Archaeological and Ethnological Studies of Southwest Oregon and Crater Lake National Park: An Overview and Assessment

CRATER LAKE NATIONAL PARK

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ARCHAEOLOGICAL AND ETHNOLOGICAL STUDIES OF SOUTHWEST OREGON AND CRATER LAKE NATIONAL PARK: AN OVERVIEW AND ASSESSMENT

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# Table of Contents

## Volume One

**Abstract** .................................................................................................................................................. vi

**Acknowledgements** ............................................................................................................................... vii

**Introduction** ............................................................................................................................................ 1

**Chapter 1: Environment** .......................................................................................................................... 3  
  Introduction ............................................................................................................................................... 3  
  Present-day Environment ............................................................................................................................. 6  
  Paleoenvironments: A Review of the Past 20,000 Years ........................................................................... 10  
  Summary .................................................................................................................................................. 12

**Chapter 2: Evaluation of Research: Ethnology** ...................................................................................... 15  
  Introduction .............................................................................................................................................. 15  
  History of Research ................................................................................................................................. 16  
  Ethnographic Collections ......................................................................................................................... 21  
  Theoretical Issues in Oregon Cascades Anthropology ............................................................................ 21  
  Summary ................................................................................................................................................ 27

**Chapter 3: Ethnology of the Southern Oregon Cascades** ....................................................................... 29  
  The Klamath .......................................................................................................................................... 29  
  The Takelma ........................................................................................................................................... 47  
  The Upper Umpqua ................................................................................................................................. 57  
  The Molala ............................................................................................................................................ 61  
  Summary ............................................................................................................................................... 67

**Chapter 4: Cultural Significance of Crater Lake** .................................................................................... 69  
  Belief and Ritual ..................................................................................................................................... 69  
  Myths of Crater Lake ............................................................................................................................... 71  
  Summary ............................................................................................................................................... 73

**Chapter 5: Evaluation of Past Research: Archaeology** ........................................................................ 75  
  Introduction ............................................................................................................................................ 75  
  Regional Review: Klamath Basin ............................................................................................................. 76  
  Regional Review: Rogue River Basin ....................................................................................................... 83
## Regional Review: Umpqua River Basin
- Evaluation of Archaeological Research Issues

### CHAPTER 6: CRATER LAKE ARCHAEOLOGY
- Previous Archaeology
- Crater Lake Prehistoric Sites and Artifacts

### CHAPTER 7: PREHISTORY OF THE SOUTHERN OREGON CASCADES
- Introduction
- Paleo-Indian and Early Archaic: 12,000 - 7,000 bp
- Middle Archaic: 7,000 - 2,000 bp
- Late Archaic: 2,000 BP to Contact
- Post-Contact Period: 1750 - 1860
- Summary: the Prehistory of Crater Lake National Park

### CHAPTER 8: MODELLING THE CULTURAL LANDSCAPE OF CRATER LAKE
- Introduction
- The Environmental Model
- Optimal Foraging Models
- Modeling Sacred Landscapes
- Testing the Environmental Model

### CHAPTER 9: REFERENCES WITH SELECTED ANNOTATIONS
Tables

Table 2 - 1 Characteristics of Forager and Collector Strategies ...................... 25
Table 3 - 1 The Klamath Seasonal Round ................................................. 34
Table 3 - 2 Klamath Animal and Plant Terms .......................................... 35
Table 3 - 3 Klamath Tribelets ............................................................... 38
Table 3 - 4 Takelma Resources ............................................................. 50
Table 3 - 5 Molala Resources ............................................................... 64
Table 6 - 1 Obsidian Sourcing and Hydration Analyses: Crater Lake National Park Artifacts ......................................................... 127
Table 8 - 1 Archaeological Site Types .................................................. 145
Table 8 - 2 Functional Site Types ......................................................... 146
Table 8 - 3 High Probability Environmental Features .............................. 152
Maps

Map 1  Physiographic Divisions of Oregon ......................... 4
Map 2  Crater Lake Surficial Geology .............................. 6
Map 3  Crater Lake Vegetation Types ............................... 8
Map 4  Selected Tribes of the Early Contact Period ................. 16
Map 5  Southwest Oregon ............................................. 76
Map 6  Klamath Basin .................................................. 78
Map 7  Rogue Basin ..................................................... 84
Map 8  Umpqua Basin ................................................... 92
Map 9  Crater Lake Archaeological Sites ............................. 120
## Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Regional Chronologies</td>
<td>102</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Western Oregon Projectile Point Chronology</td>
<td>102</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Klamath Basin Projectile Point Chronology</td>
<td>102</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Rogue Basin Projectile Point Chronology</td>
<td>102</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Umpqua Basin Projectile Point Chronology</td>
<td>102</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Crater Lake Artifacts</td>
<td>126</td>
</tr>
<tr>
<td>Figure 7</td>
<td>McArthur-Pianka Diet Breadth Model</td>
<td>154</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Selected Views: Bear Butte Site</td>
<td>158</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Rock Feature Assemblages</td>
<td>160</td>
</tr>
</tbody>
</table>
ABSTRACT

This study summarizes scientific knowledge of the American Indian experience in the Crater Lake region, considered from prehistoric times through the present day. Its principal aims are, first, to present baseline cultural data to guide further archaeological and ethnographic research within the boundaries of Crater Lake National Park, and second, to present a synthesis of relevant archaeological and ethnographic information to enhance the Park's interpretive programs.

Chapter 1 summarizes environmental conditions which have shaped the human use of the Crater Lake area, including its geological history and its contemporary geomorphology and vegetation.

Chapter 2 reviews the history of ethnographic research on the four tribes bordering the Crater Lake area, the Klamath, Takelma, Upper Umpqua, and Molala, and discusses the changing theoretical perspectives underlying these studies. Chapters 3 and 4 describe major elements of the pre-contact cultures of the four tribes, the contemporary status of these groups, and Indian use of the Crater Lake area.

Chapter 5 provides a review of regional archaeological research, analyzed in terms of the Klamath, Rogue, and Umpqua Basins, and describes the theoretical issues that have guided that research. Chapter 6 describes archaeological sites and isolates within Crater Lake National Park. Chapter 7 offers a synthesis of cultural developments in the region from the Paleoindian period to postcontact times.

Chapter 8 provides three approaches to modelling the culturally significant features of Crater Lake National Park. The first model predicts the occurrence of archaeological site types on the basis of key environmental variables. The second uses optimal foraging theory to identify two contrasting resource strategies for the central Oregon Cascades, corresponding in general terms to traditional Klamath and Molala practices, respectively. The third model takes an emic approach to identify the salient characteristics of the Park considered as an Indian sacred landscape. The chapter concludes with the findings of a test of the environmental model through limited archaeological survey.
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Ethnographic interviews did not fall within the scope of work of this project, nor did we conduct any. Nonetheless, Robert Winthrop did consult on several occasions with representatives of the Klamath Tribe and the Cow Creek Bank of Umpqua. Gordon Bettels (Klamath Tribe) and Sue Shaffer (Cow Creek Band) greatly helped the project by reviewing several drafts of the ethnological summaries of their communities, and by discussing with Robert Winthrop the significance of Crater Lake for the Indian peoples of the region. Their comments improved the ethnological chapters considerably.

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INTRODUCTION

Crater Lake, formed by a volcanic caldera some six miles in diameter, is one of the most spectacular natural features of the Oregon High Cascades, and indeed, of the entire Pacific Northwest. In 1902 President Theodore Roosevelt signed into law an act creating Crater Lake National Park as "a public park or pleasure ground" for the people of the United States. After a series of additions (the most recent in 1982), the Park today encompasses 182,700 acres, or approximately 285 square miles (Unrau 1988:1:3).

This volume offers a culture history of Crater Lake National Park, describing our knowledge of the Indian peoples of the Crater Lake region from the earliest known use of the area to the present day. While our focus is on the lands within the Park, these did not constitute an independent human ecosystem. Rather, Crater Lake formed a high-elevation zone within a larger and more diverse region. That larger region—including much of the Klamath, Rogue, and Umpqua Basins—provides the context within which the culture history of Crater Lake unfolds.

Telling this story has involved the collaboration of three disciplines. Geography provides an understanding of the natural environment—topography, processes of geological change, and the resulting patterns of soils and vegetation. Archaeology deciphers the record of human achievement in the region, based on the artifacts and structures past inhabitants left behind. Finally, ethnology describes the tribal organization, beliefs and ways of life of the Indian peoples who inhabited the region from the time of white contact to the present day, as recorded in their own traditions, and through the accounts of amateur and professional observers.

Some description of the organization of this volume may make it more intelligible and useful.

Chapter 1 (Environment) provides the geographic background to this story, describing the formation of Crater Lake through the eruption of Mt. Mazama, and the environments of the pre-Mazama period, the post-Mazama period, and the present day.

Chapters 2, 3, and 4 summarize our ethnological knowledge of the Crater Lake region. Chapter 2 (Evaluation of Research: Ethnology) sketches the history of ethnographic research in the region, and notes the theoretical issues which have guided or will continue to guide such studies. Chapter 3 (Ethnology of the Southern Oregon Cascades) describes the
precontact cultures of the four Indian peoples of the region, the Klamath, Takelma, Upper Umpqua, and Molala, and indicates briefly the experience of these peoples from the time of contact to the present. Chapter 4 (Cultural Significance of Crater Lake) focuses on the ritual use of Crater Lake, and its importance as reflected in myths of the Klamath and Upper Umpquas.

Chapters 5, 6, and 7 present the archaeological understanding of the Crater Lake region. Chapter 5 (Evaluation of Past Research: Archaeology) provides, first, a region-by-region review of archaeological findings (for the Klamath, Rogue, and Umpqua Basins); and second, a summary of theoretical issues guiding archaeological research. Chapter 6 (Crater Lake Archaeology) describes archaeological finds within the Park. Chapter 7 (Prehistory of the Southern Oregon Cascades) offers a synthesis of cultural developments in the region from the Paleoindian (12,000 BP) to the postcontact era (nineteenth century).

Chapter 8 (Modelling the Cultural Landscape of Crater Lake) describes three approaches to describing or predicting the culturally significant features of the Park: a model correlating archaeological site types with environmental features; a second predicting hunting and gathering patterns in terms of the optimization of forager time and energy expenditures (optimal foraging theory); and a third describing the salient characteristics of Crater Lake National Park considered as an Indian sacred landscape. The chapter concludes with the findings of a test of the environmental model through limited archaeological survey.

Chapter 9 (References with Selected Annotations) provides a bibliography for all works cited in the text. A large proportion of the references have been annotated to describe the contents or identify the particular relevance of the work to this study.
Crater Lake, formed by the caldera of ancient Mt. Mazama, is located in the southern Oregon Cascades (see Map 1). It is the centerpiece of Crater Lake National Park. The park is located approximately 120 miles (195 km) inland, at latitude 43 degrees north. As part of the volcanic Cascade Range, the park landscape has undergone dramatic topographic change over the past 20,000 years, particularly with the eruption of Mt. Mazama about 6800 BP.\(^1\)

Climate changes during the late Pleistocene and Holocene have no doubt caused some shift in local vegetation composition and cover and hydrology. Glaciation and volcanic activity have altered landforms, soils, soil development, and hydrology. Prehistoric cultural patterns in the Pacific Northwest and Great Basin are well documented. Prehistoric use of Crater Lake National Park and its vicinity, however, is far less understood. Little work has been done on the possible effect of climate and geomorphic changes on prehistoric human use of lands within the park because of the lack of specific evidence and the speculative nature of interpretations based on sparse data from the local region. However, what is known of the geomorphic, climatic, and vegetational history of the past 20,000 years in the greater region may help reconstruct the possible environments encountered by early inhabitants of the Crater Lake area.

Mazama Eruption

The greatest event affecting the recent past environment of the study area was the eruption of Mt. Mazama about 6850 BP. Although volcanic activity has occurred in the region of the Cascade Range for the past 50 million years, the tectonics responsible for the

\(^{1}\) BP = before the present, by convention calculated from A.D. 1950.
range began about 10 million years BP. Uplift and massive fissure flows of basaltic lava formed a north-south chain of shield volcanoes between latitude 40 and 50 degrees North. Over the past two million years the volcanic eruptions became more andesitic, that is, less fluid and more explosive. Mt. Mazama was one of the several stratovolcanic mountains that formed in the Cascade Range during this period.

The range is an example of the volcanic, mountainous landscape that can develop along a convergent plate boundary, in this case, the Pacific plate subducting below the North American plate. In the southern section of the range, stress built up by the interaction of the two plates caused numerous north-trending faults and the development of a shallow magma chamber beneath Mt. Mazama (Williams 1942; Bacon 1983).

Approximately 200 years before the climactic, pyroclastic eruption, the 12,000-foot (3700 m) Mt. Mazama, which was a cluster of several overlapping shield and stratovolcanoes, began active eruptions from four primary centers along the northern arc of the present-day rim: the Redcloud, Llao Rock, Grouse Hill, and Cleetwood centers (Williams 1942; Bacon 1983:84-88). The major eruption that resulted in the caldera-forming collapse of Mt. Mazama began as a single-vent eruption, quickly changing to a ring-vent eruption as the mountain collapsed. During all phases of the eruption it is estimated that 17 cubic miles (110 cubic km) of material was displaced. About two-thirds was ejected as pumice, ash, and lava; the remainder collapsed into the emptying magma chamber (Williams 1942; Bacon 1983:90-93). Windblown pumice and ash from the Mt. Mazama eruption spread mainly toward the north and east covering areas 60 miles (100 km) away with more than 20 inches (50 cm) of pumice and ash. A layer of Mazama ash more than one cm thick has been found in southwestern Saskatchewan. Near the mountain environmental destruction must have been devastating. Lava and ash flows covered the slopes and lava and ash poured down glaciated valleys for several miles. (For a discussion of volume estimates see Bacon 1987:105-107.)

Pleistocene-Holocene Environmental Changes

The climate of the Holocene (ca. 10,000 BP - present) generally has been warmer than that of the Pleistocene (ca. 2 million - 10,000 yr BP). Within the Holocene, however, climate has varied in temperature, precipitation and humidity, affecting vegetation patterns latitudinally and altitudinally in western North America. Presumably, changes in climate, particularly during the past 10,000 years, and the subsequent changes in plant communities and animal habitat in the Crater Lake area affected the food-gathering and/or settlement patterns of early peoples. A number of studies cover the regional paleoclimates of the Pacific Northwest and the Great Basin but none is focused on the study area. Palynological research by Hansen (1947), Heusser (1960, 1985), and Mehringer (1985) has provided a paleoecological chronology for this period, but it applies to the larger region beyond Crater Lake. Although inferring climatic similarities for the study area based on research from
adjacent, larger regions may be inconclusive, studies of fluctuating lake levels in the Great Basin (J.O. Davis 1982; Benson and Thompson 1987), for example, give insight into the possible paleoclimatic shifts that may have occurred in the Crater Lake area. Also, dendrochronological studies illustrating climate cycles as reported by Keen (1937) and La Marche (1973) are useful for estimating climate changes of the past several hundred years. Overviews and discussions of paleoclimates in the greater regions around the southern Cascade Range of Oregon may be found in Mehringer (1977, 1986), Moratto, King, and Woolfenden (1978), and Barnosky, Anderson, and Bartlein (1987).

**Historic Land Use Practices**

Indian use of the Crater Lake area is reviewed in chapters 5 and 7. Euro-Americans entered the region in the early 1800s and exploration parties passed through in the 1840s. Exploration, fur trapping, and prospecting for minerals were the initial motivations for coming into the region. When gold was found at Jacksonville, miners traveled into the southern Cascades of Oregon to search for more precious metal. During the 1850s and 1860s visitors from Jacksonville and Fort Klamath found Crater Lake. A road built in the 1860s between Fort Klamath and Jacksonville may have passed through the southern portion of the park (USDOI, NPS 1977a:II-30). After the Modoc War in the 1870s, cattle ranchers began to come into the valleys east of Crater Lake. By the turn of the century timber resources on the eastern and western lower slopes of the Cascades began to be utilized.

Logging occurred in the southern panhandle and southeast portions of what is now park land in the early part of this century. Most of these relatively small areas now are in chaparral type vegetation. Other parts of the park's forests have not been logged.

Since lodgepole pine is an invader after fire, fire suppression since the park was established nearly ninety years ago has led to a more rapid succession of lodgepole-dominated forests to other species such as Shasta red fir and mountain hemlock. Ponderosa pine forests also are being slowly replaced by white fir because of fire suppression (USDOI, NPS 1977a:II-23).

Extensive grazing by sheep and some cattle occurred before establishment of the park, but little evidence of the impact remains. Today trespass grazing does occur from adjacent National Forest lands, but impact is minimal (Steve Mark, personal communication).
PRESENT-DAY ENVIRONMENT

Topography and Geomorphology

The steep-walled caldera of Crater Lake is one of the most dramatic volcanic features in the mountain cordillera of western North America. The elevation of the rugged caldera rim ranges between 6700 feet (2045 m) and 8200 feet (2500 m). The lake level at present is 6178 feet (1884 m); the depth is approximately 2000 feet (610 m). The topography of the caldera wall is marked by peaks and high cliffs alternating with lower bluffs that reflect the drainages and glacial valley bottoms radiating from the higher elevations of former Mt. Mazama (see Map 2).

The caldera wall is composed of the truncated remains of overlapping Pleistocene stratocones and shield lava domes, lava flows, pyroclastic deposits, and the glaciated valleys and till deposits that preceded the Mazama eruption. Hillman Peak, Garfield Peak, Dutton Cliff, and Sentinel Rock represent the remains of the cluster of stratovolcanoes and domes that made up Mt. Mazama. To the east of the caldera rim is Mt. Scott, a 8929-foot (2722-m) stratocone that marks the east end of the string of ancient summits. From the southwest to the northwest flanks of the caldera are numerous shields and domes. Much of the pre-Mazama volcanics in this area are covered with Mazama pumice and ash, particularly the area known as the Pumice Desert. Union Peak volcano marks the summit of one of the larger lava shields. Major features to the north and northeast are Red Cone (a late-Pleistocene cinder cone), Sharp Peak domes, the cinder cone of Timber Crater, Desert Cone, the Pumice Desert, and Grouse Hill (formed by venting of pumice and lava in the period just prior to the Mazama eruption).

The glaciated valleys of Castle Creek, Munson and Annie Creek, Sun Creek (Sun Notch), and Sand Creek (Kerr Notch), partially filled with Mazama pumice and ash, contain in their lower sections in the park incised drainages in the unconsolidated volcanic debris and glacial till.

The last volcanic activity of significance formed Wizard Island, which appears above the surface of Crater Lake, and two or three smaller cones below the present lake surface. Hydrothermal activity is apparent in the relatively high heat flow of the caldera floor.

The remaining topography of the park consists primarily of slopes radiating outward from the former Mazama summits. These slopes have little or no apparent drainage channels outside of the major creeks to the west (Bybee and Castle Creeks) and to the south (Annie, Sun, and Sand Creeks). Evidence of surface drainage north of the caldera is conspicuously absent.
CRATER LAKE NATIONAL PARK

Crater Lake Surficial Geology

A PRE-MAZAMA LAVAS INCLUDING TIMBER CRATER, MOUND SCOTT, & UNION PEAK LAVAS

B MOUNT MAZAMA ANDACITE

C MOUNT MAZAMA DACITES

D GLOWING AVALANCHE DEPOSITS

E PARASITIC CINDER CONE

Map 2

NOTE: Location of archaeological sites in this online edition have been removed from this map in an effort to protect sensitive cultural resources.
Climate

Being located in the western United States, the climate of Crater Lake National Park is controlled by the prevailing mid-latitude westerlies and the effects of the nearby Pacific Ocean. The mid-latitude, moisture-laden, winter storms off the ocean bring significant snowfall to the elevations of Crater Lake. These same elevations keep the summers relatively cool, when land surface heating and a subtropical high pressure in the north Pacific Ocean keeps the northwest regional weather warm and dry. Winter season temperatures in the park are cold but somewhat moderated because of nearness to the ocean and the storms and cloud cover it provides. Occasionally, polar air masses moving in from the east produce clear skies and markedly lower temperatures. January mean temperature is 25 degrees F. (-4 deg. C), while July mean temperature is 53 degrees F. (12 deg. C). Summer daytime temperatures are usually in the 60 to 80 deg. F. (16 to 27 deg. C) range. Average annual precipitation is 70 inches (178 cm), most of it falling in the winter in the form of snow (USDOI, NPS 1984).

Vegetation

Within the park there are several vegetation types, principally dominated by arboreal species (see Map 3). The National Park Service inventoried vegetation types in the park in the 1930s (USDOI, NPS 1936). Listed in order of total area covered, they are:

Lodgepole pine-Hemlock Forest: lodgepole pine (*Pinus contorta*) forest on lower, open slopes in the park—up to rim on SW side—often interrupted by patches of mountain hemlock (*Tsuga mertensiana*) and mixed with mountain hemlock and Shasta red fir (*Abies magnifica shastensis*).

Pine-Fir Forest: lodgepole pine mixed with Shasta red fir, white pine (*Pinus monticola*), subalpine fir (*Abies lasiocarpa*), and white fir (*Abies concolor*) generally above areas of lodgepole pine-hemlock forest.

Fir Forest: Shasta red fir, white fir, some subalpine fir from 6,000 to 8,000 feet (1828 to 2438 m) on shaded, moist slopes and hollows. Occurs scattered on pre-Mazama slopes on S and W sides. Understory often *Arctostaphylos* spp., *Vaccinium* spp. Few pure stands.

Ponderosa Pine Forest: ponderosa pine (*Pinus ponderosa*) up to 5200 feet (1584 m) in warmer locations; transitionally mixed with white fir. Open, parklike landscape, on

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2 The altitude zonation models followed here, while developed in the 1930s and 1940s, remain useful for classifying vegetation types in mid-latitude mountainous environments.
Mazama pumice. Largest area in NE park; sugar pine (*Pinus lambertiana*) and Douglas fir (*Pseudotsuga menziesii*) sometimes mixed, mostly south side of lake, low elevations.

**Douglas Fir Forest:** few small areas on SW slopes and in drainages on west side of park.

**Herb-Grassland:** grass and herbaceous ssp. in semi-barren areas of pumice cover and adjacent to forests. *Polygonum newberryi, Chrysothamnus bloomeri, Lupinus* spp. mixed.

**Chaparral:** *Ceanothus, Arctostaphylos, Castanopsis* and *Prunus* spp. in SE park, S exposed slopes.

A more generalized scheme for vegetation types in the park was devised by Wynd (1941) utilizing the Merriam life zone concept:

**Hudsonian Zone:** whitebark pine (*Pinus albicaulis*) and mountain hemlock forests of the higher slopes above 6250 feet (1900 m); includes plant communities on pumice and talus flats and slopes, swamps and stream sides.

**Canadian Zone:** lodgepole pine and white pine forests from 5500 feet (1677 m) to 6250 feet (1900 m); includes Pumice Desert, Wizard Island, and streamside plant communities.

**Transition Zone:** Ponderosa (yellow) pine forests with white fir, sugar pine, Douglas fir sometimes mixed, at lower elevations in the park up to 5500 feet (1677 m) elevation; includes canyons and open slopes.

Microclimates, degree of soil development, slope aspect, and fire history have an influence on the distribution and composition of plant communities in the park. Specialized environments include the Pumice Desert on the north side of the lake, Sphagnum Bog (NW), Boundary Springs (NW corner), Mt. Scott Primitive Area, and Sand Creek-Pinnacles area. These locations display environmentally sensitive species or are specially designated because of unique soil or geological features.

Lightning-caused fires are common in the park during summer storms that approach from the southeast. Over 100 miles of logging roads built in the 1930s have been closed for the past 20 years; since closure, serious fires have been reached by foot or helicopter. Lightning-caused forest fires have no doubt been an environmental factor in the vegetation ecology of the region for at least the past 7,000 years. Whether pre-historic inhabitants of the
NOTE: Location of archaeological sites in this online edition have been removed from this map in an effort to protect sensitive cultural resources.

Map 3: Crater Lake Vegetation Types

Y Ponderosa Pine dominant to the exclusion of Fir
PF 20% of both Commercial Pine & Fir Species
F Abies dominant to the exclusion of Pine
LH Lodgepole Pine and/or Hemlock dominant except Lodgepole and a Fir Species
WP Western White, White-barked, or Sugar Pine dominant
CH Arctostaphylos or Ceanothus dominant
PON Polygonum and/or grasses
B Bare ground

Miles

Park Boundary
Highway
Springs
region set fires as a hunting technique or for other reasons is not known.

**Water Resources and Soils**

Geomorphic surfaces in Crater Lake National Park are dominated by pumice and ash deposits, and in a few places glacial till, which allow rapid infiltration of rainfall and snow melt. Most subsurface, pre-Mazama lava flows are basaltic andesite and have less water holding capacity and are less permeable than overlying mantle of airborne and flow pumice deposits from the Mazama eruption (Frank and Harris 1969). Therefore, infiltrating rain and meltwater is checked by underlying strata that allow water to accumulate and flow out in springs and seeps. These outlets are common on the caldera wall and upper slopes in the park, particularly in upper drainages of the established creeks that flow south and west and eventually into the Klamath Basin or Rogue River drainages. The water supply for park facilities is from some of these springs.

Crater Lake probably began to fill soon after the Mazama eruption. Given present-day climate, it would have taken somewhere between 500 and 1000 years for Crater Lake to reach the present surface level. This reflects a balance between inflow from direct precipitation, surface runoff, and groundwater, and outflow through permeable rock material in the caldera walls and evaporation losses. However, the lake was formed during the warm, dry middle Holocene and may have remained at a much lower level than it is today until climate became cooler and wetter 2000 to 3000 yrs BP (Phillips 1968:E8-E9).

There has been no systematic survey of soils within the park. Much of the soil that is present has developed from Mazama ash and pumice, glacial debris, and alluvium. These soils are young, highly permeable, and have little horizon development. Two soils that have been classified in the park are entisols, Typic Cryorthent and Typic Cryopsamment (USDOI, NPS 1984). These are excessively drained soils developed in cinder, ash, and pumice and are described as "very gravelly loamy coarse sand" (USDOI, NPS 1977a:II-8). Erosion of these soils is slight because of the rapid infiltration of rain and meltwater. Soils typically dry out rapidly during the dry summer when evapotranspiration rates are highest and rainfall infrequent. Soils are at or near maximum field capacity for water retention after winter snow melt.
Pre-Mazama Eruption Environment

**Geomorphology.** Mt. Mazama apparently had no major cone building for 40,000 years and there is no evidence of any intermediate volcanic activity for the 15,000 years prior to the eruption ca. 6850 BP (Bacon 1983:84). This quiet period is interpreted as a time when rhyodacitic magma accumulated in the shallow chamber below the mountain. Accordingly, the physical environment close to the mountain was relatively undisturbed for millennia and ecological systems had time to evolve without major volcanic disruption. In the 200 years or so before the cataclysmic eruption the northern arc of vents (Redcloud, Llao, Grouse Hill, and Cleetwood centers) commenced eruptions that were precursors to the caldera-forming event. This volcanic activity was surely noticed by people in the region. A pumice fall ca. 7015 BP, which was associated with the venting of the Llao center, extended over the eastern side of the mountain to Garfield Peak (Bacon 1983:86).

Since apparently no dramatic tectonic-volcanic change in the mountain occurred during the 40,000 years prior to the precursory eruptions, little material would have been added to the mountain and gradational processes would have had a relatively long period (compared to the 7000 years since the major eruption) to weather and erode the landscape on and around Mt. Mazama. This period of time covers late Pleistocene and early Holocene and coincides with the recession of the alpine glaciers on the mountain and the advent of dry, warm conditions (relative to Pleistocene climate) of the early Holocene. Most glacial ice had disappeared by the time of the Mazama eruption and it is likely an annular-dendritic stream drainage pattern was well established in the park area. U-shaped glaciated valleys with intermittent snowmelt streams characterized the higher elevations.

**Climate.** Late Wisconsin (25,000 - 11,000 BP) climate over northwestern North America and the northern Great Basin was cold but not necessarily wetter than at present. Benson and Thompson (1987) used model simulations to describe a climate influenced by a southward shift of the mid-latitude jet stream that brought wetter conditions to the southwest continent, and dry and cold conditions to the northwest. Anticyclonic circulation off of the ice sheet over eastern Canada forced westerly flow southward (Benson and Thompson 1987:256). By the middle Holocene (7000-3000 BP) the jet stream may have shifted north again to bring summer rains farther north. If this was the case, the regional climate around Mt. Mazama at the time of the climactic eruption may have been slightly less wet, with milder winters and more summer rainfall. Many researchers (Hansen 1947; Mehringer 1977; Heusser 1985) interpret a warm, dry (Hypsithermal) climate for most midlatitude North America during the early to middle Holocene.

The presence of glaciers and semi-permanent snow fields on the slopes of Mt. Mazama during the late Pleistocene, up until about 10,000 BP, precluded important utilization by
regional inhabitants, if any were present. With the onset of the Holocene, warmer conditions and receding Great Basin (assumed to include Klamath Basin) lake levels (Mehringer 1977; J.O. Davis 1982) may have brought early people into the mountains; game and edible plants would necessarily precede them.

**Vegetation and Soils.** From bog pollen analysis, lodgepole pine was the invader species in the forests of southern Oregon and Pacific Northwest region (Hansen 1947:72) that returned after glaciation of the Pleistocene. If, at the height of the Wisconsin glaciation, ice covered much of the higher Cascades, including Mt. Mazama, then, in response to lower temperatures as well as advancing ice, today's higher elevation and boreal species would have occurred at lower elevations. Whitebark pine, mountain hemlock, and fir species dominated forests at the margins of the ice which probably extended down to 5,000 feet (1525 m) elevation. An Arctic Alpine life zone developed at this level and the Hudsonian and Canadian zones lower as well.

Hansen's (1947) analysis of pollen studies indicate a drier and warmer climate for the period after the Mazama event. J.O. Davis (1982:68) states that the time of the Mazama eruption was a time of significant change in Great Basin climate and ecology, at least since the beginning of recession of glacial ice 18,000 BP. The seasonality of precipitation changed to greater summer and less winter precipitation (J.O Davis 1982; Benson and Thompson 1987) bringing on a change in the extent and type of vegetation communities and, by inference, changing the pattern of hunting and food gathering. By extension these changing conditions probably occurred in the Crater Lake area, affecting activities of people present before and returning after the Mazama devastation.

The character of developed soils on Mt. Mazama prior to the eruption can only be guessed. They probably were typical of mountain soils found today on older volcanic rock. Well-drained soils formed on glacial till in glaciated valleys.

**Water Resources.** Water sources in the area may have been somewhat scarce even before the Mazama eruption because of the shift toward drier conditions. Streams may have had less discharge than during the late Pleistocene and early Holocene, but increasing summer rains may have provided continued runoff in summer.

**Post-Mazama Eruption Environment**

**Landscape Destruction and Evolution.** From historic volcanic eruptions we know that ash and pumice falls can have an immediate destructive effect on plant and animal life. Although some plants and animals soon return to the devastated area, long-term recovery is necessary for habitats to regain former productivity. The pyroclastic Mazama eruption destroyed most, if not all, living organisms in the area surrounding the mountain (Hansen
1947:28). The ash and pumice fall associated with the eruption certainly retarded or destroyed much life within the first several miles from the mountain. A thick blanket of tephra was strewn across the landscape for several miles, particularly to the north and east (Williams 1942). Airborne ash and pumice deposits over 50 cm (approx. 20 inches) in depth are found up to 100 km east of Crater Lake. Hansen (1947:37) suggests that a long time lapse occurred, evident in a marsh sedimentation gap between Mazama pumice and overlying organic deposits, before organic deposition recommenced after the Mazama eruption.

**Changes in Water Availability.** Drier climate during and after the Mazama eruption probably diminished water availability in the region. As a result of the eruption, stream channels, smaller erosional valleys, and springs near the mountain would have been covered at least temporarily, and in some cases more or less permanently, with tephra or lava flows. Pre-Mazama subsurface hydrology and stream patterns in the area were altered significantly.

**Vegetation and Soil Development.** Nearest the mountain, succession to regenerated plant communities and forests probably took hundreds of years, the time lengthened by elevation and a drying climate. Soil-forming processes began in the tephra and lava flows of the eruption. As yet most surfaces lack mature soils.

Farther from Mazama, up to 100 km to the north and east, vegetation, particularly herbaceous and lower stature plants, were most likely destroyed. Here succession was more rapid since some plants must have survived and elevations are generally lower.

**SUMMARY**

As part of the volcanic Cascade Range, the landscape of Crater Lake National Park has undergone dramatic topographic change over the past 20,000 years. The paleoenvironments of the Crater Lake area changed most significantly with the recession of alpine glaciers and the onset of warmer climates ca. 12,000 to 10,000 BP.

Studies of the Great Basin suggest that the period immediately after the Mazama eruption (6800 BP) was one of increasing summer rainfall (Aikens 1982; J.O. Davis 1982; Mehringer 1986). This was accompanied by decreasing winter precipitation, an overall drying trend, and lower lake levels in the basins to the east of the Cascades. These trends lasted through the middle Holocene, from ca. 7000 to 3000 BP.

Tree ring growth-rate studies suggest that for the past 650 years climate in the Crater Lake region had no apparent trend, but was relatively wet from about 660 to 560 BP,
relatively dry from 560 to 320 BP, then wet again from 320 to 160 BP (Keen 1937).\textsuperscript{3} The pre-contact (late eighteenth and early nineteenth century) environment of Crater Lake was probably much like it is today.

\textsuperscript{3} These dates reckoned from 1937.
CHAPTER 2
EVALUATION OF RESEARCH: ETHNOLOGY

ROBERT WINTHROP

INTRODUCTION

Four tribes had territories including or adjoining what is now Crater Lake National Park: the Klamath, Takelma, Upper Umpqua, and Molala (see Map 4). The encroachment of Euro-Americans caused massive disruption to these peoples, as described in Chapter 3. In the post-contact era, the Klamath (together with the Modoc and one band of Northern Paiutes) were placed on a reservation within what had been Klamath territory. Today these three groups constitute the Klamath Tribe. In contrast, most of the Takelma, Upper Umpqua, and Molala peoples who survived Euro-American settlement were removed to reservations in northwestern Oregon. Today descendants of these three groups are constituents of the Confederated Tribes of Grand Ronde and the Confederated Tribes of Siletz Indians. Finally, some groups in the northern fringe of Takelma territory avoided both resettlement and extermination, and today form the Cow Creek Band of Umpqua Indians. Today the Klamath, Grand Ronde, Siletz, and Cow Creeks are all federally-recognized tribes.

The cultural similarities and differences between these four peoples, particularly in their varying adaptations, can be explained in large measure by the geography of the Cascades. The world of the Klamath, southeast of Crater Lake, centered on lakes and marshes within what was overall a relatively arid environment, the eastern Oregon high plateau. The Molala inhabited the flanks of the Cascades, north and northwest of Crater Lake. The environment of the Takelma and Upper Umpqua encompassed the milder, and somewhat wetter, river valleys and forested uplands west of the Cascades. In terms of traditional culture area classifications, the Klamath and Molala occupied the southern end of the Plateau culture area, that vast domain between the Cascades and the Rockies, the Colorado Plateau and the Fraser River (Ray 1939:1-3). The Takelma and Upper Umpqua, in contrast, found their greatest affinity with other tribes of the Northwest Coast culture area (Suttles 1990:9-12).

Such classifications notwithstanding, each people was distinctive in its subsistence strategy, cultural affiliations, and habitat. The Takelma resembled in certain respects northern
California tribes, in ritual patterns and in their reliance on the acorn as a food staple. The Upper Umpqua had much in common with other Athapaskan peoples of southwest Oregon, for example in their mix of resources and their social organization. The Molala can be distinguished from the other groups by the distinctive use of a higher-elevation habitat. The Klamath were set apart by their strong reliance on a lake and marsh environment, emphasizing such plant staples as the seeds of the pond lily, or wokas.

The following sections describe the history of ethnographic research within the study area, considering first investigations with a regional focus, and then studies specifically concerning the Klamath, Takelma, Upper Umpqua, and Molala, in that order. The remainder of this chapter describes relevant ethnographic collections, summarizes the major issues which have guided past research, and outlines certain topics of current importance in the anthropology of the southern Oregon Cascades.

HISTORY OF RESEARCH

General

Several sources are available which provide ethnological overviews of the four cultures considered here. The standard bibliographic reference for Native North America remains the multi-volume *Ethnographic Bibliography of North America* (Murdock and O'Leary 1975, 1990). The cultures of the Northwest Coast (including the Takelma and Upper Umpqua) are comprehensively surveyed in volume 7 of the *Handbook of North American Indians* (Suttles, ed. 1990), with an extensive bibliography. The cultures of the Plateau (including the Klamath and Molala) will be covered in a future volume of the *Handbook* (volume 12). In the interim, Verne Ray's *Cultural Relations in the Plateau of Northwestern America* (Ray 1939) and A. Anastasio's "The Southern Plateau: An Ecological Analysis of Intergroup Relations" (Anastasio 1972) provide useful introductions.

There have been various attempts to determine the pre-contact territories of the Oregon tribes (see Spier 1927b; Berreman 1937; Schaeffer 1959; regarding the Takelma and Upper Umpqua, see Gray 1987). The descriptions of Oregon Indian tribes by early explorers, soldiers, and settlers provide an important source of evidence regarding pre-contact lifeways, though such records must be interpreted with caution. For the southwest Oregon area, Jeff

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1 Linguistically, the Upper Umpqua (whose language belonged to the Eyak-Athapascan Family) must be sharply differentiated from the Siuslaw-speaking Lower Umpqua, inhabiting the lower reaches of that river (whose language is hypothesized to belong to the Penutian language phylum) (see Thompson and Kinkade 1990:34-35).
Map 4
SELECTED TRIBES OF THE EARLY CONTACT PERIOD

0 MILES

CLATSOP
KALAPUYANS
MOLALA
COOS
TAKELMA
SHASTA
KOP CREEK
UPPER UMBQUA
CROOK RANGE
PTATINO
UMATILLA
NORTHERN PAIUTES
NEZ PERCE
PACIFIC OCEAN
KLAMATH

MAP 4
SELECTED TRIBES OF THE EARLY CONTACT PERIOD
LaLande has provided an important reanalysis of the explorer Henry Skene Ogden's journals from the 1820s (LaLande 1984), as well as a useful summary of ethnohistorical sources (LaLande 1990b). S. D. Beckham (1990) gives a brief overview of Indian-white relations in western Oregon since the 1840s.

A number of books and articles survey the history of tribal-federal relations. Ruby and Brown's *A Guide to the Indian Tribes of the Pacific Northwest* (1986) is a useful ethnological reference in dictionary format, emphasizing post-contact history, the reservation experience, and litigation. Overviews of federal Indian policy on a national level are offered by Hagan (1988) for the period 1860-1900, and by Kelly (1988) for the period 1900-1980.

There are a number of collections of myths from tribes of the Pacific Northwest. Clark (1953) offered a highly westernized retelling of northwest myths, set in an idiom which is highly readable but not very faithful to the style and sense of the original myths. Ramsey (1977) has compiled a collection considerably more faithful to the poetic sense of the original Indian oral literature. Melville Jacobs, who did much of the original research on Pacific Northwest mythology, has also written extensively on the process by which these Indian myths have been collected, translated, and edited (Jacobs 1937, 1962, 1967). Regarding Ella Clark's popular collection of Indian myths (which includes several concerning Crater Lake), Jacobs noted that "publications of such authors in the Pacific Northwest almost always comprise materials that are so extremely remodeled, edited, cheapened, censored, or Europeanized as to render them worthless as documents about Indian oral literatures" (Jacobs 1967:19). Unfortunately, the same comments could be applied to dozens of other amateur accounts ostensibly documenting the native cultures of Oregon. Because of the rapid disruption of many of Oregon's aboriginal societies, such accounts are frequently all that remain.

Suttles and Jonaitis (1990) have prepared a history of ethnological research for the Northwest Coast. Donald (1984) has surveyed aboriginal slavery in the region, a practice of great importance for the four tribes described below. Liberman (1990) has analyzed the attitudes of contemporary Oregon Indians toward environmental protection, economic development, and forestry practices. Winthrop (1990) has described the processes through which Indian communities have preserved and adapted their traditions, even in the face of strong efforts at forced acculturation by Euro-American institutions.

**The Klamath**

The ethnographic literature on the Klamath is extensive. Swartz (1967) provides a good bibliography. Theodore Stern (n.d.) has prepared an overview for the forthcoming Plateau volume of the *Handbook.*
The first substantial study of the Klamath was done by Albert Gatschet (1890). Primarily linguistic, Gatschet's two large volumes contain a brief ethnography; texts in interlinear translation, including myths, narratives, and ritual formulae; a Klamath grammar; and Klamath-English and English-Klamath dictionaries. Other early works include George Dorsey's study of Klamath games (Dorsey 1901), S. A. Barrett's study of Klamath artifacts and technology (Barrett 1907), and Frederick Coville's ethnobotanical studies (Coville 1897, 1904).

Leslie Spier prepared the classic study of traditional Klamath culture, *Klamath Ethnography* (Spier 1930). Based on brief fieldwork on Klamath Reservation in 1925 and 1926, the study is nonetheless careful and substantial, offering a holistic account but emphasizing shamanism and related topics (Spier 1930:vii). Spier appears to have been well regarded by his Klamath informants. A later ethnographer of the Klamath expressed amazement that thirty and forty years later the oldsters in a community recall him [Spier] with affection and respect: "That man could talk our language." "He could make a basket just like we used to in the old days." . . . in Spier's work there is a superb model for gathering information on the human experience in culture. Moreover, none of his collected data has required revision. (Spencer 1987:436-37)

In the mid-1930s Erminie Voegelin undertook a comparative study of culture trait distributions, providing detailed information on Klamath culture patterns together with data on seven central and northeast California tribes. While the atomistic approach to ethnography reflected in this and other trait distribution studies is now theoretically outmoded, a large amount of useful data is nonetheless preserved in her study (Voegelin 1942).

Acculturation, the study of culture change under the influence of a larger, politically dominant society, was a major research focus in the 1920s and 1930s. Two studies document the first major revitalization movement among the Klamath, the Ghost Dance of 1870 (Spier 1927a; DuBois 1939). In the same period Phileo Nash undertook a more complex study of tribal politics, ethnic identity, and revitalization on the Klamath Reservation, comparing the involvement of Klamaths, Modocs, and Northern Paiutes within the reservation community (Nash 1937).

In the 1950s and 1960s, in particular, a number of studies appeared on specific aspects of Klamath language and culture. Robert Spencer examined the place of slavery in Klamath social organization (Spencer 1952a), and the relation of rhetorical style and social control (Spencer 1956). Theodore Stern undertook a number of analyses of Klamath myth, considering the role of the Trickster (Stern 1953), the innovation inherent in the traditional recitation of myth (Stern 1956b), and the degree to which myth embodies Klamath moral values (Stern 1963a). Frank Lang has extended and refined Coville's ethnobotanical studies (Lang 1988a, 1988b). M. A. R. Barker prepared a major compilation of Klamath myths and narratives (Barker 1963a), a Klamath-English dictionary (Barker 1963b), and a definitive study of the Klamath language (Barker 1964).
A number of post-War studies examined Klamath culture change, particularly in the areas of religion and politics. Spencer discussed changing religious perspectives, including a syncretism between traditional Klamath spirituality and Christianity (Spencer 1952b). Stern analyzed the cultural and historical factors influencing the formation of the Klamath Reservation in 1864 (Stern 1956a), and the interrelation of the reservation economy and Klamath tribal government (Stern 1961). Both themes were developed in his book-length study of the modern Klamath, The Klamath Tribe (Stern 1966). A useful tool for research in the history of the modern Klamath tribe is provided by Joyce Justice's guide to the records of the Klamath Indian Agency (Justice 1985). W. T. Trulove and David Bunting (1971) have analyzed the economic consequences of the termination of the Klamath Reservation in the 1950s. Homer Barnett (1957) and Pamela Amoss (1990) have described the tenets and development of the Indian Shaker Church, an important dimension of spirituality on the twentieth-century Klamath Reservation. Lynn Schonchin, Klamath historian and former tribal chairman, has written several essays on the history and culture of the Klamath (Schonchin 1987, 1990).

As noted, the Modoc and the Yahooskin band of Northern Paiutes were also incorporated within the Klamath Reservation, and their descendants form part of the modern Klamath Tribe. They are not considered here, because their traditional territories did not border on the area of Crater Lake.

The Takelma

In his reports on the Siletz Reservation, J. O. Dorsey (1889, 1890) made brief reference to the Takelma Indians as one of many tribes relocated there. The basic ethnography of the Takelma is that prepared by Edward Sapir just after the turn of the century, which is of high quality despite the drastic limitations imposed by having to work with a single informant. On the basis of his fieldwork at Siletz Reservation in 1906 Sapir prepared an article-length ethnography (Sapir 1907a), a discussion of Takelma shamanism and ritual (Sapir 1907b), an extensive body of texts in Takelma and English—and Latin for the more racy passages!—(Sapir 1909), and a monograph on the Takelma language (Sapir 1922). These remain the standard works on this people. John Peabody Harrington interviewed Takelma informants in 1933, chiefly on matters of linguistics, ethnogeography, and ethnobotany (Gray 1987:10). Though—characteristically—he did not publish this material, considerable data are available in manuscript (Harrington 1933; much is summarized in Gray 1987).

A number of modern works bear on aspects of Takelma culture and history. These include Stephen Beckham's history of the Rogue River Wars (Beckham 1971), Lee Sackett's study of the Shaker Church at Siletz Reservation (Sackett 1973), Dennis Gray's ethnological synthesis, emphasizing issues of settlement pattern and territory (Gray 1987), D. Kendall's
entry for the Handbook (Kendall 1990), and Earl Schwartz's historical study of the post-
contact Takelma (Schwartz 1991). Some material is also available regarding the Cow Creek
Band, a post-contact grouping largely derived from the Takelma (Young 1980; Thomas and

**Upper Umpqua**

There is little reliable information on the Athapaskan-speaking Upper Umpqua, and
much of what exists is in manuscript form. Albert Gatschet (1877a) compiled some Upper
Umpqua vocabulary. James Dorsey recorded comparative linguistic data for the groups at
Siletz Reservation, including the Upper Umpqua (Dorsey 1884; see also Pilling 1892). T. T.
Waterman (1921) analyzed information regarding tribal boundaries and settlements for a
number of Athapaskan groups of the region. While Philip Drucker's study "The Tolowa and
Their Southwest Oregon Kin" does not include the Upper Umpqua in its analysis of these
Athapaskan groups, in the absence of better data the monograph provides what is probably the
best available model for Upper Umpqua social organization (Drucker 1937).

More modern studies bearing on the Upper Umpqua include a review of Oregon
Athapaskan linguistic studies (Pierce and Ryherd 1964), a brief, popular account of Upper
Umpqua life based on historic sources (Bakken 1973), and a discussion of the Upper Umpqua
in a history of Douglas County (Beckham 1986). Brian O'Neill has assembled a number of
sources bearing on Upper Umpqua adaptation and settlement in his study of two
archaeological sites in Douglas County (O'Neill 1989a). Jay Miller and William Seaburg
(1990) have provided a modern overview of southwest Oregon Athapaskan groups, including
the Upper Umpqua.

**Molala**

Data on the Molala are also meager. Albert Gatschet (1877b) collected linguistic
material, and a small amount of ethnographic data, while Franz Boas (1890) compiled a short
vocabulary. The most extensive ethnographic material was compiled by Leo Frachtenberg,
recording in fifteen notebooks the information provided by a single informant at Siletz
Reservation in the period 1910 - 1911. Most of the material consists of texts (chiefly myths);
other notebooks record vocabulary, grammar, and (much too briefly) notes on Molala
ethnography (Frachtenberg 1911). Some Molala myths and stories have been translated (from
Clackamas Chinook) by Melville Jacobs (1958: pt. 2).

More recent material includes an article (not wholly reliable) by George Peter
Murdock (1938) concerning territory, migration, and intertribal relations among the Tenino, Molala, and Northern Paiute; and a discussion by Harold Mackey (1972) of the historical relations between Molala and Cayuse. Bruce Rigsby has provided a comparative analysis of the Molala and Cayuse languages, refuting an earlier assumption that the two were closely related (Rigsby 1966, 1969). Rigsby (n.d.) has also prepared a brief ethnographic overview, forthcoming. Beckham et al. (1981) have summarized information on the history of the Molala in the post-contact era.

ETHNOGRAPHIC COLLECTIONS

A number of collections contain unpublished ethnographic materials relevant to the four tribes discussed in this study. Some manuscripts are held at the park library, Crater Lake National Park (for example, Count 1934; Stern, trans. 1951). The National Anthropological Archives (NAA), Smithsonian Institution, Washington, D.C., holds a number of manuscripts and collections of fieldnotes. For the Takelma, this includes placename data collected by J. P. Harrington (1933); the Harrington Papers are also available on microfilm, for example at the Stanford University Library.² For the Upper Umpqua, the NAA's holdings include manuscripts by Dorsey (1884), Gatschet (1877a), and Waterman (1921). For the Molala, the holdings include manuscripts by Boas (1890) and Gatschet (1877b), and fifteen notebooks by Leo Frachtenberg (1911).³ The Herbarium, Southern Oregon State College, Ashland, has botanical samples documenting Klamath ethnobotany (see Lang 1988a, 1988b).

THEORETICAL ISSUES IN OREGON CASCADES ANTHROPOLOGY

Past Research

Because of the rapid disruption of Indian societies west of the Cascades in the mid-nineteenth century, most ethnographic studies described here were salvage undertakings, efforts to record what elderly informants, generally living in reservation settings, still remembered of Indian languages and cultures. Given these conditions, some of the

² For an index to this section of the Harrington Papers, see Mills 1981.

³ For a guide to the holdings of the NAA, see National Anthropological Archives 1975.
compilations of myths and other narratives were remarkable achievements: for example the Takelma texts recorded by Sapir (1909).

The situation was somewhat different regarding the Klamath. Because of their geographic position east of the Cascades, most of the initial pressures for Euro-American mining, farming, and urban settlement passed them by. As a result, even after the establishment of the Klamath Reservation much of traditional Klamath culture and social organization endured.

The concern with salvage ethnography aside, for the period 1900 - 1970 certain theoretical issues did orient central Oregon ethnography. Questions of culture area classification and the diffusion of culture traits guided a number of studies, for example Spier's *Klamath Ethnography*, which analyzed the place of the Klamath within the cultures of western Native North America (Spier 1930:224-325). Many studies were concerned to document traditional myth and ritual (notably shamanism), such as Sapir's "Religious Ideas of the Takelma Indians" (1909). Culture change was widely studied, particularly in movements of religious revitalization such as the Ghost Dance (Spier 1927a) or the Shaker Church (Barnett 1957; Sackett 1973). The reservation community as such was largely ignored as a focus for research until after the Second World War, an exception being Nash's study of Klamath ethnicity and politics (1937). In the 1960s several studies depicted the political and economic changes experienced by the Klamath Tribe, as its members struggled with shifting federal Indian policies, culminating in the debacle of termination (Stern 1961, 1966).

Future Approaches

For the 1990s, four theoretical issues seem particularly promising for anthropological studies in the Crater Lake region. These include the study of environmental adaptations, particularly through the use of optimal foraging theory; the study of hunter-gatherer complexity; the interpretation of sacred sites as part of a culturally-defined landscape; and the investigation of strategies of cultural survival. The first two topics can be considered issues in hunter-gatherer adaptation and social organization, directed at an improved understanding of aboriginal Indian societies. The latter two involve issues of symbolic anthropology and cultural survival have practical implications relevant to both contemporary Indian communities and cultural resource managers. Some of these are developed further in Chapter 8 (Modelling the Cultural Landscape of Crater Lake).

**Issues in hunter-gatherer adaptation and social organization**

1) *Environmental adaptation and optimal foraging theory*. The perspective described under the label of "optimal foraging" represents an effort to construct a theory of the
subsistence behavior of hunter-gatherer societies, derived from both detailed analyses of ecological relationships and what are essentially microeconomic models for the optimization of time and caloric returns in the food quest. The advent of optimal foraging approaches beginning in the 1970s marked a new stage in hunter-gatherer studies.

Centered on the crest of the Cascades, Crater Lake National Park borders quite distinct environments to the east and west, each offering a distinct ensemble of resources. At a rather general level it is obvious that such differences resulted in distinct adaptive strategies. For example the Klamath's reliance on the resources of lakes, rivers, and marsh (wokas, fish, shellfish, and birds) contrasts sharply with the Molala's greater emphasis on hunting within the Cascade uplands. This suggests a bi-regional model of hunter-gatherer adaptation.

Optimal foraging theory offers one means of refining such a bi-regional model. This approach investigates how hunter-gatherers optimize settlement and subsistence strategies by minimizing the time and maximizing the returns involved in the foraging process. Its aim is to model hunter-gatherer responses to environmental differences, particularly differences in the distribution and caloric return of food resources (see Winterhalder 1981; Smith 1983). Utilizing both ethnographic and archaeological data, optimal foraging theory may clarify how and why aboriginal peoples of the region differed in the distribution of settlements, the organization of foraging groups, and the breadth of diet sought in the food quest.4 See Chapter 8.

(2) Social complexity. In the last several decades, interest in evolutionary approaches within both archaeology and cultural anthropology has stimulated the recognition of social complexity in many hunter-gatherer groups (Ames 1985; Price and Brown 1985). Indicators of such complexity include "permanent habitations, food storage, domestication of plants, multiregional exchange of valuables, cemeteries, intragroup ranking of individuals, and the elaboration of art in a social context" (Brown 1985:201).

The tribes of the Crater Lake region were intermediate in complexity between the essentially undifferentiated order of small hunter-gatherer bands and the elaborate political and kinship structures of chiefdoms. Indicators of complexity include the political significance of wealth, the use of long-distance social networks, and the existence of slavery as a distinct and potentially permanent social status. Nonetheless, the theoretical perspectives which guided past research in southern Oregon Cascades ethnography largely ignored issues of complexity, and its political and economic consequences. The investigation of the forms and consequences of social complexity in the southern Oregon Cascades could offer a promising direction for research, clarifying both commonalities and differences in the social organization and economies of these aboriginal groups.

One aspect of complexity which could be readily investigated is the elaboration of

4 For an example of the application of optimal foraging approaches to the Klamath environment alone, see Winthrop et al. 1989: sec. 5.
intertribal social networks. Models for such research include studies of slave-trade networks on the Northwest Coast (Donald 1984), and of intertribal gathering, hunting, and fishing "task groups" on the Columbia Plateau (Anastasio 1972).

Another is the development of greater sedentism, a social organization based on comparatively stable settlement (a "collector" strategy), rather than one based on high mobility (a "forager" strategy). Collectors practice a highly logistical strategy by occupying residential bases (villages) for a relatively long time, such as an entire season, have the ability to store resources, and transport resources to consumers through logistical organization. Foragers are highly mobile groups, moving the consumers to the resources, do not store resources because of high residential mobility, and prefer to procure and process resources for immediate consumption (see Binford 1980; Kelly 1983).

Among the groups considered here, the Klamath appear to have pursued more of a collector strategy, the Molala more of a forager strategy. The implications of the forager/collector contrast for tribal social organization and economy are outlined in Table 2-1, below.

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5 This discussion is adapted from Winthrop et al. 1989. Dr. Barry Hewlett provided much of the theoretical guidance on these points.
TABLE 2 - 1
CHARACTERISTICS OF FORAGER AND COLLECTOR STRATEGIES

<table>
<thead>
<tr>
<th></th>
<th>Forager</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETTLEMENT</td>
<td>primarily mobile</td>
<td>primarily stable</td>
</tr>
<tr>
<td>ECONOMY</td>
<td>immediate return</td>
<td>delayed return</td>
</tr>
<tr>
<td>SURPLUS</td>
<td>minimal</td>
<td>significant</td>
</tr>
<tr>
<td>SOCIAL</td>
<td>flexible, usually</td>
<td>more formal, can include</td>
</tr>
<tr>
<td>ORGAN.</td>
<td>bilateral</td>
<td>unilineal organization</td>
</tr>
<tr>
<td>POPULATION</td>
<td>less dense</td>
<td>more dense</td>
</tr>
<tr>
<td>MEANS OF</td>
<td>widely accessible,</td>
<td>restricted ownership of</td>
</tr>
<tr>
<td>PRODUCTION</td>
<td>low value</td>
<td>critical tools and</td>
</tr>
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<td></td>
<td></td>
<td>resources</td>
</tr>
</tbody>
</table>


Issues in symbolic anthropology and cultural survival

(1) Sacred sites and cultural landscapes. Crater Lake has had special significance for Indian tribes of the region, a destination of particular importance in the vision quest, but also a place feared for the dangerous spirits which dwelt there (see Chap. 5). The area's spiritual significance is also suggested by archaeology. Within Crater Lake National Park and on adjacent federal lands are numerous piled rock sites thought to relate to vision quest activities. On the Chiloquin Ranger District of the Winema National Forest, immediately to the southeast, some thirty percent of the recorded sites are rock features such as cairns, stacks, and rings (Winthrop et al. 1989, Table 5-3).

Conventional cultural resource management is predicated on a commodity metaphor:
the aim is to conserve individual sites, tangible resources analogous to scenic rivers and endangered species (see Buckley 1978). Yet in the case of Indian ritual sites this approach is insufficient. The meaning and significance of such rock features should be sought by identifying their place within a larger system, as reflections of a culturally conceived landscape, within the framework of Indian beliefs. Indeed, as Deward Walker has noted, "sacred geography is a universal and essential feature of the practice of American Indian religions" (Walker 1988:253).

Research in northwestern California has documented the interrelatedness of such sites in native belief systems. This is expressed in various ways: by a hierarchy of spirit powers dwelling in their respective areas; the functional specificity of particular locations (one for gambling luck, another for doctor power); and the connectedness of sites, points of power on traditional trails leading from lowland villages to the most significant peaks, along which an aspirant progressed (Theodoratus and Chartkoff 1979; Davis 1988). Similar investigations of the cultural system underlying ritual sites would be very appropriate for the Crater Lake region (see R. Winthrop et al. 1992).

(2) Strategies of cultural survival. The history of ethnological research in the southern Oregon Cascades suggests two major preoccupations: first, salvage ethnography aimed at documenting aboriginal culture patterns; second, studies of acculturation, describing how Indian cultures were transformed through the dominance of Euro-American institutions and values. What has been missing in this agenda is a concern with the remarkable tenacity of Indian identity, particularly in the one group of the four that was not largely uprooted from its traditional territory, the Klamath tribe.

Anthropologists have too often failed to recognize that cultural continuity is compatible with change. Far from requiring an unvarying replication of past ways of thought and behavior, the cultural persistence of a people simply requires (as Edward Spicer has pointed out) "the growth and development of a picture of themselves which arises out of their unique historical experience" (in Castile 1981: xviii). Cultural survival thus depends on the perpetuation of patterns of thought and action felt to derive from ancient times, though often with considerable modification in the face of changing circumstances. These might include basketry patterns, diet preferences, myths and tales, the cultivation of medicinal plants, religious complexes such as the vision quest or shamanic healing, or simply a distinctive understanding of nature. The processes and contexts of cultural transmission and reinterpretation among Indian communities of the region deserve careful study (see Spicer 1971; Cornell 1988a; Winthrop 1990).

The research topics noted above concern different groups: academically-oriented anthropologists interested in adaptation and change in hunter-gatherer societies; applied anthropologists and archaeologists involved in cultural resource management; and contemporary Indian tribes. The latter topics in particular—understanding of sacred landscapes and processes of cultural survival—suggest the need for collaboration among all three groups.
SUMMARY

Beginning in the late nineteenth century, considerable ethnographic effort was devoted to reconstructing the pre-contact lifeways of the Indian peoples of southwest Oregon, based primarily on the recollections of elderly Indian consultants. This was most successful for the Klamath people, much less so for the Takelma, Upper Umpqua, and Molala, whose societies had been almost totally disrupted by Euro-American conquest. With some notable exceptions, the situation and needs of contemporary Indian communities received little attention.

Cultural resource management has to a considerable extent reflected this heritage, in which the products of Indian cultures were regarded as objects of scientific interest and governmental protection, rather than points of contact in a dialogue between Indian and Euro-Americans. Today, effective cultural resource management programs require an active collaboration between cultural resource and interpretive specialists on one hand, and concerned Indian communities on the other. Furthermore, to be effective cultural resource programs should be informed by current anthropological perspectives: for example concerning the compatibility of tradition and change (as seen in practice theory), or the partial and problematic character of any cultural account, including those found in National Park Service interpretive programs (as seen in post-modernist analyses of ethnography).

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6 On cultural persistence and practice theory, see Bentley 1987, Winthrop 1990; regarding post-modernist perspectives on ethnographic representation, see Marcus and Fisher 1986; for additional references on both topics, see Winthrop 1991:57-61.
Crater Lake National Park stands at or near the territorial boundaries of four Indian peoples. To the east and southeast lay the lands of the Klamath, to the southwest the lands of the Takelma, to the west the lands of the Upper Umpqua, and to the northwest the lands of the Molala (see Map 4).

The post-contact experience of the Klamath was very different from that of the Oregon tribes of southwest Oregon, including the Takelma, Molala, and Upper Umpqua. In southwest Oregon the de facto policy was one of near-extinction, with survivors forced to reservations far from their homelands. In contrast, as Leslie Spier observed of the Klamath, "the drastic destruction of the western and central Oregon tribes had passed them by" (Spier 1927a:45). As a consequence, much is known of the aboriginal culture of the Klamath, far less of the other three peoples considered here. Rather than attempting to summarize all aspects of a very large literature, these ethnographic descriptions will focus on those aspects of Klamath, Takelma, Upper Umpqua, or Molala life most relevant for an understanding of the cultural context of Crater Lake.

THE KLAMATH

Introduction

The Klamath were bordered to the west by the Takelma and the Molala. To the southwest the Klamath bordered the Shasta; to the south, the Modoc (a group with close social and cultural links to the Klamath); and to the east, the Northern Paiute. The distinctive features of the Klamath Basin environment and the interactions—whether peaceful or warlike—between these tribes in a sense defined Klamath territory.

Nonetheless, "territory" must be understood in the context of tribal, rather than state-
level, political organization. Rather than conceiving of Klamath (or Takelma, or Molala) territory as a definite, uniquely held domain, it is more accurate to distinguish between a core homeland and a peripheral resource area which might be utilized by several contiguous groups. The following comments regarding territory in aboriginal California could apply in large measure to the Klamath as well:

each of the Indian groups in northern California, especially those in high elevation areas, claimed a nuclear territory which constituted their national homeland and in which their permanent villages were located. These tribal homelands seemed to be universally recognized by the various Indian nations, and mainly consisted of river valleys, basins, and lakeshores. The intervening uplands were exploited only seasonally in the warmer months, and almost invariably, two or more groups exploited these same territories. (Jensen and Farber 1982:21-22)

Klamath territory centered on Upper Klamath Lake, Klamath Marsh, and the Williamson River. Here most of the permanent villages were found, with some additional settlements located in the uplands to the east, along the Sprague River. Seasonal camps, in contrast, were "established over a much wider territory, as far, it would seem, as the natural limits of [the Klamath Basin] drainage area" (Spier 1930:8). To the north the Klamath ranged to the headwaters of the Deschutes River, to the east some seventy miles to the escarpment above Summer and Silver Lakes, and to the west to the peaks of the Cascades (Stern n.d.:8). Spier noted that "the wide plain south of Klamath Falls seems to have been unoccupied," though during the spring fishing the Klamath and Modoc tribes met on Lost River, the Klamath occupying the northern, and the Modoc occupying the southern bank of that river (Spier 1930:9).

Klamath territory stood at the periphery of several major aboriginal culture areas: the Plateau, Great Basin, Northwest Coast, and California. Accordingly, aboriginal Klamath culture reflected a number of diverse influences in such matters as economy, social organization, and values (see Stern n.d.:10-12). Klamath culture was shaped by its specialized adaptation to a marsh, lake, and river environment, seen in the predominant place of fish and pond-lily seeds (wokas) in the Klamath diet. Beyond this adaptive focus, however, Klamath culture reflected a number of influences:

one may note the California flavor of the separatistic hamlets with their loose social and political organization; the weakly developed (and possibly late) wealth complex, suggestive of the Northwest and the Oregon coast; and the formalized shamanistic religion which points to affinities with tribes in the Plateau, California, and elsewhere. (Spencer 1952b:217)

The language of the Klamath is closely related to that spoken by the Modoc, the two being merely dialectical variants of one another (Stern n.d.:6). The degree of relation between Klamath-Modoc (more technically, Lutuamian) and other languages of the Plateau remains controversial. Edward Sapir postulated the existence of a "Plateau Penutian"
grouping, encompassing an area of the Plateau from Klamath territory north to the middle Columbia River (Sapir 1929:171-73). As Theodore Stern has argued, "Klamath-Modoc finds its closest linguistic congeners within the Plateau, in Cayuse, Molala, and the northern Sahaptin Tenino, Klickitat, Yakima, Umatilla, Walla Walla, and Nez Perce" (Stern 1966:4). The less sweeping suggestion of a close relation between Klamath and the Sahaptin languages of the Columbia (avoiding the question of their relation to Molala and Cayuse) has been more widely accepted (Stern n.d.:5).

The languages presumed (if not conclusively demonstrated) to have formed a Penutian language phylum are diverse, and widely distributed in the Pacific Northwest and California. Based on the "diversity and remoteness of relationship" shown by the northern Penutian languages, Oregon was the probable home of Proto-Penutian (Thompson and Kinkade 1990:45). Furthermore,

If all these languages are really genetically related, then Proto-Penutian must antedate Proto-Salishan by several thousand years; there may have been an early Penutian spread covering much of the Pacific Northwest, later split up by arrival and spread of Salishan and other peoples, with subsequent assimilation of many original Penutian speakers by these later groups. (Thompson and Kinkade 1990:45)

In short, as Stern has noted, linguistic evidence suggests "a long autochthonous development" for the Klamath people in their known homeland of southeastern Oregon (Stern 1966:4). The linguistic evidence is bolstered by the data of both archaeology (see chap. 8) and Klamath myth.

The term "Klamath" was apparently derived from Chinook (Stern n.d.:1). The Klamath term of self-reference is maqlaqs. However, the term was frequently used as part of the placename of a particular Klamath group, rather than designating the ethnic collectivity as a whole. For example, the largest Klamath grouping, located on Klamath Marsh and the Upper Williamson River, "was known as 'ewksikni maqlaqs, or simply by the former term (<'ews, lake)" (Stern n.d.:2).  

Estimates of the aboriginal Klamath population are conflicting and difficult to evaluate. Spier suggested 1200 persons at the time of contact, of whom an estimated 600 made up the 'ewksikni or Klamath Marsh division (Spier 1930:5). Stern (n.d.:14) has suggested 1000 for the aboriginal Klamath population. Klamath elders have suggested that the precontact population (including Klamath, Modoc, and Yahuskin Paiute groups, which

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1 Proto-Salishan is the presumed parent of a large family of languages, found principally within the Northwest Coast, in Oregon, Washington, and British Columbia. [footnote added]

2 Here and elsewhere an glottal stop is marked by an apostrophe ('), substituted for the more technically correct symbol (?) employed by Stern. Other symbols used here (following Stern) include capitalized letters (M, Y, etc.) to indicate aspiration, and a dot (.) to indicate length. See Stern n.d.:7.
were jointly to compose the Klamath Reservation), would have numbered about 2000.\(^3\)

Given current debates regarding population levels in pre-contact North America, such figures should be taken cautiously. Nonetheless, available estimates for the region suggest that population densities for the Shasta to the southwest or for the tribes of the Oregon Coast were perhaps ten times that of the Klamath and Modoc, while that of the Northern Paiute to the east were perhaps one-fourth of the Klamath figure (Stern 1966:5).

Adaptation

As the archaeological record demonstrates (see Chapter 8), by several thousand years ago the people of the Klamath Basin had developed an efficient and fairly specialized adaptation, emphasizing fish and the marsh-growing wokas, with a secondary dependence on a wide range of roots, seeds, fruit, and shellfish. Animals were commonly hunted with bow-and-arrow, though nooses (for deer) and nets (for water birds) were also employed (Barrett 1907:246-47). Traditionally, hunting was not a cultural emphasis; in Leslie Spier's phrase, "deer and other game are only of minor importance" (Spier 1930:145). Nonetheless, it had a significant place in the total subsistence round: Spier (1930:156-57) listed over forty species of mammals and birds in the Klamath diet.

As was characteristic throughout the region, the Klamath subsistence quest involved shifting residence patterns, from quasi-permanent villages near ice-free streams or springs during the winter, to a series of fishing, gathering, and hunting sites through the spring, summer, and fall. Winter dwellings consisted of circular, semi-subterranean earth lodges, roofed with mats, grass, and dirt over a pole frame. Summer dwellings were more ephemeral, being covered with mats (Spier 1930:197-205). The changing seasons and availability of resources largely determined this cycle:

The fixed villages are the winter residences to which people return year after year. Each spring finds them leaving for favorable fishing stations where there are successive fish runs. Through the summer they move to the prairies to gather edible roots and berries or to the mountain and desert to hunt. During most of this time families are widely scattered and the winter villages quite deserted, but with the ripening of pond lily seeds in the marshes during August and September they again congregate. (Spier 1930:10)

As can be seen from Table 3-1, fishing was a nearly constant activity, though particularly rich during the spring. Wokas provided the plant staple, and its harvest formed a key element

\(^3\) Here and elsewhere in this section I have drawn on discussions with Gordon Bettels, Cultural Heritage Specialist with the Klamath Tribe.
of the activity of late summer and fall.

The Klamath caught a variety of fish. Runs of suckers (Catostomidae) and salmon (*Oncorhynchus*) were particularly important. Fish were available on the Williamson River year-round, hence it supported many settlements, while many other streams had fish runs only in the spring. Fish were generally netted, both at dams constructed in the rivers, and on the lakes, using dugout canoes or tule rafts. The Klamath had a sophisticated fishing technology, employing a variety of nets, including triangular dip nets and smaller gill nets (Barrett 1907:247-51; Spier 1930:147-55; Stern n.d.:15-18).

Harvesting wokas, the seeds of the pond lily (*Nuphar polysepala*), was a specialized (and crucial) Klamath adaptation. Klamath Marsh is estimated to have contained ten thousand acres of the plant. The seeds were gathered from canoe in the late summer, chiefly by women. The pods were prepared through a series of processes, depending on the maturity of the plant, including fermenting, parching, and grinding. Wokas was roasted and eaten dry, or ground and prepared as porridge or bread. The stored seeds were eaten throughout the year. Coville provided a detailed analysis of the preparation of wokas. (See Coville 1904; Spier 1930:160ff.; Lang 1988a.)

The Klamath gathered a wide variety of other seeds and roots, including camas (*Camassia quamash*) and ipos (or epos, *Perideridia oregana*) (see Coville 1897; Lang 1988a). The search for berries in the late summer brought gathering parties to the uplands, including slopes in the vicinity of Crater Lake:

> Late summer and autumn, seeds, berries, and nuts are gathered, the Indians congregating where these are plentiful. Many of those at Klamath marsh, for example, move directly to Huckleberry mountain, southwest of Crater lake, to garner these berries. (Spier 1930:146)

In summary, the Klamath utilized a wide range of animal and plant resources. This is suggested by the number of animal and plant terms in the Klamath lexicon. To provide some rough approximation of Klamath animal and plant knowledge, Klamath botanical and zoological terms were compiled from Gatschet's *Klamath Dictionary* (1890), Spier's *Klamath Ethnography* (1930), and Barker's *Klamath Texts* (1963a). In all, 248 animal and 143 plant terms were included. The Klamath animal terms include (in order from most to least numerous) birds, mammals, fish, insects, reptiles, shellfish, and amphibians. Plant categories (again in order of number of entries) include grasses, fruits, trees, roots, other plants, and seeds (see Table 3 - 2).

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*This list was compiled by Dr. Barry Hewlett, as part of a study of prehistoric settlement and adaptation on the Winema National Forest (see R. Winthrop et al. 1989).*
<table>
<thead>
<tr>
<th>Month</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARCH</td>
<td>move to fishing camps; old remain at winter villages;</td>
</tr>
<tr>
<td>APRIL</td>
<td>fishing (continues, in varying intensity, year-round);</td>
</tr>
<tr>
<td>MAY</td>
<td>fishing; women dig for ipos; waterfowl eggs gathered; yellow pine cambium sought;</td>
</tr>
<tr>
<td>JUNE</td>
<td>camas gathered in meadows; waterfowl and small game hunted;</td>
</tr>
<tr>
<td>JULY</td>
<td>same</td>
</tr>
<tr>
<td>AUGUST</td>
<td>women harvest pond lily seeds (wokas) on lakes; men hunt mule deer and antelope;</td>
</tr>
<tr>
<td>SEPTEMBER</td>
<td>harvest wokas; gather berries in uplands; hunt; fish; return to winter villages;</td>
</tr>
<tr>
<td>OCTOBER</td>
<td>prepare winter provisions; hunting and fishing restricted;</td>
</tr>
<tr>
<td>NOVEMBER</td>
<td>some hunting and fishing;</td>
</tr>
<tr>
<td>DECEMBER</td>
<td>some fishing; some hunting of deer, bear, and water fowl; shamanic ceremonies;</td>
</tr>
<tr>
<td>JANUARY</td>
<td>some hunting and fishing, where possible;</td>
</tr>
<tr>
<td>FEBRUARY</td>
<td>same; provisions often low; in times of famine, moss and lodgepole pine cambium eaten;</td>
</tr>
</tbody>
</table>

Sources: Stern n.d.; Spier 1930:145-46; dates are approximate.
TABLE 3 - 2
KLAMATH ANIMAL AND PLANT TERMS

<table>
<thead>
<tr>
<th>Rank</th>
<th>Category</th>
<th>Number of Terms</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Birds (incl. eggs)</td>
<td>100</td>
<td>40%</td>
</tr>
<tr>
<td>2</td>
<td>Mammals</td>
<td>58</td>
<td>23%</td>
</tr>
<tr>
<td>3</td>
<td>Fish</td>
<td>39</td>
<td>16%</td>
</tr>
<tr>
<td>4</td>
<td>Insects</td>
<td>32</td>
<td>13%</td>
</tr>
<tr>
<td>5</td>
<td>Reptiles</td>
<td>11</td>
<td>4%</td>
</tr>
<tr>
<td>6/7</td>
<td>Shellfish</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>6/7</td>
<td>Amphibians</td>
<td>4</td>
<td>2%</td>
</tr>
</tbody>
</table>

TOTAL ANIMAL TERMS LISTED = 248

<table>
<thead>
<tr>
<th>Rank</th>
<th>Category</th>
<th>Number of Terms</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Grass/Tule</td>
<td>36</td>
<td>26%</td>
</tr>
<tr>
<td>2</td>
<td>Fruits</td>
<td>35</td>
<td>25%</td>
</tr>
<tr>
<td>3</td>
<td>Trees</td>
<td>21</td>
<td>15%</td>
</tr>
<tr>
<td>4</td>
<td>Roots</td>
<td>19</td>
<td>13%</td>
</tr>
<tr>
<td>5</td>
<td>Other Plants</td>
<td>18</td>
<td>13%</td>
</tr>
<tr>
<td>6</td>
<td>Seeds</td>
<td>12</td>
<td>8%</td>
</tr>
</tbody>
</table>

TOTAL PLANT TERMS LISTED = 143

Terms from Gatschet 1890; Spier 1930; and Barker 1963a.

Social Organization

Klamath villages were composed of one or more bilaterally extended families, headed by men of wealth and influence (laqi). Household membership was flexible, being formed on many principles. Such households could include the nuclear families of the senior male's son or daughter, his siblings and their kin, kin of his wife or wives, aged parents, and friends (Stern n.d.:28). The range of size of such villages is difficult to reconstruct. Assuming Stern's estimate of 70 Klamath villages and an aboriginal population of 1000, each village would have held on the average fourteen persons. Spier (1930:53-54) gives an example of a
household centering on a male shaman, numbering twenty in all.

Marriage was accompanied by a payment of bridewealth, consistent with the rather attenuated form of the wealth complex to be found in the Plateau. Residence was usually uxorilocal (with the wife's parents) immediately after marriage, shifting to a virilocal (with the husband's parents) after children were born and substantial wealth accumulated (Stern n.d.:29; cf. Spier 1930:53). There was no rule of village exogamy, though Spier noted a tendency for endogamy within the tribelet. Polygyny was permitted. Both the sororate (marriage with several sisters) and the levirate (marriage of a widow by the younger brother of a deceased husband) were considered appropriate though not obligatory (Spier 1930: 43-51; Spencer et al. 1977:180-182).

Klamath society was ranked, insofar as "chiefs" were recognized and slaves were held. Nonetheless, the Klamath did not manifest the social differentiation known to Northwest Coast societies: chiefly rank was not hereditary, nor was there any class-like distinction of nobles and commoners. In traditional Klamath society the influence of such "chiefs" (or better, head-men) within each community or tribelet was strictly limited: "the Klamath made little of chiefs ... . rich men, leaders in war, but they were speakers only, offering an example to the group by their success in wealth" (Spencer et al. 1977:180). In contrast, shamans had great importance. As Spier noted, "The shaman himself is, or was, the outstanding figure of Klamath society. He had no rival in the chiefs, the rich man, until the coming of the whites brought a redistribution of emphasis in Klamath life" (Spier 1930:94).

Slaves were captured in war, and seeking slaves in fact provided a major motive for raids. Slaves were primarily Achomawi or Atsugewi, though Northern Paiute, Shasta, and some Takelma were also taken. However, the Indian (or at least Klamath) slaveholding cannot be equated in any simple terms with Euro-American practices. The term loks meant equally "slave," "war captive," or simply "foreigner," and according to Spencer, did not imply a degraded status (Spencer 1952a:5). Spier commented that "It is quite likely that a slave's life is much like that of any poor Klamath" (Spier 1930:40).

Until the nineteenth century, at least, trade was probably of minor importance to the Klamath, and following from that fact, the potential for differences in wealth comparatively limited. Spier noted the following wealth items mentioned by Klamath informants (in order of frequency):

slaves, horses, beads—and not always dentalium—food, archers' equipment, furs and hides, especially elk hides, Plains type garments, armor, large houses, buffalo skins, canoes. (Spier 1930:43)

Many of the items were trade goods, and scarce or unavailable until the expansion of the

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5 The expression of traditional leadership through the role of "speaker" was also noted in tribal comments on this chapter.
southern Plateau trade networks in the early nineteenth century (see Spier 1930:41-43; Stern 1956a:230-34).

The Klamath as a whole were united by a common language and a common culture, but did not share a single, integrated political organization. Rather, the Klamath people belonged to a series of geographically localized divisions or tribelets (cf. Bean 1978:673). While summer camps might shift from year to year, the stability of the winter village settlements provided "a measure of political separatism to the several localities" (Spier 1930:11). To some degree tribal identity was ambiguous, as Spier noted:

The Klamath are not a single political entity. There are four or possibly five subdivisions or tribelets, each occupying a distinct district, and practically autonomous. This is separatism of the familiar Californian order. Nevertheless, the cohesion rising from a common dialect, common culture, and a uniform reaction against all non-tribesmen, which on occasion leads to jointly taking the field against them, produces a tribal solidarity resembling that of the Plains people. (Spier 1930:21)

Feuds were common between tribal divisions, but did not occur between the settlements of a single division. Further, such feuds "are carried on much as warfare with foreigners; property is destroyed, women and children enslaved" (Spier 1930:22). Similarly, the Klamath lacked integrating mechanisms through which the entire tribe could unite: "when it comes to war with outsiders, each group can act for itself, others may join if they wish" (Spier 1930:22).

By all accounts, the Klamath Marsh - Williamson River tribelet was numerically and perhaps culturally dominant; the Klamath Falls group was the next largest (see Table 3 - 3). These concentrations of population reflected the richer resources available along Klamath Lake and Klamath Marsh. There is disagreement regarding the precise number of divisions. Spier subsumed the eastern settlements along the Sprague River under the Klamath Marsh division (Spier 1930:13-23). Stern, however, considered the Upland Klamath of the Sprague River Valley to form a distinct tribelet, though noting a somewhat composite membership, consisting of "Klamath with some Modoc and Paiute elements" (Stern 1966:19). He also suggested that the tiny Agency Lake contingent was in fact part of the Klamath Marsh division. A Klamath tribal representative agreed with Spier's analysis in viewing Lake as an autonomous group, but added to those groups already mentioned a seventh, centered at Chiloquin (G. Bettels, pers. comm.).

37
The Klamath had the closest relationship with their southern neighbors the Modoc. Spier noted that "intercourse and marriage went on freely with the Modoc. They [the Modoc] were visited on Tule and Lower Klamath lakes, and joined for the fishing on Lost river near Olene" (Spier 1930:41-42). However, Verne Ray suggested that intermarriage between Klamath and Modoc was comparatively infrequent (Ray 1963:88). The interaction of the two peoples Ray described as "reasonably close and free," though it could not, he added, "be called friendly" (Ray 1963:xii). The Klamath received baskets in trade from the Modoc (Spier 1930:42).

The Klamath traded with the Shasta, receiving beads in return for skins and skin blankets. There was also intermarriage, at least with the Klamath Falls tribelet, though Spier
suggested that this practice may have dated only to the post-contact period (Spier 1930:41).

The Klamath also traded with the Molala, meeting them on the Rogue River headwaters west of Crater Lake, obtaining buckskins from the Molala in return for wokas and beads (Spier 1930:41). The two groups also intermarried (Stern 1956a:234, n. 16).

In contrast to the benign relations with the Modoc and Molala, the Klamath raided the Atsugewi and Achomawi for slaves. Such raids, Gatschet noted,

had no other purpose than to make slaves of the females and children of the . . . Pit River Indians. . . . Adult men were not enslaved, but killed outright if captured. (Gatschet 1890:1:25)

To a lesser extent the Takelma, Shasta, and Northern Paiute were also subjected to Klamath slave raiding.6

Slaves were a valuable commodity, and their trade linked the Klamath to the wider intertribal networks of the Plateau (see Anastasio 1972:159-63). Trading centered on Warm Springs and the Dalles. As Spier noted,

Slaves, Pit River bows, and beads are taken there to trade for horses, blankets, buffalo skins, parfleches, beads (probably dentalium shells), dried salmon, and lampreys. Two slave children are valued at five horses, several buffalo skins, and some beads. (Spier 1930:41)

The Klamath acquired horses relatively late: they were not a significant item of trade until about 1840. The addition of the horse to the Plateau trade network provided a strong incentive to the Klamath to increase trade, in particular stimulating the Klamath interest in slave raiding.

Klamath slave trading formed part of what Leland Donald has termed the "Columbia River Network":

This network stretches from the west coast of Vancouver Island in the north to the present-day Oregon-California border in the south. . . . the flow of slaves was largely toward the Columbia River from both the northern and southern parts of the network. . . .

Slaves [were] traded from the Klamath and Shasta of southern Oregon and northern California to Upper Chinook groups, especially in the region of the Dalles. Trade in

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6 For one informant's accounts of Klamath raids on Rogue River (Takelma?), Pit River, and Snake (Northern Paiute) groups, see Gatschet 1890:1:16-33.
slaves also came from these two groups via groups along the Willamette River to the Cowlitz and Lower Chinook at the Columbia River mouth. (Donald 1984:127)

The Klamath's trade to the north proceeded along several well established trails:

While one branch of the Klamath trail led northward, probably down the Deschutes valley, the western branch led by way of the north fork of the Santiam River across the Cascades to the settlements of the Northern Molala, on the river of the same name, there merging with a trail running north from Mehama through Mulino and terminating at Oregon City. (Stern 1956a:233-34)

Other trails included one running past Huckleberry Mountain to the Rogue River, and another proceeding via Rocky Point and Lake of the Woods to what is now the town of Ashland (G. Bettels, pers. comm.).

**Ritual and World View**

Spier described a number of significant rituals for the Klamath. Female puberty was marked by a five-night ceremony, similar in many respects to the puberty ceremonies of the Modoc and Shasta (Spier 1930:68-71; Voegelin 1942:122-28). A complex series of shamanistic performances occurred during mid-winter (Spier 1930:112-22). First sucker ceremonies were held in the spring (Spier 1930:148). Cremation of the dead was "the universal practice, even for suicides, the newborn, and the stillborn" (Spier 1930:71).

As with other Indian peoples of the region, however, the ritual life of the Klamath centered on the quest for spirit power. The Klamath recognized a variety of spirits, "predominantly birds and animals, winds, lightning and the like, and a handful of anthropomorphic beings" (Spier 1930:93). Any one of these could be sought for blessings. Power or good luck could be sought for a variety of situations, among these "curing, gambling, love-making, and shamanistic trickery" (Spier 1930:93). Spirit manifested themselves through songs, heard in the seeker's dreams. These formed the key to spirit power. As Spier has interpreted this view,

> The spirit never manifests itself but in the song; the singer is the vehicle, the voice of the spirit. Song and spirit are one and the same thing. (Spier 1930:95)

The spirit quest followed a consistent form. Anyone could seek power, and seemingly all or almost all undertook a quest at least once in a lifetime. The quest involved separation,

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7 For examples of spirit songs, see Gatschet 1890: Pt. 1:153-72.
a retreat to lonely and thus powerful places:

Power is sought in lonely spots in the mountains, in mountain pools, in eddies in the rivers, in all places where spirits are known to dwell. A boy is sent into the mountains on a vigil of several days, perhaps five. . . . He must fast and must not touch his hands to his face, but must use a scratcher instead. He must sleep without covering and warm himself only occasionally by a little fire. He runs about constantly throughout the night, piling rocks into high piles . . . and swimming in the mountain pools. He prays, calling loudly to the spirits, and finally gets an answer. (Spier 1930:95)

Verne Ray noted that in both Klamath and Modoc cultures, there was considerable emphasis on "making artificial rock piles for religious or commemorative purposes and for attributing mythological significance to rock piles of unknown origin" (Ray 1963:xiii).

From a traditional Klamath perspective, one can contrast two ritual forms: the vision quest proper, most commonly undertaken at puberty, whose aim is to gain or augment spirit power; and the crisis quest, a retreat to sacred places at times of tragedy, often by entire families, whose aim is spiritual healing of the troubled or bereaved (G. Bettels, pers. comm.; see also Spier 1930:94).

The location of the quest was not random, but reflected what could be termed a spiritual geography, a world view in which specific spirits or powers dwelt in particular points within mountains, lakes, or rivers. "Spirits are legion and in many cases are localized, so that one looking over the countryside finds it rich in religious connotation" (Spier 1930:100).

Certain individuals pursued the spirit quest to a much greater degree, developing powers which set them apart as extraordinary individuals. As curers, diviners, and teachers these specialists (*qyoqs*)—predominantly but not invariably men—had a central place in Klamath life:

These "medicine-men" do not only treat the sick, but they arrange and preside over the "doctor-dances" in the communal dance house, are consulted for dreams, predict the weather, during the pond-lily harvest give advice on the more important incidents of tribal pursuits, and are much dreaded on account of their alleged power of sorcery. (Gatschet 1890: Pt. 2:135)

While the *qyoqs* had outstanding importance, outshining the chiefs until Euro-American influence altered the political balance, their powers were only intensified versions of the power that all individuals could seek.

These specialists have most commonly been termed shamans, for example by Spier (1930:107) and Stern (n.d.:45). However, as applied to the Klamath (or to any tribe of the region) the term requires qualification. Hultkrantz, in his study of American Indian religions,
has contrasted two forms of supernatural curer, which he termed the visionary and the ecstatic:

we may distinguish . . . two main types of medicine man: the visionary, whose trance is light and whose clairvoyance is distinctive, and the ecstatic, who may converse with the spirits or depart from his own body in deep trance. . . . Only the latter should really be called a shaman. (Hultkrantz 1979:87)

Shamanism in its strict sense describes a religious complex "in which specialists undertake to heal, guide, and prophesy through trance behavior and mystical flight" (R. Winthrop 1991, s.v. "shamanism"), a pattern best known from the circumpolar cultures, notably of Siberia. In the distinction posed by Hultkrantz, the qyoqs is a visionary, not an ecstatic. His (or her) key ability is possession of spirit songs, not entry into trance and mystical flight (see Spier 1930:109; cf. Eliade 1964).

Klamath beliefs regarding the qyoqs (variously termed by Gatschet "conjurer" and "medicine-man") are nicely summarized in the following text:

Once man long ago spoke thus: over there is my bewitched wife, having fallen sick; you bewitched (her). Then an old man he sent out to call a conjurer [qyoqs]; and he started, the old man, to fetch the conjurer, and to call him out, hallooed; and he heard the magic songs, conjurers' songs on the mountain, far away are these songs. Then goes the conjurer to treat (her), to the spot where she lies bewitched. Now he works on her, and sucks. A big thing comes out through (his) mouth; he orders (those present) to sing, while he would suck on with (his) mouth. Then he sucks out, and feels choked, and throws up again his sucked-out article; his expounder [hutaîtìkhîsh = shaman's assistant] swallows (it). Now (after) he has swallowed (it), worse that (patient) being treated, in spite of, (she) is worse, she almost looks toward the spirit land. The conjurer starts to leave, wanting to retire because she turned worse, (and) the food not passing through (bowels). Hereupon he speaks thus whose own wife is sick for being bewitched, to the conjurer: "you have bewitched her." But the conjurer opposes denial [argues]: "not I did bewitch (her)! She had become sick (before)!" conjurer then so said. Now dies the woman. They struck (and) killed the conjurer for this woman being bewitched (and) having died. And the people [maklaks] cremated the woman killed by the conjurer; the conjurer they brought him back to (his) lodge and cremated (him). 8

Shamans were ambiguous figures: capable of curing, but equally of turning their powers in malevolent directions. Here a man suspects his wife's illness to be the result of a shaman's sorcery. He finds the shaman, and brings him to his wife. For the Klamath, illness was assumed to result from intrusion of foreign objects, for example through a sorcerer's magic;

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8 Adapted from Gatschet's interlinear translation (Gatschet 1890: Pt. 1:68-69.)
accordingly, the shaman's cure involves "sucking out" such objects, which are conspicuously exhibited in the course of treatment. However, the patient turns worse and dies, confirming the husband's suspicions. The shaman is killed, and—in keeping with Klamath practice—both bodies are cremated.

Myth

Myth telling was generally reserved for winter, when family groups had returned to the village settlements, and the harsh weather limited extensive travel:

the usual setting for Klamath myth-narration was the dark interior of a lodge, on a cold winter night when the earth lay snowbound. This was the season of social gatherings, the period when shamanistic performances drew many spectators of all ages together. (Stern 1956b:4)

While obviously myths are passed from older to younger generations, there is some evidence that myth-telling was particularly a female concern, and Stern has commented on "the common tendency for myths to be transmitted through the maternal grandmother" (Stern 1956b:4).9

The most significant figure of Klamath myth is Kmukampsh, the "ancient old man" and Klamath version of the "trickster-transformer" character common to much of North American myth (Stem 1953:164). Kmukampsh is the Klamath "culture hero, creator, ordainer of the present order." In one myth, Gopher and Kmukampsh together create the Klamath landscape through their play. Then,

Kmukampsh peoples the world with animals and, placing a characteristic material in each territory—obsidian for the Achomawi and Paiute, marble in the Shasta country, tules for the Klamath—from which mankind, it seems, arises. (Stern 1953:164).10

Kmukampsh is particularly lecherous, and a number of myths comment on the prodigious size of his penis. In a characteristic myth, Kmukampsh tries to seduce the wife of his foster son, Aisis. Kmukampsh uses his powers to raise Aisis into the sky, and then impersonates him before his wife. Eventually Aisis manages to return to earth, and Kmukampsh is tricked and

9 On the other hand, Gordon Bettels commented that in his experience it is primarily men who recount myths and tales.

10 A version is given in Ramsey 1977:185-86.
destroyed, only to come to life once again (Stern 1953:166).11

Among the other key figures of Klamath myth are coyote, skunk, bear, and owl. Probably the most popular figures are the paired Mink and his younger brother, Weasel (or Old Marten and Weasel).

Mink is clever and resourceful, a warrior, "tricky," but consistently just in the roles he plays. Like a shaman, "he knows everything that happens." . . . Weasel, on the other hand, is the marplot, "always getting into something." . . . Mischievous, curious, a restless bundle of random activity, [he is] a "kid brother" who wants to try what Mink is doing, and fails in the attempt. (Stern 1953:161)12

Compilations of Klamath myth are given in Gatschet 1890; Barker 1963a; and Ramsey 1977. For a summary of the major Klamath myths, see Stern 1963b. Several Klamath myths concern Crater Lake (see chap. 4).

Post-Contact Life

The Klamath felt the influence of Euro-Americans well before extensive exploration and settlement reached the Klamath Basin. By the early nineteenth century the presence of Hudson's Bay Company traders along the Columbia River served both to expand native trade networks and to arm many of the Sahaptin tribes of that region. The Klamath encountered Hudson's Bay personnel beginning in 1825. Nonetheless for several decades the Klamath remained relatively isolated from the Euro-American presence centered on the Columbia (Stern 1956a:230-32).

In the 1840s the American expeditions led by John C. Fremont marked a new era, in which the goal was conquest and subjugation of the Indian peoples, rather than merely exploration and trade. Changing conditions drew the Klamath into sporadic though unsuccessful warfare against white settlers. At the same time, the wealth that could be gained through slave raiding and trading provided greater incentives for warfare against other Indian tribes. These factors led to a series of changes: greater prestige for leadership in warfare, a more permanent pattern of leadership, and "a heightened sense of Klamath political, as well as cultural, integrity" (Stern 1956a:241).

Over the next two decades the white presence in southern Oregon, military and civilian, steadily increased. In 1864 a treaty was negotiated, not only with the Klamath but

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11 The myth of Krukampsh and Aisis is given in Gatschet 1890:1:94-97.

12 For a comparative perspective on the elder/younger brother pair in Plateau myth, see Sapir 1909:34, n.1.
with the Modoc and a group of Northern Paiutes as well, ceding vast territories to the federal
government, and creating in compensation a reservation of approximately 1,100,000 acres.
This established the federally recognized Klamath Tribe, bringing together Klamath, Modoc,
and Paiute on what had been exclusively Klamath territory (Stern 1956a; Kappler et al. 1904-
1941:2:865-868; Ruby and Brown 1986:91). This event began a radical transformation of the
Klamath way of life.

As a result of the 1864 treaty the Klamath had to contend with a new authority, the
U.S. Bureau of Indian Affairs. Here as elsewhere the Bureau sought to transform Indian
culture. As Indian Commissioner Thomas J. Morgan, in 1889, acknowledged the Bureau's
long-standing policy: "The Indians must conform to 'the white man's ways,' peaceably if they
will, forcibly if they must" (in Hagan 1988:61). For the Klamath, as Stern has noted, this
policy "effected sweeping social change on the reservation, levelling the nascent class
distinctions by freeing slaves as full members of the reservation and banning polygyny, a
prerogative particularly of the wealthy" (Stern n.d.:53). More broadly,

An enforced culture change began with the treaty. There was as a result proscription
of the shaman's ecstatic curing activities and an intensity of Christian missionization.
Other introductions included a new technology, White education in reservation
boarding schools, a new status in relation to an established administrative agency, and
new concepts of property, society, and political tribe. (Spencer 1952b:219)

The Klamath historian and former tribal chairman Lynn Schonchin described the change in
these terms:

The Klamath experienced the situation of being bound to the land in a different sense.
In the aboriginal sense, they were bound to the land by birth because it provided
subsistence. Now, they were bound to a reservation by law. This also changed the
way in which they lived. Cultural practices were forbidden, no longer could they use
the sweatlodge, no longer could they go to the mountains and streams on power
quests, no longer could they practice their religion, even their language was forbidden.
Yet, because of the strong cultural foundation they had, they adjusted to the new
society, and adopted its practices. (Schonchin 1990:150)

It is a testimony to the strength of Klamath culture that, despite the government's best efforts,
the Klamath language and many significant elements of Klamath tradition survived.

Among the reactions to this policy of forced culture change was the enthusiastic
acceptance of a series of millenarian movements: in 1871 the Ghost Dance and in 1874 the
Earthlodge Cult. Both movements taught that if proper ritual were followed, the dead would
return and a new era of felicity would begin for the Indians. These movements carried at
least an implicit anti-white sentiment, at times becoming overt in doctrines predicting the
disappearance of the whites as part of the predicted world transformation. In the mid-1870s
the Dream Dance appeared. This had a different character: rather than offering millenarian
images, it provided a new vehicle for traditional (and officially prohibited) shamanistic performance (see Spier 1927a; Nash 1937; DuBois 1939:11-12). The Indian Shaker Church, a syncretic religious movement originating on Puget Sound which combined traditional and Christian elements, came to the Klamath Reservation in 1914. It remained influential there for several decades, and retains a small but active following today (Barnett 1957; Stern 1966:223-37; Amoss 1990).

The modern Klamath Reservation has had a complex history. Tribal boundaries have been repeatedly redrawn, and complex schemes of compensation undertaken (Ruby and Brown 1986:90-95). The General Allotment (Dawes) Act of 1887, intended to break up tribal holdings and convert traditional Indian peoples into Americanized farmers, proved comparatively ineffective on Klamath Reservation. The Klamath Reservation lands consisted largely of timber, inhospitable to farming, and in any case too valuable to be declared surplus and sold to outsiders. As a result, from early in the twentieth century tribal members received substantial income from timber operations (Stern 1961:172-73). The comparative wealth this allowed served as an effective goad to culture change, and in particular to the abandonment of much traditional economic activity:

From 1913, tribal members began to enjoy dividends from the cutting of tribal timber, in the form of semi-annual per capita payments. They also saw the mushroom growth of mill towns upon the face of the reservation, where sizeable bodies of whites, far exceeding the total tribal membership, lived under state jurisdiction and offered a scale of living previously beyond ken and reach of tribal members, but now close and seemingly attainable. (Stern 1961:173)

In 1955 the Klamath Tribe had 2118 enrolled members (Stern 1966:316). Over time, an increasing number of tribal members have moved from the reservation. While at the turn of the century roughly ten percent lived off the reservation, by 1958 over fifty percent did so (Stern 1966:185). Of these absentee tribal members, about a quarter lived in Klamath County in towns near the reservation, while others "were scattered throughout areas of southern Oregon and northern California where Klamath had long had ties" (Stern 1966:185).

The most dramatic event in the history of the Klamath Reservation came in 1954, with the passage of Public Law 587, which terminated the Klamath Reservation, and ended the Klamath tribe as a federally recognized entity. (The Western Oregon Termination Act, also passed in 1954, terminated among other groups the Confederated Tribes of the Grand Ronde Community and the Confederated Tribes of Siletz Indians, both of which included descendants of Takelma, Molala, and Upper Umpqua peoples, and the Cow Creeks, a group of Takelma descendants.)

The policy of termination—while ostensibly intended to benefit Indian peoples by allowing them to escape from a stifling federal paternalism—proved extremely destructive (see Nash 1988:270-72). In the Klamath case, compensation was most commonly administered through an elaborate series of court-mandated trusteeships. Most of the former
reservation lands were purchased by the federal government (at below-market prices), from which the Winema National Forest was created in 1961. As one team of economists judged the results, "It appears that individual Klamath received few lasting economic benefits from termination. For the majority, termination simply meant substitution of private for federal paternalism," privately administered trusts replacing federal bureaucracies (Trulove and Bunting 1971:17).

Despite these events, a tribal political organization survived the termination process. In the 1970s and 80s the tribal organization achieved a number of victories which strengthened the capacity of the Klamath to endure as a people. In 1974 the U.S. Supreme Court ruled that Klamath fishing and hunting rights granted by treaty survived the termination process (Kimbol v. Callaghan). In 1979 another legal victory guaranteed minimum stream flows in the Klamath River to protect fish and wildlife. In 1986 Congress rescinded the 1954 termination by reestablishing the Klamath as a federally recognized tribe, thus making the tribe and its members eligible for wide range of medical, educational, and economic opportunities (Schonchin 1987).

THE TAKELMA

Introduction

The territory of the Takelma lay southwest of Crater Lake, centering on the upper reaches of the Rogue River and its tributaries. The Klamath, whose language fell within the Penutian phylum, were found to the east, across the Cascades. To the north were the Upper Umpqua and southern Molala, whose lands probably extended slightly south of the South Umpqua River, but not as far as Cow Creek, which by most accounts lay within the northern reaches of Takelma territory. To the south were the Shasta, speaking a language belonging to the postulated Hokan phylum of California. To the west were Athapaskan speaking groups; those in immediate proximity to the Takelma were found along Galice Creek and the lower reaches of the Applegate River.

Boundaries between Takelma and Shasta, and between Takelma and Athapaskan groups have been a matter of long controversy (see Spier 1927b; Berreman 1937:27-29; Gray 1987:16-26.) Roland Dixon's Shasta informants suggested that Shasta territory extended through the Bear Creek Valley as far north as Mt. McLaughlin and Table Rock, at the mouth of Bear Creek (Dixon 1907:386), a view generally accepted by Silver (1978:211). Other scholars assume that traditionally Takelma territory extended through much or all of the Bear Creek Valley. As D. L. Kendall has noted, "Takelma traditions, village names, and the diversity of Takelma dialects within the disputed region point to a long Takelma occupation"
Gray (1987:18) has argued for "a Shasta/Takelma boundary in the Bear Creek Valley near Ashland at the time of Euro-American contact," drawing on both historic documents and unpublished ethnographic materials.

Edward Sapir, the main ethnographer of the Takelma, concluded that they inhabited an area "perhaps as far west as Illinois river" (Sapir 1907a:252), a view affirmed by other scholars (Kendall 1990:589-90). This would make the Galice and Applegate Athapaskan groups isolates within a larger Takelma territory. In contrast, Gray (1987:20-26) has argued that in their western reaches the Takelma were found north of the Rogue River, thus not extending into the Illinois Valley. The territory of the Galice and Applegate Athapaskan groups would in this view have been continuous with other Athapaskan groups found to the west as far as the Oregon coast.

Takelma speakers were divided into at least two culturally distinctive groups. The Takelma proper, or lowland Takelma, are generally thought to have occupied the northern and western portions of Takelma territory, predominantly north of the Rogue River. To the southeast were the Latkawa, or upland Takelma, whose territory lay predominantly east of the Bear Creek Valley (Gray 1987:20; Kendall 1990). The two groups were distinguished dialectically, but also materially, for the Latkawa occupied a harsher, upland environment with a correspondingly sparser diet. The Latkawa were the more warlike, making raids on the lowland Takelma "to procure supplies of food and other valuables" (Sapir 1907a:252).

The Takelma language falls within the Penutian phylum. Takelma appears to have been a linguistic isolate within a larger Takelman family, most closely related to the Kalapuyan languages of the Willamette Valley (Thompson and Kinkade 1990:35, 41). Sapir noted that "linguistically they are very sharply distinguished from their neighbors, their language showing little or no resemblance in even general morphologic and phonetic traits to either the Athapaskan or the Klamath" (Sapir 1910:673). Four or five dialects have been identified (Kendall 1990:589). The last native speaker of Takelma was apparently gone by 1945 (Thompson and Kinkade 1990:41). (For the basic linguistic study, see Sapir 1922.)

The tribe was identified as the Takilma by Albert Gatschet, subsequently adopted by J.W. Powell in his linguistic handbook (Powell 1891:197). The term Takelma is now standard, being a closer rendering of the native term of self-reference, meaning "person from Rogue River." The term "Rogue Rivers" has been used inconsistently and confusingly, particularly in nineteenth century works, sometimes referring to the Takelmas specifically, more commonly to all tribes of the Rogue River area, including Takelmas, Shastas, and Athapaskan groups (Kendall 1990:592).

James Mooney estimated the aboriginal (i.e., 1780) Takelma population at 500, a figure Kendall suggests was too low. Censuses conducted in 1852 and 1853 set the figure between 1000 and 1100. However, so rapidly was Takelma society overturned by Euro-American settlement that in 1884 J.W. Powell estimated the Takelma to number only twenty-seven (Kendall 1990:592).
The experience of the Takelma mirrored that of other Indian groups in southwest Oregon, and in fact, in most regions of the United States. As Stephen Cornell has pointed out, Euro-American settlement overwhelmed Indian communities—by introducing new diseases, by undermining traditional tribal economies, and by warfare (Cornell 1988:52-53). The combined effects, as in the case of the Takelma, were often disastrous:

Indeed, under the circumstances some [Indian] nations simply disappeared. Others, their numbers vastly reduced, found their social organization by necessity simplified: villages ceased to exist, while individual clans were extinguished or had so few survivors that they were forced to join others less affected by the decline. The same thing happened to entire communities. Driven by disease and warfare to the brink of extinction, they were absorbed by neighboring or related peoples. Not only were Indian numbers thus reduced, but disappearance and remnant consolidation led to a decline in the number of distinct Indian groups. (Cornell 1988b:53)

Adaptation

In environmental terms, the territory of the Takelma was transitional, between the dryer, warmer environment of north-central California and the wetter, cooler environment of the Willamette Valley. The Takelma relied on two plant staples: acorns and camas. The Takelma favored acorns of the black oak (*Quercus kelloggii*), as did the Shasta and other northern California groups. They also collected camas (*Camassia quamash*), as did the Kalapuyan groups of the Willamette Valley.

The Takelma ground acorns using a hopper mortar. Here a funnel-shaped basket, open at the bottom, held the acorns on a flat stone slab while they were pounded with a stone pestle. The resulting meal was sifted.

[It] was then placed on carefully washed sand, seathing water being applied to extract the elements which impart the bitter taste to the acorn. The acorn dough . . . thus obtained was boiled in a basket-bucket . . . constructed of hazel shoots and split roots, the usual Pacific coast method of applying hot stones into the basket being employed. The final result was a sort of mush that here, as farther south in California, formed the most typical article of food. (Sapir 1907a:258)

Camas roots were dug with a hardwood digging stick, and then roasted in earthen ovens:

A pit was dug into the earth and filled with alder bushes which, when fired, served to heat the stones above. On top of these hot stones were placed the roots themselves, a layer of alder bark intervening between the two. The whole was covered with earth and left to roast. The succeeding day, if the roots were not yet well cooked, a fire
was again built, and so on until the roots were thoroughly roasted. (Sapir 1907a:258)

The resulting mass was mashed into a dough, and in a flat, pan-like form, stored for the winter.

Manzanita berries were made into a flour, mixed with sugar-pine nuts. A variety of seeds were also collected. Tobacco was cultivated, the sharing of tobacco smoke having for the Takelma as for other Indian groups a ritual significance (Sapir 1907a:258-59).

A variety of trout and salmon were caught, providing another staple of the Takelma diet. Baskets of roasted salmon formed important winter provisions. The Takelma also caught freshwater mussels. Deer were hunted, chiefly by driving them into enclosures (Sapir 1907a:259-60).

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<th>TABLE 3 - 4</th>
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<tr>
<td><strong>TAKELMA RESOURCES</strong></td>
</tr>
<tr>
<td>acorn</td>
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<tr>
<td>manzanita berries</td>
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<tr>
<td>sugar pine (cambium)</td>
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<tr>
<td>sugar pine (nuts)</td>
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<tr>
<td>tobacco (cultivated)</td>
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<tr>
<td>trout (various spp.)</td>
</tr>
<tr>
<td>fresh water mussels</td>
</tr>
<tr>
<td>rabbit</td>
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<tr>
<td>caterpillars</td>
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*major resources in italics*

sources: Sapir 1907a; Gray 1987

Much as with the Klamath, seeking this range of resources required mobility in the spring and summer, as groups moved from one resource area to another. As one of J. P.
Harrington's informants noted, "in summer Indians travelled all around" (in Gray 1987:38). Temporary brush shelters provided sufficient protection. In contrast, through the winter months the Takelma remained in permanent settlements, generally rectangular, semi-subterranean structures with floors of tamped earth, a door above ground level, and a gable roof (Kendall 1990:591). As Gray noted, "permanent winter villages were generally located in lower-elevation river and creek valleys near the confluence of two streams, or near sites of economic importance such as early spring vegetable sources or traditional fishing spots" (Gray 1987:38)

Frances Johnson described for Sapir the process of constructing a winter house:

The people are making a house. A post they set in the ground, and here again they set one in the ground, yonder again they set one in the ground, in four places they set them in the ground. Then also they place beams across on top in four places, and above (these) they put one across just once. And just then they make the house wall; and then on top they place the house boards, those they make out of sugar-pine lumber. Then they finish it on top, on either side they finish it. Then they make the door, and on top they make a hole for the going out of the smoke. And then they make a ladder, they notch out (a pole), for going down to the floor they make it, and the house wall they make.

Then they finish it, all cleaned inside. Now rush mats they spread out inside, on such the people sit. The fireplace is in the center, so that they are seated on either side of the fire. In that way, indeed, was the house of the people long ago; in winter their house was such. But in summer they were sitting like now [i.e., in the open], not in the house. Just a brush shelter they placed around, so that the fireplace they made in the middle. Thus they dwelt in summer, not as in winter in a house. (Sapir 1909:177)

Social Organization

Takelma social organization resembled in broad terms the pattern described for the Klamath. There is no evidence of clan or totemic groups (Sapir 1907a:267). Kinship was reckoned bilaterally, i.e., through both mother's and father's lines. Political organization appears to have been limited to the village level (Sapir 1907a:267). Kendall noted eighteen Takelma villages, found chiefly along the Rogue River (Kendall 1990:590; see also Dorsey 1890:235). Despite the seeming independence of each village, Gray has argued that "there is circumstantial evidence of the Takelma having possessed a strong sense of identity to a larger social group. . . . based on . . . dialect, nuclear territory, dietary preferences, and food procurement techniques" (Gray 1987:39).

Wealth was the essential factor underlying status distinctions. Ample bridewealth
payments—more precisely, the size of payments made by one's father to one's mother's father—were essential for a child to boast a respectable pedigree. Such payments continued after the initial marriage transaction:

Not infrequently the son-in-law, living perhaps in a far distant village, would load his canoe with presents of dried salmon or the like for his wife's parents, and visit them for a period in company with his wife. . . . After the birth of the first baby an additional price was paid to the girl's father in the shape of a deer-skin sack filled with Indian money [dentalia]. This payment was considered as equivalent to the buying of the child and was metaphorically referred to as "making its pillow." (Sapir 1907a:275)

Takelma society shared the general Northwest Coast pattern in making a rigid distinction between freemen and slaves:

If we survey Northwest Coast society as a whole, we find that two great social classes existed everywhere: freemen and slaves. The distinguishing criterion, condition of servitude (whether by capture, birth, or debt does not matter here) placed every individual in one or the other group. . . . Slaves, like the natives' dogs, or better still, like canoes and sea otter skins and blankets, were elements of the social configuration but had no active part to play in group life. (Drucker 1966:135)

The threat of slave raiding was quite real. J.P. Harrington quoted the Takelma informant Frances Johnson as noting that "it was dangerous to leave children alone, for people took and sold children in old times, in war times" (in Gray 1987:40).

In contrast to the categorical distinction between freemen and slaves, the social distinction between rich and poor freemen was more fluid. Nonetheless, the possession of wealth clearly brought with it greater political influence. As Sapir noted, "Anyone who was comparatively wealthy could be called a 'chief' . . . there does not seem to have been a recognized head chief, though in times of war some one man probably was so considered" (Sapir 1907a:267).\footnote{To speak, as does Kendall (1990:591), of three levels in Takelma society—the rich, ordinary freemen, and slaves—appears misleading.} A variety of markers served to distinguish the wealthy:

In addition to the bride price paid for one's mother, marks of wealth and social status included quality of dress and house, number of wives and servants, strings of dentalium shells, and the quantity and quality of other possessions. (Kendall 1990:591)

Wealth likewise served as the key to the settlement of disputes. Sapir recorded the following narrative:

People who are related to each other by their children's marriage slay one another, then they must "pay to one another each other's bones," dead men's bones they pay.
Dentalia it is that used to be termed "dead men's bones." . . . Then they make speeches to one another and a go-between is hired. . . . "Give me blood-money, since you have slain me [i.e., my folks]" people said to each other. "Give me of that kind [pointing to strings of dentalia], give me 100 worth!" the slayer is told. But he is not willing.

The two sides argue back and forth, through the go-between. Eventually a settlement is reached, with each side offering something to the other:

"You shall not get even with me, I shall give you something; friends we are" says the slayer. . . . Now on either side they proceed to each other and give each other (presents). The slayer gives most of all, while he (who has been injured) gives just a little bit. Thus in times long past people acted when they slew one another. (Sapir 1907a:270-72)

As was noted, the Latkawa frequently raided the lowland Takelma. The Takelma traded with, fought, and married the Shasta. They also fought the Klamath and the Galice Creek Athapaskans (Kendall 1990:589-90). "On the whole," Sapir judged, "the Takelma seem to have been a rather warlike tribe" (Sapir 1907a:272).

Ritual and World View

Data on Takelma ritual are very limited, deriving principally from one informant, Frances Johnson (Sapir 1907b:33). In the spring blessing or increase ceremonies were performed to mark the first run of salmon and the appearance of acorns. At least in Mrs. Johnson's recollection, dances were performed on only three occasions: for girls at puberty, at time of war, and as part of shamanic curing (Sapir 1907b:33).

The girl's puberty ritual involved five nights of feasting and round dances, with numerous taboos placed on the girl's behavior, for example, being forbidden to gaze at the sky (Dixon 1907a:273-74). In this and many other respects Takelma practice closely resembled the puberty ceremonies of many northern California groups, for example the Shasta, the Konomihu, and the Karok (Dixon 1907:457-61; Kroeber 1925:106; Roberts n.d.:1, 3-4).

Burial was the normal funeral practice:

When a man died, he was decorated with dentalia and other Indian finery, wrapped in a deerskin blanket, and buried in the ground. Acorns were buried with him, and a great number of baskets were strewn over the grave. . . . A man killed in war away from home could not be buried in the regular way; in such a case it was customary to burn off the flesh of the corpse, gather up the bones, take them home, and bury them there with the usual valuables. (Sapir 1907a:275)
The vision quest complex had a somewhat different character among the Takelma than, for example, among the Klamath. Here as elsewhere spiritual powers depended upon possession of guardian spirits. However, for the Takelma as for most or all California groups, the vision quest was not a near-universal practice, but was the exclusive province of medicine-men or those aspiring to such a role (see Benedict 1923:67-68). "Guardian spirits," Sapir noted, "were not possessed by the great run of people (or yap' a gamaxdi, 'raw people,' as they were called), but were vouchsafed only to the shamans" (Sapir 1907b:42).

The Takelma recognized two types of curers. The goyo, who could be either male or female, was similar in powers to the Klamath qyoqs. The goyo was an ambiguous figure: both curer and instigator of illness. Through his dancing the goyo could cure, removing the intrusion causing illness; at the same time, he could harm, by inserting "pains" in a victim, or by merely "wishing" an illness. This provided a nearly universal explanation for illness:

No bodily ill, not even death, was the result of purely natural causes, but was in practically every instance due to the malice of some evil-minded person, either a shaman (goyo) or one who had hired a shaman to inflict disease upon some hated person. (Sapir 1907b:40)

The Takelma recognized another type of curer (somloholxa's), who drew on different spirit powers, did not cause illness, and worked not by dancing but by singing a medicine song (Sapir 1907b:44).

Myth

Takelma myth resembles that of northwestern California (e.g., Shasta, Karok) in "the absence of a creation myth and the presence of a well-defined culture-hero myth," i.e. a narrative describing the bringing of culture to a people (Sapir 1909:6). As in much of California, coyote appears in Takelma myth as a trickster, a figure "greedy, erotic, imitative, stupid, pretentious, deceitful" (Leach and Fried 1972:1124; Sapir 1909:6).

Daldal, the dragonfly, is the Takelma culture-hero. His actions set down the patterns which the people follow ever after:

Travelling east up Rogue river, he overcomes and transforms the various wicked beings that threaten continual harm to mankind, sets precedents for the life of the Indians, and, after his work is accomplished, transforms himself into a mountain. (Sapir 1909:34, n.1)

In one passage, Daldal assigns the modes of life appropriate to Coyote on the one hand, humans on the other:
Now Coyote snatched up the fishing-net. "In the water I shall catch salmon," Coyote thought to himself, but he caught only mice in the fishing-net. Again he threw it forth into the water, but caught only gophers. "Eh! you shall not catch salmon," he was told. "In the earth you shall hunt for gophers, mice shall you, for your part, catch," did Daldal say. Then he said, "People shall spear salmon, they will go to get food, to one another they will go to get food; one another they will feed, and they shall not kill one another. In that way shall the world be, as long as the world goes on." (Sapir 1909:42)

Post-Contact Life

In 1846 the Applegate Trail opened the Rogue Valley to easy access by Euro-American settlers. The discovery of gold in 1851-52 brought thousands more to the valley. Between 1853 and 1856 the Takelmas, Shastas, and Athapaskans were enmeshed in a series of skirmishes and massacres which came to be known as the Rogue River War (see Beckham 1971). The Takelmas, once attacked, fought fiercely against the miners and settlers, a fact which led to their destruction in large numbers. As Sapir noted, "their rapid extinction is due in part, at least, to the hostile relations in which they stood to the white settlers" (Sapir 1907a:272).

In the years 1856 and 1857 most of the surviving Takelmas were relocated together with many other tribes to northwestern Oregon—first to the Grand Ronde Reservation, and then to the Siletz Reservation (Beckham 1990:182-83). J.O. Dorsey, visiting the Siletz Reservation in 1889, encountered twenty tribes (or sub-tribes) now inhabiting the reservation, but was surprised to find no Indians in their native attire. About thirty houses could be seen from the agency boarding-school, several of which were built by the Indians. Farms were fenced in. Oats, potatoes, and many vegetables were cultivated. . . . As more than twenty tribes, each having its own dialect [i.e., language], have been consolidated on this reservation, they are obliged to use a common language. So all speak Chinook jargon, and many are learning English. (Dorsey 1889:55)

The result of forced relocation was to deprive the Takelmas (and all other relocated tribes) of the material basis of their traditional culture: a distinctive environment, a mode of life, a pattern of human relationships, and a common language. As Kendall rightly observed, "interspersion among people of other tribes was a major factor in the destruction of the Takelma as a people and in the loss of their culture" (Kendall 1990:592).

One response to the destruction of Indian cultures and ways of life was the growth of new religions. Paralleling the events at Klamath Reservation, during the 1870s and 1880s
many Indians at Siletz Reservation became participants in a sequence of revitalistic or millenarian movements: the Ghost Dance, the Earth Lodge Cult, and the Dream Dance (DuBois 1939:25-35). In the 1920s the Indian Shaker Church gained supporters at Siletz (Sacket 1973; Amoss 1990).

The contemporary Indian group with the most direct ties to the aboriginal Takelma is the Cow Creek (officially, the Cow Creek Band of Umpqua Tribe of Indians). As noted above, Cow Creek appears to have been within the northern fringe of Takelma territory. In 1853 Joel Palmer, Superintendent of Indian Affairs, negotiated a treaty with the "Umpqua—Cow Creek Band." In this treaty, ratified by the federal government in 1854, the "Cow Creek" ceded lands roughly bounded by Myrtle Creek, Day's Creek, and Cow Creek. Compensation was purely nominal. In return for these lands they were to receive immediately twenty blankets, eighteen pairs of pants, eighteen pairs of shoes, and certain other articles of clothing; and subsequently eleven thousand dollars to be paid in kind, in twenty annual installments, "in blankets, clothing, provisions, stock, farming implements, or other such articles" (Kappler 1904-41:2:606).

Although the Cow Creeks have been ascribed variously to the Athapaskan Upper Umpqua and to the Takelma, Indians from both tribes appear to have been included in this designation. As an ethnic or tribal unit the "Cow Creek" was a creation of the treaty process. In a more profound sense, however, the Cow Creeks created themselves as a people through their resistance to Euro-American domination. In the 1850s through 1870s these Indian families retreated into the hills, for example near the Rogue-Umpqua divide or on upper Cow Creek, eluding both the murderous attacks of white settlers, and the more subtly threatening efforts of the federal authorities to place them on the Siletz Reservation (Beckham 1986:107-8).

For many of the Cow Creeks ties with tradition have been maintained through social networks and periodic gatherings. For example, many families gathered every year in late summer at the "Huckleberry Patch," in the Cascade uplands. One Cow Creek elder recalled some of the ritual which accompanied travel to the Patch:

When we reached the highest ridge there was an opening where the wind had blown the scattered trees so that they leaned kind of sideways. At this spot, everybody got off their horses and rested. This is where prayers were said as our people believed that the higher up you got, the closer you were to the "Great Spirit" . . . . We prayed for good weather, lots of berries and lots of good, fat deer. When prayers were over, we all hooped and hollered and danced around. (Emaline Young, 1980)

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14 Young and Cutsforth (1928:283) define the Cow Creek as "really a branch of the Umpqua who formerly lived on the Cow Creek." Beckham categorically identifies the Cow Creeks as Takelma (Beckham 1986:35; 1990:182).

15 Sue Shaffer, Cow Creek Band, interview 8/3/90.
The Western Oregon Termination Act (68 U.S. Stat. 724) of 1954 ended the recognized status of the Cow Creeks and numerous other western Oregon groups. As with the Klamath Tribe, termination of the western Oregon groups had serious negative consequences. In 1982 Congress restored the Cow Creeks as a federally recognized tribe (Beckham 1990:188). In 1984 the Cow Creeks received one and one-half million dollars in compensation for the lands taken in the 1853 treaty. The tribe chose not to divide the monies among its members, as many other groups had done, but to place the settlement in a permanent endowment, to support through the interest earned "programs in education, housing, economic development, and benefits" (Beckham 1990:186; see also Ruby and Brown 1986:66-68). As of 1990, approximately 850 persons were enrolled in the Cow Creek Band, most residing in Oregon's Douglas, Josephine, and Jackson Counties.

THE UPPER UMPQUA

Introduction

Ethnographic data on the Upper Umpqua is extremely sparse. No serious ethnographic account of the Upper Umpqua exists. Surveys dealing with the Athapaskan peoples of southwestern Oregon (notably Drucker 1937) do not extend their coverage to the Upper Umpqua.16

The people identified as the Upper Umpquas inhabited the middle reaches of the Umpqua, including the main stem of the river somewhere above Scottsburg, most of the North Umpqua River, and the Umpqua valley (Berreman 1937:30; O'Neill 1989a:7; Miller and Seaburg 1990:581). Horatio Hale, in his report on the U.S. Exploring Expedition of 1838 to 1842, situated them as follows:

The Umkwa inhabit the upper part of the river of that name, having the Kalapuya on the north, the Lutuami (Clamets) on the east, and the Sainstkla (Siusla) between them and the sea. (in Dorsey 1884)

More precisely, the territory of the Upper Umpquas bordered that of the Upper Coquille and the Coos to the west, the Lower Umpqua to the northwest, the Kalapuyan groups to the north, the southern Molalas (along the flanks of the Cascades) to the northeast, the Klamath to the east (across the Cascades), and the Takelma to the south.

16 For a bibliographic survey of southwest Oregon Athapaskan studies, see Miller and Seaburg 1990:587-88.
The Upper Umpquas spoke a distinct Athapaskan language, and on that basis are sharply contrasted with the tribe which occupied the lower stretches of the Umpqua River (the Lower Umpquas), whose language is believed to have formed an isolate within the Penutian phylum (Thompson and Kinkade 1990:31, 34-35). J.O. Dorsey noted this linguistic distinction in the 1880s:

There are two kinds of Umpquas: (A) Indians of the Athabaskan Family, the Upper Umpquas, also Valley Umpquas. (B) Indians related to the Alseas, Yaquinas, and Siuslows, the Umpquas of the Bay and Lower part of Umpqua River, the Lower Umpquas. (J.O. Dorsey 1884)

Hale, encountering the Upper Umpquas in the 1840s, estimated their population at 400, recognizing that they had already suffered high mortality due to epidemics introduced by Euro-American conquest (in Hodge 1910:2:866). On the Grande Ronde Reservation, to which they were removed in the 1850s, their numbers were estimated at 84 in 1902, and 43 in 1937 (Ruby and Brown 1986:254). No Upper Umpqua speakers are now known (Pierce and Ryherd 1964:142-43).

Adaptation

The environment and resource strategy of the Upper Umpquas was broadly similar to that of the Takelmas of the Rogue Valley to the south. Deer was an important resource; George Riddle described seeing a communal deer drive, "with Indians strung along the sides of the canyon. . . . noise was made to direct the deer to where the ropes were located" (in O'Neill 1989a:11). Waterfowl and grouse were also trapped (O'Neill 1989a:11).

Fish presumably formed a large element of the Upper Umpqua diet, for the fish runs along the Umpqua are plentiful. The Umpqua supports "lamprey, rainbow trout, sucker, cutthroat trout, shiner, Umpqua squawfish, dace, and sculpin," as well as freshwater mussels (O'Neill 1989a:6). However, the critical resources were the runs of anadromous fish: Chinook salmon, Coho salmon, and steelhead. The seasons during which these anadromous fish return to their spawning grounds overlap as follows:

Chinook salmon spawn during September through January. . . . Coho salmon are in the system from the last part of September through the middle of February. . . . Steelhead enter the river in November and remain until May. (O'Neill 1989a:5-6)

George Riddle witnessed Indians fishing along Cow Creek in the 1850s, immediately south of Upper Umpqua territory. He noted that "the silver salmon came in such multitudes in the fall runs that they were easily taken." At the falls, dams were created by blocking channel openings with sticks. Unable to cross the falls because of the dam, salmon would be
carried back into "traps with hazel rods woven together with withes forming a basket about
ten feet long and three feet in diameter at the upper or open end." Riddle also commented
that "The Indians would work two such traps and when the river began to raise [sic] in the
fall they would take several hundred of a night" (in O'Neill 1989a: 12). Fish were also
trapped in weirs, "slanting dam[s] of stone and stakes" built at the upper ends of rapids,
which collected the fish, allowing them to be easily speared (in O'Neill 1989a: 13).

Much as with the Takelma, three plant resources were central to the Upper Umpqua
diet: acorns, camas, and tarweed (Madia spp.) (O'Neill 1989a: 13, 121). Fields of tarweed
would be burned to remove the tarry coating. Women would then beat the seeds from the
pods, collecting these in baskets. The tarweed seeds were pounded in hopper mortars, and
parched (O'Neill 1989a: 14).

In broad terms, the Upper Umpqua appear to have followed the same settlement
pattern described for other groups of the region, residing in settled villages near rivers in the
winter, and travelling through the uplands for hunting and gathering through the balance of
the year. Richard Hanes has suggested that villages were sited to have convenient access to
acorns, camas, and fish. If so, villages could have been occupied throughout the year, with
smaller groups leaving for camps during the summer to seek berries and game (O'Neill

Social Organization

Detailed information on Upper Umpqua settlements is lacking (Miller and Seaburg
1990: 51). One pioneer in the area, J.A. Buchanan, recalled that,

The principal village of the Upper Umpquas was on the Calapooia (Creek) at Camas
Swale, called Hewut. Other important villages were located at Elkton, Olalla, Camas
Valley, Kellog, Winchester, Yoncalla, and at Roseburg. (in O'Neill 1989a: 10)

The Athapaskan groups of southwest Oregon, including the Upper Umpqua, had a
patrilineal emphasis in their political organization, contrasting with the bilateral organization
of Klamath or Takelma communities. Chieftainship in these Athapaskan groups was
"inherited patrilineally, subject to village consensus on the wealth reserves and personality of
the heir." The chief of a community "was involved in all financial transactions as the donor
of treasure, as an arbitrator, and as the recipient in a division of any acquired wealth" (Miller
and Seaburg 1990: 583).

Like the Klamath and Takelma, the Upper Umpqua had ranked societies differentiated
into slaves, commoners, and chiefs. The hereditary character of political leadership for the
Upper Umpqua, however, is evidence of cultural affinities with the Northwest Coast rather than with interior Oregon.

Myth

A few ostensibly Upper Umpqua myths have been collected by interested amateurs. It is difficult to assess the accuracy of these versions. One, described as the legend of Wolf, was summarized by W.K. Peery as follows:

It gives the account of the migration of the dead to the happy hunting ground under the leadership of Wolf. The way led over a natural bridge that crossed the Rogue and there a ramp from the milky way led to the heavens. They followed the milky way from that bridge to their destination.

A second, heavily westernized account ("Legend of the White Deer") appears to describe an epidemic among the Upper Umpqua, and the timely intervention of the Great Spirit, in the form of a white deer, to save a dying girl (Clark 1953:203-4).

Post-Contact Life

In broad terms the post-contact experience of the Upper Umpqua resembles that already described for the Takelma: attacks by encroaching Euro-Americans, displacement from their territories, and finally forced removal to reservations. Unlike the Takelma, however, the Upper Umpqua's peaceful demeanor was frequently remarked. Alexander Ross, the leader of a fur trading party, described this encounter with the Upper Umpqua in 1818:

Here our people fell in with numerous bands of natives, who were all very peaceable, but from their shy and reserved manners, and wishing to avoid the whites, it was evident that they had never been much in the habit of trading with them. Yet they made no objections to our people's hunting on their lands. The traders wished to traffic, barter in furs and to exchange horses with them; they also wished to get wives from them. . . but no inducement, no advances, could bring those natives into contact or familiarity with our people. (in Bakken 1973:5)

By 1854 their situation had been transformed by Euro-American settlement and

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17 Two Upper Umpqua myths concern Crater Lake, and are discussed in chapter 5.
hostility. Joel Palmer, Oregon's Superintendent of Indian Affairs, described the situation of the Upper Umpquas in these (somewhat ironic) terms:

On my route I visited several bands of the Umpquas. I found many of them wretched, sickly, and almost starving. Their habits being exceedingly improvident [!], and the winter unusually severe, they had been kept from perishing by the limited assistance afforded by a few humane settlers. (in Beckham 1986:96)

In November 1854 Palmer secured a treaty with the Upper Umpqua and Yoncalla, establishing a reservation near the mouth of Calapooya Creek. In 1855-56, amidst the renewal of the Rogue River Wars, the Upper Umpqua were removed—during a journey of great hardship—to the Grande Ronde Reservation (Beckham 1986: ch. 5; 1990:182-83; Ruby and Brown 1986:254-55).

**THE MOLALA**

**Introduction**

The culture, language, and history of the Molala are poorly documented.\(^{18}\) The Molala probably occupied the western slopes of the Cascades in a continuous distribution from the Mt. Hood area to the Umpqua Divide. Three supposed band divisions have been suggested: the Northern Molala, who appear to have occupied the Molala drainage near Mt. Hood; the Southern Molala, found along the Cascades in Douglas County; and (more tentatively) a third, intermediate in position, in Linn and Lane Counties, variously termed the Upper Santiam or Santiam band of Molala (Beckham et al. 1981:86).

The Northern Molala bordered the Tenino, Wasco/Wishram, and Northern Paiute to the north and east, and the Kalapuyan groups to the west (Frachtenberg 1911, Ethnology). Further south, in the Crater Lake region, the Molala adjoined the Klamath to the east, the Upper Umpqua to the west, and the Takelma to the southwest.

Various authors have hypothesized a recent movement of the Molala westward from east-central Oregon, under pressure from the Tenino or Northern Paiutes (see Mackey 1972; Murdock 1938:398; Ruby and Brown 1986:137). Nonetheless, this theory no longer appears strongly supported. Linguistic and ethnohistorical data imply a Molala occupation of the western Cascades before the nineteenth century (Rigsby n.d., 1969; Beckham et al. 1981:90-\(^{18}\)

\(^{18}\) The term also appears in twenty-six other spellings (Beckham et al. 1981:83).
92). Some archaeological evidence now suggests the existence of "an indigenous mountain people" (a Molala or proto-Molala population?) in the Cascades over a considerably longer period (E. Bergland, pers. comm. 1991).

The language of the Molala was long believed to be closely related to that of the Cayuse, a group of the southern Plateau. In 1846 Horatio Hale initiated this view by postulating a "Wailatpu" language family, encompassing Molala and Cayuse, apparently on the basis of certain close resemblances in vocabulary. This assumption went unquestioned until Bruce Rigsby reexamined the question in the 1960s (Rigsby 1966, 1969). Regarding the relation of Molala and Cayuse, Rigsby noted that,

the absence of a sizable number of inspectional resemblances in the comparative lexicon makes the few striking lexical resemblances there immediately suspect as borrowings in one direction or the other (Rigsby 1966:370)

He concluded that Molala was in fact an isolate within the Penutian phylum, and not closely related to Cayuse, though a degree of linguistic borrowing had occurred (Rigsby 1969:71-84; Rigsby n.d.).

After Euro-American conquest, the Molala rapidly dwindled in number. As Rigsby has noted, by 1891,

the total Molala population had been reduced to less than two score people . . . by epidemic diseases and other pressures arising from White settlement and dispossession of their lands. Most survivors were settled on the Grande Ronde Reservation and a few others lived among the Klamaths on their reservation to the south. There are now only a few people living who identify themselves as being of part-Molala descent. (Rigsby n.d.:1)

Adaptation

The Molala were distinctive in centering their adaptation on the flanks of the Cascades. As Rigsby noted,

The Molalas wintered in sites located along streams in the lower elevations, usually west of the Cascades, and they exploited the higher country for roots, berries, and larger game (deer, elk, and bear) at other times of the year. (Rigsby n.d.:2)

Frachtenberg's informant Steven Savage listed a number of Molala settlements, including one at the head of the Molala River, another "above Silverton," a third on Abiqua Creek ("Albiqua River"), and a fourth "close to Mt. Hood" (Frachtenberg 1911, Ethnology). In the summer, in
contrast, the Molala "mostly ranged [?] about from place to place" (Frachtenberg 1911, Ethnology).19

Winter houses were rectangular, with two doors, on opposite walls; houses were typically six to eight feet wide, twenty to thirty feet long, and five to six feet high. Summer shelters had no walls, but simply used a roof of fir-boughs (Frachtenberg 1911, Ethnology). Winter houses were built of cedar; first the roof was covered with cedar boughs, then with a second layer [?] of hemlock (Frachtenberg 1911, Texts, 9:1 et seq.)

The elements of the Molala diet—including deer, fish, camas, acorns, and berries—were broadly similar to those of the Takelma or Upper Umpqua (see Table 3 - 4). However, the Cascades orientation of the Molala would suggest a greater emphasis on hunting than would be the case for neighboring groups. A Clackamas woman, Victoria Howard, noted that at Willamette Falls (a significant center for intertribal trade) the Clackamas would trade eels, salmon, and other fish to the Molala in exchange for smoke-dried meat. She commented to Melville Jacobs: "all the Molala people did was hunt!" (Zenk 1976:35-36).

The value of hunting for the Molala is made explicit in the creation myth cited below, in which Coyote fashions the Molala people to be good hunters. All these data suggest that the Molala were somewhat more mobile in the food quest than were the Takelma or Klamath. As Frachtenberg noted, somewhat ambiguously, "not much of a social organization, being a nomadic tribe" (Frachtenberg 1911, Ethnology).

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19 Frachtenberg's notes are often difficult to decipher, hence the various ellipses and uncertainties in quotations from the MS.
Social Organization

On the basis of the information available, Molala social organization appears to have been broadly similar to that of other groups in the Crater Lake region. Small villages based upon a few families constituted the political units of Molala society. Winter dwellings might house several families. Steven Savage commented to Frachtenberg that, "Sometimes a home had 5 fire places with a[s] many smoke holes and sheltered about 5 families" (Frachtenberg 1911, Ethnology).

Leadership appears to have been formalized only in times of war. This is, at least, a plausible reading of Frachtenberg's notes on the topic:

They did not have any chieftain. Before war [?] they had one chief only. Chief as a rule appointed only in war time [---] of richest and bravest man. (Frachtenberg 1911, Ethnology)

The Molala reckoned descent bilaterally, and observed the levirate, allowing the
marriage of a widow to the younger brother of her deceased husband (Rigsby n.d.:2). As with the other groups considered here, marriage involved a payment of bridewealth. In one account given by Steven Savage, the girl's father demanded from his prospective son-in-law's family "two slaves and beads, one measure, [---] shells and dentalia shells" (Frachtenberg 1911, Texts 8:73).

The Molala, like other groups of the region, kept slaves. Frachtenberg noted:

Slavery extensive. . . . Molala never captured slaves themselves. They as a rule bought them from Klamath Indians. A slave worth about three lengths of beads. Slave could not marry a free woman. Killed when disrespectful. Slaves were [?] usually bought when young so that they could not run off. . . (Frachtenberg 1911, Ethnology)

The Molala intermarried with Kalapuyan groups to the west, with Chinookan groups along the lower Columbia, with Sahaptin groups such as the Umatilla and Tenino, and with the Klamath (Rigsby n.d.). The Northern Paiute, however, were apparently traditional enemies (Murdock 1938:398). Albert Gatschet has recorded an account of a Cayuse raid on the Molala (Gatschet 1877c; Mackey 1972).

**Ritual and World View**

Aspiring shamans sought power when young, travelling into the mountains to fast and dream. If successful, "the power tells him to dance and teaches him songs" (Frachtenberg 1911, Ethnology). This form of the vision quest, in which power resides in supernatural songs acquired through dreaming, closely resembles that of the Klamath. Dreams of rattlesnakes were portents of the shamanic vocation:

Whoever dreams of rattlesnake, he becomes a doctor, blood sucker [sucking doctor?] he becomes. From the head, black [?] blood he can suck out, and on the body he can suck out red blood. (paraphrase, Frachtenberg 1911, Texts 8)

Another element of dream symbolism foretells physical courage:

Whoever dreams of a black bear, he becomes a brave man. If he is stabbed, he will not die, always he gets well. Long ago the old timers (Molalas) . . . used to say this. (paraphrased, from Frachtenberg 1911, Texts 8)

The Molalas cremated the dead, burning the flesh off the corpse, and burying only the bones (Frachtenberg 1911, Texts 9:8).
Myth

Coyote, in the roles of both creator and trickster, figures prominently in Molala myth (see Frachtenberg 1911, Texts, vols. 1 - 7). One example is a creation myth describing the encounter of Coyote and Grizzly Bear:

I am going to tell you a story; you listen to me attentively. Long ago Coyote was staying there—a mountain he built, a high one (= Mt. Hood). Then Coyote and Grizzly Bear met. Grizzly said, "where are you going?" Then Coyote, from under here, told Grizzly: "that way I am going, up country (= upstream)." "Why do you go there?" Grizzly said. Coyote said, "I am making the world!"

Grizzly and Coyote decide to duel by swallowing hot rocks. Grizzly does so, but when Coyote's turn comes, he swallows strawberries instead, fooling Grizzly. Grizzly dies. Coyote skins him, cuts his body into little pieces, and scatters the pieces all over.

Then to the Molale country he [Coyote] threw the heart. Then he said, "Now the tribe of Molale will be good hunters . . . the Molales will not be bad (cross) fellows. They will all be good men. All the time they will be thinking about the deer." [Gatschet adds as a gloss: "They will think all the time, that they are on a hunt."] (Gatschet 1877c)

A key function of myth, as Bronislaw Malinowski noted, is to "strengthen tradition and endow it with a greater value and prestige by tracing it back to a higher, better, more supernatural reality of initial events" (Malinowski 1954:146). The Molala creation myth of Coyote and Grizzly Bear seems to function in this fashion, providing a cultural charter for the Molala's identity as a hunting people.

Post-Contact Life

The Molalas died in large numbers as a result of the diseases carried by Euro-American explorers and settlers. Based on contemporary evidence, the greatest losses probably occurred by the 1840s (for example, observations by Horatio Hale in 1841, cited in Beckham et al. 1981:94-95). This calamity was compounded by the fortunes of war: in 1847 an effort by the Molala to strike against the encroaching settlers ended in defeat and massacre. As Theodore Stern has related,

20 Paraphrased from Gatschet's interlinear (word-for-word) translation. An adaptation of Gatschet's text is given in Ramsey 1977:118.
the Molala leader, Crooked Finger, visited the Umpqua, Rogue River, Pitt River, Modoc, and Klamath, seeking recruits for an uprising, and succeeded in gathering together some 150 followers, men, women, and children. . . . The outcome, however, was disastrous for the Indians. The settlers in the vicinity of the Northern Molala had been forewarned; some of the local Indians joined them; and the combined force ambushed the hostiles as they advanced along Butte Creek, following them up the creek where they made another stand, and defeated them once more. (Stern 1956a:238)

In 1855 the Northern Molala, together with other tribes, signed a treaty ceding all of the Willamette Valley. Many were moved to a temporary reservation on Silver Creek. Later that year, as a result of the Rogue River War, many of the Southern Molalas were placed on the Umpqua Reservation, and were eventually removed with other groups to the Grande Ronde Reservation in northern Oregon (Ruby and Brown 1986:137, 139). Some of the Southern Molala found residence on the Klamath Reservation (Beckham et al. 1981:95).

SUMMARY

Four Indian peoples bordered the area of Crater Lake: the Klamath, Takelma, Upper Umpqua, and Molala. Their pre-contact lifeways, while broadly similar, reflected differences stemming from distinct environments. Situated east of the Cascades, the Klamath placed a strong reliance on the foods and materials available from Klamath Lake, for example the wokas, or pond lily. The Takelma and Upper Umpqua, living in the interior valleys of southwestern Oregon, utilized a varied range of resources, including salmon, deer, acorns, and camas. The Molala, living along the flanks of the Cascades, appear to have relied more heavily on hunting than did the other three groups. For all four peoples, the yearly round centered on movement from lower-elevation winter villages to upland camps in the spring and summer, in pursuit of available fish, game, and plants.

These four peoples were all dramatically affected by Euro-American settlement. West of the Cascades, however, the effects were more severe. Most Takelmas, Upper Umpquas, and Molalas who survived the first decades of Euro-American contact were taken from their ancestral lands to reservations in northwestern Oregon. The Klamaths, in contrast, while also forced into reservation life, were at least able to remain within their traditional territory. This fact fostered a greater preservation of the Klamath language and culture than was true for the three peoples west of the Cascades. Descendants of all four peoples are today members of federally recognized tribes.
CHAPTER 4
CULTURAL SIGNIFICANCE OF CRATER LAKE

ROBERT WINTHROP

BELIEF AND RITUAL

Native peoples of the region travelled to the Crater Lake area for many purposes. The Park environs were used for both hunting and gathering. Huckleberry Mountain, an important gathering site for the Klamath, lies about ten miles southwest of the lake. Nonetheless, the primary significance of Crater Lake appears to have been as a place of power and danger, renowned as a spirit quest site, yet also feared for the dangerous beings residing in the lake.

For the Klamath, spirit power could be found in many sources, among these "such natural features as mountains, streams, rocks, or even landmarks like Crater Lake" (Spencer 1952b:218). The ritual significance of gi-was, or Crater Lake (Barker 1963b:145), reflects a more general Klamath understanding of the natural world, involving not only reverence but the capacity for significant interaction with certain mountains, lakes, and streams, as the individual sought comfort, assistance, or power. One Klamath woman, speaking in the late 1940s, noted that,

\[
\text{those old Indians had a lot of sense. They kind of felt at home around here and they would get a lift from just talking to the mountains and lakes. It was like praying and it made them feel at peace.} \quad \text{(Spencer 1952b:223)}
\]

As one Klamath individual noted, Crater Lake was a particularly dangerous site for the spirit quest.¹ Gaining a vision of the supernatural beings residing in the lake was a major goal of that quest (Spencer 1952b:222). The seeker would often swim at night, underwater, to encounter the spirits lurking in the depths (Spier 1930:98). Leslie Spier commented regarding the father of one of his consultants, "having lost a child, he went swimming in Crater lake; before evening he had become a shaman" (Spier 1930:96). The quest for such spirits required courage and resolution:

¹ G. Bettels, pers. comm.
He must not be frightened even if he sees something moving under the water. He prays before diving, "I want to be a shaman. Give me power. Catch me. I need the power." (Spier 1930:96)

A fuller account of the quest for spirit power is recorded in a manuscript by Jeremiah Curtin:

Indians used to believe. Doctors said "we begin to be doctors by swimming and camping on top the mountains where there is a pond of lake and breaking willows and piling rocks on top the mountains and swimming in the lake." On ***** Mountain they used to camp. And at Crater Lake they used to say they got to the water and swam. And after swimming and camping and keeping awake all night piling rocks and breaking up twigs and tying them together till daylight then they would sleep. They sit down and slept, then they would dream. And whatever they dreamed of, Grizzly Bear, Black Bear or Wolf, Coyote, Skunk or all kinds of birds. Whatever they dreamed of became their medicine and they doctored with it and snakes, fishes[,] everything became their medicine. (Curtin, n.d.)

An elderly Klamath woman recounted in the late 1940s her experience of seeing a spirit being on the lake:

When I was young, I went up to Crater Lake with a woman I knew. She tied my eyes and led my horse... Then she said, "Untie your eyes," and I nearly fell off the horse. I saw a man standing on the water far away, just like in the Bible. He scared me so, I don't know who that was, but I like to think of that man now. (Spencer 1952b:222)

In other Klamath accounts the floor of the lake contains a mythical world:

People were stolen and taken down into Crater lake by beings there. Some say they have found no water in the lake. Instead there were rocks as big as trees and deep tunnels in the bottom. There are animals, snakes, and a sort of people who live at (or in) the ocean. (Spier 1930:98)

Individuals also undertook strenuous and dangerous climbing along the caldera wall. Spier's informants noted a site termed makwalks:

a point of rock projecting over Crater lake from the western cliff. The seeker clambers down and piles rocks on the point. (Spier 1930:98)

Individuals would often start at the western rim of Crater Lake and run down the wall of the

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Transcription of the Curtin MS provided by Gordon Bettels. While the MS is described as containing Modoc myths and legends, Mr. Bettels has suggested that it describes Klamath practices. The other placename in the text (***** Mountain) is omitted here to protect sensitive information not directly relevant to this study.
crater to the lake. One who could reach the lake without falling was thought to have superior spirit powers. Sometimes such quests were undertaken by groups.3

The Modoc also made spirit quest trips to Crater Lake. Verne Ray noted that "most quest sites were within Modoc territory but sometimes distant trips were made. Crater Lake, in Klamath territory, was not infrequently visited" (Ray 1963:81).

The Crater Lake area was also significant for the Cow Creeks. Although used for hunting and gathering, the Crater Lake area had spiritual importance as well. The lake was regarded with both reverence and fear, because the souls of evil persons were believed to inhabit it. One informant commented that her grandmother would travel there for "quiet communion."4

The historian A. G. Walling, apparently referring to the Upper Umpquas, noted in 1884 that,

In the past, none but medicine men visited [Crater Lake]. When one of the tribe felt called upon to become a teacher and healer, he spent several weeks on the shore of the lake in fasting, in communion with the dead, and in prayer. (in Bakken 1973:17)

MYTHS OF CRATER LAKE

There are several Klamath and Upper Umpqua myths extant regarding Crater Lake. Only one, however, the Klamath myth of Le-w and Sqel, can be traced to versions in the original language, rather than to westernized and possibly corrupt retellings by settlers or amateur folklorists.

The myth appears in five published versions, and in an unpublished translation.5 Le-w is "the monster who dwells in Crater Lake ... rather octopoidal and of a dirty white color" (Barker 1963b:215). The myth relates his battle with Sqel (who also appears as Old Marten

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4 Sue Shaffer, pers. comm., 8/30/90.

5 The myth of Le-w and Sqel (or Lao and Skell) appears in Klamath and English in Barker 1963a:71-75, as narrated by the Klamath informant Robert David; in Ramsey 1977:202-205, in an English version adapted from Barker, in a summary by Stern (1963b:33-34); in a westernized version by O.C. Applegate (1907); and in a collection by Clark (1953:56-58), which involves a retelling of Applegate's version. Stern (trans. 1951) has also done an unpublished translation from a version told by Herbert Nelson.
or Old Mink), a great figure of Klamath myth:

a culture transformer, giving laws, destroying evil beings, teaching subsistence
techniques, and generally preparing the world for the myth age humans. (Barker
1963b:389)

The myth opens with Sqel/Mink/Old Marten and his friend Weasel. They are tricked
by the beautiful but wicked daughter of Le-w, who ingratiates herself with Mink (or in an
alternate version, Weasel), and tears out his heart. She then takes the heart to Le-w's people
at Crater Lake, who play ball with it.

Weasel runs for help to Gmokame, the Klamath creator figure, who advises Weasel, and then
proceeds with the help of various allies to recover Mink's heart. Mink revives, but Le-w now
carries him off to Crater Lake, and is about to cut him to pieces and feed him to his children,
the crawfish. However, Mink outwits Le-w and slays him, cutting up his body and
(pretending the pieces belong to Mink's own corpse) feeding them to the crawfish. Finally
Mink throws Le-w's head into Crater Lake, naming it correctly. Stern's account concludes:

Then he [Mink] threw into the water all this, heart, windpipe-and-lungs, and liver.
"Here's Mink's heart, windpipe-and-lungs, and liver!" Now the Crawfish came and ate
all that. "Then here's Lao's [Le-w's] head!" Bawak! sound of head splashing into the
water. The Crawfish recognizing their father scattered in all directions. Then that
head of Lao's lodged there. This is Wizard Island. (Stern, trans. 1951:5)

Ella Clark includes in her collection three other Crater Lake myths, attributed to
Klamath sources. In "The Origin of Crater Lake" (Clark 1953:53-55) describes a battle
between the Chief of the Below World and the Chief of the Above World. The opening to
the underworld was found in a vast mountain ("the high mountain that used to be"). In a
development recalling the myth of Hades and Persephone, the Chief of the Below World falls
in love with the beautiful daughter of a Klamath chief. She spurns him, and in revenge the
Chief of the Below World tries to destroy the Klamath with fire. However, the Chief of the
Above World pities the humans, and does battle with his underworld counterpart. Amid vast
explosions and fire the Chief of the Below World is driven underground, and the mountain
collapses upon him, creating Crater Lake.

"Crater Lake and the Two Hunters" emphasizes the lake as a realm inhabited by
spirits of the dead, dangerous to the living, and safely accessible only to powerful shamans.
Two hunters, defying this taboo, travel to Crater Lake, and are destroyed (Clark 1953:58-60).
"Another Crater Lake Legend" has much the same theme. A group of hunters discovers the
lake. One man is greatly drawn to it, returning again and again to swim in its waters and to
camp on the overlooking cliffs. In this way he acquires great spirit power. Ultimately,
however, he is killed by one of the spirit creatures which dwells in the lake (Clark 1953:60-
61).

At least one myth of Crater Lake from the Upper Umpqua area is extant. "The
Mountain with a Hole in the Top" was related by a Cow Creek informant, Ellen Crispen, to W. K. Peery (in Bakken 1973:13-17). Long ago the animal-people and the man-people spoke the same language, and were friends. They lived in the shadow of a great mountain, perpetually covered with snow. An evil chief arose among the man-people, and taught others to kill the animals. Bear, chief of the animal-people, protested to Tamanous, Old Man God. Angered, Tamanous created a great wind, which uprooted trees, and made the mountain explode. All that remained was a crater, which filled with water. The evil man-people were killed, and their souls were sent to dwell in lodges at the bottom of the lake.6

SUMMARY

Crater Lake exemplifies the concept of a sacred place or sacred landscape, embodying in a specific location the qualities of mystery, power, and danger.7 Traditionally Crater Lake served as an important site for Indian spirit quest activities, and continues to be used for spiritual purposes today.8

A sacred landscape entails a correlation of physical place and cultural meaning, existing within a larger body of tradition. Its physical elements (a piled rock site, Wizard Island, the lake bottom) have associations with various culturally postulated events, some in a mythic time (for example the myth of Le-w and Sqel), others (such as spirit quest rituals) still occurring today. Traditional knowledge of such a landscape—of the myths which recount its origins, and the rituals by which its powers are encountered—shapes one's experience. Some appreciation of the myths and rituals associated with Crater Lake allows the Euro-American visitor to have some understanding of the traditional Indian experience of Crater Lake National Park, of its spiritual powers and the possibilities for personal transformation which it affords.

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6 W. K. Peery (1951) summarizes a second myth, in which twin boys seek a grizzly bear at Crater Lake. The bear is killed, but one boy is transformed into a monster, who dwells in Llao Rock.


8 For example, at a meeting with Park personnel (8/31/89), information was given regarding Indian individuals seeking exemption from the Park entrance charge for visits having a religious or spiritual purpose.
INTRODUCTION

Crater Lake lies at the crest of the High Cascades, in between the forested mountains and river valleys of western Oregon and the marsh and lake basins of the more arid east. The high elevation and correspondingly severe winters of the present day Park precluded year-round use by native peoples; those prehistoric peoples who visited the Park lands came from adjacent lands. Because of its situation, therefore, the prehistory of the Park must be viewed as tied to that of the people inhabiting nearby lands, and seen as an expression of these peoples' activities at the highest altitude available to them.

The lands around the Park may be divided into three geographic areas which correlate loosely with the territories inhabited by native peoples at the time of contact with Euro-Americans: (1) the northern Klamath Basin on the east, inhabited by the Klamath Indians; (2) the upper portions of the Rogue River drainage basin, west of the Park and inhabited by the Takelma and Molala; and (3) the North and South Umpqua Rivers drainage basins west and north of the Park, inhabited by the Umpqua and Molala Indians (see Map 5). Together, these three areas encompass much of interior southwestern Oregon. The following review presents the archaeology of these three areas as well as of the Park itself.

Archaeological work in this region spans the last fifty years and includes major, interdisciplinary works as well as more routine site studies and surveys. This discussion incorporates three classes of information pertinent to the archaeology of the Park. First are those studies from southwest Oregon or adjacent areas with regional implications; second are site specific studies from the three areas just defined; and third are survey data from lands within a few miles of the Park's boundaries. The first part of this section reviews the specifics of archaeological work done; the second part evaluates that research in light of common themes and theoretical perspectives.

For an excellent synopsis of major archaeological work in the region, see The Archaeology of Oregon (Aikens 1993). The review here provides detail on a number of sites
not covered in that work, however, and takes Crater Lake as its specific focus.

REGIONAL REVIEW: KLAMATH BASIN

Setting

The Klamath Basin forms the northwest corner of the Great Basin, a physiographic province which extends east from the Cascade Mountains in Oregon and the Sierra Mountains in California to the Rocky Mountains (see Map 6). This province is characterized by north-trending fault-block mountains and internally draining valleys. In the past, many of these valleys contained lakes; remnants of these lakes still exist in a number of basins, including the Klamath Basin. Great Basin climates tend to be dry, with seasonal extremes of temperature as well as wide diurnal fluctuations. In Oregon, the Basin and Range topography of the Great Basin lies at a high elevation, over 4,000 feet above sea level, with ranges and peaks to almost 10,000 feet (Baldwin 1959:100). As part of the Great Basin province, the prehistory and archaeology of the Klamath Basin has frequently been interpreted through Great Basin ethnographic models and chronological schemes.

The Klamath Basin itself contains pumice plains and marshlands in the north, resulting from the cataclysmic eruption of Mt. Mazama during the mid-Holocene. The Cascade Mountains border the basin to the west, forming an impressive division between the arid east and wetter mountains and valleys to the west. Forested mountains form the eastern boundary of the basin; valley floor elevations range from 4,000 to 5,000 feet. The climate is semi-arid; the summers are hot and dry, and most of the precipitation falls as snow during the cold winter. The western part of the basin receives more precipitation than the rest, from storms passing over the Cascades (Carlson 1979:5).

The lakes and marshes which distinguish the Klamath basin were of considerable importance to the prehistoric inhabitants. These lakes and marshes were formerly more extensive than they are today, since much of the basin has been drained for agriculture. Upper Klamath Lake in the western basin is the largest natural lake in Oregon, and is a remnant of a larger lake, Lake Modoc, which filled the Basin at the end of the last Ice Age (Gustafson 1971). Agency Lake just north of the Upper Klamath Lake and the Klamath Marsh also provide significant aquatic resources in the northern part of the basin. In addition to the lakes and marshlands, several major rivers, including the Williamson, the Wood, and the Sprague, drain the northern part of the basin.

These lakes, rivers, and marshes provided numerous plants and animals used for food and materials. The lakes and streams had excellent fish resources, including several species
Map 5
Southwest Oregon

Base Map from USGS, 1966
Map 5:
SOUTHWEST OREGON

<table>
<thead>
<tr>
<th>Map No.</th>
<th>Site No.</th>
<th>Site Name</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>NIGHTFIRE ISLAND (CALIFORNIA)</td>
<td>Sampson 1985</td>
</tr>
</tbody>
</table>
of trout and salmon, as well as numerous species of warm-water fish such as bass, perch, mullet, sucker, and lamprey, as well as mussels. These abundant waters also attract the greatest waterfowl concentrations in North America during the spring and fall migrations, with the greatest concentrations in November (Gustafson 1971:32-36). Ducks and geese account for most of the game birds, with other water birds such as loons, pelicans, cormorants, herons, egrets, cranes, gulls and terns. Vegetable foods, particularly the pond lily (wokas, *Nuphar polysepala*) were available in abundance from the marshlands, and utilized intensively by the Klamath Indians (Bryant et al.1978.30-31; Masten 1985.42,45).

The dryland vegetation communities in the basin include pine forests in the eastern and northern mountains of the basin; juniper forests, which occur intermittently throughout the basin; shrub-steppe vegetation and desert shrub in the southern basin (Franklin and Dyrness 1973). Sagebrush and dry meadows occur with the juniper zone, providing excellent summer habitat for deer and vegetable foods such as epos (a root crop).

In addition to numerous useful plants and animals, the Klamath Basin contained another resource of significance: obsidian. This volcanic rock, which was prized because it could be made into tools with sharp edges, occurs at several sites within the Basin (Hughes 1986:279). A major source of obsidian lies along the Sycan River at Spodue Mountain, about ten miles north of Beatty. Another source occurs around Sycan Marsh, north of Spodue Mountain. Both of these sources are in the northern and eastern part of the Klamath Basin.

Holocene environmental changes have had significant effects on past environments and the peoples who lived within them. At the end of the Pleistocene, some 15,000 to 13,000 years ago, Lake Modoc filled much of the Klamath Basin. At this time, precipitation was dominant during the winter, as it is today. As the climate warmed and became drier, after 12,000 years ago, there was an increase in summer rainfall. With continued climate warming, the large pluvial lake shrank; summer became the season of maximum precipitation, and effective precipitation remained low. The dry conditions lasted from about 8-7,000 to 4-3,000 years ago. Higher elevations may have provided more moisture and productive habitats. After 3,000 years ago, the temperatures became cooler, summer precipitation dropped, and winter precipitation increased. From about 2,000 to 600 years ago evidence for the Great Basin as a whole suggests a warming trend and a drop in winter precipitation. After 600 years ago the climate became relatively wet, with a drying trend apparent in the twentieth century (from Mairs 1989).

**Archaeology**

For years the major source on the prehistory of the northern Klamath Basin was Cressman's work along the Sprague and Williamson Rivers. Between 1948 and 1952 Cressman excavated Medicine Rock Cave; a rich midden at Kawumkan Springs; and
housepits at villages located at and near the confluence of the Sprague and Williamson Rivers (Cressman 1956). Though the cave did not yield many artifacts, it did produce evidence for habitation of the area before the explosion of Mt. Mazama, in the form of a large, basalt atlatl dart point found below a layer of Mazama pumice (Cressman 1956:401). The major part of Cressman’s work, however, was at the midden and housepits.

In keeping with the methods of the day, an initial trench was rapidly dug in order to open up the midden; since no stratigraphy within the midden was noted, the excavation took place using arbitrary 40 centimeter levels. Material was sifted and flakes were (usually) saved. Working in the early days of radiocarbon dating Cressman relied on stylistic correlations of projectile points and careful analysis of site and environmental topography to establish a relative chronology for the site. His chronology was later refined by obsidian hydration studies done in the basin and for the site (Johnson 1969; Aikens and Minor 1978). These studies suggest that the midden was occupied from about 5000 years ago until perhaps 500 years ago (Aikens and Minor 1978; Cressman 1956:493).

The midden produced a rich complement of artifacts as well as bone and shell, and human remains. Cressman recovered projectile points, which he related to Great Basin styles; manos and metates as well as mortars and pestles, some of which were very large; large choppers assumed to be for cutting wood and butchering large animals; numerous small scrapers, presumably used for small animals, fish, and mussels; and a few bone artifacts. Stone platforms occurred in the midden, which Cressman referred to as "kitchens". Human skeletal remains were also recovered from burials.

Cressman noted important evidence for stability and change in the cultural patterns inferred from the archaeological materials. Impressed with the continuity of artifacts from the beginning to the abandonment of the midden, Cressman argued that the basic pattern of Klamath life was of long duration. This pattern included a reliance on aquatic resources, particularly those available in the rivers, lakes, and marshes, as well as hunting of large and small game animals. Yet he also suggested evidence for change over time. Although the types of resources remained the same, there was a noticeable change in emphasis in the foods used: fish bones increased through time, and game and animal bones decreased, suggesting that the aquatic resources gradually became more important in the Klamath diet. The housepits which Cressman excavated he estimated to be later than the midden. They were similar to many of those documented at the time of contact with the Klamath Indians and produced numerous seed grinding tools, related to the processing of the marsh-plant wokas seeds, which was a staple food for the Klamath at the time of contact.

A somewhat more dynamic picture of the prehistory of the basin comes from work at Nightfire Island, at the edge of the marsh around Lower Klamath Lake in the southern part of the Klamath Basin (Sampson 1985). Excavated and analyzed after the advent of more sophisticated methods and within the context of greater regional knowledge, this study provides an abundance of information for the region. Topics addressed include: chronology, based on projectile point styles, obsidian hydration, radiocarbon, and stratigraphy;
NOTE: Location of archaeological sites in this online edition have been removed from this map in an effort to protect sensitive cultural resources.
## Map 6: KLAMATH BASIN SITES

<table>
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<th>Map No.</th>
<th>Site No.</th>
<th>Site Name</th>
<th>Reference</th>
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<td>KAWUMKAN SPRS</td>
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</tr>
<tr>
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<td>MEDICINE ROCK</td>
<td>Cressman 1956</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>SPRAGUE RIVER</td>
<td>Cressman 1956</td>
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<td>37-11 1/2-12-1</td>
<td>DAM SPRINGS</td>
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<td>35-KL-34</td>
<td>COLLIER PARK</td>
<td>Cheatham 1990b</td>
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<td>BEATTY CURVE</td>
<td>Musil 1987</td>
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<td>35-KL-605</td>
<td>BEATTY PIT</td>
<td>Winthrop et al. 1986</td>
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<td>Winthrop et al. 1989</td>
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environmental change and human adaptational responses; and social structure and inter-group relationships. The site dates from somewhat after 7000 BP (post-Mazama) to 1000 BP, or possibly later (Sampson 1984). During this long period of habitation, the site use alternated between temporary camp and village, with village occupation between about 4300 and 3000 BP. The site's inhabitants at all times made use of the fish and water birds which were abundant at the site.

Fluctuations in site use throughout the millennia correlate with changes in lake level induced by regional climatic events, and are seen as evidence of adaptational responses to environmental change. The earliest occupations (c. 6000-5000 BP) were characteristic of hunter-gatherer-foragers exploiting one aspect (waterfowl) of their environment. The temporary campsite and associated assemblages from this period resemble those for foragers in non-lacustrine settings. After a brief period of abandonment, the site was reoccupied about 4500 BP, again as a fowling station, which became a semi-permanent village by 4300 BP. From this period for the next three millennia, the archaeological assemblage attests the increasing reliance on waterfowl, fish, and plant resources; after 3000 BP clay-lined house-pits appear at the site. By the end of its period of use, after the first few centuries A.D., the site was again a temporary camp, this time used as a Spring/Fall fishing village.

By this late period as well, the site's inhabitants were integrated into extensive social networks oriented towards northwest California and the Pacific coast. Numerous artifacts, including *Olivella* shell beads, large obsidian knives, ground stone bowls, platters, and pipes, were imported to the site. Complementing this evidence for burgeoning trade networks is an indication of less friendly interactions with other groups. A burial ground at the site contained the victims of raids which occurred about 1700-1500 BP (Sampson 1984:479), during the period in which bow-and-arrow technology was spreading throughout the region.

Evidence from the burials also suggests that some of the basic beliefs and social practices which characterized the peoples living in this area at the time of contact were in place for about the last 2,000 years. Cremation was practiced during this period, for example, and Sampson interprets the grave goods from one burial as representing a shaman's pouch (1984:461). He further hypothesizes that the evidence for raids may signify the development of the slave-trading networks which were in place at the time of contact (1984:467). Tribes in the Klamath Basin (Modoc and Klamath) captured slaves from neighboring groups, to be traded north to the Columbia River.

Building upon information from Kawumkan Springs and Nightfire Island, as well as other sites, Richard Hughes examined patterns of obsidian use through the thousands of years of these sites' histories. He discovered that early in the history of both Kawumkan Springs and Nightfire Island, obsidian for projectile points was obtained from nearby Spodue Mountain. From about 3300 to 1800 years ago, however, the inhabitants used projectile points made from obsidian obtained from sources farther to the east. The small points which characterize the introduction of the bow and arrow, after about 1800 years ago, were again made almost entirely from the Spodue Mountain obsidian. Whether these changes reflect
shifts in foraging patterns with coincident shifts in exposure to obsidian sources, or changes in social networks guiding access to these sources, or some other explanation, is yet unknown.

These important studies for the Klamath Basin are complemented by a number of other investigations, most of which have been generated by the cultural resource concerns of the last twenty years. Test excavations at a site along the Sprague known as the Beatty Curve site (35KL95) suggest that it was a base camp, from which individuals or groups pursued activities along the river or in the adjacent uplands (Musil 1987). The site yielded stone and bone tools, ground stone artifacts, and bones of game animals—including large mammal bones such as deer—and aquatic species, as well as concentrations of mussel shells. Radiocarbon dates indicate a period of use 1500-1000 years ago, with the possibility of earlier occupation. A possible housepit is associated with the carbon-dated period of use. Not far from this site, along the banks of the Sprague, small shell middens and dispersed stone artifacts (site 35KL605) provide evidence of small groups or individuals using the river's resources. Excavation of one of these small mussel shell middens yielded a date of c. 2000-1500 BP, based on projectile point styles, obsidian hydration, and a radiocarbon date from the shell. These small middens were interpreted as representing the remains of short-term stays (a day or two), as small groups passed along the river in the early spring (Winthrop et al. 1986:19-21).

Further down the Sprague, at its confluence with the Williamson River, test and data recovery excavations at the Klamath village of Bezuksewas (35KL778) uncovered numerous features and produced a wealth of chipped stone, bone, and cobble artifacts, as well as trade beads, buttons, and numerous early historic materials (Cheatham 1989a, 1989c, 1990a). Preliminary analysis of this site suggests three occupation episodes, the earliest several thousand years old, the next from the later prehistoric period, and the final episode from the historic period.

North of this site, at Collier Park (35KL34) near the confluence of the Williamson River and Spring Creek, surveys in the 1960's located several areas of prehistoric land use including numerous large and small depressions associated with these areas (Cheatham 1990b). Augering of the largest of these pits suggested that they were housepits; one such pit was excavated. This pit yielded two radiocarbon dates, indicating abandonment of the structure about A.D. 1675. The structure was about ten meters in diameter with an earthen bench around the inside perimeter and a hearth in the center.Comparatively few artifacts were recovered; an interpretation of this phenomenon is that the structure was not a regular habitation, but used for special purposes such as communal ceremonies.

Test excavations and data recovery at a site on the Williamson (35KL677) below its confluence with the Sprague identify a fishing station which was probably used during the spring sucker migration (Cheatham 1989b, 1989c). A low density and diversity of stone tools suggests that this site was a task-specific site; abundant fish remains in conjunction with the site location attest to the site's function. A radiocarbon date from mussel shell suggests initial occupation of the site before 2050 BP, with regular use throughout the last 2000 years.
In addition to these sites along major waterways, there have been a few investigations of upland areas. Three large lithic scatter sites in the forest above the Sprague River were tested (Hopkins 1983). These are known as Horton Barked Trees Site (eight acres), Dam Spring site (about eight acres), and Dam Rattler site (two acres). These sites contained projectile points and other artifacts for hunting and processing game. Point styles included those used in the Klamath Basin over the last several thousand years, and were comparable to those found at Kawumkan Springs, attesting long-term usage of the uplands. All three sites were associated with dry meadows or scabrock flats, with the spring site showing heaviest use. Two of the sites, Horton Barked Trees and Dam Spring site, had ponderosa pine trees which were scarred from the removal of the cambium layer, presumably for food. Coring of these trees gave dates for the scarring ranging from the late nineteenth century to the early twentieth (Hopkins 1983). This was a period in which the Klamath Indians were facing the depredations of the Euro-American immigrants, and being forced onto reservation lands.

A multidisciplinary study of a small, sparse lithic scatter (35KL680) also above the Sprague River has provided a new perspective to the study of such sites (Winthrop et al. 1989). The site itself is located at the edge of a large, dry meadow just above the Sprague River Valley, and east of Kawumkan Springs. The meadow contains numerous nodules of obsidian, as well as excellent forage for deer and an abundance of plant species, such as epos, used for food by the Klamath. The site consists of the remains of bipolar reduction episodes, produced as people collected obsidian nodules and broke them apart to obtain flat, sharp flakes. Obsidian sourcing shows these nodules to be of the Spodue Mountain geochemical type. An approximate date of 800 BP for the site comes from comparing hydration readings on artifacts from the site with hydration data from Kawumkan Springs (Aikens and Minor 1978).

This site's significance lies in the fact that it is representative of a class of sites in the area. As part of the study, the approximately three hundred known sites on the Chiloquin Ranger District were classified as lithic scatters (sites with debitage only, or debitage and tools); vision quest sites (sites with rock cairns or rings), or settlements (sites with features indicating habitation such as housepits and middens). Fifty-five percent of the known sites on the district are lithic scatters, twenty-nine percent are vision quest sites, and nine percent are settlements. These three classes of sites are not randomly distributed throughout the district, however; settlements are concentrated in the west around the lakes, and there is a higher density of lithic scatters in the eastern, more arid part of the district. Vision quest sites were scattered throughout, with a higher proportion in the lands adjoining Klamath Marsh.

Although these differences in the spatial distribution of sites may be attributable to sampling error, Winthrop et al. (1989) believe that these differences represent different land-use patterns. Drawing upon optimal foraging theory, they argue that the stable and clumped resources available from the western part of the district fostered the larger, more sedentary settlements in that area. The patchier distribution of resources in the more arid eastern area, however, fostered a more mobile subsistence pattern resulting in higher density of temporarily occupied sites.
Vision quest sites do not fit easily into the subsistence models just noted, since they are generated by other cultural concerns, such as religious belief. Locational data on those found, however, indicate that such sites occur on rocky promontories, rock outcrops, peaks, and other high points on the landscape (Winema National Forest Site Records). It is difficult to date these sites, and none has been thoroughly investigated.

Most recent archaeological studies in the Klamath Basin are taking place as part of the environmental review for a multi-state gas pipeline project (Jackson et al. 1990). These studies will contribute considerable archaeological information to the data reviewed above.

Surveys on Winema National Forest lands within about five to ten miles of the Crater Lake National Park boundary have discovered a number of archaeological sites. Out of seventeen of these sites recorded with descriptive information, thirteen are considered vision quest sites. These sites consist of rock features, such as cairns, circles or horse-shoe shaped structures; some of the features occur singly at a site, but most sites have a number of such features. Many of the vision quest sites are located on peaks and buttes in the mountains leading up Crater Lake. Four of the sites consist of obsidian and other stone artifacts; at one of these sites there are numerous depressions in the ground, of various sizes, presumably from some sort of human activity. Stone artifacts appear associated with these pits. These sites with lithic materials are associated with creeks or springs, rather than with rocky outcrops and peaks.

Summary

Archaeological work in the Klamath Basin began with the excavation of Kawumkan Springs, a major habitation site along the Sprague River, in the middle part of the decade. The focus of these investigations was on defining the major cultural patterns characterizing the inhabitants, and attempting to define major chronological periods and cultural changes based on stratigraphy. Work at Nightfire Island in the southern part of the basin in the 1960's provided a major study primarily focussing on the interrelationship of human cultures with changing environments. Since the 1970's there have been a number of studies in the Klamath basin which were generated by cultural resource legislation protecting archaeological sites. One of these, a multidisciplinary investigation of a small lithic scatter, provided a detailed investigation of the environment and an analysis of site distribution patterns in the area from the perspective of optimal foraging theory.

The archaeology to date attests to widespread human use of the Klamath Basin for a long period of time, from at least the mid-Holocene (c. 7,000-6,000 years ago) to the present. During this time inhabitants made use of the especially productive lake, marsh, and river resources of the basin. It appears that use of these aquatic resources intensified over time, as at Kawumkan Springs. Evidence for a semi-sedentary way of life exists from the last 4,000-
5,000 years, in the rich midden at Kawumkan Springs and in the deposits from Nightfire Island. At Nightfire Island analysis of environmental change correlates with changes in occupation at the site. The application of optimal foraging theory to sites in the northern Klamath Basin suggests a more mobile subsistence pattern in the eastern area, where lake and marsh resources were less abundant, and a more sedentary way of life in the west where aquatic resources prevailed.

Long-term changes in inter-cultural relationships are indicated in shifts in obsidian procurement patterns at Kawumkan Springs and Nightfire Island. During the later prehistoric period (approximately the time of the introduction of the bow and arrow about 2000–1500 years ago), evidence from Nightfire Island in the southern part of the basin indicate intensification of contacts with outside groups, including long distance trade of various items, and conflict.

Archaeological work documents the presence of various types of sites, including substantial settlements associated with the waterways and marshes, lithic scatters in the uplands, and rock cairn "vision quest" sites. These latter sites are particularly abundant in the northwest part of the Klamath basin, and occur on rocky prominences or high points, such as peaks. Several such sites are noted on the high points leading up to Crater Lake from the western edge of the basin.

REGIONAL REVIEW: ROGUE RIVER BASIN

Setting

The Rogue River drains a large part of interior southwestern Oregon, south and west of Crater Lake (see Map 7). With headwaters just north of Crater Lake, the river flows southwest through the Cascades, then heads westerly to the sea. It passes through the Rogue Valley, a major interior valley in southwestern Oregon. The river drains the western Cascades east of the valley, as well as the Siskiyou Mountains to the south and portions of the coastal ranges to the west.

The landscape of this part of southwestern Oregon offered a significantly different constellation of resources to its prehistoric inhabitants than that found to the east of Crater Lake. The rugged mountains ringing the interior valleys support heavy coniferous forests, occasionally broken by upland meadows and flats and bisected by numerous streams. Deer, elk, and large and small mammals inhabit these mountains; sugar pine forms an edible resource in the forests, while berries and root crops occur in the meadowlands. Particularly productive patches of huckleberries, for example, are located at Huckleberry Mountain, about
twelve miles southwest of Crater Lake; this resource was heavily used by the native groups living both east and west of the Cascades (i.e. Klamath and Molala) (LaLande 1980:170-71). At lower elevations, interior valley vegetation included resources of particular importance, such as oak and camas. In addition to the provisions of mountain and valley, an abundance of anadromous fish ran in the Rogue River in the spring and fall, as well as in its major tributaries.

Interior southwest Oregon today experiences a relatively mild, wet winter and warm, dry summer. Heavy snowfalls occur in the higher elevations, sending herds of ungulates to the lower elevations for the winter. Within this area, the valleys experience the warmest temperatures and frequently the driest regimes, due to the rainshadow effect of the mountains (Todt 1990:76).

The vegetation in interior southwest Oregon is highly diverse, since it is transitional between the wet coastal forests to the west and dry semi-arid plateau east of the Cascades, as well as between the Pacific Northwest to the north and Mediterranean California to the south, and contains species common to these different areas (Todt 1990:71). Such transitional areas are among the first to show the effects of climatic fluctuations. During the warmer mid-Holocene phase, drought-tolerant species such as Oregon white oak expanded their ranges, probably replacing conifers on slopes above the valley floor. Many such species benefit from increased fire frequency; land management practices such as burning did, at the time of contact, contribute to a greater abundance of such species than is present today. A study of acorn yields in the Rogue Valley points to a possible side effect of the transitional nature of the climate: acorn yields tend to be highly variable, fluctuating widely from year to year, and never particularly abundant (Hannon 1992).

The explosion of Mt. Mazama also affected the local environments in the Rogue River area. Ash and pumice clogged the streams flowing west out of the Cascades and into the valley, undoubtedly damaging fish runs and riparian habitats (Nilsson 1991:6).

The western Cascades in this area contain sources of cryptocrystalline silicate (CCS); these are rocks such as chert, jasper, and chalcedony which were important materials for chipped stone tools. Obsidian does not occur; sources lie to the east and south.

Archaeology

Archaeological work in the Rogue Valley area began with Luther Cressman’s excavations at the Gold Hill site in the 1930’s, which was for years the only significant study in the area. Beginning in the 1960’s, major archaeological studies have been undertaken as part of dam and reservoir construction projects, at Lost Creek (1960s and 1970s), Applegate River (1970s and 1980s), and Elk Creek (1980s). Since the implementation of cultural
NOTE: Location of archaeological sites in this online edition have been removed from this map in an effort to protect sensitive cultural resources.
## Map 7: ROGUE BASIN SITES

<table>
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<tr>
<th>Map</th>
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resource programs in the 1970's, regular survey, testing, and data recovery programs have contributed considerably to the knowledge of the prehistory of the area.

The Gold Hill mound is in the Rogue River Valley, just north of the town of Medford, located on a sandy terrace on the south bank of the Rogue River. Portions of the mound were excavated in 1930-32 (Cressman 1933a, 1933b). The soils were loosened, and at any sign of an occupation or burial materials were hand-troweled and sieved. Cressman discerned three cultural strata based on the vertical locations of occupation zones and burials. He did not recover any discrete evidence for houses, but did note concentrations of charcoal, fire-cracked rock, and living debris which he identified as occupation zones. These features ranged from four feet to fifteen or twenty feet in diameter, and seem to represent the remains of prehistoric camping spots. They occurred throughout the mound, but are concentrated in the northwest portion. A cemetery area was located; burials had been interred in a flexed position and rich grave goods had been buried with some of the individuals.

Cressman recovered large pestles and CCS chipped stone tools, including a variety of projectile points and large black and red obsidian blades similar to those used by people of the Lower Klamath River and other southwest Oregon groups at the time of contact. These large blades were considered important ceremonial items and were used to display status and prestige. Cressman noted that these blades were found with burials, but that these items did not occur in stratigraphically later burials. Projectile points occurred throughout the mound, and were constructed primarily of CCS. A variety of types were recovered, including many willow-leaf shaped points (dubbed "Gold Hill" points), and Gunther barbed points. These types have since been dated at other sites in the Rogue Valley, and provide an estimate of occupation at Gold Hill from about 3,000 years ago through the late prehistoric period (Aikens 1993). Cressman noted shell from the Oregon and Californian coasts at the site, indicative of trade with these regions. He also noted the absence of dentalium in the artifact assemblage. At the time of contact with Euro-American peoples, dentalium served as an important medium of exchange; Cressman inferred therefore that occupation at the site may have ceased before dentalium became important.

Working in an archaeological vacuum, Cressman concluded that the Gold Hill site had striking affinities with cultures from the west of the Cascades, but exhibited little contact with those to the east, such as the Klamath; this interpretation still holds today. The rich assemblage, including a cemetery area and "camping spots", marks this site as the location of a prehistoric residential area. Here, people lived a sedentary existence for at least part of the year, in groups large enough to warrant social distinctions which were marked in death with items of wealth.

A recent study by Hughes (1990) analyzes the more spectacular of the Gold Hill artifacts—the large red and black obsidian bifaces—and relates them to a socioceremonial system visible in the cultures of northwestern California. Such large bifaces were important items to peoples living along the lower Klamath River and coast, and were used in special ceremonies of the Yurok, Karok, Wiyot, and Hupa. In a study of obsidian artifacts from the
Gunther Island site on the northern coast of California, Hughes found that the large, black and red obsidian bifaces were manufactured from obsidians obtained from distant sources, whereas the obsidian used for everyday tools was from closer "cheaper" sources. Hughes analyzed the sources for the large Gold Hill bifaces as well as for the two projectile points and several obsidian flakes. He found the procurement pattern to be the same for Gold Hill as it was for the coast. Bifaces were constructed of obsidian from the east, northeast and southeast (Quartz Mt., Glass Buttes, Horse Mountain, Silver Lake/ Sycan Marsh, Buck Mountain, and Medicine Lake Highland), sources which range from near Paulina Mountain in the north to the Warner mountains in extreme northeastern California. The utilitarian objects, however, came from Medicine Lake Highland (from the Grasshopper Flat and East Medicine Lake geochemical groups) in northern California and closer to Gold Hill than the other areas.

Most of the major archaeological studies done in the Rogue River drainage area since Cressman's work have been affiliated with dam and reservoir projects. The first such project was the construction of the Lost Creek Dam on the upper reaches of the Rogue River, at its confluence with Lost Creek. This area lies within the Western Cascades, before the river flows out into the Rogue Valley, to the west of Crater Lake. During the 1960's and 1970's, survey, test excavations, and data recovery excavations were carried out within the reservoir area (Davis 1970, 1972, 1983). This research recorded twenty-one sites. Test and data recovery excavations at seventeen of these produced information from a variety of upland sites, including sites with middens, sites with housepits associated with Gunther barbed (late period) points, sites with multiple components, burials, and lithic scatters (Davis 1983). Three sites produced radiocarbon dates, ranging from about 900 years ago to 120 years ago. Many of the sites were located on terraces beside and above the streams and rivers, at an elevation of about 1500-2000 feet above sea level. Although no site typology was attempted, the inventory suggests a range of functional types, from winter habitation to temporary collecting sites, encompassing many of the annual activities of the hunter-gatherers who lived there or used the area.

The Applegate reservoir project also generated years of archaeological investigation. The Applegate River flows through the northern Siskiyou Mountains, southwest of the Rogue Valley, into the Rogue River west of Grants Pass. The dam is located in the Siskiyou Mountains, some seventy air-miles southwest of Crater Lake. The investigations discovered and tested eighteen sites in the reservoir area; of these six were further excavated through data recovery projects (Brauner and Honey 1978; Brauner 1978; Nicholls, Brauner, and Smith 1983; Brauner and MacDonald 1981; Brauner and Nisbet 1983; Brauner 1983). The sites from this project included small, relatively late period and contact settlements with housepits, as well as camp sites with artifact assemblages related to earlier periods. One site, 35JA53, produced over 80 very wide stemmed, square-based spear points, unlike others found in the region. These points resemble those from early Holocene contexts to the east and south, and are thought to represent the earliest assemblage in the region, from the period of about 10,000 to 8,500 BP (Brauner and Nisbet 1983; Pettigrew and Lebow 1987:10.18). Unfortunately, this assemblage has no radiocarbon or hydration dates.
The third major reservoir project to engender years of archaeological study was along Elk Creek in the western Cascades. Elk Creek drains into the Rogue River just south of Lost Creek, and the sites of this locality occupy an environment similar to those investigated along Lost Creek. Work on the Elk Creek project began with surveys in the 1960's and 1970's; test and data recovery excavations have taken place through the 1980's (Davis 1983; Budy et al. 1986; Pettigrew and Lebow 1987; Nilsson and Kelly 1991). The data recovery excavations at Elk Creek are among the most sophisticated projects accomplished in southwest Oregon, and have generated considerable information about this region's past.

Over twenty prehistoric sites have received some level of investigation in the Elk Creek area; reports on data recovery excavations at five sites have been completed and the others have been test excavated. As at Lost Creek, the sites are at moderate elevations within the mountains; most are located on terraces of Elk Creek or its tributaries. A variety of different types of sites have been investigated, including small sites with housepits, middens, and burials; chert quarries; and featureless lithic scatters indicative of temporary encampments. Dates from housepit sites are from the later periods (beginning c. 1000-2000 years ago), although projectile point styles, radiocarbon dates, obsidian hydration readings, and stratigraphic correlations suggest use of the Elk Creek area for at least the last 4,000 years, and possibly longer (Budy et. al 1986; Pettigrew and Lebow 1987; Nilsson and Kelly 1991).

The Elk Creek sites share a distinguishing characteristic with other sites along the upper Rogue River and in the southern Cascade Mountains along the Klamath and Pit Rivers in northern California. This is the presence of a low-fired, hand-molded pottery, usually in the shape of open-mouthed bowls and small pots. An analysis of pottery from southern Cascade sites has defined its physical characteristics, established its known distribution in the region, and placed its occurrence within a time frame (Mack 1989). The pottery occurs at sites dated between 900 A.D. and 1600 A.D. It is associated with housepit villages or hamlets, late period projectile points (especially Gunther series points), and frequently occurs with baked clay figurines. The Rogue River pottery is distinguished from that of the Klamath and Pit River sites by the occasional presence of fingernail-impressed decoration.

The investigations at Elk Creek have benefitted from comparative data on several significant sites elsewhere in southwest Oregon. These sites include the Marial site (35CU84) and the Ritsch site (35JO4), both located down the Rogue from Elk Creek. Both sites have produced carbon dates and the Marial site has produced impressive evidence for the antiquity of human habitation in this area. The Marial site is a stratified site located on a terrace above the confluence of the Rogue River and Mule Creek, about fifty miles west of the Rogue Valley (Griffen 1983; Schriendorfer 1985). Repeated episodes of flooding have deposited sand and silt over repeated episodes of terrace occupation, yielding archaeological components which may be distinguished stratigraphically from one another. Radiocarbon dates associated with several of these components have provided an invaluable sequence for assessing archaeological assemblages in the region. The dates obtained range from 8560 ±190 years BP from a depth of 430 centimeters below the surface to 2810 ±50 years BP from 60 centimeters
The artifacts from the Marial site are predominantly of stone, with cryptocrystalline (66 percent), obsidian (22 percent), and basalt (14 percent) as the dominant types. They include chipped stone and cobble tools; numerous fragmentary pieces of bone as well as fire-cracked rock were also recovered. The investigators conclude that the site functioned as a seasonal camp, at which hunting was an important activity. The site's location along the river and near rich terrestrial resources, however, would have made it a good spot for a longer-term type of encampment. The excavations to date have been too limited to rule out this possibility; further investigation may well amplify the original conclusions regarding site function.

The Ritsch site is also located on a river terrace above the Rogue, east of its confluence with the Applegate River (Wilson 1979), just west of the Rogue Valley. A rich assemblage of artifacts was recovered from two components. The later component was radiocarbon dated to 460 ±90 BP; the earlier component yielded two dates of 1150 ±100 BP and 1400 ±80 BP. This site provides evidence for house structures in the earlier component; both components were associated with the smaller stemmed, triangular, or barbed points characteristic of the late period in the Rogue Valley. Faunal evidence indicated fishing during both periods, although nets were apparently used only during the later occupation.

Several other sites in the Rogue Valley have received varying degrees of scholarly attention. The Marthaller site (35JO16; Steele 1981; Deich 1982) is located along the Rogue River, near the confluence with the Applegate and not far from the Ritsch Site. Excavations yielded a rich and varied assemblage of chipped and ground stone tools; wood, bone, and shell objects; and three burials, one with an associated stone pipe. Steele (1981) sees considerable affinity with assemblages from the coast dated to the late prehistoric period. The burials were excavated with the cooperation of local tribal members from the Cow Creek Band of the Umpqua Indians, and re-interred at their request with proper ceremony.

The Saltsgaver (Prouty 1988) site is one of a very few interior valley sites to have been studied by archaeologists because most valley sites are privately owned. The site is located along Bear Creek, near the town of Central Point, in the heart of the Rogue Valley. More than one hundred earth ovens have been recorded at the site. They were probably used for roasting camas. The site yielded two radiocarbon dates, of 5310 ±140 BP and 1900 ±90; the dates were obtained on charred wood and nut or camas fragments from the bottom of two of the ovens. The earlier date was from material collected during preliminary investigations in the 1960's. A series of thirty obsidian hydration dates were also obtained. Readings ranged from 2.2 to 5.5 microns; the broad spread confirms a lengthy period of use at the site. Projectile points were recovered from the surface of the site, and represent types used in the region for approximately the last 2000-3000 years.

Data from excavations at two Rogue Valley sites occupied through the time of contact led Nan Hannon to suggest that the inhabitants were engaged in intensive exploitation of a
very broad spectrum of natural resources (personal communication, 1990). These sites are located in southern portion of the Rogue Valley, which is known as Bear Valley. Excavations produced flaked bottle glass, very small points, and at one site faunal remains from a wide range of species. Reports on these investigations are in progress.

Further west along the Rogue River, and not far from the Elk Creek sites, minor investigations at Far Hills Ranch site produced an abundance of information indicative of a small village site. The site is located near the confluence of the Rogue with Long Branch Creek. A wide variety of tools, a midden, occupation floors, burials, and possible storage pits attest its use as a residential location at least part of the year. Though the investigator did not date the site, the assemblage of projectile points suggest occupation over the same span of time as the Gold Hill site, tentatively dated to about the last 3,000 years and possibly earlier (Davis 1983).

Closer to Crater Lake Park, test excavations at several upland sites in the Cascades illustrate the activities of those who lived and used the foothills to the west of the Park. Three such sites tested along the Crater Lake Highway near the confluence of the Rogue River and Elk Creek augment the studies done as part of the Elk Creek Dam project. These sites are located on terraces and knolls along the river, in the lower elevations of the mountains. One site (35JA189) contains midden deposit associated with densely distributed cultural materials (Connolly 1988). Projectile points indicate habitation during the last 2000 years, with some earlier usage likely; radiocarbon dates which can be reasonably associated with the assemblage also demonstrate occupation during the last 2000 years (Connolly, personal communication, 1989). Another site (35JA190), yielded a high density of debitage, along with a few chipped stone, cobble, and grinding tools (Connolly 1988). Points from the site indicate a date of 2000-1500 years ago, and the possibility of an earlier component is suggested by the distribution of debitage in the test units. Radiocarbon dates from this site, which was extensively disturbed, show occupation for the last 1000 years (Connolly, personal communication). The third site (35JA185) lies along the Rogue River near Shady Cove, just west of Elk Creek (Baxter and Minor 1987). The site contains a rich deposit of artifacts, including predominantly CCS chipped stone artifacts and debitage, and cobble tools and milling stones. Based on the projectile points and one radiocarbon date, investigators suggest occupation during the last 800 years. Further up the Rogue River, closer to the Park and at an elevation of 3400 feet, test excavations at site 35JA133 (Lalande 1983) contributed an assemblage similar to those just reviewed. This assemblage consisted primarily of CCS debitage and chipped stone tools, basalt tools, grinding stones, and an obsidian biface.

Test excavations at four sites on federal lands provide further information regarding sites on the lower slopes of the Cascades west of Crater Lake Park. The Salt Creek Site (35JA77; Satler n.d.) is located at an elevation of 2800 feet, near a spring-fed stream called Salt Creek. The site produced a predominance of cryptocrystalline chipped stone artifacts and debitage, with grading slabs and cobble tools. Projectile points include those from the late prehistoric period (c. 2000-1500 BP), as well as a few possibly earlier specimens. Like this site, the Brokaw Site (35JA48), located at 4500 feet, yielded an abundance of CCS debitage, a
few chipped stone artifacts, and a small amount of obsidian (Lalande 1977). The assemblage is too meager to hazard a date, though the few projectile points suggest long-term use of the site, including the late prehistoric and previous period. Site 35JA81 is located five miles north of the Brokaw Site, at an elevation of 3500 feet (Lalande 1982). Like the other two sites in the vicinity, this one produced mainly CCS chipped stone debitage and tools, along with a few unusual objects. These objects consisted of a fragment of a zoomorphic figurine, characteristic of the late prehistoric period; obsidian blanks; and a cylindrical, two-ended basalt pestle.

In addition to these test excavations, the Rogue River National Forest has also produced a study of obsidian artifacts found on the Forest (Lalande 1990a). This study submitted a total of eighty-eight artifacts from eighty prehistoric sites for obsidian source analyses. The obsidian sources represented in this sample were predominantly from northern California (Medicine Lake Highland sources, to the southeast) and the Klamath Basin (Spodue Mountain and Silver Lake/Sycan Marsh sources, to the east), with a few samples from sources further east. None of the obsidian came from sources north of the Rogue Valley, in the Cascades. Not surprisingly, the sources represented at sites along the upper Rogue River and in the Cascades east of the Rogue Valley contained a higher percentage of obsidian from the Klamath Basin sources, which lie directly to the east.

The Rogue River National Forest holds lands immediately adjacent to Crater Lake National Park to the west and northwest. Surveys conducted in these lands (Prospect Ranger District) have covered over 50% of the land and discovered a number of sites (Lalande, personal communication). West of the Rogue River, along the Rogue/Umpqua divide, there are numerous sites, mainly small lithic scatters containing predominantly CCS artifacts. Projectile points from this area cover a wide range of forms, suggesting use of this area over many millennia. East of the Rogue, in the high elevation lands just west of Crater Lake Park, sites are few; the landscape is dry, since water disappears rapidly into the deep pumice soils. This area, however, does contain meadows which furnish excellent elk habitat, as well as prime huckleberry fields around Huckleberry Mountain.

A sample of twenty-four finds within five miles of the Park boundary yielded nine lithic scatter sites, ten isolated stone tools or flakes, and five rock cairn sites. The lithic scatter sites and isolates consist mainly of cryptocrystalline artifacts, with obsidian present in minor quantities. A number of these finds cluster around Huckleberry Mountain, just beyond the southwest corner of the Park, in the vicinity of the important huckleberry fields there; one of these sites includes groundstone. Four of the rock cairn sites are located on peaks also near Huckleberry Mountain; another site is located near the northwest corner of the Park, on Sherwood Butte.
Summary

Archaeological investigations began in the 1930's, with the excavation of a major Rogue River site, located in the heart of the Rogue Valley at Gold Hill. From the 1960's through the 1980's, dam construction projects stimulated archaeological surveys and excavations in areas affected by construction. These areas were above the valleys, including tributaries to the Rogue River in the foothills of the Cascades just west of Crater Lake Park, as well as in the Siskiyou Mountains west of the Rogue Valley. During the last two decades, further archaeological work has been implemented as a result of federal and state cultural resource regulations. Much of this effort has been focused on the forested uplands, rather than on the valleys. Fortunately, a number of studies at sites in the Rogue Valley and along the Rogue River complement the strictly impact-oriented work, and have provided valuable information for the region as a whole.

This work indicates occupation of the Rogue Valley area for most of the Holocene. Throughout this time, inhabitants appear to have used the resources from both uplands, lowlands, and rivers. Sites occur in river, valley, and mountain settings, though the habitation sites appear confined to the lower elevations. During this time increasingly intensive exploitation of the region's resources seems to have taken place. Semi-sedentary habitation sites, indicated by house structures and well-developed middens and presumably indicative of a more intensive focus on certain resources, do not appear in the archaeological record until about 2,000 - 3,000 years ago. Intensive use of the foothills above the valley appears during this period as well, in the sites at Elk Creek and Lost Creek. In the valley, village sites at the time of contact with Euro-Americans produce evidence of intense utilization of the local food sources.

Cultural contacts with peoples outside the valley are indicated throughout the Holocene, in the use of exotic obsidian at many sites. Artifacts from the Gold Hill and other sites, as well as the pottery of the late prehistoric period, also suggest strong contacts with coastal and Californian peoples.

REGIONAL REVIEW: UMPQUA RIVER BASIN

Setting

North of the upper Rogue River, various creeks and streams drain westerly from the mountains north of Crater Lake into the North and South Umpqua Rivers. Like the Rogue and its tributaries, these rivers provide access to the resources of the mountains from the
interior valleys, and pathways to the eastern lands. From the northwest corner of the Park, streams drain to the northwest, joining the North Umpqua River at Clearwater some twenty miles from Crater Lake. West of the Park and west of the Rogue/Umpqua divide, streams flow into the South Umpqua River. Both the North Umpqua and the South Umpqua Rivers meet in the Umpqua Valley a few miles north of Roseburg. Like the Rogue Valley, the smaller Umpqua Valley provided lowland resources to complement those available along the rivers and in the mountains. From Roseburg, the Umpqua flows north then bends west to head through the mountains to the sea. The climate, landscape, and vegetation of this area is much the same as that of the Rogue River drainage to the south, and like the Rogue River, archaeological sites follow the rivers and tributaries into the mountains (see Map 8).

As elsewhere in the area, the Mazama explosion had a significant effect: rivers and streams were clogged with debris, with periodic floods breaking through the pumice dams (Winthrop 1989). Fish habitat and riparian zones would have been damaged for some period after the cataclysm, until natural processes healed the scars. At the time of historic settlement, burning by the native inhabitants formed an important part of their land use practices (Carlson 1986). This practice contributed to a more open forest along the North and South Umpqua Rivers, with more oak, than is apparent today. Places such as Oak Flats along the North Umpqua were originally dominated by oak; fire suppression has led to the rapid invasion of coniferous species.

Archaeology

Archaeological research in the North and South Umpqua River drainages began in the early 1970's with the implementation of federal environmental protection legislation. Since that time, surveys have located numerous sites, many of which have been at least minimally excavated as part of the evaluation process. In the last few years, this growing body of data has generated a number of more synthetic studies. The most recent study synthesizing information from this area is a cultural resource overview of the archaeology of the Umpqua Basin (Beckham and Minor 1992).

North and South Umpqua River sites encompass a variety of different types, including upland lithic scatters, rockshelter deposits, rock cairn sites, and stratified riverside deposits. The following discussion first reviews archaeological studies from the North Umpqua River drainage area, then from the South Umpqua River area.

In the mountains along the upper reaches of the North Umpqua, the Medicine Creek Site (35DO161) has produced a pre-Mazama component. Located on benches above the river, the site yielded leaf-shaped projectile points; large, broken andesite bifaces; and small scrapers, from below a layer of Mazama pumice (Snyder 1981b). The site also produced an assemblage of chipped stone tools and debitage, bone fragments and groundstone/cobble tools
from a component above the pumice, which was interpreted as the remains of a base camp.

Moving west from Medicine Creek, site 35DO11 on Rhododendron Ridge consists of over two dozen rock cairn features, presumably related to prehistoric vision quest activities (Minor 1976). Not far from Rhododendron Ridge, on Oak Flats above Copeland Creek, another site consisting of about one hundred such rock cairn features lies along a high bluff above the creek (Winthrop and Gray 1987). Both cairn sites are associated with small lithic scatter sites nearby, 35DO12 at Rhododendron Ridge (Minor 1976), and 35DO227 (included with the cairn features) at Oak Flats. Not far from the cairns at Oak Flats, test excavations at site 35DO187 produced an assemblage indicative of a seasonal camp, consisting of chipped stone tools and debitage as well as heavy stone bowls and groundstone (Winthrop and Gray 1987). The forest adjacent to this site also contains numerous ponderosa pine trees which have been scarred by bark removal to obtain the cambium layer for food or medicine. Peeled trees occur throughout Oak Flat, and are also associated with the rock cairn and lithic scatter site just mentioned (35DO227). Based on their size, these trees were probably peeled some time in the last century.

In the uplands above the North Umpqua River test excavations at a number of lithic scatters have yielded modest chipped stone assemblages. These sites include the Muddy site (35DO160; Snyder 1981a), the Apple Creek site (35DO265 Berryman 1987a), the Calf Ridge site (35DO408; Baxter 1988); the Horseshoe site (35DO400; Spencer 1987); and the Little Oak Flat site (35DO289; Berryman 1987b). These sites are interpreted as seasonal, short-term camps or task specific sites. Other such sites lie above tributaries to the North Umpqua. The Snowbird site (35DO399; Jenkins and King 1988) lies above Little River, the Snuff Out site (35DO379; Jenkins 1988) lies above Copeland Creek, and the Reynolds site (35DO372; Churchill 1986) as well as the Steamboat Creek sites (DOX3 and DOX5; Brauner and Honey 1977) are located along Steamboat Creek. Further west above the North Umpqua the Powerline site (35DO398; O'Neill 1988) and the Shivigny East site (35DO397; O'Neill 1988) provide examples of these upland lithic scatters, closer to the Umpqua valley.

It has been difficult to place these sites within a cultural pattern, due to the problem of dating chipped stone materials from featureless, unstratified sites. Many such sites do yield projectile points; stylistic dating of the points indicate that prehistoric peoples have used these uplands at least since the eruption of Mt. Mazama. In addition, several of the sites have had hydration studies performed on the obsidian artifacts. Samples from the Snuff Out site have hydration readings of 1.1 to 5.4 microns, indicating a long span of time; samples from the Snowbird site clustered between 2.9 and 3.9 microns; and samples from Little Oak Flat had relatively small readings of 1.0-1.3 microns suggesting a late period occupation at the site (Jenkins and Churchill 1989:15).

Although most of the upland sites investigated along the North Umpqua have been open-air lithic scatters, test excavations at Limpy Rock Shelter (35DO389; Baxter 1987) provide data from another context. Materials from the limited excavations undertaken at this site consisted of a comparatively dense deposit of chipped stone debitage and tools and small
<table>
<thead>
<tr>
<th>Map No.</th>
<th>Site No.</th>
<th>Site Name</th>
<th>Reference</th>
</tr>
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<tr>
<td>1</td>
<td>DOX3</td>
<td>STEAMBOAT</td>
<td>Brauner &amp; Honey 1977</td>
</tr>
<tr>
<td>2</td>
<td>DOX5</td>
<td>STEAMBOAT</td>
<td>Brauner &amp; Honey 1977</td>
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<td>3</td>
<td>35-DO-11</td>
<td>LOWER RHODY</td>
<td>Minor 1976</td>
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<td>35-DO-12</td>
<td></td>
<td>Minor 1976</td>
</tr>
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<td>5</td>
<td>35-DO-40</td>
<td>CAVITT CRK</td>
<td>Snyder &amp; Honey 1979</td>
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<td>7</td>
<td>35-DO-61</td>
<td>WHISTLER'S BEND</td>
<td>Connolly 1981</td>
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<td>8</td>
<td>35-DO-67</td>
<td>WINCHESTER BR.</td>
<td>O'Neill 1989b</td>
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<td>10</td>
<td>35-DO-160</td>
<td>MUDDY</td>
<td>Snyder 1981a</td>
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<td>35-DO-161</td>
<td>MEDICINE CREEK</td>
<td>Snyder 1981b</td>
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<td>35-DO-187</td>
<td>POWERFUL 1</td>
<td>Winthrop &amp; Gray 1987</td>
</tr>
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<td>13</td>
<td>35-DO-227</td>
<td>POWERFUL 2</td>
<td>Winthrop &amp; Gray 1987</td>
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<td>14</td>
<td>35-DO-252</td>
<td>GATCHEL</td>
<td>Ottis &amp; West 1984</td>
</tr>
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<td>35-DO-265</td>
<td>APPLE CREEK</td>
<td>Berryman 1987a, O'Neill 1990</td>
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<tr>
<td>16</td>
<td>35-DO-274</td>
<td>ORCHARD</td>
<td>Simmons &amp; Gallagher 1985</td>
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<td>17</td>
<td>35-DO-275</td>
<td>SYLMON SCHL</td>
<td>Lyman 1985, Simmons and Gallagher 1985</td>
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<td>18</td>
<td>35-DO-278</td>
<td>BOGUS</td>
<td>Winthrop 1986; 1989</td>
</tr>
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<td>35-DO-289</td>
<td>LITTLE OAK FLAT</td>
<td>Berryman 1987b</td>
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<td>35-DO-372</td>
<td>REYNOLDS</td>
<td>Churchill 1986</td>
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<td>35-DO-383</td>
<td>SUSAN CRK</td>
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<td>35-DO-389</td>
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<td>23</td>
<td>35-DO-395</td>
<td>SHELTER</td>
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<td>35-DO-397</td>
<td>GRUBBE RANCH</td>
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<td>35-DO-400</td>
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<td>35-DO-401</td>
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<td>APPLE CK. BENCH</td>
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<td>35-DO-422</td>
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</tr>
<tr>
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<td>35-DO-142</td>
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<tr>
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<td>35-DO-143</td>
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</tr>
<tr>
<td>39</td>
<td>35-DO-144</td>
<td>MER</td>
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</tr>
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<td>JEWEL</td>
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<tr>
<td>41</td>
<td>35-DO-146</td>
<td>GOLDEN</td>
<td>Snyder 1981d</td>
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<tr>
<td>42</td>
<td>35-DO-205</td>
<td>S. UMP FALLS ROCKSHELTERS</td>
<td>Minor 1987</td>
</tr>
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<td>43</td>
<td>35-DO-209</td>
<td>HUGHES 1</td>
<td>Minor 1987</td>
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<td>44</td>
<td>35-DO-212</td>
<td>TIMES SQ.</td>
<td>Minor &amp; Connolly 1987</td>
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fragments of large-mammal bone as well as a few groundstone tools. The tool assemblage was dominated by late period projectile points. A single radiocarbon date of 430 BP was obtained from a composite charcoal sample taken from the soil matrix at the base of the cultural deposit. The site was interpreted as a late period, task-specific hunting camp.

On a small terrace alongside the North Umpqua itself, data recovery excavations at Bogus Creek (35DO278; Winthrop 1986, 1989) provide an example of a lower elevation location used over several thousand years as a temporary camp. Excavations produced mainly obsidian chipped stone tools and debitage. Point types as well as a series of hydration readings indicate that the site was used intermittently from about 6,000 to 600 BP. Source analysis indicated that materials from Silver Lake/ Sycan Marsh source in the Klamath basin was favored throughout this period. The artifacts reflected short-term, task specific activities related to hunting as the primary activities at the site. Due the site's location in territory used as winter range by deer, it was suggested that the site was a winter hunting camp.

A series of test excavations at six other sites on riverside terraces just east of Bogus Creek reveal that the Bogus Creek site is similar to others along the North Umpqua River (Sites 35DO265, 401, 418, 420, 421, 422; O'Neill 1990; Jenkins and Churchill 1989). These sites produced mainly chipped stone tools, with a few cobble tools at several locations. Several sites have stratified cultural deposits; radiocarbon dates as well as projectile point styles and obsidian hydration readings have helped place these sites in a chronological framework. Radiocarbon dates range from 5200 to 1100 BP; geomorphic work showed that four of the sites were located on river terraces consisting of reworked Mazama pumice, and hence occupied after the eruption. The investigators identify two components, Middle and Late Archaic, on the basis of the radiocarbon dates and a projectile point chronology developed for the North Umpqua (O'Neill 1989c). A possible pre-Mazama component is reported for the Dry Creek site (35DO401) (O'Neill 1992).

Obsidian source studies conducted at these sites suggest the possibility of a shift in obsidian procurement patterns over time; obsidian from the Klamath Basin (Spodue Mt. and Silver Lake/Sycan Marsh sources) is prevalent in the earlier period, with obsidians from Cascade sources, such as Obsidian Cliffs, included in later assemblages. Obsidian usage also appears to decrease with time, with local CCS accounting for a higher percentage later in time. Despite their proximity to the river, these sites—like the Bogus Creek site—do not provide direct evidence for fishing or long-term encampments.

Riverside sites which are closer to the Umpqua Valley produce a wider variety and richer assemblage of artifacts, and are generally interpreted as representing seasonal camps or winter villages. The duration of occupation was longer at such sites and hence productive of a wider variety of activities; these activities generated a diversity of archaeological materials not seen at more specialized, task-specific sites. The Glide Ranger Station site (35DO58; Churchill 1985) is located at the confluence of the North Umpqua River and Little River, at the point where the North Umpqua exits the mountains into the foothills of the Umpqua Valley. The site extends over both banks of the North Umpqua River, and reportedly had
housepits and burials. Very limited testing of the site produced a high density and wide variety of artifacts, and suggested at least two chronological components based on projectile point types.

A few miles east along the North Umpqua, the Narrows site (35DO153; O'Neill 1988a, 1989a) produced the only stratified, radiocarbon-dated cultural assemblage yet investigated along the river. It is located at a significant fishing spot, and ethnographic data indicates that it was an important salmon fishery for aboriginal peoples. It yielded four chronological components. Component 1, dated 90-330 BP includes a wide variety of artifacts and a burial; it was interpreted as a base camp for hunting, fishing, and gathering expeditions. Component 2, dated 1020 and 420 BP, produced a housepit and a variety of stone tools, and was also interpreted as a base camp. Component 3 is dated to 5090 BP; artifacts suggest a seasonally used base camp. Component 4 yielded the oldest radiocarbon date so far from the North Umpqua, of 6270 BP; the comparatively limited assemblage indicates a short-term, seasonal camp. Differences among the components appear to indicate increasingly intensive use of the site over time.

Southeast of the Glide site, along a small tributary to Little River, excavations at the Gatchel site produced evidence of a habitation site (35DO252; Ottis and West 1984). The site is at a relatively low elevation (1000 feet), near spawning grounds on Cavitt Creek and close to the junction of two "Indian" trails. One of these trails headed south over the mountains to the South Umpqua River, and the other headed east along Little River to the crest of the Cascades, in the direction of Crater Lake. A small amount of excavation at the site yielded chipped and groundstone tools, including stone bowl and adze fragments; a possible housefloor; burnt planking; and a baked-clay lined pit. No date was established for the site, although a possible atlatl weight and the few projectile points suggest occupation prior to the late period. Not far from the Gatchel site, test excavations at the Cavitt Creek site (35DO40; Snyder and Honey 1979) produced a dense, but undated chipped stone tool assemblage. This area was reportedly one of the last gathering spots of the local Indians, after settlement of the Umpqua river drainages (Snyder and Honey 1979:32); this site as well as the Gatchel site may represent long-term use of this area. Unfortunately, these sites have been extensively surface collected and neither the Cavitt Creek nor the Gatchel site produced any projectile points attributable to the later prehistoric period.

Evidence for winter village habitation sites comes from the Umpqua Valley. Site 35DO61 (Connolly 1981) extends about a quarter of a mile along the north bank of the North Umpqua, including its confluence with Cooper Creek. Augering at the site indicated that it has a deep, stratified deposit, and produced both chipped and groundstone tools. With only a minimal amount of testing, interpretation of the site as a permanent habitation area seems to rest mainly on its size and depth; no date for occupation was given in the report.

The Grubbe Ranch (35DO395; O'Neill 1989c) site lies west of 35DO61 along the river. Artifacts collected at the privately owned location included stone-bowl mortars, pestles, and a stone hammer. Minimal excavation at the site indicated a stratified deposit reflecting
four possible components, and produced a variety of chipped stone tools and debitage. Heavy cobble tools appear only in the later two components. A basin-shaped oven-like feature was also excavated; associated bits of river-mussel shell provide some evidence that it was used as a mussel steaming pit. This site was interpreted as a seasonal camp, with more intensive use during the late prehistoric period indicated. Another major site (35DO63; O'Neill 1989c) has been recorded along the river, not far from the Grubbe Ranch site. This site contains numerous projectile points and groundstone and cobble tools, and reportedly includes burials.

The Winchester Bridge site (35DO67) lies slightly downstream in the heart of the Umpqua Valley (O'Neill 1989b). Burials have been reported at this site, but the area has been extensively disturbed and any surface indications of a winter village site have been destroyed. Test excavations did produce evidence of intact cultural deposits, possibly representing two cultural components. Artifacts recovered included chipped stone tools and debitage, groundstone, a chopper, and pieces of baked clay. Though no date for the site was ascertained, historic accounts place its use at least in the late prehistoric period (O'Neill 1989b).

Various sites have been excavated or tested along the South Umpqua drainage. A number of these have been small, upland sites with modest chipped stone assemblages. Nine such sites were tested in the late 1970's and early 1980's. These sites produced predominantly CCS debitage and chipped stone tools, as well as a few projectile points representing a range of types, probably spanning a long period of time (Snyder 1978, 1979, 1981d). Two of these sites were located along the South Umpqua River, at comparatively low elevations (sites 35DO142 and 35DO146). The remaining sites were at higher elevations above the river (sites 35DO140, 35DO141, 35DO143, 35DO144, 35DO145, Tiller #1 and Tiller #6).

In addition to these sites, significant archaeological work has taken place at upland rockshelters. Times Square Rockshelter is located above the South Umpqua River, near a small tributary stream (35DO212; Minor and Connolly 1987). It is a large rockshelter, which reportedly contained an aboriginal pole and twine structure; this had been destroyed by the time the test excavations took place. Although the rock shelter had been vandalized, it yielded a unique assemblage of perishable artifacts, including cordage, fiber bundles, twig artifacts such as hooks and a possible snare, and several pointed and charred sticks. This assemblage was found under a rock, representing a possible prehistoric cache of materials. Excavations also produced an assemblage of chipped stone tools and debitage, as well as a few cobble tools, two trade beads, and elk, deer, and rabbit bone. Some of the wood pieces showed evidence of sharpening with a metal knife; the beads and wood pieces indicate that the area was used in the period after contact. The points recovered are types associated with late period use. A radiocarbon date of 2690 ±60 from a firepit, however, indicates use of the site prior to the late period. The large number of hunting implements and debitage indicate that the site was used as a task specific site, at which hunting and tool manufacture were important activities.

Data recovery excavations at two rockshelters above South Umpqua Falls (35DO205;
Minor 1987), a few miles downstream from Times Square Rockshelter, show that these appear to have been used over the course of the last 3000 years. The site consists of an upper and lower rockshelter, which were occupied sequentially. The upper rockshelter produced numerous artifacts and faunal materials as well as a pit burial consisting of at least five individuals. Artifacts from both shelters included chipped stone tools and debitage, cobble tools, bone tools, beads and bear claws (for a necklace), as well as several glass trade beads. The later artifacts were recovered from the lower rock shelter. Radiocarbon dates from charcoal obtained from stratigraphic levels (not cultural features) from the shelters place the beginning occupation of the upper rockshelter at about 3000 years ago, and of the lower rockshelter at about 600 years ago. Basing their interpretation on an analysis of tool types, the investigators suggest that the occupants of the rockshelters engaged in a variety of activities indicative of longer-term usage, and suggest the two rockshelters functioned as seasonal base camps.

Also as part of this project, the excavators tested the deposit at Hughes I Rockshelter (35DO209; Minor 1987), located above a tributary to the South Umpqua River, south of the Falls. This site produced a radiocarbon date, from an ashy lens, of about 1000 years ago. The artifacts recovered from the excavations included chipped stone tools and debitage, cobble tools, an antler wedge, and faunal remains. Like the Times Square Rockshelter, this site was interpreted as a seasonal, task-specific hunting site. Making a comparison among the four rockshelters (including Times Square), the investigators note that the artifacts and dates suggest a strong degree of cultural continuity through the last 3000 years. They argue that change was neither sudden nor dramatic, and appears to reflect the natural evolution of societies in place in the region.

Several open-air sites have been tested on lower-elevation stream terraces adjacent to Elk Creek, which flows from the Rogue-Umpqua divide to the South Umpqua River several miles downstream from the South Umpqua Falls (35DO390, 35DO391; 35DO396; Baxter and Minor 1987) (This is a different Elk Creek from the one which flows south into the Rogue River, at which there has been considerable archaeological work). Testing was confined to a narrow corridor of impact from a proposed fiber-optic cable, and yielded few materials at two of the sites, although more extensive deposits were noted beyond the project boundaries. At site 35DO396, however, a comparatively wide variety of chipped stone and groundstone artifacts were recovered from a modest amount of testing. The site is associated with a known Cow Creek Indian encampment, and produced evidence of occupation during the late prehistoric period.

The Crispen Ranch site (35DO36; Baxter and Minor 1987) is also located in a known Cow Creek use area, on the South Umpqua River just south of its confluence with Elk Creek. Testing at this large, open site confirmed this area as a significant habitation spot. The excavation uncovered two features, one a hearth and another a stacked cobble feature, and recovered chipped stone tools and debitage, groundstone and cobble tools, and faunal remains. Charcoal from beneath the cobble feature yielded a date of 620 ±60 years BP.
A stratified site excavated along Section Creek (35DO219), a tributary to Elk Creek, produced evidence of three components. Radiocarbon dates, cultural stratigraphy, and obsidian hydration date occupation from about 3,000 years ago. Ethnohistoric information indicates that the site was a winter village; the wide variety of materials from the later components confirm this view (O'Neill 1991).

Testing and data recovery excavations at Coffee Creek Bridge (35DO412, 35DO413; Baxter 1988; Musil and Minor 1989) produced information on sites located on river terraces adjacent to the South Umpqua River. The sites yielded limited chipped stone artifact assemblages and one millingstone, suggesting use of the location as short-term, seasonal camps. The sites' location at the confluence of the South Umpqua River and a major tributary, as well as its lowland location, however, suggested use of this area for longer-term habitation. The investigators argue that the extensive disturbance to the area has made it impossible to discern evidence for a village site, if it had existed at this location.

Further west in the Umpqua valley, data recovery at the Sylmon Valley school provides information on one of the few valley sites investigated in the area (35DO275; Lyman 1985). This site is located on a river terrace adjacent to the South Umpqua River, a few miles before its confluence with the North Umpqua. Artifacts recovered from the site include a number of late period projectile points, chipped stone tools and debitage, cores, cobble tools, and netsinkers for fishing. No evidence of habitation structures was encountered, and the excavators considered this a seasonal camp. Not far from this site, also along the river, limited test excavations at the Orchard site (35DO274; Simmons and Gallagher 1985) produced a similar array of artifacts.

O'Neill's dissertation (1989c) provides a synthesis of this body of data from the Umpqua drainage basin, and develops a projectile point chronology. This work compares projectile point assemblages from the North and South Umpqua drainages, as well as from a few sites along the main stem of the Umpqua River in the mountains west of the Umpqua Valley. These statistical comparisons yielded three groups having both temporal and spatial significance. O'Neill argues that one of these groups represents a basin-wide expression of an early culture pattern, identified with the Middle Archaic (6000 - 2000 BP). This pattern gave way to the Late Archaic (after 2000 BP) pattern, termed the Falls phase which persisted in the South Umpqua area until contact. In the North Umpqua drainage, a different Late Archaic pattern, termed the Narrows phase appears about 400 years ago. O'Neill argues this pattern may represent the advent of Athapascan speakers to the North Umpqua River.

O'Neill's study also tests a series of hypotheses concerning cultural stability and change in southwestern Oregon put forth by Connolly several years previously (Connolly 1986). Connolly examines regional trends manifested in a number of sites from southwestern Oregon. His work (discussed further in the next section) suggests that this area was inhabited by peoples pursuing a nomadic, foraging existence for an extremely long period of time. This cultural pattern, he argues, persisted in remoter areas even as new cultural patterns were making their appearance in the valleys and along the major river. O'Neill's study refines
Connolly's analysis for data along the North Umpqua, where he sees an earlier pattern replaced rather late by a possibly intrusive one.

Archaeological surveys in the Diamond Lake Ranger District have located a sample of sites within five to seven miles of the Park's northern boundary. These sites include two rock cairn sites at Mt. Thielsen and near Mt. Bailey, as well as four small lithic scatters located between the northern Park boundary and Diamond Lake, near streams and small lakes, and near Garwood Butte. Four isolated finds of projectile points or obsidian flakes occur near Diamond Lake and near Garwood Butte. The sites found near the northern border of the Park are thus similar to those found on the Rogue River and Winema National Forests to the east, west, and south.

Summary

Archaeological work along the North and South Umpqua Rivers has taken place primarily in the last two decades as a product of cultural resource protection regulations. Numerous sites have been evaluated under the federal guidelines establishing criteria for significance, and a few have been subjected to data recovery excavations as part of the mitigation process. In addition, this large body of data has stimulated more synthetic studies, such as the dissertations by O'Neill (1989) and Connolly (1987), which have attempted to provide cultural chronologies for the region.

The sites themselves occur in the uplands, along the rivers, and in the interior valleys west of the mountains. Although federally mandated projects contribute to a bias towards the forested upland areas, other projects have led to surveys and investigations in the lower elevations. Radiocarbon and other dates firmly establish use of this area in the post-Mazama period, while a few sites have yielded cultural materials below the Mazama pumice and ash. As in the Rogue Valley and uplands to the south, larger, more intensively occupied sites appear in the lower-elevation valley and foothill locations. Sites at higher elevations and along the rivers within the mountains have limited assemblages, indicative of short-term, task specific and seasonal activities. Sedentism may be associated only with the later prehistoric period, though further work may change this perception.
EVALUATION OF ARCHAEOLOGICAL RESEARCH ISSUES

Introduction

This section reviews the major themes orienting research in southwestern Oregon along with the methods used to achieve these research goals, and the theoretical lenses through which scholars have interpreted the results of this archaeological work. As noted several times in this report, the prehistory of Crater Lake National Park is integral to that of the surrounding regions, and this review encompasses that greater area of research.

Five major research orientations have guided much of the previous work in the region. (1) Chronology is the first concern; without a chronological framework the investigation of other issues has little basis. (2) Land use patterns, expressed through analysis of subsistence practices and settlement locations, provide a second major research theme. Determination of a site's function or use is an important step in land use concerns, and site specific studies always address this question. (3) The cultural identity or affiliation of a site's inhabitants is the third major area of concern, and reflects attempts to relate sites to identifiable cultural groups. (4) Intergroup contacts and relationships form a fourth major research question; examination of this issue has focused mainly on trade relations. (5) Finally, detailed studies of stone tool manufacturing techniques, styles, and procurement patterns form a fifth major research focus.

In addition to these fundamental concerns, other questions which have received less attention may well prove important in the future. These include the study of social organization; ideology, religion and world view; the effects of both indirect and direct contact with Euroamericans during a "protohistoric" period; and the role of technological change in prehistoric cultural transformations.

Selection of research topics as well as the interpretation of archaeological data reflects the theoretical orientation of the researcher. The above list of research topics has been generated by at least three overlapping—but sometimes competing—Theoretical perspectives. The first is the cultural historical approach; the second is an ecological/materialist approach; and the third is a perspective which draws upon studies of cultural variability and complexity among hunters and gatherers to postulate an evolutionist framework for the prehistory of this region.

Chronology

Methods of dating sites and artifacts within the region are of particular interest to the
Park, since materials from the Park must tie into chronological schemes developed for adjacent areas. Projectile points are frequently identified as significant markers of specific chronological periods, and are the most numerous category of artifact yet recovered from Crater Lake National Park. The following review describes those projectile point chronologies most commonly in use or applicable to adjacent lands, and reviews other methods for dating materials and sites (see Figures 1-5). Particular emphasis is placed on those issues of specific relevance to dating Park materials.

In the Klamath Basin, sites are often dated with reference to projectile point schemes worked out in the northern Great Basin as a whole (e.g. Heizer and Hester 1978). Chronological work more specific to the Klamath Basin, however, appears in the study of Nightfire Island (Sampson 1985) and in the study conducted by Hughes (1986). Though Sampson stops short of establishing a point chronology from the Nightfire Island site, he defines a sequence of point styles which are based on radiocarbon, stratigraphic, and obsidian hydration data, as well as on stylistic correlations with other sites. Hughes does produce a projectile point chronology based on analysis of materials from both Kawumkan Springs and Nightfire Island; this is given below, against the basic chronology for the northern Great Basin (see Figure 3). The reader should refer to the references just cited for the definition of projectile point types; only very basic illustrations of these types are reproduced herein.

A hydration rate for the Klamath basin was derived from studies of Nightfire Island artifacts. This study was conducted in 1969 (Johnson 1969), in the early days of hydration dating, but is the only study available for the Klamath Basin. It was used to refine the dating of Kawumkan Springs (Aikens and Minor 1978). In this latter work, projectile points were categorized according to Great Basin typologies, and subjected to hydration analyses. Results yielded broad agreement between Great Basin point sequences and those derived from the hydration data in the northern Klamath Basin.

West of the Cascades several regional cultural historical schemes have provided the basic framework for ordering sites. The one with the widest applicability follows the broad divisions of the Archaic period used throughout western North America (Beckham et al. 1981). In Oregon, the model is based on projectile point chronologies worked out initially for the Willamette Valley (see Fig. 2). In this scheme, projectile point size, and especially neck-width, provides a frequently used criteria for placing points in chronological order. Late Archaic narrow-necked points are considered representative of the introduction of the bow and arrow, and hence later than Middle Archaic broad-necked atlatl dart points; both types succeed the Early Archaic large, unstemmed spear points representative of the earliest periods.

Despite its usefulness in initially ordering sites, there are a number of problems with this framework. First, the chronological divisions encompass too many thousands of years to provide more than the most general statements about regional prehistory. Second, sites are frequently assigned to a chronological period based on identification of a few artifacts; rarely have sites been independently dated to provide local dates to this broad model. There is evidence, for example, that the larger, broad-necked projectile points indicative of the Middle
Archaic actually persisted in use much longer in the mountainous areas north and west of Crater Lake than the dates established elsewhere suggest (Baxter 1986; Connolly 1986).

In both the Rogue River and Umpqua River drainage areas, however, there have been recent attempts to overcome these problems by establishing local chronologies. The Elk Creek dam project has stimulated this effort in the Rogue Valley (Budy et al. 1986; Pettigrew and Lebow 1987; Nilsson and Kelly 1991). The later study (Pettigrew and Lebow 1987) presents a local projectile point chronology, based on a synthesis of stratigraphic, radiocarbon, obsidian hydration, and stylistic analyses for the area. This was refined in the subsequent study by Nilsson and Kelly (1991). In defining chronological periods, the study also identifies other characteristics of the material record which are indicative of specific time periods. Obsidian was comparatively more abundant locally before 4500 BP, for example, and pottery occurs at sites dating from AD 900 to AD 1600. In the process of establishing this chronological framework, Pettigrew and Lebow also provide the first obsidian hydration curve for the valley. The latest investigations at Elk Creek have refined this chronology, and have confirmed the hydration curve established by Pettigrew and Lebow (Nilsson and Kelly 1991). See Figures 1 and 4 for these chronologies.

Dissertation research by O'Neill (1989) represents the first attempt to refine the point chronology for the Umpqua basin. Working with a number of sites, O'Neill performed a series of statistical analyses which produced clusters of sites (or site components) identified by groups of co-occurring projectile points. He also seriated the projectile points for these sites. The results of these analyses provide three groups of projectile point types which have chronological significance for the North and South Umpqua River drainages. Although small points clearly dominate later assemblages, some of the broader-necked varieties also associate with assemblages from the later periods, attributed by O'Neill to mixing of compared assemblages (see Figure 5).

O'Neill's pioneering efforts make the first contribution to defining a local chronology in the Umpqua River drainage basin. Such efforts, however, can be no better than the data which contribute to them, and dating is frequently problematic in the region, especially at Umpqua sites. There are few stratified sites which have been excavated along the Umpqua or its tributaries; there is only a very small body of obsidian data available and no synthesis or interpretation of it; and there are only a handful of good radiocarbon dates from clearly identifiable cultural contexts. O'Neill's study makes the most of the data so far available, however, and provides a working framework for stylistic dating of archaeological materials in the area. On-going research in the area continues to augment and refine this model (e.g. O'Neill 1991).

Individual sites within southwestern Oregon are dated by a variety of means, each of which presents problems for use in this area and which at times yield conflicting data. Some of these methods and problems are especially pertinent to the study of sites in this mountainous area, and as such have particular relevance for Crater Lake National Park. The major methods of chronologically ordering sites here, as elsewhere, include stratigraphy,
Figure 1: REGIONAL CHRONOLOGIES

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Figure 2: WESTERN OREGON PROJECTILE POINT CHRONOLOGY
(after Beckham et al. 1981)

Late Archaic

1800 BP

Middle Archaic

6000 BP

Early Archaic

8000 BP
Figure 3: KLAMATH BASIN PROJECTILE POINT CHRONOLOGY
(after Hughes 1986; Heizer and Hester 1978)

Key
NSN Northern Side-Notched
H Humbolt
P Pinto (Bare-Creek)
E Elko
EG Eastgate
RS Rose Springs
DS Desert Side-Notched
G Gunther
Figure 4: ROGUE BASIN PROJECTILE POINT CHRONOLOGY
(after Pettigrew and Lebow 1987)

Present
RRB
RRDC
RRDS
SNCB

1000
CSN
ECSB
WLS

2000
Rogue

3000
Coquille

4000
Marial 2

5000
Marial 1

6000
Applegate

RRB  Rogue River Barbed
RRDC  Rogue River Distally Constricted
RRDS  Rogue River Diverging Stem
SNCB  Side Notched Concave Base
CSN  Coquille Series Narrow-Necked
ECSB  Elk Creek Square Barbed
WLS  Willow Leaf Small
CSB  Coquille Series Broad-Necked
WLM  Willow Leaf Medium
WLL  Willow Leaf Large
SNSB  Side Notched Straight Base
WLXL  Willow Leaf Extra Large
DSB  Diverging Stem Broad Necked
Figure 5: UMPQUA BASIN PROJECTILE POINT CHRONOLOGY

Narrows Phase: North Umpqua River

Falls Phase

400 BP

2200 BP

Middle Archaic

620 BP
radiocarbon, obsidian hydration, and stylistic methods.

Well-stratified sites are rarely investigated in the region, nor is determining cultural stratigraphy at a site always an easy affair. Many of the sites investigated are open air sites, located in upland, forested environments where soils have suffered extensive mixing from natural processes such as tree blow-downs, root growth and decay, and the actions of burrowing rodents. Furthermore, these sites are apt to be short-term occupation sites, where cultural deposits are relatively light and do not contribute to a build-up of materials readily identifiable in a vertical profile of the site. Such sites may, however, be horizontally stratified, representing different occupation episodes across the site. Those few vertically stratified sites which have contributed notably to the chronologies mentioned above are frequently located on river terraces or along water courses. Such sites include the Marial site in the Rogue River; the Narrows site in the North Umpqua drainage, and Nightfire Island site in the southern Klamath Basin.

Occasionally, where studies of the depositional environment are equivocal but artifact density is comparatively high, debitage concentrations are mapped and density peaks used to distinguish horizontal as well as vertical stratigraphy. A sufficient sample of obsidian hydration readings from a site may also help distinguish components and give a relative ordering of those defined through other means (e.g. Bogus Creek, Winthrop 1989). This technique facilitates the determination of both horizontal and vertical components within a site. Both of these methods of determining site components have particular relevance for sites in upland, forested environments, and hence may have pertinence to studies at the Park.

Obsidian hydration studies have not been broadly employed in the region, although the technique is becoming increasingly popular and has been used in major studies such as those at Elk Creek. Initial hydration rates exist for the Rogue Valley (Pettigrew and Lebow 1987; Nilsson and Kelly 1991) and the Klamath Basin (Johnson 1969; Aikens and Minor 1978). Obsidian is abundant in the region; even though there are many sites with comparatively low percentages of obsidian artifacts there are few sites with none. Perhaps more than any other technique, obsidian hydration dating has the potential to knit the many short-term sites typical of the uplands into local chronological frameworks. The Park should make maximum use of this technique in order to make a contribution to this effort.

Carbon 14 dates provide the most reliable basis for absolute dating in the region. Radiocarbon dates are difficult to obtain, however, since preservation of datable carbon is difficult in open-air, forested sites. In addition, many small, upland sites lack features which are clearly related to cultural strata or artifacts. Most radiocarbon dates, therefore, come from sites located along streams and rivers, or from rockshelter deposits, since these areas are both more likely to contain features and to have distinguishable cultural strata. Any prehistoric features with the potential for radiocarbon dates which are discovered within the Park take on extra significance within this context; the potential of such sites should be realized.

Since the people using the Park came from adjacent lands, then interpretations of Park
materials will depend upon those local chronologies developed to the east and west of the Lake. At the same time, materials from the Park can contribute to the development of good local sequences. Park archeology should not depend entirely on stylistic cross dating but should use whatever means are available to independently date Park sites and artifacts.

**Land Use Patterns: Subsistence and Settlement**

The manner in which prehistoric hunters and gatherers interacted with the natural environment has been a pervasive concern in southwest Oregon archaeology as it has been elsewhere in the United States. This concern is most often expressed in the investigation of subsistence and settlement regimes. Several land-use models have been developed for the areas adjacent to the Park. These models include use of the uplands; hence they have relevance to the use of Park lands.

East of the Park, the Klamath/Modoc way of life, outlined in Chapter 3 of this report, serves as a model for subsistence/settlement strategies in the Klamath Basin prior to Euro-American contact. This model emphasizes an adaptation to the resources of the lakes and marshes, with fish and water fowl as major protein staples and wokas (water lily) seeds as a major vegetable food. Upland resources complemented the aquatic foods, but were not as important. Major settlements were located near the lakes and marshes; seasonal use of the uplands for terrestrial resources took place during the warmer months.

West of the Cascades, the ethnographic data indicate an annual subsistence round reflecting the rhythm of lowland winter habitation alternating with warm-weather upland use. Foods were stored in permanent winter villages located along rivers or other reliable sources of water at warmer, lower elevations. In the spring, summer, and fall, the villagers dispersed into the countryside and higher elevations, seeking game and plant foods as they became available (Baxter 1986:47; Lyman et al. 1985). Riverine resources, especially anadromous fish, were important spring and fall crops. Provisions were collected during the warmer months and stored for the winter; some winter foraging took place, especially hunting of game driven to lower ground by the snowy winters of the mountains.

Translated into an archaeological idiom, this generalized pattern is thought to produce three basic types of sites (Beckham et al. 1981:147; Lyman et al. 1985): (1) winter villages; (2) summer base camps; (3) task-specific sites. The location of these types of sites was subject to environmental constraints. Winter villages, for example, would not occur at high elevations experiencing long periods of harsh weather, or distant from a good source of water. Summer base camps, where families would stay while availing themselves of resources within the vicinity, require at least a good water source and sufficient flat space to camp. Task specific sites occur near the resources generating the activity.
Both of these models for land use to the east and west of Crater Lake postulate seasonal use of the uplands for resource extraction. However, the abundant aquatic resources of the lakes and marshes to the east may have reduced the reliance of Klamath basin peoples on resources of the high elevations of Crater Lake Park. To the west of the Park, however, the seasonal round may have generated use of these high elevation lands, as part of the mid- to late-summer food-gathering regime. Yet such use would also compete with exploitation of more generously distributed resources (game, plant foods, fish) at more accessible locations.

The patterns derived from ethnographic information do not address the question of change through time; nor do they account for local variations arising from the variety of ecological situations offered in the region. This need for more locally refined or chronologically specific patterns has given rise to several alternative subsistence/settlement schemes.

Connolly's dissertation (1986) sets forth an argument for significantly different patterns of land-use throughout the long prehistory of this area. He groups artifact assemblages from a number of sites in southwest Oregon statistically and identifies three distinct cultural/temporal patterns. The earliest pattern, called the Glade Tradition, represents an extremely long-lived and stable cultural tradition which persisted from the beginning of the Holocene, which was gradually replaced after about 1500 years ago. The Glade Tradition is characterized by a "generalized hunting and collecting strategy oriented toward terrestrial resources". Small, mobile bands of foragers are inferred as part of this pattern, and "occupation sites appear to be predominantly temporary camps", frequently located at valley edges (Connolly 1986:214).

The two later patterns, called Siskiyou and Gunther Patterns, are similar to the subsistence and settlement patterns described for the native peoples in the ethnographies of this area (see Chapter 3 this report). These later patterns are characterized by settlement in nucleated river-side villages with fishing and intensive use of other foods as an important part of the subsistence regime. The transition from the Glade Tradition to these later patterns thus represents a significant shift in subsistence and settlement practices, from highly nomadic foraging groups to those living a more settled existence in semi-permanent villages located along major rivers and streams. Implied in this change is a shift to a way of life in which resources are collected and stored in central villages, coincident with somewhat greater groupings of people.

In another model, Pettigrew and Lebow (1987) argue that local variations in resource availability account for differences in settlement regimes. In their work along Elk Creek, these authors note the existence of small, residential hamlets within the foothills of the Cascades just west of Crater Lake National Park. Drawing upon data from the Rogue Valley as a whole, they argue that the regional settlement system involved two kinds of habitation sites: large riverside villages (with multiple houses and extended families) on large streams where salmon could be relied upon as a staple, and small homesteads or hamlets (with one extended family group and one to three houses on average) fairly evenly scattered across the landscape on smaller streams. Though similar food staples would be used by these groups
(i.e. salmon, deer, acorns), emphasis would vary depending on availability within any group's territory. Salmon, for instance, were of "paramount importance to the large riverside villages while acorns and deer were more important for the homesteads. . . the resource distribution largely determined the settlement distribution." They further suggest that a lifeway involving small housepit settlements as central bases and wintertime habitation sites is of considerable antiquity (1987:12.11).

In a recent dissertation, Winthrop (1993) sorts sites from the Umpqua and Rogue basins into functional categories and chronological periods, and discerns a change from a early, mobile subsistence/settlement pattern to a later, more sedentary regime. In the earlier period, inhabitants of this area apparently followed a way of life which included travel among various resources as they became seasonally available, probably within well-defined territories. After about 2,000-3,000 years ago, however, a more sedentary existence appeared, in which resources were collected and stored at permanent villages. The seasonal round continued, however, as inhabitants moved out of the villages to warm-weather encampments to collect provisions for the winter.

These land use models all recognize the complementarity of lowland and upland resources in the region. One of the only studies to specifically address the significance of the upland component, however, is a study of land use patterns in the central Oregon Cascades, north of the project area (Snyder 1987). Snyder notes that "high country adaptations" stress exploitation of seasonally available plants and animals in successively higher elevation zones beginning in early spring. Mountain resources of importance to human groups tend to clump in non-forested meadows and mires, which support numerous plant species and provide primary forage for deer and elk. On the west side of the Cascades such areas are widely distributed and found in several topographic settings; on the east side, however, such locations are more restricted to river bank and lake shore settings (Snyder 1987:140). Examining site location data for her project area, Snyder discovered a significant association between these resource rich areas and upland archaeological sites. Such areas in or near the Park would provide destination zones for prehistoric hunters and gatherers.

Studies of prehistoric land use practices depend upon the validity of the ethnographic, archaeological and environmental information upon which they are based. There are a number of problems which affect research into these questions. The first is the lack of good paleoecological research in the region. Though the broad outlines of Holocene environments are known, the specific effects of environmental change in southwest Oregon is not yet well documented. The second concerns the reliance on ethnographically described cultural patterns as models for prehistoric patterns. As suggested in the studies by Connolly and Winthrop, earlier peoples may have followed a way of life significantly different from that of people at the time of contact, and for which there may be no local, ethnographic analogs. This fact suggests that models derived from a broad range of hunting-gathering-fishing societies would be applicable to this area. A third critical problem throughout the region arises from the biases inherent in the archaeological record. The location of known sites which contribute to and test land-use models is heavily biased to areas where modern activities have affected the
landscape, especially on federal lands.

Furthermore, analysis of site function, a basic constituent of land use models, frequently rests solely on analysis of the types of artifacts recovered. Site functional analyses in this region have rarely employed the many techniques which may be used to determine human activities at a site, such as flotation, soils analyses, blood residue studies, microwear analyses, or site catchment studies. Increasingly sophisticated handling of site materials will contribute greatly to studies of settlement and subsistence regimes, and is strongly recommended for studies conducted within the Crater Lake National Park.

Finally, we suggest that existing models consistently assume the priority of material subsistence needs in the formation of settlement patterns. While these needs were critical, other factors contribute to land use patterns. For example, use of the landscape for vision quests has left a substantial number of ritual sites within the project area. Trade was also important among the groups who lived in the region; examination of trade and travel routes should account for the location of a number of sites. A more comprehensive attempt to model prehistoric land-use patterns which takes account of these other factors would be of particular relevance to the Park lands. High elevation Park lands may not have provided highly desirable locations for resource use, but may have been utilized for resource extraction co-incident with other purposes, such as religious quests or trade expeditions.

Cultural Affiliation

The cultural identity of the people who produced the archaeological sites in southwestern Oregon has been a concern expressed in many studies. This concern translates into questions regarding the longevity of the native tribes in the area; the incursion of other peoples into the area and the expansion or contraction of their territories over time; the transformation versus the replacement of peoples in areas exhibiting cultural change; and the lowland affiliations of those who used the Cascade uplands during the warm seasons of the year. Some of the major hypotheses regarding the cultural affiliation of southwest Oregon prehistoric peoples are briefly reviewed here.

Ever since Cressman's (1956) work in the Klamath Basin, it has been assumed that the Klamath Indians have inhabited that area for thousands of years. Cressman saw a long record of unbroken occupation at Kawumkan Springs, and research in the basin since Cressman's time has not yet produced evidence to challenge this view. Further to the south, the site of Nightfire Island also shows a stable record through numerous periods of occupation, spanning approximately 6000 - 1000 BP (Sampson 1985). This archaeological data receives support from linguistic analyses. As Stern has noted, the geographic distribution of the Klamath-Sahaptin languages supports the idea of "a long autochthonous development" in the region (Stern 1966:4).
West of the Cascades, the situation appears more complex. According to linguistic evidence, Athapascan speakers such as the Upper Umpqua and various coastal groups were late arrivals to the region, coming within the last one to two thousand years. Various recent studies have attempted to identify these immigrants in the archaeological record. In his dissertation research (noted above), Connolly identifies the "Gunther Pattern" with ethnographic Athapascan sites along the coast, and argues that the appearance of this pattern represents the immigration of Athapascan speakers to southern Oregon. Inland, the Siskiyou Pattern appears beginning about 1500 years ago; Connolly sees it as an introduced way of life, possibly spread through local population shifts and originating through the influence of the western Athapascons or from the peoples to the south and east.

O'Neill's (1989) work in the Umpqua River drainage basin (noted above) also identifies one pattern with immigrant Athapascons. His analysis defines a Middle Archaic pattern which changes to a Late Archaic pattern, termed the Falls Phase, about 2000 years ago; no population shift or immigration is postulated for this change. This pattern persists in the South Umpqua drainage basin, where it is identified with the Takelman (Penutian speaking) Cow Creek Band of Indians at the time of contact. However, the Falls Phase is replaced about 400-500 years ago by another pattern (the Narrows Phase) along the North Umpqua River. O'Neill identifies the Falls Phase with the incursion of the Athapascanspeaking Upper Umpqua Indians, who were present in this area at the time of contact.

Another concern is the identification of Molala Indian sites in the archaeological record. This group presumably inhabited the Western and High Cascades, with little more than a winter toehold in the western interior valleys. As a mountain-adapted group, they are prime contenders for the use of Park lands. Just north of the Umpqua Basin they are tentatively identified as late arrivals from the east, bearing an abundance of narrow-necked arrow points which appear rather suddenly in the archaeological record around 600 years ago (Baxter 1986). Within the study area, there is as yet no postulated archaeological signature for the Molala, although Pettigrew and Lebow note that the distribution of ceramics may mark a cultural boundary between Takelma and Molala along upper Elk Creek (1987:12.16). That is, sites lacking ceramics further upstream may have been Molala habitations.

These few examples highlight the complexity of the archaeological record in interior southwestern Oregon. Considerable temporal and spatial variation is present, and attempts to understand that variation has produced several scenarios for the identity of prehistoric peoples in this region. Against the apparent stability of the Klamath Basin, the valleys and mountains west of the Park appear to have experienced greater changes. Confirmation of this impression, however, depends upon future research and the comparison of data from the two distinctive geographic areas.
Intergroup Contacts

In addition to defining different groups within the region, the nature of the contacts among them has provided a significant research interest. Trade relations have been the major focus of this interest, with obsidian studies providing a vehicle for investigating such contacts. Obsidian endures in the archaeological record and can be traced to its geologic source, giving a map of the movement of an important resource.

Obsidian sources exist east, south, and north of the Crater Lake, and obsidian was widely traded throughout southwest Oregon. Obsidian is not uniformly distributed at archaeological sites throughout the region, however, nor does its distribution remain constant through time. Patterns of obsidian distribution may be used to delineate group territories and trade routes, although such studies are not yet well-developed for this region. Sourcing analyses constitute a fundamental research method for these studies.

The Klamath Basin has two local sources of obsidian, the Spodue Mountain source and the Silver Lake/Sycan Marsh source. Both are in the northern part of the basin, with the Spodue Mountain source closest to Crater Lake National Park. Hughes's (1986) study of changes in obsidian usage through time in the Klamath Basin, as well as other parts of the northern Great Basin, revealed major shifts in obsidian procurement patterns at both Kawumkan Springs and Nightfire Island. Though local sources were heavily used during early and late periods, the use of non-local sources to the east dominated during a period from about 3300-1800 BP. The reason for this shift is as yet unknown.

In the Rogue River area, obsidian from the two Klamath Basin sources and from the Medicine Lake Highland in California dominate the sources used (Lalande 1989; Pettigrew and Lebow 1987). In a study of artifacts from the Rogue River National Forest, which encompasses lands adjacent to Crater Lake National Park as well as south and west of the Rogue Valley, Lalande distinguishes several trends in obsidian usage. He notes that in the Cascades the Klamath Basin sources predominate, although the Medicine Lake source is more commonly found on the Forest as a whole. The Klamath Basin sources are closest to sites in the Cascades, and occur within the territory of the ethnographic Klamath. At the time of contact the Klamath Indians regularly spent part of the summer season at Huckleberry Mountain. These rich huckleberry fields lie just southwest of Crater Lake National Park and were frequented by west-side peoples as well, giving both groups opportunities for contact and trade. LaLande also identifies a shift towards greater reliance on Medicine Lake Highlands obsidian for the Rogue Forest as a whole, during about the last 1500 years; however his sample is admittedly small and conclusions tentative.

In the Umpqua Basin, obsidian source analyses have contributed to an hypothesis concerning obsidian procurement patterns along the North Umpqua in the vicinity of Steamboat Creek (Jenkins and Churchill 1989:13-15; O'Neill: 1990:124). Studies suggest that during an early period, about 6000 to 1100 BP, the northern Klamath Basin sources (Spodue
Mountain and Silver Lake sources) contributed almost all of the obsidian used. After about 1200 years ago, during the late prehistoric, other sources appear more frequently in the archaeological record, suggesting a broadening of the procurement patterns. Obsidian from Obsidian Cliffs, to the north in the central Cascades, as well as from the Newberry Crater in central Oregon are increasingly represented, as are a few artifacts from other sources. Along with this apparent extension of trade networks, however, O'Neill notes evidence for a trend towards increasing use of local CCS at the expense of obsidian at several sites.

These studies represent the initial steps in constructing a model of intergroup trade and contact during the prehistory of this area. As yet there have been few attempts to model trade for the region. Such an effort would require a much larger body of obsidian sourcing data, coupled with hydration studies to give at least relative chronological control. Modelling trade also requires careful attention to ethnographically known trade routes and points of contact, as well as attention to geographical possibilities for travel. Consideration of all items traded (in addition to obsidian) is a necessary part of such efforts. Pettigrew and Lebow (1987), for example, point to the predominance of small scrapers in Rogue Valley sites at a time when obsidian is particularly abundant at these sites, and suggest that hides were important trade items used in exchange for obsidian. The study of intergroup contacts of which trade is a part requires a regional perspective. Crater Lake lies between very different ecological regions, each supplying different resources; trade among the various groups in the region may have engendered considerable travel within the vicinity of the Park.

Lithic Analysis

Chipped stone tools and debitage are frequently the primary—if not the only—categories of artifacts found at many archaeological sites, a fact which has led to an emphasis on the detailed analysis of such artifacts as part of site-specific studies. The aim of such studies is usually to identify which part of an overall "lithic system" is expressed at a given site. The lithic system constitutes all the activities involving stone tools from the original procurement of the stone, through the various phases of tool manufacture and reworking, to the final discard of the used or broken artifact. Such studies can contribute to questions concerning trade and intergroup contact, resource procurement strategies (with the raw stone material considered along with other subsistence materials), and to the definition of cultural groups or ethnic boundaries based on consistent differences in stone working techniques and/or raw materials used.

Although methods of lithic analysis in southwestern Oregon have become increasingly sophisticated, there have been few studies which use the information gained to address the issues noted above. The initial study at Elk Creek (Budy et al. 1986) represents one of the few efforts to apply a complex theoretical model to the interpretation of local sites. The authors use a cost/benefit model to explain variation in the lithic artifacts recovered from two
sites, which in turn contributes to their analysis of the function of each site.

More commonly, artifacts from sites investigated are subjected to technological analyses to determine the stage in the reduction sequence which is present at a given site. Though a useful exercise, this procedure suffers from a number of problems. Reduction models which are used in the analysis are biased towards biface reduction techniques (e.g. Sullivan and Rozen 1985; Callahan 1979); other types of reduction strategies (such as bipolar re-cycling of utilized bifaces) may go un-noticed in the analysis or may receive inadequate treatment. Furthermore, though most researchers recognize the problem of mixed assemblages, the analyses of site materials frequently proceeds as though a single cultural group or occupation episode produced the artifacts.

These problems appear most critical at those sites which were used for short-term occupations over long periods of time, such as upland lithic scatters and seasonal task-specific sites. Such sites rarely receive the type of funding which makes possible the detailed and creative analysis necessary to sort through or work with the types of problems they present; studies such as those conducted at Elk Creek are the exception rather than the rule. Should such sites be investigated at the Park, full attention to the regional lithic system, in addition to focused technological analyses, will provide the maximum interpretive framework.

Other Research Concerns

In addition to the research questions discussed above, there are a number of equally important issues which have received less attention. Although most of these topics require evidence which is difficult to obtain from the archaeological record, there is an increasing amount of information suitable for their investigation as well as a growing interest in them. These topics include the identification and description of prehistoric social organization; the effects of technological change on prehistoric groups; modelling of ideological systems; and the possibilities of cultural transformation during a "protohistoric" period.

The social organization of prehistoric groups—such as the structure of villages, bands, and families—has largely been assumed on the basis of local ethnographic analogies rather than demonstrated through examination of the archaeological record. There is today considerable information regarding differences among hunter-gatherer societies, based on study of historically and ethnographically described peoples. A distinction between "foragers" and "collectors", for example, is widely recognized. Foragers refer to those peoples whose economy is based on a mobile foraging pattern, in which resources are consumed as they are recovered. This is contrasted to the "collector" strategy, in which resources are collected during part of the year and used during the winter. There are logistical and social correlates of each pattern. For example, forager groups tend to be small, autonomous bands consisting of a few related people. Collectors tend to congregate in larger village groups, and to exploit
foods, such as fish or small seeds, needing a degree of communal effort to collect and process. The social organization of forager societies is consequently very simple, with little need to develop social hierarchies beyond those inherent in sex and age distinctions and expressed through kinship ties. Collectors, on the other hand, have the potential to develop more complex societies. Sedentary life in aggregated settlements can lead to the emergence of political and religious leaders, economic specialization, and increased territoriality and more complex relationships with neighboring groups.

The differences between these types of societies have been translated into an archaeological context (e.g. Price and Brown 1985; Binford 1980), and there are a number of types of evidence which contribute to understanding these differences in the archaeological record. An elaboration of technology, the appearance of storage facilities, changes in demographic patterns and the appearance of nucleated semi-sedentary settlements, the appearance of social/wealth distinctions in burials, and the exchange of wealth items reserved for a social elite are all indicators of a transition to a more complex society. Yet, the study by Hughes (1990) of the large ceremonial obsidian blades found in burials at Gold Hill in the Rogue Valley, stands as an isolated example of the investigation of social status among the prehistoric inhabitants in this area.

The role of technological change in the transformation of hunting-gathering societies has been well documented in many parts of the world, but is rarely discussed as a factor in the prehistory of southwestern Oregon. The introduction of the bow and arrow, for example, is seen as a useful time-marker, or as an indicator of a new cultural group, but the role of a new weapon in the transformation of a hunting-based society has not yet led to the development of testable research hypotheses. Nor is the bow and arrow the only technological innovation of potential significance. Fish and other resource storage and preservation technology, as well as techniques for building substantial houses, were necessary to the development of semi-sedentary societies. The advent of such technology may have had a considerable impact on local groups. For example, Chartkoff (1989) hypothesizes that the introduction of intensive fishing and storage techniques along the lower Klamath River (south of the Rogue Valley), coupled with the inception of long-distance trade bringing obsidian to the region, effectively opened up a new "econiche" and led to the comparatively intensive settlement of an area which had hitherto been only very lightly used.

Modelling ideological systems for prehistoric groups is an obviously tricky enterprise. Nonetheless, the abundance of archaeological sites attributed to ideological motives which exist in southwest Oregon begs the development of a good investigative and interpretive framework. These sites consist of rock features, such as rock piles, rock rings, and rock alignments, which are attributed spiritual significance on the basis of ethnographic data. These "vision quest" sites have been recorded throughout the region, and there have been some attempts to classify them as to different morphological types (Chartkoff 1983; West and Steinfeld 1983). In addition, studies of the locations of such sites show that they are generally placed on high points or rocky prominences (Winthrop and Winthrop 1989). Description, classification, and locational studies of such sites represent a first step in
understanding these sites within the context of the prehistoric cultures. Development of hypotheses regarding the function of such sites and their place in an overall settlement system involves examination of a wide range of ethnographic and archaeological data, and has yet to be accomplished.

Finally, the effects of a "protohistoric" period on the native Oregonian populations is receiving increasing consideration. This consideration focuses not only on the effects of direct contact (i.e., post-1850 settlement in southwestern Oregon) but on all the various cultural changes which were stimulated by the introduction of new diseases, new technologies (such as the horse), and new economic patterns (such as the fur trade), including those beyond the immediate reach of Euro-American colonies. For example, the trade networks linking southern Oregon with major trading centers such as the Dalles on the Columbia River were expanded and enhanced with the advent of fur traders to the region, especially along the east side of the Cascades. In an examination of the slave trade, for example, one investigator notes that "It is quite possible that the long reach of the southern portion of the Columbia River network (Shasta/Klamath) is a result of post-European contact conditions stemming from the fur trade" (Donald 1984). Others have postulated a depopulation of the northern Oregon Cascades due to the combined effects of disease, consequent composite group formation, and emigration to areas more suitable for foraging via foot or horse (Burtchard 1990:24-25). Such a model postulates a severe reduction in very late prehistoric settlements in the northern Oregon Cascades. Though this area was closer to the initial Euro-American centers of operation, such effects may have occurred on a lesser scale further south.

Theoretical Perspectives

There are few explicit statements describing the interpretive frameworks which guide research in southwestern Oregon. Yet specific research questions such as the ones discussed above are generated by and contribute to specific theoretical perspectives. Among those perspectives guiding southwest Oregon research are three views of particular importance: a cultural historical perspective, an ecological/adaptationist view, and an evolutionist framework.

Cultural historical approaches attempt to provide chronological order to the archaeological record, and to identify cultural patterns which signify specific time periods and geographic areas. Artifacts are seen as symbols of group identity, and discrete assemblages of artifacts which have spatial or temporal limits are interpreted as marking distinct cultural groups. Migration of new groups into an area or the diffusion of significant technologies act as explanations for cultural change. Such approaches have provided the basic orientation for much of the work accomplished in southwestern Oregon. Cultural chronologies established by Connolly (1987), O'Neill (1989), and Pettigrew and Lebow (1987), discussed above, are recent examples of this approach.
Cultural historical studies have made significant contributions to the archaeology of southwestern Oregon. These studies have provided chronological and geographic order to the archaeological data, and identified potentially significant prehistoric events, such as the introduction of the bow and arrow and the advent of a migrant peoples (i.e. the Athapascans). Yet this perspective suffers from several weaknesses. It is descriptive rather than explanatory, and the underlying causes for variation in the archaeological record may be poorly analyzed. Differences among sites or artifacts which are due to functional causes may be mistakenly attributed to cultural preference or style. Furthermore, the focus on identifying specific groups or cultural patterns may mask significant variation in the archaeological record.

Ecological/adaptationist studies assume that culture is the mechanism through which human beings adapt to the environment. Thus, ecological models explain variation in the archaeological record with reference to the constraints and possibilities of the natural environment. The land use models discussed above, by Snyder (1987), and Pettigrew and Lebow (1987), are examples of this approach in southwest Oregon. The optimal foraging perspective utilized by Winthrop and Winthrop (1989) for the northern Klamath Basin as well as Sampson's analysis of Nightfire Island are also examples of the ecological approach. All of these studies share a common perspective that attributes significant variations in the archaeological record—such as site size and density, and settlement patterns—to significant variations in the environment, especially in terms of the distribution of resources. These models tend to be static, analyzing the archaeological record at one (often idealized) point in time.

It is possible to apply an ecological/adaptationist point of view to the problem of culture change, and such perspectives have provided powerful tools for explaining major transformations of cultures through time. When applied to problems of culture change, these models focus on changes in the natural environment, technology, and demography as important variables affecting human groups. There have been few studies directly assessing the effects of these variables on cultural patterns in southwest Oregon; the work at Nightfire Island is the only study which examines the effects of long-term environmental changes on the people who experienced them. The lack of information for changes in local environments during the last 10,000 years has hampered this type of study.

The ecological/adaptationist approach provides a analytic framework for the study of cultural differences and cultural change. One weakness of this perspective, however, is its exclusive focus on material factors as primary in the explanation of change. While this is useful in providing a "macro-view" of prehistory, by finding the factors common to different peoples at different times, this perspective misses those specific events which may have contributed to the prehistory of a given area. By placing priority on material variables, furthermore, this view overlooks other aspects of social life, such as changes in the social or ideological realms, which may have been important factors precipitating change.

Both cultural historical schemes and ecological/adaptationist models developed for southwest Oregon or the Cascades recognize (implicitly or explicitly) a long-term cultural
trend in the direction of increasing complexity. One measure of this complexity, for example, is the transition from forager to collector economies and societies, described above. If such a trend is demonstrated, models applicable to the development of complexity become appropriate. These models derive from an evolutionist framework, which traces the development of relatively simple societies into those with a greater degree of complexity. In analyzing this change, materialist variables such as demography and environment have long received attention. More recently, evolutionist perspectives have expanded to include the effects of particular circumstances in the cultural development of any given area and to give social factors equal weight with material concerns in explaining culture change (e.g. Gould 1985). As such, they may represent a synthesis of the two other perspectives and provide a more powerful interpretive tool than either. This perspective has yet to be tested in southwest Oregon.

In southwest Oregon, archaeologists have focused more on the definitions of chronological periods and the identification of cultural groups and their adaptations than on long-term evolutionary trends. These efforts are essential steps preliminary to the more difficult analyses involved in explaining both cultural stasis and cultural change. The work of the last several decades has laid important foundations for research in the 1990's.

Summary

Archaeological studies in southwestern Oregon have been oriented through studies of chronology, land use patterns, identification of local cultural groups in time and space, intergroup interactions, and studies of lithic technology. Other research questions which have received less attention but which will be of importance for future research include the analysis of prehistoric social organization, the role of technology in cultural change, the definition of prehistoric ideological systems, and the effects of a protohistoric period.

Research in southwestern Oregon has focused on building local chronologies in order to develop culture histories and to give a temporal framework for relating sites to one another in the region. The most general scheme in use divides prehistory into several broad periods: the Paleoindian, Early Archaic, Middle Archaic, and Late Archaic periods. In addition to this scheme, work with local assemblages has produced projectile point chronologies for the three regions discussed here. In the Klamath Basin, Great Basin point sequences are used; work by Hughes (1986) has produced a modified sequence based on data from two Klamath Basin sites. In the Rogue Valley, Pettigrew and Lebow (1987) and Nilsson and Kelly (1991) have produced a sequence based on sites from that region. In the Umpqua Basin, recent work by O'Neill provides an initial scheme applicable to sites along the North and South Umpqua Rivers. These studies provide comparative data for the analysis of Crater Lake artifacts (see Fig. 6).
Land use patterns have been investigated through the examination of subsistence and settlement regimes. Again, several regional models have been developed. In the Klamath Basin, the Klamath/Modoc way of life, with its intensive focus on aquatic resources, seems to have been in place for a long time. Yet variations in this way of life may occur, dependent upon the differential distribution of resources. A more sedentary way of life focused around the lakes and marshes of the northwestern part of the basin, for example, apparently contrasts with a more mobile way of life focused on the more dispersed resources to the east. West of the Cascades, the interior valleys and mountains provided complementary resources which were exploited by the transhumant pattern of life evident in the ethnographic accounts. As on the west side, differential distributions of resources may have accounted for alternative settlement strategies, with larger, nucleated villages along the rivers where fish were abundant, and smaller hamlets in the foothills where resources were less concentrated. Studies also suggest a significant change in land use patterns, from an earlier wide-spread, small group foraging pattern to a later more sedentary, collector regime. Use of the Park lands were tied to regimes at lower elevations, and patterns of land-use in these areas give important information regarding the use of higher elevations.

The identification of cultural groups in the archaeological record has been another primary concern. On the east side of the Cascades, archaeological and linguistic evidence points to an unbroken record of habitation by the Klamath and their ancestors. On the west side, the archaeological, ethnographic, and linguistic record is more complex. As noted above, a major change in lifeways is postulated for the region; this has been linked with the migration of Athapascan speaking peoples into some areas and to the influence of new cultural traditions from the south and east.

Tracing interactions among the various prehistoric groups has focused on defining patterns of trade; obsidian studies have provided the primary vehicle for such analyses. Although there have been no attempts to model trade networks in the region, certain trends appear in the archaeological record. In the northern Klamath Basin local sources of obsidian predominate in the early and late prehistoric periods, with sources from further to the east dominating for two millennia prior to about 1800 BP. West of the Crater Lake, obsidian from the northern Klamath Basin predominates at sites in the western Cascades. During the late prehistoric, trade networks appear to have broadened, with the inclusion of other sources from the north and east at sites along the North Umpqua and with a heavier reliance on obsidian from the south in the Rogue Valley. Studies at Crater Lake National Park should contribute to this research area through sourcing and hydration of obsidian artifacts.

Technological analyses of chipped stone tools and debitage has been a major tool for the analysis of many sites, especially upland lithic scatters with little else in the artifact inventory. To date, most studies have been site specific, and the potential of this avenue of study to yield information regarding broader cultural patterns has yet to be realized. Studies of lithic artifacts from the Park should place the technological information in the widest possible context.
Work on these major issues will continue in the future, abetted by the development and use of better excavation and analysis techniques. At the same time, there should be an increase in attention to other topics, such as social organization, ideological systems, the role of technology in culture change, and the effects of contact during a protohistoric period. All of these research topics need to be addressed from a regional perspective; site specific studies provide necessary building blocks, but a broader view is necessary to develop models which can generate hypotheses and guide future research.
CHAPTER 6
CRATER LAKE ARCHAEOLOGY

KATHRYN WINTHROP

PREVIOUS ARCHAEOLOGY

Archaeological research at Crater Lake National Park has been limited in scope and relatively recent. Occasional isolated finds of prehistoric artifacts at the Park gave the first indication of prehistoric occupation. Since the early 1960's, a few surveys have located a small sample of archaeological materials in the Park (see Map 9).

Prior to the first formal surveys at the Park, ten isolated finds of prehistoric artifacts attested to use of the area by prehistoric peoples; since then, other finds have increased the number to eighteen isolated artifacts. These include obsidian projectile points, bifaces, flakes, and nodules; one cryptocrystalline point; several CCS flakes; and a CCS biface. These finds have come from around the rim of the Lake, mainly on the south and west sides; from the Munson Valley, near the Park Headquarters and Godfrey Glen; and from the northwest corner of the Park near Oasis Spring.

The first formal survey was conducted in the 1960's by Wilber Davis. Davis's study concentrated on those parts of the Park which were judged accessible from lower elevation population centers and which had economically important resources. He eliminated most of the northern part of the Park, which consists of lodgepole pine with little understory, and concentrated on the south and especially southeastern part of the Park. Within this area he surveyed the valleys leading to the Klamath basin, the bluffs and ridges north of Mt. Scott (looking for caves or rockshelters), and the streams around Union Peak; he also searched the springs and bogs along the western boundaries of the Park. Although no survey map is given in the report, a crew of two people spent seven weeks surveying within the Park boundaries. There is, unfortunately, no indication in the report concerning the intensity of the survey, or a specific coverage map.

Davis notes that throughout the survey they encountered considerable disturbance to the ground surface due to recent activities, illustrated by roads, trails, campsites, and quarries, especially at spots which seemed like promising areas for prehistoric camps. This survey
located very little evidence for prehistoric use of the Park. Two flakes of CCS were found at Lightning Spring and one obsidian flake was found near the Park headquarters. Davis attributed this paucity of prehistoric materials to the absence of abundant food resources at the Park and to native beliefs that it was a dangerous place to visit.

A number of surveys have been undertaken in the 1980's in conjunction with planned developments at the Park. In 1984, Leslie Wildeson conducted a survey of ten acres and eight miles in the northern part of the Park, for a road construction project between the northern Park boundary and the Rim Road (Wildeson 1984). Wildeson surveyed eight miles of road corridor and about ten acres of planned parking lot development, covering lodgepole pine forest and the barren "pumice desert" north of the lake. No cultural resources were found. Another small survey of about one mile covered the trail from the gauging station and boat landing at Cleetwood cove to the rim; no prehistoric materials were found (Thomson 1983).

Following these investigations, surveys by Eric Bergland as well as efforts by Park personnel have resulted in the location of several prehistoric sites within the Park (Bergland 1985a, 1985b, 1985c, 1986, 1987, 1988). All of these surveys were on-the-ground pedestrian surveys. Notably, several sites are rock cairn features—presumably associated with vision quest activities—which are not related to natural resource procurement. The first survey (Bergland 1985b) included 150 acres at Mazama Campground and 50 acres in Munson Valley, both in the southwest part of the Park. One isolated CCS tool was found during the survey.

Bergland's second survey used "informed predictive modeling" to construct the survey design. Bergland (1985a) examined previous survey records, topographic maps, ethnographic literature, and the locations of known archaeological finds to generate a series of hypotheses about the types of sites and their possible locations which might be found in the Park. Bergland hypothesized that there would be three types of sites in the Park: (1) small base-camps on habitable surfaces next to permanent water sources, indicated by lithic scatters; (2) hunting-related locales, such as lithic scatters or isolates, found anywhere in the Park and containing broken, lost, discarded artifacts; (3) rock cairns or stacks, likely to occur on rocky prominences, peaks, ridgetops, and other high spots. Twelve areas were selected for survey; seven of these were adjacent to permanent water sources and considered likely spots for base-camps. Bear Cave was inspected and tested through excavation of a one-meter square unit, since this location was reputed to be an Indian basecamp in the historic period. The remaining four areas were selected for their probability of containing rock feature sites.

Survey of approximately 250 acres at these twelve areas located two rock cairn sites (35KL595, 35KL596) in predicted locations, two isolated lithic artifacts in other survey locations, but no base-camp lithic scatters. The absence of lithic scatter sites at predicted locations was interpreted as an indication that the overall density of such sites is low. This low density, Bergland suggests, may reflect scheduling conflicts in the annual subsistence round of the prehistoric peoples, where more productive resources were available at more
NOTE: Location of archaeological sites in this online edition have been removed from this map in an effort to protect sensitive cultural resources.
<table>
<thead>
<tr>
<th>Map No.</th>
<th>Site No.</th>
<th>Site Name/Description</th>
<th>Reference</th>
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<td>DUTTON CLIFF</td>
<td>Bergland 1985c</td>
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<td>SHARP PEAK</td>
<td>Bergland 1988</td>
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<td>CRLA 88-02</td>
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<td>Bergland 1988</td>
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<td>35KL804</td>
<td>OBS. SOURCE AREA</td>
<td>Minor &amp; Musil 1989</td>
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<td>--</td>
<td>BEAR BUTTE CAIRNS</td>
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accessible spots at the same time as they were available at the Park. Alternatively, hunters may have avoided this area since it was a border zone among the various different aboriginal groups which surrounded the Park.

In 1986 Bergland surveyed 440 acres within the Park and placed a test unit in a small cave, in order to examine areas considered likely to have prehistoric resources (Bergland 1986). The survey examined the area between Sand Creek and Cavern Creek, southeast of the Lake; the top of Bald Crater in the northwest corner of the Park; and a small cave in the southwest corner of the Park near Bald Top. No prehistoric finds were noted. A survey in 1987 (Bergland 1987) of the National Creek drainage in the northwest part of the Park did yield evidence for a small, low density artifact scatter. This is the first lithic scatter found in the Park and conforms to the type of location previously predicted in the predictive model of 1985. About 100 acres were surveyed; the site was located on a flat north of the middle fork of National Creek. The artifacts consisted of three utilized obsidian flakes and a groundstone pestle. The pestle appears to be made from lithic materials found at Crescent Ridge, not far from the site.

In addition to these surveys, rock cairns have been noted within the Park by Park personnel. Two of these sites were formally recorded in 1988 (Bergland 1988); one site is at Sharp Peak and one is at Maklaks Crater. Other sites have been reported on Bear Butte and Scout Hill east of Crater Lake (Bob Jones, personal communication; Minor and Musil 1989), but had not been formally recorded before the beginning of this overview project.

The most recent survey within the Park was conducted by Heritage Research Associates (Minor and Musil 1989). This survey covered approximately five hundred acres encompassing the Rim Village and Lodge area at the south edge of the Lake, extending south to Munson Springs just north of the Park Headquarters. In keeping with other recent surveys, transects were closely spaced at fifteen meters apart. Despite reasonably good ground visibility, the investigators did not locate any clearly defined prehistoric sites or artifacts. At Munson Springs, however, heavy machinery had disturbed the site in 1958-60, as part of a "spring improvement" project, damaging or destroying any site which might have been there. One locality, just south of the Lodge on the rim above the Lake, was recorded as a site. This location contains a scatter of naturally occurring obsidian nodules within approximately one acre. There was, however, little indication of prehistoric use of this area as a quarry. Auger work indicated that this is primarily a surface deposit, interpreted as an airfall deposit of obsidian related to the Mazama eruption. As part of this recent survey, also, the investigators augured the soils surrounding Munson Springs and an unnamed spring just southwest of Munson Springs. Despite these efforts, no cultural materials were recovered.
Summary

Archaeological work at the Park began with Wilber Davis's survey in the 1960's, and was followed by more systematic surveys in the 1980's. Excluding the Davis survey, for which no specific location and survey method data is available, a total of about 1500 acres and ten linear miles have been surveyed within the Park. This represents less than one percent of the Park's 183,000 acres (excluding the Lake)—an extremely small sample from which it is difficult to generalize. The archaeological finds to date do, however, conform to the hypotheses set forth by Bergland in his predictive model. This model predicts that rock feature sites will be found on peaks and other high spots; that small base camps indicated by lithic scatters will be found near water sources; and that hunting related locales indicated by isolated hunter's artifacts will be found anywhere in the Park.

CRATER LAKE PREHISTORIC SITES AND ARTIFACTS

Sites and Isolates

One lithic scatter, five rock cairn "vision quest" sites, and eighteen isolated finds have been reported so far from the Park. In addition, one obsidian source area near the Lodge on the rim was recorded as a site, and three probably recent rock feature sites have been recorded. Augmenting these survey data, a sample of nine artifacts from the Park's collection of isolated finds were submitted for sourcing and hydration analyses, as part of this study. The sites, isolates, and results of the obsidian studies are described below.

*The National Creek Site #CRLA 87-1.* The National Creek site is located on a gentle bench on the north bank of the middle fork of National Creek, at the western boundary of the Park. The creek is a tributary to the Rogue River, with its headwaters at Oasis Spring, less than a mile to the east of the site. The bench is forested, with lush riparian vegetation including willow, dwarf huckleberry, and sedges, in the creekbed below. Four artifacts were observed at the site: three obsidian flakes and one groundstone pestle or maul. The pestle has been finely worked and shaped, but does not appear used. The lithic material from which the pestle is constructed is visually similar to a rock outcrop at the nearby Crescent Ridge. Since a large, heavy groundstone object seems unlikely at this elevation, the investigator tentatively identifies the site as a cache site, where the object was stored for later retrieval (Bergland 1987). This site is the only lithic scatter so far recorded in the Park.

*Cottonwood Cairn Site, #35KL595.* This rock cairn site consists of five rock cairns and two rock stacks. These are small features built from local rocks. The investigator
defines cairns are those rock features consisting of two or more piled rocks, and stacks as at least one rock stacked on top of another. These features are small, with heights of one to three feet. They are located on Sand Ridge, on a ridgetop saddle between two high points in the extreme southeast corner of the Park (Bergland 1985c).

**Dutton Cliff Site, #35KL596.** This site is located on the "spectacularly beautiful" north side of Dutton Cliff, which is a high point on the southeast edge of the caldera rim, overlooking Crater Lake. This site consists of three rock features. The first is a low pile of 30-35 stones, located on a narrow ridge descending from the highest point on Dutton Cliff. There are two single-rock stacks below the cairn, just inside the caldera rim (Bergland 1985c).

**Sharp Peak Cairns, #CRLA 88-01.** This site is located on the top of Sharp Peak, just northeast of the lake, and consists of sixteen piled rock features. The features include: two rock rings, both consisting of 35-40 rocks in a ring 30-50 cm (one to one and a half feet) tall; three rock wall alignments, ranging from 100 to 454 centimeters long (approximately three to fifteen feet); two rock stacks; and nine rock cairns (piles) (Bergland 1988).

**Maklaks Crater, #CRLA 88-02.** This site consists of five rock features on the top of Maklaks Crater, in the southeast corner of the Park. The features include: one collapsed rock ring of about 35-50 rocks; a cairn of eleven rocks; a two-rock stack; and two rock stacks consisting of one rock each (on a base rock) (Bergland 1988).

**Obsidian Source Area, #35KL804.** This site consists of a scatter of obsidian chunks in an open pumice flat near the Lodge on the rim of the Lake. The obsidian or vitrophere chunks appear to be naturally deposited, from an airfall deposit related to the Mazama eruption. The chunks are scattered in an area of about one acre; auguring indicated that it is primarily a surface deposit. Since this may have been a source area for lithic materials for Native Americans, the scatter was recorded as a site, although there was little indication of prehistoric quarrying activity (Minor and Musil 1989).

**Bear Butte Cairns, CRLA-2.** This site consists of eight piled rock features on the rocky outcrop on top of Bear Butte. Shrubbery vegetation is growing out of the outcrop and encroaching on the features; they seem to have been in place a long time. The site is slowly deteriorating due to tree and shrub growth. This site was recorded as part of this project; see Appendix 2 for the site form.

**Vidae Falls Rock Feature, CRLA-4.** This site consists of recently constructed rock features at the top of Vidae Falls. The most notable feature is a rock alignment in the shape of a "V". The site was recorded as part of this project; see Appendix 2 for the site form.

**Skell Head Rock Feature, CRLA-1.** There is a low wall at the edge of a talus slope on the shore of Crater Lake, just below Skell Head. This site appears to be fairly recent, and is associated with modern debris. The site was recorded as part of this project: see Appendix 2 for the site form.
CRLA-3. This is another fairly recent rock feature site. It consists of five small rock features in two separate locations along a low ridge running west from Crater Lake Rim. Unlike the other two recent features (CRLA-4, CRLA-1) the features in this site are small piled rock features, like the features at the older sites. The location of the site provides a view of Union Peak and Mt. McLaughlin. One of the rocks in one feature is oriented towards these mountains. The site was recorded in the course of this project; see Appendix 2 for the site form.

Isolated Finds. Most of these have not been found during a systematic archaeological survey, but have been recovered by visitors or personnel in the Park. As a result, the specific provenience of these items is lacking, though there is usually some note of the vicinity in which they were found (e.g. "Park Headquarters"). The isolated finds are listed below. A number of obsidian tools were submitted for sourcing and hydration analysis as part of this Overview project; the results of these analyses are presented following the list of isolated finds.

--85-02 IF, Tool: This is a possible stone tool, constructed on a light-colored, fine-grained igneous or sedimentary stone showing flake morphology and a modified edge, possibly indicating use. It was located on a sloping bench near a dry meadow above Munson Creek (Bergland 1985b).

--852, Projectile Point: This base-notched point has a long, narrow, triangular, blade; squared barbs, narrow stem, and flat cross section. The stem and one tang are broken. Its morphology fits that of the Eastgate series points of the northern Great Basin. This point series came into use about A.D. 600, and were used until historic times (Gates 1978; Hester and Heizer 1978). This point was constructed on Spodue Mountain obsidian from the Klamath Basin and has a hydration reading of 1.2. The point was found on the last switchback of Garfield Trail, south of the Lake.

--853, Projectile point: This point is missing the base—its most diagnostic element—and therefore cannot be assigned to any of the types defined for the region. It is a long, slender, triangular point with one tanged shoulder still intact. The base is broken from a snap fracture, possibly from impact during use. It is made from obsidian from Newberry Crater to the northeast, and has a hydration reading of 1.4 microns. The point was found near the highway below the visitor facilities at the rim of the caldera.

--854: Obsidian point or knife: This is a long, slender, lanceolate tool with slight shouldering for hafting. A chunk is missing from one edge, with the fracture cutting across the flaking on the edge. This irregularity appears to have occurred after the completion of the tool, possibly as post-depositional damage. The artifact is made of obsidian from the Medicine Lake Highlands in northern California, southeast of Crater Lake, and has a hydration reading of 5.5 microns. It was found in Godfrey Glen.

--855, Obsidian point: This is a small, thick, lanceolate point with shallow side-
notching near the base. It does not resemble any of the defined types from either east or west of Crater Lake (Pettigrew and Lebow 1987; O'Neill 1989c; Heizer and Hester 1978). It is made of Spodue Mountain obsidian, and has a hydration reading of 2.4. It was found in Godfrey Glen.

--856, Obsidian point: This is a small, thick, lanceolate point with slight shouldering on one side of the base for hafting. The obsidian came from Spodue Mountain, and the hydration rim measured 1.9 microns. It was found in Godfrey Glen.

--857, Obsidian point tip: This is a finely worked obsidian point tip, probably a knife blade. It was found in Godfrey Glen. The obsidian comes from the Tucker Hill source, and the hydration rim measured 1.7 microns.

--858, CCS point: This point has a long triangular blade, with corner notching and a pointed stem. It fits the description for the Coquille series points described to the west of Crater Lake (Pettigrew and Lebow 1987; Connolly 1986), which are ascribed to the period immediately preceding the introduction of the bow and arrow. This point was found near Discovery Point, on the western rim of the Lake.

--859, Obsidian point tip: A small, narrow point tip was found at Mt. Scott, near the lookout. It was not submitted for source and hydration analysis.

--860, Obsidian point: This is a small side-notched point of the Desert Side-notched type, common in the Great Basin during the last one thousand years. This type of point is also found, but is less common, on the west side of the Cascades during the later prehistoric period. The obsidian comes from Newberry Crater to the northeast, and the hydration rim measures 1.0 microns. It was found at Park Headquarters, near the Chief Ranger's residence.

--861, Obsidian point base. A fragment of a small point base was found near the Park Engineer's residence. This artifact is broken from a snap fracture, possibly from impact during use. Though the base is fragmentary, it appears to have side-notches and to be similar to the Desert Side-notched point. It was not submitted for sourcing and hydration analysis.

--863, Obsidian pieces: Four small pieces of obsidian were recovered across from the Park Engineer's residence, at Park Headquarters. None of these pieces has clearly cultural breakage patterns; all have water-worn cortex and shiny, fractured surfaces.

--1852, Utilized obsidian flake: This black, opaque, shiny obsidian flake was recovered at Forgotten Crater, west of Hillman Peak. It has small, regular fractures ("nibbling") along one edge, interpreted as a sign of use.

--2011, Obsidian biface: This is a large, percussion flaked biface fragment in the middle stages of biface reduction. Such items were transported throughout the region as blanks for fashioning desired tools. The artifact has a snap fracture at the point of breakage.
There is no provenience given in the accession catalog for this tool. Source and hydration analysis yielded no hydration reading, and no identifiable source.

--2012, Obsidian nodule: Half of an obsidian nodule was recovered from the site of the present Administration Building at the Park. The nodule was broken by a blow to one end; there is a point of impact, negative bulb of percussion, and impact ripples on the interior surface.

--2070 (85-04 IF), Obsidian biface/scraper: This is an opaque obsidian blade or point tip, which has been reworked around the broken base to fashion a rounded scraping edge. It was located about one-half mile northwest of Bald Crater, on the trail between Boundary Springs and Oasis Springs in the northwest corner of the Park. The tool—as a knife or large point blade and scraper—is interpreted as a hunting-related tool (Bergland 1985c).

--2071 (85-04 IF), CCS biface: This artifact is a heat-treated, banded brown and red/gray cryptocrystalline biface (point or knife) midsection, and is interpreted as a hunting related artifact. It was found near Oasis Spring, in the northwest corner of the Park (Bergland 1985c).

--Lightning Spring: Two CCS flakes were noted at Lightning Spring by Wilber Davis during his survey.

--Park Headquarters: One obsidian flake was noted "in the residence area at Park Headquarters" (Davis 1964:4).

**Source and Hydration Analyses**

Nine of the isolated obsidian artifacts collected by the Park were submitted for source and hydration analyses as part of this Overview project (see Figure 6). Obsidian source analysis consists of a method of matching the chemical composition of pieces of obsidian (used for tools) with the obsidian flow in which they originated. Obsidian hydration analysis is a method for measuring the hydration layer on the surface of an obsidian artifact, which begins to form when the tool is made and which becomes thicker through time.

The artifacts submitted for analysis include all the reasonably complete obsidian points and tools. The results of this analysis are intriguing (see Appendix 2 for the original reports).
Figure 6: CRATER LAKE ARTIFACTS
### TABLE 6 - 1
OBSIDIAN SOURCING AND HYDRATION ANALYSES:
CRATER LAKE PARK ARTIFACTS

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<tr>
<td>2070</td>
<td>point/scraper</td>
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</table>

*GF/LIW/RS refers to the Grasshopper Flat/Lost Iron Wells/Red Switchback source in the Medicine Lake Highlands in California.

**NVB means No Visible Band; no hydration reading was obtained on this artifact.

A surprisingly wide variety of sources appears in this small sample. Spodue Mountain accounts for four of the samples, more than any other source. This is the closest source; it is located about forty miles southeast of Crater Lake in the northern Klamath Basin. Two samples come from Newberry Crater, about eighty miles northeast of the Lake. One sample is from Tucker Hill, about eighty miles east of Crater Lake, in the northern Great Basin. One sample is from the Medicine Lake Highlands (GL/LIW/RS), which was an important source of obsidian to northern California groups. This source is the most distant, and lies about one hundred miles to the southeast of Crater Lake. Small though this sample is, it certainly indicates that those who used the Park traveled widely or had far-flung contacts.
Temperature regimes and obsidian source are two variables which can cause obsidian pieces to hydrate at different rates. In comparing hydration readings from different samples, therefore, it is best to compare those from the same source and depositional environment. Unfortunately, the samples in this study come from different sources and from surface finds at various locations within the Park. Thus, statements regarding the meaning of the hydration data are risky.

Nonetheless, it is tempting to speculate on the hydration data. With one exception, the hydration readings range from 1.0 to 2.4, representing a fairly tight clustering compared with other assemblages within the region. Although there is no data on hydration rates at the Park, these comparatively small readings suggest use of the Park at a fairly late date. Some confirmation of this suggestion comes from the fact that the two projectile points which can be firmly identified with known types (#852, and #860) are both late prehistoric points with the smallest hydration readings. The one hydration reading which does not fit in the cluster is much higher, at 5.5 microns, suggesting an older date, closer to the Mazama eruption. Whether this is an indication of early post-Mazama travelers through the area or not will have to await further hydration studies at the Park. It is intriguing that this piece is the only one from a southern obsidian source, where the impact of the blast did not affect the landscape.

Summary

Only ten sites have been officially recorded at Crater Lake National Park. These consist of one lithic scatter at the west side of the Park, five "vision quest" rock feature sites in the southeast and east part of the Park, three rock feature sites constructed within the last ten to thirty years, and one obsidian source area on the southern rim. Complementing these sites are eighteen isolated finds, most of which have been curated with the Park. These isolates include two finds of obsidian raw materials (chunks or nodule); one isolated obsidian flake; a find of two CCS flakes; eleven obsidian tools or tool fragments; and three CCS tools. The tools are mainly hunting related implements, consisting of ten point and point fragments (projectiles or knives), with one utilized flake, two bifaces, and one unifacially modified flake. These isolates are mainly located on the south and west side of the rim and along Munson Creek valley south of the rim. These areas are heavily frequented by the public, a fact which at least in part accounts for the number of finds in these locations.

Sourcing and hydration analysis of nine obsidian artifacts reveals interesting information. Four different obsidian sources were represented in the sample; two from the east (Spodue Mountain, Tucker Hill), one from the northeast (Newberry Crater) and one from the southeast (Medicine Lake Highlands). The hydration readings cluster within 1.0 - 2.4 microns, with one at 5.5 microns, suggesting heavier use of this area at a later rather than earlier post-Mazama period. Two identifiable points from the late prehistoric period (an Eastgate and Desert Side-notched) also confirm the use of the Park in the recent past.
CHAPTER 7
PREHISTORY OF THE SOUTHERN OREGON CASCADES

KATHRYN WINTHROP

INTRODUCTION

Crater Lake, "The Jewel of the Cascades" lies at the southern end of this mountain chain which stretches from northern California to Canada. East of this impressive volcanic chain the landscape is high and dry; to the west, a mosaic of interior valleys, westward flowing rivers, and forested slopes characterize the land. The mountains offer high elevation habitats to the flora and fauna of the region, and even today pose transportation barriers between the east and west side. To the east, the rain-shadow effect of the Cascades and the high plateau or basin and range topography generated a flora and fauna adapted to more arid conditions. In the south, this aridity is broken by the lakes and marshes which collect in the basins; to the north, rivers alleviate the arid landscape. West of the Cascades the more abundant rainfall contributes to the heavy forests which blanket the mountains. These forests are broken by the drier interior valleys which support a diversity of floral species. The forests are also punctuated by upland meadows and marshes which produce a richer constellation of plants than the forests themselves, and provide forage for the deer and elk which inhabit the mountains. The rivers flow to the sea, and provide habitats for seasonally abundant runs of anadromous fish.

Throughout the last 10,000 years the Cascade Range and the lands immediately adjacent experienced those major fluctuations in climate which characterize this Holocene period. With the climatic warming at the end of the Pleistocene the glaciers which covered the peaks of the Cascades retreated, and the pluvial lakes filling the eastern basins shrank to more moderate sizes. This early warming was followed by several thousand years of a climate which was warmer and drier than that of today. In the already arid east, lakes shrank even further during this period and flora and fauna retreated to higher, moister, and cooler elevations. In the west, this climatic optimum opened up the coniferous forests at lower elevations, providing greater forage for ungulates and allowing the expansion of species such as oak and madrone, and of non-forested prairies and meadows. The return of cooler and moister conditions similar to today brought about additional shifts in habitats during the latter part of this period.
Despite local and regional variations in climate and topography, the Cascade Range presented prehistoric inhabitants with broadly similar problems and possibilities throughout their long length. The mountainous topography emphasized the seasonality of this temperate latitude, with harsher winter regimes prohibiting the use of higher elevations, and mid-summer heat exaggerated in the lowland valleys. The vertical gradient also provided a variety of environments and micro-climates within a short distance, giving inhabitants a diversity of plant and animal species which became available at higher elevations as the seasons progressed. Throughout the Holocene, this seasonal complementarity of upland and lowland resources provided a basic theme to the cultural organization of those living in and near these mountains.

The prehistory of the Cascades followed the general patterns evident elsewhere in the West. The post-glacial landscape was home to the newly-arrived and highly nomadic Paleo-Indians, who hunted widely throughout the west leaving large, fluted, Clovis spearpoints as signatures of their passing. With the establishment of a more modern flora in the early Holocene, a hunting and gathering way of life termed the Archaic came into being, and persisted with local and temporal variations until the time of contact with Euro-Americans. The Archaic pattern is characterized by a hunting-gathering-fishing subsistence economy which is based on use of a broad spectrum of the environment's resources. Throughout the Archaic period there was a general tendency towards increasingly intensive exploitation of these natural resources. In the early Archaic, plant foods became more important in the diet than they had earlier been; later on fish and foods needing more processing—such as acorns and camas—met critical subsistence needs. By the time of contact, peoples in many areas were intensively exploiting whatever the environment had to offer, and had developed sophisticated technologies to store perishable seasonal foods and to process foods which were not immediately palatable. Accompanying the expansion and intensification of the subsistence base was a slow increase in population and the appearance of a more sedentary, village-oriented settlement pattern. By the time of contact with Euro-Americans, some groups had well developed social hierarchies, complex political and religious institutions, and trade contacts reaching almost the length of the Cascades.

These broad trends were subject to local timing and fluctuations. In southwest Oregon, the eruption of Mt. Mazama about 7,000 years ago was a major event punctuating the prehistory of the region. For several hundred years prior to the big eruption Mazama gave warning bursts, possibly discouraging hunters from using the territory around the mountain. After the major eruption the countryside immediately surrounding the mountain was completely devastated, and a thick layer of ash was widely deposited to the east and north, certainly encompassing the territory of anyone adjacent to the mountains who might have used those uplands for seasonal forage. To the west, great quantities of pumice and ash choked the upper reaches of the westward draining rivers, resulting in episodes of damming and dramatic release of water which rushed downstream depositing layers of Mazama pumice in riverside terraces at lower elevations (Mairs 1989; Nilsson and Kelly 1991). These events destroyed habitat for people, plants, fish, and other animals alike. Regeneration of the landscape would have taken hundreds of years, and may have been slowed by the warm and
dry conditions of the early Holocene.

The following brief synthesis of the prehistory of southwest Oregon draws upon the data presented in more detail in the review of the region's archaeology. The chronology of this period is presented here using the four broad periods accepted for western North America: (1) Paleo-Indian, 12,000 - 10,500 BP (before the present); (2) Early Archaic, 10,500 - 7,000 BP; (3) Middle Archaic, 7,000 - 2,000 BP; (4) Late Archaic, 2000 BP - contact. In the following discussion the first two periods are combined into one Pre-Mazama timeframe.

**PALEO-INDIAN AND EARLY ARCHAIC: 12,000 - 7,000 BP**

During the transition from the Pleistocene (the glacial age) to the Holocene (the current time period, dating from the retreat of the glaciers about 12,000 years ago) human groups entered the northwestern part of the United States and spread thinly about the landscape, following the herds of large mammals upon which they were dependent. As Cascade environments improved, so did habitat for deer, elk, and other montane ungulates. These animals followed a seasonally transhumant pattern; winter and spring forage was available at lower elevations east and west of the mountains, with summer and fall forage available at higher elevations.

Mt. Mazama dominated the early Holocene topography of interior southwest Oregon. At the beginning of this prehistoric period this 12,000 foot shield volcano was still covered with significant remnants of the glacial ice and snow which had blanketed it above an elevation of 5,000 feet during the height of the last Pleistocene glaciation. Forests of whitebark pine, mountain hemlock and fir extended below the ice. As the climate warmed and the ice retreated, the vegetation zones moved up the mountains, and more warmth-loving species colonized the lowlands and interior valleys. To the east of Mazama, pluvial Lake Modoc began to shrink down to the present Klamath Lake, leaving the rich marsh habitats behind.

Occasional finds of Clovis points in southern Oregon and one Clovis site in eastern Oregon demonstrate human entry to this region at the beginning of this period, although there are as yet no well-documented sites for the Paleo-Indian period in southwest Oregon. There are, however, a few locations both east and west of Crater Lake which document pre-Mazama habitation of the region during the Early Archaic. A large projectile point suitable for use with the atlatl, used before the bow and arrow, was found below Mazama pumice in a cave above the Sprague River in the northern Klamath Basin (Cressman 1976). In the Umpqua Basin, assemblages have been uncovered below layers of re-deposited Mazama ash at two sites along the North Umpqua River, at Medicine Creek (Snyder 1981b) and Dry Creek.
(O'Neill 1992). These sites come from the pre-Mazama period and illustrate the Early Archaic in the region.

The Early Archaic is also attested from sites in the Rogue River drainage area, which lie west of the Cascades. The site of 35JA53 along the Applegate River (Brauner and Nisbet 1983) produced artifacts similar to spearpoints found from about 10,000 years ago in assemblages east of the Cascades. Unfortunately there are no carbon dates from this site, which has an assemblage of artifacts so far unique in this area. At the deeply stratified Marial site along the Rogue River, however, a carbon date from a lower cultural deposit firmly dates human occupation of the area by 8500 BP (Griffen 1983). The very small amount of archaeological data from this period, however, is insufficient to generate a very complete picture of the way of life of the early peoples.

The present landscape surrounding Crater Lake National Park did not exist at this time, and any archaeological materials from this period would be under quantities of volcanic debris. It may be assumed that, as elsewhere in the Oregon Cascades, hunters and gatherers were comparatively few in number, and followed a fairly nomadic way of life which brought them to Mt. Mazama's slopes in the warmer seasons, hunting the ungulate herds and gathering the ripening plants.

MIDDLE ARCHAIC: 7,000 - 2,000 BP

This period begins with the eruption of Mt. Mazama, during the early warm and dry period of the Holocene. As noted above, this eruption destroyed habitats to the east and west, producing a landscape devoid of sustenance for prehistoric hunters and gatherers. Regeneration and coincident re-entry to the lands near the present-day Park may have taken centuries.

East of the Cascades, the semi-arid conditions of the early Middle Archaic were exaggerated in the Great Basin; during this period, many species migrated to cooler and moister conditions at higher elevations. The northern Klamath Basin may have provided an hospitable refuge to those coming from the more arid lands to the east. West of the Cascades, oak and madrone ranges expanded as did open meadows with edible species of plants and abundant ungulate forage. Evidence for human habitation becomes increasingly abundant after about 6000 BP, both to the east and west of Crater Lake.

At some time during the Middle Archaic, the climate became cooler and moister, with the development of vegetation patterns similar to those of today. This change was accompanied by an increase in forested areas and a general lowering of vegetation zones in
the mountains and valleys. The open oak savannah of the inland valleys, productive of acorns and forage for deer, would have been reduced unless inhabitants kept the area open through burning. Potentially, populations on the west side would have faced an environment less suited to hunting and gathering than at the beginning of this period. On the east, however, the lake and marsh habitats expanded with the advent of cooler, moister conditions.

Several important sites in the Klamath Basin are from the early part of this period. The peoples who inhabited these early sites used projectiles similar to those used in the Great Basin, and may represent immigrants from these eastern lands. The site of Nightfire Island in the Klamath Basin was initially occupied about 6000 years ago by small groups following a nomadic, foraging existence (Sampson 1985). The initial settlement at Kawumkan Springs in the northern Klamath Basin also took place about 5,000 years ago; the people using this site placed a greater reliance on hunting during this early period than they did at later times (Cressman 1956). East of Kawumkan Springs test excavations at three upland lithic scatters (sites with only stone tools and no features such as hearths or housepits) produced projectile points similar to types used elsewhere in the Great Basin during the Middle Archaic (Hopkins 1983). The number of points recovered from these upland sites indicates that hunting was an important activity, though the association of these sites with meadow resources also suggests that plant gathering was significant.

By the middle part of this period, the familiar Klamath Basin reliance on aquatic resources—waterfowl, fish, and plants—is evident at both Nightfire Island and Kawumkan Springs. This reliance is accompanied by a more sedentary existence; by about 4300 BP Nightfire Island was a small village occupied on a semi-permanent basis. Though evidence for houses is lacking for Kawumkan Springs at this time, other features—such as stone platforms, burials, and the rich midden deposit—demonstrate intensive use of the site. Both of these sites suggest that the people of this area were placing greater reliance on the stable, predictable resources of the lakes and marsh towards the middle and end of the Middle Archaic than at the beginning.

Settlement along the North and South Umpqua drainages appears to increase during this period, with numerous small sites along the watercourses and in the uplands. The earliest carbon-dated assemblage comes from the lowest component of the Narrows site on the North Umpqua (O’Neill 1988b). This component represents a seasonal camp and is dated to 6270 BP. Other sites along the North Umpqua, such as Dry Creek (O’Neill 1990) and Bogus Creek (Winthrop 1989) have assemblages dated to about 6,000-5,000 BP, possibly representing re-entry to this area after the destruction caused by the Mazama explosion.

Sites from various locations along and above the North and South Umpqua Rivers include sites on river terraces, upland benches, and in rockshelters. These sites are all either short-term hunting camps or task specific sites, or seasonal base camps from which foragers exploited the resources of the rivers and uplands. Some of these sites have evidence for repeated use over a long period of time, as at Bogus Creek (Winthrop 1989), or the South Umpqua Falls Rockshelters (Minor 1987). Collectively, these sites indicate a foraging
existence, in which people followed a well-defined annual round, probably within recognized
cultural territories. There are no permanent or semi-permanent village sites yet identified for
this time; occupants do not appear to have placed an emphasis on stored, collected, or heavily
processed foods during this period. Those who used these sites lived in small, mobile groups,
exploiting the plant and animal foods of the region. They obtained obsidian from the
Klamath Basin, probably trading for this resource with peoples from that area.

In the Rogue Valley, occupation continued from pre-Mazama times, though evidence
for prehistoric use of the lands adjacent to Crater Lake is scant for the millennium following
the Mazama blast. In the eastern part of the Rogue River Basin extensive studies at the Elk
Creek dam reservoir area indicate that regular use of the flanks of the Cascades began about
5,000 - 4,000 years ago, with hunters and gatherers establishing small residential bases from
which to exploit local resources (Nilsson and Kelly 1991). Task specific sites from this
period indicate that hunting was an important activity, though vegetable processing tools from
the residential bases confirm the importance of these foods as well (Nilsson and Kelly

Further from the impact of Mazama there is a record of continuous occupation from
the previous period. The deeply stratified site at Marial along the Rogue River, for example,
continued in use during this period. An abundance of exotic obsidian and the recurrent use of
this site over a long period of time attest to both the existence of far-flung trade contacts and
a well-established territorial round. In the Rogue Valley itself camas roasting ovens from the
Saltsgaver site document the use of this staple food during the Middle Archaic and suggest a
commitment to foods needing substantial processing.

While the archaeological record attests stability of lifestyle and tradition for this
period, some changes did take place. For example, during the early part of this period Rogue
Valley sites produce an abundance of obsidian. After about 4500 years ago, however, sites
contain a much smaller proportion of this stone. Whatever caused the shift—such as changes
in trading networks—remains unknown. Settlement patterns and subsistence organization may
have undergone certain changes. Though there are no confirmed "pithouse" villages from this
period, sites such as Gold Hill and the Far Hills site testify to a more sedentary existence than
appears in the archaeological record for the early part of this period. These sites date from
the middle to the end of the Middle Archaic, and coincide with an apparent increase in use of
the lower elevation foothills, as indicated by the sites at Elk Creek.

Any of the groups inhabiting these nearby regions might have used Crater Lake Park
lands during the post-Mazama Middle Archaic, although it is likely that use of the Park lands
was low. As the people in the Klamath Basin became more focused on the aquatic resources
of the lakes and marshes, upland hunting and foraging expeditions may have decreased. West
of Crater Lake, the hunters and gatherers followed a intensive foraging existence. Evidence
for temporary camps repeatedly occupied over time indicates that foraging groups practiced a
regular hunting/gathering regime, probably within well-known and restricted territories. These
groups would have scheduled their routine to make maximum use of the availability of

134
seasonal resources; use of the very high elevation Park lands may have competed with more accessible areas.

Though data from this time period is very sketchy, it is possible to postulate that use of Park lands would have been minimal at this time and limited to occasional travels through the Park, perhaps on trade expeditions. An interpretation of the hydration data on nine artifacts from the Park does suggest that it was little used during this time (see above). These speculations do not preclude use of Park lands for ritual purposes, however; such uses would not necessarily be tied to subsistence concerns, and might leave little physical evidence.

LATE ARCHAIC: 2,000 BP TO CONTACT

This period is usually identified in the archaeological record by the appearance of the bow and arrow. Archaeological sites are more numerous and remains are more abundant than for earlier times. Changes which are apparent in the archaeological record for this time did not appear uniformly throughout the region, however, with earlier patterns persisting later in the more mountainous areas.

A semi-sedentary subsistence pattern was well established in parts of the Klamath basin at the beginning of this period, and intensified during this time. At Kawumkan Springs and nearby along the Sprague, pithouse architecture dates from this period. Seed grinding tools associated with the intensive exploitation of wokas are associated with these housepits (Cressman 1956), indicating an expanding reliance on foods needing a high degree of processing. A number of housepits are noted at Collier Park on the Williamson River; an ending date of about 400 BP from one of these places it at the end of this period (Cheatham 1990b). Also along the Sprague, excavations at the Klamath village of Bexuksewas (Cheatham 1989a, 1990a) indicate that it is a late prehistoric site. In addition to village sites, seasonally used task-specific sites have also been identified from this period. These sites include a fishing camp along the Williamson (Cheatham 1989b, 1989c).

Further west along the Sprague River other sites also suggest more intensive use of the area's resources. A base camp near Beatty (Musil 1987) dating from 1500-1000 BP yielded evidence of both large mammal hunting and exploitation of river resources. This base camp is also associated with a number of small, river mussel middens scattered along the river; excavation at one of them dates the midden to about 2000-1500 BP (Winthrop 1986). In the uplands, especially to the east, gathering expeditions continue throughout this period. Analysis of one small lithic scatter site dates it to about 800 BP (Winthrop et al. 1989).

The bow and arrow came into use in the Klamath Basin about 1500 years ago. At
Nightfire Island in the southern part of the basin the introduction of this weapon is accompanied by the only direct evidence for intergroup conflict yet excavated in the area: victims of raids from this time period were recovered at a burial ground at the site. Nightfire Island also produced abundant evidence for extensive and active social networks with groups to the west, through artifacts indicative of long-distance trade (Sampson 1984).

West of Crater Lake, in the Rogue River and Umpqua River areas, the Lake Archaic is characterized by the advent of pithouse hamlets and villages in the archaeological record and the adoption of the bow and arrow. These changes are coincident with the postulated Siskiyou and Gunther Patterns, both ways of life based on semi-sedentary collector economies. The immigration of Athabascan speaking groups to some parts of the region also occurred during this time. Analysis of obsidian source locations suggests changes in exchange networks, with a broader range of sources appearing in the archaeological record.

In the Rogue Valley a number of sites indicate semi-sedentary residence patterns coupled with more intensive use of the area's resources and a stronger focus on storable foods. The Ritsch site (Wilson 1979) along the Rogue River has housepits, faunal evidence for fishing, and arrow points, dated from about 1100 years ago. The later component of the site produced netweights for catching fish. The Marthaller site along the Rogue produced a rich assemblage and burials dated to this period. Work at the Lost Creek dam area in the foothills of the Cascades west of Crater Lake Park produced sites with middens and housepits, as well as more temporarily occupied sites, from the last 1000 or so years. Adjacent to the Lost Creek area, work at Elk Creek confirms this pattern. Sites with housepits date from about the last 2000 years as do a number of temporary encampments. No major village sites are known from these foothills; these sites are residential hamlets consisting of one to three housepits.

These hamlets strongly suggest that a semi-sedentary way of life was expanding beyond the major sites on the valley floor and along the main stem of the Rogue, possibly indicating an increase of the population during this period. This impression is strengthened by the results from three sites excavated along the Rogue not far from Elk Creek (Connolly 1988). These sites have middens, vegetable processing tools, and dates which fall within the last 2000 years. Lithic scatter sites tested in the uplands of the Rogue River forest just west of Crater Lake show the continued seasonal use of these areas during this period (LaLande 1977; 1982).

North along the North and South Umpqua River drainages, there is also an apparent intensification of a semi-sedentary collector existence, though the evidence for the development of this pattern in the upper reaches of these rivers remains equivocal. Village settlements appear at lower elevations and in the western valleys; unfortunately, most of these sites are poorly dated, though ethnographic information confirms the use of several during the late prehistoric. One such site is known along the North Umpqua at Cooper Creek (Connolly 1981) and another at Winchester Bridge (site 35DO67; O'Neill 1989b). Surface evidence and historic accounts indicate use of these locations in the late prehistoric period; minimal testing
at each site revealed the possibility of earlier components, though the dates and functions of these earlier components remain unknown. The Glide site, at Glide along the North Umpqua, also was reportedly an aboriginal village with housepits and burials; limited testing yielded both arrowpoints and atlatl darts, but produced no specific dates for the village occupation.

In addition to these winter village locations, there is evidence for increasingly intensive use of the area's resources, such as fish and oak. At the Narrows (O'Neill 1988a, 1989a), the two upper components date from 1000 years ago; a housepit dates from this time and a burial from the latest component. This was an aboriginal fishery, and the abundant archaeological materials from the later components are interpreted as representing a seasonal base camp, probably focused on fishing. A similar camp is noted at the Grubbe Ranch along the North Umpqua (O'Neill 1989c); at both of these sites, richer artifact assemblages and features indicate more intensive use later in time. In the Umpqua Valley itself, the Sylmon Valley School site also functioned as a seasonal camp for fishing. At Oak Flats above Copeland Creek on the North Umpqua, late period arrowpoints are associated with an extensive site including stone bowls and mortars in a formerly oak dominated environment.

In the uplands above the North Umpqua investigations at many small sites reveal that the upland hunting patterns of the previous period continued, with the scant assemblages from these sites producing both atlatl and arrow points. At a few sites, such as the Little Oak Flat site (Berryman 1987b) and Limpy Rockshelter (Baxter 1987), task-specific short-term hunting camps produced arrowpoints dating from the late part of this period. This continuity is also reflected in sites located along the upper reaches of the North Umpqua, along the terraces near Steamboat Creek. Assemblages from these sites, indicative of short-term encampments, suggest little functional variation through time; obsidian hydration and radiocarbon dates indicate temporal continuity from the Middle through the Late Archaic (O'Neill 1990; Winthrop 1989).

Along the South Umpqua, modest excavations at three lower-elevation sites (sites 35DO396, Crispen Ranch, and Coffee Creek) produced evidence of late period habitations (Baxter and Minor 1987; Musil and Minor 1989). In two cases, these sites were also known encampments of the local Indians at the time of contact. In the uplands above the South Umpqua four rockshelters were used as task specific hunting camps throughout this period, with no particular hiatus in cultural traditions noted beyond the introduction of the arrowpoint. At other open-air upland sites, a diversity of projectile points indicate use continuing from the preceding period.

The developments during the Late Archaic may have had several effects on the use of Crater Lake National Park lands. East of the Park, the intensification of the semi-sedentary way of life led to a greater focus on the marsh and lake resources, with a possibly coincident lessening of reliance on resources at high elevations. To the west, however, the more intensive use of the landscape evident in the Cascade foothills may have pushed hunting parties into areas formerly considered marginal due to their distance or elevation. Task-specific hunting parties may have frequented Park lands more regularly during this period, as
lower elevation hunting grounds became more crowded. Expanding trade networks during this period may have fostered greater travel throughout the Cascades, bringing about an increase in visitors to Park lands. The very small sample of obsidian data from projectile points from the Park does support this contention of greater use during the late prehistoric. Archaeological evidence for ritual use of the landscape at Crater Lake, and in the surrounding areas, is difficult to date. However these features are comparatively fragile, especially when subject to vegetation growth and erosion; those which are still extant at the Park may date from this late period.

POST-CONTACT PERIOD: 1750 - 1860

This period includes the time during which influences from Euro-American settlement on the west coast of America affected the native inhabitants of this area. Thus it covers the cultural influences immediately prior to direct contact with Euroamericans, as well as those resulting from contact and the subsequent strategies for survival. There were a number of effects of the advent of Euroamericans to this continent that were experienced throughout the Pacific Northwest even prior to the major colonial immigrations to this area. Communicable diseases to which aboriginal inhabitants had no resistance eliminated a large proportion of the population, especially in those areas with comparatively high density populations, such as along the Columbia River. Population decline led to the formation of composite groups, as remnant groups banded together for social and economic security. The introduction of the horse to the Plateau area east of the Cascades in Washington and northern Oregon altered the pattern of travel and transportation, and had a role in the development of long distance trade and the growth of regional trade centers, such as the Dalles (Burtchard 1990:23-24).

Southwest Oregon was an isolated region, not subjected to direct contact with Euroamericans until the early nineteenth century, and buffered from the devastating onslaught of miners and settlers until the 1850's. It is difficult to judge the effects of contact upon the native groups prior to this period; settlements in California may have introduced diseases to the region prior to the nineteenth century, and the opening up of the Pacific Northwest to the fur trade in the late eighteenth certainly had an impact. Though trading centers were located well to the north along the Columbia, the indirect effects of their presence may have been considerable. They were centers of disease and economic change; they introduced new technologies and stimulated trade; and they may have acted as a catalyst for population movements in the region. The effects of this period on the peoples of southern Oregon remain largely hypothetical, though the slave trading networks in place at the time of contact were largely a late development (see Ethnography chapter). In the Elk Creek drainage area, extensive archaeological investigations have failed to produce any evidence for occupation during a proto-historic or historic time period, causing one investigator to hypothesize...
population decline due to introduced diseases as an explanation (Nilsson and Kelly 1991:352).

There are few archaeological sites elsewhere from the period of direct contact, possibly because it was such a short time. Miners and settlers poured into the region after the discovery of gold in the early 1850's. A short decade later there were virtually no intact native communities left west of Crater Lake, and by the late 1860's many Klamath (together with peoples from other groups) were confined to the reservation in the northern Klamath Basin. In the Klamath Basin, the village of Bexuksewas has an historic component (Cheatham 1989a, 1990a). Several Rogue Valley sites from the southern part of the valley contain historic artifacts, such as bottle glass flaked to form tools (Nan Hannon, personal communication). In the Umpqua Valley, an number of locations are known from ethnographic records as places of Indian encampment, such as the Narrows site and the area along Cavitt Creek.

The effects of a period of contact, extended to include the century or so prior to major immigrations to southern Oregon, may have been to stimulate use of Crater Lake National Park lands. Trans-Cascade travel, trade, and warfare may have increased as native peoples, especially the Klamath, were pulled into the enhanced raiding/trading complex east of the Cascades. Spiritual use of the uplands may also have increased, especially with the advent of direct struggles with encroaching Anglo culture; this pressure may also have driven native peoples into the uplands in search of food, game, and spiritual help.

SUMMARY: THE PREHISTORY OF CRATER LAKE NATIONAL PARK

Human entry to the West began at the end of the Holocene, about 13,000 to 10,000 years ago. As the glaciers covering the Cascades began to recede, hunters following big game made an appearance in the southwestern part of the state. Mt. Mazama was still covered with ice and snow during the early postglacial, and populations on either side of the mountain were extremely low. As the climate warmed and forests replaced the snow, an occasional small band of hunters may have passed through the area, following herds of deer and elk. People living in the Rogue Valley during this early period utilized obsidian from the Klamath Basin; trading parties from these two regions may have met on the slopes of Mt. Mazama, which lay between these two areas.

The early Holocene climate became warmer and drier than at present. During this warm period the cataclysmic blast of Mt. Mazama devastated the area now encompassed by Park lands, and rendered much of the surrounding area uninhabitable, especially to the north and east. Parts of the Klamath Basin remained habitable during this time, however, and the arid conditions in the Great Basin to the east may have led peoples to higher elevations and
moister climates in the west. The people who lived in the Klamath Basin about 5,000 years ago followed a mobile, hunting-gathering way of life, still reliant on large game as an important part of their subsistence. To the west of Crater Lake, the warm period opened up the forest, providing greater forage for ungulates and a more plentiful supply of root and other vegetable food crops. Small bands of foragers roamed the river valleys and mountains during this time. Obsidian remained a critical resource for these people of the western Cascades and adjacent valleys; much of this material came from the Klamath Basin. Occasional parties of foragers or traders may have passed through the Park lands during this time, once the landscape had stabilized and vegetation become established.

By at least 3000 years ago, climate and major vegetation communities had assumed their present configurations. East of the Park, the lakes and marshes of the Klamath Basin expanded, as did peoples' reliance on the resources they provided. In the northwestern part of the basin, closest to the Park, hunting gradually became less important as emphasis shifted to more labor intensive, but more productive, subsistence techniques. Fish, waterfowl, river mussels, and small seed plants became increasingly important. Though use of the uplands continued, this use competed with the abundant resources of the lakes, marshes, and streams. Long-distance foraging to high elevations became increasingly unlikely, and use of the Crater Lake Park lands by Klamath Basin groups, at least for subsistence purposes, was probably minimal.

West of Crater Lake foragers appear to have conducted their subsistence activities following well-established annual rounds, scheduling hunting and gathering expeditions to maximize return for labor invested. In the valleys people increased their reliance on vegetable foods needing more processing to make them palatable, but with high calorie returns and the potential for storage. Use of upland resources complemented, and sometimes competed, with use of the lowlands. The intensive foraging regimes and incipient sedentism in the valleys focused subsistence techniques on the most profitable sources for food. It is unlikely that the resources of Crater Lake Park would have competed successfully with those at lower elevations, which were richer and easier to access. This may have been a period when use of Park lands by surrounding groups was at a minimum.

After about 2,000 years ago changes took place both east and west of the Cascades which served to stimulate greater travel to and through the Park. East of the Cascades, people lived in villages which were permanently occupied for at least part of the year, and at which foods were stored for the slack times of the year. This pattern of semi-sedentary life fostered more complex interactions among people, both within the more densely populated villages and among groups within the region. More extensive trade networks formed part of this pattern; social hierarchies and more formalized religious institutions may well have appeared at this time. The bow and arrow was adopted as a better weapon for game and, perhaps, defense of group territory.

To the west of Crater Lake, a similar pattern of increasing social complexity and possible population growth also developed. Semi-permanent villages appear well-established
in the lowlands and valleys; small habitation sites extended into the foothills of the western Cascades. The intensive foraging regime of the earlier period continues in the uplands, possibly distinct from the lowland pattern. Population increase may have placed greater pressure on lowland resources, with more intensified use of the uplands. Use of Park lands probably expanded during this time. Increased trade networks between peoples to the east and west would have led more people through this area. Increased pressure on resources such as game, formerly abundant at more accessible locations, may have made hunting forays to the Park more likely.

After Euroamericans came to the Pacific Northwest, in the latter eighteenth century, the introduction of new technologies and trading networks affected the people living in southwestern Oregon. The introduction of the horse as well as attractive markets along the Columbia River stimulated more trade in slaves and consequent raids for slaves. The short period of direct contact prior to removal of native peoples to reservations witnessed displacement of these peoples throughout the region as well as the rapid destruction of their food sources. This increase in trade, raids, and the depredations of the newly arrived Anglo populations may have stimulated use of the uplands for refuge, resources, travel, and spiritual quests. This late period may have witnessed increased usage of the Crater Lake National Park lands.
CHAPTER 8
MODELLING THE CULTURAL LANDSCAPE OF CRATER LAKE

KATHRYN WINTHROP AND ROBERT WINTHROP

INTRODUCTION

In this chapter we model human use of the Park in prehistoric times so as to predict where sites (and thus archaeological materials) would be likely to occur. Three approaches are followed. The first uses features of the landscape which are considered to have particular relevance to human activity to predict the occurrence of archaeological sites. As part of this exercise, regional archaeological data are examined to predict site types likely within the Park. The second approach employs optimal foraging theory, which predicts settlement and subsistence strategies on the basis of theoretical statements regarding human behavior. The third approach examines culture patterns which derive from ritual or symbolic concerns (rather than adaptational necessity) as a basis for predicting site locations. These three approaches are complementary, and converge to yield predictions regarding both likely site types and site locations within Crater Lake National Park.

THE ENVIRONMENTAL MODEL

Models which predict the location of archaeological sites from features of the natural environment are commonly constructed from the examination of an existing database of known sites. These are correlative models, correlating known sites with environmental variables such as distance to water, slope, game trails, resource patches, and so on. To be most effective, these models require a sound and extensive database derived from an unbiased survey of the region examined. Unfortunately, such a database is simply not available for the Crater Lake area. The Park itself has only a very small sample of sites and localities. As noted in Chapter 7, only about 1500 acres of Park lands have been subjected to documented professional survey.
Finds of archaeological materials within the Park derive in part from professional surveys, and in part from chance finds by Park personnel and visitors. Surveys in surrounding lands have been entirely project driven; that is, the lands surveyed have been chosen on the basis of priorities—such as timber harvest—which are unrelated to archaeological concerns. Furthermore, the sample of sites from these surveys is small, and the information regarding environmental variables, such as landform, is not uniformly addressed.

There are, however, several sources of information which can suggest both the kinds of sites likely to occur within the Park, and their locations. The sites from southwest Oregon, discussed in Chapter 6, provide a database usable for predicting the types of sites found at high elevations in this area. Specific environmental features of the Park related to archaeological site location can be defined and located. Ethnographic and historic references and information specifically pertinent to the Park contribute to the predictive model. Finally, the type and location of known archaeological finds provides obvious data on where and what is found within the Park.

Southwest Oregon: Site Types and Elevation

As noted in this report, one outstanding environmental characteristic of Crater Lake National Park is its high elevation relative to surrounding lands. The sites discussed in the review of archaeology provide a substantial database from which to draw conclusions regarding site types occurring at high elevations. In examining this data, however, certain qualifications must be kept in mind. First, like the sites identified through survey, these excavated archaeological sites have received attention primarily because of their location in lands slated for disturbance from development or timber harvest projects, and do not constitute an unbiased sample. Also, like the survey data, information from these archaeological investigations is highly variable. Different researchers and agencies have emphasized different issues; these in turn have changed over time as the discipline itself has changed. Despite these limitations, the regional archaeological investigations provide a rich source of information for this study.

In the absence of a regionally accepted site typology, two ways of construing site type were used in examining the database of sites. The first defines descriptive archaeological types; sites were assigned to different categories based on the archaeological assemblage recovered. The second examines site function; this is more ambiguous than the first typology, since it depends upon data from sites which are both variable in quality and subject to differences in interpretation.

Archaeological types. The archaeological typology presents a series of descriptive types. The goal was to sort sites into categories of greater and lesser archaeological
complexity. The first four types listed below form a logical sequence of increasing archaeological complexity; the last two represent special cases in the archaeological record. The sites were assigned to one of six categories, presented in Table 8 - 1.

TABLE 8 - 1
ARCHAEOLOGICAL SITE TYPES

1. **Lithic scatter (LS):** chipped stone debitage and tools only, no defined temporal or cultural components;

2. **Complex lithic scatter (CLS):** chipped stone tools and debitage plus groundstone, and/or other tools and materials (bone, shell), and/or temporal or cultural components indicated; NO features (e.g. habitation features).

3. **Feature site (FS):** a variety of artifacts together with features such as middens, housepits, hearths, burials, peeled trees or rock features; may have defined temporal or cultural components;

4. **Complex site (CS):** a combination of different types, evident in stratigraphically defined components of a site;

5. **Rock feature site (RS):** rock features (generally assumed to relate to vision quest activities) not associated with other archaeological materials;

6. **Other (O):** sites which do not fall into the above categories such as rock art sites, quarries, peeled tree sites not associated with other archaeological materials.

Data were entered from the regional sample for the three sub-regions discussed in the review of previous archaeology: the eastern Umpqua River drainage; the eastern Rogue River drainage area, and the northern Klamath Basin. A total of forty-seven cases were entered for the Umpqua, thirty-six for the Rogue, and fourteen for the Klamath Basin. The data are tabulated in Appendix 1.

West of Crater Lake there are no complex sites (CS) or sites with archaeological features (FS) above 3,000 feet. Sites which occur above this elevation are primarily lithic scatters and complex lithic scatters; one rock feature site is included. These sites are all located in the mountains leading up to Crater Lake, and occur at high elevations. As indicators of the types of sites which might occur at Crater Lake, these suggest that simple chipped stone lithic scatters as well as lithic scatters associated with other materials such as
groundstone or bone are likely.

The three sites which occur at comparatively higher elevations in the northern Klamath Basin are all feature sites. However, these three sites are large lithic scatters associated with peeled tree features located in scabrock flats in the eastern part of the study area. These lands are not part of the Cascade Mountains, and may not be representative of sites found at higher elevations on the east side of the Cascades.

**Functional types.** The sites were also sorted into functional types and correlated with elevation. Sites were assigned a function based on the original investigator's conclusion or on an assessment of the materials found. For a number of sites, however, sufficient data to assess function was not available. These data are also tabulated in Appendix 1. Sites were assigned to one of five functional categories, presented in Table 8-2.

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**TABLE 8-2**

FUNCTIONAL SITE TYPES

1. Village sites
2. Seasonal base camps (including spring fishing camps)
3. Task specific sites, such as hunting sites, lithic reduction sites, butchering sites
4. Multiple function sites, i.e., those which have components exhibiting various functions over time
5. Vision quest sites (function assumed)

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With the exception of one presumed vision quest site, the sites above 2500 feet to the west of Crater Lake are all seasonal camp and task-specific sites. On the east side, the three sites at a higher elevation are also seasonal camps and task specific sites.

The handful of sites which are known from within the Park itself and from the land immediately adjacent to it augment the information given above. The archaeological sites within the Park include one complex lithic scatter (the National Creek Site) and five rock feature sites, assumed to be vision quest sites, as well as an obsidian source locality. The National Creek Site, so far unique in Crater Lake Park, has both chipped stone tools as well as a groundstone implement (a pestle), making it a complex lithic scatter according to the
definitions given above. It is also associated with an area along Crescent Ridge which may have served as a place for quarrying material for such groundstone tools.

Sites on land within a few miles of the Park boundary include twenty-four rock feature sites (i.e., vision quest) and thirteen other types of sites. On the basis of surface evidence only, these other sites appear to be various types of lithic scatters. Certainly this evidence affirms that lithic scatters (simple or complex) will be likely types of sites to be found within the Park. This evidence also highlights the likelihood of rock feature sites occurring within the Park; these site types were seriously under-represented in the other database.

**Site Locations**

Having defined the types of archaeological sites most likely to occur within the Park, it remains to specify their likely locations. Information for probable site location comes from a variety of sources: location of known sites within and nearby the Park, ethnographic information, historical references, and the location of environmental features known to have significance to prehistoric peoples. Chief among these latter are the location of natural resources used by native peoples: water, land of moderate slope for camping, and natural travel routes.

**Site Distribution Within the Park.** The archaeological finds within the Park provide clues to the location of other materials. The rock feature sites are all located on peaks or ridgetops. The National Creek Site is located on a flat bench along a stream flowing from Park lands to the west, a reasonable location for a seasonal camp or stopping place. Archaeological materials within the Park also include a number of isolated finds. These materials have been found throughout the Park, but cluster along Annie Creek and the south and west rim of the Lake (see Map 9). These are areas which have been frequently visited in the recent past, and finds of archaeological materials there reflect to some degree current patterns of land use within the Park. Nonetheless, there is reason to expect that the distribution of these finds indicates areas of particular importance to prehistoric peoples.

The locations along Annie Creek include two distinct clusters; one at the Park Headquarters, and one in Godfrey Glen. As will be noted below, the Annie Creek - Munson Valley area provides a route of travel for elk as they move into their summer range within the Park, as well as a travel corridor used today and historically by visitors to the Lake itself. The Park Headquarters and Godfrey Glen are both sites of relatively flat land near sources of water which would have provided decent camping spots for early hunters; these are likely areas for prehistoric sites.

Sites located on Forest Service lands immediately adjacent to the Park show similar associations to those within the Park. Rock feature/vision quest sites are all located on peaks
and buttes. Lithic scatters are associated with water and moderate slopes; southwest of the Park these sites are also associated with the important huckleberry grounds near Huckleberry Mountain.

**Ethnographic and Historic References.** Specific reference to prehistoric use of Crater Lake lands in the historic and ethnographic literature is rare. The ethnographic literature is most useful for defining the ways of life which may have contributed to use of the Park lands, and to defining the useful resources located within the Park (see Chapter 4). Upland hunting and berrying was a part of life for all of the peoples who lived around the Park, as was travel and trade, warfare, and intermarriage among the various groups. Of the resources significant to prehistoric peoples, elk and deer are the most important to be found within the Park.

The Park was also of significance spiritually; peaks and high points were sites of vision quest rituals, as were the lake itself, the lakeshore, and the rim. As was noted earlier, vision quest ritual could include swimming in the lake and piling rocks. Leslie Spier (1930:98) specifically noted a named site, makwalks, as a point on the western rim from which questers climbed down and piled rocks (LaLande [1980:172] suggests this may be Discovery Point). The significance of water in the spiritual quest not only highlights the importance of the lake, but calls attention to the possible importance of waterfalls within the Park. There are a number of falls in the park: Vidae Falls on Sun Creek, as well as other along the Creek; Duwee Falls at the head of Godfrey Glen; and several intermittent falls within the rim of the lake may have provided foci for quest activities (see Allen n.d. regarding waterfalls).

Ethnographic and historic evidence amply documents travel across the Cascades among the various groups in the area. The Klamath met with the Molala in late summer at the huckleberry fields just outside the southwest corner of the Park. A likely route of travel from the homelands around Klamath Marsh and Agency Lake would have been along Annie Creek and Castle Creek, through the southwest corner of the Park. This was also a route used by Takelma warriors conducting raids against the Klamath (LaLande 1980:171). In the early historic period, Indians migrated between Fort Klamath and Little River in the Umpqua drainage (Wharton 1978); again, the route following the creeks through the southwest corner of the Park would have been a likely travel corridor. The Molala Trail, which ran the length of the Cascades north to the falls of the Willamette River, terminated a few miles north of Crater Lake (Minor and Pecor 1977:154).

Historic references contain occasional information specific to aboriginal use of the Park. For example, an early map notes "Squaw Camp" at the confluence of the main stem of Annie Creek and the East Fork (map on file, CLNP). A letter from the Acting Superintendent in 1932 notes that Indians used the saddle just north of Maklaks Crater as a means of reaching Sun Creek (Libby 1932). According to a 1935 report on the caves in Crater Lake National Park, Indian individuals have commented that on rare occasions Bear Creek Cave was used by hunters. Although this cave was subsequently examined for archaeological
resources and found devoid of them (Bergland 1985c), the suggestion remains that caves provided occasional shelter for prehistoric peoples.

Historic sources are especially useful in defining areas which were likely travel routes and camp spots. Throughout the west, as settlers displaced the native inhabitants they frequently followed the old trails and built their roads along ancient pathways. These routes generally followed the topographic features most amenable to travel, and examination of early routes is often a clue to prehistoric patterns. Similarly, early historic campers often settled in the same camp spots favored by native peoples.

The Crater Lake National Park Historic Resource Study enumerates early trails, roads, and camps within the Park (Green 1984). In 1897, for example, two routes were recognized as possible means of access from the rim to the Lake: at Eagle Cove and Cleetwood Cove (today, Cleetwood Cove still provides a main access route to the Lake). Early roads and trails through the Park follow what are today the major roads: along Annie Creek and Castle Creek in the southwest, and north through the pumice desert. Early camps are also listed in the study (pp. 170-174); these locations included camps at the head of Annie Creek Canyon, at Cold Spring and Cold Creek, and at other locations within the Park. An old map notes a travel route up Sand Creek in addition to the routes along Annie Creek and across the Pumice Desert.

Environmental Features

The key environmental features with respect to the location of archaeological materials within the Park are resource availability, landform, slope, and water. Resources include plant and animal foods and materials, as well as materials such as stone useful for tools. Landforms constrain travel and provide places for ritual use. Slope constrains habitation; flat to moderate slopes are necessary for camping. Water is necessary to humans and to the animals they hunted; streams also may provide access through steep and forested lands.

Resources. There are two questions to address in assessing the resources available at the Park to prehistoric peoples. The first is whether there were resources in sufficient abundance to attract people to the Park to hunt or gather. The second is whether there were sufficient resources to sustain people if they came through Park lands for other purposes.

Game, particularly elk and deer, are abundant in the Park during summer months and would have provided the most plentiful resource to draw prehistoric peoples to the area. Elk find good habitat throughout the Park, especially on the west side of Crater Lake. The open forests, watered by small streams, which surround the dry pumice flats south of Red Cone and the Pumice Desert support a healthy population of elk. The herd which today occupies this summer grazing ground migrates from winter pastures near Prospect, southwest of the Park, to
spring pastures just south of the Park near Fort Klamath. As the weather warms, the herd disperses and moves northward into the western half of the Park. This herd consists of Rocky Mountain elk which were introduced in 1917 to augment a remnant herd of Roosevelt elk, which had been hunted to near extinction in the early historic period. A second herd migrates into the Park from Chiloquin on the east, entering along Sun Creek Valley. Reports of early settlers document an abundance of elk; the movements of today's herds identify areas which provided decent habitat for herds in the past.

In addition to the elk, deer and antelope migrate into the Park during the summer months. Mule-deer and antelope enter from the east, and black-tailed deer from the west. The antelope herd summers in the northeast corner of the Park, which contains a remnant of the bitterbrush/snowbrush, grass and ponderosa pine habitat favorable to antelope which used to exist along the east side of the Cascades (Jim Milestone, personal communication). Even in historic times, antelope may have ranked with deer and elk as a significant game species.\(^1\) Though the herd is small, it probably represents a remnant of a once much more extensive population.

Elk and deer in particular would have provided an attractive resource in sufficient quantity for productive hunting by prehistoric peoples. Good habitat areas for game within the Park suggest areas likely to contain remnants of prehistoric hunting activities, such as butchering sites and tool repair sites, represented by lithic scatters, or isolated projectile points lost during hunting.

Other animal resources also occur within the Park, which may have been used by prehistoric peoples passing through. Beaver used to inhabit some of the western creeks, such as Copeland and Bybee Creeks. Sun Creek provides a decent fishery for trout, as well as a route for elk migration. This creek occupies a glacial cut valley and supports richer wildlife than some of the other, pumice-cut streams in the Park. Annie Creek and the southwest corner of the Park also support a generally richer wildlife than the rest of the Park (J. Milestone, pers. comm.). These areas also include the travel route east-west through Park lands which may have been followed by prehistoric travelers.

There are no plant resources in sufficient abundance to draw people to the Park, although there are areas which may have been used if people were passing through. Yew trees, which provided desired wood for bows, occur as part of a mixed conifer forest in the southwest corner of the Park. Sphagnum bog, in the northwest part of the Park, provides a unique wet meadow environment with a diversity of plants surrounded by open, dry forest in fairly flat topography (J. Milestone, pers. comm.). Elsewhere in the Cascades, wet and dry meadow environments serve as good predictors of archaeological site locations (Snyder 1987); Sphagnum Bog seems one such likely area.

\(^{1}\) "Judge Waldo referred to the Pumice Desert as Antelope Prairie and in one place recounted shooting antelope from near his campsite on the north side of Red Cone in the 1880s." (Steve Mark, personal communication)
In addition to plant and animal resources, the Park contains minerals useful to prehistoric peoples. Two such locations are known, although no indication of prehistoric use of these areas has been found. The first is a scatter of naturally occurring obsidian at a site near Rim Village (Minor and Musil 1989); the second is an outcrop of igneous rock useful for groundstone implements near Crescent Ridge (Bergland 1987).

Topography and landforms provide clues to past use of the Park. As noted above, high points such as peaks, the lake rim, bluffs, and ridges were used for ritual purposes. Stream courses, ridge systems, and mountain passes provide access through the mountains and indicate more likely areas of prehistoric travel. Flat terraces and benches along waterways and by springs provide hospitable camp spots.

The Model

Based on the above considerations, Table 8 - 3 indicates the environmental features having a higher probability of containing archaeological sites:
TABLE 8 - 3
HIGH PROBABILITY ENVIRONMENTAL FEATURES

<table>
<thead>
<tr>
<th>environmental features</th>
<th>archaeological site types</th>
</tr>
</thead>
<tbody>
<tr>
<td>peaks, ridges, bluffs, prominences and</td>
<td>rock feature sites</td>
</tr>
<tr>
<td>rocky outcrops;</td>
<td></td>
</tr>
<tr>
<td>ridges, saddles, stream courses with</td>
<td>associated camp spots/hunting locations indicated by lithic</td>
</tr>
<tr>
<td>passable streamside terraces, as routes</td>
<td>scatters or isolated tools</td>
</tr>
<tr>
<td>of travel</td>
<td></td>
</tr>
<tr>
<td>elk/deer habitat areas, especially</td>
<td>hunting-related locations indicated by lithic scatters or</td>
</tr>
<tr>
<td>forest edge zones on the west side of</td>
<td>isolated tools</td>
</tr>
<tr>
<td>the Park</td>
<td></td>
</tr>
<tr>
<td>areas of flat to moderate slope near</td>
<td>campsites indicated by lithic scatters</td>
</tr>
<tr>
<td>water, such as streamside terraces and</td>
<td></td>
</tr>
<tr>
<td>flats near springs</td>
<td></td>
</tr>
<tr>
<td>lakeshore and rim areas</td>
<td>rock feature sites</td>
</tr>
<tr>
<td>caves with accessible interiors</td>
<td>campsites</td>
</tr>
<tr>
<td>waterfalls</td>
<td>rock feature sites</td>
</tr>
</tbody>
</table>

Certain specific areas are suggested by this review of the geography of Crater Lake National Park:

**1) Sun Creek and Sun Creek Valley.** These provide a constellation of factors which make it an area particularly likely to contain archaeological resources. This creek runs through a glacial cut valley which provides a gentler topography than the steeply eroded courses of the pumice cut streams; a diversity of plant and animal life exist in the valley, and the creek contains one of the better fisheries in the Park; elk migrate into the park through this corridor; the valley provides a natural pathway from the southeast to the lake.

**2) Sphagnum Bog.** This area also contains a constellation of factors which make it
particularly likely to have been used by prehistoric peoples. The wet marsh/meadow has a diversity of plants and is surrounded by dry, open forest, making it an extremely attractive habitat for elk and other game. The land is gently sloping with flat areas conducive to camping, unlike the steeper terrain around other major springs such as Thousand Springs.

(3) **Park Headquarters and Godfrey Glen.** The number of isolated finds from these locations indicate that these were areas occupied by prehistoric peoples.

(4) **Historic trails, travel routes, and camps.** These are areas used by early travelers to and through the park; good travel routes and camp spots were frequently those used by the aboriginal peoples before them.

**OPTIMAL FORAGING MODELS**

Unlike the environmental model presented above, which is derived inductively by generalizing from previously observed correlations between site types and environments, optimal foraging theory offers a means of modeling prehistoric land use on a *deductive* basis. As noted in Chapter 2, optimal foraging theorists seek to model the factors guiding the food quest among hunter-gatherers. One issue considered is diet breadth, the range of edible resources that a given group actively seeks.

The diet breadth model assumes that breadth is a function of the time costs involved. Two components of cost are considered: search time and handling (or pursuit) time. Search time is seen as the time needed to encounter an acceptable prey type (plant or animal), "generalized over all prey types," in accordance with the assumption that prey are encountered randomly. Handling time is calculated as "the average time spent pursuing, capturing, processing, and consuming one item of each prey type once encountered" (Smith 1983:628).

According to this formulation (the MacArthur-Pianka Model), search costs and pursuit (or handling) costs yield opposing cost curves in relation to diet breadth. Thus,

as a forager widens its diet by adding prey types of lower rank (i.e., higher handling time per unit return), handling costs averaged over the entire diet increase; search costs decrease because less time is spent searching for acceptable items. This fundamental trade-off between search costs and handling costs defines a unique and optimal set of prey types for any foraging system fitting the assumptions of the fine-grained diet

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2 Some material in this section is adapted from Winthrop et al. 1989.
The theory therefore predicts that the number of resource types in the diet will increase until the marginal increase in handling time exceeds the marginal decrease in search time.

Figure 7 represents this relationship graphically, with the vertical axis representing time, and the horizontal axis representing the number of resources types (diet items) utilized. As noted, search costs fall as the number of resource types increases, while handling costs rise. For a given set of search costs (curve S) and handling costs (curve H), the point where S and H cross (Optimum A) defines optimum diet breadth.

The potential relevance of this model to the central Oregon Cascades can be seen in contrasting hypothesized cost curves for Klamath and Molala subsistence regimes. These would represent contrasting patterns of resource use centered southeast and northwest of Crater Lake, respectively. The Klamath (as described in Chapter 4) relied heavily on certain abundant resources of the lakes and marshes forming their core territory, particularly wokas, fish, and waterfowl. The Molala, in contrast, occupying the flanks of the Cascades, lacked equally rich resources. This would imply that on the average, less time would be spent in the Klamath than in the Molala subsistence round travelling to resource areas, and (once there) searching for particular plant and animal foods.

In Figure 7, based on this assumption, curve S represents the idealized Klamath diet regime, curve S1 the Molala regime. Assuming that average handling time is invariant, A represents the optimal trade-off of search and processing time for the Klamath, B that for the Molala. The Molala optimum is further to the right, signifying the need to utilize a greater breadth of resources than the Klamath. This is consistent with the ethnographic record. The relevance of this model for the Crater Lake area is this: the Molala would have been more likely than the Klamath to travel to the Crater Lake area to hunt the large mammals (deer, elk, antelope) which summered there. Klamath hunting in the Park area would be more likely to be incidental to some other purpose, particularly ritual/spiritual pursuits.

Obviously the number of identified archaeological sites within the Park is far too small to test any hypothesis of this type in a statistically meaningful sense. It is, however, suggestive, that aside from the lake rim itself, all known rock feature sites are east of the lake; the one known lithic scatter is west of it.

MODELING SACRED LANDSCAPES

Clearly, Crater Lake and its environs served a range of uses for the Klamath, Upper
Figure 7

McArthur-Pianka Diet Breadth Model

S = "Klamath" search costs
S1 = "Molala" search costs
H = handling costs
Umpqua, and other Indian peoples of the region. Nonetheless, the primary significance of Crater Lake appears to have been as a place of power and peril, renowned as a spirit quest site, yet also feared for the dangerous beings residing in the lake. In short, Crater Lake constituted a sacred landscape, that is, a region distinguished in the traditions of a people by its special spiritual qualities or powers.3

The goal of modelling a "sacred landscape" is made far more difficult by the apparent lack of corresponding concepts in Euro-American culture. Nonetheless, there are certain similarities in Euro-American and Native American perceptions of nature. These are suggested briefly below, as aid to better articulating what is distinctive in the traditional Indian understanding.4

Given the numerous controversies which have arisen since the 1970s over proposed development of lands viewed by Indian peoples as sacred or culturally sensitive (Gould 1986; Stoffle and Evans 1989), it is worth emphasizing that Anglo-American culture has also seen in nature an avenue for spiritual experience. The romantic movement, in particular, strongly influenced the perception of wilderness in nineteenth century America. Denis Cosgrove, in his interesting study of society and symbolic landscapes, noted that in America,

by the 1820s and 1830s the idea of romantic landscape had invested scenes of wild grandeur with a special significance. They were held by many to be places which declared the great forces of nature, the hand of the creator. . . . In the context of a religious tradition which stressed individual salvation, the idea of sublime wilderness offered a powerful opportunity for transcendence, a way of appropriating America as a distinctive experience unavailable in Europe. (Cosgrove 1984:185)

Crater Lake, first encountered by Anglo-American travellers in the 1850s, admirably fulfilled the desire for a sublime and inspiring experience of nature. Captain Franklin Sprague, describing his visit in 1865, spoke of the lake's "majestic beauties" and "awful grandeur" (in Greene 1984:271). Clarence Dutton remarked in 1886 on the emotional reaction which the lake aroused in its visitors:

It was touching to see the worthy but untutored people, who had ridden a hundred miles in freight-wagons to behold it, vainly striving to keep back tears as they poured forth their exclamations of wonder and joy akin to pain" (in Unrau 1988:I:32).

John Wesley Powell, writing in 1888 in support of a bill to create a national park to protect Crater Lake, argued,

3 Regarding sacred space or sacred landscape see Eliade 1959: ch. 1; Graber 1976; Tuan 1978; and Walker 1988.

4 The discussion of Crater Lake as a sacred landscape is adapted in part from K. and R. Winthrop 1992.
The lake itself is a unique object, as much so as Niagara, and the effect which it produces upon the mind of the beholder is at once powerful and enduring. There are probably not many natural objects in the world which impress the average spectator with so deep a sense of the beauty and majesty of nature. (in Unrau 1988:1:33)

Similarly, Mark Daniels, former General Superintendent of the National Parks, said of Crater Lake:

The sight of it fills one with more conflicting emotions than any other scene with which I am familiar. It is at once weird, fascinating, enchanting, repellent, of exquisite beauty and at times terrifying in its austere-dignity [sic] and oppressing stillness. (in Unrau 1988:1:233)

What is particularly intriguing about these expressions of "geopiety"—to borrow a term from the geographer Yi-Fu Tuan—is the way in which they manifest both strong similarities and differences with the Indian experience of the Crater Lake region (Tuan 1976). The similarities lie in the common recognition of an encounter with the alien, the weird, and the numinous in this ancient caldera. Yet the differences are also telling. For the American explorers and settlers, the encounter with Crater Lake appears to have yielded a deep emotional response, but not a deeper knowledge or transformation of self. Such testimonies as these suggest an awareness of the sacred, but it is a mute awareness, a matter of mood. Unlike the Indian visitors to Crater Lake, the Anglo-American travellers lacked the cultural models—the cognitive templates encompassing mythology, ritual practices, and knowledge of localized spirit beings—which allow such encounters to yield a message, to produce lasting understanding and personal change.

The elements of a sacred landscape derive their power in part from a net of symbolic associations accruing from myth. Crater Lake figures prominently in the Klamath myth of Le-w and Sqel (see above, Chapter 5). The myth relates the battle between the monster Le-w and Sqel (who also appears as Old Marten or Old Mink), in Klamath tradition a culture transformer who prepared "the world for the myth age humans" (Barker 1963:389). Through such myths the prominent features of a sacred landscape are linked to significant events in a primordial time, as (in the myth of Le-w and Sqel) the head of the decapitated Le-w was transformed into Wizard Island.

Ritual acts also create the symbolic associations essential to a sacred landscape. In a sense features in a sacred landscape are persons: one can enter into relationships with them. A Klamath woman about 80 years old, paralyzed and bedridden, said:

Every day I pray to the mountain. I lie here in my bed and I am sick and old and every morning I say to those mountains, I say, "Bless me, help me." I pray just like my mother taught me to do. . . . My mother taught me to pray to rocks and mountains and to give some food to them before we eat. It's just like in the Bible. I dream of those mountains at night. They kind of help you when you ask it. (Spencer
This interaction can occur through prayer; equally, it can take more active forms, for example through the physical rigors of the spirit quest.

What has been termed here a sacred landscape entails a correlation of physical place and cultural meaning, existing within a larger body of tradition. Its physical elements, such as Wizard Island, have associations with various culturally postulated events, some in a mythic time, others occurring still today. Those who share traditional knowledge of a landscape such as Crater Lake bring to the encounter culturally patterned expectations which shape experience, form symbolic associations, and allow lasting experiential value to be gained.

Many sacred landscapes lack any artifactual component, consisting purely of so-called natural features with ritual or mythic significance (see Walker 1988:259). Nonetheless in south-central Oregon, as noted, the archaeological record includes many examples of piled rock sites, which ethnographically are known to be frequently associated with spirit quest activities or similar ritual. Thus while piled rock features may have entirely pragmatic uses (e.g., as trail or resource markers [Walker 1966; Galm 1979]), often they are emblems of a sacred geography.

Of the six prehistoric sites now recorded at Crater Lake National Park, five are piled rock sites, all found on peaks or ridgetops. The consistent setting of such sites in the Park provides one basis for a predictive model. Regional ethnology (i.e., from northwestern California through the southern Plateau), however, suggests a more complex cultural logic guiding the placement and construction of such sites. The following are suggested as some issues relevant to modelling the traditional Indian understanding of sacred space in the Crater Lake region.5

(1) The importance of silence, isolation, and views. Thomas Buckley's study on the cultural significance of the southwest Siskiyou Mountains of northwest California (the "High Country")6 provides evidence for the importance of silence, isolation, and extensive vistas in the choice of areas appropriate for the pursuit of "medicine" or shamanic powers. One consultant stated:

People would go up alone, in secret. And they'd keep themselves hidden if anybody came around. They didn't want to be seen. They'd camp off in the brush, and they'd just make a small fire so nobody could see them. That was because they were so

5 The following material is adapted in part from Winthrop et al. 1992.

6 This area was the subject of protracted litigation over the construction of the Gasquet-Orleans logging road (the G-O Road project). See Lyng v. Northwest Indian Cemetery Protective Association, 108 S. Ct. 1319 (1988).
pure, and they didn't want anybody to come near them and spoil it. (Buckley 1976:12)

Solitude was a necessary condition for the concentration essential to "making medicine" (Buckley 1976:12-13). Buckley notes in his consultants' comments "the recurrent theme of distance... Unobstructed lines-of-sight over vast stretches of countryside, distant echoes and reverberations, the intuitive reinforcement offered by far off mountains and clouds, were all of importance" (Buckley 1976:15).

The fact that prehistoric (or early historic) piled rock sites in the Park have been found only on peaks and ridgetops implies that such sites possess excellent views. However, only one site record (that for CRLA-2) includes adequate information on areas visible from the site. Situated atop Bear Butte (6376 feet), this piled rock site commands excellent vistas, including clear views of Mt. Scott (8929 feet), Lao Rock (8049 feet), and the Watchman (8013 feet). (See Figure 8.)

(2) Sacred sites as systems. Sites used for "making medicine" or gaining other spiritual powers were seldom understood individually, in isolation one from another, but more commonly formed an interrelated system. In northwestern California, trails connected lowland villages with mountainous sacred sites; such trails were frequently marked with rock cairns or stacks. Culturally, such trails could include a number of "altars," sites where offerings were made along the route (Davis 1988:311).

Drawing on this model, Eric Bergland has suggested a parallel situation at Crater Lake. He notes that,

the presence of cairns on the caldera rim and cairns on a ridge system intermediate between the riverine lowlands and the caldera suggest that there may be [within the Park] an at least partially preserved material record of Native American spiritual "pathways" (Bergland 1985a:16).

(3) Sacred landscape as a reflection of cosmology. Because in many regions native cultures were badly disrupted if not destroyed outright by Euro-American conquest, it is difficult today to reconstruct the mythological and cosmological understandings which shaped the ritual use of areas such as Crater Lake. Again northwestern California, because of its relatively greater isolation, appears to have preserved a greater cultural continuity with pre-contact era traditions. It can for this reason offer a model.

Lee Davis's doctoral dissertation on Hupa world-view and cultural ecology illustrates the symbolic or cosmic significance of features of the land. She noted:

The prayer seats, rock circles, were the houses of the Immortals to which Indian doctors and shamans climbed during the power quest. They were situated at the axis points in the system of ley lines, invisibly criss-crossing the mountainous landscape as a "net thrown down upon the earth." (Davis 1988:328)
Figure 8
Selected Views: Bear Butte Site

NOTE: Location of archaeological sites in this online edition have been removed from this map in an effort to protect sensitive cultural resources.
Speaking of the same region, but drawing chiefly on Yurok consultants, Thomas Buckley observed,

Symbolically, these mountains comprised not only the center of the spiritual world, but the central point on a vertical axis of spiritual ascent which began in the subterranea"n house of the Thunders, rose through the centerpost of the sweathouses where initial medicine training for both men and for female shamans was undertaken, up through the High Country where final exercises were... practiced, reaching eventually through an "aperture" in the symbolic "sky-bowl" and thence into the Spirit World or "Heaven." (Buckley 1976:11, references deleted)

If such cosmological systems at one time existed for the Crater Lake region, there is little evidence of it today, at least in the published ethnographic literature. Nonetheless, Klamath mythology distinguishes many natural features of that environment: Yamsay Mountain, Modoc Point, Bare Island, etc. (Stem 1963b:33; Ramsey 1977:185). Certainly for many Klamath today, both Mt. Scott and Crater Lake continue to have particular significance as areas for spiritual endeavor (field notes, 4/8/92).

(4) Archaeological patterning of sacred sites. Information from northwestern California, at least, suggests that sacred sites, such as those marked by piled rock features, were not culturally uniform, but rather were distinguished by specific functions, with different powers and qualities. In the High Country, certain sites were used for sorcery, others for gaining aid in bravery or wealth, and still others for more esoteric "High Medicine" training (Buckley 1976:6-8). At least to some extent such distinctions in function were reflected in differences in form.

In northwest California, for example, archaeological studies for the G-O Road project recorded rock cairns, stacks, walls (i.e., rock alignments), rings, and semicircular rock enclosures (termed "prayer seats"), among other forms (Chartkoff 1983). Rock stacks occurred primarily along trails, and were apparently used to mark the sites of offerings and prayer en route to medicine areas. Semicircular prayer seats, in contrast, generally occurred on high peaks or outcrops. Ethnographically, such prayer seats were used as the site of meditation, dance, and prayer to gain various powers and aptitudes (Chartkoff 1983:748).

A study of piled rock sites on the Mt. Hood National Forest suggests other types of patterning (Winthrop Associates n.d.). (1) Many features in which a long axis is discernable (walls, elongated mounds) had that axis precisely oriented to a major peak (e.g., Mt. Hood, Mt. Jefferson, Mt. Rainier). (2) Some sites which possess numerous rock features show a geographic clustering of feature types. That is, one portion of a site may have numerous rock

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7 Stacks are "simple rock features consisting of one or more rocks piled one on top of another on a larger rock that is usually embedded in the ground." Cairns are used here for any other rock piles, i.e., piles of rocks wider at the base than at the top. The available data do not allow finer distinctions to be drawn. See Winthrop et al. 1992.
walls, another numerous rock mounds, yet another numerous semicircular enclosures. Such spatial patterning by type suggests that each rock design had a distinct meaning or ritual function. However, the ethnographic data needed to confirm this assumption are unavailable, or at least unavailable to outside researchers.

At Crater Lake, piled rock sites include a variety of features: cairns, stacks, rings, and walls. To recapitulate, the Cottonwood Cairn site (35-KL-95) has 5 cairns and 2 stacks; the Dutton Cliff site (35-KL-596) has 1 cairn and 2 stacks; the Sharp Peak Cairns site (CRLA 88-01) has 9 cairns, 2 stacks, 2 rings, and 3 walls; the Maklaks Crater site (CRLA 88-02) has 1 cairn, 3 stacks, and 1 ring; and the Bear Butte site (CRLA-2) has 6 cairns and 2 stacks. (See Figure 9.)

No significant patterning is obvious from the limited data available. Site reports do not suggest any obvious spatial patterning regarding the distribution of feature types within a given site. Similarly, no relationships are evident in comparing the distribution of feature types between sites. All five have rock stacks and cairns. Two sites also have rings; only one site has rock walls. Site reports indicate neither trail systems marked by rock features nor clear alignments of walls or other rock features with major landmarks of the area.

The characteristics of sacred landscapes in this region—the importance of isolation and views, their systemic character, their cosmological significance, and their archaeological patterning—provide a framework of hypotheses for understanding traditional Indian use of Crater Lake, and interpreting additional archaeological sites which may be discovered. Further ethnographic study centering on contemporary use of sacred sites in the region, particularly among the Klamath, could help clarify the relevance of this model for Crater Lake.

TESTING THE ENVIRONMENTAL MODEL

Introduction

The environmental model was tested by performing an archaeological survey of selected areas of the Park. These areas were chosen to represent the different types of environments thought to be of special significance for prehistoric sites. Two broad site types were sought:

Rock feature sites: expected on high points and prominences such as peaks, ridges, saddles and bluffs, especially around the lake rim; the lakeshore; and special areas
Figure 9
Rock Feature Assemblages

KEY

△ = cairn (pile or mound)
□ = stack
○ = ring
≡ = wall

NOTE: Location of archaeological sites in this online edition have been removed from this map in an effort to protect sensitive cultural resources.
such as waterfalls;

**Hunting- or travel-related lithic scatters:** expected in elk and deer habitat areas; near sources of water especially with flat or moderately sloping benches or terraces nearby for camping; along possible travel routes including saddles, ridges, and stream courses; in areas where numerous finds of isolated projectile points or hunting implements suggest a local prehistoric camp, such as the Park Headquarters or Godfrey Glen area.

### Areas Surveyed and Results

A brief summary of the areas surveyed and methods employed follows, as well as conclusions regarding the model.

1. **Skell Head Lakeshore.** The lake itself was a focus of prehistoric ritual interest, and rock features were constructed along the lakeshore. However, the lakeshore is a very unstable environment. The very steep slopes above are subject to snow avalanches which, together with wind and wave action, constantly modify the shoreline. Given these conditions, it is not expected that prehistoric features constructed along the lakeshore would be likely to survive for a long period of time.

   The area below Skell Head, however, is somewhat more protected than other parts of the lakeshore. Furthermore, a rock feature had been noted by a Park Service employee at this location. Upon examination, it was found that this feature had been constructed within the last ten to fifteen years. It consists of a low wall with a cleared space behind it; possibly it served as a camper's windbreak. There were modern artifacts—such as a plastic bag, fishline weight, root beer bottle—associated with the feature. Survey along the rocky beach below Skell Head netted no other finds. The geomorphologist who accompanied the survey estimated that the small talus slope upon which the feature was constructed had been stable for no more than ten to twenty years; hence the feature is definitely of recent origin.

2. **Scott Bluff.** This survey area includes the moderate slopes between Mt. Scott and Scott Bluff, just east of the Lake. This is an area of open, intermittent forest and of decent habitat for elk and deer. The bluffs also represent high spots that are potentially sensitive for rock feature sites. This area, however, is quite dry, without permanent sources of water. Nine transects spaced thirty meters apart were walked approximately northwest-southeast beginning at the picnic area on the road between Mt. Scott and Scott Bluff. Survey conditions were good, with fairly good ground visibility. Approximately eighty acres were surveyed at this location. No archaeological sites or isolates were found.

3. **Vidae Falls.** Vidae Falls is at the head of Sun Creek, which is among the more archaeologically sensitive areas in the Park. It is also a significant waterfall, and only about a
mile from the southern edge of the lake rim. Moderately sloping land with open forest rises gently to the north from the falls, to the lake rim. Furthermore, a rock feature site had been reported at this location. The area above the falls, including both sides of the spring generating the falls and a small bench just west of the falls were surveyed using transects spaced twenty-five meters apart. Approximately ten acres were covered.

The rock feature at the head of Vidae Falls is on a bluff overlooking the valley to the south, just east of the top of the falls. It appears to be of recent origin. The feature consists of a low rock alignment forming a V-shape, with a rock stack at the point of the V and a small rock circle within it. Another rock circle and stack are located just outside the V at the point of the V. These patterns of rocks are fairly pristine, with little weathering, disturbance, or duff cover despite the exposed location at the top of an open bluff and the easy access to numerous visitors. No prehistoric sites or isolates were found.

(4) Discovery Point Area. A ridge of land running west from the rim of the Lake, and just north of Discovery Point, was surveyed, as was the area around an unnamed spring just northwest of the ridge. The ridge is a high point near the rim, and the spring is a source of water with moderately flat land adjacent; both the ridge and spring are in an area of open forest and good ungulate habitat. Six meander transects spaced approximately thirty meters apart were walked west-east along the ridge from the road and northwest/southeast from the toe of the ridge to the spring. Benches and terraces on both sides at the head of the spring were also surveyed. Conditions were open and good on the ridge, but duff cover obscured the ground around the spring. About forty acres were surveyed at this location.

Another rock feature site was discovered on top of the ridge. This site consisted of five rock stacks or piles, consisting of one to three rocks placed on larger base rocks or on each other. The first three features each consist of a single rock placed on top of a small boulder. These features were constructed after trees in the area had fallen over the boulders and begun to rot; hence they are relatively recent. The two other features each consist of three rocks piled together. The degree of weathering of the rocks in these piles again suggests that they have not been in place more than several decades. No prehistoric sites or isolates were found.

(5) Red Cone. The area immediately south of Red Cone mountain provides some of the best habitat for elk in the Park today. A pumice desert south of Red Cone is ringed by open forest; at the south end of the desert two unnamed springs provide water at the forest's edge. The land is fairly flat, with numerous small knolls and bluffs overlooking the landscape just within the treeline and near the drainages in the south. The area contains abundant evidence of elk and deer, and elk were sighted during the survey. Three transects were walked east-west across the southern flanks of Red Cone mountain, through the pumice desert and open forest at its edge. Four meander transects, spaced about thirty meters apart, were walked along the southern and western edge of the pumice desert, in the pumice flat/forest interface. Approximately one hundred seventy acres were surveyed in this area.

162
Survey conditions were fairly open and good, with some areas of heavy duff obscuring the ground under the trees. The springs were still flowing in mid-August, and there were green meadows interspersed with the forest, especially south and west of the pumice flat. No prehistoric sites or artifacts were found.

(6) Godfrey Glen. Several isolated artifacts have been found in the Godfrey Glen area, suggesting that this was a prehistoric camp location. There is a flat terrace at the southern end of Munson Valley, just north of the confluences of Munson Creek and Goodby Creeks with Annie Creek. Today, the Godfrey Glen trail winds through this terrace. The terrace was surveyed using transects spaced thirty meters apart; approximately fifty acres were covered. This area is forested, and in many parts of the terrace the ground was covered with duff; visibility was confined to patches of ground around fallen trees, rodent burrows, and other such disturbances. No prehistoric sites or isolates were found.

(7) Whitehorse Bluff. The saddle between Whitehorse Butte and the bluffs to the east contains the present highway and provides a natural travel corridor from the southeast part of the Park to the southwest. This corridor was identified above as potentially an important prehistoric travel route. Small ponds on top of Whitehorse Bluff provide some sources of water, and the bluffs themselves, on both sides of the pass, have spectacular views of Crater Lake rim and the mountains to the north. The tops of the bluffs on both sides of the present road (Highway 62) were surveyed using meander transects spaced thirty meters apart, as was the saddle between the bluffs. Approximately eighty acres were covered. Conditions were fair throughout most of the area surveyed, with open forests providing intermittent patches of visible ground. No prehistoric sites or isolates were noted.

Conclusions

Approximately 430 acres—less than 0.3 percent of the Park lands—were surveyed to test the predictability of the model. All of the areas surveyed represented high probability areas within the Park. Though a real test of the model would have included survey of low probability areas as well, it was decided that the small amount of time (two person-weeks) allotted to this phase of the project would best be spent attempting to increase the small sample of prehistoric sites known in the Park. The results of this attempt did not serve to increase the number of sites, and the question of the predictability of the model must be addressed.

There are a number of reasons why no prehistoric sites were discovered, outlined below:

(1) Small amount of survey and low density of sites. This survey covered a comparatively small amount of land. If, as seems likely, the hunting and travel related sites
within the Park consist of small, low density artifact scatters and isolated finds then it will take a proportionately larger effort to locate these materials. The rock feature sites appear to be confined to a rather narrow range of landforms.

Interestingly, those areas surveyed which were considered particularly likely to have rock feature sites did indeed have them, though these features all appeared to be of recent origin. It is impossible to determine archaeologically whether such features are contemporary Indian expressions of traditional practices, or the products of modern Euro-Americans interested in Indian spirituality. Regarding the modern rock alignments at Vidae Falls, for example, the prominence of the site and popularity among visitors suggest the latter explanation (see Brand 1988; Rose 1992).

(2) **Fragility of archaeological materials.** The light lithic scatters, isolated finds, and rock feature sites predicted for the Park have been subjected to years of harsh weathering and environmental factors. Snow, wind, and freeze/thaw actions serve to wear down and eliminate features built up on exposed prominences. The same factors cause soil movement on even moderate slopes, and mix the soils in flat areas. In the loose pumice soils which are characteristic of the Park lands, small artifacts would be easily mixed into the ground within a relatively short period of time. In an area where archaeological materials have probably consisted mainly of light artifact scatters and isolated finds, these conditions alone would lessen the chances of discovery.

This natural disturbance has been augmented in some places by historic and recent development. The Park Headquarters and early and current campgrounds are located in spots which were likely stopping places for prehistoric peoples as well. Given the fragility of the expected types of prehistoric materials, it is likely that any development at these locations has removed traces of earlier occupations.

(3) **Difficulty of discovery.** Some of the areas most likely to contain archaeological materials are located under a forest canopy, with the consequence that the soils are hidden under leaf-fall and duff. In the relatively pristine environment of the Park, there are few agencies which disturb this ground cover, and artifacts which may lie beneath the duff remain unseen. More open areas are characterized by very loose soils, where the passage of animals or other natural forces quickly works surface materials into the ground.

The above considerations highlight the importance of fortuitous finds within the Park. Few of the archaeological sites and materials known from the Park have been discovered during systematic survey, but have been found by Park personnel and others in the course of other activities. While the Park has a responsibility to conduct surveys prior to land-affecting changes, it also has a responsibility to carefully note and curate those cultural resources which are located at other times. Over time, both approaches—systematic survey and careful tracking of fortuitously located materials—will generate a larger sample of archaeological information which can serve to augment and revise the model presented here.
CHAPTER 9
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Brauner, David
1978 *A Reevaluation of Cultural Resources within the Applegate Lake Project Area, Jackson County, Oregon, Phase II*. Report by the Department of Anthropology, Oregon State University, to the Portland District Army Corps of Engineers.

1983 *The Reevaluation of Cultural Resources within the Applegate Lake Project Area, Jackson County, Oregon. Phase III: Data Recovery at Site 35JA42*. Report prepared for the U.S. Army Corps of Engineers, Portland District, Oregon. This study reports the excavation of several housepits along the Applegate River. Large blocks were excavated, and activity areas defined. The houses were not occupied at the same time, but over a few years, by one or a few families. The site contains Euro-American beads and glass, and is considered protohistoric (c. 1750-1830). Stone artifacts, floral, and faunal materials were recovered.

Brauner, David and William Honey

1978 *A Reevaluation of Cultural Resources within the Applegate Lake Project Area, Jackson County, Oregon. Report by the Department of Anthropology, Oregon State University, to the Portland District Army Corps of Engineers.*

Brauner, David and Lynne McDonald
1981 *The Reevaluation of Cultural Resources within the Applegate Lake Project Area, Jackson County, Oregon. Phase III: Archaeological Sampling of Sites 35JA47 and 35JA49*. Report prepared for the U.S. Army Corps of Engineers, Portland District, Oregon. These two sites were excavated using large block excavations with particular attention to defining activity areas. Both are considered to be late prehistoric winter villages, and yielded a variety of chipped and cobble stone tools. Site 35JA47 has intact housepits, a possible sweatlodge, and a possible earlier component. No carbon dates are available.
Brauner, David and Robert Nisbet, Jr.
1983 The Reevaluation of Cultural Resources Within the Applegate Lake Project Area, Jackson County, Oregon Phase III: Archaeological Salvage of Sites 35JA52 and 35JA53. => This report discusses the excavation of two sites in the Applegate River drainage. Site 35JA53 contains a unique assemblage including large stemmed points, thought by the authors to resemble those from early (c. 8,000-10,000 B.P.) occupations in the Plateau area of Oregon and Washington.

Brown, James A.

Bryant, Richard, David Eisler and John Nelson

Bryant, V. M., Jr. and R.G. Halloway, eds.

Buckley, Thomas


Budy, Elizabeth, and Robert Elston
1986 Data Recovery at Sites 35JA102 and 35JA107, Elk Creek Lake Project, Jackson County, Oregon. Report prepared for the U.S. Army Corps of Engineers, Portland District. => Analysis of data from these sites in the upper Rogue River drainage area included reorganizing the projectile point chronology for the area; geomorphic analysis of Holocene stream terrace formation; obsidian hydration and sourcing analyses and an obsidian hydration chronology; blood residue and wear pattern analyses on stone tools; and exploration of functional site use models, especially lithic analysis and use models, applicable to these sites.

Burtchard, Greg C.
Gresham, Oregon. => This work sets forth a comprehensive ecological model for the prehistory of the central Cascades.

Butzer, K.W.

Callahan, Eric

Carlson, Garwin

Carlson, Vance
1986 Some Explanations for Settlement Patterns and Contact Period Evidence in the Western Cascades. Paper presented to the Association of Oregon Archaeologists, November, 1986, Eugene, Oregon. => This paper discusses distribution of archaeological sites along the North and South Umpqua Rivers with reference to ecological factors. Particular attention is paid to aboriginal practices of burning and changes in the landscape in recent times.

Casteel, R.W. and C.K. Baker

Castile, George P.

Chartkoff, Joseph
1989 Exchange, Subsistence and Sedentism along the Middle Klamath River. Barry Isaac, ed., Research in Economic Anthropology, Vol.2, JAI Press: Greenwich, Connecticut. => Chartkoff argues that the advent of intensive fishing and storage techniques, as well as regular trade networks insuring a supply of obsidian for tools, opened up the lower Klamath area to more extensive settlement during the late prehistoric period.
Cheatham, Richard
1989a Letter report: Test Excavations at Site 35KL778, Bexuksewas Village Site, Klamath Co. Report for the Oregon State Highway Division, Department of Transportation, Salem, OR.

1989b Archaeological Testing at Williamson River Bridge (35KL677), Klamath County, Oregon. Oregon State Museum of Anthropology Report 89-6; Eugene, Oregon. => Testing of this site suggests it was a springtime, task-specific site for fishing and gathering mussels. Sucker fish bones were a primary component of the faunal assemblage; a carbon 14 date on mussel shell of 2000 BP and a few chronologically diagnostic artifacts suggest occupation within the last two millenia.

1989c Test Excavations at the Bexuksewas Village Site (35KL778), Klamath County, Oregon. Paper presented at the 5th Annual Association of Oregon Archaeologists Conference, Nov. 1989. => Test excavations at this site on the Williamson River recovered an abundance of materials, with radiocarbon dates from about the last 1100 years. Trade beads indicate occupation through the time of contact.

1990a Letter Report to the Oregon State Highway Division, Regarding Data Recovery Excavations at Bezuksewas Village, (35KL788). => Data recovery recovered 350 chipped and groundstone tools, 55,000 pieces of debitage, a few bone artifacts, and historic trade items, as well as sixteen features and a large amount of animal bone. Three occupations episodes were identified, including an historic component.


Churchill, Thomas
1986 Archaeological Investigations of the Reynolds Site (35-DO-372). Report prepared for the Umpqua National Forest, Roseburg, Oregon. => This site is located along a creek north of the North Umpqua River. Testing yielded a chipped stone assemblage and both broad-necked and narrow-necked projectile points. A non-culturally related radiocarbon date was obtained.

Churchill, Thomas and Paul Christy Jenkins
1985 Testing and Evaluation of the Glide Station Site, 35DO58. Report prepared for the Umpqua National Forest, Roseburg, Oregon. => This report discusses a small amount of testing at a site which was probably a winter village site along the North Umpqua River. A high variety and density of artifacts were recovered.

1989 Archaeological Investigations of the Dry Creek Site. Report prepared for the Umpqua National Forest, Roseburg, Oregon. => This study reports the results of
test excavations at a site on a river terrace along the North Umpqua. The investigators found at least a two component site, with one component dated 5200 BP, below reworked Mazama sediments. Obsidian sourcing and hydration data are compared to other studies in the vicinity; the site yielded assemblages indicative of short-term hunting camps.

Clark, Ella E.
1953 *Indians Legends of the Pacific Northwest*. Berkeley: University of California Press. => Clark includes a number of Klamath myths, among these two concerning Crater Lake. However, the tales have been extensively reworked to present a Western, rather than Indian discourse.

Clark, Linda
1988 *A Study of Temporal Variation in the Scrapers from the Marial Site (35CU84)*. Report prepared for the Bureau of Land Management, Medford District, Medford, Oregon. => A study of various attributes of scrapers from the stratified Marial site indicates that temporal variation may be indicated by changes in some of these attributes.

Clemmer, Richard O. and Omer C. Stewart

Connolly, Thomas

1986 *Cultural Stability and Change in the Prehistory of Southwest Oregon and Northern California*. Ph.D. dissertation, Department of Anthropology, University of Oregon, Eugene, Oregon. => This dissertation establishes a new cultural chronology for southwestern Oregon, linked to the definition of an ancient and long-lasting cultural tradition (Glade Tradition) and two later, possibly intrusive cultural traditions (Siskiyou Pattern and Gunther Pattern).

1988 *Archaeological Evaluation of Sites Along the Crater Lake Highway, Jackson County: Trail to Casey State Park Section*. Oregon State Museum of Anthropology Report 88-4, University of Oregon, Eugene. => Testing of sites reveal three prehistoric sites with chipped stone and groundstone artifacts. One site has a midden and
possible housepit. Assessment of these sites in includes a brief evaluation of recent studies in the region, such as work at Elk Creek, and the placement of these sites within regional chronological/ cultural patterns.

Cooperative Holocene Mapping Project

Corliss, David

Cornell, Stephen


Count, Earl
1934 Summary of Crater Lake Ethnology. 1 p. MS on file, Crater Lake National Park Library.

Coville, Frederick

1904 Wokas, a Primitive Food of the Klamath Indians. U.S. National Museum, *Annual Report, 1902*, pp. 727-39. => This remains an important study of the harvesting and preparation of wokas, or pond-lily seeds, a staple of the Klamath diet, based on brief field observation.

Cressman, L.S.

1933b Contributions to the Archaeology of Oregon: Final Report on the Gold Hill Burial Site. University of Oregon Publications 4:3. Eugene. => Cressman's work at the Gold Hill site was for many years the major work for southwest Oregon. The study of this site in the Rogue Valley includes descriptions of the numerous artifacts and burials recovered, as well as discussion of the finds, relating them to Klamath River...
(California) cultures.


1956 *Klamath Prehistory.* American Philosophical Society, *Transactions* 46 (4):375-513. => This monograph was for years the only major work available on Klamath Basin archaeology, and is still an important source for this area. Cressman synthesizes data from work at several sites along the Sprague River, including Kawumkan Springs, Medicine Rock Cave, and housepits along the river.

Curtin, Jeremiah
n.d. Myths and legends [of Modoc?]. MS 1299, National Anthropological Archives, Smithsonian Institution, Washington, D.C.

Cushing, E.J. and H.E. Wright, Jr., eds.

Davis, J.O.

Davis, Lee
1988 *On This Earth: Hupa Land Domains, Images and Ecological on 'Deddeh Ninnisan.'* Ph.D. dissertation, Department of Anthropology, University of California, Berkeley. => A detailed study of Hupa spirituality, ritual, and world view, with much information concerning vision quest sites.

Davis, Wilber
1964 *Archaeological Surveys of Crater Lake National Park and Oregon Caves National Monument, Oregon.* Report prepared for the National Park Service, Western Region, San Francisco, California. => The Park was surveyed opportunistically, with crew members checking those locations which were considered likely to have cultural resources. The model was implicitly an ecological one; lack of archaeological finds was attributed to scarcity of food resources within the Park.

1970 *Lost Creek Archaeology, 1968: Final Report.* Department of Anthropology, Oregon State University, Eugene. => Report of the excavations carried out prior to the construction of the dam along the upper Rogue River. Sites include one assemblage which the author suggests may be pre-Mazama.
1974 Lost Creek Archaeology, 1972: Final Report. Department of Anthropology, Oregon State University, Eugene. => Report of excavations at ten sites in the Lost Creek Dam area. Information given includes descriptions of sites, artifacts recovered, and brief discussion of the finds in terms of lithic technology, resemblances to artifacts elsewhere, and possible chronological changes. The author notes a specialized end-scraper complex.

1983 1973 Lost Creek Archaeology, Jackson County Oregon, Contract CX 8099-2-0016, and 1974 Elk Creek Archaeology, Jackson County Oregon, Contract CS 8099-2-0017; Final Reports. Submitted to the Interagency Archaeological Services Division, Western Region, National Park Service. Department of Anthropology, Oregon State University, Corvallis, Oregon. => This report summarizes the excavations at Lost Creek and Elk Creek in the 1960's and 1970's.

Deich, Lyman P.
1982a Aboriginal Clay Figurines from the Upper Rogue Valley in Southwestern Oregon. Master's Thesis prepared for the Department of Anthropology, Portland State University, Portland, Oregon.

1982b A Report on the Excavation and Deposition of Three Aboriginal Burials at the Marthaller Site, 35JO16. Report on file, Bureau of Land Management, Medford, Oregon. => This report covers an archaeology project in which volunteers, under the supervision of a professional, excavated and re-interred the remains of three prehistoric burials, with the cooperation and participation of local Native Americans.

Detling, L.E.


Diller, J.S. and H.B. Patton
Dixon, Roland B.
=> The standard ethnography of the Shasta.

Dohrenwend, J.C.

Donald, Leland

Dorsey, George A.
=> Dorsey's account is essentially an inventory of Klamath gambling artifacts (staves, dice, balls, etc.), with scant information on the conduct of the games, or their social context.

Dorsey, James O.
1884 Comparative Notes and Notes on the Relationship between Dialects and Languages Spoken on the Siletz Reservation, Oregon. National Anthropological Archives, Smithsonian Institution, Washington, D.C., MS 4800, Part 365. => Using linguistic data, Dorsey analyzes the ethnology of the various groups inhabiting the Umpqua River drainage, distinguishing the Athapaskan-speaking Upper Umpqua from the Lower Umpqua tribes. Also quotes earlier writers on the Umpqua.

1889 Indians of Siletz Reservation, Oregon. *American Anthropologist* 2 [o.s.]:55-61. => Brief linguistic and ethnological notes on groups at Siletz Reservation, which was created from survivors of numerous western Oregon tribes, including the Upper Umpqua.

=> Lists of villages of the various peoples represented on the Siletz Reservation, including the Takelma.

Drucker, Philip
1937 The Tolowa and Their Southwest Oregon Kin. *University of California Publications in American Archaeology and Ethnology* 36 (4):221-300. => Drucker's study of the Tolowa offers a model for interpreting the culture of Oregon Athapascan groups, including the Upper Umpqua.


180
DuBois, Cora

Eliade, Mircea


Fagan, John
1974 An Evaluation of Non-Renewable Cultural Resources of the Steamboat Ranger District, Umpqua National Forest. Report prepared by the Museum of Natural History, University of Oregon, Eugene, Or. => This brief report discusses a visits to two rockshelters located north of the North Umpqua River, with extensive aboriginal deposits still extant, though vandalized, at the time of the visit.

Frachtenberg, Leo J.
1911 Notebooks: [Molala Texts], 9 vols.; [Notes to Texts], 3 vols.; [Molala Lexicon], 1 vol.; [Molala Syntax], 1 vol.; [Molala Ethnology], 1 vol. National Anthropological Archives, Smithsonian Institution, Washington, D.C., MS 2517. => This material was gathered from one Molala informant, Steven Savage, on Siletz Reservation in 1910 and 1911. The ethnological notebook includes comments on habitat, food, games, dwellings, social organization, shamanism, war, and ritual. Most of the text notebooks contain myths, in which coyote figures prominently, but the last two volumes also contain ethnographic descriptions, e.g. regarding marriage, the construction of dwellings, and burial.

n.d. (a) [Two Molala legends, with grammatical notes], National Anthropological Archives, Smithsonian Institution, Washington, D.C. MS 1735. Typescript.


Frank, F.J. and A.B. Harris
Franklin, Jerry and C.T. Dyrness

Fryzell, R.

Galm, Jerry R. and Glenn D. Hartmann

Gardner, J.V. et al.

Gates, Gerald

Gatschet, Albert


Klamath dictionaries.

Gould, Richard

Graber, Linda H.

Gray, Dennis J.
1987 The Takelma and Their Athapascan Neighbors. University of Oregon Anthropological Papers, 37. Gray provides an ethnographic synthesis for the pre-contact Takelma and neighboring groups of the upper Rogue River drainage. Among other sources, the study draws on unpublished field notes of J.P. Harrington, Melville Jacobs, and Pliny Goddard.

Grayson, D.K.

Greene, Linda

Griffin, Dennis
1983 Archaeological Investigation at the Marial Site: Rogue River Ranch; 35CU84. Department of Anthropology, Oregon State University, Corvallis, Oregon. Prepared for the Bureau of Land Management, Medford District, Medford, Oregon. Test excavations at the Marial site on the lower Rogue River showed that it was a deeply stratified site, multi-component prehistoric site. A series of radiocarbon dates indicate that it was occupied for the last 8,000 years. It has given a dated, stratigraphic, sequence of artifacts of considerable value for archaeology in the region.

Gustafson, Fred

Hagan, William T.
Hansen, H.P.


Harrington, John Peabody

Hayes, J.F. and W.R. Hildebrandt

Heizer, Robert F., ed.

Hester, Thomas and Robert F. Heizer

Heusser, C.J.


1985 Quaternary Pollen Records from the Pacific Northwest to the Oregon-California Boundary. V.M. Bryant, Jr. and R.G. Halloway, eds., *Pollen Records of Late-Quaternary North American Sediments*. Dallas: American Association of Stratigraphic Palynologists Foundation. => Short reviews of climate and vegetation history for region, but specific information for Oregon confined to coast. Some
discussion of late Quaternary regional temperature and precipitation patterns.

Hildebrandt, W.R. and J.F. Hayes, eds.

Hodge, Frederick W., ed.

Honey, William and Thomas Hogg, editors
1980 *Cultural Resource Overview, Umpqua National Forest and Bureau of Land Management, Roseburg District*. Prepared for the U.S. Department of Agriculture, Forest Service, Umpqua National Forest and U.S. Department of Interior, Bureau of Land Management, Roseburg District. => The overview summarizes archaeological, ethnographic, historic, and environmental information, and provides a hypothetical cultural chronology for the Umpqua River area. Considerable work in this region since the time of writing has modified the prehistoric synthesis presented in this report.

Hopkins, Joseph
1983 An Archaeological Evaluation of Three Sites on the Chiloquin Ranger District, Winema National Forest. Winema National Forest, Klamath Falls, Oregon. => Three lithic scatters above the Sprague River in the Klamath Basin were tested and found significant.

Hughes, Richard
1988 *Diachronic Variability in Obsidian Procurement Patterns in Northeastern California and Southcentral Oregon*. University of California Publications in Anthropology, 17. Berkeley: University of California Press. => This study presents a model for prehistoric trade patterns in obsidian for the Klamath Basin and other (eastern) areas.

1990 The Gold Hill Site: Evidence of a Prehistoric Socio-ceremonial System in Southwestern Oregon. Nan Hannon and Richard Olmo, eds., *Living With the Land: The Indians of Southwest Oregon*. Medford, Oregon: Southern Oregon Historical Society. => Proceedings of a 1989 symposium on the prehistory of southwest Oregon. Hughes performs source analysis on the obsidian artifacts from the Gold Hill site. He discovers that the large obsidian blades from the site were constructed from obsidians from sources comparatively distant from the site, but that the more utilitarian objects were from closer sources. This pattern is similar to that found at
sites on the California coast, which participated in rituals using the large ceremonial blades.

Hultkrantz, Ake
1979 *The Religions of the American Indians.* Monica Setterwall, trans. Berkeley: University of California Press. => Hultkrantz provides considerable information on the forms of shamanism and Indian world view, relevant for an understanding of Indian belief and ritual practices associated with Crater Lake.

Jackson, M.T. and A. Faller

Jackson, Thomas L., et al., eds.

Jacobs, Melville

1958 *Clackamas Chinook Texts.* Indiana University Research Center in Anthropology, Folklore, and Linguistics, Publication 8. Indiana University, Bloomington, Indiana.

1962 The Fate of Indian Oral Literatures in Oregon. *Northwest Review* 5:90-99. => Jacobs summarizes the history of linguistic and ethnographic research in Oregon, noting that only a tiny fraction of the Indian oral literatures have been preserved.


Jenkins, Paul Christy
1988 Archaeological Investigations of the Snuff Out Site, 35DO379. Umpqua National Forest, Roseburg, Oregon. => Report of the test excavations of a small, upland, lithic scatter above the North Umpqua River; no date was obtained.
Jenkins, Paul Christy and Ron King
1988 Archaeological Testing of the Snowbird Site. Report prepared for the Umpqua National Forest, Roseburg, Oregon. => This site is located on a ridge south of the North Umpqua River. Testing produced an assemblage of lanceolate and broad-necked points, as well as broken points, bifaces and scrapers.

Jensen, Peter M. and Alfred Farber
1982 Archaeological Data Recovery Program at CA-Sis-342. Prepared for California Department of Transportation, Sacramento.

Johnson, LeRoy

Judson, Katherine B.
1910 Myths and Legends of the Pacific Northwest. Chicago: A.C. McClurg. => Contains a few minor Klamath myths; no references to Crater Lake.

Justice, Joyce

Kappler, Charles J., ed. and comp.
1904-41 Indian Affairs: Laws and Treaties. 5 vols. Washington, D.C.: U.S. Government Printing Office. => Provides the texts of treaties between the U.S. Government and various tribes of the Crater Lake region, including those with the Cow Creek Band of Umpquas (1853), and the Klamath (1864).

Keen, F.B.
1937 Climate Cycles in Eastern Oregon as Indicated by Tree Rings. Monthly Weather Review 65(5):175-188. => This study has some application for estimating climate for the past several hundred years in southern and eastern Oregon. Good source of data for inferring dry-wet cycles in Crater Lake area.

Kelly, Lawrence C.

Kelly, Robert
Useful on the contrast of forager and collector settlement strategies.

Kendall, Daythal L.

Kerr, Mark B.
1901 Wimawita: A Legend of Crater Lake. *Pacific Monthly* 6 (5):190-91. => This myth recounts the formation of Wizard Island, in Crater Lake. Kerr implies that this is a Shasta myth, or at least that its hero is a Shasta. He provides no source for this highly westernized tale, nor have we been able to find one.

Kettleman, L.R.

King, Ron

Kroeber, A.L.

Kutzbach, J.E. and H.E. Wright, Jr.

LaLande, Jeffrey
1977 An Inventory and Evaluation Report for the Brokaw Archaeological Site, 35JA48, Jackson County, Oregon. Report on file, Rogue River National Forest, Medford, Oregon. => This site is located in the uplands east of the Rogue Valley. Testing at this site yielded projectile points, scrapers, biface fragments, and a possible vision quest location.

1980 Prehistory and History of the Rogue River National Forest. USDA, Forest Service, Rogue River National Forest, Medford, Oregon. => This overview summarizes the environmental, historical, and prehistorical information available for the Forest.

1982 An Inventory and Evaluation Report on Site 35JA81 (RR-167), Jackson County, Oregon. Report on file, Rogue River National Forest, Medford, Oregon. => This site is an extensive, upland lithic scatter east of the Rogue Valley. Minimal testing and survey yielded chipped stone artifacts as well as obsidian blanks, a fragment of a
carved slate figurines, and two-ended pestle.


1990 Summary Report on the 1989 Obsidian-Sourcing Project. Rogue River National Forest, Medford, Oregon. => Obsidian from most of the documented, obsidian-bearing sites on the forest (76 sites) was submitted for source analysis. The results of this analysis are presented. These results can contribute to the study of changes in obsidian source preference over time; differences in source and artifact types; studies of long-term movement of cultural groups into and out of the region, and other broad questions.

LaLande, Jeffrey
1977 An Inventory and Evaluation Report of the Brokaw Archaeological Site, 35JA48, Jackson County, Oregon. Report on file, Rogue River National Forest, Medford, Oregon. => This site is located in the uplands east of the Rogue Valley. Testing at this site yielded projectile points, scrapers, biface fragments, and a possible vision quest location.

1980 Prehistory and History of the Rogue River National Forest. USDA, Forest Service, Rogue River National Forest, Medford, Oregon. => This overview summarizes the environmental, historical, and prehistorical information available for the Forest.

1982 An Inventory and Evaluation Report on Site 35JA81 (RR-167), Jackson County, Oregon. Report on file, Rogue River National Forest, Medford, Oregon. => This site is an extensive, upland lithic scatter east of the Rogue Valley. Minimal testing and survey yielded chipped stone artifacts as well as obsidian blanks, a fragment of a carved slate figurines, and two-ended pestle.


1984 First Over the Siskiyous. Portland: Oregon Historical Society. => LaLande provides a significant reanalysis of Peter Skene Ogden's journeys in the 1820s, which included southern Oregon. Ogden's journals documented Indian lifeways--including that of the Klamath--in the immediate post-contact period.

1990a Summary Report on the 1989 Obsidian-Sourcing Project. Rogue River National Forest, Medford, Oregon. => Obsidian from most of the documented, obsidian-
bearing sites on the forest (76 sites) was submitted for source analysis. The results of this analysis are presented. These results can contribute to the study of changes in obsidian source preference over time; differences in source and artifact types; studies of long-term movement of cultural groups into and out of the region, and other broad questions.


La Marche, V.C., Jr.


Lang, Frank A.

1988b Ethnobotanical Notes of Margaret Knowles Small, Klamath Falls, Oregon. MS on file, Herbarium, Southern Oregon State College, Ashland. => Lang compiles the notes for an ethnobotanical collection describing both Klamath Indian and pioneer use of plants in the Klamath Falls region.

Layton, T.N.

Leach, Maria and Jerome Fried, eds.

Libby, D. S.

Liberman, Kenneth
Based on interviews, Liberman presents contemporary Indian views on the environment; informants include Cow Creek and Klamath Indians.

Lyman, Lee, ed.

1985 Archaeological and Geoarchaeological Investigations at the Sylmon Valley School Site (35DO275), Southwestern Oregon. Department of Anthropology, Oregon State University. Prepared for Roseburg Sanitary Authority, Roseburg, Oregon. => Excavations at this site along the South Umpqua River just downstream from Roseburg produced chipped stone artifacts and debitage, and large numbers of heavy cobbled tools. Small points date the site to approximately 1500-300 years ago. The site may have been a village, or task-specific camp.

Mack, Joanne


1989 Siskiyou Utility Ware: A Possible Horizon Marker of the Late Prehistoric of the Southern Cascades of California and Oregon. Paper presented at the Northwest Anthropology Conference, 1989. => This paper describes the ceramic ware found at prehistoric sites in southern Oregon and northern California, and presents evidence for its use between A.D. 900 and A.D. 1450.


Mackey, Harold


Mairs, John


Malinowski, Bronislaw


Marchiando, Patricia

1965 A Technological and Statistical Analysis of Upper Umpqua River Artifacts. Master's thesis, University of Oregon, Eugene, Oregon. => This was one of the first studies done of Umpqua River artifacts. The author analyses a collection of surface finds from a number of sites, in terms of technological variability, and finds the

191
collections to be fairly homogeneous.

Marcus, George E. and Michael M.J. Fisher

Markgraf, V. and T. Lennon

Masten, Ruth Anne

McNeil, R.C. and D.B. Zobel

Mehringer, P.J.


Mehringer, P.J., Jr., E. Blinman and K.L. Peterson
Mieirendorf, Robert
1986 People of the North Cascades. National Park Service, Pacific Northwest Region, Seattle, Washington. => This overview of the National Park presents an environmental and chronological scheme for analyzing the prehistory of the north Cascades.

Miller, Jay and William R. Seaburg

Mills, Elaine L., ed.

Minor, Rick
1976 Archaeological Evaluation of Sites 35DO11 and 35DO12, in the Proposed Lower Rhody Timber Sale Area, Umpqua National Forest, Oregon, with an Appendix on Lichenometric Dating at Site 35DO11, by Larry Pike. Report prepared for Umpqua National Forest, Roseburg, Oregon. => Site 35DO11, above the North Umpqua River, consists of rock cairns thought to relate to the vision quest of prehistoric inhabitants; another rock cairn site along Susan Creek is noted in the report. An appendix on lichenometric dating is included. Site 35DO12 is a small, surface, lithic scatter nearby.

1987 Archaeology of the South Umpqua Falls Rockshelters, Douglas County, Oregon. Report prepared for the Umpqua National Forest, Roseburg, Oregon. => This report documents the data recovery excavations at two rockshelters above the South Umpqua River. It is a major work for this region, with separate chapters on artifactual materials, faunal and floral components of the site, and burials. Test excavations at another nearby rockshelter, Hughes I, are also presented in the report and compared with the two other rockshelters.

Minor, Rick and Thomas Connolly
1987 Archaeological Testing at Times Square Rockshelter, Douglas County, Oregon. Report prepared for the Umpqua National Forest, Roseburg, Oregon. => This rockshelter above the South Umpqua River is unique in having deposits which yielded perishable artifacts: cordage, wood, and fiber items. Projectile point styles, historic trade goods, and a carbon 14 date suggest intermittent occupation over the last 2000-3000 years.
Minor, Rick and Robert Musil

Minor, Rick and Audrey Pecor

Mitchell, M.H.

Moratto, M.J., T.F. King, and W.B. Woolfenden
1978 Archaeology and California's Climate. The Journal of California Anthropology 5(2):147-161. => Although based on California sites, this article correlates climate change and cultural responses. Gives insight into what may have happened in this regard in southern Oregon.

Murdock, George Peter

Murdock, George Peter and Timothy J. O'Leary


Musil, Robert R.
1987 Archaeological Investigations at the Beatty Curve Site. Oregon State Museum of Anthropology, Report 87-5, Eugene, Oregon. => Testing of this site along the upper Sprague River yielded a variety of artifacts, faunal material, shellfish cooking area, and a possible housepit. Carbon 14 dates place the heaviest occupation of the site at about 1500 to 1000 B.P.

Musil, Robert and Rick Minor
Two heavily disturbed sites at the confluence of Coffee Creek and the South Umpqua River yielded small assemblages of predominantly chipped stone tools and debitage. The sites were dated by projectile point types and carbon 14 to the Falls Phase of the Late Archaic. The report contains a good review of the recent archaeology along the South Umpqua River.

Nash, Philleo


National Anthropological Archives

Nelson, C.H.

Nicholls, Lou Ann, David Brauner and Shelly Smith
1983 Archaeological Test Excavations of Ten Upland Sites on the Applegate Ranger District. Department of Anthropology, Oregon State University, Corvallis, Oregon. => All of these upland sites contained cultural material, though only two were considered to meet National Register criteria for significance, based on considerations such as depth, integrity, and artifact variety.

O'Neill, Brian

1988a Archaeological Evaluation of the Shivigny East Site (35-DO-397): A Ridge Crest Hunting Camp in the Upper Umpqua Basin, Douglas County, Oregon. Report prepared for the Bureau of Land Management, Roseburg District, Oregon. => This site is located above the North Umqua River; testing yielded a dense
deposit of chipped stone artifacts and debitage, including lanceolate and broad-necked projectile points, and one narrow-necked point.

1988b Archaeological Evaluation of the Narrows Site (35DO153): A Middle and Late Archaic Fishery in the Middle Umpqua Basin, Douglas County, Oregon. Report on file, Bureau of Land Management, Roseburg District, Roseburg, Oregon. => The Narrows site, located along the North Umpqua River, is the only stratified, carbon 14 site investigated in the North Umpqua River basin. This is a major study for this area, and is incorporated in the chronology for the North Umpqua Basin proposed by O'Neill (1989).

1988c Archaeological Evaluation of the Powerline Site (35DO398): A Chipping Station in the Upper Umpqua Basin Douglas County, Oregon. Bureau of Land Management, Roseburg District, Roseburg, Oregon. => Testing at this site above the North Umpqua River yielded a small amount of cryptocrystalline debitage and one tool. The site did not meet criteria for eligibility to the National Register.


1989a Archaeological Investigations at the Narrows and Martin Creek Sites, Douglas County Oregon. Bureau of Land Management, Portland, Oregon. Cultural Resource Series No. 4. => A report of test excavations at two prehistoric sites in the middle Umpqua Basin. The Narrows site is a stratified, radiocarbon dated site along the North Umpqua River. The Martin Creek sites are a pair of rockshelters above the main stem of the Umpqua River. Carbon dates were obtained for the rock shelters.


1989c A Cultural Chronology of the Umpqua Basin, Southwest Oregon. Ph.D. dissertation, Department of Anthropology, University of Oregon, Eugene, Oregon. => This dissertation provides a cultural chronology for the Umpqua River basin, based on analyses of collections from sites in the area, and reviews and addresses problems with other cultural chronologies recently proposed for southwest Oregon.

1990 Archaeological Evaluation of Six Archaeological Sites Along the North Umpqua Highway, Douglas County: Steamboat Creek to Boulder Flat Section. Oregon State Museum of Anthropology, Eugene, Oregon (draft). => Six sites were tested along the North Umpqua River; all were on terraces adjacent to the river, and yielded mainly chipped stone tool and debitage assemblages.


Ottis, Nancy and Terry West

Otto, Rudolf

Peery, W.K.
1951  Correspondence regarding Umpqua Myths. On file, Crater Lake National Park.

Pettigrew, Richard

Pettigrew, Richard and Clayton G. Lebow
1987  Data Recovery at Sites 35JA27, 35JA59, and 35JA100, Elk Creek Lake Project, Jackson County, Oregon. Report by Infotec Research Incorporated, Eugene, Oregon. => The data recovery project (1987) presents a regional chronology for southwestern Oregon and discusses evidence for prehistoric cultural adaptations, settlement patterns and demography; the use of ceramics and other aspects of prehistoric technology; trade relations; and site function. The study makes a contribution to other regional issues including the understanding of a possible coast/interior dichotomy, Athabascan migration into the area, and evaluation of competing hypotheses for culture history. Technical studies included: obsidian sourcing and hydration, carbon 14 dates, geomorphology, residue analysis, use wear analysis, and ceramic studies.

1989  Cultural Chronology in Southwestern Oregon. Paper presented at the annual State of Jefferson Conference, Grants Pass, Oregon. => The paper presents a cultural chronology based on the work carried out at Elk Creek; obsidian hydration data as well as carbon 14 and stratigraphic correlations are used to construct the chronology.

Philipek, Frances
1983  Post-Mazama Aboriginal Settlement/Subsistence Patterns: Upper Klamath Basin,
Analysis of Forest Service survey data for a portion of the northern Klamath Basin showed that except for small lithic scatters, other occupation sites (housepits, larger lithic scatters) occur within one mile of a major source of water.

Phillips, K.N.

Pierce, Joe E. and James M. Ryherd

Pilling, James C.

Porter, S.C. and G.H. Denton

Porter, S.C., K.L. Pierce and T. D. Hamilton

Powell, J.W.

Price, T. Douglas and James Brown

Prouty, Guy
1988 Ancient Earth Ovens at the Saltsgaver Site, Southwestern Oregon. University of Oregon, Department of Anthropology. MS on file at the Oregon State Museum of Anthropology, Eugene, Oregon. This site consists of over one hundred fired clay pits in a field in the Rogue Valley of southwest Oregon. These pits are
identified as camas bulb roasting pits. Dating of the site is suggests use over a long period of time, with one carbon date of over 5000 years BP, from the 1960's excavations, a wide range of obsidian hydration readings on materials from different sources, and projectile point correlations suggesting dates between 2800 and 450 B.P.

Prueher, L.M. and A.R. McBirney

Ramsey, Jarol, ed.
1977 *Coyote Was Going There: Literature of the Oregon Country*. Seattle: University of Washington Press. => A collection of translated Indian myth texts, including Klamath, Modoc, and Takelma. Ramsey includes several Klamath myths concerning Crater Lake: the myth of Lao and Skell; and Coyote in Love with a Star. The volume is distinguished from many other such collections (cf. Clark 1953) in presenting myths in relatively original form.

Ray, Verne F.


Riddle, George W.


Rigsby, Bruce
1966 *On Cayuse-Molala Relatability*. *International Journal of American Linguistics* 32:369-78. => Rigsby argues that H. Hale was in error in suggesting a close linguistic relationship between Molala and Cayuse; lexical resemblances he believes to be the result of borrowing.


Roberts, Helen H.


Rondeau, Thomas W. and Wallace Rondeau


Rose, Wendy


Ruby, R.H. and J.A. Brown


Sackett, Lee

1973 The Siletz Indian Shaker Church. *Pacific Northwest Quarterly* 64 (3): 120-26. => Many of the survivors of the tribes of the Rogue River drainage (such as the Takelma) were brought to the Siletz Reservation in the 1850s. Sackett provides details specific to the experience at Siletz in this brief account of the Indian Shaker religion. For a standard history, see Barnett 1957.

Sampson, Garth

1985 *Nightfire Island: Later Holocene Lakemarsh Adaptation on the Western Edge of the Great Basin*. University of Oregon Anthropological Papers, 33. => This study provides a comprehensive account of prehistory in the Klamath Basin, focusing on changing patterns of human adaptation related to changes in the environment throughout the Holocene at Nightfire Island site. Technical analyses include carbon 14, obsidian sourcing and hydration, pollen analyses, phytolith and macrobotanical remains, and lithic, bone, and stratigraphic studies.

Sapir, Edward

1907a Notes on the Takelma Indians of Southwestern Oregon. *American Anthropologist* 9: 251-75. => A brief ethnographic description of the Takelma, by a master linguist and anthropologist. This was, of necessity, only a fragmentary cultural account of
memory ethnography.


1909 *Takelma Texts*. University of Pennsylvania, *Anthropological Publications of the University Museum*, 2 (1). => An important source on Takelma linguistics and ethnography. Provides Takelma texts and English translations of twenty-four myths, together with some additional material involving personal narratives and charm (medicine formula) texts.


Satler, Timothy
n.d. A preliminary report on excavations at 35JA77 (Salt Creek Site). Report prepared for the Bureau of Land Management, Medford District, Medford, Oregon. => This report summarizes the results of 1979 test excavations at an upland site east of the Rogue Valley. Artifacts consist of chipped stone and cobble tools, with projectile points from the Late and possibly Middle Archaic periods.

Schaeffer, Claude E.
1959 Indian Tribes and Languages of the Old Oregon Country: A New Map. *Oregon Historical Quarterly* 55 (1):129-33. => Describes the history of scholarly debate over the reconstruction of tribal territories in Oregon.

Schonchin, Lynn J.

Schreindorfer, Crystal
1985 Marial: 1984; Archaeological Investigations at 35CU84. Oregon State University, Corvallis, Oregon. Report prepared for the Bureau of Land Management, Medford District, Medford, Oregon. => On-going work at the Marial site along the lower Rogue River revealed six culture-bearing strata, with carbon 14 dates as early as 8560 B.P. These are the earliest dates so far in southwest Oregon; Marial remains one of the major excavations in the region.

Schwartz, Earl A.

Sheets, P.D. and D.K. Grayson

Silver, Shirley

Simmons, Alexy, and Michael Gallagher
1985 Archaeological Evaluation of the Orchard Site 35DO274 and the Sylmon Valley School Site 35DO275. Report Prepared for CH2M Hill; on file Umpqua National Forest, Roseburg, Oregon. => Test results from two sites along the South Umpqua River in Roseburg are presented. One site, the Sylmon Valley School site, is further reported in data recovery excavations (see Lyman et al. 1985).

Sims, J.D.

Skinner, Craig

Smith, Eric

Smith, G.I. and F.A. Street-Perrot
1983 Pluvial Lakes of Western United States. H.E. Wright, Jr., ed., Late Quaternary

Snyder, Sandra

1979 An Archaeological Investigation of Tiller Northside #1, Douglas County, Oregon. Report prepared by the Department of Anthropology, Oregon State University, Corvallis, Oregon, for the Umpqua National Forest, Roseburg, Oregon.

1981a Muddy Timber Sale. Report Prepared for the Umpqua National Forest, Roseburg, Oregon. => Test excavations at this site on a ridge south of the North Umpqua River yielded chipped stone artifacts, including several broad-necked and one narrow-necked projectile points.

1981b Medicine Creek. Report prepared for the Umpqua National Forest, Roseburg, Oregon. => Located on above the North Umpqua River, this site is on of a few investigated along the River to have a possible pre-Mazama component. Artifacts recovered consisted of chipped stone tools and debitage for both the pre- and post-Mazama components.


1981d Tiller District Test Evaluations: Umpqua National Forest. Report prepared by the Department of Anthropology, Oregon State University, Corvallis, Oregon, for the Umpqua National Forest, Roseburg, Oregon. => Six upland lithic scatter sites, above the South Umpqua River, were tested.

1987 Prehistoric Land Use Patterns in the Central Oregon Cascade Range. Ph.D. dissertation, Department of Anthropology, University of Oregon, Eugene, Oregon. => This study explores the relationship between prehistoric sites and the natural environment for the central Oregon Cascades. Archaeological sites occur more frequently near wet and dry non-forested areas (e.g. meadows and mires) than chance expectation would predict.

Snyder, Sandra and William Honey
Spencer, Lee
1987 Archaeological Testing of the Horseshoe #6 Site (35DO400), A Middle Archaic Glade Tradition Site, on the Steamboat District of the Umpqua National Forest. Report for the Umpqua National Forest, Roseburg, Oregon. => Testing this site, located on a ridge above a tributary to the North Umpqua River, yielded chipped stone artifacts and broad-necked and foliate projectile points. Point styles indicate a Middle Archaic date to the site.

Spencer, Robert F.


Spencer, Robert F. et al.

Spicer, Edward H.
1971 Persistent Cultural Systems. Science 174:795-800. => An important article, advancing a theory regarding conditions facilitating ethnic persistence and cultural survival.

Spier, Leslie


1930 Klamath Ethnography. University of California Publications in American Archaeology and Ethnology, 30. Berkeley: University of California Press. => The major ethnography of the Klamath, based on two months of fieldwork conducted in
1925 and 1926. Spier emphasizes religion and social organization.

Steele, Harvey
1981 The Marthaller Site. Preliminary Report on 35-JO-16, Oregon Archaeological Society. Report on file at the Rogue River National Forest, Medford, Oregon. => This site is located near the mouth of the Applegate River at its confluence with the Rogue. Three burials, a dense occupation zone, and late-style projectile points were recovered. The excavations were conducted by volunteers under the supervision of a professional archaeologist and with the cooperation of local Native Americans.

Stern, Theodore


1956a The Klamath Indians and the Treaty of 1864. Oregon Historical Quarterly 57:229-73. => Stern describes the interactions between Klamaths and Euro-American traders, soldiers, and settlers, from the 1820s through 1860s, which led to the formation of the Klamath Reservation community.


Stern, Theodore, trans.
Steward, Julian H. and Erminie Wheeler-Voegelin

Stewart, Omer C.

Sullivan, Alan P. III and Kenneth C. Rozen
=> This article introduced a widely-used method for analyzing lithic debitage.

Suttles, Wayne

Suttles, Wayne and Aldona C. Jonaitis
=> A brief overview, with references.

Swanton, John R.

Swartz, B.K., Jr.

Theodoratus, Dorothea J. and Joseph L. Chartkoff
1979 Cultural Resources of the Chimney Rock Section, Gasquet-Orleans Road, Six Rivers National Forest. On file, Six Rivers National Forest, Eureka, California. => An extensive ethnographic and archaeological study of vision quest sites to be affected by the controversial G-O Road project in northwestern California; provides important data on the relation between individual ritual sites and a broader "sacred landscape."

Thompson, Gail, Steve Wilke, and Glen Lindeman
1979 Cultural Resource Overview, Winema National Forest, Oregon. Prepared for the Winema National Forest, Klamath Falls, Oregon. => The overview summarizes historical, environmental, and archaeological information for the Forest; work in the Klamath Basin since this document was produced has considerably augmented the archaeological record.
Thompson, Laurence C. and M. Dale Kinkade

Thomson, Jim

Tidball, R.

Todt, Donn

Trulove, W.T. and David Bunting

Tuan, Yi-Fu


Unrau, Harlan D.

U. S. Department of the Interior, National Park Service (USDOI, NPS)
1936 Report on the Vegetation Type Survey of Crater Lake National Park. San Francisco: Branch of Forestry, RG 79, Region IV.


1987  Crater Lake National Park, Mazama Campground/Rim Village Corridor: Supplement to the 1984 Environmental Assessment.

Voegelin, Erminie W.

Walker, Deward E., Jr.


Walsh, S.J.

Waterman, T.T.
1921  The Athapaskan Indians of Southwestern Oregon and Northwestern California. MS 3183, National Anthropological Archives, Smithsonian Institution, Washington, D.C. => Waterman discusses, among other topics, tribal boundaries and villages.

Wells, P.V.

West, Terry and Tish Steinfield

Wharton, Jack
Whittaker, R.H.  
1961 Vegetation History of the Pacific Coast States and the Central Significance of the Klamath Region. *Modrono* 16:5-19.

Wildesen, Leslie  
1984 Report on an archaeological survey in Crater Lake National Park. On file with the National Park Service, Seattle, Washington. => The survey covered approximately eight miles of road corridor and ten acres of land designated for parking lots. No cultural resources were found.

Williams, H.  


Wilson, Bart McLean  
1979 Salvage Archaeology of the Ritsch Site, 35JO4: A Late Prehistoric Village Site on the Central Rogue River, Oregon. Master's thesis, Oregon State University, Corvallis, Oregon. => This report describes the results of excavation at this site along the lower Rogue River. The author gives evidence for two components, representing different occupations with different cultural orientations, based on artifacts recovered and carbon 14 dates obtained from hearths. He suggests that an earlier component (c. 1000-1400 BP) shows affinity with inland sites, and that a later one (c. 500 BP) shows similarities with coastal sites.

Winterhalder, Bruce  

Winthrop, Kathryn  

1989 Bogus Creek Data Recovery Project (35-DO-278). Report prepared for the Umpqua National Forest, Roseburg, Oregon. => The Bogus Creek site lies alongside the North Umpqua River. Testing and data recovery at this site yielded primarily chipped stone artifacts, including an assemblage of broad-necked, primarily obsidian, projectile points. Obsidian sourcing and hydration from thirty-nine samples suggest that this site was used intermittently by groups of hunters between c. 6,000 and 600 BP.

Winthrop, Kathryn and Dennis Gray
1987 Testing and Evaluation of Two Sites on Oak Flats: 35-DO-187 and 35-DO-227. Report prepared for the Umpqua National Forest, Roseburg, Oregon. => Testing at 35DO187, located above the North Umpqua River yielded a variety of artifacts suggesting use of this site as a seasonal base camp. The site is also associated with numerous peeled ponderosa pine trees. Site 35DO227 is located nearby; artifacts suggest use as a task-specific hunting site. Some one hundred vision quest rock cairns, briefly described in the report, are located along a bluff within the immediate vicinity of these two sites.

Winthrop, Kathryn, Robert Winthrop, and Dennis Gray
1986 Archaeological Data Recovery Program, Beatty Pit Quarry Site (35KL605), Klamath County, Oregon. Report prepared for Weyerhauser Company, Klamath Falls, Oregon. => A minimal amount of excavation at this site along the Sprague River identified a shell midden (river molluscs) associated with chipped stone tools. A carbon 14 date on the shell, hydration readings on obsidian artifacts, and stylistic correlations of the projectile points suggest the site was used about 1500-2000 years ago. Obsidian sourcing analysis was also done.


Winthrop, Robert H.


Winthrop, Robert H. and Kathryn R. Winthrop
1989 Multidisciplinary Approaches to a Lithic Scatter: Site 35KL680. Report prepared for the Winema National Forest, Klamath Falls, Oregon. => This report places the analysis of a small lithic scatter in a number of perspectives, using botanical, paleoenvironmental, and ethnographic information to formulate a model for land use in the northern Klamath Basin based on optimal foraging theory.

Woodburn, James

Wright, H.E., Jr.

Wynd, F.L.

Young, Emaline L.

Young, Kimball and Thomas D. Cutsforth
1928 Hunting Superstitions in the Cow Creek Region of Southern Oregon. *Journal of American Folklore* 41:283-85.

Zenk, Henry B.

Zielinski, G.A. and W.D. McCoy