northern end of the site. Directly underneath this wood were two stone points. At the time of excavation the author did not recognize its possible significance. A year

later while excavating "... on the opposite side of the river ...," the author uncovered a plank-covered burial. Associated with this burial was a bison hide, copper and brass tubes, glass trade beads, Olivella and Dentalia shells, and several large chunks of red ochre (1962:32). The author states "There was no skeletal material associated with the feature encountered at the northern end of the B. Stewart site; however, the excavation may not have progressed far enough to have exposed it." (1962:32).

The Cradleboard Mortuary Site: The Cradleboard Mortuary Site is located at the top of a talus slope near the Wishram village of Spearfish and the Wakemap Mound Site, on the Washington side of the Columbia River at the Dalles. The site is marked by a number of cradleboards (six or seven intact and numerous fragments) and a rock cairn.

The rock cairn contained the following items; a pail containing fabric and blue beads, tin and enamelware dishes, medicine bottles including two marked "H.E. Crosby, Chemist and Druggist, Dalles Oregon," talcum powder cans, blue jar, Willow ware and Chinaware dishes, rubber doll fragment, spoon, bottles, book fragment, charred cloth and leather fragments, and miscellaneous fragments of iron and brass. The medicine bottles, marked H.E. Crosby, were found to be a type used between 1910 and 1917. The dating of the site was subsequently, and independently, confirmed by local Wishram residents.

Most of the boards associated with the cairn were of modern manufacture, being sawed and having uniformly drilled holes. One board found fifteen feet above the cairn was more crudely made. The handle was broader and the holes less uniform and further from the edge of the board. "It is quite possible that this board was made at an earlier time than the other and perhaps deposited at the site at an earlier date" (1962:33). The cradleboards were not placed in any particular pattern in reference to the cairn, but it is noted that visitors may have disturbed the site.

Local Wishram residents informed the author of the importance of the proper disposal of cradleboards. The cradleboard of a child who had died was stripped of its trimmings. The trimming and some of the child's personal effects were burned. The cradleboard and personal effects of the child were laid to rest at a place that faces east, into the sun. "As the cradleboard weathers and decays away, the memory of this place (? the earth or the village where the baby was born) will fade out in the baby's mind. And so, too, will the memory of the baby fade out in the minds of his parents" (1962:34). A person's cradleboard was kept throughout his lifetime and was treated in the same way as a child's when death occurred. However, it is not known if the personal effects of an adult were left with the board at the cradleboard site, or if they were interred with the remains. It is unclear if children were buried at the cradleboard site, one informant stated that children had been buried at a similar site. Other informants emphasized the importance of the proper disposal of the cradleboard, and believed that this was the chief significance of the Cradleboard Mortuary Site.

The Cradleboard Mortuary Site was the final resting place for the cradleboards of deceased persons. The special place was a high rimrock adjacent to the site that faces east. The deceased child's personal effects were enclosed in the rock cairn. Archaeologically and ethnographically this pattern of cradleboard disposal among the Wishram persisted until 1920. "The tradition dated back beyond the existence of my oldest informant, but its existence before the period of 1910-1920 has not been documented archaeologically" (1962:34).

(Annotated by Erin M. Shumate)

Further notes on the Burials and the Physical Stratigraphy at the Congdon Site, a multi-component Middle Period Site at the Dalles on the Lower Columbia River.

B. Robert Butler, 1963

An earlier paper on this site distinguished three cultural components of the Congdon Site, located on the Washington side of the Columbia River at the Dalles.

"Congdon I, habitation debris, thought to have dated (on the basis of artifact seriation) from ca. 5500 BC to 1500 BC; Congdon II, an apparently artificial cap of angular basalt fragments up to three feet or more in depth in which was enclosed cremated human remains and artifacts, tentatively dated at 1500-1000 BC; and Congdon III, a series of multiple mass burials which appeared to have been intrusive into one end of the Congdon II cap and which were of unknown antiquity" (1963:16).

Butler's purpose is to provide information on the burials and on the physical stratigraphy. Human skeletal remains were recovered by amateurs at the southwest end of the site. The burials were located in an area up to 15 feet wide and 75 feet long, and occurred 18 to 38 inches below the surface. The entire burial zone only yielded one complete skeleton. The individual was in a semiflexed position on its back in a shallow grave. "It was in excellent condition, fully articulated, and had a fresher appearance than any of the other skeletal material at the site" (1963:17). Tables discussing the metric measurements of skeletal material from the Congdon Site are included in the paper (See Appendix 6).

All the burials at the Congdon Site were located in a cap or mantle of heavy angular basalt fragments, some weighing close to 100 pounds. The cap was thickest (approx. 3.5 feet) at the center and thinned out at the edges. Also present was a dark, humic soil. This is "... almost certainly the result of human endeavor; it is not continuous with any nearby accumulation of talus or scree and is a generally elevated position..." (1963:18). The recovery of the human remains was haphazard. There were as many as ten to fifteen amateurs working on the site at any time, none who were familiar with archaeological techniques. A large share of the remains were relocated to the Thomas Burke Memorial Washington State Museum of the University of Washington (TBMWSM), anthropology students performed anthropometric measurements. "In the earlier report I stated that skeletal material from an estimated 150-160 individuals had been recovered from the site. As will be seen in the tables, the minimum number of individuals in the collection at the TBMWSM (based on the number of crania) is 51" (1963:17).

See Garner 1963 for an analysis of the cranial material from the site.

(Annotated by Erin M. Shumate)

An Archaeological Survey of the Okanogan and Similkameen Valleys of British Columbia

Warren Caldwell, 1953-54

Caldwell's study is based on data obtained in 1952 during an archaeological and ethnographical survey of the Okanogan and adjacent valleys. Caldwell states that burials constituted 25% of the total material remains recorded by the survey. According to Caldwell, there is no evident correlation between specific burial groups and known habitation sites, although physical proximity suggests evidence of a

relationship (1953:16). Burial patterns are discussed. Cedar cist burials found at CO-61 located at Osoyoos are all tightly flexed. A cedar plank cist surrounded a few bodies. Burial goods include a single set of copper earrings and large obsidian and chert blades. Red ochre is abundant (1953:16).

Burned human remains were found at CO- 47, a site overlooking Skaha Lake. Burial goods included celts, pierced elk and deer teeth, obsidian and turquoise objects (1953:16). A surface superstructure of large stone characterizes a small number of burials. The superstructure consists of large flat stones slabs arranged in rectilinear form. A single definite group of cist burials (CO-84) was recorded. Talus slope burials are seen in the region from Princeton to Nighthawk (1953:17).

A small series of burials in the Okanogan Valley have, as surface markers, a number of flat stones set in the earth in the form of a circle. The largest group of burials lack surface indication. Both flexed and extended burials occur. Burials are single and in groups. Most had no burial goods (1953:17,18).

(Annotated by Lourdes Henebry-DeLeon)

The Archaeology of Wakemap

Warren Wendell Caldwell 1956

Wakemap Mound is located on the north bank of the Columbia River, approximately five miles north and east of the city of Dalles, Oregon. Wakemap Mound is a culturally stratified site first occupied before 2000 year BP and showing a continuity terminated shortly before European contact (1956:262). Intensity of occupation and utilization increases until the late prehistoric period. Traits become more complex from early to late. As time goes on a widening of the subsistence base is apparent. An emphasis on fishing and gathering techniques is emphasized. Caldwell suggests an increase in population accompanies these changes (1956: 262).

Caldwell states that the pattern during the late period at Wakemap is substantially that of the ethnographic Wishram. Ethnographically a large number of Wishram villages have been recorded (1956:10). Wakemap Mound is a single large site but for analytical purposes it is divided into areas and subareas. Area 2 includes the complex of sites at Avery Bluff. In the sand filled areas are the remains of 15 semi-subterranean houses (1956:14). Northeast of the house pits is a large circular enclosure of "stones concentric to a deeply imbedded central boulder (1956:14)." Caldwell states that the general form is suggestive of a cairn or cremation burial.

Area 4 is a steep talus slope. Numerous burials occur throughout the slope. Test Pits 1-3 were placed to recover the remains of a disturbed cremation. A few surface fragments of carbonized bone were found. No cremation remains were recovered.

Test Pits 7-8 contained a series of burials. Burial A was a skull with a disarticulated mandible. The calvarium was lying on the left side and facing southwest. The remains were placed in a cairn structure that covered a partially cremated burial (Burial B). The skull of Burial B lay on its side, facing toward the southwest. This interment is a reburial. The area of this burial had a great deal of rodent activity (1954:271). Burial C is a fragmentary distorted (pressure) cranium. Burial D is a flexed burial. Burial E is a complete articulated skeleton. The torso lay on its back, the axial orientation of the vertebral column to the southwest. The lower extremities were semi-flexed. The skeleton was in a shallow grave with rocks suggesting the presence of an original cairn structure (1956:271).

All the human remains were associated with the stratum of fine gray, silty, humic

earth lying on a sandy clay base. Caldwell states that it is not possible to associate any artifacts with a specific burial. Caldwell further observes "as a consequence, there seems no reason to consider the interments as anything but late" (1956:272).

(Annotated by Lourdes Henebry-DeLeon)

Archaeological Investigations at Nonhabitation and Burial Sites Chief Joseph Dam Project

Sarah K. Campbell (editor), 1984

Burial Relocation Sites: Of the four sites at which burials were found during archaeological work at the Chief Joseph Dam Project, three were habitation sites and the fourth was closely associated with habitation sites. Each of the burials found is unique in terms of the form of disposal and demography. They include primary inhumation of an adult male, an elderly female, and a child, and the double secondary inhumation of an adult female and child. The burial at 45OK2 is the oldest dating to around 1000 BP, and the others occurred within a relatively short period of time (approximately 400 to 150 BP) (1984:113)

Preparation of the graves varied considerably. The most elaborate preparations were made in the case of the adult male burial at 45DO244, in which a complete cyst was constructed and numerous grave goods were deposited with the body. The pit was large enough to contain not only the body, but also the cyst, with space between the cyst and the pit walls. In the case of 45OK1 burial and child burial at 45DO244 the pit was oval and closer to the minimum size required to accommodate the remains although some type of wooden construction was also placed in the graves. The pit outlines were not apparent in the 45OK250 burial, nor was any other evidence of grave preparation. A small circular pit was excavated at the interment of the calvarium at 45OK2 (1984:113)

Complete skeletal remains represent the primary burials of the adult male and elderly female, with the exception of a few items, missing because of preservation factors. The secondary burial at 45OK1 seems to have included a relatively complete skeleton, while the secondary burial at 45OK2 is limited to the cranium. Where orientation can be determined on in situ remains, the faces look toward the river (1984:114).

Fire was used in connection with the burial ceremony in some cases but not all. Partially burned planks show that fire was built over the grave. In none of the cases does the fire appear to have been for the purpose of cremation. Because the planks are only partially carbonized and the bones largely unburned it is suggested that the planks were set on fire after the bones were placed, and then soil was put over the top (1984:114).

Description of mortuary practices and skeletal variation 45OK250 (James Alexander) [Appendix 7]:

This individual is an elderly female. Her age at death is somewhat indeterminate. A minimum age of 65 is a safe assumption. She may have been a decade older. Her prime of life stature is computed to be 5' 4 1/2".

Mortuary Practices:

- a. Burial setting: pit
- b. Mode of disposal:
- c. Orientation: the body was lying on its right side in a fully flexed position; axis of the body ran north-south, with the face oriented to the east.

- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: no evidence of artificial deformation on the skull, cranial bones generally appear thin, suggesting advancing resorption, alveolar resorption severe, teeth wear severe, mental foramen halfway up body and under posterior edge of second premolar.
- b. Dentition: the mandible is incomplete with many teeth missing, and the lateral surfaces of the ramii have eroded away. Teeth inventoried include: right side-first premolar, canine, incisors, left side-first premolar, canines, both incisors, Alveolar resorption is severe.
- c. Culturally induced skeletal modification: no evidence of cranial deformation.
- d. Skeletal nutrition indicators: extreme tooth wear assigned to old age and diet containing a high percentage of gritty food. Dental caries are absent.
- e. Skeletal disease indicators: Extreme pathological curvature of the spine. The body was bent over anteriorly at an angle approaching one hundred degrees. The area of the spine involved in this abnormal curvature is between the eleventh thoracic and the first lumbar vertebrae. The most plausible explanation for this is accidental rupturing of one or more intervertebral discs sometime after reaching adulthood. The degree of modification of L1 suggests at least a decade of stress prior to death. All vertebrae with relatively intact bodies show evidence of severe lipping.
- f. Taphonomy:

45OK1: Burial 1 comprises the remains of two individuals, one a mature female, the other an immature individual of indeterminate gender, in an oval pit. The burials were intermixed and both appear to be secondary. A radiocarbon date of 175+/- 60 BP. was obtained on charcoal from the burial.

Mortuary Practices:

- a. Burial setting: pit
- b. Mode of disposal: secondary
- c. Orientation:
- d. Funerary objects: shell beads, clam disk beads, dentalium beads, Olivella beads, solid copper bead, fragment of charred basketry, flakes, biface fragment, broken projectile point.
- e. variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition: some teeth with considerable attrition and others with no wear
- c. Culturally induced skeletal modification: no evidence of cranial deformation; some bones of the immature individual are burned.
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

45OK2 was a pit and at the base was a human cranium lacking a mandible, lying on its right side and facing the river. Three pieces of ochre and a flaked long bone were found with the cranium, as well as two unmodified bones and six FMR.

Mortuary Practices:

- a. Burial setting: pit?
- b. Mode of disposal: primary
- c. Orientation: laying on its right side in a tightly flexed position; axis of the body is north south with the head at the east or upriver end.
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition: some teeth with considerable attrition and others with no wear.
- c. Culturally induced skeletal modification: no evidence of cranial deformation; some of the bones of the immature individual are burned.
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

45DO244: Burial 1 contained the remains of a young individual of indeterminate sex interred in an oval pit. Tooth eruption indicates the child was approximately six years old. No grave goods accompanied the burial, but the burial had been marked by wooden posts. A fire had been built over the burial and a rock cairn over the fire. The skeletal remains were incomplete and scattered. It is uncertain whether this is due to preservation or whether it indicates a secondary burial. A radiocarbon date of 410+/-71 BP was obtained from charcoal.

Mortuary Practices:

- a. Burial setting: pit
- b. Mode of disposal: secondary?
- c. Orientation: the midline was oriented 50 degrees north and the face looked toward the river.
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: the absence of almost all postcranial skeleton could be due to poor preservation since the individual was young.
- b. Dentition: some teeth with considerable attrition and others with no wear.
- c. Culturally induced skeletal modification: no evidence of cranial deformation; some of the bones of the immature individual are burned.
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy: postdepositional movement of bones suggested by the scattered distribution of the teeth. Burial 2 is a primary burial of an adult male, interred in an elaborate wooden cyst placed within a pit. Numerous grave goods accompanied the burial. Eight of the projectile points are Plateau side notched points. A radiocarbon date of 370+/-60 BP was obtained from the charcoal.

Mortuary Practices:

- a. Burial setting: pit
- b. Mode of disposal: primary
- c. Orientation: an adult male flexed laying on his left side with his face towards the river.
- d. Funerary objects: The right hand held a large chipped stone knife. Five projectile points were pointing in a "headward direction." A circular piece of

leather was found. A large side notched point in three fragments was lying in the area of the upper legs; antler pendant. A cache of lithic artifacts, which included 72 cryptocrystalline objects, two incised bones, seeds, a small pointed bone or tooth, and small abraded pebble. All these items appear to have been placed in a small basket/pouch. Fragments of woven material were recovered. A concentration of organic remains is interpreted by Campbell (1984) to be remnants of the body wrappings and offerings, largely meat, laid over the body.

- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: the absence of almost all postcranial skeleton could be due to poor preservation since the individual was young.
- b. Dentition: some teeth with considerable attrition and others with no wear.
- c. Culturally induced skeletal modification: some of the bones are burned.
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

(Annotated by Lourdes Henebry-DeLeon)

Biological Distance of the aboriginal Colville and Nez Perce Populations Derived From Skull Non-Metric Features

Raymond Carino, 1987

The present study was initiated in an attempt to determine the biological relationship of the aboriginal Colville and Nez Perce Indian populations. The data consisted of the readings of 25 non-metric traits (21 bilateral and 4 midsagittal), derived from 91 Colville and 119 Nez Perce Skulls (1987:iii).

The crania selected for this study were chosen on the basis of age and preservation. Nonmetric traits were selected on heritability, the inclusion of a wide range of variant classes, and the inclusion of major areas of the crania. The frequencies of nonmetric traits of females and males were combined for this study. The existence of sexual dimorphism was not great enough to divide the sample. The inclusion of bilateral traits was also justified. The mean measure of divergence, MMD, was calculated using two methods.

The ... Constandse-Westermann approach is discussed first. The second method of analysis, proposed by Green, Suchey, and Gokhale (1979), takes into consideration the side-to-side correlation of bilateral traits when constructing the MMD (1987:44).

The MMD was calculated between the two groups. The Condtandse-Westermann (1972) procedure yielded the following results: MMD= 0.0287644, standard deviation= 0.0020683. Thus, the hypothesis of no difference is rejected.

The Green, Suchey, and Gokhale method yielded these results: MMD= -0.0154168, standard deviation 0.0061441. Thus the hypothesis is rejected again. "It was concluded that the aboriginal Colville and Nez Perce Indian populations were biologically quite distinct" (1987:iii). The distance between the two groups suggests a long period of independent development.

(Annotated by Erin M. Shumate)

Archaeological Survey of Coulee Dam National Recreation Area: Part 2: Spring draw-down of 1967

David Chance, 1967

Chance reports on the second phase of the archaeological survey of Coulee Dam National Recreation Area. The surveying was done by Chance during March and April of 1967. The report consists of the description of 122 sites visited or pinpointed on this survey (1967:1). A total of 112 previously unlisted sites were located during the survey and 10 sites reported by previous surveys were rechecked (1967:79). Several are reported to have burials. No burials were excavated.

45FE10 is a small burial ground on a small terrace on the right bank of Kwei Kwei gully. The burial had been disturbed. At the time of the survey a 1900 Indian head penny was found close to the burials.

45FE14 is an aboriginal worksite. A local resident reported a small burial ground at the site.

45FE15 is a large burial ground that was missed by the disinterment project (1967:11). No data on the burials are reported.

45LI6 is an aboriginal campsite. Burials were disturbed. Burial data are not discussed in the report. Salvaged bone represented six individuals. In the burial area were found small-notched points and historic items (1967:18).

45ST21 consist of an aboriginal campsite, historic dwelling, and a burial ground. The site was potted and 100 burials were reportedly all reinterred elsewhere (1967: 23).

45ST11 is a historic burial ground still in use at the time of the survey. The oldest date was 1901 and the most recent date was 1961 (1967:26).

45ST5 is a probable burial site.

Chance describes 45ST16 as a probable burial site. The practices of burial mounds or knolls seem to be a common practice in the reservoir area (1967:30).

45FE (Little Mission) is the historic mission with a historic aboriginal burial ground (1967:33). The burials are reportedly removed to Inchelium cemetery (1967:34).

45ST30 is an aboriginal campsite and reported burial ground. According to Chance (1967) this site was largely destroyed (39).

45FE34 (Barnaby Island) is an aboriginal campsite and burial ground. Chance states that there are probably a number of undisturbed burials around the islands below the 1289 elevation (1967:40).

45FE is an aboriginal camp and burial site. Bones of five individuals had fallen out of the bank. Roderick Sprague and crew excavated nine more individuals (1967:44).

45FE38 is an aboriginal burial ground. Potters tore out the two burials. Chance reports that historic items were found with the bones.

45FE16 (Nancy Creek) is an aboriginal camp, burial, and historic site. Bones belonging to two individuals were recovered.

45ST82 is an aboriginal burial with at least one intact burial. Half of the cranium and the mandible and the right shoulder were checked. There was no obvious cranial deformation (1967:56).

445ST65 is an aboriginal camp and historic homestead site.

45ST74 is an aboriginal camp, burial, housepit, and historic site. On the site was a probable burial cairn. 45ST47 (Sheep Island) contained burials (recorded by Collier, Hudson and Ford 1942).

(Annotated by Lourdes Henebry-DeLeon)

Archaeological Survey of Coulee Dam National Recreation Area: Spring and Summer 1970

David Chance, 1970

During a resurvey of Lake Roosevelt in the spring and summer of 1970, twenty-five new archaeological sites were located and fifteen sites already known were reexamined. Chance reviews past work in Lake Roosevelt (see annotations). Chance reports no new burials recorded from this survey. Chance concludes by making recommendations for further work in the Lake Roosevelt area.

(Annotated by Lourdes Henebry-DeLeon)

Forensic Analysis of a Prehistoric Internment, Bonaparte Creek, Okanogan Co. WA

James Chatters, 1985

Site: 45OK512: The Bonaparte Creek skeleton (45OK512) (850 BP) is an adult male 20-30 years of age. The body was interred on its back, most likely in a flexed position. His skull exhibits fronto-occipital cranial deformation. There is an extra second right lower incisor and the upper left third molar had never developed. Carbon isotope (C13) analysis indicates a terrestrial diet. There were five artifacts (all projectile points or point fragments) associated with the skeleton. One of these was embedded in a rib. A date of 850+/- 70 BP is assigned to the skeleton (see Appendix for osteometric data).

Mortuary Practices:

- a. Burial setting: disturbed
- b. Mode of disposal: intentionally interred
- c. Orientation: flexed burial inclined on his back
- d. Funerary objects: projectile points
- e. Variation according to age and sex: NA

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition: extra second right lower incisor and the upper third molar never developed.
- c. Culturally induced skeletal modification: fronto-occipital cranial deformation; projectile point fragment embedded in rib
- d. Skeletal nutrition indicators: carbon isotope indicates a terrestrial diet
- e. Skeletal disease indicators: none
- f. Taphonomy:

(Annotated by Lourdes Henebry-DeLeon)

The Ellisford Cremations: Internecine Hostilities in the 5th century AD

James C. Chatters and Hartmut Krentz, 1986

Human remains found by an irrigation district trenching crew near Ellisford, Washington represented five individuals. Evidence from the grave pit and the bones indicate that there was one young woman, one young man, a second man in his 30's and two children between the ages of 5.5 and 9. They were killed in an attack in the early 5th century AD (AD 425). Their bodies lay exposed to scavengers for a few days before they were buried. They were laid on their backs, with the head of all adults oriented in the same direction. Wood was then stacked around the bodies and then they were cremated. When the fire died, the ashes and unburned parts of bodies were scraped into a small hole and buried.

Site 450K562: Skeleton 1 was a women 20-23 years old whose vertebrae and ribs were found in situ.

Mortuary Practices:

- a. Burial setting: pit
- b. Mode of disposal: partial cremation, flexed lying on back in flexed position on the ground surface, subsequent inclusion in mass burial.
- c. Orientation:
- d. Funerary objects:
- e. Variation according to age and sex: NA

Skeletal Variation

- a. Skeletal Morphology: alveolar portion of the maxilla, the mandible, base of the skull, nearly complete vertebral column, femora, shafts of both humerii and the right scapula.
- b. Dentition:
- c. Culturally induced skeletal modification: tip of projectile point embedded in 5th rib. Wound is healed.
- d. Skeletal nutrition indicators: none
- e. Skeletal disease indicators: none
- f. Taphonomy: evidence of post mortem but preinternment damage to the diaphysis of the left femur and both humerii. Shallow striations of the sort left by carnivore teeth.

Skeleton II is a 30-35 year old male. He had been cremated. He had advanced periodontal disease and had already lost his upper incisors. He had degenerative joint disease (arthritis) in his back that had caused slight scoliosis. He had suffered multiple wounds, one which shows signs of healing; others do not. Scoring by carnivore teeth can be seen on the right humerus.

Mortuary Practices:

- a. Burial setting: pit
- b. Mode of disposal: partial cremation, flexed lying on back in flexed position on the ground surface, subsequent inclusion in mass burial.
- c. Orientation:
- d. Funerary objects:
- e. Variation according to age and sex: NA

Skeletal Variation

- a. Skeletal Morphology: alveolar portion of the maxilla, back and base of the skull, portions of the mandible, vertebral column, ribs, right humerus, and both femora. The general roundness of the remaining portion of the cranium despite the fact this was a male. The mylohyoid line on the labial surface of the mandible is distinct. This line tends to be pronounced in Native American populations.
- b. Dentition: He had advanced periodontal disease and had already lost his upper incisors. The second molars are narrower mesial-distally than buccal-lingually.
- c. Culturally induced skeletal modification: healed cut: second thoracic vertebrae. Unhealed cut: right humerus; Arrow wounds: 7th thoracic vertebrae.
- d. Skeletal nutrition indicators: none
- e. Skeletal disease indicators: He had degenerative joint disease (arthritis) in his back that had caused slight scoliosis.
- f. Taphonomy: Scoring by carnivore teeth can be seen on the right humerus.

Skeleton III was a man between 20-24 years old. Little of his skeleton remains. Most of his body had been destroyed by fire. There are no pathologies except for minor periodontal disease. No evidence of trauma is present. Scoring from carnivore teeth is present.

Mortuary Practices:

- a. Burial setting: pit
- b. Mode of disposal: partial cremation, flexed lying on back in flexed position on the ground surface, subsequent inclusion in mass burial.
- c. Orientation:
- d. Funerary objects: none
- e. Variation according to age and sex: NA

Skeletal Variation

- a. Skeletal Morphology: alveolar portion of a maxilla, base of the skull, most of the mandible, cervical vertebrae, 1st and 12th thoracic vertebrae, lumbar vertebrae, most of the inominates and proximal femora.
- b. Dentition: The right M2 has an occlusal surface that is very concave. The enamel is worn around the dentine. The right M3 has crowns which are worn flat, but only a small portion of the dentine is visible.
- c. Culturally induced skeletal modification: none
- d. Skeletal nutrition indicators: none
- e. Skeletal disease indicators: none observed
- f. Taphonomy:

Skeleton IV was a child probably between 6 and 9 years old. Very little of his skeleton is present. Nearly all the bones were fire damaged. No pathologies were discernable.

Mortuary Practices:

- a. Burial setting: pit
- b. Mode of disposal: cremated above ground, included in mass grave.
- c. Orientation: flexed lying on back in flexed position.
- d. Funerary objects:
- e. Variation according to age and sex: NA

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Skeletal Variation

- a. Skeletal Morphology: burial base of the skull, tiny fragment of mandible, most of the cervical vertebrae, all thoracic vertebrae, one lumbar, and part of the left innominate.
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators: none
- e. Skeletal disease indicators:
- f. Taphonomy:

Skeleton V is a girl(?) 5.5 to 6.5 years old. Virtually nothing remains of the child. All parts exhibit fire damage.

Mortuary Practices:

- a. Burial setting: pit
- b. Mode of disposal: cremated above young; inclusion in mass grave.
- c. Orientation:
- d. Funerary objects:
- e. Variation according to age and sex: NA

Skeletal Variation

- a. Skeletal Morphology: base of the skull, alveolar and condylar portions of the mandible, 6 cervical vertebra, one lumbar vertebra and pieces of the left innominate.
- b. Dentition: The first permanent molar has not yet erupted. The deciduous molars are still in situ. A permanent canine and incisor can be seen lying below the tooth line.
- c. Culturally induced skeletal modification: All parts exhibit fire damage.
- d. Skeletal nutrition indicators: none
- e. Skeletal disease indicators: none observed
- f. Taphonomy:

(Annotated by Lourdes Henebry-DeLeon)

The Cemetery at SNTL'EXWENEWIXWTN Okanagan County, Washington

James Chatters and Mathew K. Zweifel, 1987

Long known to the Indians of the local Okanagan bands, the cemetery was first recorded in 1976 by David Munsell. According to his notes, the site reportedly consisted of several Indian burials and an associated midden. The site, designated 45OK355, has been extensively borrowed by a man living on the adjacent property who had scraped sand off most of the site when he needed fill (1987:3). Some human bone and artifacts had turned up at that time. In June of 1986 the contractor constructing the East Osoyoos lateral of the Oroville-Tonasket Unit Extension disturbed the graves in the cemetery. The cemetery was on a low mound of windblown sand lying between the Okanagan River's east bank and a rocky hill known to the Okanogans as SNTL'EXWENEWIXWTN (1987:5-6). Five complete and three partial skeletons were recovered (1987: 5-6).

Two graves, A and B, contained single individuals. The third, Grave C/D, contained four individuals. The remains of two individuals were recovered from the backdirt (1987:5-6). Five of the adults, including three young men and two girls, died of

multiple wounds inflicted by arrow, club and spear (1987:28). Musculature of the men indicates use of hands in strenuous activity. Powerful gluteal muscles in all teenagers and adults probably developed because of travel on foot in this steep, rocky country. The burial of Skeleton A is dated at A.D. 1640 and those of Skeletons C, D, E and F are dated about A.D. 1300.

Skeleton A is a nearly complete skeleton of a young Indian male 18 to 20.5 years of age. Deformation of the anterior of his right humerus and his right calcaneus resulted from infection on his right upper arm and heel. Bones of the skeleton showed extensive leaching of inorganic, carbonate portion as their result in burial in calcium cemented sand (1987:20).

Skeleton B is a female between 14.5 and 15.5 years. Skeleton C is a female about 17. Skeleton D is that of an 18-20 year old man. He was massively built and stood at 5'7" tall. He suffered from arthritis in the left tibiofibular joint. There was a minor anomaly in the spine, consisting of a canal through the fourth lumbar vertebra (1987:20, 22).

Skeleton E is a 2-4 year old child. Copper was responsible for preserving the right shoulder girdle and ribs. Skeleton F was scattered by the backhoe. He was a man in his late 20's or early 30's. He was 5'7" and very robust. Skeleton G consists of only the skull. Suture closing and tooth wear indicate an age of 50 or more. Skeleton H is a partial skeleton of a woman 25-35 years old who had arthritis in her hip and some sort of abscess in the pelvic area. All bones have been weathered (1987:25, 28) (see Appendix 8 for morphometrics).

(Annotated by Lourdes Henebry-DeLeon)

An Early Human Skeleton from South Central British Columbia: Dietary Inference from Carbon Isotopic Evidence. In, *Canadian Journal of Archaeology*, Vol. 7

Brian Chisholm and D. Erle Nelson, 1983

Cybulski et al. (1981) describe human skeletal remains recovered from the Gore Creek site (EeQw 48). A C14 date of 8250 \pm 115 was obtained from the burial. Chisholm and Nelson requested a stable carbon isotope measurement be taken for paleonutrition information. The value obtained for the Gore Creek burial -19.4% lies at a point 91% removed from the marine diet end point, toward the terrestrial end of the scale. The low-level marine consumption indicates that the Gore Creek individual was eating a much smaller amount of salmon than more recent inhabitants of the same area (1983:85-86).

(Annotated by Lourdes Henebry-DeLeon)

Reconstruction of Prehistoric Diet in British Columbia using Stable-Carbon Isotopic Analysis

Brian Chisholm, 1986

"This study uses a new approach, the application of stable carbon isotope analysis of human bone collagen," to distinguish populations who subsisted on marine and terrestrial species (1986:iii).

"Results indicate that prehistoric British Columbian coastal dwellers obtained about 90 \pm 10% of their protein from marine species, while people along the Fraser and Thompson Rivers in Interior British Columbia obtained only about 40 to 60 (\pm 10)%

of their protein from marine species, specifically salmon ... These proportions do not appear to have changed significantly for the last 5000 years" (1986:iii).

(Annotated by Erin M. Shumate)

Excavation at Two Prioritized Sites, 45BN161 and 45FR101, in the McNary Reservoir

Cleveland, Gregory and Morris Ubelaker 1980

Bateman Island (45BN161) was excavated as a salvage project in response to impacts by Benton County barrow activity. Human use of Bateman Island commenced more than 2000 years ago (1980:28). This date is based on the tools recovered. The authors report a pit area on Bateman Island's northeast shore, a burial area near mid-island, and a midden or shell heap area. The basic difference between burial provenience at Bateman Island and Chiawana Park (45FR101) is that the Chiawana burials were within or next to habitation floors within structures (1980:29).

The faunal analysis focused on the remains of Bison bison underlying or associated with the house remains on the northeast shore of Bateman Island. Faunal elements represented at least 8 individuals.

In the authors estimation, the Chiawana Park site contains evidence of a much longer period of habitation than Bateman Island although C-14 dates are not available (1980:54).

(Annotated by Lourdes Henebry-DeLeon)

A Report on the Disinterment of Burials on Grave and Memaloose Islands in the Dalles Dam Reservoir.

David Cole, 1956

Cole presents information on the internment of Indian remains from Graves and Upper Memaloose Islands in the Dalles Dam Reservoir area. With the completion of the initial phase of the Dalles Dam a pool would form that would inundate Grave and Memaloose Islands, which had been ancestral burial grounds for Indians in the Mid-Columbia area. The Federal Government had agreed in accordance with the wishes of some of the Indians, to disinter the remains on these islands and provide them with graves elsewhere.

Cole was not allowed to take notes during the removal of the human remains, so at the end of each day he wrote notes from memory. He was able to handle many of the objects, and the official photographer photographed a few objects. Toward the end of the project, when rapport was best, unusual objects were considered for photographing (1956:2). Official photographs were taken of the removal process.

Grave Island is located in the downstream end of Fivemile Rapids on the Oregon side of the Channel. The Indians say that Grave Island was used by the Wasco Indians who lived in Oregon on the shore adjacent to Grave Island (1956:3). In 1894 the island experienced the greatest flood recorded. It is reported that the island was not used after this and burials were placed on the Upper Memaloose Island (1956:4).

Upper Memaloose Island is located approximately six miles east of The Dalles, Oregon, above the upper end of Fivemile Rapids. Upper Memaloose Island was

said to have been used for burial purposes by the Yakamas. The last person buried on the island died in the spring of 1955 (1956:5).

Burial Practices on both Grave and Memaloose Island can only be partially described because the methods used to disinter the remains made it almost impossible to determine details regarding secondary burials.

On Grave Island most of the remains were recovered from a pit approximately 10x14 feet. The remains were piled in the pit. There was no clear evidence of inhumation other than secondary burial. There were a few instances where bones were recovered under circumstances that could have been primary inhumation. These bones were found on the periphery of the depressions on the island. Occasionally wood was found with these burials.

Cole reports that one of the Indians said that during the flood of 1894, two burials were washed out and carried as far as Hood River. These individuals were said to have been tied to a board in a flexed position and buried. The evidence supporting the placement of the dead in buildings was the presence of decayed wood recovered in the excavation.

On Memaloose Island there were three buildings of different ages that contained remains. Each building had the door facing east (upstream). The oldest building had a shed roof and vertical siding and contained few remains. Most of the remains were wrapped in rawhide and tied with rope or curtain cord. According to Cole they appeared to be in both extended and flexed positions oriented in an east-west direction. Shell beads and shell ornaments were buried with two of the individuals. The next oldest building had a gabled roof and vertical siding. Inside, all the remains were placed in boxes. Some of the boxes were nailed with square nails. There were two caskets in the building.

In the newer buildings boxes were piled along the walls. Boxes that were open revealed that in some instances a number of remains had been placed in a single box. According to the Indians these were members of the same family (1956:9). These remains were wrapped in buckskin, blankets or decorative cloth. They were placed in either extended or flexed position. The boxes were oriented in an east-west direction.

Cole estimates that over 2,500 remains were disinterred on Memaloose Island. The Indians claim there were over 3,000 burials (1956:9). Bones believed to be those of horses were found on the surface in several places. According to the Indians it was customary to kill a man's horse and place it over his grave when he died(1956:9).

On both Grave Island and Memaloose Island there were indications that it was common to place grave goods with the dead. Cole observes that the use of blankets in burial practices appeared to be the correct thing to do.

On Grave Island the remains of an estimated 500 to 550 individuals were disinterred. The skulls exhibited head flattening. It was either frontal flattening or a combination of frontal and lambdoid flattening. Cole observes that in some cases "it was so severe that the parietals were under the frontals, forming a ridge under the frontal sutures (1956:13)." A few skulls showed depressions that Cole attributes to binding. In all the skulls inspected there were few cases of marked bilateral asymmetry. The skulls were short faced with wide malars, with medium nasal aperture. It appears that the people were fairly uniform in stature - 5' to 5'2 for males (1956:14).

On the Upper Memaloose Island, it is estimated that 2500 remains were removed.

Skulls were both deformed and undeformed. One in three manifested frontal flattening (1956:14). There was evidence of lambdoid flattening on most burials. The physical characteristics were similar to the people from Grave Island. Bone diseases and healed fractures were common.

On both the islands grave goods were common. The objects manufactured by whites outnumbered objects of native manufacture. According to Cole the presence of trade goods throughout the burial pits indicates that many of the remains were placed there after 1811 (1956:19).

(Annotated by Lourdes Henebry-DeLeon)

Archaeology of the Upper Columbia Region

Donald Collier, Alfred E. Hudson. And Arlo Ford, 1942

The initial professional archaeological work in the upper Columbia River was salvage excavation conducted by Collier, Hudson and Ford during 1939-1940. The project area included both banks of the Columbia River from Grand Coulee Dam north to the Canadian border. The immediate aim of the Columbia Basin Archaeological Survey was to obtain as much information as possible about the archaeological remains within the area to be flooded by the Grand Coulee Dam.

A total of 150 burials were found from 13 sites. The burials fall into two types. The first are pit burials which consist of inhumation on sand or gravel near the river banks. The second, rock slide burials, which consist of inhumation in talus slopes along the base of cliffs usually near the rivers. No evidence of cremation burials was found (1942:39).

A total of 134 pit burials was found at sites 2,7A,7B, 24,31,46,47,48, and 51. The pit burials were found on the edges of the low sandy beaches along the Columbia River. Generally the burials are grouped close together in an area running along the bank for 100 feet or so and back from the bank 10 feet. They are 1 to 4 feet below the surface. Of those whose position could be determined, 72 were flexed, 38 semi flexed, and 9 extended (1942:39).

At sites 2, 7A, 24, and 48, from the Spokane River westward, most of the burials were marked on the surface with stone circles. These consist of circular piles of river cobbles 5-7 feet in diameter, one layer thick although occasionally piled up somewhat at the center. Most of the graves had a circular or oval enclosure of cedar planks placed vertically above the body (1942:39).

A total of 16 rockslide burials were found at sites 5, 8, 13, and 48. Rock slide burials were made by excavating a pit 2 to 4 feet deep in a talus slope, placing the body in the pit, and covering it with rocks. These graves are usually a few feet apart along the bottom of the talus slope. Orientation was consistent with the head downstream. Of those whose position could be determined, fourteen were flexed, one was semi-flexed, and one was extended (1942:39).

Numerous artifacts and worked materials were associated with 90 of the 150 burials. It may be inferred that burials containing European trade goods in any abundance are post 1800 and those with large amounts are probably post 1820 (beginning of intensive fur trade on the upper Columbia). Burials at sites 8, 48, 51 are believed to be no more than 50 years old (1942). (See Appendix 10 for a detailed description of the burials.) (See Sprague and Mulinski [1979] for a more recent discussion of the material.)

(Annotated by Lourdes Henebry-DeLeon)

Preliminary Report of Excavations at 45FR42

Columbia Archaeological Society, 1958

45FR42 is located on an island in the Snake River about 13 miles from its confluence with the Columbia River. The south side of the island contains an estimated 17 house pits. Burials are found on the east end and part of the north side of the island and extend into the center. The burials located in the north east corner are assigned a later date because of the presence of artifacts of European origin. Burials excavated near the north side contained mostly native artifacts.

Three types of burials were located at the site. Pit burials were the most common. Cedar stakes accompanied the burials. They were driven in the ground at the time of the burial, around the skeleton. Plank cist burials were assumed to be a later type than the open pit burials. Plank burials are characterized by having only the cedar planks lying lengthwise with the skeleton, both below and above. Sprague states that both burial patterns were used during historic times. The north end of the site that contained burials showing evidence of trade material dates to A.D. 1800. The area where most of the burials were recorded is assigned a date between AD 1700 and 1800. The burial area in which cremations were found is assigned a date prior to AD 1700.

(Annotated by Erin M. Shumate)

Burial Practices as an Indicator of Cultural Change in the Lower Snake River Region

John Combes, 1968

Combes compares the burial patterns of two sites, Ford Island and Fish Hook Island and compares them to Sprague's (1959) Asotin burial work. "The primary objective of this study has been to determine if burial practices are a sensitive and reliable indicator of culture change, and to establish a sequence of burial patterns since late prehistoric times" (1968:2).

Ford Island (45FR47) : Ford Island is located on the Snake River 21 miles upstream from its confluence with the Columbia River. The burial ground is located in river gravel on the southeast corner of the upstream 1/3 of the Island. Intensive pothunting had occurred and no evidence of grave markers remained.

Fish Hook Island (45FR42): Fish Hook Island is located on the Snake River approximately 13 miles upstream from the confluence with the Columbia River. The burials were located in two main burial areas: A and B. Area A was located at the upstream end of the island, with the most recent burial occurring 40 years prior to excavation. No undisturbed graves could be found in this area due to extensive pothunting. Area B was located near the center of the island. The upstream portion of this area had been devoted to cremation burials, but pothunting left none intact. The downstream end of Area B lay undisturbed, except for the removal of two burials; it was here that the burial excavations were conducted.

Burial Phases: "The burial phases described by Sprague from the Asotin Burials were compared with those studied in this paper. With these additional data the necessary adjustments have been made to the burial sequence scheme" (1968:37).

The Fish Hook and Ford Island burial provide additional data to test Mr. Sprague's

conclusions. When looking for correlations with regard to sex, age, specific orientation, and placement on the right or left side, none could be found. "The present data will not support the west orientation of Sprague's late prehistoric phase" (1968:24).

Late Prehistoric Phase: The burials of the late prehistoric phase are fully flexed and consist of a simple pit without a lining or a cairn. There was no preference in the direction of orientation, and there are few or no grave goods. Burial 1 from Ford Island yielded one small tubular stone pipe, and Burial 3 contained 4 stone pestles. "The excavations suggest that the deceased was forced into a grave that was only barely large enough (burial 20)" (1968:25).

Transitional Phase: The transitional phase or protohistoric burials are characterized by an elaborate grave. Some of these graves were 6 ft long and 2.5 to 4 feet deep (1968:25). Plank cists, stone cairns and linings were used. There was a preference for placement on the back and all were semiflexed. Orientation was to the northeast to east. Burials with ceremonial burning were all dated to this phase. Often the tops of plank cists were left protruding above the surface and were burned. "Some of the burials from this phase were covered with stone cairns (see fig. 27). This was done most likely for marking the burial and/or for protection from animals" (1968:25). Grave goods were elaborate and numerous. Objects of ornamentation were popular grave items, native beads and pendants were common. Knives, awls, projectile points, and scrapers were also recovered. The ceremonial killing of objects was practiced.

Burial 3, although very typical in respect to burial pattern, contained an unusual amount of grave items. Over 100 artifacts were found, comprising woodworking, hunting, and fishing implements. One item of particular interest to the excavators was a quiver of arrows. A variety of projectile point styles was represented.

This illustrates clearly that one man may use four or five different styles of projectile points. This comes as a warning to archaeologists who have a tendency to build entire cultures upon given projectile point styles. Also, a find of this nature exemplifies once again the complexities involved in the development of a useful typological system that has meaning both spatially and temporally. It must be kept in mind that these people traded and gambled extensively, and we should not eliminate the possibility that some of these arrows found their way into this quiver in the form of grave offerings given by the survivors (1968:29).

The transitional phase indicates a change in Plateau culture, which relates to the acquisition of the horse. Elaborate grave construction, change in orientation and a larger variety of grave goods can be contributed to improved communication with neighboring culture groups. "The data of this phase support and augment the notion held by ethnographers that this period was typified by a state of instability, a period in which new ideas were rapidly bringing about change in the region" (1968:37).

This phase is essentially the same as Sprague's rock cairn period except for the orientation and possible European items.

Historic Phase: Extended burials characterized the Historic Phase. All inhumations were lying on the back and oriented to the east to northeast. All burials occurred in a plank box, although canoe burials were also used. "The body was dressed in elaborately beaded clothing and placed in the box along with grave offerings" (1968:26). There was a shift in grave goods from items of native manufacture to those of European manufacture. No evidence of "killing" grave goods was found. Still popular were ornaments, including glass beads, buttons, brass rings, bracelets

and mirrors. Cotton, wool, and silk cloth was found, as well as digging sticks made of iron, and numerous other metal items.

The Historic Phase's use of wooden boxes to bury their dead in an eastern orientation seems to be borrowed from Christian influences of the white settler.

Comparisons with other Lower Snake River Sites: Late Prehistoric Phase artifacts are few in number and consist of items that persist through all three phases (1968:31).

Transitional Phase: Most lithic material from Ford and Fish Hook Island is found in the lower Snake River Region in comparable chronological units. " For the more unusual items such as celts, wedges, harpoon parts, beaver tooth chisels, and clubs, it is necessary to look to burials from the adjacent Columbia River Region, notably the McNary Reservoir, for comparative materials" (1968:33). The Asotin site (Sprague, 1959) provides similarities with grave construction, and to a lesser degree, grave goods.

Historic Phase: Grave goods recovered from Ford and Fish Hook Island dated to the Historic Phase are typical of those found throughout the region and the entire Plateau.

Ford Island and Fish Hook Island burial data are located in Appendix 11.

(Annotated by Erin M. Shumate)

Preliminary Summary of the Southern Plateau/Lower Snake River Archaeological Record Statement in Support of Affiliation with the Ancient One

Confederated Tribes of the Colville Reservation History/Archaeology Department
2000

The paper is a summary description of the archaeological and historical records of the Lower Snake River region. The authors state that there is no evidence of a break in aboriginal occupation of this area from the earliest archaeological times through the historic era (2000:13). According to the authors, archaeological investigations in the Southern plateau culture area have asserted changes in climate, technology, and resource utilization, rather than population replacement, as the factors responsible for the observed changes in the archaeological record (2000:13). As such, the Confederated tribes of the Colville Reservation assert that ancestral Palouse people were occupants of the southern Plateau during the time that Kennewick man was buried in what is now Columbia Park (2000:13).

(Annotated by Lourdes Henebry-DeLeon)

Two Burial Sites in Central Washington

Robert H. Crabtree, 1957

This report focuses on two burial sites in Central Washington; the Rabbit Island Site (45BN15) and the Pot Holes Site. Both sites are located on the Columbia River.

The Rabbit Island Site is located three miles downstream from the confluence of the Snake and Columbia Rivers. In 1951, a field crew uncovered a multiple burial which led to the discovery of extended burials "...which had a depth and artifact association indicating a hitherto unsuspected phase of Plateau prehistory" (1957:6).

See Table 1: Elements of the Burial Complex, and Table 2: Rabbit Island II and Rabbit Island I, Appendix 12.

Rabbit Island I: Nine burials consisting of eleven individuals comprise Rabbit Island I. All the burials were in Stratum III, a loose, coarse, grayish-brown sand, which lies between 1.2 and 2.8 feet below the surface (1957:6). The burials in this group were fully extended and oriented toward the northeast or north northeast. Data indicates that preferential treatment was not given to children and did not differ between sexes. Grave goods distinctive of this phase are pestles, large modified-triangular points, medium to large points, shouldered with contracting stems, and cut shell.

The distinctive components of the site make it similar to other regions in the area including: Cold Springs I at 35UM 7, 35UM7, and Cedar Cave in the Vantage region. Thus, Rabbit Island I components are assigned to the first period of The Frenchman Springs Phase, dating from 3500 to 1500 years ago.

There are, however, tantalizing hints in the material from the Early Horizon in Central California, where there are, among other things, extended burials with large shouldered contracting stemmed points (Heizer, 1949). These alone would not ordinarily be enough of a similarity to mention, but the rarity of extended burials in other than late historic contexts highlights the resemblance. The ultimate ties with Paleo-Indian cultures, if there are any ... can not even be hinted at now, and will have to wait for further development of the sequences of early Plateau cultures, as well as those in all of the surrounding areas (1957:64).

Rabbit Island II: Ten burials, with fifteen individuals make up the Rabbit Island II component. All originate in Stratum I, a superficial probably wind deposited sand layer. The burials in this group are flexed or semi-flexed, accompanied by numerous artifacts, and sometimes buried in pits. The individuals are almost evenly divided by sex and age (juvenile/adult). Two individuals exhibit artificial cranial deformation. One individual is fronto-lambdoidally deformed while the other has fronto-occipital deformation.

The considerable amount of agreement between Rabbit Island II and the Sheep Island burials, which are stratigraphically precedent to cremations, which are without contact goods, and the agreement of both with 45BN3, which has contact goods, suggests a late period in which the burial patterns, for as yet undetermined reasons, underwent frequent and rapid changes (1957:49).

Comparisons with other sites indicate that this component is an example of the Wallula Gap Phase.

Pot Holes Site: The Pot Holes site is located about 3 miles south of the town of Trinidad, Grant County, Washington. Dr. F.S. Hall of the Washington State Museum excavated the site in 1920. "Dr. Hall's notes consist of little more than itemized lists of the burials or graves that were removed while he was present, and the contents of those which came into the Washington State Museum" (1957:65).

There are seventy-seven graves reported in Dr. Hall's notes, six without any grave goods. The Museum has records for thirty-five graves, seven without any grave goods. The graves located by Dr. Hall were said to be cremations. Portions of the remains that were found in the Museum's collection are only partial cremations. "That is to say, the bodies and some accompanying goods were partially burned or charred, and then the charred bones and artifacts with some additional artifacts

were placed in a shallow grave" (1957:65).

Although the writer has some reservations about the Pot Holes Collection because of the lack of really adequate notes, or any photographs from the field, it is the only record that is known for what was apparently a very important burial site in the late pre-historic and early contact period. Discrepancies between this collection and data from other sites in the Plateau have failed to materialize thus far, and as long as it is consistent with other, verifiable phenomenon, it will be useful for comparative purposes (1957:66).

There is no specific information on the burials of the Pot Holes site; a detailed account of all grave goods is included in Chapter III. The presence of copper ornaments, incised shell, steatite pipe, and incised human figures indicate a late 18th century burial pattern.

Heglar (1957) compiled metric measurements for the burials reported by Crabtree, see annotation of Heglar. Original records for these measurements are on file at the TBMWSM. Examples are enclosed in Appendix 23.

(Annotated by Erin M. Shumate)

Early Man in the Northern Part of the Great Basin of South Central Oregon

Luther Cressman, 1940

Beginning in 1935, a cave located in the northern part of the Great Basin of Oregon was excavated. Over the next two years human remains, as well as other cultural artifacts were uncovered in Catlow Cave. The remains of two individuals were found, one of those only being represented by the left wing of the sphenoid. The material covering the bones was disturbed. Wave actions from ancient lakes seem to have deposited the material in the cave. The skeleton was contained within a five foot area, and follows the rising level of gravels in the cave.

"Hrdlicka, Hooton, and Woodbury all examined the bones for signs of scars of teeth of animals which might have dug up a body and chewed upon the remains, and these men were unanimous in their opinion that the bones showed no signs of gnawing" (1940:171).

The remains were not buried, "then it follows that the body must have been deposited naturally" (1940:171).

The theory set forth here that the body was washed into the cave by wave action in the time of a storm when the water was receding from the high terrace; that the body was washed to the extreme end of the area by wave action, where it snagged and was partially dismembered; ... and the body was thus covered. The covered body with tissues to some degree intact was thus covered with sand and roof material which was slightly sounded by gentle wave action. ...If the body retained some of the tissues covering the bones when it was deposited, this would account for the lack of abrasions from gravel on the bones (1940:172).

(Annotated by Erin M. Shumate)

Archaeological Researches in the Northern Great Basin

L. S. Cressman, 1942

Catlow Cave No. 1: See Cressman (1940) for a description of these human remains.

Roaring Springs Cave: Remains of at least three individuals were located in Roaring Springs Cave. The remains consist of cranial fragments, fragmented mandibles from three individuals, and atlas, and a fragmentary humerus. "Speculation regarding the manner or time of death is futile. Two or three cranial fragments seem to have been burnt, but this might be quite accidental as a result of later fires in the cave"(1942:31).

Burials, Cremations, and Caches from the shore of Tule Lake: Eight burials, a cremation cache and five cremations were recovered on the shores of Tule Lake. No possible dates are suggested for the remains. Grave goods consisted of aboriginal items, no items of European manufacture were present. Burials on the shore of Tule Lake usually occurred in cracks in the lava ledge, and then were covered with rocks. A number of the remains exhibited evidence of occipital flattening. A cache pit containing two baskets filled with cremated human remains was located in a small cave in the lava dyke. Cremations are found in flat areas and covered with rocks.

See Cressman's Appendix A in Appendix 13.

(Annotated by Erin M. Shumate)

A Case of Possible Osteomyelitis in an Indian Skeleton

L. S. Cressman and O. Larsell, 1945

The skeleton was found in a cave in the Tule Lake region. According to those who found the skeleton the body was on its right side with the right leg twisted over the left. The right arm would have been hidden under the body. No artifacts were found with the burial. It was not known at the time (1945) a date for the skull. Many of the bones showed marked deformities.

The skeleton was well preserved by the dryness of the cave. It is an adult male. The cranium is asymmetrical. According to the report "... on the inside of the skull cap, an oval depression is present on the right parietal bone. This depression appears to be unusually large Pacchionian pits (1945:333)." The left mastoid process is very reduced in size, and the mandibular fossa is absent. The temporal root of the zygomatic process is smaller on the left side than the right. The lower premolars and first and second molars had been lost from the left side, apparently the result of an injury. The head of the right humerus was lacking. The authors comment that this may be due to the osteomeylitis (1945:335). The acromion and the neck and the articular surface of the right scapula are also lacking. The right humerus and ulna are firmly ankylosed together. The left tibia, which is shorter than the right is firmly ankylosed with the anklebones. The ankle bones are fused. The tarsals are fused with the second and third metatarsals. The condition of the bones of the left foot and the right elbow were likely due to osteomyelitis acquired during childhood, probably between the ages of ten and twelve (1945:335).

The malformation of the mandible was probably due to dislocation of the jaw, with improper care. The small size of the scapula is disuse atrophy following the injury to the right arm (1945:335). The osteomyelitis probably was due to staphylococci infection, which may have followed traumatic injury.

(Annotated by Lourdes Henebry-DeLeon)

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Human Skeletal Remains from Namu (EISx 1)

A. Joanne Curtin, 1984

A sample of forty-two human skeletons from the Central Coast of British Columbia is examined for archaeological context and morphological characteristics. The major aims of this analysis are: "1) to compile a comprehensive descriptive profile of the Namu Skeletal sample; 2) to compare these burials with other Northwest Coast Skeletal samples described in the literature and 3) to provide a body of descriptive data that can be utilized in future research on Northwest Coast populations" (1984: iii).

Two burial practices occurred at Namu, single and multiple inhumations. The earliest burials (5000 to 2000 BP) are adults, most often male, and are characterized by cranial lesions and labret facets. Later burials (post 2000 BP) are few in number, but special treatment is said to now include children as well as adults.

When compared to other Northwest Coast samples the Namu sample shows better dental health. There are less abscesses, periodontal disease, attrition, and tooth loss in the Namu sample. Namu burials are similar to other coastal samples in that degenerative joint diseases and trauma are the most common pathological conditions. Based on dental characteristics Namu shows closest affinity to the Queen Charlotte Islands.

(Annotated by Erin M. Shumate)

Skeletal Variability in British Columbia Coastal Populations: A descriptive and Comparative Assessment of Cranial Morphology

Jerome Cybulski, 1975

"This is a descriptive and comparative study of cranial variation within and among select indigenous populations of the coast of British Columbia" (1975:1). Eighteen groups were selected from within the territory of the Haida, Kwakwaka'wakw, Nootka, and Coast Salish language area. "Metric and non-metric morphology is described and compared in the context of anthropological and geographic frameworks and in the context of artificial head deformation" (1975:1). The purpose of this study is to describe the metric and non-metric traits, describe regional variation, and describe variations in cranial deformation.

Most of the Kwakwaka'wakw, Nootka, and Coast Salish crania exhibited deformation. No individuals in the Haida sample were deformed.

For all intents and purposes, the four ethnolinguistic divisions could be identified as discrete morphological entities owing to differences in shape influenced by variations in the cultural practice of intentional head deformation. Negligible between-division variation is found in the Kwakwaka'wakw, Nootka, and Coast Salish with respect to size of crania, but the Haida groups are distinct. Similarly, accounting for local group variability, no statistically significant between-division variation could be found for Kwakwaka'wakw, Nootka, and Coast Salish in elements of non-metric divergence, but the Haida groups are different (1975: 3).

(Annotated by Erin M. Shumate)

Cribræ Orbitalia, a Possible Sign of Anemia in Early Historic Populations of the British Columbia Coast

Jerome Cybulski, 1977

Three hundred seventy-nine skulls from four ethnolinguistic divisions in museum collections and seventy-five from recent archaeological work representing Haida, Kwakwaka'wakw, Nootka, and Coast Salish, representing the early historic period (1750-1850) were examined for evidence of a sieve like expanse in the orbital plates of the frontal bone. The condition was evidenced in all the sampled populations, indicating a widespread occurrence. The results were reported by age group and sex.

Cribræ orbitalia is found in populations of the Old World, in the Pacific, and in the New World, mainly Peru and the American Southwest. Cribræ orbitalia is considered indicative of pathology, but the etiology of the condition is unknown, and its cause may be due to genetic or environmental factors. Anemia, particularly iron deficiency anemia, is considered a likely cause of the condition. Both orbits are almost always affected, and usually in similar degree. Immature individuals are affected more frequently than adults, with female adults three times more likely to be affected than males, the category with the highest incidence is the 6-18 year olds.

Cribræ orbitalia manifests a condition similar to porotic hyperostosis, symmetrical osteoporosis, or hyperostosis spongiosa, the cause of which is believed to be related to diploic thickening. Some lesions have been detected in the grooves formed by cultural modification of the skull, but it is unlikely that the incidence of cribræ orbitalia is related to cultural deformation. The variability in the incidence of cribræ orbitalia may indicate an etiology that is both genetic and environmentally related. Studies of cranial morphology among these groups tend to rule out a widespread occurrence of the condition due to a common inherited disorder; the populations display considerable genetic homogeneity.

In living individuals, the condition is caused by marrow hyperplasia, demonstrated by hemolytic anemias, namely thalassemias, and sickle cell anemia. Chronic iron deficiency anemia also manifests itself with similar results. Since the thalassemias and sickle cell anemia are not endemic to the British Columbia region natives, these causes are unlikely to be the cause of observed cribræ orbitalia. A disease such as hereditary spherocytosis, which has no past or present geographical restrictions, may be implicated in the unusually high incidence in the Haida population. The trait is inherited as an autosomal dominant and is therefore potentially common in a genetically homogeneous population.

Current research, and the marked variability by sex in the Haida sample, points to iron deficiency anemia as a likely cause of cribræ orbitalia in past populations. Although the autosomal trait does not explain the sex differences, there are factors which do. Adult females are more susceptible to iron deficiency anemia due to menstruation, pregnancy, childbirth blood loss, and lactation. Females with succeeding children are at an even higher risk. Adult males generally have sufficient body stores of iron and are therefore less likely to be anemic. The age group variability also can be explained in this manner. Children in the 6-18 year group have excess demands for iron due to the needs of the growing body. Adolescent females also have the added loss of menstruation. The lowest incidence of cribræ orbitalia, in infants less than two years, can be explained by the fact that infants are generally born with sufficient body stores of iron. Culturally determined weaning times of 2-3 years accounts for a higher incidence in this age range, as prolonged weaning can result in iron deficiency anemia.

Since diets including salmon and shellfish (both high in iron content) as well as other meats, (including liver), dietary causes are unlikely. However, historic changes in diet cannot be completely ruled out due to the affects of the European expansion and the resulting disruption in eating patterns. Impaired absorption from the gastrointestinal tract may be a contributing a factor. Malabsorption syndromes, parasitic infections and disease can cause this. Precontact skeletons are rare, so it is difficult to exclude or completely accept any cause, though the author's study of four individuals from the Prince Rupert area does suggest that iron deficiency anemia may be at the root of cribra orbitalia development. Both inherited and acquired forms of anemia may be implicated in the etiology of cribra orbitalia.

(Annotated by Steven Hackenberger and Kathy Hill)

An Earlier Population of Hesquiat Harbor British Columbia

Jerome Cybulski, 1978

"This study has presented the results of an on-site analysis of skeletal remains from Hesquiat Harbor, British Columbia. Remains of 108 deceased, representing an early historic population most probably of the first few decades of the 19th century, were removed for reburial from 11 burial-cave and rock-shelter sites that were exposed to vandalism" (1978:71).

Results of the study indicate that young adult mortality was the highest, followed by infants. Mortality rates are more like that of prehistoric groups than postcontact groups. Some intentionally broken long bones were found, suggesting ethnographic ritual use of human remains. Half of the sample from Hesquiat Harbor exhibited intentional cranial deformation. Joint disease was the most common pathological condition. The sample also exhibited slight to moderate musculature, short stature, and moderate dental occlusion.

(Annotated by Erin M. Shumate)

An Early Human Skeleton from South Central British Columbia: Dating and Bioarcheological Inference. In, *Canadian Journal of Archaeology*, No. 5

Jerome S. Cybulski, Donald E. Howes, James C. Haggarty, and Morley Eldridge, 1981

Cybulski and others discuss the adult postcranial skeleton discovered at EeQw 48 on the east bank of Gore Creek in south central British Columbia. The skeleton was discovered in May 1975 and in May 1979 a detailed osteological examination was carried out. A radiocarbon date of 8250 \pm 115 BP was obtained. The excavation report (Charlton and Hanson 1975) indicated that four vertebrates were flexed and oriented to the south (1981:50). The bones were recovered *in situ*. No artifacts were found in the vicinity of the skeleton.

The skeleton is a young male. No skull or mandible was found. Measurements of the bone are found in Table 1 of Cybulski et al. paper (1981: 53). Overall there was minimum postmortem damage. Age was determined 23 to 39.

The Gore Creek skeleton suggests a relatively tall and slender body build. The deltoid tuberosity is moderately developed. The tibiae have very prominent and roughened popliteal lines. The shafts of the femora and tibiae are flat, possibly an adaptation to stronger muscle attachments (1981:54).

(Annotated by Lourdes Henebry-DeLeon)

DOI 10428

A Greenville Burial Ground: Human Remains and Mortuary Elements in British Columbia Coast Prehistory

Jerome Cybulski, 1992

The remains of 57 individuals were excavated from a midden in the modern Nisga'a village of Greenville. Two burial components were located dated from AD 550 to 1010 and AD 1180 to 1290. All intact burials were in a flexed position, and buried in a burial box. A high percentage of the women had labret facets. Pathologies noted included chronic sinus infection, middle ear disease, scoliosis, and hip dysplasia. "Cranial morphology suggests the people who buried their dead at Greenville were biologically related to those of Prince Rupert Harbour, possible denoting a common Tsimshian ancestry 3,000 years ago" (1992:iii). About a third of the individuals buried at Greenville exhibited trauma, and almost all adults had degenerative joint disease. Associated grave goods included dog crania and elderberry seeds.

(Annotate by Erin M. Shumate)

Preliminary Excavations of a Burial Site on the Snake River

Richard Daugherty and Eugene Dammell, 1952

The site, 45AS2, consisted of five primary burials covered with cairns. These were found through the River Basin Archaeological Surveys of the Smithsonian Institution. The burials were excavated by an archaeology class from The State College of Washington. Burial descriptions can be located in Appendix 14.

"None of the burials appeared to have been disturbed in any manner ... The skeletal material was rather poorly preserved." (1952:127). Orientation was not patterned, although cairns formed a line parallel to the river.

(Annotated by Erin M. Shumate)

The Wildcat Canyon Site (35GM9)

Don Dumond and Rick Minor, 1983

The Wildcat Canyon site is located on the Columbia River near the mouth of the John Day River. Eighty-one burials, sixty-three datable, were recovered from a cemetery area. There were no artifacts suggesting European contact found at the site.

The majority of the burials were flexed or semiflexed and most commonly lying on the left side, back lying was infrequent. Burials of only the skull are the second most common burial type. The most common orientation was to the northeast or east (71%) (1983:56). There is no indication differential treatment between sexes or ages in the type of grave goods placed with the deceased. Evidence of burning is limited to grave goods.

Interesting difference emerge in the demographic profile. Individuals 15 years of age and under are underrepresented, comprising 19% of the burials. Infant and child mortality was higher and should be reflected in the cemetery. This would indicate that infants were being treated differently than the adults in burial practices.

Appendix B: Inventory of Human Remains, by William Zukosky Jr, and adapted from a description by Cole and Cressman, is included in Appendix 15.

(Annotated by Erin M. Shumate)

Human Skeletal Remains from Gold Hill, Southwestern Oregon: Morphological Comparison with Prehistoric Modoc, Paiute/Shoshoni, and Athapaskan Assemblages

Roxana Felicia Ferllini, 1989 (Masters Thesis)

Ferllini studied the human skeletal remains from Gold Hill, Oregon, and compared them to collections representing prehistoric Modoc from Northeastern California, Paiute/Shoshoni from Stillwater Marsh, Nevada, and the Athapaskan from Alaska. The groups represent the Penutian, Uto-Aztekan and Na-Dene (1989: iii). One of the Penutian speaking groups was the ethnographic Takelma, who inhabited the interior southwestern region of Oregon, the general vicinity of the Gold Hill Site.

The purpose of Ferllini's research was to assess the degree of morphological correlation between the Gold Hill skeletons and skeletons from the Nightfire Island site in Modoc territory, and the presumably unrelated skeletons of Athapaskan and Paiute/Shoshoni ancestry.

The Gold Hill site was located near the small town of Gold Hill, Oregon. It appears the site was first occupied as early as 3000 BP, abandoned, and occupied again about 1000 BP. The burials were located northeast to the southeast on the long ridge occupied by the site, and distributed in an oval pattern. Most of the deepest burials were lying on the left side, the heads toward the south and facing west, the legs flexed with the knees flexed against the chest, the feet pulled in against the pelvis and the arms folded across the chest. The shallower burials were apparently all flexed (1989:16). Obsidian blades were found in the deepest burials.

The statistical analysis of morphological traits from Gold Hill (ancestral Takelma) and Nightfire Island (Ancestral Modoc) skeletal material indicates that based on the craniometric and non-metric traits the two may be genetically related. According to Ferllini the Gold Hill and the Athapaskan (skeletal series from Alaska - exact locality unknown) remains also appear to be related. The Athapascans belong to a different language phylum and did not arrive in the area until about 900AD. These results are probably a result of the small sample size (1989:35). The Paiute/Shoshoni material appears genetically distant. When the same skeletal material was evaluated on nonmetric traits, the results indicated a closer genetic affinity.

From the available evidence it would appear that the Gold Hill population was most likely ancestral to the historic Takelma. They were also genetically related to the Modocs and did not share significant genetic material with the Paiute/Shoshoni. Results of the analysis indicate a relationship to the Athapaskan, but the small sample size must be considered (see Appendix 16).

(Annotated by Lourdes Henebry-DeLeon)

An Analysis of Cranial Material from the Congdon Site. Appendix 1, Further notes on the Burials and the Physical Stratigraphy at the Congdon Site, a multi-component Middle Period Site at the Dalles on the Lower Columbia River.

James Garner, 1963

A sample of 37 crania was analyzed from the Congdon Site. Cranial capacities were taken with mustard seed. No attempt was made to distinguish cranial capacities on

a sexual basis. Twenty-three of the crania exhibited artificial deformation. Fourteen crania had flattening originating near lambda. On six more crania deformation extended from lambda to the right and in three it extended to the left. Fourteen exhibited no deformation. Although not discussed in this paper, two impressions were noted. The first impression being a "wide diversity of forms in a series obtained from one source" (1963:33). A second impression was the unusual number of pathologies present. The collection is currently split between TBMWSM and the CWU anthropology department.

(Annotated by Erin M. Shumate)

The Middle Columbia Cremation Complex

Thomas R. Garth, 1952

Sheep Island Cremation Pits: Garth maps archaeological sites and tribal distribution. His Fig. 40 shows archaeological sites superimposed upon a tribal distribution map along the middle Columbia and lower Snake Rivers (see Appendix 17). Two cremation pits were located near the west end of Sheep Island (45BN55) located 13 miles downstream from Wallula, Washington. These cremation pits were shallow depressions 6 to 8 feet across and a foot or less deep (1952:40). Cremated bone occurred only an inch or two from the surface. Burial descriptions can be located in Appendix 17.

Pit 1 was surrounded by a wide ring of stones that was almost 14 feet in diameter. Additional rings occurred at 10" and 18" deep. Between each of these layers calcined human bone was found. The underfaces of the stones were covered with soot and the stones on the southwest side of the middle ring were painted with red ochre. "It seems probable that the cremations took place at least three times. Each time the burned bone, charcoal, etc., was swept into the pit and then covered with a ring of stones" (1952:40).

Pit 2 was similar to Pit 1 except that it was triangular. The diameter of the upper ring was 15.5 feet and there were up to two rings below it. Surrounding this pit was an old occupation level, now covered by windblown sand. The floor was compacted and a thin layer of calcined bone occurred on the surface. "Some of the bones had a thin coating of red ochre, indicating that the bodies must have been exposed, probably on a platform, and that after the flesh had disappeared the bones were painted" (1952:41). "Mud Dauber" wasp nests were found providing additional evidence for exposure.

There were some distinctive grave goods uncovered at 45BN55. Small stemmed basalt arrowpoints were abundant and differed little from those used in historic times. The 4 concave base "mule ear" points "... may be a distinctive trait of the cremation culture. None have been found in such historic sites in the area ..." Several were found at Juniper Island though they were not in situ (1952:41).

Rabbit Island Cremation: The cremations at Rabbit Island, one mile south of the Snake River, are similar to Pit 2 at Sheep Island. The site had been disturbed leaving only a small amount of bone in situ. Found with the remains were charcoal, charred willow rods, and fragments of two charred baskets.

"The early funerary custom was burial in a flexed position on the back as a rule, with the head to the west or south" (1952:54). There were no, or very few, burial goods. Later funerary customs included exposure of the dead, the use of red ochre, and ritual burning.

DOI 10431

(Annotated by Erin M. Shumate)

The DeMoss Burial Locality: Preliminary Observations

Thomas Green, Max Pavesic, James C. Woods and Gene L. Titmus, 1986

"The DeMoss Site is a Cascade Phase burial site dating to 6000 years BP. The remains of at least twenty-two individuals of all ages and 236 burial blades, Cascade points, and side-notched points have been recovered" (1986:31). The site is located two miles south of New Meadows, Idaho in and around a cold water spring. It was discovered in 1985 by Mr. Craig DeMoss while excavating the spring. The State Archaeologist Office in Boise handled the removal of the skeletal material and artifacts. All material was in a disturbed context.

Daniel Seachord of the University of Idaho, completed a preliminary analysis of the material. Based on the analysis there are at least 22 individuals, 18 over 10 years of age, 3 between 2 and 5 years and one neonate.

The DeMoss Site expands the interpretive base of the Archaic burial patterns as they are currently recognized in western Idaho and the Southern Plateau. The DeMoss Site is directly comparable to Cascade Phase burial materials recovered at the famed Marmes Rockshelter in southeastern Washington, and at the same time it clearly provides an antecedent for the recently identified Western Idaho Burial Complex (Pavesic 1985) (1986:38).

The Western Idaho Burial Complex is identified at various sites in Idaho, dated to 4500 to 4000 BP. "It includes multiple flexed or semi-flexed inhumations which are commonly in high sandy knolls adjacent to major river drainages" (1986:39). These burials contain bifacial cache blades, large side-notched projectile points, obsidian preforms and Olivella shell beads. The use of red ochre and possible cremations also occurred. "The technological analysis of the DeMoss lithic materials suggests a developmental association with the Western Idaho Burial Complex" (1986:39).

"A full, detailed analysis of the human skeletal material is not yet completed. The interpretation of the material will be hindered by the lack of articulation and the generally poor condition of the bone. However, it is an important collection because of the age and the number of individuals recovered" (1986:33).

(Annotated by Erin M. Shumate)

The Buhl Burial: A Paleoindian Woman from Southern Idaho

Thomas Green, B. Cochran, T.W. Fenton, J.C. Woods, G. L. Titmus, L. Tieszen, and S.J. Miller, 1998

In 1989, human skeletal remains representing a 17 to 21 year old female were found near Buhl, Idaho. Grave goods consisted of a stemmed biface, an eyed needle, and an unidentified bone implement. AMS measurements indicate an age of 10,675±95 BP. "The skeleton was well preserved but partially destroyed by quarry operations. In fact, it was one of the best-preserved Paleoindian skeletons ever recovered, with minimal postmortem damage to the bones" (1998:445). Sex of this individual was determined by morphologic and anthropometric variables. The cranium is gracile, muscle markings were light to moderate. Metric analyses verified that the individual is female. Postcranial and cranial metric data from the Buhl skeleton is located in Appendix 18. The age of the individual was determined using dental eruption, cranial suture closure and epiphyseal fusion. The occlusion of the

third molars, the fusion of the basilar synchondrosis, and postcranial epiphyses all suggested an age of 17 to 21 years.

Morphologic and nonmetric analysis was performed to determine biological affinity. Traits which confirmed American Indian ancestry included: forward projecting zygomatics, flared nasal aperture, "tented" nasal root, smooth contour of nasion, alveolar prognathism, keeling of the skull, and the palate was a squared-off U-shape (1998:446). The individual exhibited a high degree of occlusal wear. This is unusual for someone this age. "The Buhl mandibular dentition also exhibited unusual oblique wear planes for an individual of this age" (1998:447). Enamel hypoplasias, caused by disease or malnutrition, were "...observed at 3mm above the cemento-enamel junction, which correlates with an occurrence age of 4.7 years" (1998:448). Harris lines, another indicator of stress during development, occur in this skeleton. "No evidence of a burial pit was observed in the soil profiles, and the manner of interment could not be determined because of the disturbance to the grave by the gravel quarrying" (1998:452). The authors state that the artifacts were made specifically for this individual at the time of death, therefore suggesting that this is an intentional burial.

See annotation for Neves 2000.

(Annotated by Erin M. Shumate)

The Mecham Site: A Rockshelter Burial in the Snake River Canyon of Southern Idaho

Ruth Gruhn, 1960

The prehistoric burial of a young adult female, 21 to 35 years of age, was found in a rockshelter near Twin Falls, Idaho. The burial may be a primary burial oriented to the east or a secondary burial of disarticulated remains. Associated artifacts include; red ochre, mussel shell fragments, knife blades, projectile points, a stone pipe, cores, bone tubes, and small Olivella beads.

(Annotated by Erin M. Shumate)

Notes on Material From a Burial Along the Snake River in Southwest Idaho

Ruth Gruhn, 1961

The burial of a young adult male individual was found along the shore of the Snake River in Canyon County, Idaho. The body was in a flexed position lying on the right side, and oriented east. The skull of the individual and associated artifacts were collected. Artifacts include a fragment of a basket, a scraper, a hafted stone point and a wooden cylinder.

(Annotated by Erin M. Shumate)

Nez Perce National Historical Park Archaeological Excavations, 1979-1980

Part I-Burial Recovery and Monitoring

Karl Gurcke, Michael Bies, Thomas Mulinski, and Roderick Sprague, 1981

Burials were located during the 1979 construction for a visitor center at the Nez Perce National Historical Park. Construction was shut down and the decision was made to excavate the burials and search for additional cultural material. Five intact

burials were located during the bulldozing operations. Additional remains uncovered determined the MNI for the site as between 50 and 60 individuals. Burial data for the five intact burials and the limited data for an additional 13 burials are presented in Appendix 19. "From abundant informant data we can conclude that the burials observed fit the expected historic pattern of extended burial on the back oriented east (Sprague 1967; Rodeffer 1973)" (Gurke et al. 1981:26).

(Annotated by Erin M. Shumate)

Salvage of Human Skeletal Remains From "Knoxway Canyon," Lower Granite Reservoir

Carl Gustafson, 1978

Human remains representing at least two individuals were found eroding from a bank on the south side of the reservoir. Location 1 was identified by an exposed mandible; further excavation led to the discovery of additional fragments and a skull. A flaked basalt cobble, found near the edge of the pit, may be an associated grave item. It is believed that this is an eroded unmodified pit burial.

Location 2 is a pile of rocks that resembles a cairn. The cairn was excavated and one fragment of human bone was found in a rodent burrow.

Additional human remains that may represent another individual were located on the beach. The remains include a maxilla, long bones and fragments, a scapula, and rib fragments. The additional remains do not appear to correspond with location 1, as a right scapula was found at each location. The additional remains do not show continuity with location 2. Copper staining on the maxilla may signify that this burial was historic in origin.

(Annotated by Erin M. Shumate)

Dental Pathology of Prehistoric Residents of Oregon

Roberta Hall, Robert Morrow, and J. Henry Clarke, 1986

The dentitions of 208 prehistoric human skeletal remains from five different regions of Oregon were analyzed to describe differences. The five regions were Lower Columbia Valley, Central Oregon, Klamath Basin, Coast of Oregon, and the Willamette Valley. Dental status was determined using 6 variables; caries, pathologically missing teeth, abscesses, edentulous, attrition, and alveolar loss. The author notes that one variant may be a precursor to another, for example high levels of attrition could lead to an infection, producing a cavity or an abscess (1986:333).

"This study has found relationships between diet and prevailing dental pathologies among cultural groups practicing variant forms of a collecting and hunting life-style" (1986:333). The Willamette Valley and Klamath Basin are areas in which the heaviest dependence on soft vegetable resources existed. These two sample areas exhibited the highest level of dental problems. People of the Lower Columbia Valley relied more on riverine resources, which causes more attrition. Higher frequencies of abscesses were recorded for the Klamath Basin and the Lower Columbia Valley samples. Aboriginal use of gathered plants in the Willamette Valley and the Klamath Basin, "...could be considered in the incipient stage of agriculture, which has frequently been associated with an increase in health problems" (1986:333). The Lower Columbia Valley's high level of attrition is associated with a low number of caries. Central Oregon and the Coast of Oregon samples depended on gathering and hunting equally which is exhibited in their moderate levels of attrition and

pathology. Table 4 the summary of dental status by region for specimens aged 15 or older can be located in Appendix 20.

(Annotated by Erin M. Shumate)

Skeletal Population at 35-CS-43C

Roberta Hall, 1986

In 1986, a field crew from Oregon State University uncovered the remains of at least nine individuals. Three burials had been disturbed by a backhoe when the City of Bandon was installing underground cables. Four burials were excavated. Fragmentary remains from at least two other burials were located in the backfill from the city's excavation.

Arthritic lipping of the vertebral bodies occurred in varying degrees among all the adults, the degree correlated with other measures of age. Patellas of two individuals were uncovered; both sets of patellas exhibit a condition called emarginate patella. "Frequencies in other skeletal populations that have been studied have been recorded as varying from none to 0.051" (1986:172).

Dental attrition was recorded on an 80 point scale, with 10 indicating no wear and 80 indicating loss of all enamel with the roots functioning as the occlusal surface. The mean value for 33 observations of the maxilla were 58.1 (sd=23.5) and 52.6 (sd=20.9) for the mandible. "Dental Health of all individuals was excellent relative to age" (1986:172). No pathologies were found in younger persons, and premortem loss of teeth and abscesses were noted in older individuals. No caries were found. Dental pathology was slightly greater in maxillary teeth (6.94%) than in the mandible (6.06%), but differences were not statistically different (1986:175).

Historic artifacts were found in the disturbed areas of the site. None of these artifacts were in direct association with the burials. A number of prehistoric artifacts were found in the backdirt of the city's excavation. These artifacts included worked flakes, harpoons, and faunal remains. "In every respect, all skeletons showed signs characteristic of indigenous prehistoric people of Oregon. This includes dental attrition and pathologies ..., relatively rugged cranial attributes, and rather short stature of both sexes. Tarsals and metatarsals indicate relatively small feet; hands, though not large, were very muscular" (1986:175).

Burial No. 1

Mortuary Practices

- a. Burial setting:
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects: ground bone point, found near skull

Skeletal variables

- a. Skeletal morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal disease indicators:
- e. Taphonomy: .37 meters below datum, lowest burial, intact and undisturbed, analysis of a soil sample taken near this burial indicated a high level of iron, very likely from leaching of manufactured materials.

Burial no. 7

Mortuary Practices

- a. Burial setting:
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects:

Skeletal variables

- a. Skeletal morphology:
- b. Dentition: ectopic eruption and partial impaction of the left maxillary second premolar, extreme wear of all teeth; left maxillary 1st molar and 1st premolar were worn to the level of the gum.
- c. Culturally induced skeletal modification:
- d. Skeletal disease indicators:
- e. Taphonomy:

Burial No.5

Mortuary Practices

- a. Burial setting:
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects: fire-cracked rock ringed around the cranium.

Skeletal variables

- a. Skeletal morphology:
- b. Dentition:
- c. Skeletal disease indicators:
- d. Taphonomy:

(Annotated by Erin M. Shumate)

A Unique Burial From the Lower Coquille River

Brian Harrison, 1977

A burial was recovered from the banks of the lower Coquille River in 1976. Preservation was excellent. Few artifacts were associated with the burial. Spina bifida occulta and an extra ossicle on the fifth vertebra were identified. No date has been determined for the material.

(Annotated by Lourdes Henebry-DeLeon)

The Osteology of the Human Skeletal Material from the Braden Site, 10-WN-117, in Western Idaho

Lucille Harten, 1975

The Braden site, located near Weiser, Idaho, was excavated in 1967 and 1968. The remains of 10 individuals were uncovered as well as two cremations.

In 1968, a cranium that did not appear the same as the others was found. It is not included in this comparison. A description of these remains is included as an unnumbered burial. All the individuals were found in the flexed position. Orientations of the burials were random.

Cremations: A minimum of two individuals were represented in the cremation component of the site. The bones exhibited warping and fragmentation. All of the charred human remains were located in subsurface layers, thus it is improbable that they are from an accidental burning. The Braden Site is dated to 5790+/- 120 (1975:6). Burial descriptions and measurements of the remains are available as an Appendix 22.

Anthropometric examination of the osteological material has revealed a homogeneous population of slightly smaller dimensions than modern Americans. Head shape was generally doliocranial, teeth fairly large, and mandibles broad. A coarse vegetal diet probably accounts for the worn condition of the teeth (1975:67).

(Annotated by Erin M. Shumate)

More Concerning the Pistol River Site

Eugene Heflin, 1964

The Pistol River Site was a two section village of about 40 houses south of Gold Beach, Oregon. It had been burned to the ground by whites in 1856. The author assigns a date of 1640 to the site, the late prehistoric to historic time period. Twenty burials were excavated from the site. Three burials were removed from a housepit. The skulls of "Heflins burials" were sent to Dr. Hoyme, Division of Physical Anthropology, U.S. National Museum in Washington, D.C. for cephalic measurement and comparison with other skulls from the southwest coast of Oregon and northwest coast of California. The author states the name of the village was Chetlessentan and the people who lived there the Chetleschantunne. [*there are no page numbers on the article.]

(Annotated by Lourdes Henebry-DeLeon)

Racial Analysis of Indian Skeletal Material From the Columbia River Valley

Rodger Heglar, 1957

The author analyzed human remains representing populations from two general areas; the Plateau and Western Washington. These two areas were subdivided into Upper Columbia, Middle Columbia, Lower Columbia, Puget Sound, and Upper and Lower British Columbia. The samples were described and interpreted using various methods. Heglar's metric and nonmetric observations are on file at the Thomas Burke Memorial Washington State Museum; an example of his data is included in Appendix 23.

Cranial deformation occurred in both areas. Fronto-lambdoidal and fronto-occipital were common in the Plateau and Coast, although frontal and cylindrical were also common on the Northwest Coast. Plateau artificial deformation was consistent with the use of cradleboards. The females of the Plateau sample, when compared to males, show greater alveolar prognathism. The males have more skeletal robustness and narrower nasal apertures than the females. The Upper Columbia sample exhibited greater dental indices, broader palates, and shorter palate lengths. Male Middle Columbia crania from the Pot Holes Site exhibited greater

length-breadth and maxillo-alveolar indices. Plateau and Northwest Coast crania differed in a few ways. The Coastal crania were larger and had shorter, broader faces with more prognathism and longer palates than their Plateau counterparts. Puget Sound crania exhibited a greater cranio-facial longitudinal index than the Coastal samples.

Stature estimates for the Plateau sample was bimodal, which the author suggests may be due to population mixture. "However other metric data, blood groups, and observations do not support this hypothesis" (1957:72).

Dental traits between the two population samples differed. The Plateau sample exhibited more dental attrition, resulting in an increase in the occurrence of dental pathologies.

The occurrence of pathologies, anomalies and fractures was not significant. Upper Columbia remains exhibit a high frequency of the gene for blood group A, especially the females. This characteristic may be from the neighboring Plains groups that also have a high frequency for A. The Middle Columbia sample had a higher frequency of O, similar to Coastal frequencies.

From the interpretations of the metric and morphological data presented in the preceding pages, the population of the Plateau represented by skeletal remains appears to be homogeneous in the sense of 'physical type'. The few differences that did occur were usually due to variations within a given range, which may be the result of population mixture to a minor degree. Likewise, the Plateau and Northwest Coast remains do not differ in any major respect as to physical type. The similarity of these two populations is great enough to suggest very strongly that their isolation from one another had not been great enough to lead to genetic differences (1957:70).

(Annotated by Erin M. Shumate)

Human Skeletal Remains. In, Archaeological Investigations at Yaquina Head, Central Oregon Coast. Rick Minor, Kathryn Ann Toepel and Ruth Greenspan

Brian Hemphill , 1987

Two human burials were found during the excavations at Yaquina Head. Burial 1 (Feature 5) was the skeletal remains of an infant of unknown sex. The body was placed in a seated position with the trunk in the southeast portion of a shallow pit. Hemphill suggests that the individual died either at birth or shortly after birth. A fragment of the whalebone artifact submitted for radiocarbon analysis gave a date of 3400+/-240 years (1987: 67).

Burial 2 (Feature 11) was an articulated male resting in a supine position oriented from northeast to southwest. The individual was at least 25 but less than 30 years old at the time of death. Osteological measurements were recorded for both burials. Unfortunately sections of the adult male crania could not, or were not, refitted for fuller measurement (see Appendix 31). The two sets of human remains were reinterred on Siletz Reservation.

(Annotated by Lourdes Henebry-DeLeon)

Osteological Report on the Human Remains Recovered from Feature 2, Site 35JA27A In Data Recovery at Sites 35JA27, 35JA59, and 35JA100, Elk Creek Lake Project, Jackson County, Oregon. Richard Pettigrew and Clayton G. Lebow

Brian E. Hemphill, 1987

A human burial designated as Feature 2 was interred directly beneath a large flat capstone surrounded by a cluster of smaller stones. The extreme disarticulation of the burials suggests that this was a secondary burial. At the same time, evidence points to an intentional orientation of the bones. The lower limbs were to the east, the head to the west, and the face turned to the northeast (K.14). Hemphill suggests that the remains in Feature 2 represent a secondary burial in which the bones were placed in the pit only after the soft tissue had been removed (K.15). It was determined that the individual was a male between 30 and 40. American Indian ancestry was assumed for this burial because of the association of the burial with American Indian cultural materials (K.21).

Metrical analysis of the cranium and mandible was limited by the nature of the fragmentary remains to three indicators (Appendix 36). There was no evidence of macroscopic pathology.

(Annotated by Lourdes Henebry-DeLeon)

Human Skeletal Remains . In, Yaquina Head: A Middle Archaic Settlement on the North-Central Oregon Coast.

Brian E. Hemphill, 1991

Archaeological investigations at Yaquina Head in 1986 encountered two human burials. The first burial consisted of the remains of an infant; the second burial was an adult (1989:121) (see annotation). During the analysis of the vertebrate faunal remains recovered, four isolated human bones were identified. Hemphill describes these elements (1989:121).

The remains include elements from at least three individuals. A juvenile represented by a right radius, an adult represented by the metatarsal and scapula, and the incisor of a subadult. Together with the two burials found earlier (1986) a total of five individuals are known from 35LNC62. The human remains found in 1989 were reinterred on Yaquina Head (1989:123).

(Annotated by Lourdes Henebry-DeLeon)

A Report on the Salvage of an Aboriginal Burial from the Mouth of Knoxway Canyon, Lower Granite Reservoir

Thomas M. Iverson, 1976

A burial of an adult male, approximately 30 years of age, was found eroding out of a bank of an alluvial fan at the mouth of Knoxway Canyon. The grave was marked by a subsurface cairn located 10 inches below the surface. The primary inhumation of this individual was located approximately 2 feet below the surface.

The rock cairn, body placement on the back in an assumed flexed position, and the easterly orientation suggests a protohistoric temporal assignment for this burial. However, the paucity of grave goods, which include dentalia and the relatively large quantity of well developed soil which covered the rock cairn suggests the possibility of even greater antiquity, making a late prehistoric date quite plausible (1976: 2).

(Annotated by Erin M. Shumate)

DOI 10439

The Tucannon Burial Relocation Project, Columbia County, Washington

Thomas Iverson, 1977

The site 45CO1B is located on the Tucannon River at its confluence with the Snake River. Earlier excavations at the site led to descriptions of burials but removals did not occur. "The purpose of this project was twofold. Its primary function was to salvage all of the remaining aboriginal skeletal material and associated cultural items for 45CO1B and reinter the human remains in a protected cemetery. This was accomplished with the final reburial in 1977" (Iverson 1977:5).

"As many as 169 individuals were identified osteologically from the 134 archaeologically determined graves" (Iverson 1977:132). Extensive relic collecting has limited the amount of cultural data that can be obtained from 45CO1B. Descriptions of the burials can be located in Appendix 24.

(Annotated by Erin M. Shumate)

Lake Roosevelt Burials: a Computer Analysis

Thomas M. Iverson, 1984

Iverson coded and analyzed 283 burials from 33 sites in the Lake Roosevelt area of Washington. The data were synthesized and a chronological burial pattern proposed for the Lake Roosevelt area. Iverson's goal was to develop a body of data that would allow the calculation of descriptive statistics for use in comparative analysis. Iverson designed a burial excavation form for use with the computer programs of the Statistical Package for the Social Sciences (SPSS) (1984:18). The sites were from the region of the Upper Columbia River inundated by the construction of Grand Coulee Dam. The burials include those recovered by Collier, Hudson and Ford (1942), Chance (1967, 1970, 1979), (Sprague and Birkby (1970), Mulinski (1977), and Iverson (1975, 1979) (1984:13) According to Iverson, there were too many variables in burial patterns to fit into a coded statistical package. (See annotations this report).

(Annotated by Lourdes Henebry-DeLeon)

Variation Among North Amerindians: Analysis of Boas's Anthropometric Data

Richard Jantz, D.R. Hunt, A.B. Falsetti and P.J. Key, 1992

A computerized database was developed for Boas's anthropometric data for over 15,000 subjects (Boas 1895). The database is used for a general analysis of North Amerindian variation (64 tribes with 6458 subjects) and detailed analysis of variation among 38 tribes and bands in the American Northwest (see Table 3). The authors' work follows earlier more limited analyses by Hall and McNair (1972). Results of canonical analysis and principal components analysis indicate that both geographic location and language explain highly significant levels of variation among face and body measurements of sample populations.

Overall head and face measurements (such as cranial length and breadth, face breadth and nasal height) are more variable than body measurements; however, all twelve measurements exhibit significant variation among samples and yield several useful eigenvalues. In the general study two variates account for 80% of among tribe variation by culture area. In this study culture area explains 53% of variation and language group explains 38% of variation. Also in the general study Wakashan

and Salish are removed from each other and Penutian and Na-Dene are close together. Continent wide Northern Plains groups are large bodied, have high faces and noses, and long, narrow heads. Northwest Coast samples have small body size, large sitting heights, with large heads and faces; whereas California and Great Basin samples have small head and face with small body dimensions. Southeast populations have small body and small heads and faces. Eskimo combine small body, wide shoulders, high face and narrow nose.

The study distinguishes Na-Dene groups (n=7) from both coastal (n=15) and interior (n=6) Salish groups. Penutian (n=4) and Wakashan (n=5) fall between these groups. Northern Na-Dene have large bodies with high noses and faces that are both more narrow. The Puget Sound Salish share broad heads and faces with wide, short noses. Some of these similarities are shared with Penutian speaking Tsimshian. Interior Salish of the Thompson and Fraser rivers are separated from coastal Salish, and distinctions also appear between the upper and lower Thompson populations. Thus in some cases groups with different languages overlap in phonetic space, while other groups with the same language have distinct phonetic space. The authors' discussion raises questions about the strength of climate-morphology correlations within North America and natural selective process as opposed to the considerable patterning of anthropometric measures by culture area and language group that may reflect migration and gene flow, and/or genetic drift.

(Annotated by Steven Hackenberger)

Circumpacific Populations and the Peopling of the New World: Part II Paper presented at the Clovis and Beyond Symposium, Santa Fe, NM, October 29-30, 1999.

Richard Jantz and Douglas Owsley, 1999

Multivariate analyses are performed to obtain a difference between ancient crania and modern populations. The Buhl skeletal remains are used to show differences between the ancient and modern populations. Buhl's morphometric traits are not similar to modern Native American groups, in fact they are closer to groups from the Pacific. This is similar to the trend of other Paleoindian remains that seem to resemble Old World populations. This "suggests that a source of the early migrants to America might be found in Asian Circumpacific populations. A logical way to investigate this is to examine early Pacific Coast populations in America and Asia." Californian and Asian populations, of a later date, were compared to Pacific populations.

Early western North Americans and early Asians are both part of an early circumpacific distribution of populations. These populations are quite naturally variable, but their craniofacial morphology consists of cranial vaults that are large, long and narrow, forward projection of the face, and low faces. Ancestors of Polynesians came out of these populations, and in America they survived until recently in California. The Ainu are also derived from this population.

(Annotated by Erin M. Shumate)

Variation Among Early American Crania

Richard Jantz and Douglas Owsley, In Press

The limited morphometric work on early American crania to date had

treated them as a simple, temporally defined group. This paper addresses the question of whether there is significant variability among ancient American crania. A sample of 11 crania (Spirit Cave, Wizards Beach, Browns Valley, Pelican Rapids, Prospect, Wet Gravel male, Wet Gravel female, Medicine Crow, Turin, Lime Creek, and Swanson Lake) were available.

Crania dated to at least 4500 BP were used for the study. Five of the crania were dated chronometrically, and six crania were stratigraphically dated. The Prospect burial, from Oregon, was lying below Mazama ash dated to about 7000BP. Two approaches were used to compare the crania: the crania were compared to modern samples, and they were compared to each other.

Each cranium was compared to 34 modern groups. Six crania (Prospect, Wet Gravel male, Wet Gravel female, Medicine Crow, Turin, and Wizards Beach) fall into the variation of modern groups. "In general, the 11 fossil crania do not show any particular affinity for the nine modern Native American samples for which we have data."

When the crania are compared to each other they form three distinct groups. The first group is comprised of Browns Valley, Pelican Rapids, and Lime Creek. Turin and Medicine Crow make up the second group, and the third group consists of the Wet Gravel specimens, Swanson Lake, Prospect, Wizards Beach, and Spirit Cave.

The heterogeneity among early American crania makes it inadvisable to form them into a single group for the purpose of analysis. Our results are inconsistent with hypotheses of a single ancestral group and they further suggest that the pattern of cranial variation is of recent origin, at least in the Plains region.

(Annotated by Erin M. Shumate)

**Recovery of Early Human Remains from the Marmes Rockshelter
Archaeological Site, Southeastern Washington May 3 - December 15, 1969**

Bennie Keel and Roald Fryxell, 1969

Excavations were begun in the vicinity of the original finds. The excavation of these units stopped when the Marmes horizon was reached. A component of archaeological material older the 6,700 years was discovered beneath volcanic ash of the Mazama eruption. This assemblage consists of a bone flaker, miscellaneous animal bone and mollusk shell. Under Richard Daugherty's direction, excavations were initiated in the rockshelter. Materials recovered consisted of a cobble chopper, projectile point, ethnobotanical specimens, miscellaneous faunal remains, shell and a human phalange.

During the month of July additional megafauna and cultural materials including more of the Marmes I skeleton were recovered in the Marmes horizon (1969:16). During August a fire hearth located near the western margins of the rockshelter was excavated. Associated with this feature was a cremation area, which was geologically dated at 8,000-10,000 years ago. Charred bone and charcoal were abundant. The fragmentary remains of a second individual in the Marmes horizon (Marmes II) were found. Bones representing part of a child's skull and several teeth were recovered. Analysis by Krantz indicates the child to have been about six years old at the time of death (1969:18). The axial skeleton of an elk was also found. The bones indicate it was butchered, probably at the site.

A third skull designated Marmes II was located in September. According to Krantz this is a young adult. In the rockshelter portion of the site ten artifacts including several scrapers were recovered.

(Annotated by Lourdes Henebry-DeLeon)

The Dentition of Indian crania of the Early and Late Archaeological Horizons in Central California

E. A. R. Kennedy, 1960

Dentition of crania were compared from two sets of archaeological sites in the lower Sacramento Valley. The samples differ in time by more than 1500 years. The samples were compared in an attempt to discover distinct dental features, or changes in dentition, which could be attributed to differences in food behaviors between groups in the two time periods.

The oldest group consists of fifty skulls derived from sites from the Early Horizon (2500 B.C. -1500 B.C.). The more recent samples come from sites of the Late Horizon (A. D. 300-1700). The researchers noted: 1) the degree of wear of the teeth, 2) frequency of tooth loss, ante-mortem, and 3) incidence of alveolo-dental disease. The aim of the study is to suggest cultural factors that may be related to changes in the dentition, particularly with respect to the wear of the teeth (1960: 42). The author states that as a result of the investigation he is "wary of suggesting a direct relationship between any particular cultural or dietary practice and a characteristic dental manifestation of the practice" (1960:49).

(Annotated by Lourdes Henebry-DeLeon)

Oldest Human Remains from the Marmes Sites

Grover Krantz, 1979

The Marmes rockshelter site (45FR-50) is located in southeastern Washington state on the west bank of the Palouse river about two and one-half kilometers north of its confluence with the Snake River. It was excavated from 1962 to 1969 under the direction of Richard Daugherty of Washington State University and under the sponsorship of the National Park Service (1979). Human bones from Marmes are divided into three groups in order of increasing antiquity: those from the main shelter deposit (200 to 8000 years old), those from the cremation hearth within the shelter (9000+ BP), and those found in the flood plain deposits in front of the shelter (10,000 BP).

Two groups of human bones found at the Marmes rockshelter dating between 9000 and 10,000 years ago represent the remains of at least 10 people including 4 children between 6 and 14 years of age. With a few exceptions the bones were burned and broken. They are meso to brachycephalic, rather thick vaulted and had shovel shaped incisors (1979:159).

The oldest remains were from the flood plain deposit immediately in front of the rockshelter, about two meters (six and one-half feet) below the present horizon. The flood plain fragments of the first individual were discovered in 1965 and additional parts were added through 1968 for a total of four persons. They are firmly dated at about 10,000 years from radiocarbon determinations based on charcoal and shell several inches below their stratum. The flood plain individuals are labeled Marmes I-IV.

The cremation hearth was excavated in 1968, producing parts of at least six burned and broken skeletons. These are dated as somewhat older than 9000 years BP from radiocarbon determinations of that magnitude from the overlying deposits.

The "Cremation Hearth" remains are small fragments of mostly burned bones. On the basis of overlapping parts and two age categories, it can be established that there were at least three fully adult specimens, and three children roughly between the ages of 8 and 14 years. The three juveniles were recognized on the basis of parts of three frontal bones with overlapping parts of the mid-frontal crest. The three adults were determined also by overlapping frontal crest as well as by three separate pieces of the right asterion region of the occipital. Mandibular condyles, glenoid fossae, and right maxillae gave minimums of only five individuals. The six individuals are described from clear specimens and are designated as Hearth I-VI, beginning with the largest adult (1979:169)

Three pieces of frontal crest are from Skulls I, II, and III, but it can not be determined for certain which frontal goes with which occipital. All other adult vault fragments are unassignable. The adult fragments range in color from black to light brown, and in general are not as completely burned as the younger specimens.

Three mandible fragments can be recognized, but cannot be clearly assigned to any particular skull. Numerous teeth fragments, both loose and in jaws, are all in fragmentary condition. None give evidence of incisor shoveling. Facial bones are only from juvenile specimens. One indicates a very low nasal bridge (Hearth V) while one maxilla fragment suggests pronounced alveolar prognathism (1979:173).

No postcranial bones are complete enough to yield measurements or observations as to their morphology. Two bones are identifiable as being from the shafts of a humerus and probably a femur. They do not indicate either outstanding powerfulness or gracile bodies.

The femur fragment has two clearly marked parallel cuts on it at right angles to the length of the shaft. These cuts are 6 to 8mm long and 2.5mm apart. Within 2 cm of these cuts there are several other apparent cuts, less well marked and roughly parallel to the first. From each of the major cuts the surface bone has broken away on the same side in a thin layer, so that the second cut was made inside the bone flake scar from the first cut. These could easily be taken for butchering marks except for the fact that no other cuts have been found. The fragmentary nature of the remains may well have obscured other such marks.

45FR50 Floodplain Burials

Marmes I is a female. This diagnosis is based on the fact that the skull is smaller, thinner, and rounder than skull III and that the supraorbital pieces simply have a "feminine" feel to them even though they are of fair size. Opposed to this is the large size of the reconstructed jaw relative to the braincase. Postcranial bones associated with Marmes I include pieces of ribs, vertebrae, and a carpal (lunate) and possible long bone fragments. These are all so incomplete that no measurements or observations could be made from them. It is indicated that a large part of the human body, not just the head, was left at this spot some 10,000 years ago.

Subsequent to the Bielicki's report, the discovery of additional fragments of Marmes I and further study have confirmed his observations. New discoveries include the following: about 20 pieces of the cranial vault, an incus bone, many tooth fragments, a large piece of the chin region, and about 100 tiny fragments of bone which cannot be identified but most likely are from the skull (see Appendix 26).

Marmes I

Mortuary Practices

- a. Burial setting: floodplain
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: the two pieces of the jaw seem large in relation to the braincase. None of the preserved sutural borders reveals any trace of closure. The sagittal margin is perfectly preserved and shows sharp, fine denticulation. Suggestive of young age is also the appearance of the vascular grooves on the endocranial aspect for the parietal. They are very distinct but rather shallow and smooth edged. The skull is thick by modern standards. The skull exhibits some sagittal keeling. An incus bone is present.
- b. Dentition: Most of the tooth fragments are tiny flakes of enamel or burnt dentition but part of an incisor crown is of great interest. This is part of a worn occlusal surface of a lower incisor. It measures 2.4mm mesiodistally and is just under half of the probable original crown width. It is well worn, showing a strip of dentine about the same thickness as the enamel. On the occlusal surface it measures about 3mm bucco-lingually suggesting considerable loss of crown height to achieve this thickness. The significance of this tooth is that it clearly shows a backfolding of the edge, in other words, a shovel-shaped incisor.
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: None
- e. Taphonomy:

Marmes II

The second person discovered in the flood plain in the summer of 1968. The remains consist of the greater part of the frontal squama, in pieces, and parts of the four permanent teeth. Four recognizable portions of the frontal have been pieced together from many small fragments of bones. Most of the fragments cannot be identified. It was evident at once that a child's skull was involved. The four identifiable pieces of tooth are from an incisor, a canine, a premolar and a first molar, all of the upper permanent dentition. An age of about six years may be inferred from the teeth and is fully in accord with the frontal development. Of interest is the lateral margin preserved on the incisor fragment. It clearly shows fold back or shoveling, though not to a marked degree as Marmes I.

Mortuary Practices

- a. Burial setting: floodplain
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: The remains consist of the greater part of the frontal squama, in pieces, and parts of the four permanent teeth. Four recognizable

portions of the frontal have been pieced together from many small fragments of bones. Most of the fragments cannot be identified.

- b. Dentition: The four identifiable pieces of tooth are from an incisor, a canine, a premolar and a first molar, all of the upper permanent dentition. Of interest is the lateral margin preserved on the incisor fragment. It clearly shows fold back or shoveling, though not to a marked degree as Marmes I.
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: None
- e. Taphonomy:

Marmes III consists mainly of a skullcap without any of the frontal bone. It was discovered lying upside down in one piece with a few small bone fragments around and inside it. During the removal of dirt from inside the skull an upper left medial incisor was found. The incisor is one of the most complete found at the site in the older deposits. The root is complete, the crown lacks most of its anterior enamel and is worn off more than halfway. The worn occlusal surface shows a good outline of the dentine. This is not a circular shape, but is strongly indented by enamel in the center of the buccal margin. A strongly shoveled incisor might be expected to have this appearance in an advanced state of attrition. Krantz sawed through several complete and well shoveled incisors at this level. They all showed the same bulge of enamel on the inside edge. Age indications suggest a young individual, but the evidence is not conclusive.

Mortuary Practices

- a. Burial setting: floodplain
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: Ectocranially the sutures are clear and open. The anterior third of the sagittal was well preserved and showed no trace of fusion. There was no trace of heaping up of bone along the sutures ectocranially, as is common in lapsed sutures. Endocranially the posterior two-thirds of the sagittal suture was bound by substantial thickening of the bone. Marmes III shows no sagittal keeling. It does have a notable postcoronal depression extending across the entire preserved portions of the anterior parietal. This depression reaches a depth of at least 1mm. Inside the parietal, about a third of the way behind bregma on each side of the sagittal suture are irregularly rounded depressions about 10mm in diameter and 2mm deep.
- b. Dentition: The incisor is one of the most complete found at the site in the older deposits. The root is complete, the crown lacks most of its anterior enamel and is worn off more than halfway. The worn occlusal surface shows a good outline of the dentine. This is not a circular shape, but is strongly indented by enamel in the center of the buccal margin. A strongly shoveled incisor might be expected to have this appearance in an advanced state of attrition. Krantz sawed through several complete and well-shoveled incisors at this level. They all showed the same bulge of enamel on the inside edge.
- c. Culturally induced skeletal modification: Ectocranially a pit is located on the left parietal near the center of the bone, somewhat in the direction of the lambda. This appears to be a healed injury 8mm in diameter and 2mm deep. It is too far lateral to represent a parietal foramen.
- d. Skeletal disease indicators: None
- e. Taphonomy:

Marmes IV consists of three fragments of a vault found uphill of the others. The bones are clearly those of an adult, but no clear age or sex determination is possible.

Mortuary Practices

- a. Burial setting: floodplain
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: three fragments of vault. An occipital fragment, a parietal fragment, and a frontal or parietal fragment.
- b. Dentition:
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy:

Cremation Hearth 45FR50

Hearth I is the most complete. The restored portion extends diagonally from a piece of frontal along the left coronal suture, through a large part of the left anterior parietal, through much of the right posterior parietal, ending with a piece of occipital near the right asterion. The age of Hearth I appears to be greater than any other recognizable skull. Preserved parts of three major vault sutures are fused endocranially. Ectocranially, only the middle part of the sagittal suture is fused, while the extant parts of the coronal and lamboid are clearly seen. The general shape and contour of the vault are about midway between those of Marmes I and III. It was probably somewhat round headed.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: cremation
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: Maximum thickness measurements on the parietal are 5mm near coronal, 8 mm near the lambdoid, and 9mm along the sagittal sutures. These are almost the same as Marmes III, and it might be presumed a male. The skull is also rather strongly arched in the midparietal region and shows some obelid fattening. It shows no postcoronal depression. It was probably somewhat round headed.
- b. Dentition:
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy

Hearth II is based on a major part of the right side of an occipital with a piece of the adjacent parietal just above the asterion. It is a large adult but the lamboid suture is

not closed.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: cremation
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: lamboid suture is not closed
- b. Dentition:
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy

Hearth III consists of two large pieces of occipital, one from each side near the widest part of the bone. They do not join, but are virtual mirror images of each other. None of the adult occipital display pronounced nuchal cresting.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: cremation
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: two large pieces of occipital, one from each side near the widest part of the bone. They do not join, but are virtual mirror images of each other. The occipital does not display pronounced nuchal cresting.
- b. Dentition:
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy

Hearth IV is one of the children singled out from a large piece of frontal, about 3mm thick and including the interior midline crest. This bone is burned to a light gray color. Over 100 pieces are similarly burned grey, with some white on the outside parts, and all appear to be a juvenile. They might all be from the same skull, which would still be more than half missing.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: cremation
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: large piece of frontal about 3mm thick and including the

interior midline crest. This bone is burned to a light gray color.

- b. Dentition:
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy

Hearth V consists of the forehead and most of the right side of the face (unattached and only tentatively assigned) of a juvenile skull. It is burned quite black, both inside and out. It appears to be smaller and thinner than Hearth IV.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: cremation
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal Morphology: the forehead and most of the right side of the face (unattached and only tentatively assigned) of a juvenile skull. It is burned quite black, both inside and out. It appears to be smaller and thinner than Hearth IV.
- b. Dentition:
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy

Hearth VI is a juvenile, burned black, but identified by a frontal crest. Other cranial parts of skull V and VI cannot be separated in any way as they are about the same stage of development and similarly colored.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: cremation
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: frontal crest burned black; Other cranial parts of skull V and VI cannot be separated in any way as they are about the same stage of development and similarly colored.
- b. Dentition:
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy

Hearth A is the largest mandible, consisting of most of the left half and chin region. It has been pieced together from fragments leaving gaps, and provides no reliable measurements.

Mortuary Practices

- a. Burial setting: rockshelter

- b. Mode of disposal: cremation
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: mandible; It is not particularly robust , especially in the gonial region, and probably goes with either Hearth II or III. It is notable in having a strongly developed bilateral chin combined with a weak gonial region.
- b. Dentition:
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy

Hearth B consists of most of the right ascending ramus, without condyle or coronoid. In color (grey) it most resembles the juvenile in Hearth IV, but it appears to be an adult skull.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: cremation
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: right ascending ramus without condyle or coronoid.
- b. Dentition:
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy

Hearth C is most of a mandible missing the entire left ascending ramus. This is a juvenile as it is small and contains remnants of the second molar in place, but there is only a cavity where the third molar was developing.

Mortuary Practices

- a. Burial setting: rockshelter
- b. Mode of disposal: cremation
- c. Orientation:
- d. Funerary objects:
- e. Variations according to sex and age

Skeletal Variables:

- a. Skeletal morphology: most of a mandible missing the entire left ascending ramus.
- b. Dentition: A juvenile with remnants of the second molar in place.
- c. Culturally induced skeletal modification: none
- d. Skeletal disease indicators: none
- e. Taphonomy

(Annotated by Lourdes Henebry-DeLeon)

An analysis of two disturbed ancestral Nez Perce burials from the Cottonwood Creek Burial Site, 10NP182, Hells Canyon National Recreation Area, Idaho

Frank Leonhardy, Bruce Cochran, and Raymond Carino, 1987

The site is located on a small ridge north of Cottonwood Creek, south of Lewiston, Idaho. In 1985, the site was vandalized; the Laboratory of Anthropology, University of Idaho was selected to document of extent of vandalism and recover skeletal material and artifacts from the disturbances. The number of burials at the site is unknown, although it is thought to include more than the two excavated and described under the contract.

Burial 1: This burial containing the remains of an adult male, 25-35 years old, was destroyed. Osteological analysis of the remains show that five vertebrae exhibit bone spurs. Artifacts thought to be associated with this burial are bear claw beads, shell beads, a projectile point, and small flakes. Provenience and direct association cannot be determined. Human remains and some of the artifacts were red ochre stained. A sample from the backdirt was dated to 830+/-85 years BP Based on other dates at the site this age seems reasonable.

Burial 2: This burial consists of two burials: an adult male, 27-37 years of age, and a fetus. Only some of the burial was vandalized. Excavation revealed a prehistoric reinterment. Study of the adult remains show a pathological condition of the left foot, causing the fusion of the tarsals. Cranial metric and nonmetric observations are presented in tables 6 and 7 (see Appendix 27). Four bone fragments were found to represent a fetus. Due to the fragmented nature of the remains nothing can be determined. Associated grave goods consist of dentalium beads, a projectile point, a point fragment, a scraper, and possibly a large blade. An undisturbed piece of charcoal dated to 615+/-100 years BP.

(Annotated by Erin M. Shumate)

Dimensions of Face in Asia in the Perspective of Geography and History. American Journal of Physical Anthropology 85: 269-279.

Yongyi Li, C. Loring Brace, Gao Qiang, and David P. Tracer, 1991

While craniofacial measures may not be as effective as are DNA data, they can be better used to assess the relationships between prehistoric data and modern populations. Samples were taken from all the major populations of the world, and data from 24 craniofacial variables were converted into Z scores used to generate C scores in order to correct for the size or robustness of samples. Euclidean distance dendrograms constructed from the C score results yielded eight major regional clusters: Africa, Amerind, Australo-Melanesia, Eskimo-Siberia, Europe, India, Jomon-Pacific, and Asia-Mainland. Amerindian samples used in the study are from the collection of the Lowie Museum at the University of California, Berkley.

Asia-Mainland subdivides into two regions: north and south. South includes populations of Southeast Asia, including Vietnam, Indonesia, Borneo, and the Philippines. North encompasses Taiwan, Korea, Japan (with the exception of the Ainu, who fall with the Jomon-Pacific), and the peoples of China. The selection made by the test battery creates a dendrogram that displays a relationship between European and Amerindian samples. It is important to note that this relationship is an artificial creation and is a function of the measurements selected for the test battery. The similarities they represent are more likely to be a representation of selection as they are to be of common ancestry. Additionally, the nose is more subject to the

effects of selection than are other aspects of cranial morphology. These results again stress the need for the test battery to be expanded to include elements less subject to the effects of selection.

To offset the effects of a small set of measurements, measurements were transformed into indices, and these were used to create new dendrograms. This resulted in more likely relationships; the Amerindian and European affinity disappeared, and the Amerindian sample more closely aligned with the Jomon-Pacific, a more likely association (Figure 5). Further, the distinctions were sharpened, notably between eastern and western European Neolithic groups.

Samples from north China and Thailand do not exhibit sufficient differentiation to fall into a specific north or south designation. Two conclusions may be drawn from these results. First, both the Mongols and the Buriats are not closely related to other members of the Asia-Mainland regional designation, despite their geographic closeness. Second, the Mongols are only peripherally related metrically, hence the term "Mongoloid," commonly used as a synonym for all Asian peoples, is inappropriate.

The authors stress that the precision of the population relationships can be further improved by the addition of more measurements of no obvious adaptive significance to the test battery. The original structure of the test battery was designed to distinguish between non-indigenous rice agriculturists in Japan and the indigenous Jomon; the measurements were selected to accentuate the noticeable differences in nasal elongation and elevation of the nasal skeleton.

(Annotated by Steven Hackenberger and Kathy Hill)

The Effects of Environmental Stress upon the Dentition of the Indians of the Southern Plateau of Northwestern North America

Alice Lynch, 1977

"This study comprises an inventory of dental traits manifested in three skeletal populations of American Indians from precontact time and two from historic time to determine the differences in incidence of dental pathologies: caries, alveoclasia, and pulp exposure- apical osseous process" (1977:l). The sample size of precontact populations is 330: 186 from the middle Columbia, 70 from the lower Snake, and 74 from the Upper Columbia. The sample size for the historic populations is 161: 135 from the lower Snake, and 26 from the upper Columbia, and none from the middle Columbia. Temporal comparisons are therefore only discussed in the Lower Snake region.

Precontact Comparisons: The environmental stress that affected the precontact Plateau populations greatest was tooth wear. This was due to the method of curing, storing, and processing food, in an environment "...permeated by fine wind-blown silt" (1977: 67). All three regions exhibit more wear on the maxillary teeth than the mandibular teeth. Tooth wear was greatest in the lower Snake due to the greatest amount of wind-blown silt. The lowest amount of tooth wear occurred in the upper Columbia region where rock types "...produce a less dusty environment" (67). There are also differences between the sexes concerning tooth wear. Precontact males have more wear than their female counterparts, in all three regions. "This is due in part to the heavier musculature of the male jaw which allows for greater occlusal force" (1977:69). No differences were found between sexes in the differential wear of anterior teeth and molars. Females have a higher occurrence of "sound" teeth in the precontact time, but the difference disappears in the historic period. "Although the difference is not statistically significant, the dental health of the upper Columbia

River People is slightly poorer, on the whole, than the lower Snake or middle Columbia groups" (1977:71).

The evidence of caries in the sample population is very low. Of the 330 precontact samples only 16 (4.8%) have one or more caries (1977:71). The author discusses the role of diet in the reduction of caries. Proteins and phosphates, which are present in fish, and organic compounds, such as the outer coverings of seeds, roots and tubers, may be useful in lowering the rate of caries.

The middle Columbia sample exhibits a higher occurrence of alveoclasia than do the other populations. There is also a slightly higher occurrence in females and increases with age. Incidence in younger samples, in the middle and upper Columbia, may be the result of poor nutrition.

Precontact and Historic Lower Snake Area: The teeth of the Historic sample population exhibit a higher rate of pathology than their counterparts. The increased availability of refined foods may be the cause of less tooth wear among the historic sample. "In addition it is at least partially responsible for the highly significant increase in caries in the population as a whole" (1977:75).

The greatest change to take place in the dental health of the Plateau Indians between precontact and historic time was the significant increase in caries incidence. The carious lesions in the historic period tended to be more virulent leading to periapical involvement, whereas the trend of caries in precontact Plateau peoples was to become indurated and dormant (1977:79).

(Annotated by Erin M. Shumate)

Cultural Implications of Prehistoric Plateau Burial Practices

Richard H. McClure, 1984

"This paper is intended as a review of the potential of the existing archaeological data and excavated material rather than an actual analysis" (1984:4). The author expands and updates the studies of Sprague (1967), Combes (1968), and Rodeffer (1973). Rodeffer's patterns were produced for Lower Snake River sites and ignored cremations and shed burials in the Lower Columbia.

Patterns	Position	container	grave marker	orientation	modifications
I	non-extended	unmodified pits, in earth or talus	cairns or depressions	westerly	
II	non-extended	cist, in earth or talus	cairn	westerly	lining
III	non-extended	plank cover	boulders or cobbles		
IV	Extended	unmodified pits			
V	Extended	non-portable, simple, adapted containers, built in situ, also canoe		east	
VI	Extended	coffin, casket, trunk		east or northeast	lining?
VII	Cremation	cist	cairns		lining of basalt or cedar
VIII	Cremation	unmodified pit	cairns		
IX	non-cremated, secondary burial	unmodified pit			
X	non-cremated, compound disposal	shed structure, subsequent to defleshing through exposure			

See McClure's Table 2, Frequency of occurrences of burial patterns in Plateau archaeological sites, Appendix 28.

Flexed burials in unmodified pits or cists are seen as predominant through the late prehistoric period. Ethnographic data and osteological data show that the practice of pattern I burials was a "...relatively stable tradition of at least 500-700 years for the Central Plateau" (1984:13). This pattern was only slightly altered during the late prehistoric and protohistoric to include cists.

The changes in the protohistoric period "have been traditionally explained as a result of increased mobility and cultural contacts after the arrival of the horse. ...there have been no attempts among Plateau researchers to explain changing burial practices in terms other than diffusion. ...Indeed, an entire thesis devoted to changes in burial practices on the lower Snake River includes this introductory statement: 'It is beyond the scope of the present study to investigate that various causal factors related to culture change'" (1984:15).

The historic period is characterized by the burial of an individual in an extended position in a container. There is no evidence that shed burials existed before the protohistoric.

See Appendix A, "Archaeological Sites with burial features from the Columbia Fraser Plateau", Appendix 28.

(Annotated by Erin M. Shumate)

Archaeological Assessment of the Crates Point Site (35WS221), Wasco County, Oregon

Rick Minor and Brian E. Hemphill, 1990

The investigation of Crates Point was prompted by illegal digging by vandals, which resulted in the exposure of prehistoric artifacts and human skeletal remains on the ground surface. The human remains from Crates Point were obtained during the process of screening the vandals' backdirt piles and screening the fill removed during the probe and test pit excavations. Only superficial inspection of the human remains found in situ during the excavation was undertaken. At the conclusion of the field investigation all bone and dental fragments were reinterred at the site (1990: 43).

An estimated 36 individuals were represented among the skeletal and dental remains recovered. Most of the individuals died before 20 years of age. The age of occurrence of linear enamel hypoplasia indicates that Crates Point individuals suffered low levels of chronic stress throughout childhood (1990:63). The stress was most severe between five and seven years old (1990:63). One hundred and one dental measurements were recorded on the permanent teeth recovered from Crates Point. Comparative analysis of posterior tooth crown area revealed that the Crates Point individuals possessed rather large teeth (1990:63).

Results of the field investigations indicate that two cultural components are represented. The earlier component is a prehistoric cemetery containing secondary interments and at least one multiple internment. Charcoal collected from a layer of angular rocks overlying the burials produced a radiocarbon date of 560+-180 BP. The burials at Crates Point are consistent with Columbia Plateau mortuary practices, and contrast with Chinookan Wasco who occupied the Crates Point area at the time of historic contact (1990: 1) (see Appendix 32 for metrical and non-metrical data.)

(Annotated by Lourdes Henebry-DeLeon)

45WT2: An Archaeological Site on the Lower Snake River

Charles R. Nance, 1966

The well-preserved burial of a female, 18 to 24 years old, was found in the burial ground designated as area C. The skeleton was flexed and lying on its back. "The head was oriented to the NW facing the SW and the Snake River" (1966:113). The individual was placed in an oval grave pit that had been covered with planks. Matting also occupied the grave and it had been covered with red ochre. Traces of red ochre were found on the skull, on the leg bones and on the bottom of the grave, as well as on the matting or skin clothing the individual was wrapped in. Grave goods consisted of a pestle and two areas of red ochre were found one by the left hand and the other near the right femur. The burial is suggested to date to the protohistoric period, on the basis of grave goods and the flexed position of the

individual.

(Annotated by Erin M. Shumate)

The Buhl Burial: A comment on Green et al.

Walter Neves and Max Blum, 2000

This article tests the recent claim that craniofacial observations of the Buhl Paleoindian remains are similar to other North American and East Asian populations. The measurements of the Buhl skull were compared to twenty-six modern populations (Howells), and to a paleoindian skull from Lapa Vermelha, Brazil, which shows morphological similarities with Africans and Australians. Multivariate analysis shows that there is a great difference between the paleoindian skulls, and when compared to the modern populations the skulls belong to different clusters. These results can be seen in Figure 1, Appendix 33. The results may confirm the ideas of Green et al. (1998), that the Americas were colonized by at least two migrations; one with characteristic Mongoloid morphology (Buhl), and another with a generalized morphology (Brazilian Paleoindians).

(Annotated by Erin M. Shumate)

Indian Skeletal Material from the Berrian's Island Cists (45BN3) Lower McNary Reservoir, Washington

Marshall Newman 1957

Newman reports on skeletal remains of 57 individuals uncovered from plank cists on Barrian's Island (45BN3). More than one third of the individuals are subadults. Ten adult males and eight adult female skulls were measured. The collection represents historic Middle Columbia tribes who were buried on Berrian's island during the latter half of the 18th century.

Metrically the skeletons are on the meso- to brachycranial borderline. Slight evidence suggests a skull vault of medium height. Most striking according to Newman is "the pronounced forward and lateral jut of the malars, the deepness of the lower jaw at midline (especially in males), the narrowness of the nasal aperture, and the prominence of the nasalia" (1957:222). In their mean measurements and indices, the Berrian's Island skulls are similar to small Sahaptin and Salish series described by Hrdlicka (1957:222).

All of the skulls show artificial cranial deformation, which is slight enough in some cases to closely approximate the natural form of the skull. One third of the skulls, six of the seven are males, show simple and probable unintentional deformations. More than twice as many females as male skulls have fronto occipital deformation (1957:222).

Pathological changes are only found on middle age (36-55) or older skeletons. The most severe skeletal pathology is largely confined to males. Arthritic infections are the most common, usually involving the vertebrae. Osteomyelitic infections occur in two cases. Heavy tooth wear, where all the enamel has been ground off the molar surfaces, occurs in 25 of the 29 skulls. Dental caries is infrequent (1957:223).

(Annotated by Lourdes Henebry-DeLeon)

The Sheep Island Site and the Mid-Columbia Valley. In, River Basin Surveys Paper, Frank Roberts, Jr. Editor, No. 24

Douglas Osborne, Alan Bryan, and Robert Crabtree, 1961

The Burials: Table 1 lists pertinent data on the 16 burials removed by the Smithsonian crew and also for those removed by Garth. Orientation is mostly southwest. The heads lay downstream. Garth records one burial with a southeasterly orientation. Three burials were oriented northeast probably a reversal of the burial bundle by attendants (1961: 280). Semiflexure is the preferred burial type. The body was laid on its back, or back with legs directed to one side. Fronto-lambdoidal and fronto-occipital deformation was probably culturally identical. All those showing deformation were adults (1961: 280-281).

Artifacts were common. Of the eight infants and children in Garth's and Osborne, Bryan and Crabtree series, four had nonperishable artifacts. Shell was preferable for the very young. Dentalia and a single shell pendant, rectangular, with three holes along one side and one on another were the other artifacts with infants.

Cremation Pits: When the River Basin Survey opened the site some undisturbed portions of two cremation pits remained. Ninety-six plain bird-bone beads form a major part of the artifacts recovered from the cremation pit remnants. Eighteen dentalium shells or fragments and one Olivella fragment were recovered. A piece of hematite was also included. The heat of the fire was evident in the way bones were warped and lumps of sand were fused to the bone (see Appendix 34 for metrical and nonmetric data).

(Annotated by Lourdes Henebry-DeLeon)

**Origins and Affinities of the Native Peoples of Northwestern North America:
The Evidence of Cranial Nonmetric Traits
In, Method and Theory for Investigating the Peopling of the Americas.**

Nancy Ossenberg, 1994

Ossenberg employs MMD for 25 nonmetric cranial traits. Her sample includes 50 recent and prehistoric samples (N=2800 individuals). Plots of MMD versus Spearman's r complement cluster analysis for depicting two-dimensional relationships between groups. Significantly 15 traits discriminate between Aluets and Eskimo and show intermediate placement for Athapaskans. Aluets are hypothesized to represent a relict Paleoartic population. Remains from Namu (N=25; 5000-2000 B.P.) cluster with Aleut and NaDene, although the remains from Namu also exhibit unique morphological characteristics such as external occipital protuberancies in some adults. Ossenberg remarks in her footnotes that the Namu crania do resemble the crania in samples with which they cluster according to nonmetric MMD.

Ossenberg reviews previous studies of craniometrics (including Brennan and Howells 1976; Howells 1989; Brace et al 1989). She concludes that both types of data can be used to support Neumann's (1952) older hypothesis that relatively late Aleut migrations involving a "Deneid" variety exerted profound influence on populations along the Pacific Northwest Coast, in the Southwest and on the Northern Plains.

Early American samples (Umnak, Kodiak Early, and Namu) are distant from Neolithic Japan and historic Ainu when compared according to nonmetric traits. However, Haida, Tlingit and Tungus might share affinity with Japan and Ainu. Ossenberg hypothesizes that the PaleoTlingit-Haida populations might have Southeast Asian roots and could have founded a very early pebble-tool industry in

the Pacific Northwest. Later Paleo Aleut-NaDene populations might have carried a 9000 year old immigrant microblade traditions to the coasts. By 5000 B.P. these populations are represented in the human remains from Umnak, Kodiak and Namu. Although she points to the lack of evidence for such a scenario she also remarks that the archaeological record is, " too incomplete to rule out the possibility of Proto-Mongoloid movements from Southeast Asia around the Pacific Littoral and in the New World" (1994: 106).

(Annotated by Steven Hackenberger)

Data Recovery at Sites 35JA27, 35JA59, and 35JA100 Elk Creek Lake Project, Jackson County, Oregon

Richard M. Pettigrew and Clayton G. Lebow, 1987

The partially cremated skeletal remains were excavated from 35JA100. Many of the bones were completely surrounded by charcoal and burnt soil. The body appeared to have been interred and cremated "in the flesh" rather than after the bones had been dried or defleshed (1987: K.2). It appears that the individual had been interred in a northwest-southeast orientation. The individual was lying on its right side with the head near the southeast corner.

Only a small percentage of the bone was identifiable. No intact teeth were recovered from the burial. The individual is identified as a young adult female (1987:K.8). Non-metric traits could not be assessed. Craniometrics could not be taken because of the absence of facial bones.

The skeletal material is assigned a Native American origin on somewhat speculative nature (1987:K.6). The skeletal remains appear to have been cremated on a surface within a house site, presumably of Native American origin although the provenience of the remains at a depth of 40cm from the surface makes this conclusion somewhat tentative (1987:K.7). The best evidence that this individual was a Native American is the lack of any associated Euro-American artifacts. Radiocarbon dates place the cremation at or shortly before the contact period (A.D.1700-1850).

(Annotated by Lourdes Henebry-DeLeon)

The Cache Creek Burial Site (EeRh1), British Columbia. In, Contribution to Human History

David L. Pokotylo, Marian E. Binkley, and Joanne Curtin, 1987

Five wood cist burials excavated between 1954 and 1956 at EeRh 1, near Cache Creek in south-central British Columbia, are reported by Pokotylo et al. Radiocarbon dates for four of the burials range from 1960 BP to 700 BP. Burial X was donated to the UBC Laboratory. Grave goods accompanied three of the four burials. The skeletal remains of five individuals are identified as an adult female, an adolescent female, two children, and a newborn. No cranial modifications were observed. All the skeletons were oriented east-west. Skeletal and dental materials from the burials are inventoried in Table 3 and 4. The skeletons in the sample were virtually complete. Lovell's (1982) study of prehistoric diet using stable carbon isotope analysis included all five skeletons from Cache Creek. The high proportion of marine protein is expected in the diet of people with a subsistence system focused on river (1987:12).

Burial 1 is a young male. A date of 700+-80 BP is assigned.

Mortuary Practices:

- a. Burial setting:
- b. Mode of disposal: primary
- c. Orientation: body orientation E-W, head orientation west, body placement unknown
- d. Funerary objects: patches of red ochre covered the right parietal and occipital, bits of rush matting, a fragment of birchbark rested on top of the matting that covered the knees. Three complete points and one broken point were present near the skull and pelvis.
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition: The lower right third molar (M3) is missing congenitally. Small dentine patches are exposed on all first molars (M1), cusps of all second molars are faceted and the lower left third molar (M3) shows very slight wear on the mesiobuccal cusp.
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators: The sacrum is composed of six elements instead of the usual five.
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 6 is a middle age (greater than 45) female. A radiocarbon date of 1330+/-260 BP is assigned.

Mortuary Practices:

- a. Burial setting:
- b. Mode of disposal: primary
- c. Orientation: body orientation E-W, head orientation east, body placement on right side
- d. Funerary objects: a large biface placed on its lap. The entire body was originally covered with matting and a piece of poplar bark over the cranium. Fragments of matting near the right femur and right elbow.
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition: Dental attrition is so advanced that tooth roots form the occlusal surface in all teeth except the second and third molar. In those cases dentine is exposed and secondary dentine response is present.
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators: Mild osteoarthritic lipping is evident along the margins of most major long bones. Degenerative vertebral osteophytosis is present throughout the vertebral column, and it is pronounced in the lower lumbar column. Congenital bilateral shortening of the fourth metatarsal has resulted in the deformation of the shaft of metatarsal III to accommodate the distal joint of metatarsal IV and the proximal joint of proximal phalange IV. The right foot shows scars of widespread periosteal infection. The burial also exhibits a small cribiform lesion (criba orbitalia) on the root of the left orbit.
- f. Taphonomy

Burial 8 is that of a one-and-a-half to two-year old child. There is no notable pathology. A radiocarbon date of 760+-110 BP is assigned.

Mortuary Practices:

- a. Burial setting:
- b. Mode of disposal: primary
- c. Orientation: body orientation E-W, head orientation east, body placement on back
- d. Funerary objects: Fragments of matting: twenty one decorated wapiti canine teeth, arranged in three rows around the neck vertebra; two shallow pouch-like containers of birch bark; dentalium segments and beads; an eyed bone needle; and a decorated bone tube into which the right fibula of a lynx was inserted. All lay together over the left tibia of the skeleton.
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy

Burial 8a is a newborn, stillbirth, or almost full term fetus. No pathologies or anomalies were noted. A radiocarbon date of 1960+-400 BP is assigned.

Mortuary Practices:

- a. Burial setting:
- b. Mode of disposal: primary
- c. Orientation: Body orientation E-W, head orientation east, body placement on right side
- d. Funerary objects: Fragments of tule rush matting over most of the postcranial skeleton
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy

Burial "X" skeleton is that of a child approximately two to three years old. No pathology was observed.

Mortuary Practices:

- a. Burial setting:
- b. Mode of disposal:
- c. Orientation: loosely flexed body places on its left side and encased in a wood cist
- d. Funerary objects:

e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

(Annotated by Lourdes Henebry-DeLeon)

Progress Report on Excavations at Chiawana Park (45FR101)

Rice, David 1967

Excavations at Chiawana Park were conducted beginning July 15, 1967 and lasted through September 30, 1967. Chiawana Park is located on the left bank of the Columbia River just opposite the mouth of the Yakima River and lies about 5 miles west of Pasco, Washington. Excavation in the west sector revealed a series of hearth areas, two house pits, and a historic trash heap left by early white explorers. The cultural deposits were limited to the top three to four feet (1967:8).

Work in the south sector uncovered a rock cairn feature, an earth oven, and two historic burials.

The southeast sector uncovered several structural features including three house pits, a mat lodge, two extensive earth ovens, hearth areas, and some storage pits (1967:8). Eleven human burials were exposed, "all of which appear to be pre-white contact." The deepest cultural deposits were about seven feet down (1967:8).

The artifacts recovered are similar to other Lake Period Columbia River assemblages.

No radiocarbon dates were run on the materials. Relative age was established by stratigraphic studies, and by comparisons of artifacts from dated contexts at other sites. At the western end of the site a large lanceolate projectile point was found that "resembles finds made by Dr. Daugherty at Lind Coulee which are thought to be over 10,000 years old. In addition, large side-notched projectile points belonging to Cold Springs cultural phase dating from approximately 4500 to 2500 BC. were found along the beach (1967:10). Most of the artifacts belong to the Cayuse II subphase which ranges from A.D. 1000 to A.D. 1700.

Geographically Chiawana Park is located on the Columbia River between the confluence of two major rivers, the Yakima and the Snake, and probably was a focal point of cultural exchange. Historically, the Yakima and Wanapam Indians wintered in the area and spent summers fishing along the river (1967:11).

(Annotated by Lourdes Henebry-DeLeon)

Preliminary Report Marmes Rockshelter Archaeological Site

David G. Rice, 1969

Excavations at the Marmes Rockshelter between 1962 and the end of 1968 obtained evidence for 22 human burials and a cremation hearth complex. At least

nine of the burials reported were encased in plaster (see Breshchini annotation). This review will detail the additional burials.

Burial 2 is a male. The skeleton rests on a shell layer immediately underlying undisturbed pumicite.

Mortuary Practices:

- Burial setting: rockshelter
- Mode of disposal:
- Orientation:
- Funerary objects: projectile point fragments, biface, cobble spall scraper
- Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: teeth, ribs, hand or foot bones, bones are disarticulated and scattered.
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 5

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects: Olivella shell beads
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: skull fragments and tooth
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 11 is an infant or child. There is a definite burial pit covered by 5" of ash lens; covered by pre-pumicite shell midden.

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects: Olivella shell beads, 5 matched basalt knives, projectile points
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: skull and teeth
- b. Dentition:
- c. Culturally induced skeletal modification:

- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 12

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects: crude biface, bone pendant, Olivella shell beads, graphite bead, projectile point

Skeletal Variation

- a. Skeletal Morphology: skull, ulna, phalanges, tarsals; bones broken and not in articulation, mixed with shell and animal bones
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy: bones broken and not in articulation, mixed with shell and animal bones

Burial 13

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects:

Skeletal Variation

- a. Skeletal Morphology: teeth and scattered bones
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy: bones evidently disturbed and fragmented

Burial 14 has no data.

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 15 is a definite burial. A pit was dug into Unit I with fill from Unit II. North and northwest of the burial is a heavy shell deposit. Duck bones were found in association with the burial beneath which three sections of matting were found. A C14 sample of shell was taken from the burial area, yielding an age determination of 7870+-110.

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects: cryptocrystalline core

Skeletal Variation

- a. Skeletal Morphology: skull, vertebrae, ribs, and long bones
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 16

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects: Olivella shell beads, red ochre, projectile points, projectile point fragments, abrasive stone/shaft polisher, chopper, basalt knife fragments, stone pendant, milling stone

Skeletal Variation

- a. Skeletal Morphology: teeth, phalanges, skull, femur, humerus, ulna, left humerus, scapula
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 17 has no data on bones encountered or description.

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects: wood fragments found in association (cradleboard?)

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:

f. Taphonomy:

Burial 18

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects: Olivella shell beads

Skeletal Variation

- a. Skeletal Morphology: skull and long bones
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 19 has a definite burial pit. It is intrusive into Unit III-IV and filled with Unit V. Burial 19 is an adult with the body semi-flexed, in a north-south orientation with the head at the south end. This is possibly two burials since one child femur was found with one adult femur. A charcoal lens containing burned Olivella shell beads and red ochre was found. Charred human bones were observed.

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation: semi-flexed, north-south orientation with the head at the south end
- d. Funerary objects: choke cherry pits, Olivella shell beads, projectile points, dart shaft fragment.

Skeletal Variation

- a. Skeletal Morphology: skull, ribs, femur, tibia
- b. Dentition:
- c. Culturally induced skeletal modification: charred human bones
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy: charred human bones

Burial 21

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects:

Skeletal Variation

- a. Skeletal Morphology: ribs, vertebrae, long bones, pelvis, phalanges and no skull
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:

f. Taphonomy:

Burial 22

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal:
- c. Orientation:
- d. Funerary objects: 2 bone point fragments, drill or graver

Skeletal Variation

- a. Skeletal Morphology: tarsals, phalanges, metacarpal
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 23 is a series of small hearth areas each containing ash, charcoal and charred human remains. Rings of rock and rock piles are present. Shell, mammal bone, and chipping detritus are interspersed throughout this cremation hearth complex. Preliminary analysis has revealed the remains of at least five individuals, including two adults and three children between eight and 14.

Mortuary Practices:

- a. Burial setting: rockshelter
- b. Mode of disposal: cremation
- c. Orientation:
- d. Funerary objects: a wide variety of artifacts including projectile points were recovered from the area of the cremation hearths

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

(Annotated by Lourdes Henebry-DeLeon)

An Archaeological Burial Relocation at Old Umatilla, Oregon In, Summary of Findings of Archaeological Burial Relocation Work at Old Umatilla, Oregon

David Rice, 1978

The site (35UM35) is located along the Columbia River at the confluence of the Umatilla River. The site was used prehistorically as a winter camp of the Umatilla Indians and historically during the gold rush. The site has been periodically vandalized since at least 1900. The Umatilla tribe passed a resolution requesting that the Corps of Engineers relocate the burials with the help of the University of Idaho's Laboratory of Anthropology.

Previous burial removal by the Mid-Columbia Archaeological Society occurred in

1971, when 130 individuals were recovered. The relocation project recovered 100 individuals. Descriptions of the burials can be found in Appendix 37.

(Annotated by Erin M. Shumate)

The Nez Perce Grave Removal Project 1972

Michael Rodeffer, 1973

This project continued work begun during the 1971 excavations of Nez Perce burials. Sprague (1972) reports on the previous findings. The 1972 season eight sites were examined as possible burial locations. Burials were recovered from two sites, 45AS2 and 45AS82, however our copy of this publication is incomplete.

(Annotated by Erin M. Shumate)

A Classification of Burials in the Lower Snake River Region, Southeastern Washington

Michael J. Rodeffer, 1973

Rodeffer analyzes 394 burials in order to "formalize distinctions between the kinds of burials ... This is achieved first by a partitive analysis intended to define the smallest meaningful units of classification and then to integrate these units into culturally meaningful patterns"(1973:1). Burial sites and locations are included in Table 1, Appendix 39. It was determined that burial patterns could be distinguished by analyzing two variables: disposal container and position. The disposal containers in this sample include unmodified pit, cist, plank covered, box, canoe, coffin, casket and trunk. Position is described as extended and non-extended. Each burial in this sample could be classified using one of the sixteen combinations of variables.

CLASS	DISPOSAL CONTAINER	POSITION	GRAVE MARKER	ORIENTATION	GRAVE GOODS
A	unmodified pit	non-extended	cairn	west	None, dentalium?
B	Cist	non-extended	cairn	East and west	Dentalium, pipes, mauls, wedges, some European
C	plank cover	non-extended, semiflexed	boulders, cobbles	East, northeast	Euroamerican trade beads and buttons
D	box-like, constructed in situ	non-extended, semiflexed		East, northeast	Euroamerican
E	Canoe	non-extended, semiflexed		northeast, southwest	Euroamerican
F	Coffin	non-extended		eastward	European trade items
G	Casket	non-extended, semiflexed		east	Euroamerican goods
H	Trunk	non-extended, semiflexed		northeast	Euroamerican trade goods
I	unmodified pit	Extended		Northeasterly, westward	None
J	Cist	Extended		None (45FR42) North (45FR36)	None (45FR42) Tin cans (45FR36)
K	plank cover	Extended		East, northeast	Euroamerican
L	box-like, constructed in situ	Extended		easterly west (45AS81)	Euroamerican trade items
M	Canoe	Extended		East, northeast	Euroamerican trade items
N	Coffin	Extended		east, northeast 3-N/S 3-W (45FR36)	Euroamerican
O	Casket	Extended		west	Euroamerican
P	Trunk	Extended		East, northeast	Euroamerican

These sixteen classes are integrated into a scheme, which is believed to have both cultural and chronological significance, by eliminating anomalous classes (D, E, F, G, H, J) and grouping the remaining classes into six "patterns," several of which are subdivided. These six patterns are shown in his Figure 13, Appendix 39. The distribution of individual by burial class in the Lower Snake River is in Table 3,

Appendix 39. The burial patterns defined in this paper generally represent an expansion of Sprague's and Combes' schemes.

Late Prehistoric Period (AD 1300 to 1700 AD): The late prehistoric period was characterized by non-extended unmodified pit burials. "Orientation was generally through the western sector of the compass and few, if any, grave goods were placed with the individual" (1973:29). If grave goods were present it was most often dentalium (15).

Protohistoric Period (AD1700 to AD 1805): The Protohistoric period was characterized by burials in the non-extended position in a cist or grave usually with evidence of burning. "Burials from sites in the lower section of the region (45FR42 and 45FR47) were oriented to the east whereas a westward orientation predominated throughout the remainder of the region" (1973:30). Grave goods were usually aboriginal in nature, although European trade goods were found with cist burials at 45FR42 and 45WT65 indicating that this pattern remained in use until the end of the Protohistoric or early Historic Period.

Historic Period (AD 1805 to AD 1900): Inhumations of the Historic Period have been consistently characterized by interment in the extended position in a rough box oriented east. "This description is no longer adequate" (1973:30). The Historic Period should be separated into two distinct components. The Early Historic Period should be characterized by one or more forms of non-extended burials such as plank covered interments or cist inhumations. After about 1840, the Historic period was characterized by burials in the extended position in a variety of box-like burial containers, with orientation to the east or the west. Most grave goods found in these burials are of European manufacture.

(Annotated by Erin M. Shumate)

The Nez Perce Grave Removal Project: A Preliminary Report

Michael J. Rodeffer, Stephanie H. Rodeffer with Roderick Sprague, 1972

Wawawai Store Site: The site, 45WT47B, is located upriver from the former Wawawai store. A single adult individual was excavated. The individual had been placed in a flexed position oriented west, looking south. Associated grave goods include three small rocks, two projectile points, two pounding stones, and shell.

Nisqually John Talus Site: The site, 45WT65B, is located on the Snake River, upriver from Nisqually John Creek. Eight burials were excavated. All burials are assigned to the protohistoric period.

Burial 1: This burial was represented by long bone fragments and charred wood. Trade beads may have been artifacts associated with the burial.

Burial 1a: This burial is represented by 15 bone fragments. Charred stakes were located and may represent a stake cist. No grave goods were in association. The individuals represented in burials 1 and 1a may represent the same person.

Burial 2: This burial was represented by bone fragments. Associated grave goods include trade beads and copper fragments.

Burial 3: This burial was represented by long bone fragments. No grave goods were in association. The individuals represented in burials 2 and 3 may represent the same person.

Burial 4: This burial was represented by bone fragments. Associated artifacts included an antler tine and two burned planks.

Burial 5: The burial is represented by small bone fragments from pothole excavations and resulting backdirt.

Burial 6: This burial was represented by disarticulated horse vertebra, a cedar plank cist, and an adult male individual. The human remains had been placed in a semi-flexed position on the back. Orientation was south 35° east. Associated grave goods included the remains of a decorated shirt, components of a necklace and bracelets, trade beads, 8 thimbles, 4 pieces of brass, a pewter button, iron knife blade, dentalium, sandstone pipe, and a iron tube. The disarticulated horse remains may represent cultural placement as a grave monument.

Burial 7: This burial was represented by burned long bone and a copper stained rib fragment. Five horse molars were found in association with the burial.

The Lawyer Site: The site, 45WT101B, is located 2.3 miles below Steptoe Canyon. Thirty-four burials were excavated. "The burial pattern was normally characterized by several features: 1) a grave indicated on the surface by a marker of one or two boulders, or a cairn--a circular to elliptical ring or cover of boulders; 2) evidence of fire; 3) deposition on the back in a tightly flexed position; 4) an orientation ranging over the western half of the compass; 5) a lack of preference for any particular orientation with respect to the river, i.e. upstream or downstream; and 6) a paucity of grave goods" (Rodeffer 1972:17). Burial descriptions can be located in Appendix 38.

Alpaweyma Site: The site, 45AS81B, is located on Alpowa Creek above its confluence with the Snake River. "Overall, ninety-one burials ranging from the prehistoric Piquin Phase, ca. AD 1300-1700 to the late 19th century were removed from 45AS81B" (Rodeffer 1972:50). Burial descriptions can be located in Appendix 38.

Five burial patterns have been defined at the Alpaweyma Site. Alpaweyma I consists of burials in a flexed position on their side. Orientation ranged from northwest to southeast. Cairns were placed above the body and individuals were often wrapped in leather or matting for burial. Alpaweyma I dates to the late prehistoric Piquin Phase.

The Alpaweyma II pattern is characterized by burial on the back in a semi-flexed position, orientation to the east, and a cedar post or log covering. Alpaweyma II is dated to the protohistoric and early historic.

The Alpaweyma III pattern marks drastic change in burial practices. "The individual was interred in a simple pit in a extended position on the back and oriented to the west with no accompanying grave goods" (Rodeffer 1972:128). This burial pattern is earlier than Alpaweyma IV based on superposition.

The Alpaweyma IV pattern is characterized by burial on the back in the extended position, a rough cedar box, orientation to the west, and trade goods. "The terminal date of this burial pattern is contingent upon the initial availability of sawed planks for the construction of the coffins, probably around 1862" (Rodeffer 1972:131).

The Alpaweyma V pattern is characterized by burial on the back in the extended position, orientation to the west, the use of a milled plank coffin, and trade goods.

Offield Bar Site: The site 45GA100 is an undisturbed site associated with a "white" cemetery. Burial descriptions can be located in Appendix 38.

(Annotated by Erin M. Shumate and Jennifer Sugden)

The Texas Creek Burial Site Assemblage, British Columbia

David Sanger, 1968

The Texas Creek site (EdRk:1) is a burial site of unknown size. Logging operations had disturbed an undermined number of burials interred in a sandy hillside that slopes steeply to the Fraser River. The bulldozing and subsequent uncontrolled digging had been so extensive that systematic excavation was pointless. A few human bones and cranial fragments were collected, but all evidence of burial patterns was lost. According to Sanger, it seems likely that flexed primary burials with grave inclusions were present. No traces of wood slab cists or stone suitable for cairns were found. One femur appeared scorched by fire, but there was no other indication of cremation.

(Annotated by Lourdes Henebry-DeLeon)

Mortuary Variability and Status Differentiation on the Columbia-Fraser Plateau

Rick J. Schulting, 1995

The goal of Schulting's work is to explore variability in Plateau mortuary assemblages, with an emphasis on the portion of variability that can be related to socioeconomic status differentiation. The data Schulting used are scattered in various sources. Some sites have detailed analysis and others have little data. Data from burial sites on both the southern and the northern Plateau are discussed.

The Upper Columbia

Grabert (1968, 1970) investigated a series of burial and habitation sites in the Okanogan area. Site 45OK66 yielded 13 burials and 45OK112 had eight. Site 45OK66 is located along the south slope of a dune paralleling the Columbia River, 400 meters from the mouth of the Okanogan River (Grabert 1968). All of the burials were oriented parallel to the Columbia. Burials 12 and 13 had clearly defined cedar cists together with stone cairns (Grabert 1968). Burials 1, 4, 9, 10 and 11 showed traces of wood suggestive of cists.

Site 45OK112 is located on an alluvial fan at the mouth of the Chiliwist Canyon on the Okanogan River, approximately 12 miles upstream from 45OK66. Burials 5b and 9 were enclosed by cedar cists. Burial 5a was associated with a subsurface carved rock in addition to a surface cairn. Grabert (1968:138) places the 45OK66 assemblages as slightly predating the turn of the nineteenth century. The OK112 assemblage appears very similar and probably dates to the same period (1995:119).

Artifacts from the sites include dentalium, abalone, copper ornaments, red and yellow ochre, a tubular pipe, bone beads, bone gaming pieces, projectile points, large bifaces, scrapers, a graver, flakes, an antler point, an antler wedge, a bone flesher, and a whetstone. The two large bifaces were placed at the head of Burial OK66. Four males and four females are reported for OK-66 including one child. There is no indication of differential treatment relative to age or sex.

The Okanogan/Similkameen: Atkinson (1952) estimates that more than 40 graves were disturbed at a site above Osoyoos Lake, south of the town of Oliver, during the construction of a subdivision. Caldwell's (1954a) site CO-61, possibly a remnant of the site described by Atkinson, consists of a series of evenly spaced interments on a

low gravel terrace above Osoyoos Lake. According to Caldwell all the bodies were tightly flexed. Some interments were enclosed in cedar plank cists. Grave goods include a single set of copper earrings, abalone ornaments, a series of large obsidian and chert blades, and abundant red ochre (1995:129).

Site CO-47: This site consists of a series of burials overlooking Skaha Lake near Penticton. Caldwell (1954a: 16) states that the "physical remains were burned." Atkinson (1937, 1952) also discusses cedar line cists containing "charred" human remains. All individuals examined by Atkinson (1937) were oriented with their heads toward the lake. Atkinson (1937) also records instances of one burial overlying another, though in separate graves. Grave goods include large nephrite celts, perforated elk teeth, dentalium, serrated agate and obsidian points, whetstones, chipped knives, bone awls, wedges, barbed bone points, an incised digging stick handle, beaver teeth, red ochre, and a bear tooth pendant (Atkinson 1937, Schulting 1995: 129).

Site CO84 (temporary site number) consists of a group of stone cist burials near Hedley. Large flat slabs were arranged in a rectilinear pattern. Most of the graves contained no artifacts. Caldwell also reports a single cairn burial near Oroville, Washington, found to contain copper beads strung on buckskin, a copper plate, a large nephrite celt, and dentalia.

The Fraser River: The Mile 28 Ranch site (EdRk3) was located on a terrace overlooking the east bank of the Fraser River approximately midway between the towns of Lytton and Lillooet. Two undisturbed burials were recovered, and the remains of one disturbed burial.

Burial 1 was an adult male, lying flexed on its side and oriented with the head to the north. A projectile point was embedded in the thoracic vertebra. Burial 2, an infant, was found beside Burial 1, and lay tightly flexed on its right side and oriented with the head to the east. There was a projectile point lying between the ribs and the left radius.

Texas Creek (EdRk 1) 3: This site is located on the west bank of the Fraser River, approximately 12 miles down river from the town of Lillooet. The site was severely looted and has no intact burials. Only a femur that appeared scorched was collected (1995:133). The site dates between 500 to 300 BP.

The Murray Site (EeR1 18): This site is located on a sandy terrace just outside the town of Lillooet. It is estimated to have contained approximately 40 individuals (1995:133). A minimum of 12 individuals including five males, four females, and three individuals of indeterminate sex were located. The total does not include the three intact burials.

Burial 1, an infant, was buried with a strung necklace of dentalia, tubular copper, and glass trade beads. A copper thimble was attached to a leather thong. A fragment of sagebark basketry in which the infant may have been placed was found.

Burial 2, also an infant, contained no grave goods.

Burial 3, an adult female, was covered first with sagebark mat and then with four metal plates, presumably made from flattened kettles. A hafted iron knife and a deerskin pouch containing three copper bracelets and an unidentified circular iron object were recovered (Schulting 1995: 134). Styrd and Baker (1968) have suggested a date in the 1840's.

EeR1 192: A disturbed burial site near Lillooet. A minimum number of 22 individuals

was calculated for the remains recovered from the site. There were 13 adults and nine subadults. Evidence suggests that most of the burials were flexed. Orientation could be determined for two individuals; both lay with their head to the north (1995: 134).

The Fountain Site (EeR1 19): Two burials are found at this large pithouse village north of Lillooet. Burial 1 was flexed on its right side, oriented with its head to the west, and covered by a sagebark mat and Douglas fir bark. The skeleton is identified as an adult. Items attributed to this individual include a birchbark container holding a chalcedony drill, a quartzite crystal, gypsum crystals and pendant, and mica flakes. Other items include a basalt biface, basalt and chalcedony flakes, red ochre and a carved whalebone club and a steatite tubular pipe. Burial 2 was found directly underlying Burial 1. It was flexed on its left side and with its head oriented to the southeast. Douglas fir bark was found over the body.

The Bell Site (EeRk4): A single burial of an infant, approximately 1.5 years old found in the floor of Housepit 19. The infant is a primary interment, lying on its left side and back. Grave goods include a carved antler figurine, a carved steatite pendant, five steatite pipe fragment pendants, an incised antler comb, a quartz crystal, a siltstone bear figurine, Dentalium beads, a number of basalt flakes and abundant ochre.

Canoe Creek, (EiRn15) had seven highly disturbed burials and the presence of five stone circles suggests additional burials. Copper trade beads and pendants were present in all but one of the burials indicating a protohistoric or early historic date for the assemblage. The seven individuals include one male and one female adult, an adolescent, two infants, one young child (age 2-3), and one older child (age 8-10). One grave contained three individuals, while another contained two. Only two single interments were found. The high incidence of infants and children together with the occurrence of multiple burials suggests that the Canoe creek burials represent the victims of an epidemic (1995:135). Burial 6, a newborn, had a leather pouch, a bundle of sticks, and three feathers buried with it.

Nicoamen, (EbRi7) is located on the north side of the Nicoamen River near its confluence with the Thompson River. Skinner and Copp (1986) estimate a minimum number of 22 individuals from the site, many of which were disturbed by construction activity (1995: 135). This estimate includes eight adults, four adolescents, three children, and six infants/neonates. Three of the adults were identified as male and four as female. Burial 14, one of the adolescent (age 16) skeletons, Burial 14, reportedly exhibited pregnancy scars. Burial 3 was identified as an adolescent (age 18) female.

The burials all appeared to have been flexed. Orientation in ten of the 13 relatively undisturbed burials was with the head roughly to the east. The burials apparently fall into two spatially and possibly temporally defined clusters, a late prehistoric group and a protohistoric group. Burial 6, containing two copper ear ornaments, was radiocarbon dated to 740+-130 BP. This date is questioned (1995: 136).

Kamloops/Chase: Some of the most significant excavated burial assemblages on the Canadian Plateau are those of the Kamloops/Chase area, on the South Thompson River. The largest assemblage from a single location in the Kamloops area comes from the "Large" site. Smith recovered the remains of the 13 individuals, all primary single interments. For the first 11 burials there is no information regarding the remains, other than that all appeared to have been flexed on the side. Burial 12, an adult male approximately 50 years of age, was lying flexed on the left side. Burial 13, a child, is the only subadult reported for the assemblage. Grave inclusions associated with Burial 13 consist of Dentalium, and unidentified pieces of shell. Copper artifacts occurred in Burial 6 and 11, with copper staining on a piece of

carved antler in Burial 5. Pieces of "copper clay" were found with Burials 3, 5, 9, 11 and 12. Two burials exhibit possible evidence of burning as part of the mortuary ritual. A number of burials include small side-notched projectile points diagnostic of the Kamloops Horizon, ca. 1200-200 BP (1995: 140).

The Hill site is located near the Large site. Smith recovered two burials from this site, both adult primary interments. The artifacts indicate an early protohistoric date for Burial 1 and 2. Burial 1 is described as a male about twenty years of age (1995: 140). A scattering of Dentalium shells and an oval of decayed wood marked it on the surface, which were the remains of a broken canoe made of Alaska cedar. Wooden stakes surrounded this. The skeleton lay slightly flexed on its left side. The body had been wrapped in fabric, presumably of sagebark, and also in pieces of hide daubed with red ochre. The entire bundle was tied with a vegetable cord. Strands of dentalia and tubular copper beads were arranged across the forehead, and additional strands of dentalia and copper together with perforated elk and deer incisors lay at the neck. A fiber bag was around the shoulders and included beaver tooth dice, bone needles, an iron awl in a bone handle, bone tubes, a bone pendent, and basalt flakes and bearberry seeds. Red ochre permeated the bag (1995:140). Burial 2 was similar to Burial 1 but instead of pieces of a canoe, poles had been placed around the body. The tops of these poles had been burned off about a foot below the surface. The grave contained the remains of a young adult female wrapped in the fabric of woven vegetable fiber. Wood fragments, possibly a spear or bow, lay beside one arm. Other inclusions were a basalt knife retaining evidence of hafting, basalt flakes, an abrader, a beaver tooth, and a bone awl.

The Government site: This site was excavated by Smith (1900: 432, 436). Four graves which contained the partially burned remains of a single child. All burials had abundant and elaborate grave inclusions, including flat bone beads, tooth and claw pendants, Dentalium shell beads, nephrite celts, "copper clay", and pieces of mica. The burials have a suggested date in the Thompson phase, ca. 2400-1200 BP.

EeQw1: Sanger (1968) excavated one of the most important burial assemblages on the Canadian Plateau near Chase (EeQw1). Local collectors had destroyed the site and only five burials were recovered. These included one infant, two young children, and two adults, both of which were identified as males. All five burials were flexed. The two children were lying on their backs, while the adults and infant lay on their side. Sanger assigned the terminal date of AD 1750 to the site.

Skwaam Bay (EgQw) 1: This site is located on a talus slope on Skwaam Bay, Adams Lake. The remains of two adults and one child were recovered from the slope. They were placed one above the other, although apparently not in a single event. Burial 1 was semi-flexed on its back, parallel to the slope contour, with the head oriented to the east. A single large flat rock had been placed over the chest. A depressed fracture was noted on the cranium. Burial 2 underlay Burial 1. The disturbed remains of a child represent Burial 2; Burial 3 was found underneath Burial 2 by some 60 cm. The individual was semi-flexed and parallel to the slope, with the head to the west, and also had a large flat rock placed over the chest. A bone point was embedded in the innominate. The burials are assigned a late prehistoric date.

The Cache Creek: This site is located on a slope near the confluence of Cache Creek with the Bonaparte River. Three cairns containing a total of four individuals were excavated. The remains of a fifth individual were acquired from a local collector. Each of the four burials was surrounded by wooden cists consisting of vertical split stakes and slab poplar (1995:144). Burial 8, a one to two year old infant, had the largest assortment of grave inclusions at the site. These include 21 elk canines found arranged around the cervical vertebrae in three rows. The Cache Creek assemblage is very important in that it provides radiocarbon dates for four of

the burials. Radiocarbon dates are shown below (1995:145).

Burial 1 700 +/-80
Burial 6 1330+-260
Burial 8 760+-110
Burial 8a 1960+-400

With the exception of 8a, all the dates are on associated unburned fragments of the wooden cists. The burials most probably belong to the period between AD 1100 and 1300.

The Lower Middle Columbia

The Dalles-Deschutes: Archaeological research on burials in the area was limited due to extensive pothunting and reservoir filling. Published dates on material from the major sites in this region are rare or nonexistent, at least for those sites that were inundated by Lake Celilo. Three types of burials are recovered most frequently in this region: pit inhumation, talus slope burial, and cremation. W. Strong (1930) conducted some of the earliest burial descriptions in this area. He investigated 19 pit graves, from several numbered sites. His results are partly documented and may be found at the TBMWSM.

Leachman (45KL68): E. Strong (1959a, 1959b, 1960) described a cremation site located directly behind Wakemap Mound. The pit is about 18 feet in diameter and five and one-half feet deep. Evidence of wood planks suggests a lined pit. There is no estimate of the number of individuals. Artifacts found include stone carvings, "slave killers," pipes, whalebone clubs, chipped stone artifacts, and bone and antler carvings (1995: 82). This cremation pit is assigned to the Late Prehistoric Period based on grave goods.

Congdon (45KL41): The Congdon is located near the Dalles on the Washington side of the Columbia River. There are two burial components at this site (Congdon II and Congdon III). Congdon II is a large cremation pit containing large amounts of beads, amulets, rings and atlatl weights. The cremation pit is capped with basalt boulders. Human remains were not collected from this component due to poor preservation. The Congdon II component has been dated to 3500-3000 BP based on artifact type (see annotation of Butler 1963).

Congdon III is a series of multiple mass burials. There are at least 51 individuals reported. Cranial deformation was not apparent in any of the crania. Bergen (1989) revisited this site in 1960 and recovered 29 more burials (1995:82). Bergen reports that sub-adults were not underrepresented but more than likely they were less preserved. There were fewer artifacts in this component although it contained similar items seen in Congdon II. More information on the Congdon Site is found in Butler's 1959 and 1963 annotation.

Maybe: The Maybe site is west of the Congdon site. It consists of a small amount of cremated bone from secondary burials of partial cremations. The artifact assemblage appears to be similar to Congdon II.

Indian Well (45KL42): The Indian Well site, now covered by Lake Celilo, was located in a talus slope along the Long Narrows. Two components are present, Indian Well I (8500-7500 BP) and Indian Well II (1900-1400 BP). Indian Well I is an early occupation component. Butler (1959) describes Indian Well II as a cremation, while Strong (1959) describes it as talus burials. Because of the disturbed nature of the site it cannot be determined which is correct, although there is evidence of burning. Artifacts in the Indian Well II component included beads, red ochre, points and

knives, pipes, mortar and pestles, and a "slave killer" (1995:84).

Atlatl Valley: The Atlatl Valley site is located just west of Wakemap Mound. Strong (1959) describes the site as a burial ground, 150 ft. in diameter. Strong (1959) estimates that there are as many as 5000 burials in the Atlatl Valley II and III components. This number is based on the amount of knives found. There are three components to this site: Atlatl Valley I, II, and III. Atlatl Valley I consists of four cremation pits dating at about AD 1800. Artifacts include atlatl weights, stone pipe fragments, and glass beads. Atlatl Valley II consists of poorly preserved skeletal material. Artifacts include stone points and knives. Atlatl Valley III consists of only occasional fragments of human remains. Based on projectile points found, Cole (1993) dates the majority of the assemblages to the Cayuse phase (2000-150 BP). Atlatl Valley III may date to an earlier phase based on the occurrence of Cascade-type points, usually seen no later than 4000 BP (1995:85). Associations of Cascade points with burials are uncertain.

Beek's Pasture: This site is on the Washington side of the Columbia River near the lower end of Long Narrows. Three components are represented: prehistoric, protohistoric, and historic. The site consisted of four cremation pits and eighteen talus burials (1995:85). None of the cremations include European trade items suggesting that they are prehistoric. The artifact assemblage of the cremation pits included stone points, knives, drills, worked bone, Dentalium shells, Olivella shells, and a pipe. Most of the burials were flexed, lying on the right side with the head oriented to the west. Many burials were lined with cedar, some with charring and marked by cairns. Four of the talus burials contain European trade items. The artifact assemblage included bone points, digging stick handles, celts, blades, glass beads, and copper artifacts. "Thus the cremation and talus assemblages do not appear to differ significantly, and it may be supposed for the purposes of analysis that they are approximately contemporaneous" (1995:87).

Sundale: This site is located above the Long Narrows on the Washington side of the Columbia River. Twenty-five burials of late prehistoric period were recovered from talus slopes. All individuals recovered were adults in poor state of preservation. Artifacts found with the burials include points, knives, bone tools, shell beads, and pipes. Five burials contained Euroamerican trade items and probably represent a historic component.

Big Leap: The Big Leap site is located near Celilo Falls on the Oregon side of the Columbia River. At least five large cairns contained 60-80 burials each. The large rock mound like features and artifact assemblages suggests contemporaneity with Maybe and Congdon II.

B. Stewart: See annotation for Butler 1962.

Juniper: The Juniper site is located on the northern side of the Columbia River opposite the mouth of the John Day River. Twenty-nine talus and cremation burials were found at the site. The artifact assemblage of the cremations suggests a protohistoric date. Pestles, Dentalium, Olivella, copper and glass beads, pipes, knives, and red ochre were found. Burial 15, a multiple burial pit, contained the remains of eight individuals. This burial may be the result of an epidemic, due to the various ages of the individuals. The burial was lined with cedar planks and contains historic artifacts. The large amount of European trade goods within the talus burials indicates a historic or possible protohistoric date.

Wildcat Canyon (35GM9): See annotation for Dumond and Minor 1983.

The Middle Columbia

Old Umatilla (35UM35B): This is a large prehistoric burial site. A total of 230 graves, 264 individuals, were found within an area of 60 x 90 ft. Artifact types include Dentalium, *Haliotis*, shell beads, bone beads, pendants, whistles, worked bone, a paint pot, war clubs, points, knives, scrapers, pestles, bola stones, bone tools, digging stick handles, and other utilitarian artifacts. "Most points from this site are large triangular forms with basal or corner notches. These have been assigned to the early Harder phase and the Quilomene Bar phase in the Lower Snake River and Vantage area sequences, respectively, and date from approximately 2500 to 700 BP" (1995:100). See annotation for Rice 1978.

The Yakima Valley: Thirty-eight burials from North Yakima and Ellensburg were recorded by Smith (1910). Many of these burials had been disturbed. Three burial types were recorded: inhumation, talus, and cremation. Half of the undisturbed burials contained no grave goods. The burials dated to prehistoric, protohistoric and the historic periods, based on grave goods in cremations and talus burials. The Yakima artifact assemblage is mostly restricted to ornamental items. See annotation for Smith 1910.

Selah: Archaeological investigations in Selah have uncovered cairn burials at the foot of a talus slope. Ten individuals were represented in the flexed position with orientation to the west. Grave goods include shell beads, shell pendants, Dentalium, stone beads, and a pipe. This site dates to the late prehistoric or early protohistoric period.

Sheep Island (45BN55): See annotation for Garth 1952.

Rabbit Island (45BN15): See annotation for Crabtree 1957.

Fish Hook Island (45FR42): See annotation for Combes 1968.

Marmes Rock Shelter (45FR50): See annotation for Rice 1969

Potholes (45GR131): See annotation for Crabtree 1957.

Wahluke (45GR306): This site is located on the west bank of the Columbia River in Grant County. The majority of the burials are cremations and occur three or more feet below the surface. They were arranged in rows along the river upstream from the village. All crania exhibited frontal-occipital deformation. Grave goods include simple utilitarian tools made of stone and bone, as well as beads, *Dentalium*, *Haliotis*, *Olivella*, and *Glycymeris* beads, pipes, celt, pendants, gaming pieces, drinking tubes, and whistles. No indications of European trade items were found indicating the burials are probably Late Prehistoric.

(Annotated by Lourdes Henebry-DeLeon and Erin M. Shumate)

A Reevaluation of the Marmes Rockshelter Radiocarbon Chronology

John C. Sheppard, Peter Wigand, Carl Gustafson, and Meyer Rubin, 1987

In the 1980's the authors began a reevaluation of the Marmes Rockshelter and its environmental setting. The radiocarbon dates in their stratigraphic context were reassessed. The authors confirmed the earlier radiocarbon sequence from the Marmes Rockshelter and stratigraphic relationships have been clarified or corrected.

Additional determinations were run to verify the chronology of the Marmes Rockshelter and to assign C14 ages to previously undated sediments. At least 22

dates were required to resolve most questions regarding the C14 sequence (1987:124). The earlier radiocarbon sequence was confirmed and the stratigraphic relationships have been clarified or corrected.

Radiocarbon dates and associated burials and artifacts indicate that human use of the shelter commenced by about 10,500 years ago and continued to the Mazama ashfall (6700)(1987:122). Absence of radiocarbon dates in Stratum V reflects a scarcity of carbon containing material. This may also indicate a period when people rarely visited Marmes Rockshelter. During the last 2000 years, radiocarbon dates imply greater use of the cave resulting in disturbances of its deposits especially around 1200 BP (1987:118, 124) [see Appendix 40.]

(Annotated by Lourdes Henebry-DeLeon)

The McNary Reservoir, A Study in Plateau Archaeology

Joel L. Shiner, 1961

Site 45BN3 (Berrian's Island): Some of the graves were simple interments. Others were plank-lined cists. Generally the bodies were flexed or semiflexed, on the back or side, with the head oriented to the west (downstream) (1961:217). In one burial glass beads and food had been thrown on the fire, presumably as an offering. The projectile points from the graves represent two types, side notched and barbed. Five stone pipes of soapstone had been placed with the burials. Several polished stone blades were found with the burials. A fetish that was carved and polished from a tabular slate was recovered. Red ochre had been rubbed into the designs of most of the fetishes that were found. Some of the chipped stone fetishes had red ochre rubbed into the notch. Vast quantities of European trade goods were found in and around the burials. Glass beads were found (1961:217). (Also see annotation for Simpson 1948).

45BN6: The burial included the remains of a male more than 50 years of age who had been interred without any burial furniture. All metrical measurements and morphological observations fell within the expected ranges, and anomalies or pathological conditions could be seen. The teeth were in extremely poor condition (1961:221).

Sheep Island 45BN55: There have been two archaeological investigations at Sheep Island. The first was an excavation in 1949 by Thomas Garth and the second excavation was by the River Basin Surveys crew in 1950. Garth's excavation showed two large cremations and several burials with a series of stone and bone artifacts associated with each of them. Osborne found a series of burials that were stratigraphically older than the cremations. The burials had no artifacts associated with them (1961:222). Garth found 10 burials that were stratigraphically older than the cremations. Grave goods were found with six of the burials, with most of the artifacts found with one burial. There were no European trade goods with the graves or cremations; Shiner assigns a date prior to AD 1750.

(Annotated by Lourdes Henebry-DeLeon)

Indian Burials Excavated at McNary Dam Site

R.S. Simpson, 1948

The Smithsonian Institutions River Basin Survey completed work in the summer of 1948(?) on a village site and Indian burial ground. The crew worked from August 4 until September 10. At the burial site (45BN3) 49 burials were cleared, of which 10

had been exposed by flooding. All burials were inhumations, all were either flexed or semi flexed. Artifacts found with the burials, and in other excavation area include artifacts of copper and iron, glass beads, shell ornaments, and stone implements. Fragments of matting were associated with many of the burials. The use of burial cists made of wooden posts set on end was common. In some instances there was evidence of fire above the pit (1948:194).

(Annotated by Lourdes Henebry-DeLeon)

The Archeology of the Yakima Valley

Harlan I. Smith, 1910

Harlan Smith spent from May to August 1903 investigating archaeological sites in the Yakima Valley between Cle Elum and Kennewick and in the Columbia Valley in the vicinity of Priest Rapids. During this time period, Smith was working for the American Museum of Natural History. Near north Yakima he examined graves in rockslides along the Yakima and Naches Rivers (1910:7). He also writes about human cremations on the point northwest of the junction of the Naches and Yakima Rivers, recent rockslide graves on the eastern side of the Yakima River, graves in domes of volcanic ash in the Ahtanum Valley near Tampico and rockslide graves in Cowiche Valley. At a village site near the head of Priest Rapids graves in rockslides away from the river were examined. Some modern graves were also mentioned (1910:8).

Smith comments that in all the old graves the skeletons were flexed and usually on the side. He continues on to say that "the graves where the body was buried at length with the feet to the east were doubtless recent and probably due to the teachings of Christians." Smith also observes that the more modern rockslide graves seemed to contain more grave goods than the older graves or graves in domes (1910:143). The "cremation circles" often contained dentalium shells. Two of the children skeletons and two adult skeletons exhibited ankylosis (ankylosis) of some of the vertebrae. Included in Smith's report is an appendix that contains an account of graves with catalogue numbers of the contents and other finds (1910:152-173). Geographical areas include Kennewick, North Yakima, Ellensburg, Priest Rapids, and those combined in "various localities."

(Annotated by Lourdes Henebry-DeLeon)

A Comparative Cultural Analysis of an Indian Burial Site in Southeast Washington

Roderick Sprague, 1959

The site, 45AS9, is located south of the town of Asotin, Washington. Twenty-three burials were uncovered. Descriptions of historic burial patterns of the Plateau are discussed on pages 51 through 62. The descriptions include information on the following groups: Carrier, Chilcotin, Columbia, Coeur d'Alene, Flathead, Kalispel, Kittitas, Klamath, Klickitat, Kutenai, Lillooet, Okanogan, Sand Poil and Nespelem, Sekani, Shuswap, Spokane, Tenino, Thompson, Umatilla, Wanapum, Wasco, Wenatchi, Wishram, and Yakama.

Chapter 4 is a discussion of archaeological burial practices. "The previous studies on the Plateau and surrounding areas are divided here into several regions for convenience of presentation and comparison. The divisions do not necessarily reflect areas of divergent burial pattern as much as excavation procedure" (1959:70).

The patterns of this one individual site as determined by the evidence from twenty-three burials is a three-fold one. This is: (1) a late prehistoric pattern of burials oriented in a generally westerly direction, some degree of flexure, placement on the side, and grave goods consisting largely of dentalia; (2) a brief period of rock cairns associated with fire and occasional cedar stake cists, an increase in grave goods, placement of the body in a flexed position on the back, variable orientation but largely south and west, and heavy painting with red ochre; and (3) an early historic period of extended burials placed on the back, orientation invariably to the east, placement in cedar burial boxes, and the inclusion of large numbers of trade items in the grave (1959:85).

Prior accounts of the Plateau culture often describe the culture as stable and conservative. Plateau culture changed extensively during the historic period. Even prior to Europeans coming into the Asotin area, European goods and ideas were already being traded between Plateau groups. Burial practices changed; this "acculturative receptivity" does not characterize stability.

Not only is it clear that the varied burial pattern of the Nez Perce fails to follow the accepted characterization but it is also evident that the Plateau groups as a whole show a high degree of intra-group and inter-group variability in patterns of disposing of the dead. Perhaps the time has come to look upon the Plateau Culture Area not as a living fossil but to evaluate it for what it is: a highly variable and rapidly changing culture area with reference to certain cultural practices (1959:89).

(Annotated by Erin M. Shumate)

The Descriptive Archaeology of the Palus Burial Site, Lyons Ferry, Washington

Roderick Sprague, 1965

In 1964, two hundred fifty one historic burials were excavated near the mouth of the Palouse River. This site was the last extensive burial ground of the Palus band. Descriptions of each burial, including age, sex, orientation, position, container, and grave goods can be found in Appendix 42.

(Annotated by Erin M. Shumate)

Micellaneous Columbia Plateau Burials

Roderick Sprague and Walter Birkby, 1970

"The burials described in this report are from twelve different sites excavated between 1959 and September 1967" (1970:1). Burial descriptions are located in Appendix 43. Complete craniometric and osteometric data are on file at Washington State University and The University of Arizona.

Ferguson Burial Site (34WT55B)

The total absence of trade objects in the seven talus burials suggests that they are prehistoric. The modern form of the two pestles argues against great antiquity. The appearance of the talus slope and the degree of discoloration of the disturbed rocks would also suggest a late prehistoric date.

All seven burials were marked by slight cairns, and all but one had evidence of

juniper stakes placed in the talus. Orientation when it could be determined was northwest or down river for three burials and southwest and toward the river for one. The age and sex distribution showed no unexpected trends (see Appendix 43 for metrical and nonmetrical data).

Palus Talus Burial Site (45WT56)

The presence of largely native manufactured artifacts plus a few iron objects combined with an absence of glass beads would suggest an early historic date for these burials. Talus slope burials are contemporaneous with earth inhumation in the Plateau.

Sheffler Cut Burial Site (45WW30)

The three burials probably represent the remains of a badly looted historic burial site. The pattern of extended burials on the back in a nailed coffin with abundant grave goods, especially beads, is one postulated by Sprague (1958) for the later half of the 19th century. This site probably dates between 1840 and 1860.

Freeland Burial Site (45FE1)

All evidence suggests that the pattern of this site was primary inhumation with no coffin or other vehicle of disposal except for the use of deerskin wrapping. This wrapping was probably the general pattern but was observed in only five cases of the nine excavated. With the exception of one infant, all the burials were flexed and with arms flexed to the chest. The occurrence of extended infant burials is not unusual in the prehistoric Plateau. Deposition on the back was favored four out of six times with left side and faced down practiced once. The face down deposition was extremely rare on the Plateau. Orientation was universally westerly with the exception of the infant who may have been oriented east. Demographically the sample included two adult males, seven adult females, one adult of indeterminate sex, six children and 11 infants.

Cranial deformation of the lambdoidal type was observed on Burials 12, 13 and 14. Squatting facets occurred on the lower limbs of Burials 15 and 16. Weathering was noted on some of the bones indicating surface exposure prior to discovery.

The only nonpathological dental condition occurring in the subadult skeletons was a mesial-lingual torsion of the maxillary right central incisor. Dental attrition was comparable to that seen in most populations subsisting on a gritty diet.

The shallow burial depth, high incidence of infants and children, the disturbed and crowded burial distribution, and the time placement all suggest that this may have been an epidemic burial ground of greater extent than indicated by the excavation. The most common artifact was the rolled copper bead.

During the spring of 1967 Chance surveyed the Coulee Dam Recreation Area and recovered the remains of 15 individuals.

Nancy Site (45FE16)

Chance defined this site as an aboriginal camp, burial, and historic site. The skeletal remains were on the surface and in poor condition, badly weathered and out of cultural context.

Kettle Falls Railroad Bridge Site (45FE38)

This site was located near the west end of the Kettle Falls railroad bridge. The extensive copper stains on the bones as well as the preservation of much of the hair and non-osseous tissue suggested that these burials had quantities of historic copper grave goods interred with them. The bones separated in the laboratory included two adult males and one adult female.

Mill Creek Site (45LI6)

The burials at this site were looted. The skeletal material was sorted in the laboratory. The eight incomplete skeletons included three adult males, two adult females, one adult of indeterminate sex, and two children. Artificial deformation of the lambdoidal variety was observed on the occipital fragments of two males.

Crown Creek Site (45ST74)

Chance (1967: 71) reported this site as an aboriginal camp, burial, housepit, and historic site. The badly weathered and fragmentary skeletal material was recovered from the surface. The presence of burial cairns was reported for this site (Chance 1967:71). The skeletal material was in such poor condition that no metric data could be obtained. Gross evaluation indicated the individual was an adult male, 40 years of age, and without posterior cranial deformation.

Steamboat Rock Mass Grave (45GR98)

A mass grave was exposed by the receding waters of Banks Lake. The skeletal material was recovered in a block of frozen matrix. The material was badly disturbed and thoroughly mixed by water action prior to exposure.

Banks Lake Skeletal Material

This material was washed out of a bank on Banks Lake near Steamboat Rock, Grant County, Washington. The skeleton was an adolescent female, 14 to 16 years of age. An undeformed skull with some postmortem tooth loss, both clavicles, and radii, and ulnas were found.

(Annotated by Lourdes Henebry-DeLeon)

Nez Perce Grave Recovery Lower Granite Dam Reservoir 1973-1978

Roderick Sprague, 1978

Upper Tammany Burial Site: The site, 45NP109, is located above the confluence of the Tammany Creek and the Snake River. Seventeen burials were excavated. All burials were characterized by flexed positions, no trade beads, dentalium and few iron or copper artifacts. This site is assigned to the protohistoric period.

Burial 10 contained an infant, 1/2 to 1 year of age. This individual was found on the back, in a flexed position with a westward orientation. Associated grave goods consisted of dentalia shells.

Burial 14 contained an adult female 30 to 40 years of age. The individual was buried face down in a flexed position with a southwest orientation. Associated grave goods consisted of a projectile point, a shell pendant, iron fragments, dentalia shells, and a copper pendant. Some cupric staining was found on some remains.

Lower Tammany Burial Site: This site (45NP110) is located slightly upriver from the Upper Tammany Burial Site. Burial descriptions can be located in Appendix 44. The site is protohistoric due to flexed burials and an absence of metal.

Tammany Talus Burial Site: This site (45NP131) is located upriver from the confluence of Tammany Creek and the Snake River, below the Upper and Lower Tammany Burial Sites. Ten burials were excavated from the site. Burial descriptions can be located in Appendix 44. "A very cautious date of late prehistoric to early historic is hypothesized for the site based on the copper beads and iron recovered from burial 2" (1978:14).

Steptoe Burial Site: This site (45AS2) is located across the Snake River from the mouth of the Steptoe Canyon. Twenty-seven burials excavated from the site are discussed in this publication. Burial descriptions can be located in Appendix 44. This site dates to the late prehistoric period.

Offield Bar Burial Site: See annotation from Rodeffer, Rodeffer, and Sprague, 1972.

Knoxway Canyon Burial Site: See annotation from Iverson, 1976.

Wawawai Burial Site: See annotation from Rodeffer, Rodeffer, and Sprague, 1972.

Wilma Bar Silo Burial Site: This site (45WT99) is comprised of nineteen excavated burials. Burial descriptions can be located in Appendix 44. "The total lack of historic trade goods, the relative richness of those undisturbed graves that were excavated, and the flexed position associated with cairns suggest a late prehistoric date for this burial site" (1978:29).

Lawyer Burial Site: See annotation from Rodeffer, Rodeffer, and Sprague, 1972.

Wilma Bar Bench Burial Site: This site (45WT102) is situated overlooking Wilma Bar. Eighteen burials were excavated at this site. Burial descriptions can be located in Appendix 44. "The pattern of flexed inhumations oriented west, marked with cairns, the relative lack of grave goods, but the presence of wood and charcoal, would argue for a late prehistoric date for this site" (Sprague 1978:37).

Wilma Bar Culvert Burial Site: This site (45WT103) is located on Wilma Bar. Nine burials were excavated at this site. Burial descriptions can be located in Appendix 44. "The crude construction of the burial cists, the extended position, and the easterly orientation would all argue for a fully historic time period for this site. On the other hand, the complete lack of historic grave goods including even nails for construction of boxes argues against this conclusion. Without further evidence a protohistoric to historic borderline date is assigned" (1978:39).

(Annotated by Erin M. Shumate and Jennifer Sugden)

Ancestral Burial Relocations Chief Joseph Dam

R. Sprague and T. Mulinski, 1980

As part of the report on the relocation of burials at Chief Joseph Dam, Sprague and Mulinski summarized the earlier work of Collier, Hudson and Ford. As part of a reburial project financed by the Colville Confederate Tribes and the Spokane Tribe, the Collier, Hudson and Ford (1942) material was reexamined by Mulinski, and the cultural data reviewed by Sprague. Sprague also assigned a Smithsonian trinomial number to the burial sites reported in Collier, Hudson and Ford. These are discussed below. Metrical and nonmetrical data are located in Appendix 51.

45FE13 (Site 13) is a talus slope site down river from Whitestone Creek. The body was marked with a cedar stake, flexed, placed on the right side, and oriented south. Only prehistoric artifacts were recovered (Collier et al. 1942: 46; 1979:7).

45FE24 (Site 24) is situated at the mouth of Whitestone Creek. Thirty-eight burials were recorded from a sandy area. Seventeen of the burials were intrusive in a midden area and thirteen of these contained trade goods including glass beads, copper and iron. These are dated to post-1820 by Collier, Hudson and Ford (1942: 7). Orientation was primarily westerly (20 west, 2 southwest, 2 northwest). Five

individuals were oriented east. Four of these burials were semiflexed infants. Most of the burials were marked by stone cairns or had cedar cists (Collier et al. 1942: 24-26; 1979:7).

45FE5 (Site 5) along with 7A and 7B were situated on the Ferry County side of the Columbia River. The site contained two talus slope burials marked with cedar stakes and lacking grave goods. No other cultural data were collected (Collier et al. 1942:14, 16, 43; 1979:7).

45FE7A (Site 7A) contained 8 inhumations recovered from a sand and gravel area of the site. The text suggests there were no features but the tables and pictures indicate cairn and cists were present (Collier et al. 1942:16, 42-44; 1979:8). Orientation was west and trade goods included copper, iron and glass beads.

45FE7B (Site 7B) produced 13 burials in a sandy and gravelly area. There was an absence of features except for one burial marked with a stake at the skull. The dominant pattern is flexed (2 semi flexed 1 extended). Nine were on the side and 4 were on the back. The extended and one of the semiflexed burials were children, a common Plateau variation in flexed burial sites (1979:8). Sprague (1979) states that this site might represent a cemetery utilized by the followers of a nativistic movement. Numerous glass trade beads were located in two of the burials oriented east (Collier et al. 1942:16, 44-45; 1979:8).

45ST50 (Site 50) was on the north side of the Spokane River near its confluence with the Columbia. Four burials washed out of the sandy area by the reservoir. They were extended, oriented southerly, lying on the back except for one on the face. None contained historic trade goods. (Collier et al. 1942:35-36, 56; 1979:7).

45ST51 (Site 51) represent two burials missed by the Ball reinternment project. The only cultural data recovered were also for the cist burial which was semiflexed on the right side and oriented west. They were in a sandy area with the only marker an uncharred pine cist around one burial. Both burials contained iron and copper (Collier et al. 1942:36; 1979:8).

45ST8 (Site 8) had twelve burials that were recovered from the talus slope site. All were marked with cedar stakes, all but one was flexed, and all but one was buried on its side. Orientation was generally southwest. Trade goods include iron and copper but no glass beads (Collier et al. 1942:35, 55-56; 1979:8).

45ST48 (Site 48) contained 5 burials in sandy soil and one talus slope burial. The talus burial was marked with a cedar stake and contained glass beads. The burials were flexed and semi flexed on the back and on the side, and orientation was mixed. They were both unmarked and marked by cists or planks. Abundant historic grave goods including copper and glass beads were present in all but one grave. Copper was so abundant in several graves that the bodies were mummified (Collier et al. 1942:34,55-56; 1979:8).

45ST31 (Site 31) contained five burials in a sandy area. There were no cists or markers and few artifacts, all of which were protohistoric. The predominant pattern was flexed, on the back or side, and oriented easterly (Collier et al. 1942:27, 50; 1979:9). The easterly orientation without trade goods is in contrast to the general Plateau pattern (1979:9).

45ST46 (Site 46) a sandy area burial site contained 39 burials with no cairns or cists. Flexed burials exceeded semi flexed by two to one. All the semiflexed and extended burials were adult. The dominant placement was on the side and orientation generally southwest. Grave goods were numerous, but only a fragment

of a copper pendent represented an historic trade good (Collier et al. 1942:33, 51-54; 1979:9).

The most northerly site, 45 St 47 (Site 47) contained 10 inhumations not marked by cairns or cists. Two of the burials contained trade goods including copper, iron and glass beads and a steel knife. Collier, Hudson and Ford date this site to 1810 (Collier et al. 1942:33-35, 55; 1979:9).

The Crown site (45ST74) had one adult burial. No cultural data was provided (1979:9).

Hill Creek Site (45LI6) contained eight individuals in a disturbed context with no cultural data available (1979:9).

In 1966, a series of burials eroding out of the bank of Lake Roosevelt near Kettle Falls. These were flexed, primary inhumations associated with early historic grave goods.

The Chaudiere Site (45FE47) produced one multiple burial containing one adult female, a juvenile and a child. Preservation was poor. Probably all were oriented north, flexed, and on the right side. The burial was probably prehistoric based on the grave goods. The most unusual thing about this multiple burial is that it is placed in an apparently artificial mound, a unique Plateau occurrence (Sprague and Birkby 1970; 1979:9).

Sprague and Mulinski also report on more recent skeletal material recovered during the project.

The Pakootas Site, 45OK159, is located on a high point overlooking the Columbia River. Miller reports that the graves in the site include members of the Pakootas family reportedly interred early in the century. The Pakootas Site suggests a cemetery of short utilization from approximately 1770 to 1800 by a family group. The finding of two individuals (burials 3 and 6) with projectile points in or near the spine and one individual in a contorted position (Burial 4) leads to the speculation that the multiple burial was the result of a raiding party (1979:31)

The site can be characterized by a pattern of flexed burials, oriented west, surrounded by cedar cists, and protected with subsurface stone cairns. Cairns extending above the soil surface mark the graves. Arms are always flexed and head position is generally straight ahead with the face direction a result of the body orientation more than anything (1979:75).

Burial 1 was an adult male 40 to 50 years old. The skeletal material was severely disturbed by rodent activity. A cist of cedar slabs had been built around the burial and filled with waterworn cobbles. The cist had been burned off, probably intentionally, at or below the original ground level.

Mortuary Practices:

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: The person was deposited on his back. The position was flexed with the arms to the pelvis and the head turned to the right. Orientation of the body was 20 degrees north of west or down river with the individual facing west.
- d. Funerary objects: dentalia beads, tubular brass beads, tubular bone gaming pieces or beads, elk teeth, carnivore claw.

e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: metrics available (1979:35-39)
- b. Dentition:
- c. Culturally induced skeletal modification: lambdoidal
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators: the tip of the spinous process of the fifth thoracic vertebra exhibits what appears to be a healed fracture. There are signs of degenerative disc disease and osteoarthritis in the vertebral column. The inferior facet of the 9th thoracic vertebra and the superior facet of the 10th on the left side exhibit slight lipping; while the inferior facets of the 10th thoracic vertebra and the superior facet of the 11th exhibit light lipping. Spondylolysis of the 5th lumbar vertebra is present.
- f. Taphonomy: cupric staining was present on a number of bones

Burial 2 is an adult female 25-35 years of age. Burial 2 is considered a multiple burial with burials 3, 4, 5 and 6, and possibly with 8. A common cist used for at burials 2 and 5, and possibly burials 4 and 6. The skeleton of Burial 2 was fragmentary.

Mortuary Practices

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: flexed, the left arm flexed to the pelvis, and the head looking straight ahead with the chin compressed to the chest. The body was oriented west of north or down river and the face was facing west of south
- d. Funerary objects: dentalia, Olivella and disc beads appeared to have been strewn over the top of the whole multiple burial. One shell pendant or earbob was found with Burial 2.
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators: two thoracic vertebra were fused together
- f. Taphonomy: The skull of Burial 2 was directly over the skull of Burial 6

Burial 3 is an infant from 1.5 to 2.5 years of age. The burial was extremely fragmentary and severely disturbed by rodents. A cedar cist was present on the north side of the body and it shared the cairn with the other burials in the group.

Mortuary Practices

- a. Burial setting: cemetery
- b. Mode of disposal:
- c. Orientation: body is on the right side with the legs flexed, the arms to the pelvis, and the head looking straight ahead. It was oriented west of north or down river with the face facing south.
- d. Funerary objects: dentalia shell beads. One strand of segmented dentalia with rolled brass beads still containing the vegetable fiber stringing material.
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: the skeleton is fairly well represented.
- b. Dentition:
- c. Culturally induced skeletal modification: a broken projectile point was found dorsally from the 3rd thoracic vertebrae.
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy: the distal right radius and ulna exhibit cupric staining

Burial 4 was a 15 to 17 year old.

Mortuary Practices

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: deposited on its back and the head contorted so the cranium was facing down. The legs were flexed. The orientation of was west of north or down river.
- d. Funerary objects: perforated bone object, bone awl, bone spatulate object and bone point were found near the right shoulder; shell beads
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology:
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy: the patella and the distal femoral epiphyses are blackened which could be indicative of postmortem burning.

Burial 5 was the youngest of the individuals recovered from the site. It was an infant in age from neonatal to 1 year.

Mortuary Practices

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: left side with the head looking straight ahead. Orientation was west of north or down river with the face facing east of south.
- d. Funerary objects:
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: very fragmentary
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 6 was another individual in the multiple burial. This is a child from 4 to 5 years of age. A cist was probably present.

Mortuary Practices

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: right side in flexed position, with the arms also flexed , oriented east of north or upriver.
- d. Funerary objects: shell beads, parts of a small toy or composite fishing gear (?).
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: fragmentary and no special features could be observed.
- b. Dentition:
- c. Culturally induced skeletal modification: a projectile point was found touching, but apparently not penetrating the 7th cervical vertebrae.
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 7 was a 16 to 19 year old female. This was the only individual where there was any evidence of wrapping in a mat. The matting was completely decomposed. This was also the only burial where dimension of the grave pit could be established. The pit measures 60 x 122 cm.

Mortuary Practices

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: articulated and placed on the right side, slightly rotated toward the back, the legs were flexed and the hands were to the face. The head was looking straight ahead and facing east of south while the body orientation was west of north or down river
- d. Funerary objects: none
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: fragmentary and nothing of special interest was observed
- b. Dentition:
- c. Culturally induced skeletal modification: lambdoidal cranial deformation
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators:
- f. Taphonomy:

Burial 8 was a 25 to 35 year old female. A separate cedar cist was present.

Mortuary Practices

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: articulated and deposited on her back. The position was flexed , with the hands flexed and crossed on her chest. Orientation was west of north or down river and the face was facing east of south.
- d. Funerary objects: none
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: skull and scapulae in good condition, while most of the vertebrae that are present are extremely fragmentary and friable.
- b. Dentition:
- c. Culturally induced skeletal modification: lambdoidal cranial deformation
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators: the iliac blade of the left innominate, the upper two thirds of the posterior surface of the femur and the upper one third of the posterior of the tibia exhibit osteomyelitis
- f. Taphonomy:

Burial 9 is the best preserved of the multiple burials. This is a 20 to 30 year old male. A cedar cist was present and separated it from the burials in the multiple inhumation. Palynological analysis (1979:72) indicates that this individual was probably buried in the spring when pine trees are in bloom.

Mortuary Practices

- a. Burial setting: cemetery
- b. Mode of disposal: primary
- c. Orientation: articulated and deposited on his left side. The position was flexed. The head was looking straight ahead with the face facing east of north and body orientation west of north.
- d. Funerary objects: a bone composite harpoon element. Bird beak, tubular bone gaming pieces or beads, a stone pendant, an incised bone object possibly a pendent or gaming piece.
- e. Variation according to age and sex:

Skeletal Variation

- a. Skeletal Morphology: there is quite a differential in the preservation of the various parts of Burial 9
- b. Dentition:
- c. Culturally induced skeletal modification:
- d. Skeletal nutrition indicators:
- e. Skeletal disease indicators: two phalanges of the foot (middle and distal) are fused
- f. Taphonomy:

In summary, Sprague sees a general trend toward defining the plateau burial pattern as flexed prehistoric burials followed by an increase in the use of cairns, cists and grave goods in the protohistoric and the use of burial boxes and extended burials in the historic.

(Annotated by Lourdes Henebry-DeLeon)

Chief Joseph Dam Ancestral Burial Relocation Survey Rufus Woods Lake, Washington

Roderick Sprague and Jay Miller, 1979

In 1980, the Seattle District U.S. Army Corps of Engineers decided to modify the Chief Joseph Dam project that included a 10-foot pool rise. Raising the pool would inundate 700 acres along the shoreline of Rufus Lake. A reconnaissance of part of the shoreline identified a possible 95 individual burials and 31 Native American

cemeteries that would be damaged as a result of the project. More burials were believed located on the shoreline that had not been examined. The work was divided into two components, archaeological and ethnohistorical. The archaeological group inventoried the burial sites on project lands, determined the number of burials present, and developed a plan for the relocation of the burials that would be affected by the project (1). The burial data include four graves and 16 cemetery areas (1979:19). The burial data are divided into three sections: burials, place names, and other. Metrical data are not included in the report.

(Annotated by Lourdes Henebry-DeLeon)

Paleobiological evidence of the Peopling of the Americas: A Morphometric View
In, In Method and Theory for Investigating the Peopling of the Americas.

D. Gentry Steele and Joseph Powell, 1994

Steel and Powell cite age estimates for the earliest Marmes remains as 10,000-11,000 B.P. Their now well known morphological study of remains from eight sites (five with associated age estimates) leads them to conclude that early populations may have resembled southern Asian and European populations more than modern northern Asians. A typical early American might be characterized by a long head, low rising frontal, and a prominent occipital protuberance. Principal component analyses align early Americans with a Jomon sample that reflect the strong contribution of dolichocranic shapes of braincases.

Their small sample size for early Americans precludes definitive conclusions; however, a useful historical review is included in their discussion. In this review they outline the ideas of researchers who have described this "suite of features." They cite Dixon (1923) and Neumann (1952) who suggest replacement models that produced relict populations restricted to more marginal environments. Neumann described both early individuals and relict groups who shared the above suite of traits as the "Otamid variety."

(Annotated by Steven Hackenberger)

Utilization of Thin Sections of Exhumed Human Teeth for Paleopathological Investigation

John Steen, 1974

This investigation utilized thin sections of teeth from a prehistoric cemetery in the John Day Reservoir area of the Columbia River (Cole and Cressman, 1960). A sample was drawn from the remains of people who were buried between about 5000 and 3000 BP. Forty-two teeth (including two deciduous teeth) from seventeen individuals were sectioned ... and viewed under a microscope (1974:89).

The teeth were analyzed for hypoplasias, transparent dentin, interglobular dentin, and hypercementosis of the roots. All of these disorders were apparent in the sample. The results indicate that developmental defects may accelerate the rate of occlusal attrition. The most severe problems occurred in the second molars. Thus, the calcification process occurring in the third year of life (possibly in relation to weaning) contributed to the hypercementosis on the second molar.

(Annotated by Erin M. Shumate)

Descriptive Analysis of Human Remains from the Fuller and Fanning Mounds, Yamhill River, Willamette Valley Oregon

David Stepp, 1994 (Masters Thesis)

Stepp presents the results of a descriptive analysis of the skeletal remains of 66 individuals recovered from the Fuller and Fanning Mounds, located on the Yamhill River, Willamette Valley Oregon. W. T. Edmundson and Laughlin excavated the sites in 1941-1942. The literature and original field notes were analyzed. A description of burial type, side, orientation, grave type, associations, original preservation was compiled for each individual. A series of craniometric measurements, and non-metric traits, a dental analysis, and general description of obvious pathological and morphological conditions was made.

The human remains from the Fuller and Fanning Mounds represent the largest well-defined skeletal population of prehistoric peoples from the Willamette Valley. According to Stepp, the Fuller and Fanning sites seem to be good representatives of Late Archaic Kalapuya occupation of the Willamette Valley.

Stepp also discusses Cressman's 1930-1932 fieldwork. Cressman recovered 39 individuals at the Gold Hill site along the Rogue River in southwestern Oregon in 1930-32 (Stepp 1994:27, Cressman, 1933a, 1933b). Most of these burials were so fragmentary that the remains were not saved, although Ferllini (1989) reports parts of 29 individuals were recovered. Stepp includes craniometric information of the Gold Hill skeletal remains. The burials were always found in a flexed position, typically on the right side with the head oriented to the south, and an abundance of grave goods was usually associated with each burial including many large obsidian "wealth" blades (1994:27). Cressman reported cranial data on 10 individuals. Ferllini (1989) remeasured the cranial remains from the site (see Ferllini annotation). Comparative summary of Ferllini's cranial data is presented in Tables 12 and 18 of Stepp's thesis.

Craniometric results were compared to several known populations including the Gold Hill material. The results are shown in Tables 12, 13, 14 and 15 of Stepp's report. Craniometric results were also compared to the Kalapuya craniometrics of Franz Boas (Boas 1891, Jantz 1992) and presented in Table 16.

Crania were evaluated for a series of non-metric traits. In the Yamhill population, highest nuchal lines are present in 80% of the sample. High rates for this trait are typical of Native American populations' (1994:84). Non-metric trait variation was compared between Fuller and Fanning sites. According to Stepp two traits showed significant differences. Lambdoid ossicles were present in 45.71%(n=35) of sites in the Fuller sample, but only 15.0%(n=20) of sites in the Fanning group. The mastoid foramen was exsutural in 77.78% (n=27) of sites from Fuller, and only 37.5%(n=8) of sites from Fanning. Incidences of non-metrics variants were compared (chi square frequency analysis with continuity correction) between the Fuller and Fanning combined sample to the Gold Hill, Takelma. Differences were considered significant at $p < 0.05$. The Gold Hill sample was different in frequency of several traits including presence of highest nuchal line, lambdoidal ossicles, ossicles at asterion, presence of auditory torus, and exsutural (1994:85). Most individuals had a "broad or round skull, high in relation to length and medium height in relation to breadth, average frontal breadth in relation to vault breadth, average height to breadth ratio of face, medium breadth to height of nasal aperture and wide orbits (1994:96.)" Male and female skulls are of similar shape.

Stepp expected the Gold Hill Takelma to be biologically similar to the Yamhill (Fuller/Manning?), yet the Gold Hill showed several differences in metric and

nonmetric traits. The Gold Hill population was different in cranial length, cranial index, length-height index, mean height index and orbital index (1994:77).

Markedly shovel-shaped incisors are present in eight of the 20 individuals with incisors to study. Shovelings occur in all eight of the individuals in both central and lateral incisors except for Fuller # 41 in which only the central incisor is available for inspection.

Individuals at the Fuller site were often buried with many grave goods. There was no preference for orientation in the interment of flexed burials. Graves types were typically pits, dug into the softer mounds, but sometimes intrusive into the deeper clay soils below the cultural midden. A few individuals were found associated with fragments of cedar bark and wood.

Cressman (1933a, 1933b) digging at Gold Hill, a Takelma population, (Penutian language) in interior southeastern Oregon also had abundant grave goods, mostly flexed burials, lying on their left side, head toward the south and facing west. The large ceremonial obsidian blade found with one of the Fuller burials match those found with the Gold Hill burial. (Metric data are located in Appendix 52).

(Annotated by Lourdes Henebry-DeLeon)

Analysis of the Human Remains

Guy Tasa in Archaeological Investigations for the Port of Siuslaw Nopal Street Project, Florence, Oregon Rick Minor Editor (nd)

The human skeletal remains recovered from Florence (35LA1152) represent those of an adult female 35-45 years at death. The remains were recovered from a known Native American archaeological site. This indicates that they are those of an individual of Native American ancestry. Standard osteological measurements were taken. The assessment of non-metric traits of the cranium and mandible revealed the presence of the highest nuchal line and a unilateral parietal foramen. Dental pathologies include the presence of calculus deposits, alveolar resorption, and a number of abscesses. Tooth wear was significant (nd:13-15).

Skeletal and Dental Variation of Pacific Coast Athapaskans: Implications for Oregon Prehistory and the Peopling of the New World.

Guy Tasa, 1997 (Doctoral Dissertation, University of Oregon, Department of Anthropology)

Tasa (1997) completed metric and non-metric analysis of 66 Late Prehistoric and Historic period skeletons that represent Pacific Coast Athapaskans (PCA) from southern Oregon. Statistical comparisons suggest that their skeletal traits resemble the Tlingit. Skeletons of the Pacific Coast Athapaskans from both northern California and southern Oregon are found to be more variable than previously assumed for a population that migrated from the Northwest Pacific Coast approximately 1000 years ago.

Tasa offers a concise review of biological evidence for the peopling of the New World (dental, cranial non-metrics and metrics, anthropometry, blood groups data, serum proteins, mtDNA, and diabetes). He also reviews Athapaskan language, ethnography, archaeology, and physical anthropology in order to summarize models of their migration. Ten sites with 1 to 28 individuals contribute to his total sample of 66 skeletons. Tasa also reports non-metric and metric observations for approximately 75 individuals from the roughly 2000 year old cemetery population

recovered at Wildcat Canyon (35GM9) located near The Dalles on the Oregon side of the Columbia River (see annotation of Dumond and Minor [1983]). Remains excavated by Cole and Cressman (1960) from some 68 burials (Burials 1-33, 35-47, 49-67, 70, 72, and 74) in this cemetery include the remains of about 75 individuals, and are curated at the Oregon State Museum of Anthropology.

An informative description of measurement techniques and statistical methods precedes results for age estimations, sex determinations, sample bias, cranial metrics, cranial non-metrics, odontometrics, dental non-metrics, post cranial metrics, stature, and post-cranial non-metrics. Comparative test analysis of craniometrics was qualified by interobserver variability and small samples sizes for data sets from Hall (1995), Sampson (1985), Stepp (1994), Ferllini 1989 Hrdlicka (1944), Cybulski (1973, 1992), Oetteking (1930) and Haldeman (1986) (see Table 13 and 14). Cluster analysis of a subset of males and females from these samples show that Kalapuya (Yamhill; see Stepp 1994) and Wildcat Canyon populations are "quite dissimilar" to Pacific Coast Athapaksans. Coquille are only "slightly more similar." Comparisons of non-metric traits were made using mean measure of divergence (MMD) and cluster analysis based on Euclidean distance average linkage methods. Tasa's observations were combined with sample observations from Ossenberg (1990, 1994). Non-metric data reveal clusters similar to metric data. Wildcat and Kalapuya samples are again distinct from the Athapaskan samples which join in more related clusters.

Dental non-metrics are compared with data from three lumped sample groups Aleut-Eskimo, Na-Dene, and Indian (Turner 1983, 1985, 1986a). Tasa shows that PCA dental morphology deviates from the known range of other samples. He finds that PCA may lean toward the Sundadont pattern for some traits, a great amount of traits indicate the Sinodont pattern. Tasa concludes that New World populations can express more variability in tooth traits than previously described by Turner and others. Cluster analysis of MMD distances of PCA samples with the composite samples in two of Turner's studies (1983, 1985) show that PCA are very distinct; most of the separation in clusters may be the result of the great amount of variability within each of Turner's samples. Significant differences were found in estimates of stature from both skeletal samples (see Table 29) and the anthropometry of living peoples (Boas 1891). Males in the Chinook, Sahaptin, and Wildcat Canyon samples represent significantly taller individuals when compared to males of all other Pacific Northwest peoples.

In a descriptive summary focused on the PCA, Tasa concludes that PCA neurocranium exhibit: average or broad heads, low cranial height, and relatively flat cranial base. Most cranial non-metric traits are found in ranges "in-line" with world samples, but several traits occur in low frequencies (such as various ossicles, and the absent mastoid foramen) and some in unusual high frequency (such as nuchal lines and accessory infraorbital foramen). A large degree of sexual dimorphism is apparent in the odontometrics of PCA. The low frequency of shoveling, peg or reduced upper third molar, and the high frequency of the Y-groove pattern in the lower second molar are among the traits that deviate from the otherwise Sinodont dental pattern. PCA post-crania are robust (with sexual dimorphism), and exhibit low incidence of platymeria and platycnemia. Post-crania also exhibit low frequencies of non-metric traits such as third trochanter and the acetabular crease. Other traits are entirely absent. A similar summary of the Wildcat Canyon is in progress.

(Annotated by Steven Hackenberger)

Relating Eurasian and Native American Populations Through Dental Morphology

Christy G. Turner II, 1994

An analysis of 29 dental traits shows that Native Americans in Turner's sample form one major group with North Asians. Of the 15,000 crania in the database for Native American an unspecified number derive from the Pacific Northwest and Northern California.

The dental relationships, as illustrated in dendrograms, do not match the genetic distances presented by Cavalli-Sforza (1988) using monogenetic traits of modern populations. Turner interprets his dental results as a better indicator of distinctions between European and Native American populations than Cavalli-Sforza's samples of monogenetic traits.

Turner's dendrogram of MMD relationships (Figure 4; p. 134) shows a Paleoindian sample linking more closely with other Native American samples as compared to USSR Upper Paleolithic samples and Europe. Southeast United States samples link with Northern California.

(Annotated by Steven Hackenberger)

The Archaeology of the McGraw Creek Site (35WA1), Hells Canyon, Oregon. Idaho State Historical Publication

Claude Warren, Robert Yohe II, and Max Pavesic, 1999

During the 1996 field season of excavation at the McGraw Creek archaeological site, a single human burial was found. This burial consisted of a flexed human covered by a small rock cairn and at least one hopper mortar base. The skeleton was interred under the house floor on its left side. The tightly flexed body was oriented NE/SW and was found with no burial goods (Yohe et al. 1999:179).

The overall preservation of the bone is fair to good. The left radius and ulna and right fibula all exhibit rodent gnawing. The osteometric values for the skeleton are presented in Tables 4-1 (cranial) and 4-2 (postcranial) of the report. The skeleton was a female and her age is believed to be greater than 50 years. She exhibited a number of age related pathologies, primarily of the teeth and joints. Significant maxillary tooth loss and bone resorption has resulted in profound shrinkage of the lower face. All maxillary teeth were lost early in the individual's life, resulting in major bone loss. A large abscess crater is present at the root of the right first incisor. Attrition is pronounced with all occlusal surfaces flattened and dentine exposed. Both third molars are worn at a 45-degree slant toward the front of the mouth. Periodontal disease is apparent (1979:187).

Minor vertebrate lipping is visible on the centra of all lumbar vertebrae. Clear degenerative processes are evident on the proximal tibiae, left fibula, and distal femora. Osteophytes are also present on the right and left calcaneus and a left talus (1999:187).

Several nonmetric traits are observable on the skeleton. The prominence of bone just posterior of the bregma gives the skull a "pointed" appearance. The skull also has a large triangular suture bone ("Inca bone"). Multiple supraorbital foramina are present, but only one parietal foramen (right) exists. The mental foramina of the mandible are enlarged (1999:189) (See Appendix 30 for metric data).

(Annotated by Lourdes Henebry-DeLeon)

Comparative Analysis of Indian Skeletal Materials from the Columbia Plateau

of Washington

G. Melton White, 1962

The skeletal material that forms the basis of White's study comes from the Columbia Plateau area. The total sample consists of 60 skeletons, many of which were incomplete. The material is late precontact or early contact in age, placing them from shortly before A. D. 1800 on into the 1800's (1962:4).

The Salishian data were derived from burials excavated in the Coulee Dam Reservoir by Collier, Hudson, and Ford (1942). The Sahaptin material was recovered from sites on the Snake River near the towns of Asotin and Pasco, Washington.

Measurements and observations were recorded but not reported. The craniometrics and osteometrics are located on tables in White's report (see Appendix 57). Nearly all the Sahaptin crania are deformed to some degree. The crania display only fronto-lambdoidal deformation. One instance of carious teeth was found. Abscesses were rare. Incisor shoveling is common in the sample. Nearly one half the maxillae contained tori (1962:60).

(Annotated by Lourdes Henebry-DeLeon)

An Unusual Historic Indian Burial from the Salmon River Estuary, Lincoln County Oregon.

John Woodward and Dale Archibald, 1975

The Otis burial site is located in Lincoln County approximately 3/4 of a mile from the Pacific Ocean. One burial of an adult male was located. The individual was buried in an extended fashion, face down, with legs crossed. He exhibited fronto-occipital cranial deformation, as well as an abnormally depressed area on the back of the skull. The individual was resting on a plank and there were additional planks to one side and on top. Grave goods included buttons, ceramic fragments, a trade pipe, fabric, a metal knife and an iron wedge-like object. Based on artifacts present including datable ceramic shards, this burial is historic in origin.

(Annotated by Erin M. Shumate)

Descriptive Analyses of Two Late Prehistoric Burials from Southwestern Idaho

Robert Yohe and Jessica St. Clair, 1999

The Royston Burial (10PE20): This burial was located during a land leveling operation in Payette, Idaho. The almost complete skeleton of an adult male, 30-40 years of age, was excavated by the Payette County Sheriffs Department and subsequently by the Idaho State Historical Society. Information regarding the position of the skeleton is unavailable due to the recovery methods of the Sheriffs department. The burial pit was located 30-80 cm below the surface. Remains do not exhibit evidence for nutritional stress or extreme trauma. Pathological conditions noted were dental attrition, caries, vertebral lipping, and a sacral hiatus. Cranial and postcranial measurements can be found in tables 5 and 6, Appendix 58. Numerous burned grave items were found on the bottom of the pit. These artifacts included projectile points (Eastgate and Rose Spring), bifaces, burned bone shuttle fragments, bone tools, a sandstone abradar, and shell or bone beads. Charcoal samples associated with the artifacts yielded dates of 1050+/-60 RCYBP to 850+/-70 RCYBP.

The Hardtrigger Creek Burial (10OE5968): The burial located in the foothills of the Owyhee Mountains near Marsing, Idaho, was discovered by a Boy Scout leader eroding out of a wash. The remains of an adult male, 30-45 years of age, were covered by a cairn consisting of thirty boulders and cobbles, eleven of which were hopper mortar bases. The skeleton was in a flexed position, facing southwest. Osteological analyses indicated that there was no evidence of nutritional stress. Five lesions of traumatic origin were found on the parietal bones. Cranial and postcranial measurements can be found in tables 10 and 11, Appendix 58. Grave goods consisted of four Eastgate points and a carbonized stick. The carbonized wood fragment was dated to 1310+/-70 RCYBP.

(Annotated by Erin M. Shumate)

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Kennewick Man
Cultural Affiliation Report

Chapter 5
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Cultural Affiliation Study of the Kennewick Human Remains: Review of Bio-Archaeological Information

Steven Hackenberger Ph.D.
with contributions by
Lourdes Henebry-DeLeon and Erin M. Shumate

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Kennewick Man
Cultural Affiliation Report

Chapter 5
Table 1

**Cultural Affiliation Study of the
Kennewick Human Remains: Review of
Bio-Archaeological Information**

Steven Hackenberger Ph.D.

Table 1. Chronological Outline 11000 to 1000 B.P.

Time Period	Site Name	Mortuary Data (n=)	Osteological Data	Investigators	Annotation/ Appendix
11000-9000	Marmes	Cremation? (n=10?)	Limited	Keel et al. 1968; Krantz 1969, 1979	Yes/ None Yes/ Appendix 26
	Buhl	Position/ objects? (n=1)	Metric/ N-Metric	Green et al. 1998; Neves and Blum 2000	Yes/ Appendix 18 Yes/ Appendix 33
	Kennewick	Indeterminate (n=1)	Metric/ N-Metric	Chatters 1998, 2000; Chatters et al. 1999; Powell and Rose 1999	No/ None No/ None No/ None
9000-7000	Marmes	Indeterminate (n=2?)	Metric/ N-Metric	Breschini 1975, 1979	Yes/ Appendix 5
	Gore Creek	Slide (n=1)	Metric	Cybulski et al. 1981	Yes/ None
	Prospect?	Indeterminate (n=1)	Metric/ N-Metric	Cressman 1940b Jantz and Owsley 1999a, Jantz and Owsley 1999b	No/ None Yes/ None Yes/ None
	Buck Cave?	(n=1)	?	?	
	Catlow?	Indeterminate (n=2)	Limited	Cressman 1940a, Cressman 1942	Yes/ None Yes/ Appendix 13
	Stickman?	Indeterminate (n=1)	Metric/ N-Metric	Chatters et al. (In prep.)	No/ None
7000-5000	Marmes	Pit-Flex/ objects (n=3?)	Metric/ N-Metric	Keel and Fryxell 1969; Rice 1969; Breschini 1975, 1979	Yes/ None Yes/ None Yes/ Appendix 5
	Braden	Cremations (n=2) Pit-Flex/ objects (n=10)	Metric/ N-Metric	Harten 1975; Pavesic 1985; 1992 Owsley and Yohe (In Prep.)	Yes/ Appendix 22 No/ None No/ None

	DeMoss	Indeterminate (n=22+)	Metric/ N-Metric	Green et al. 1986 Seachord 1985 Owsley and Yohe (In Prep.)	Yes/ None No/None No/ None
5000-3000	Marmes	Pit-Flex/ objects (n=3?)	Metric	Keel and Fryxell 1969; Rice 1969; Breschini 1975, 1979	Yes/ None No/ None Yes/ Appendix 5
	Chiawana? FR101	Pit-Flex/ objects (n=?)	Metric/ N-Metric	Rice 1967 Cleveland and Uebelacker 1980; U.I. Lab Metrics	Yes/ None Yes/ None No/ Appendix 41
	Big Leap?	Cairn/Cremation Rock Mound (n=300-400?)	None	Butler 1959, 1963; Schulting 1995	No/ None Yes/ None
	Maybe Site?	Cairn/Cremation Rock Mound (n=?)	None	Bergen 1989; McLeod 1958; Schulting 1995	No/ None No/ None Yes/ None
	Congdon II?	Indeterminate Cairn/Cremation Rock Mound (n=51+)	Metric	Butler 1963; Gardner 1963; Schulting 1995 Chatters and Hackenberger (In Prep.)	Yes/ Appendix 6 Yes/ Appendix 6 Yes/ None No/ None
	Atlatl III?	Indeterminate (n=?)	None	Strong 1959 Schulting 1995	No/ None Yes/ None
3000-1000	Marmes	Pit-Flex/objects (n=1-2?)	Metric	Keel and Fryxell 1969 Rice 1969; Breschini 1975, 1979	Yes/ None No/ None Yes/ Appendix 5
	Chiawana? FR101	Pit-Flex/objects (n=16?)	Metric/ N-Metric	Rice 1967 Cleveland and Uebelacker 1980 U.I. Lab Metrics	Yes/ None Yes/ None No/ Appendix 41
	Rabbit Island I?	Extend/objects (n=11)	Metric	Crabtree 1957 Heglar 1957	Yes/ Appendix 12 Yes/ Appendix 23
	Sheep Island BN55?	Pit-Flex/objects (n=?)	?	Shiner 1961	Yes/None
	35UM35B Umatilla	Pit-Flex/objects Multi Secondary (n=230+)	Metric?	Rice 1978; U.I. Lab Records?	Yes/ Appendix 37
	Wildcat Canyon	Pit-Flex/objects (n=81+)	Metric/ N-Metric	Cole and Cressman 1960 Minor and Dumond 1983 Schulting 1995 Tasa 1997 U.O. Records (Tasa In Prep.)	No/ None Yes/ Appendix 15 Yes/ None Yes/ Appendix 54 No/ Appendix 55
	Congdon III?	Cairn/Cremation Rock Mound (n=? not collected)	None	Butler 1963; Gardner 1963; Chatters and Hackenberger (In Prep.) C.W.U Records	Yes/ Appendix 6 Yes/ Appendix 6 Yes/ None No/ None No/ None

	Indian Well?	Talus Pit? Cremation? (n=?)	None	Strong 1959; Butler 1959; Schulting 1995	No/ None No/ None Yes/ None
	Atlatl II?	Indeterminate (n=?)	None	Strong 1959; Schulting 1995	No/ None Yes/None
	Wakemap?	Talus Pits (n=?) Pit-Flex/objects (n=?)	Metric	Caldwell 1956; C.W.U. Records	Yes/ None No/ None
	KT27?	Pit-Flex (n=1)	None?	Greengo 1982	No/ None
	GR77?	Pit-Flex (n=1)	None?	Greengo 1982	No/ None
	McGraw Creek?	Pit-Flex/objects	Metric/ N-Metric	Warren et al. 1999	Yes/ None
	Fuller/ Fanning? (Yamhill River)	Pit-Flex/objects (n=20)	Metric/ N-Metric	Laughlin 1941; Hegrenes 1955?; Stepp 1984; Tasa 1997;	No/ None No/ None Yes/ Appendix 52 Yes/ None
	Gold Hill? Takelma/Penut	Pit-Flex/objects (n=39+)		Cressman 1933a, 1933b; Hegrenes 1955?; White 1962?; Stepp 1984; Ferllini 1989; Tasa 1997	No/ None No/ None Yes/ None Yes/ Appendix 52 Yes/ Appendix 16 Yes/ None
	Mahleur?	(n=54+)	Metric/ N-Metric	Hemphill 1990, 1992a, 1992b, 1992c, 1993, 1999	No/ None
	Butte Cave?			Cressman?; Stewart ?; Laughlin?;	
	Government (B.C.)	Cremation/objects (n=4; Child)	None	Smith 1900; Schulting 1995	No/ None Yes/ None
	Cache Creek? (B.C.) (EeRh1)	Cairn/Wood Cists/Flex objects (n=5)	Metric/ N-Metric	Sanger 1968; Pokotylo et al. 1987; Schulting 1995	Yes/ None Yes/ None Yes/ None

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