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Science and Fiction: Kennewick Man/Ancient One in Latter-day Saint Discourse

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Abstract *In June of 1997, Orson Scott Card, a popular science fiction author and prominent Latter-day Saint, seized upon the news of the erosion of an ancient skeleton out of a riverbank along the Columbia River in eastern Washington during the previous summer. Card prematurely suggested to a Mormon audience that this Kennewick Man represented an ancient founding Caucasoid population displaced by ancestors of American Indians. Indigenous peoples called this ancestor the Ancient One and participated in a long and contentious struggle between a team of scientists and the U.S. Army Corps of Engineers over repatriation. This article critically examines the deployment and evolution of images of Kennewick Man in Latter-day Saint discourse about Native Americans, DNA, and the Book of Mormon. Despite cautionary warnings from the Church of Jesus Christ of Latter-day Saints and Latter-day Saint scientists, the latest pseudoscientific resurrection of a Latter-day settler colonial narrative about ancient America appears as David Read's* Face of a Nephite *(2020) featuring a racialized and creationist distortion of the scientific analysis and facial reconstructions of Kennewick Man. Read's book feeds into a larger discourse advocating a Heartland setting for the Book of Mormon in North America advocated by Rodney Meldrum's misnamed Foundation for Indigenous Research and Mormonism (FIRM). These authors anachronistically racialize both scripture and human DNA, misrepresent archaeological and genetic science, draw from fraudulent and looted materials, and disregard Indigenous perspectives on the Ancient One, now firmly established as ancestral to American Indians.*

Keywords Ancient One, anthropology, Book of Mormon, DNA, Kennewick Man, Mormonism, Native American, racism, repatriation.

Introduction

In June of 1997, the popular science fiction writer and prominent Latter-day Saint, Orson Scott Card (1997), seized upon the news of the erosion of a skeleton out of a riverbank along the Columbia River in eastern Washington during the previous summer. Card expressed excitement at the discovery and frustration with the Umatilla Nation and others who sought repatriation of this Ancient One through the Native American Graves Protection and Repatriation Act (NAGPRA). The science fiction author used the skeleton to suggest that Native Americans had inflicted "exactly the kind of displacement… on their predecessors" as Europeans had done to Indigenous peoples in their conquest of the Americas. He depicts these predecessors as "racially different people" from

"native-Americans." Seeking to undermine the autochthonous heritage of American Indians he proclaimed, "We are all immigrants to the New World." He directed particular animosity toward the "Umatilla Indians" who he feared "may succeed in hiding away this skeleton that could never have belonged to a member of their or any living tribe." In contrast to his negative characterizations of repatriation efforts, Card expressed "pleasure" in the report of a skeleton of presumed "Caucasoid physical structure" from ancient America and its implications for "Book of Mormon culture and archaeology." Card inappropriately racialized the skeleton and then used that interpretation to insinuate that American Indians were the first to commit genocide and that Indigenous claims to repatriation must therefore be invalid.

Card's perspective is representative of widely held beliefs the authors have heard expressed in Latter-day Saint communities around the turn of the century. Card, though, does note that "some Mormons will take no comfort from any of this, being unwilling to consider any artifact dating before 4,000 bc as genuine." He contrasts those young earth creationists from himself and other Latter-day Saints like him "who take a more flexible view of the calendar." He suggests that "the 9,000 year-old dating of Kennewick man dovetails nicely with the probable date of Jaredite-era migrations" assumed by Latter-day Saint apologist Hugh Nibley. The Jaredites were the earliest of three migrations from the ancient Near East to the Americas described in the Book of Mormon. Joseph Smith (1830), recognized as a prophet by the various branches of the Mormon Restoration, first published this purportedly scriptural account of ancient America in Palmyra, New York, in 1830.

In the years that have followed Card's blog, Latter-day Saint interpretations of the Book of Mormon have shifted dramatically. DNA evidence challenged the traditional interpretation of the text as a hemispheric history of ancient America providing a simplistic explanation for the origins of American Indians. The genetic evidence demonstrated the antiquity of Indigenous occupation of the Americas, millennia before the events described in the Book of Mormon. Shared DNA lineages indicate that the closest relatives to modern American Indians can be found in North and East Asia, not the ancient Near East (Murphy 2002, 2003a, 2003b, 2004; Murphy and Southerton 2003; Southerton 2004, 2020; Baca 2008; Murphy and Baca 2016, 2020). References to Kennewick Man have recurred throughout subsequent Latter-day Saint literature reinterpreting the Book of Mormon in response to DNA evidence. This article offers a critical review of depictions of the Ancient One in four branches of Book of Mormon discourse: 1) a Mesoamerican limited geography; 2) a Heartland limited geography; 3) the official statements and essays of the Church of Jesus Christ of Latter-day Saints (LDS, the largest Mormon denomination); and 4) decolonizing scholarship.

Both the Mesoamerican and Heartland advocates inaccurately racialize ancient human remains such as Kennewick Man. Mesoamerican advocates and the LDS Church's official essays reinterpret the historical narrative of the Book of Mormon and minimize hemispheric teachings of early church leaders. Heartland proponents respond by resurrecting widely discredited archaeological frauds and selectively reasserting earlier interpretations of the Book of Mormon that supported a North American setting while also minimizing the previously predominant hemispheric models. They deceptively point to a mitochondrial lineage known as X2a, found among some North American Indians, as an indication of a Book of Mormon era immigration from the ancient Near East to North America. Patent attorney David Read's *Face of a Nephite* (2020) has recently joined the Heartland narrative by reasserting a creationist reading of the American past like that decried by Card two decades earlier. Read misleadingly employs dates of carbonates in and on Kennewick Man's skeleton to undermine its antiquity and offers disputations of the molecular clock to advocate for a timing of X2a's appearance that is more compatible with the Book of Mormon.

Meanwhile, the LDS Church's official essays have encouraged spiritual over historical readings of the Book of Mormon, repudiated the racism underlying both Mesoamerican and Heartland models, and cautiously discouraged efforts by Heartland advocates to misuse the DNA evidence.

Decolonizing interpretations of the Book of Mormon offered by Latter-day Saints of Indigenous heritage provide an alternative to the juggernaut of limited geographic settings that are dependent upon misrepresenting either the science or the scripture. Indeterminate or figurative readings of the Book of Mormon eschew the racism and nationalism inherent in the determinate settler colonial interpretations that see the scripture as the one and only true narrative of ancient America. Indeterminate, or figurative, readings of the Book of Mormon allow for both science and fiction, requiring that neither displace each other nor that either displace the varied narratives of origins coming from Indigenous peoples across the hemisphere.

Archaeology and the Book of Mormon

The view of American antiquity in Joseph Smith's Book of Mormon complemented common nineteenth century settler colonial speculations about Israelite ancestry of American Indians. These Israelites called Nephites, Mulekites, and Lamanites purportedly came to the Americas in two migration events around 2600 B.P. (before present). These migrants found the records of a previous population (known as Jaredites), who had brought plants and animals over from the ancient Near East shortly after a world-wide Noahic flood, but had destroyed themselves in an ancient cataclysmic battle (Murphy 2003b). Climaxing with a visit to the Americas from Jesus Christ four centuries before the Lamanites reportedly destroyed the Nephites, the Book of Mormon is heralded today as a sacred text by the Church of Jesus Christ of Latter-day Saints, the Community of Christ, and other Mormon or Restoration traditions that trace their origins to Joseph Smith's prophetic message (Givens 2002; Gutjahr 2012).

The ancient migration events and historical claims of the Book of Mormon have met with significant skepticism and charges of fraud from anthropologists, archaeologists, and historians (Pierce 1899; Silverberg 1968; Coe 1973; Vogel 1986; Williams 1991; Mann 2010; Colavito 2020; Fenton 2020; Watts 2020). Even professionally trained scholars from within Restoration and Mormon traditions have raised considerable concerns about the historicity of the text. LDS archaeologist Dee F. Green (1969:74) critiqued Latter-day Saint defenses of the historical claims of the Book of Mormon (Hunter 1956; Hunter and Johnson 1959) as "inadequate, from a professional archaeologist's point of view," noting their neglect of time and space and misrepresentations of archaeological evidence. Wayne Ham (1970), a scholar from the Reorganized Church of Jesus Christ of Latter Day Saints (RLDS, now called Community of Christ), pointed to the lack of archaeological support for the plants, animals, and technology described in the Book of Mormon; its reliance on the King James Bible; and its questionable morality linking divine curses to skin color and justifications of colonial conquest as sufficient for treating the scripture as "a nonhistorical treatise in much the same manner as modern critics view the books of Jonah, Ruth, Job, and Daniel in the Old Testament." The private writings of theologian Brigham H. Roberts and attorney Thomas Stuart Ferguson, early and mid-century defenders of the Book of Mormon, revealed that even they had significant doubts about their public stances (Madsen 1992; Larson 1996).

Anthropologist John A. Price (1974:38–39) provided a succinct summary of key problems with the Book of Mormon's historical and ecological claims. "An impressive feature of New World prehistory is the extent to which it developed independently of the Old World." Price continues, "The aboriginal New World did not have wheat, barley, cows, oxen, horses or elephants (after about 5000 B.C.), asses, sheep,

or domesticated goats or swine. No Native Americans made grape wine or wheat bread." To the contrary, "native plants and animals were domesticated corn, beans, squashes, potatoes, tomatoes, manioc, turkeys, llamas, etc." He stated more emphatically, "The Jaredites and Nephites are portrayed as having had plow agriculture of wheat and barley and pastoralism of sheep and cattle, but nothing remotely resembling this kind of culture has ever been found, either archaeologically or ethnographically, in the aboriginal New World." Price finds similar mismatch with the buildings, housing, clothing, metallurgy, tools, weapons, vehicles, writings, languages, and religions described in the scripture. He does note, however, that "the forts and burial mounds described in the Book of Mormon are, in fact, like those of the Iroquois." Anthropologists, archaeologists, and other scholars coming from outside and within Mormonism questioned the Book of Mormon's historical and ecological claims long before the emergence of DNA evidence.

Mesoamerica

The proposal that the events in the Book of Mormon occurred within a limited regional setting in Mesoamerica rather than across two hemispheres, as the sacred text seems to describe them, first appeared in the writings of an RLDS scholar, Louis E. Hills (1917, 1918, 1919). Despite such an early proposal, this perspective would not receive widespread support until almost a century later. References to a narrow neck of land separating a land southward from a land northward, along with geographic footnotes pointing to locations spread across North and South America in the 1879 LDS edition of the Book of Mormon, hampered broad acceptance of a limited geographic setting, despite the removal of the footnotes in 1911 (Sorenson 1992:141–142; Givens 2002:106; Murphy 2003b:111–113). The Mesoamerican proposal received a boost in 1984 with publication of anthropologist John L. Sorenson's changing understandings of the Book of Mormon's ancient setting in the *Ensign*, a widely read LDS magazine. Sorenson (1984a, 1984b, 1996, 2013), though, competed with a more prominent claim that Lamanites "are the principal ancestors of the American Indians" that LDS church leaders had placed conspicuously in the introduction to their 1981 edition of the Book of Mormon (Murphy and Baca 2020:74). A broader acceptance of a smaller Mesoamerican setting would not come until new DNA research pushed this limited geographic interpretation into the forefront of twenty-first century apologetics.

Despite publication of Sorenson's proposal in a church magazine and press, peer review by his colleague Thomas Stuart Ferguson, an LDS founder of the New World Archaeological Foundation, had found it wanting for failing plant-life, animal-life, metallurgy, and script tests (Larson 1996; Murphy 2003a). LDS archaeologist and former Brigham Young University (BYU) faculty member, Deanne Matheny (1993), subsequently reaffirmed Sorenson's failure to adequately address problems with European flora, fauna, and technology and disputed his distortion of directional terminology necessary to fit his proposed setting into the isthmus of Tehauntepec. She found the archaeological record at the site of Santa Rosa, Chiapas, proposed for the Book of Mormon city of Zarahemla inconsistent with descriptions of the infrastructure, population, ecology, economy, and destruction in the text. Matheny (1993:322) describes Sorenson's method as "a bits-and-pieces approach involving a larger area and all time periods rather than the specific area and time he has selected, failing to take into account the specific cultural processes and developments in that area." The proposal that the archaeological site of Kaminaluyu in Guatemala is the city of Nephi also fails critical analysis and problematically credits Mayan cultural accomplishments to foreign influences (Southerton 2020:56–57).

Proposed alternatives to Sorenson's Mesoamerican model have included reading the Book of Mormon as "spirit writing" (Dunn 1985, 2002; Taves 2020), a "modern expansion of an ancient

source" (Ostler 1987), "midrash" or "inspired fiction" (Hutchinson 1988, 1993), "American apocrypha" (Vogel and Metcalfe 2002), "historical fiction" (Firmage 2002), pseudepigrapha (Price 2002), a "revelatory" event (Taves 2016), and an "oral performance" (Davis 2020). A recent anthology argues that the Book of Mormon "never portrays itself as an ancient text" (Fenton and Hickman 2019:7) while a contrasting monograph advocates viewing Joseph Smith as a "creative co-author" (Ash 2021).

DNA research summarized by anthropologist Thomas W Murphy (2002, 2003a, 2003b, 2004) and geneticist and former Mormon bishop Simon G. Southerton (2004) accelerated debate about the Book of Mormon's historicity by demonstrating no close affinity between Native American populations and those of the ancient Near East. Murphy and Southerton (2003) found that 99.4% of mtDNA from published samples of 7,300 Native Americans demonstrated their closest affinity with populations in north and east Asia rather than the Middle East. The mtDNA lineages A-D were only found in the Americas and northern and eastern portions of Asia. While the lineage X could also be found in Europe, Africa, and the Middle East, the American branch separated from the others millennia before the migrations described in the Book of Mormon. The remaining 0.6% showed affinities to lineages found in Africa and Europe, most likely the result of recent admixture, long after the events of the Book of Mormon. Biological anthropologist Michael Crawford stated the case more bluntly, there is not "one iota of evidence that suggest a lost tribe from Israel made it all the way to the New World. It is a great story, slain by ugly fact" (Egan 2000). Biologist Scott Woodward, then at Brigham Young University (BYU), acknowledged that BYU's tests of 6,000 Native Americans, primarily from Peru, were consistent with those of other researchers (Fabrizio et al. 2002).

Two documentary films (Kramer and Reyes 2003; Baca 2008) and widespread news coverage of the LDS Church's efforts to discipline Murphy and Southerton for their academic publications drew significant attention to the lack of genetic support for the Book of Mormon (Lobdell and Stammer 2002; ICTMN Staff 2002; Lyke 2003; Dobner 2005; Associated Press 2005a, 2005b; Lobdell 2006). A flurry of articles from the Foundation for Ancient Research and Mormon Studies (FARMS) at BYU and the Foundation for Apologetic Information and Research (FAIR, now known as Faithful Answers, Informed Research) employed a limited geographic setting in which a small group of immigrants entered a much larger Mesoamerican population. Authors then proposed dilution by gene flow, genetic drift, and founder effects as possible explanations for the lack of genetic markers connecting Near Eastern populations to the Americas (Gardner 2003; Stewart 2006; Peterson 2008).

Kennewick Man would figure prominently in writings by Latter-day Saints employing a limited geographic setting as a possible explanation for the lack of genetic evidence. Anthropologist D. Jeffrey Meldrum and biologist Trent Stephens (2007:22), both from Idaho State University (ISU), acknowledged that "DNA data lend no obvious support" to Book of Mormon populations as the source for "all pre-Columbian inhabitants of the Americas," but held out hope for smaller migrations. Much like Card, however, these LDS authors racialized the Ancient One and portrayed Umatillas as hostile to science. Calling features of the Kennewick skull "Caucasoid," they raised the question of "an earlier population" lacking ties to Asians "that predated modern Native Americans." They accused Umatilla of ignoring "data coming out of the earth" and denigrated Umatilla "oral histories" by equating them with "folklore" and questionable interpretations that "have strayed beyond the Book of Mormon story." Meldrum and Stevens (2007:22–23, 79–80) present themselves as open to science and willing to reconsider previous interpretations while they portray Umatillas as dismissive of scientific theories and the Book of Mormon.

Other Latter-day Saint scholars also echo some of Card's early claims. Religion and literary

professor Terryl Givens (2002:148–149), from the University of Richmond, asserted that the Army Corps of Engineers covered the site where Kennewick Man was found "under a politically motivated directive of the Clinton administration." He deployed this story as an example of an allegedly more widespread effort to suppress evidence for "transoceanic contact with the Americas long before Columbus (whether Semitic injections or other kinds)." Givens suggests that suppression originates from fear that such revelations might damage "Native identity." Anthropologist John Sorenson (2008:8) and biologist David McClellan (2008:137), both from BYU, suggested that Kennewick Man's "European-like" appearance could be "due to a Haplogroup X people from Europe who reached America" or at least "allow for the possibility of Caucasoid habitation in the Americas." Although Kennewick Man and Native Americans carrying the X lineage lived far away from their favored setting in Mesoamerica, Latter-day Saint scholars repeated problematic racialized characterizations of Kennewick Man from the media and the presence of the X lineage in Europe and the Middle East as support for the plausibility of their regional interpretations of the Book of Mormon (Figure 1).

Heartland

DNA evidence fostered movement away from hemispheric toward more limited settings for purported Book of Mormon migrations. A geographic disconnect, though, appeared between

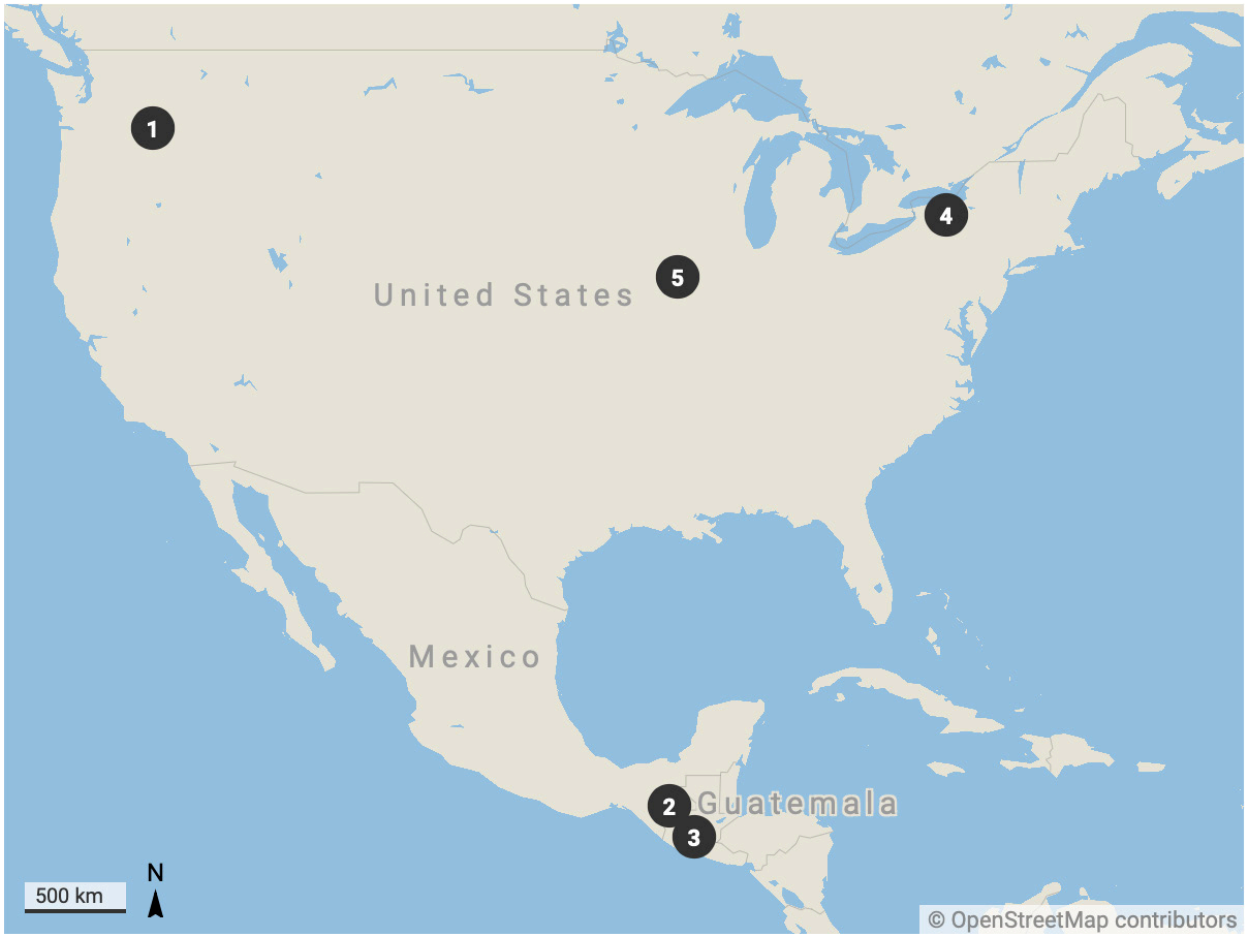

Figure 1. Key locations mentioned in the article: 1) Kennewick, WA; 2) Santa Rosa, Chiapas; 3) Kaminaljuyu, Guatemala; 4) Hill Cumorah, NY; and 5) Nauvoo, IL.

favored forms of genetic and skeletal evidence and a Mesoamerican setting for the Book of Mormon preferred by prominent Latter-day Saint scientists and scholars. A similar disjuncture existed between statements in scripture and from early church leaders that seemed to link some events and peoples in the Book of Mormon to places in North America, especially that of Hill Cumorah in New York and Zarahemla in Iowa, purportedly adjacent to the Mormon settlement of Nauvoo, Illinois (Duffy 2008; Neville 2015). This incongruity, combined with a creationist skepticism toward science more generally and an embrace of white nationalism among some Mormons, created an environment ripe for the flourishing of a limited geographic setting in North America.

Calling their proposed geography the Heartland model, new authors built upon the work of earlier advocates of a North American setting for the Book of Mormon (Olive 2000; Goble and May 2002). Rod Meldrum (2009, 2011), a business developer who claims to be a "senior scientific researcher" because of his work on a creationist "natural science textbook," began his studies after watching the video, *DNA vs. the Book of Mormon* (Kramer and Reyes 2003). Latter-day Saint purveyors of a North American setting for the Book of Mormon draw liberally from known archaeological frauds (Newark Holy Stones, Bat Creek Stone, Michigan relics, elephant pipes and effigies, etc.) to make their case for a Semitic presence in ancient America (see Feder 2006 for discussions of these frauds). Meldrum (2009) assigns Book of Mormon peoples to a European race; attributes the dark skin of Lamanites (and by implication American Indians) to a curse for their wickedness; blames the unrighteousness of Jews and Native Americans for bringing holocausts upon their own populations; inaccurately claims that the X mtDNA lineage is not found in Asian populations; and repeatedly calls the X lineage "Causasian," "white," and "European" despite its widespread distribution in Africa, Europe, Asia, and the Americas. Meldrum founded the misnamed Foundation for Indigenous Research and Mormonism (FIRM) to advocate for this racialized interpretation of the Book of Mormon.

Steven E. Smoot (2010), President of the Family First Foundation, featured the Heartland claims in a deceptively produced film, *The Lost Civilizations of North America*. The anthropologists and historians interviewed in the film issued a collective statement (Atalay et al. 2010) exposing the film maker's deception and prodigious use of fraudulent artifacts. "None of us was asked directly for our opinion on what turned out to be its underlying claim; that Old World civilizations played an active role in the development of Native American cultures, especially the mound builders." The anthropologists stated their actual views forthrightly, "there is no compelling archaeological or genetic evidence for a migration from the Middle East to North America a few thousand years ago, nor is there any credible scientific evidence that Old World civilizations were involved in developing Native American cultures in pre-Columbian times." They attested to "overwhelming evidence that Native Americans were independently responsible for designing and creating the Newark Earthworks, Cahokia Mounds, and the myriad other pre-Columbian sites across the United States." Deborah Bolnick, one of the biological anthropologists interviewed for the film, teamed up with geneticist Jennifer Raff (2015) for a peer reviewed evaluation of the Heartland advocates' claims about mtDNA haplogroup X. They demonstrated, "X2a is not found in the Middle East" and "none of the X2 lineages present in the Middle East are immediately ancestral to X2a." They continued, "the data of coalescence for X2a (14,200–17,000 cal yr B.P.) significantly precedes the hypothesized migration from the Middle East." They conclude, "X2a does not provide any evidence for an ancient Hebrew migration from the Middle East to North America."

Archaeological evidence calls into question the assertions of a Heartland Moundbuilder setting for the Book of Mormon. Meldrum's association of Jaredites with Adena or Early Woodland cultures and Nephites with Hopewell

or Middle Woodland cultures is problematic. None of the Eurasian grains or domesticated livestock portrayed in the Book of Mormon appear in those cultural traditions. Neither does plow agriculture nor pastoralism. Woodland peoples cultivated sumpweed, sunflower, gourds, squashes, goosefoot, knotweed, maygrass, little barley, tobacco, nuts (acorn), fruits, and berries. They ate migratory waterfowl, deer, raccoon, turkey, shellfish, fish, and dogs. An indigenous form of barley is found, but it could not have come from the Near East with Jaredite or Nephite colonies. Corn, the only American domesticate mentioned in the Book of Mormon, only has sporadic occurrences during the Middle Woodland period. Nor is there evidence of population scale displacements like those resembling the destructions of Jaredite and Nephite cultures in the Book of Mormon (Larson 1996; Fagan 2000; Murphy 2003b). The Heartland proposal fails critical examination.

Ian Thompson, Choctaw and Creek archaeologist, sees parallels between Kennewick Man and Moundbuilder controversies. Both assert an unwarranted discontinuity between living Native Americans and their past. Thompson (2008:208) states, "These mounds are still revered, used, and constructed today (e.g., by the Choctaw Nation of Oklahoma Capitol Grounds), and there is no intervening point during which they were not." BYU archaeologist John Clark (2004:151) observed concurrently, "the archaeology of New York is persuasive evidence that Book of Mormon peoples did not live in that region." Regarding the Hill Cumorah where Joseph Smith claimed to find gold plates, he clarified, "Archaeologically speaking, it is a clean hill. No artifacts, no walls, no trenches, no arrow-heads.... Pre-Columbian people did not settle or build here." Latter-day Saint medical doctor Gregory Smith (2010) critically reviewed Meldrum's Heartland proposal, calling it "pseudoscientific snake oil and strained proof-texting." Flora, fauna, technology, and cultural continuities in the archaeological record are incompatible with a Heartland setting for the Book of Mormon.

The publication of Kennewick Man's genome further undermined the foundational Heartland claim that Indigenous X2a mtDNA was derived from Middle Eastern migrations 2600 B.P. Analysis of the genome revealed the Ancient One carried a version of the X2a lineage that was directly ancestral to all modern Native American X2a lineages (Rasmussen et al. 2015). The problem for Heartland advocates is that there has not been any scientific dispute about Kennewick Man's antiquity. His teeth were cavity free and worn down to their roots, characteristics of prehistoric hunter-gatherer teeth. He also carried an ancient projectile point embedded in his hip. Radiocarbon dating of a well-preserved finger bone revealed the skeleton's antiquity. Good quality collagen purified from the bone was found to be about 9,000 years old (Burke et al. 2008). The presence of the X2a lineage in an individual who lived in North America over 6,000 years before the Nephites in the Book of Mormon presented a serious challenge to Latter-day Saint claims of its Semitic origins.

Digital Legend recently responded to this problem by publishing *Face of a Nephite: DNA Studies and the Book of Mormon* by patent attorney David Read (2020). A major focus of the book is to cast doubt over the age of Kennewick Man. Read takes advantage of the fact that Kennewick Man's bones had been washed out of the soil profile. Consequently, painstaking forensic analysis was required to determine the original context of his burial. The study included detailed isotope analysis of the bones, examination of skeletal morphology and the projectile point embedded in the hip bone, and matching the soil attached to the bones with the nearby soil profile. Read's book advocates a creationist rebuttal of the Ancient One's age, as presented in *Kennewick Man: The Scientific Investigation of an Ancient American Skeleton* (Owsley and Jantz 2014).

Read takes full advantage of the controversial facial reconstruction by anthropologists Karin Bruwelheide and Douglas Owsley (2014).

Cree and Metis archaeologist Paulette Steeves (2021:39) calls their reconstruction "very problematic." The cover of *Face of a Nephite* features a light-colored image of the second stage reconstruction with a full beard and wavy long hair. Without informing his audience of the discrepancy, Read selected an image from an earlier step in the process rather than the final facial reconstruction to which the artist Rebecca Spivak had added "weathered dark skin" (Bruwelehide and Owsley 2014:527). Not only is Read's selection a pale misrepresentation of this particular facial reconstruction, but even the final version has come under criticism from Steeves (2021:39) because "cranial features do not inform experts as to the color of the skin, hair, or eyes or the shape of the ears or mouth." This image graces the cover of Read's book "without informing readers that soft tissue reconstructions are created through the assumed racial categories of the skulls, created by those doing the reconstructing." Steeves (2021:39) countered, "Genetic research has shown that human variation is incredibly diverse and that race is not a valid biological category for anything, including ethnic identity."

In order to discredit the scientific research on Kennewick Man, Read spends much of his time misinterpreting the radiocarbon dating of the skeleton and the analysis of soil particles attached to the bones. Read misrepresents the detailed radiocarbon analysis of Kennewick Man carried out by geologist Thomas Stafford (2014). Stafford's analysis yielded a further nine collagen radiocarbon dates that were all close to the original estimate of 9,000 years old. To understand the burial context more fully, Stafford also dated "secondary geological carbonates" derived from rainwater that had crystallized on bone and in bone cavities. The carbonates yielded dates in the vicinity of 2500 B.P. Because these dates align well with the proposed arrival of Book of Mormon migrations at approximately 2600 B.P., Read (2020:32) incorrectly concludes that the carbonate dates reflect the true age of Kennewick Man.

To cast further doubt over age, Read (2020:36–38) also claims Mazama ash (tephra) was attached to the bones. He uses this claim to advance the proposition that Kennewick Man was buried more recently than the Mount Mazama eruption which took place about 7,700 years ago. This claim is also plainly incorrect. In his study of the skeleton, archaeologist James Chatters (2014:46) observed "a concretion" on the bones that contained "allophane, a by-product of tephra weathering." The occurrence of allophane on the bones is entirely consistent with the burial position of the skeleton, which detailed soil analysis had shown to be 10 to 20 cm below the Mazama ash layer. The same water carrying dissolved carbonates weathered the tephra and carried microscopic particles of allophane down the soil profile, depositing them on the bones.

Read's errors in *Face of a Nephite* are not simple oversights. Prior to publication, Read shared sections of his book with Chatters, the forensic archaeologist who recovered Kennewick Man's bones in 1996. Chatters pointed out Read's mistaken carbonate and Mazama ash claims in emails to Read that he subsequently shared with Southerton.[1] Despite being informed about these fundamental errors Read made no retreat from his faulty conclusions.

The scientific study of Kennewick Man has provided conclusive evidence that the Heartland movement's interpretation of the Book of Mormon is based upon falsehoods. Kennewick Man's geological and archaeological timestamps are impeccable, and he provides compelling evidence that he, and the X2a mtDNA he carried, were present in the Americas about 6,000 years before the Book of Mormon claims Nephites first existed.

[1] "The ca. 2000 year dates you cling to are actually dates on soil carbonate, which deposits continuously from water percolating down from the surface. They are not dates on the skeleton at all"—Jim Chatters 2020, pers. comm.

"No Mazama ash was found in sediment around the skeleton, and believe me it is ubiquitous in younger sediments. Therefore, the skeleton if buried, went into a pit dug before the ash fell"—Jim Chatters 2020, pers. comm.

Official Statements and Essays

Formal responses to DNA research from the LDS Church are much more nuanced than simply pursuing disciplinary actions against scientists and encouraging apologetic scholarship. The LDS Church actually aborted disciplinary actions against Murphy in response to publicity and tried to reframe those against Southerton to make them appear as if they were not retaliation for scientific publications (Lyke 2003; Associated Press 2005a; Moore 2007; Lindholm 2011). In 2003 BYU dismissed biologist Scott Woodward who had been involved in amassing one of the largest private collections of DNA samples from Indigenous peoples, some of which were collected without adequate ethical review (Perego 2009; Murphy and Baca 2016:713–716; Southerton 2020:89–90). Despite the early rebuke of scientists, changing approaches took hold in the LDS Church less than a decade later. The Neal A. Maxwell Institute at BYU would absorb FARMS and in 2012 dismiss Daniel Peterson from his editorial role at *Mormon Studies Review* (Haymond 2012). Earlier support at BYU for divisive apologetic scholarship has declined over subsequent years, and new philosophies of respectful engagement with broader academic fields exemplified by the Maxwell Institute have tempered conflict (Hodges 2013). Several scholars from BYU have published in and/or edited recent anthologies that forthrightly acknowledge nineteenth century content and ideas in the Book of Mormon (Colvin and Brooks 2018; Fenton and Hickman 2019; Hafen and Rensink 2019; MacKay et al. 2020).

The LDS Church also modified the controversial claim linking the Book of Mormon to Native Americans that had appeared prominently in its editions of the scripture since 1981. The claim that Lamanites were "the principal ancestors of American Indians" became "among the ancestors of American Indians," beginning with a Doubleday edition in 2006, and then in its own English editions in 2013. The 2013 edition also softened racial language in chapter headings (Stack 2007, 2013). In June of 2016, President Russell M. Nelson told a gathering of mission presidents that the Book of Mormon "is not a textbook of history, although some history is found within its pages. It is not a definitive work on ancient American agriculture or politics. It is not a record of all former inhabitants of the Western Hemisphere, but only of particular groups of people" (Sterzer 2016). The Church subsequently suspended its Hill Cumorah Pageant in New York that had featured actors in redface playing Lamanite characters from 1937 to 2019 (Baca 2008; Murphy and Baca 2020; Taylor 2021). In October of 2021, Nelson announced a $2 million donation to the First Americans Museum in Oklahoma City and again clarified that the Book of Mormon "is not a textbook" (Swenson 2021). These changes make some dramatic departures and important gestures distancing the Church from the previous positions linking all American Indians to Lamanites.

There is some evidence indicating lay membership is also changing its perspectives on the Book of Mormon, race, and evolution. The Next Mormons Survey, a recent large scale, national study of four generations of Mormons, demonstrates that confidence in the truth of the statement, "The Book of Mormon is a literal, historical account," drops from 62% of Boomer and Silent generations, to 53% of GenX, and only 50% of Millennials." Confidence in a statement attributing earlier racial bans to God dropped from just 44% of Boomer and Silent generations to 30% of GenX. Millennial confidence falls in between at 37% (Riess 2019:19). The same survey also shows nearly half of Mormons in the United States support evolution as the best explanation for the development of life on earth, while the remainder doubt or reject it. The support for evolution is strongest among Millennials at 58% versus 38% for older generations (Riess 2019:286). These data suggest that the Heartland movement may be, at least in part, resistant to changing social attitudes among younger generations of lay membership. Generational differences accent a review by BYU graduate

student and member of GenZ, Hanna Seariac (2021), who critiques the Heartland movement for its overt American nationalism and "language of Anglo-Saxon heritage and bloodlines [that] cements the connection between the Heartland movement and white supremacy."

Formal statements and online essays authorized by church leadership have reinforced these changing perspectives. A newsroom statement in the midst of the Mitt Romney campaign for President of the United States declared, "The Church unequivocally condemns racism, including any and all past racism by individuals both inside and outside the Church" (Walker 2012). "Gospel Topics" essays on race and DNA released in the following couple of years illustrate these shifts (Church 2013, 2014). The first reiterated, "Church leaders today unequivocally condemn all racism, past and present, in any form." The second stated, "the primary purpose of the Book of Mormon is more spiritual than historical." For those who might wonder about historical issues, the DNA essay points to a limited geographical setting in no specific location, accompanied by gene flow, genetic drift, and founder effect, as possible explanations for the lack of genetic evidence for Book of Mormon migrations in Native American ancestry. The essay, notably, acknowledges Asian affinities in Native American genetics and chastises those who use DNA both to critique and defend the Book of Mormon (Murphy and Baca 2020).

The Church's implicit critique of the Heartland advocates for their claims that DNA supports historical assertions of a North American setting for the Book of Mormon is noteworthy in light of the subsequent publication of Kennewick Man's DNA. Analysis published in *Nature* found that the Ancient One's mitochondrial genome "is placed at the root of haplogroup X2a" and rejected "the hypothesis that Kennewick Man is more closely related to Ainu or Polynesians than he is to Native Americans." Instead, it showed "that Kennewick Man has ancestry proportions most similar to those of other Northern Native Americans… including the Colville" who had petitioned for his repatriation. In striking contrast to the scientists who opposed repatriation and the media who used terms "European-like" and "Caucasoid" to describe the features of the Ancient One, this team of scientists found that "Kennewick Man's pattern of craniometric affinity falls well within the range of affinity evaluated for individual Native Americans." They faulted plaintiff scientists for not "explicitly taking into account within-population variation," concluding that "biological affinities of individual specimens [using craniometric data] cannot be resolved with any statistical certainty." They contrast this uncertainty with "autosomal DNA data [that] are highly statistically significant." More reliable genetic data show "stronger association of the Kennewick Man with Native Americans than any other continental group." They demonstrate "that the autosomal DNA, mitochondrial DNA and Y chromosome data all consistently show that Kennewick Man is directly related to contemporary Native Americans, and thus show genetic continuity within the Americas over at least the past 8,000 years" (Rasmussen et al. 2015).

The analysis of the Ancient One's DNA confirmed positions of claimant tribes and anthropologists who had supported initially unsuccessful attempts at repatriation. Donald Sampson (2008:40–41), former Executive Director of the Confederated Tribes of the Umatilla Indian Reservation, had long objected to racializing the Ancient One with outdated craniometric methodologies, noting "it is common knowledge among good anthropologists that it is impossible to determine the so-called 'race' of an individual. A sample group is needed so that common traits can be determined." Umatilla, he insisted, "do not reject science." The tribes employ "anthropologists and other scientists" and "use science every day to help protect our people and the land.… However, we do reject the notion that science is the answer to everything, and therefore should take precedence over the religious rights and beliefs of U.S. citizens." Umatilla religious leader Armand Minthorn

(2008:43) reflects, "We believe that humans and animals change over time and adapt to their environment. And our Elders have told us that Indian people did not always look the way we look today." Minthorn emphasized "We are not trying to keep anything from anyone. All we want as Umatilla tribe is a voice in how these remains are treated" (Riffe 2000). Archaeologist Darby Stapp (2008:58) observed, "there is no evidence in the archaeological record of displacement or migration of any of the Columbian Basin peoples throughout prehistory." In fact, "no such hiatus" was found in ethnological, oral tradition, or linguistic analysis. Anthropologist Ann Kakaliouras (2019:83) concluded that the Ancient One's "genetic results have ended craniometry's authority to classify ancient American skeletons." After publication of the DNA analysis, the U.S. Army Corps of Engineers finally ended a decades long struggle by returning the Ancient One to the tribes who claimed him as their ancestor on February 17, 2017, for a private reburial in an undisclosed location (Burke Museum 2017).

Decolonization

Decolonizing methodologies that center on the perspective of Indigenous peoples have begun making an impact in twenty-first century studies of the Book of Mormon (Baca 2008; Benally 2017; Covin and Brooks 2018; King 2019; Hafen and Rensink 2019; Hernandez 2021; Simon 2022). *In Laman's Term*s, a documentary film directed by Diné and Hopi anthropologist Angelo Baca (2008), featured scientists discussing new DNA research alongside Native Americans expressing concerns over cultural misrepresentations in the Book of Mormon. Tim Roderick (Wampanoag) told the audience that he thought stories of violent Lamanites helped white Latter-day Saints "let themselves at ease" over their own complicity in atrocities against American Indians. G. Peter Jemison (Seneca) objected to the Book of Mormon's claim that his ancestors had destroyed an ancient white nation of Nephites, "We were never the kind that thought you had to wipe out every last person." Forrest Cuch (Ute) objected, "We are not of Israelite" heritage, and "certainly are not going to turn white someday." Māori scholar Hemopereki Simon (2022:6–7) identifies the following priorities for engagement between Critical Indigenous Studies and Mormon Studies: "the relationship of Mormonism… to settler colonialism;" "The appropriateness of assigning a religio-colonial [Lamanite] identity upon Indigenous groups or people;" "Questioning the position of whiteness within Mormon culture;" "Advocating for cultural engagement with the Church, particularly around *taonga* [precious treasure, Indigenous knowledge] the Church may hold or exploit;" "Moving the Church and its members to accept the spiritual nature of the Book of Mormon (i.e., that the Book of Mormon is not actually factual);" and "Preventing the further destruction of Indigenous cultural heritage sites as a worldwide archaeological project of the Church and its members to validate the Book of Mormon as historically accurate." Scientific and cultural concerns about the Book of Mormon's historical claims overlap (Baca 2008).

If the LDS Church seeks to achieve its laudable goal of rejecting racism then it needs to consider repatriation of human remains, cultural materials, and lands taken without consent from Indigenous peoples. "A fundamental problem," noted by Murphy and Baca (2016:702, 706), is that the faith's foundational events "began with the looting of Indigenous artifacts and graves and were made possible through the theft of Indigenous lands." If there are actual gold plates inscribed with reformed Egyptian hieroglyphics, from which Joseph Smith said he translated the Book of Mormon, or if he used Indigenous artifacts in his translation activities, "then they would rightfully have belonged to the Seneca from whose graves or ruins they were taken." The Seneca, on whose traditional lands the founding events of Mormonism took place, have strong beliefs about the sanctity of the ancestors and their burials. Seneca elder Geraldine Green explains that "the digging up of human remains… is not

our way of life." After a person is buried and there is a funeral address, Green states, "We leave them alone, they are through.… They have done their jobs; we need not bother them anymore. That is why they go to rest; they have finished their job here, and it is very important to us that we not disturb them anymore," the Longhouse elder concludes (Jemison 1997:59–60). Even under English common law, Pascua Yaqui law professor Rebecca Tsosie (1997:66) notes, "dead bodies cannot be owned, and the removal of funerary objects from a burial site is considered a dreadful and abhorrent crime."

Seer stones, gold plates, and Egyptian papyri involved in the production of Mormon scripture are inescapably linked to looting. Murphy (2021a) lamented, "While we can view Joseph Smith as a product of his settler culture, he set a regrettable example with grave consequences for successive generations of Latter-day Saints who have learned that it is okay to take sacred records, artifacts, and even remains from human graves." Baca (2018:74) observes that if the Church does have sacred artifacts of Indigenous origin "then they need to be examined by outside anthropologists and archaeologists as well as through consultation with Native American tribes." Murphy (2018:55) reflects, "If we insist upon the truth claim that the Book of Mormon is an ancient Indigenous scripture, then an ethical decolonization effort requires that it be returned to the people from whom it was stolen." Choctaw artist Gary White Deer (1997:39–43) calls the "finders-keepers notion of buried objects… the Buried Treasure Syndrome." He calls "collecting Indian remains and grave objects as buried treasure" an unacceptable practice. He continues, "What is needed at this moment is a return of the sacred." That would include "objects of cultural patrimony [such as seer stones]… used to mediate between the seen and unseen." Since passage of NAGPRA, LDS church museums have repatriated dozens of human remains and funerary objects but still retain Egyptian papyri and Indigenous artifacts (gorgets, spindle whorl, etc.) used as seer stones by early church leaders (Murphy and Baca 2016; Murphy 2020, 2021a, 2021b). The dilemma facing Mormons is similar to the ethical quandary posed by the colonial legacy of anthropology and archaeology and the debate over the repatriation of the Ancient One it generated (Riffe 2000).

Dakota Latter-day Saint historian Elise Boxer (2019:9) notes that even after recent changes, "The Introduction to the Book of Mormon and the history theirin not only ignores the diversity of Indigenous Peoples completely, but ignores their unique history that intimately connects them to the land." The association of American Indians with Lamanites "erases the diverse creation stories and histories unique to each tribe." In common settler colonial readings of the Book of Mormon, such as those found in both the Mesoamerican and Heartland movements, "Indigenous identity, history, sovereignty, and belief systems have not only been dismissed but replaced with a limited, racialized identity grounded in Mormon religious discourse." In its depictions of "Indigenous Peoples as Lamanites, or the first immigrants to this continent, the Book of Mormon provides the necessary justification for Indigenous removal and dispossession by Mormon settlers" (Boxer 2019:4). Boxer (2019:5) clarifies that her "rereading of the Book of Mormon is not about its veracity, or challenging its ecclesiastical authority, but rather how [the] text operates as a definitive history of Indigenous Peoples in the Americas."

A recent *Dialogue* podcast on Indigeneity and Mormonism (King et al. 2021) highlighted concerns about settler colonial interpretations of the Book of Mormon. Diné sociologist James Singer stated, "The Book of Mormon is a book of faith.… It is not a history. But, we have been taught it is a history. So, what do you do with that?" Diné historian Farina King repeated, in a paraphrase, President Nelson's recent statement, "the Book of Mormon is not a textbook, it is not a history textbook." Tsimshian blogger Sarah Newcomb noted, though, that despite some shifting perspectives among church leadership, missionaries continue to teach the Book of Mormon as history.

Literary scholar Jared Hickman (2020:75–76) highlights what he calls a decolonizing potential within the Book of Mormon. Hickman's interpretation draws from common nineteenth-century definitions of "translation" to suggest that Joseph Smith may have employed more of a metaphysical than a linguistic concept of translation when he looked into his seer stone to dictate the scripture. Hickman suggests that Smith acts "as if" Native voices "had cried from the dust" (3 Nephi 3:19–20). He represents Smith's role as more like that of an "activist; that is someone acting on behalf of Native peoples as a 'spokesman'… rather than as an actual medium of Native peoples." Recognizing the inherent limitation of such a settler colonial spokesperson, Hickman advocates conceding interpretive authority to Indigenous peoples, "the Book of Mormon has to be ceded to indigenous peoples and made to serve their fruition, as determined by them." In light of the conflict over the Ancient One, one might read Hickman's interpretation as akin to a literary repatriation of at least interpretive authority.

Indigenous Latter-day Saint scholars have offered interpretations that escape some of the historical difficulties in both the Mesoamerican and Heartland models of the Book of Mormon. Taos Pueblo literary scholar P. Jane Hafen (2018:273) notes, "For Mormons to see Indigenous peoples as 'alike unto God' (2 Nephi 26:33), the relationship must decolonize." Hafen (2018:263) distinguishes between determinate and indeterminate approaches to origins. Fixed or determinate origins "may lead to racism or nationalism." On the other hand, "If an origin is indeterminate, or perhaps simply figurative, a door is opened to multiple interpretations and understandings. These various understandings decolonize the dominant culture." Hafen (2018:266) emphasizes, "Listening to Natives tell their own stories about their origins is a decolonizing act." Wīnak anthropologist Daniel Hernandez (2021:10) highlights "many Indigenous Mormons who use extra-canonical texts to add to an expanding world view, which include the oral, woven, tattooed, and written sacred stories of the ancestors of the Americas and Polynesia." Indigenous Mormons often read the Book of Mormon's references to "other scriptures" as validation of canonical status for oral traditions and other sacred texts such as the Code of Handsome Lake, Popol Wuj, and Black Elk Speaks (Murphy 2018, 2019, 2022). Indeterminate Indigenous approaches allow for the co-existence of multiple origins, while determinate settler colonial readings of the Book of Mormon displace those alternatives.

Similar perspectives to those of Hafen appear in dialogue between archaeologists and Native Americans. Archaeologist Larry Zimmerman (1997:54) regrettably acknowledged, "Pasts created by archaeologists have been imposed on Indian pasts without a chance for debate." He prefers to see these narratives as "analogues, not homologues." Indigenous and archaeological narratives, he explains, "need not be the same stories even if they are discussing the same past(s)." Anishinaabe-Ojibwe archaeologist Sonya Atalay (2006:285) noted settler colonial complicity in the discipline, "Through the process of colonization, Westerners gained the power to study not only those distant from themselves by time but also the pasts of others who were distant from themselves culturally, and often geographically—those who had been subjected to colonial rule around the globe." Pawnee archaeologist Roger Echo Hawk (1997:89) observed, "A religious approach accepts oral texts as the source of holistic truths rather than as documents that require evaluation for historicity." Harvey Moses, Jr. (2008:102), former member of the Colville Business Council, advises those who "want answers about our (American Indians') past, present, or future… need to come and talk to us." In this decolonizing dialogue, there is space for multiple approaches to and interpretations of the past.

Dakota anthropologist Kim Tallbear (2013:116) highlights a significant difference between Native American and Mormon approaches to the use of genetics in the interpretation of the settlement of the Americas. She describes

a discussion on a genealogical listserv, "One lister posted favorable comments of Mormon scholars who attempt to use genetics to support church views of creation and the settlement of the Americas." Even there, the poster was met with an unfavorable response, "He was roundly criticized and his views were declared irrelevant to the list." This incident inspired Tallbear to lament that "Native American and Christian perspectives that are critical of genome knowledge are seen to fall on the same side of a religion-versus-science divide." She identified mistaken assumptions, "Unlike Christian traditions, Native American origin narratives are generally missing the will to convert and so are without intolerance of other ontologies." Native Americans, she notes, are much more concerned about "who has the power to research whom and how, and who has the power to make policy that affects Native American lives." She objects to a "false comparison between Christian creationists and tribal creation narratives." Indigenous concerns about the Ancient One, in this respect, are better understood as protecting particular "notions of the sacred, and [as] political resistance to being objects of research."

Diné scholar Moroni Benally (2017:72) highlights a decolonizing approach to the Book of Mormon through his family's negotiation of spirituality and place in a colonizing Latter-day Saint faith tradition. His family "respectfully negotiated the doctrines of the Church with their Navajo practices, always viewing the Church structure and organization within the broader context of colonization." The experience, he explains, is more aptly described as "conversation" than "conversion." The Book of Mormon, Benally (2017:73) clarifies, operates dually as an instrument of evangelism and as "a tool of erasure for Indigenous people's rightful claim to land, politics, economies, and power." In this context, "the struggles of native peoples in the United States—and in the Church—becomes a struggle against elimination, against their erasure." "The Book of Mormon," Benally (2017:74–77) observes, "functions as both a tool of invasion and replacement, but also, strangely, as an instrument of resistance against the Church itself." His grandfather's "negotiation of membership into the LDS church" was not governed by "historical inconsistencies" or a "belief in being an Israelite." His family, like many other Indigenous Mormons "continue to participate in their own ceremonies because these ceremonies expand the meaning of Church doctrine and reify the core purposes of the Book of Mormon." In this "mode of non-compliant resistance," Benally (2017:77–78) concludes, "Indigenous faith *blossoms*."

Conclusion

Injudicious use of ethnic terminology, craniometrics, and facial reconstructions by some anthropologists and, even more carelessly by the media, have fed Latter-day Saint misrepresentations of Kennewick Man as a white Jaredite or Nephite from the Book of Mormon. These Latter-day Saint depictions, especially those associated with the Heartland movement, share much in common with the "virulently racialized representations of Kennewick Man at white nationalist and white supremacists sites" analyzed by Kakaliouras (2008:89). Even a popular science fiction author and biologists and anthropologists at BYU and ISU, who would likely bristle at any association with white nationalism, have racialized the skeleton, mischaracterized Native American perspectives about science, and portrayed ancient American populations as white. In these respects they undermine recent efforts of their own church leadership to reject racism in any form.

Long-standing challenges posed by archaeology and more recent ones coming from genetics have led the two largest Mormon denominations to distance themselves from racist; hemispheric; and even, to a limited extent, literal historical readings of the Book of Mormon. The Heartland movement appears to resist changing perspectives by hearkening back to teachings of earlier church leaders, res-

urrecting archaeological frauds, and repeating creationist objections to radiocarbon dating in service of settler colonial readings of the Book of Mormon. The recent publication of *Face of a Nephite* (Read 2020) inappropriately racializes the Ancient One and his mitochondrial lineage and deliberately misrepresents radiometric dating in support of a white nationalist reading of the Book of Mormon.

Indigenous Mormons have objected to racist and historical readings of the Book of Mormon, insisted that the Book of Mormon is not a history, called for repatriation of human remains and sacred items taken from Indigenous graves, and read scripture in ways that validate Indigenous sacred traditions. In the inclusive, indeterminate, and analogic approaches to the past advocated by Indigenous Mormons, there is space for dialogue, oral tradition, science, and sacred narrative—even for allegory, pseudepigrapha, and inspired fiction.

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Columbia Plateau Culture Area Rock Art Bibliography

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Abstract *Columbia Plateau rock art has been the subject of intensive study for more than a century. Some of the earliest research was done as part of a large-scale scientific archaeological expedition from the University of California, but other recordings were done by avocationalists who were intrigued with the many carvings and paintings lining the cliff faces along the Columbia River. Of course, some early avocationalists' studies are little more than flights of fancy, trying to attribute the rock art to marauding Viking warriors or Indian sun-worshippers, but several avocationalists left records that remain the basis for twenty-first century research projects. Here, we summarize the history of research into Columbia Plateau rock art and present it as a matrix organizing the hundreds of references provided herein.*

Keywords
Columbia Plateau, Columbia River, rock art, rock imagery, history of research, bibliography.

Foreword

William D. Layman

Contemporary rock art researchers build their respective contributions on the shoulders of early informants, previous scholars, and, stretching back in time, the individual makers who brought their work to life on stone. This regionally-specific article offers a vast array of citations that are scattered throughout the Columbia Basin and Plateau in a multitude of holdings—tribal cultural resource repositories, state archaeological records, federal agencies, museum and educational institutions, and personal libraries. Though many books are accessible to the public, and an increasing amount of information is available on the Internet, much of the relevant research is tucked away in reports, historical and archaeological journals, conference proceedings, newsletters, magazines, and newspaper archives. Adding to the trove of publications, numerous dissertations, theses, and unpublished manuscripts sit on shelves or are packed away in files, awaiting discovery by new generations of researchers.

Here three distinguished leaders in American rock art studies illuminate the history of rock art traditions within the Columbia Plateau Culture Area. Notably, each author is a recipient of the American Rock Art Research Association's highest award for lifetime achievement. Their cumulative impact in the arenas of scholarly contributions to the field, documenting sites, engaging in conservation work, and promoting education has been long appreciated by their peers.

The article's primary author, Leigh Marymor, is like a modern-day medieval scribe spending early mornings and late evenings patiently adding citations and links to the database he has created, now hosted online by the Museum of Northern Arizona as the Rock Art Studies Bibliographic Database. David A. Kaiser's finely honed research and writing skills over the last twenty years give all his work an enduring place in the rock art literature of the Columbia Plateau and the Plains. The article's third author James D. Keyser's lifelong devotion to the field is recognized by professional and lay audiences throughout the world through his numerous contributions including his authoring and co-authoring in excess of 100 articles and books within the realm of rock art and biographic imagery.

Marymor's strong pull to gain a full sense of the world's rock art literature opened the doors to what has become an enduring commitment to offer his work freely to others. Beginning in the early 1990s, he ditched the use of hand or type-written lists in favor of using rudimentary database software then available for use on early versions of home computers. Once having mastered the right software, Leigh was able to make magic happen. With a few instructions and a tap of a key, rock art professionals, students and amateurs alike, would forevermore save enormous amounts of time and effort by more easily accessing citations and relevant resources. This work of generosity, persistence, and creativity has resulted in strengthening the level of scholarship across the board by virtue of its completeness; no longer would it be excusable to ignore what others had already contributed to the field.

Marymor is known to assist fellow researchers in accessing relevant source materials for their projects. After a time, this inspired him to collaborate on the publication of several regional and thematic rock art bibliographies. In this article readers can see at once the sum total of present references of rock art found within the Columbia Plateau cultural area. Keyser and Kaiser's discussion of the region's rock art history provides a narrative that is refreshingly new to the field. In particular, it underscores the Columbia Plateau area's importance in documenting the intentions and motivations of those who have used this form of expression, especially with early ethnographic contributions from individuals such as Canadian anthropologist James A. Teit.

The variety of subjects and headings covered within the article is impressive—readers will not only find ethnographic references and classic studies, they will see a host of various citations showing advances in dating technologies, rock art conservation efforts, and numerous topics that shed additional light on the field. If one were to wish going beyond the bibliography published here to find more specific groupings of themes and places, the online database is only a step away.

So strong is the appeal of this age-old form of Indigenous expression, that thousands of amateurs and professionals alike regularly log on to the Museum of Northern Arizona's Rock Art Studies Bibliographic Database. Growing validation of the work happens every time an individual utilizes the site.

The field of rock art studies is simply like none other, combining stunning works of beauty with unending streams of images and panels that have been painted, scratched, etched, abraded, or pecked on a multitude of rock surfaces. The imagery gives voice to humankind's intimate relationship to place and cultural life. The incredible number of aboriginal sites throughout the world raise fundamental questions about the origins of symbolic thought and expression. We are deeply drawn to the histories revealed by various sites—their relationship to past and present Indigenous cultures, the themes and styles which are expressed within them, and the stories people have gathered about them. To witness rock formations upon which the images are displayed—cliffs, caves, shelters, fallen rock, and even the boulders that stand alone in the landscape—is good for one's eyes and spirit, opening pathways of further inquiry.

Recent trends in the field indicate signs of health and advancement. Ethics matter more than ever, professional research grows sharper, and Indigenous tribal people are making their voices known (e.g., see *Talking with the Past: The Ethnography of Rock Art*, Keyser, Poetschat, and Taylor 2006). Increasing numbers of North American Tribes are training their own rock art specialists who operate within traditional and ethical guidelines generated by culture-bearers of their respective communities. To the disappointment of some, significant contributions may never find their way into bibliographies such as this. Nor will they be necessarily accessible to the public writ large, though researchers, upon being vetted, may be given restricted permissions to carry out specified work. Such sovereign tribal positions can be understood both within the context of Indigenous historical trauma as well as within the context of the fragility of the sites themselves. The combination of unintentional wear and tear, modern day unregulated cultural tourism, thoughtless postings of site locations on social media, and willful acts of vandalism create a mix of increased vulnerabilities facing cultural resource sites throughout the continent. It is worth hearing the sentiments of contemporary Native people. Mid-Columbia elder Arlene Buck spoke to the importance of rock images in her introduction to a 1994 exhibit created by the Wanapum Priest Rapids band entitled *Sacred Stones*: "These images have been locked inside our lives for protection and safety… they are reminders of what is holy."

A bibliography such as this is a story within its own right, one that carries hundreds of smaller narratives written by observers and researchers who, like the initial makers who took paint and tools to stone, have possessed a passionate interest to express their findings for others to see, using paper and ink rather than rock.

Rock Art—A Multidisciplinary Field of Study

Leigh Marymor

The study of rock art embraces wide ranging interests in the origins and development of human capacities for symbolic thought, communication, symbol making, ceremonial and religious expression, and more. The particular focus for the field of rock art study is on the multiplicity of cultural markings that are found in natural landscape settings on enduring rock-supports. Rock art expressions are bracketed in time from early markings on stone that have been dated in archaeological context to around 100,000 B.P.[1] through prehistoric, protohistoric, and historic times. Rock art is generally understood to include "non-utilitarian anthropic markings on rock surfaces, made either by an additive process (pictograms[2]) or by a reductive process (petroglyphs[3])" (International Federation of Rock Art Organizations Editorial Board 2003[4]). Portable rock art can be found on painted or incised pebbles and plaquettes, and is referred to as mobiliary art. In addition to rock engravings and rock paintings, the field of study includes rock features created on a landscape scale. Geoglyphs, large ground-based motifs formed by alignments of stones, and intaglios, formed by the removal of ground materials that result in negative designs, are two examples of rock art on a landscape scale. Other rock features of interest include cairns, earthen mounds, petroforms, and the like. The field also encompasses interest in monolithic rock structures (megaliths, dolmen, stelae, passage tombs, standing stones, etc.) especially when these incorporate engraved or painted elements. And finally, culturally-storied landscapes and landscape features are included in many rock art studies.

[1] Liritzis, Ioannis, Robert Bednarik, Giriraj Kumar, George Polymeris, Ioannis Iliopoulos, Vayia Xanthopoulou, Nikos Zacharias, Asimina Vafiadou, and Maria Bratitsi (2019), "Daraki-Chattan Rock Art Constrained OSL Chronology and Multianalytical Techniques: A First Pilot Investigation" in *Journal of Cultural Heritage*, 37:29–43.

[2] Also known as pictographs, rock paintings.

[3] Also known as rock engraving; often involving abrasion, percussion, incising, etc.

[4] *Rock Art Glossary. A Multilingual Dictionary*, Brepols, p. 16.

Many Native American culture-keepers within the Columbia Plateau and beyond are rightfully sensitive to the use and mis-use of the term "rock art," and some have suggested that the term "rock image" is more suited to the imagery found in their traditional lands.

The term "rock art" used to describe this field of study emerged in the first quarter of the twentieth century in English language literature. At the same time, "art rupestre" and "arte rupestre" were in use in French and Spanish literature.[5] Prior to this, terms like "hieroglyph" and "picture-writing" were (mis-)used to describe cultural markings on natural rock supports by early explorers and prehistorians. The term "rock art" gained currency in reaction to the earlier terms that fell short of encompassing the many cultural motivations expressed by peoples from around the world over the passage of the millennia.

"Rock art" has become a convenient and familiar term, but it is also loaded with uncomfortable post-colonial connotations. Rock art researchers are aware of this and have proposed, struggled with, and argued about alternatives for a long time.[6] Of the many alternative terms that have been proposed, none have gained a foothold that might dislodge the familiar term "rock art" as the accepted nomenclature to describe the field of study. Some of the alternate terms proposed include: rock-art, rock writing, rock images, cultural markings, rock representations, graphic rock manifestations, and picture-writing.

A singular exception to the use of the term "rock art" is the term "quilca" whose regional adoption has been vigorously advanced by Peruvian archaeologist, Gori Tumi Echarvarría López.[7] Echarvarría Lopez makes the case for use of the term as follows:

> The category "quilca" should be used to universally refer to the graphic phenomenon without considering the exclusivity of any material. Quilca is any graphic manifestation in Peruvian archeology and the term categorizes the phenomenon itself, allowing its study and research without conceptual restrictions. Pictograms, petroglyphs, geoglyphs and mobile art with rock tradition, the four classic objects of "Peruvian rock art" are quilcas, regardless of their intrinsic material properties or artifactual nature, since they are cultural objects that carry plastic and graphic manifestations. This definition also covers any "artistic" form sanctioned for its quality or aesthetic quality, manufacturing or cultural correspondence, whether assigned or self-defined, such as the so-called "Chavín art," "Tiwanaku art," "Shipibo art" or any other "art" whatever the case, which can and should be considered phenomenologically similar to the manifestations referred to as "rock art," from which they have been historically separated, forced by the tacit conditioning of Eurocentric ideology. [Translation to English by GoogleTranslate]

The successful normalization of the term to describe Peruvian graphic rock manifestations can be appreciated by the numbers of Peruvian publications using the term in their titles—the Rock Art Studies Bibliographic Database (RASBdb) lists 76 books, manuscripts, and articles published beginning in 1990. The term "quilca" can be found in the titles of approximately 7% of all Peruvian literature cited in the RASBdb. In comparison,

[5] German = *felsbilder*, *felskunst*. Norwegian = *bergkunst*. Russian = *наскальное искусство*, etc.

[6] "One of the oldest debates in rock art studies is over the term 'rock art' itself," Breen Murray (2005), *La Pintura* 32(2):7.

[7] Echevarría López, Gori-Tumi (2016), "Quilca" y "Arte Rupestre," "Disquisiciones en el Contexto del Arte, la Arqueología y la Ciencia Perúana" in *Arqueología y Sociedad*, 31:11–22. Lima, Perú: Museo de Arqueología y Antorpología, Universidad Nacional Mayor de San Marcos. <https://www.academia.edu/33798174/_Quilca_y_arte_rupestre_disquisiciones_en_el_contexto_del_arte_la_arqueolog%C3%ADa_y_la_ciencia_peruana>. Accessed 15 May 2022.

one of the more preferred alternative terms to "rock art" that has gained some currency over the same time period, "rock image," appears in the titles of .13% of all of the world's titles listed in the RASBdb. The future of the wide adoption of the term "rock image" in publication appears to be in its early days locally on the Columbia Plateau with seven occurrences appearing in the RASBdb, these authored by four researchers.

In their discussion of "What is Art," David and McNiven (2018)[8] accept that the definition of art in its diverse manifestations implies the "expression or application of human creative skill and imagination…," but they underscore that aesthetic value, however culturally defined, does not imply that rock images were primarily created for their beauty and emotional power. Recognizing that the intent of rock art expressions is frequently unknown to the modern day viewer, they recognize a host of motivations found across a wide range of cultural groups (e.g., marks of ancestral or spiritual power, increase and maintenance of rituals, presence of ancestral beings, passing of ancestral knowledge to initiates, etc.). Summarizing the shortcomings with the term "rock art," they observed that "By reducing image-making to 'art,' we normalize the West's notion of imagery and distance those of others, exoticizing the latter in the process."

An important ethnographic contribution to discussions about rock art (rock images) in which Indigenous worldviews are held front and center resulted from a conference convened in 2002 hosted by the Oregon Archaeological Society. The conference brought together rock art scholars from around the world with tribal traditionalists from the lower Columbia River region to discuss rock art, both locally and further afield. The resulting publication, *Talking with the Past: The Ethnography of Rock Art* (Keyser, Poetschat, and Taylor, editors, 2006) engendered spirited discussions among scholars, authors, and elders and provides a fresh look at the role of rock art from around the world.

Professional values in academic study and land management have been evolving in the United States commencing with the Antiquities Act of 1906, which was succeeded and greatly broadened by the Archaeological Resources Protection Act (ARPA) of 1979 which criminalizes the theft or destruction of archaeological resources, including rock art, on public lands. Subsequent laws, especially the American Indian Religious Freedom Act of 1978 and the Native American Graves Protection and Repatriation Act (NAGPRA), have enshrined Native American rights of protection for sacred heritage and sacred landscapes on federal lands, as well as rights of return of human remains and sacred objects held within institutional collections. These federal laws coupled with the ground swell of grassroots cultural empowerment movements on the rise in the United States beginning in the 1960s and 1970s (e.g., "Red Power," the American Indian Movement, the occupation of Alcatraz Island, Native American Studies curriculum in university courses, etc.) have led to the normalization of Native American consultation in management decisions related to Native American intellectual and property rights on state and federal lands. Increasingly, archaeological research has moved away from purely academic agendas. Today, archaeological research (including rock art research) is carried out in service to Heritage Management, where ever more frequently Native American voices and concerns set the agenda.

The centrality of concern for "right relationship" between Indigenous peoples' worldviews, intellectual and real property rights, and rock art research is evidenced by the large and ever-growing body of literature on this topic. A subject keyword search of the Rock Art Studies Bibliographic Database using the search term "conservation" recently returned 4,110 citations culled from more than 47,250 citations that populated the database at that moment in time. Within this broad topical search, many terms were found

[8] "What is Art?" In *The Oxford Handbook of the Archaeology and Anthropology of Rock Art*, p. 3. Oxford University Press.

representing Heritage Management issues and Native American concerns. The list below is helpful in directing a focused search of the rock art literature concerned with these issues:

Advocacy
- Bureaucracy
- Conservation District
- Conservation easement
- Fundraising
- Grassroots
- Community organizing
- Land Trust
- Land acquisition
- Trustee
- Law enforcement
- Prosecution
- Laws
- Litigation
- Valuation
- Legislation
- Networking
- Private
- Public
- Partnership
- Alliances
- Collaboration
- Government/Sovereign Nation
- Public/Private
- Political and public awareness
- Political action
- Politics.

Ethics
- Academic integrity
- Code of ethics
- Colonialism
- Decolonialization
- Post colonialism
- Conflicts of interest
- Control and power
- Cultural appropriation
- Exploitation
- Professional vandalism.

Community Engagement
- Community involvement
- Aboriginal Ranger Program
- Citizen participation
- Citizen scientist
- Descendant communities
- Indigenous intellectual property
- Appropriation
- Commoditization
- Indigenous property rights
- Cultural property
- Native Title
- Indigenous values
- Custodianship
- Stewardship
- Economic benefits
- Community development
- Consumerism
- Marketing
- Landscape values
- Oral history, interview, narrative, story
- Outreach
- Public relations
- Repatriation
- Traditional knowledge
- Well-being.

Cultural Landscape
- Historic landscape
- Social landscape.

Cultural Resource Management (CRM)
- Archival records, storage
- Area of Cultural and Environmental Concern (ACEC)
- Best practices
- Harm, do no
- Reversibility
- Condition Assessment
- Geological risk assessment
- Geomorphic stability assessment
- Risk, Risk map
- Rock Art Stability Index (RASI)
- Conservation, techniques
- Consultation
- Disaster planning
- Documentation
- Recording form
- Environmental Impact Statement (EIS)
- Evaluation

- Interagency cooperation
- Interpretation
- Etic/Emic
- Multivocality
- Intervention
- Mitigation
- Inventory
- Database
- Geographical Information System (GIS)
- Management plan
- Monitoring
- Color monitoring
- Multiple use
- Significance
- Site record
- Special Protection Area
- Stakeholder
- Strategies
- Survey
- Visitor study.

For a deep dive into the most current thinking about Heritage Management issues offered by a wide spectrum of prominent rock art researchers from around the world, we recommend *Networking for Rock Art. Global Challenges, Local Solutions*, edited by Neville Agnew, Janette Deacon, Nicholas Hall, Terry Little, Tom McClintock, Peter Robinson, Sharon Sullivan, and Paul Taçon (2022[9]).

Rock Art Studies Bibliographic Database

The Rock Art Studies Bibliographic Database (RASBdb)[10] is an open access, online resource that fulfills the need for a searchable portal into the world's rock art literature. Geared to the broadest interests of rock art researchers, archaeologists, students, cultural resource managers, and the general public, the RASBdb makes rock art literature accessible through a simple search interface that facilitates inquiries into multiple data fields, including authors' names, title and publication, place-name keyword, subject keyword, ISBN/ISSN, and abstract. The results of a data search can further be sorted by any of the data fields, including: authors' names, date, title, and so forth. An ever-increasing number of citations within the database include web links to online versions of the reference cited, and many citations include full authors' abstracts.

The data compilation has been undertaken by Leigh Marymor with the year 2022 marking the 29th year of continuous revision and expansion of the data. Over 47,400 citations are currently contained in the database. Materials cited in the RASBdb have been culled from hundreds of sources. These include: books, periodicals, journals, conference proceedings, gray literature (unpublished documents), bibliographies, public and academic library catalogs, institutional repositories and archives, private libraries, academic search engines, internet search engines, and social media. A few words about materials that are de-emphasized in the RASBdb follow.

Newspaper accounts have not been a primary focus of the literature included in the Rock Art Studies Bibliographic Database primarily due to the copious numbers of such accounts and the limited resources of time and energy available for the compilation of the RASBdb project as a whole. This is not to say that newspaper articles are not of great interest to the historiography of rock art research and to specific research interests pertaining to regional or thematic concerns. Researchers will discover a fair number of newspaper citations in the "Columbia Plateau Culture Area Rock Art Bibliography," but our list is certainly not complete.

For researchers who would like to dig deeper into newspaper accounts, the most efficient access is found through use of internet-based search engines, such as Newspapers.com. The primary drawback involved in using archival

[9] Getty Conservation Institute, Los Angeles, CA. <https://www.getty.edu/conservation/publications_resources/pdf_publications/networking_for_rock_art.html?fbclid=IwAR3V1LA8JUlNjpjM2RGL4jMrFsEpeoZz7o4dJxYTpclT4E7D-d6w_jlUZnvw>.

[10] The Rock Art Studies Bibliographic Database can be searched at: <https://musnaz.org/search_rock_art_studies_db/>.

search engines is that they are often protected by paywalls. As such, unless the researcher has institutional access, one will need to find a library that offers access to the search engine, or as a last recourse, pay for access. As of this writing, Newspapers.com offers a seven-day free trial subscription.

Two publications that contain excellent references to early newspaper accounts pertaining to the Columbia Plateau Culture Area are cited in our bibliography; for these see Keo Boreson (1976) and Roderick Sprague (1967).

There are often many magazine references to primary scientific research. Every attempt is made to include the primary research, if not all of the dissemination of news about that research through magazine accounts.

Unpublished conference presentations are frequently unavailable to researchers, except when directly available from the presenter. As such, unpublished conference presentations are of limited usefulness to rock art researchers and for the most part are not cited in the RASBdb. An exception is made for draft manuscripts of unpublished presentations that have been placed on file at public repositories such as State Historic Preservation Offices (SHPOs).

Published conference abstracts in the absence of publication of the complete paper are the next best thing. At a minimum, a researcher can learn something about who in the field has been working with particular rock art sites or research issues, and gain a sense of what held currency as of the date of the conference. Although there are far too many published abstracts to include in the RASBdb based on the compiler's limited time and energy, exceptions have been made for some conferences.

Book reviews when well-conceived and written not only describe a publication's content, but contribute to the discussion by amplifying issues or providing constructive criticism. Constraints on the RASBdb compiler's time and energy have precluded citations to most book reviews, but every attempt has been made to include a citation to the reviewed publication. A Google search of a publication's title will often include citations to a publication's reviews, as well as to the publication itself.

Digital media including videos, photographs, PowerPoint presentations, and the like are not cited in the RASBdb.

The RASBdb first launched online as a joint project of the Bay Area Rock Art Research Association and the University of California's Bancroft Library. After thirteen years of collaboration, the project found a new home and collaborator at the Anthropology Department at the Museum of Northern Arizona. The "Columbia Plateau Culture Area Rock Art Bibliography" results from an export of data from the RASBdb and captures a freeze-frame of rock art research as compiled here in the year 2022.

The online version of the RASBdb at the Museum of Northern Arizona is updated continually, and we refer the reader to that resource for up-to-date bibliographic data revisions and additions.

The History of Columbia Plateau Rock Art Research—The Area and its People

James D. Keyser and David A. Kaiser

The Columbia Plateau (Figure 1) is one of the lesser-known culture areas of western North America, especially when compared to such famous regions as the Plains, Northwest Coast, and American Southwest. The area encompasses the watershed of the Columbia River and its major tributaries including the lower Snake River from the Hells Canyon downstream, the Salmon River of central Idaho, and the Clarks Fork of the Columbia River and Flathead River of western Montana. In addition, it also includes the Fraser River drainage in south-central British Columbia. The area is bounded on the west by the Cascade Range, on the north by the Mackenzie/Fraser river drainage divide, on the south by the Snake River Plain in southern Idaho and the northern Great Basin in Oregon, and on the east by the Rocky Mountains. Along the

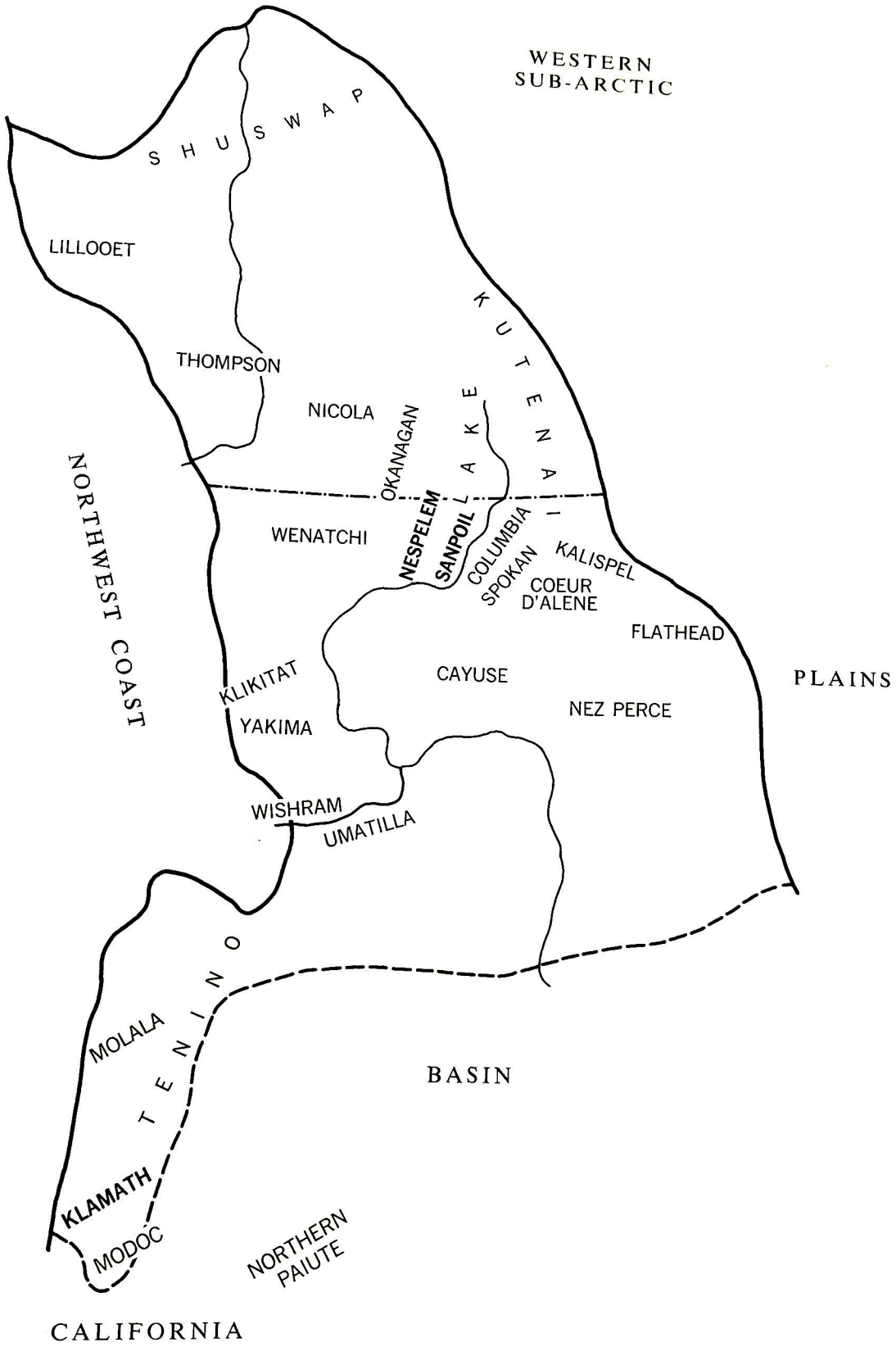

Figure 1. Map of the Columbia Plateau Culture Area. Map courtesy of *The Native Americans: Prehistory and Ethnology of the North American Indians* by Robert F. Spencer, Jesse D. Jennings, and others; Harper and Row, publishers; New York, Evanston, and London, 1965.

Cascade Range in Oregon, the region extends southward to encompass the Klamath Basin in far southern Oregon and extreme northeastern California.

The area is defined by a mild, dry continental climate with hot summers and cold winters. The northern Columbia Plateau is heavily forested with dense stands of fir and pine and characterized by major streams and rivers flowing through narrow valleys. Numerous long, deep glacial lakes occupy glacially scoured portions of narrow, north-south trending valleys. The central and southern portions of the region are an ancient basalt plateau formed by successive lava flows extruded from Miocene volcanoes between 10 and 30 million years ago. In some places these successive basalt flows are more than ten thousand feet thick. The Columbia River and its major tributaries have cut deep canyons in these basalt flows forming dramatic basalt-rimmed gorges extending for miles. In the central part of the region, miles of dry channels are the remnants of Pleistocene floods caused by the periodic emptying of Glacial Lake Missoula. The southern margin of the region is rimmed by a series of low mountain ranges that separate the area from the northern Great Basin.

Tribal groups living in the Columbia Plateau in historic times included representatives of six distinct language groups, including the Salishan, Athapaskan, Sahaptian, and Chinookan language families, and the Kutenai and Klamath-Modoc language isolates. Keeping in mind that each of the Tribes in the area had specific beliefs, customs, ceremonies, and socioeconomic systems that differed slightly from their neighbors, in general all of the Tribes in the region shared more in common with one another than they did with Tribes from other regions. These groups lived in autonomous villages (or bands in areas like western Montana and central Idaho) to whom members gave their allegiance and from which they received their identity. Villages or bands were led by councils who "governed" through charisma and group consensus rather than true political power. Hunting, fishing, and gathering were key elements of Columbia Plateau economy, but trade served to spread items from distant areas throughout the region. Large-scale trade fairs took place at major fishing villages found throughout the region such as those at Celilo Falls, Kettle Falls, and on the lower Fraser River, where products arrived from the Northwest Coast, northern California, the Northern Plains, and the Great Basin. Key villages were occupied year-round, and large pit houses or plank houses were typical habitations at such sites for at least the last five thousand years. Columbia Plateau religion centered on the vision quest and various shamanic rituals and ceremonies, with rock art occupying a central role in many of these religious activities.

The Rock Art

Columbia Plateau rock art has been the subject of intensive study for more than a century. Some of the earliest research was done as part of a large-scale scientific archaeological expedition from the University of California, but other recordings were done by avocationalists who were intrigued with the many carvings and paintings lining the cliff faces along the Columbia River. Of course, some early avocationalists' studies are little more than flights of fancy, trying to attribute the rock art to marauding Viking warriors or Indian sun-worshippers, but several avocationalists left records that remain the basis for twenty-first century research projects. Here, we summarize the history of research into Columbia Plateau rock art and present it as a matrix organizing the hundreds of references provided herein.

Early Scientific Study

Rock art was sporadically mentioned by early explorers and settlers describing their new landscapes. Most descriptions were brief and vague, telling of "rude pictures of men and animals scratched on the rocks" (Abbot 1857:94). Some reports, however, contain the

earliest illustrations of rock art in the region (e.g., Pickering 1848:42; McClellan 1853:Image 23). The earliest detailed study of rock art in the Columbia Plateau was conducted by the ethnologist Albert Gatschet (1878) who sketched and made detailed notes about Oregon's Patton Valley petroglyphs. Unfortunately, he never published these records, but they are now filed at the Smithsonian Institution.

For the first third of the twentieth century, rock art research of lasting import was conducted primarily by university-trained or supported scholars. The earliest detailed research pertaining directly to rock art in the region was the work of James A. Teit (1896, 1900, 1906, 1909, 1918). Although he was a self-educated ethnographer, under the sponsorship of Franz Boas of Columbia University, between 1896 and 1918, Teit wrote at least four detailed studies concerning pictographs in the territories of individual interior Columbia Plateau Salishan Tribes. He then summarized this work (and added additional data) in a 1930 publication concerning all interior Salishan Tribes. But Teit was not the only scholar interested in these images. Contemporaneously, Morton Elrod, a biology professor at the University of Montana, conducted a detailed study of the Painted Rocks site (later designated 24LA1026) on Flathead Lake (Elrod 1908). Bringing formal scientific method and a professional photographer's "eye" to his study, Elrod published photographs and a drawing of more than 200 hundred images at the site that rival any recordings done before the late 1970s. Between 1932 and 1935, Luther Cressman, an anthropology professor from the University of Oregon, recorded several rock art sites in the southern Columbia Plateau (Cressman 1937). These included both Cascadia Cave and Picture Gorge, both of which have been the subject of major studies more than 80 years later (Poetschat et al. 2010; Hann 2013a). Finally, one major scientific expedition was undertaken by the University of California, and it recorded rock art at several major sites around the confluence of the Deschutes and Columbia Rivers (Strong and Schenck 1925).

These early scholarly studies range from detailed descriptions of images, sometimes with accompanying ethnographic information, to more basic descriptions of sites and images that were obviously thought to be of secondary import to data collected from controlled excavations. These first recorders primarily used freehand black and white drawings to document their subject, although Elrod's article has ten excellent black and white photographs of the imagery at Painted Rocks. Unfortunately, many of the early drawings are isolated images without panel context (e.g., Strong and Schenck 1925:78), greatly reducing their value to later scholars.

Fanciful Interpretations

Sharing this early period of investigation were self-styled experts who believed the pictographs and petroglyphs of the region were either not the work of the Native inhabitants or represented a long-lost religious cult that no longer survived in Indian cultures. One of the most vocal of these was the self-proclaimed "Professor" Olaf Opsjon, who lived near Spokane. In more than two dozen articles published in local newspapers (but also appearing as far away as the *New York Times (NYT)*) (*NYT* 1926; Finley 2005), Opsjon claimed that the rock art of the region was runic writing done by Viking raiders commemorating their epic battles with local Indian Tribes (Clark 1971:191). He even claimed to have discovered a burial mound containing fallen Viking warriors, though he never produced any artifacts or excavation reports. Even when confronted with the testimony of Herbert J. Spinden, an anthropologist at Yale University's Peabody Museum who was knowledgeable about rock art, that indicated these images were made by local Tribesmen, newspapers continued to print Opsjon's flights of fancy. The one contribution Opsjon did make to regional rock art study was an amazing set of early photographs (1919) of the rock art at

Vantage, Washington, on the mid-Columbia River, as well as smaller suites of imagery from a few other sites.

A similar interpretation of Indigenous art through one's own cultural lens was promoted by Yasin Raja, a Pakistani student at the University of Oregon, who claimed the art was carved by early Buddhist monks (Hauser 1957). This interpretation was further supported by K. V. Krishnamurthy, a visiting engineer from India working with the Army Corps of Engineers (Anonymous 1957). Other than reflecting the racial and cultural biases of the proponents and the times, the idea that Vikings or Buddhist monks contributed to Columbia Plateau rock art is simply nonsense.

Finally, closer to home, noted Oregon historian John Horner published numerous newspaper articles and book chapters on regional rock art in the 1920s. These included many drawings of the art. His interpretations were also, unfortunately, quite fanciful, touching on Mexican calendars and again on early European explorers. However, his primary interpretation, given weight by his scholarly credentials, was an overarching cult of sun-worshippers. He often promoted this idea, even visiting pictograph sites in the Columbia Gorge with Native people to inform them, rather than ask them, what the art meant (Horner 1925). This cultural ignorance and arrogance was the cornerstone of many early misinterpretations of the Indigenous art in the region.

Avocationalists Become Involved

The amount of rock art in the Columbia Plateau, especially near sizeable cities and towns along the Columbia River, was simply a subject too large not to attract attention. Thus, beginning just before World War II, and increasing in popularity following the war, avocational rock art recorders began documenting rock art sites along the Columbia River and in the interior of British Columbia. This period began in the late 1920s and continued until the late 1970s. The first of these people to leave records worthy of professional consideration was Harold Cundy (1938), a businessman and member of the Columbia River Archaeological Society, who made both black and white and watercolor sketches of imagery in the mid-reach of the Columbia River and surrounding areas. Cundy also took photographs of sites and produced a manuscript that was donated to the Washington State Historical Society but unfortunately was never published (Layman 1998). Cundy also produced a second unpublished volume that was more focused on his ethnographic explorations and work with Indian myths. Cundy's work was state of the art for its time, and his drawings are still used today for some of the imagery that no longer survives.

For two decades spanning the period from the late 1940s to the early 1960s, to the north in British Columbia, John Corner (1968), the provincial apiarist, was amassing a record equal to Cundy's. In that period, Corner recorded more than 100 sites in the interior of the province and published the results of his work in 1968. Corner's book still remains a key source for British Columbia pictographs.

During this "avocational" period, rock art recording grew in popularity because of a combination of factors including a growing population involved in leisure-time activities (including various archaeological projects), increasingly popularized photographic technology, and the realization that industrialization of the Columbia River region was rapidly destroying much of the rock art resource. In the three decades between 1950 and 1980, there were more people doing more rock art recording in the Columbia Plateau than at any time before or since. Photography was often the preferred method of recording, though drawings of various sorts were still frequently produced, and many of the more deeply pecked petroglyphs were recorded with rubbings. The practice of "chalking" petroglyphs became popular to help images stand out and show up

better in photographs, but doing such chalking often resulted in incomplete recordings and sometimes damaged the images. One horribly misguided effort in the Hells Canyon painted over the actual native designs with whitewash for this purpose (Keyser 1992:104). The result usually obscures (and sometimes even completely masks) the actual prehistoric image and is often disastrous for the art itself. Many Hells Canyon sites remain badly damaged today, with pictographs only incompletely visible beneath this historic whitewash overlay.

In addition to Cundy and Corner, there were several equally important avocational recorders during this period. Susan Barrow did a major project prior to the filling of the Wanapum Reservoir which included a large set of tracings of the several sites at Vantage, Washington, while Arlie Ostling did another large set of tracings of the Whale Island petroglyphs. Others included Jeanne Hillis, Malcolm and Louise Loring, Greg Bettis and Faye Speciale, and Howard F. Hughes who worked along the lower Columbia River from Kennewick to The Dalles. Publications written by or about these people, and various online compilations, document their avocational fervor, and their work still forms the basis for much current professional research in the region (Cundy 1938; Corner 1968; Loring and Loring 1982; Woodward and Speciale 1982; Bettis 1986b, 1987; Keyser 1994; Hughes 2020).

More recently, several "albums" have been compiled to document photographic records of sites that were inundated by the dams built on the Columbia River. Probably the most complete of these are major compilations of the rock art at Whale Island and the Vantage sites (Layman 2013, 2015), which lay out the history of recording at those sites and pull together all the known imagery from them. Until the completion of these albums, neither of these two key site complexes had been well-documented in the published record.

An even more recent such album, with a slightly greater geographic coverage, and a more singular focus, is a two-volume compilation by Steven Hughes (2020), who chronicles the "lost" rock art of the lower Columbia River. His fascinating compilation includes more than 470 photographs taken by his father in the late 1950s to document at least 20 rock art sites that were being inundated by Columbia River dams at that time. Among his photographs are images that we have never seen before, including what appears to be a sculpture of a turtle—the largest Columbia River sculpture so far known.

Professional Rock Art Scholarship

Throughout the period of avocational interest, a few professional anthropologists—often conducting thesis research as graduate students—maintained professional involvement in Columbia Plateau rock art research. Some of these students were cultural anthropologists who interviewed members of several Tribes and obtained information about why rock art was made and used. These included, Walter Cline, who recorded and published pages of data about rock art from his interviews with Southern Okanagan people in 1938 (Cline et al. 1938) and Norman Lerman, whose interviews with other Okanagan people for his M.A. thesis published in 1952 recorded significant ethnographic information about the making and use of rock art (Lerman 1954). About this same time, Carling Malouf, a University of Montana anthropology professor, partnered with Thain White, a Montana avocationalist, to record pictograph sites in western Montana, but Malouf's even more important contribution was the effort to document the beliefs and traditional knowledge of both Salish and Kootenai elders about the pictographs in the Flathead Lake region (Malouf and White 1952, 1953).

One major government-sponsored project was undertaken in the early 1950s to record rock art in The Dalles area of the lower Columbia River. That effort was to sketch and photograph as many of the petroglyphs and pictographs as possible in the area to be flooded by The Dalles Dam. The project was initiated by David Cole and Jack Hegrenes in 1953 as part of the River

Basin Survey sponsored by the National Park Service. Their publication, "Report on Petroglyphs of The Dalles Reservoir," used freehand drawings and photography to record panels and to rank significant rock art for removal before the site was inundated (Cole and Hegrenes 1953). Shortly thereafter, Mark Hedden, an anthropology graduate student, made relatively detailed records of additional sites using freehand sketches, rubbings, and a few black and white photographs (Hedden 1956a). Unfortunately, the two monographs produced by these scholars have never been published, and their work is therefore neither widely known nor often cited.

However, other archaeology graduate students began to study particular sites or site complexes from the 1950s through the 1970s. These included H. Thomas Cain (1950), Paul Nesbitt (1968a, 1968b), Doris Lundy (1974, 1979), Rick McClure (1978, 1979a, 1979b, 1981, 1984), Keo Boreson (1976b, 1984; Boreson and Peterson 1985), and Larry Coburn (1975), who all wrote theses or dissertations focusing on complexes of rock art sites in various areas of the Columbia Plateau that provide a wealth of site information and imagery for current scholars. Of these students, only Boreson and McClure maintained an ongoing professional interest in the region's rock art by continuing to publish additional articles and summaries of recording projects. Additionally, Dan Leen, an independent professional rock art recorder working on various archaeological projects for the USDA-Forest Service, documented groups of sites from the Chief Joseph Reservoir on the upper Columbia River, the Hells Canyon area of the Snake River, and the Harney Basin, and assisted McClure on his work throughout the region (Leen 1984, 1988, 1991; Hann and Leen 2017).

Finally, two British Columbia studies deserve special mention. Baravalle did a rock art inventory of Kootenay Lake and published the results in 1981. This work added key new sites to the interior of the province. Then in the early 1990s, two anthropologists and a Native woman, Annie York, published a stunning study documenting Annie's traditional knowledge of pictographs in the Stein River valley of southwestern British Columbia (York et al. 1993). Showing the continuing value of present-day ethnographic information, the work with Annie York laid a foundation for the 2004 symposium sponsored by the U.S. Forest Service and Oregon Archaeological Society (OAS) in which top world rock art researchers met and talked with tribal elders from the lower Columbia River region about the pictographs and petroglyphs of that area (Keyser et al. 2006). Both of these studies show that a wealth of information about rock art still exists in traditional Native communities.

Concurrent with the fluorescence of research in the late 1970s, James Keyser began studying the rock art of western Montana and published several articles on sites in that area before authoring an overview of Columbia Plateau rock art in 1992. Since then, he has been actively working with a research team from the Oregon Archaeological Society to record rock art in the lower Columbia River region. This research has produced a series of eight monographs published by the OAS (Keyser et al. 1998a, 2004, 2008, 2018; Keyser and Poetschat 1998; Keyser and Taylor 2002; Keyser, Poetschat, and Taylor 2006; Keyser 2010; Keyser, Kaiser, and Minick 2018) and a number of site-specific research articles (Keyser 1989, 1992a, 2018; Keyser and Whitley 2000a, 2000b; Keyser and Poetschat 2004; Poetschat and Keyser 2007; Minick and Keyser 2018). In addition, several members of the OAS research team have co-authored articles with Keyser (Poetschat et al. 2003; Taylor and Keyser 2003; Taylor et al. 2008) and David Kaiser, another team member, has published his own research regarding the region's imagery (Kaiser 2010, 2016, 2017; Kaiser and Keyser 2010, 2018; Kaiser and Cleary 2020).

It was McClure and Leen, Boreson, and Keyser who began the direct tracing as the preferred method of recording rock art in the region in the late 1970s. These tracings on clear plastic sheets (and illustrations based on these) relatively quickly came to replace hand drawn or sketched images for most professional pub-

lications. Direct tracing continues to be used in more recent studies done by Keyser and his OAS research team and several other researchers. This is because the method is easily used to produce a copy of the image with maximum fidelity to the original. Likewise, it has the greatest flexibility for use in recording all types of rock art, from the most lightly scratched and abraded petroglyphs to deeply pecked images, bas-reliefs, and polychrome pictographs (Keyser et al. 2004, 2008; Keyser 2005:23).

More recently, however, with the advent of digital photography and use of the DStretch enhancement program, photographs have returned to prominence in Columbia Plateau rock art recording projects and publications (Figures 1–6). In fact, for sites containing primarily pictographs, recent projects have relied primarily on digital photography and enhancements (Minick and Keyser 2018; Keyser et al. 2019). Digital technology combined with DStretch enhancement capability promises to both speed up the recording of Columbia Plateau pictographs and improve the capability of scholars to capture many images that have been difficult to record until now.

Current Research Trends and Accomplishments

In addition to leading the national effort to integrate ethnographic and rock art research (e.g., York et al. 1993; Keyser and Whitley 2000a, 2000b; Cash Cash 2004; Hann and Bettles 2004; Keyser et al. 2004; David and Keyser 2008; Hann et al. 2010; David 2012a), Columbia Plateau scholars have made initial forays into other areas of research that currently occupy mainstream rock art scholarship in North America. Just previously mentioned is the use of DStretch enhancement for finding and recording many of the difficult-to-document pictographs that characterize much of the region. Dating efforts and studies of pigment composition have not been common on the Columbia Plateau. Possibly, the stylistic homogeneity across the area has rendered dating efforts less important than in other regions, especially when archaeological finds show that the basic Columbia Plateau imagery has existed for several thousand years (Copp 1980; Keyser 1992:18, 59–60). Conversely, determining what the prehistoric artists used for pigment and where they obtained it has a long history of research. Long before such practices would have been discouraged, Elrod (1908:6) reports that his party broke off a "few portions of the rock with the 'writings'" at 24LA1026 and returned them to the University of Montana where a chemistry professor determined the pigment to be iron oxide. Much more recently, MacDonald et al. (2019) have shown that artists in the Babine Lake area of the far northern Columbia Plateau harvested "aquatic microbial iron mats" that were then homogenized and heat-treated to enhance their color to a vivid red hue.

Possibly also because of the basic homogeneity of most Columbia Plateau rock art, analysis of style tends to focus on documenting how intrusive stylistic entities have interacted with the basic Columbia Plateau tradition. On the southeastern margin of the region, Don Hann (Hann and Leen 2017) has spent considerable effort investigating how Great Basin and Columbia Plateau Styles interact in the Blue Mountains region. Along the lower Columbia River, there has been intensive effort to identify how the Columbia River Conventionalized Style interacts with both the Yakima Polychrome and Central Columbia Plateau Styles (Keyser et al. 2008, 2019), and as part of this, to better identify some of the key characters in the Columbia River Conventionalized Style (McClure 1979b; Kaiser 2017; Keyser et al. 2019:77–84). Likewise, work on the eastern margin of the region has begun to explicate how connections to the northern Plains introduced the Biographic art tradition into the region where it was integrated into several cultures and modified in various ways (Keyser et al. 1998a; Cash Cash 2004; Loendorf et al. 2015).

Landscape analysis of rock art has recently become fashionable in the Columbia Plateau

and has ranged from looking at the site or even the panel itself as an expression of landscape (Keyser and Poetschat 2004; Loubser 2006; Keyser 2016) to understanding the placement of an entire style within the landscape as viewed by the artists who created the imagery (Whitley et al. 2004; David 2005). Trying to understand why sites occur where they do on the landscape and how sites differ from one another in the same landscape has become a recent focus of interest (Hann 2013a, 2013b; Kaiser and Keyser 2018; Delgado-Morris 2019; Keyser et al. 2019). Finally, some of the most in-depth landscape-oriented rock art research is currently being undertaken by Robert David, a member of the Klamath-Modoc Tribe and recent graduate of the University of California at Berkeley, who is exploring Klamath Basin rock art through an emic view of the Klamath-Modoc landscape (David 2005, 2010, 2012b; David and Conkey 2021).

Finally, the conservation and preservation of the numerous rock art sites in the region has been a focal point of research by a few scholars for the last two decades. Early efforts by Barbara Kennedy (1979) reported graffiti removal at one British Columbia site and the reattachment of a nearly detached painted slab at another, but we know of no follow-up study to determine the success of these efforts. Similar restoration efforts were conducted on a Columbia River site near Hermiston, Oregon, in 2019 (Loubser and Damp 2020). In the late 1990s two major condition assessments—with accompanying management plans—one for an individual site and the other for a group of sites have been conducted by Dean (1996) and Loubser (1997a, 1997b). Finally, in 1999, Loubser (2011; Loubser et al. 2000) established a long-term monitoring plan to evaluate the effects of changing air quality conditions on a group of pictograph sites in the Columbia River Gorge National Scenic Area. That study is still ongoing.

Lastly, although not research per se, the removal and protection of rock art resources threatened with inundation by the many reservoirs on the Columbia River and its tributaries has a long history on the Columbia Plateau. Efforts at removal and eventual repatriation in consultation with appropriate Indian groups, in some cases, range from the Wallula Stone, which was removed from ceded tribal lands to the Portland City Hall in 1897 and returned to the Umatilla Indian Reservation a century later, to the Vantage Petroglyphs, and the Temani Pesh-wa petroglyphs interpretive exhibit at the Horsethief Lake unit of Columbia Hills State Park, both of which have rescued dozens of images from inundation by federal reservoirs. Another, less well-known example is the Crooked River petroglyph boulder, which was moved from the bank of the Crooked River to Cove Palisades State Park above Lake Billy Chinook Reservoir in northwestern Oregon.

Summary

Given this long and complex history of interest in the pictographs and petroglyphs of the Columbia Plateau region and a vibrant history of research that continues to this day, this bibliography, which updates and expands a previous list of resources compiled almost fifty years ago (Boreson 1976a), is an essential tool for both the professional scholar and the avocationalist. We have built our own research libraries over decades and yet we still use Leigh Marymor's bibliography to find "out-of-the-mainstream" sources or to answer specific questions about particular citations. This work will find a place in the library of anyone interested in rock art of the Pacific Northwest.

IMAGES OF COLUMBIA PLATEAU ROCK ART.

Figure 1. Painted geometric image in the Central Columbia Plateau Style.

Figure 2. Yakima polychrome paintings consist primarily of red and white geometric images.

Figure 3. Cupules and simple geometric shapes are carved in pit and groove style petroglyphs.

IMAGES OF COLUMBIA PLATEAU ROCK ART. (cont.)

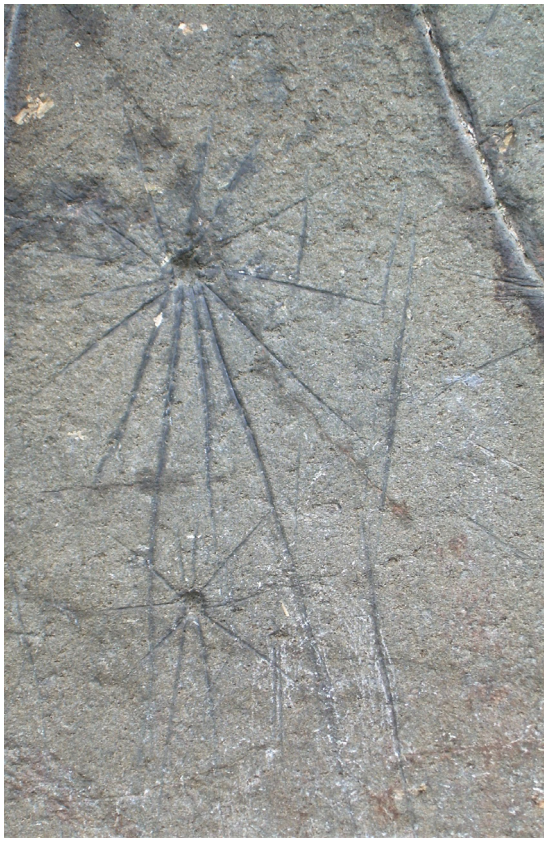

Figure 4 (top left). Incised starbursts in the Columbia Plateau Scratched Style.

Figure 5 (top right). Columbia Plateau Tradition art reaches as far as western Montana, as seen at the Kila site.

Figure 6 (bottom). Typical vision quest composition in the Central Columbia Plateau Style showing stick figure human under a rayed arc, paired with an animal. Colors enhanced with DStretch yre.

Columbia Plateau Culture Area Rock Art Bibliography

Leigh Marymor and David A. Kaiser

Aaron, Louise

1956a Reproductions Sought on Vanishing Carvings. *The Oregon Journal*, 29 November. Portland, OR.

Keywords: The Dalles, Columbia River, Washington. Northwest. United States. North America. Walter Schuck of the Oregon Archaeological Society campaigns to remove petroglyphs from The Dalles prior to inundation by the rising dam waters. *Biblio*.

1956b Ever Seen a Petroglyph? *The Oregon Sunday Journal*, 2 December, 52(39 Section C):6. Portland, OR.

Keywords: Columbia Plateau. Northwest United States. North America. *KBORE*.

Abbot, H.L.

1857 Report of Lt. Henry L. Abbot upon Exploration for a Railroad Route from Sacramento Valley to the Columbia River. *Reports of Exploration and Surveys to Ascertain the Most Practicable and Economical Route for a Railroad from the Mississippi River the Pacific Ocean*, 6(1):94. 33rd Congress, 2nd Session, Senate Executive Documents, Vol. 6, No. 78 (Serial no. 733). Washington, D.C.

Keywords: Columbia Plateau, northwest United States. North America. Early description of regional rock art, "rude pictures of men and animals scratched on the rocks." *MNA*.

Abraham, Meg, Dean J. Claire, Jim Hammett, and Mark Gilberg

2003 Targeting Graffiti. *National Center for Preservation Technology and Training (NCPTT) Notes,* Summer, 43:8. National Park Service, Cultural Resources, Department of Interior.

Keywords: John Day Fossil Beds National Monument, Oregon. Northwest. Columbia Plateau. United States. North America. Cultural resource management. Conservation and preservation. Laser removal of graffiti. *AATA*.

Aguilar, George W., Sr.

2005 *When the River Ran Wild!* Portland: Oregon Historical Society Press.

Keywords: Mid-Columbia River, northwest United States. Warm Springs. Tsagaglalal (She-Who-Watches). Death Cult (see pp. 230–231).

Ahl, W.W.

1923 *Manuscript on the Petroglyphs of Modoc and Lassen Counties.* File #58. Berkeley: Archaeological Research Facility, University of California.

Keywords: Modoc Lava Beds (CA-MOD-17), Fairchild Swamp (CA-MOD-19), Porcupine Valley (CA-MOD-20), Rattlesnake Canyon (CA-MOD-21), Willow Creek Valley (CA-MOD-161), and Dry Valley (CA-LAS-76), Modoc and Lassen Counties, California. United States. North America. Letter to Kroeber with sketches. These materials have been used by Julian Steward (1929), Heizer and Baumhoff (1962), and Heizer and Clewlow (1973) in their respective publications. *UCBARF, BSABSR*.

Altman, Julia

2011 Vandals Guilty—Idaho Rock Art Site, Restoration Pending. *La Pintura*, 37(4):14. Tucson, AZ: American Rock Art Research Association.

Keywords: Red Elk Rockshelter (10NP287), Lewiston, Snake River, Idaho. Columbia Plateau. United States. North America. Cultural resource management. Conservation and preservation. Vandalism. Legal prosecution. *LMRAA*.

Anonymous
1900 What Mean the Carvings? *The Oregonian,* February 25. Portland, OR.

Keywords: The Dalles, Columbia River Plateau. Washington. Northwest United States. North America. Portland, Oregon, Petroglyph.

Anonymous
1916 Indian Tells Story of City Hall Rock. *The Oregonian*, 25 January:3. Portland, OR.

Keywords: Columbia River. Northwest United States. North America. Wasco, Warm Springs, Yakama (Yakima) Indian. Vision quest. Ethnography. Each Indian youth visits petroglyph boulder at night by himself, cuts his sign on it, remains all night to insure a charmed life (per David Whitley, *INORA*, 2000). *Biblio*.

Anonymous
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Keywords: Portland City Hall, Oregon, Columbia River, northwest United States. North America. Wasco Indian. Petroglyph interpretation. Vikings.

Anonymous
1920 Picture Writing Found Upon Rocks. *The Oregonian*, 9 November:14. Portland, OR.

Keywords: Roosevelt (45KL14), Washington, Columbia River, northwest United States. North America.

Anonymous
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Keywords: Roosevelt (45KL14), Arlington, Columbia River, Washington. Northwest United States. North America. Early documentation and reporting. Petroglyphs chalked for photographs. *Academia.edu*.

Anonymous
1926 Columbia Runes Yeild Viking Saga. *The Oregonian*, 8 July:1–2. Portland, OR.

Keywords: Columbia River, northwest United States. North America. Vikings.

Anonymous
1929 Cliffs of Columbia Hold Keys to History. *The Oregonian*, 1 December:26. Portland, OR.

Keywords: Columbia River, northwest United States. North America. Early European carvings. Sun worship.

Anonymous
1936 Indian Pictographs Found in Gorge. *The Oregonian*, 25 October:3. Portland, OR. <https://content.libraries.wsu.edu/digital/collection/clipping/id/10755/rec/2>. Accessed 16 May 2022.

Keywords: Rock Creek, Oregon, Columbia River, Washington, northwest United States. North America. Works Progress Administration (WPA) Writers Pproject. Rose Leibbrand [Washington State University Library Digital Archive Resource Identifier sh143-97].

Abstract: "Indian pictographs found in Gorge. The above pictographs were found recently in Rock creek gorge and have been interpreted and reported by Rose Leibbrand, field worker for the historical records survey, a WPA writer's project. The pictographs may possibly provide another link in the race migration story revealed in other Columbia valley pictographs and petroglyphs." *MNA*.

Anonymous
1955 Prehistoric Stone Carving. *Screenings*, 4(11):2. Portland: Oregon Archaeological Society.

Keywords: Fisher's Landing (45CL6), Clark County, Columbia River, Portland Basin, Vancouver, Washington. Northwest United States. North America. Beaver Bowl motif(s).

Anonymous
1957 Petroglyph Under Study. Buddhist Origin Held Possible. *The Oregonian*, 27 March:11. Portland, OR.

Keywords: Columbia River, Portland, Oregon. Northwest United States. North America. Petroglyph boulder on display at city hall. Buddhist interpretations of symbols suggested. *LMRAA (photo copy).*

Anonymous
1958 Preservation of Magical Rocks Sought as Shrine of Indian Lore. *The Goldendale Sentinel*, 12 June:1.

Keywords: Old Lady Rock (aka Old Lady Chinook, Wind Rock, Weather Rock, Rain Rock), Coyote Rock, Roosevelt (45KL14), Arlington, Columbia River, Oregon, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Dam construction. Inundation. Moved from *in situ*. *Academia.edu*.

Anonymous
1959 Vantage Petroglyph. *Screenings*, 8(2). Portland: Oregon Archaeological Society.

Keywords: Vantage, Washington. Columbia River. Northwest United States. North America. *KBORE*.

Anonymous
1963 Columbia River Petroglyphs. *Screenings*, 12(7). Portland: Oregon Archaeological Society.

Keywords: Columbia River, Washington. Oregon. Northwest United States. North America. *KBORE*.

Anonymous
1997 Landmark Returned with Apologies. *Indian Arts*, III(2):15. Santa Fe, NM.

Keywords: Columbia River. Portland, Oregon. Niix-Ya-Wii-Veterans Memorial Park, Umatilla Indian Reservation, Oregon. Northwest United States. North America. Cultural resource management. Conservation and preservation. Repatriation. The "Wallula Stone," a ten-ton petroglyph boulder, is returned by the City of Portland, where it has been on display behind City Hall since 1910, to the Confederated Tribes of the Umatilla. Removed from *in situ*. *LMRAA*.

Arlington Bulletin
1929 Figures on Rocks Near Arlington Create Interest. *Arlington Bulletin*, 20 October:44.

Keywords: Roosevelt (45KL14), Arlington, Columbia River, Oregon, Washington, northwest United States. North America. *MNA*.

Arment, Horace L.
1960 A Series of Red Pictographs from Northwest of Brogan, Oregon. *Screenings,* 9(12):2–3. Portland: Oregon Archaeological Society.

Keywords: Northwest of Brogan, Oregon, Columbia Plateau, northwest United States. North America. *WELLM.*

Arnett, Christopher Anderson

2012 Archaeological Investigations at TseTseQU/(EbRk-2), an Nlaka'pamux Rock Painting Site on the Stein River, British Columbia. *The Midden*, 44(3/4):17–22.

Keywords: TseTseQU/(EbRk-2), Stein River, British Columbia, Canada. North America. Nlaka'pamux rock painting site. *RASNWV.*

2016 *Rock Art of Nlaka'pamux: Indigenous Theory and Practice on the British Columbia Plateau.* Doctoral dissertation, University of British Columbia, Vancouver. <https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0300422>. Accessed 1 May 2019. 609 pp.

Keywords: Stein River, Lytton, British Columbia. North America. Rock art along the Columbia River, Washington, northwest United States, see pp. 372–376. *Internet, OATD.*

2017 Chapter 26: Rock Art of the Lower Fraser River Region. In *Archaeology of the Lower Fraser River Region,* edited by Mike K. Rousseau, pp. 217–228. <https://www.academia.edu/39236874/Rock_Art_of_the_Lower_Fraser_River_Region>. Accessed 26 May 2019.

Keywords: Lower Fraser River region, British Columbia, Canada. North America. Indigenous view. Coast and Interior Salishan rock art. *Academia.edu.*

Ashton, Linda

2003a Washington Petroglyphs Still Lack a Proper Home. *Seattle Post-Intelligencer*, 6 July. Seattle, WA. <https://www.seattlepi.com/ae/article/Washington-petroglyphs-still-lack-a-proper-home-1118579.php>. Accessed 14 May 2022.

Keywords: Roosevelt (45KL14), Columbia River, Washington. Northwest. United States. North America. Cultural resource management. Conservation and preservation. Damaged and neglected petroglyph boulders located in a small city park will be moved to Horsethief State Park for their protection. *MNA. r42.*

2003b Vandals, Weather Scar Rock Etchings. *Associated Press*, 28 July, 2 pp. Internet download.

Keywords: Roosevelt (45KL14), Columbia River, Washington. Northwest. United States. North America. Cultural resource management. Conservation and preservation. Damaged and neglected petroglyph boulders located in a small city park will be moved to Horsethief State Park for their protection. *LMRAA.*

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Keywords: Crooked River Petroglyph, Round Butte Dam, Cove State Park, Oregon, Columbia Plateau, northwest United States. North America. Cultural resource management. Conservation and preservation. Removed from *in situ.* Petroglyph boulder recently moved to a more culturally appropriate display. *Internet.*

2008 Vandalism Damages Yakima Valley's Rock Art. *The Lewiston Tribune,* 22 November. Lewiston, ID. <https://lmtribune.com/northwest/vandalism-damages-yakima-valleys-rock-art/article_efa1492f-7df1-5b20-8cf1-82f19712bbb4.html>. Accessed 15 November 2021.

Keywords: Painted Rocks County Park, Yakima Valley, Yakima County, Washington, Columbia Plateau, northwest United States. North America. Cultural resource management. Conservation and preservation. Vandalism. Park closure. Stairs, walkway, interpretive sign removed. Now no tresspassing. *Internet.*

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Keywords: Whale Island, Columbia River, Washington, northwest United States. North America. Wanapum Indian. Cultural resource management. Conservation and preservation. Central Washington Museum of Culture and Environment exhibition. Education. *Internet.*

Baravalle, V.E. Richard

1977 Report on a Survey of Lower Kootenay Pictographs, Kootenay Lake, B.C. Report to the Archaeological Site Advisory Board of British Columbia, Provincial Archaeologist Office, Victoria. Unpublished report on file.

Keywords: Kootenay Lake, British Columbia Plateau. Canada. North America. *Biblio.*

1978a 2nd Report on a Survey of Lower Kootenay Pictographs, Kootenay Lake, B.C. Report to the Heritage Advisory Board of British Columbia, Provincial Archaeologist Office, Victoria.

Keywords: Kootenay Lake, British Columbia Plateau. Canada. North America. *Biblio.*

1978b New Indian Pictographs Found at Kootenay Lake, Report of Site Survey. *The Midden*, 10(5):1–4. Victoria: Archaeological Society of British Columbia.

Keywords: Kootenay Lake, British Columbia, Canada. North America. *CRARA.*

1979a 3rd Report on a Survey of Lower Kootenay Pictographs, Kootenay Lake, B.C. Report to the Heritage Advisory Board of British Columbia, Provincial Archaeologist Office, Victoria. Unpublished report on file.

Keywords: Kootenay Lake, British Columbia Plateau. Canada. North America. *Biblio.*

1979b Report on a Survey of Lower Kootenay Pictographs, Kootenay Lake, British Columbia. *Annual Report for the Year 1977: Activities of the Provincial Archaeologist Office of British Columbia and Selected Research Reports,* pp. 71–100. Victoria, B.C.: Queen's Printer.

Keywords: Kootenay Lake, British Columbia Plateau, Canada. North America. *Biblio.*

1979c Are the Pictographs at Kootenay Lake of Lower Kootenay Origin? *La Pintura*, V(3):6, 10. El Toro, CA: American Rock Art Research Association.

Keywords: Kootenay Lake, British Columbia, Canada. North America. *Biblio.*

1980a Dating of Kootenay Lake Pictographs. *The Midden*, XII(1):2–8. Victoria: Archaeological Society of British Columbia.

Keywords: Kootenay Lake, British Columbia Plateau. Canada. North America. Dating. *CRARA.*

1980b Photographic Reconstruction of Fading Kootenay Lake Pictographs. Final Report to the Canada Council Exploration Programme, Ottawa.

Keywords: Kootenay Lake, British Columbia Plateau. Canada. North America. Documentation. Photographic reconstruction. *Biblio.*

1981 An Experiment in Photographic Reconstruction of Fading Kootenay Lake Pictographs. In *Canadian Rock Art Research Association Newsletter,* Vol. 15, May, edited by Tim Jones, pp. 60–69. Saskatoon: Canadian Rock Art Research Association.

Keywords: Kootenay Lake, British Columbia Plateau. Canada. North America. Research methodologies, documentation, photographic reconstruction. *LMRAA*.

Barbeau, Marius

1962 Indian Days on the Western Prairies. *National Museum of Canada, Bulletin 163.* Ottawa: Ottawa National Museum of Canada.

Keywords: British Columbia, Canada. North America. "… [F]our 1926 interviews pertaining to pictographs, two with an old Kootenai man named Tartley, or Qalsahluhlat, one with (Daniel) Wildman, and one with George McLean or Tatangameme, a Stony," per Mike Klassen, Rock Art Newsgroup Electronic Posting, 23 May 1996. Ethnography. Kutenai Indian. Vision quest. Consult spirits about the future. Red paint was a medicine with supernatural power. Painted pictures to make things happen (per David Whitley in Chapter 7: Art and Belief, *Seeing and Knowing* [Blundell et al. 2010]. Whitley cites publication date as 1960). *Biblio*.

Barker, James H.

1960 *Petroglyphs at Buffalo Eddy Along the Snake River*. Pullman: Washington State University Library Archives.

Keywords: Buffalo Eddy (45AS14) is 18 miles south of Asotin, Snake River, Washington on Snake River Road, Nez Perce National Historic Park, Washington (Idaho). Columbia Plateau. Northwest. United States. North America. Nine photographs. *KBORE*.

Barrow, Susan

1957 Petroglyphs in Pattern. Paper prepared for Anthropology 499 class at the University of Washington. Mattawa, WA: Wanapum Heritage Center Repository, Wanapum Dam.

Keywords: Whale Island, Priest Rapids, Columbia River, Washington. Northwest. United States. North America. Petroglyph documentation project. *Biblio*.

Beauchamp, Douglas

2013 Context Interrupted: The Displacement and Re-Situation of Four Unique Petroglyph Boulders in Oregon. In *Ancient Hands Around the World, International Federation of Rock Art Organization 2013 Proceedings,* edited by Peggy Whitehead and Mavis Greer. *American Indian Rock Art*, 40:685–688. Glendale, AZ: American Rock Art Research Association. ISBN: 978-0-9888730-1-8.

Keywords: Wallula Stone, on the Umatilla Indian Reservation; the Crooked River petroglyph, at Cove Palisades State Park; and the Agness boulders near the Rogue River, Oregon. Northwest. Columbia River Plateau. United States. North America. Petroglyph boulders removed from *in situ*. *LMRAA, ALL*.

2014 Glyphland: The Strange Story of a Century of Speculation and Promotion, and the Unlikely Journey of the Roosevelt, Washington, Petroglyphs. Paper presented to Northwest Anthropological Conference. <https://www.academia.edu/61804345/Glyphland_The_strange_story_of_a_century_of_speculation_and_promotion_and_the_unlikely_journey_of_the_Roosevelt_Washington_petroglyphs>.

Keywords: Roosevelt (45KL14), Arlington, Columbia River, Oregon, Washington, northwest United States. North America. Petroglyph boulders removed from *in situ*. Cultural resource management.

Conservation and preservation. Dam construction. Inundation. Moved from *in situ*.

Abstract: "In the early 1920s an Oregon newspaper announced discovery of 'Picture Writings' near Roosevelt, Washington, on the Columbia River. A popular 1921 volume, Oregon, provided drawings of petroglyphs from the site. In 1928–1929 The Oregon State Motor Association promoted it as destination for vacationers, via ferry from Arlington, Oregon. Thus began 'Glyphland' and nine decades speculation, promotion, displacement, and documentation. The John Day Dam project in the 1950s and 1960s sparked relocation of 27 of the riverside basalt boulders to a civic park near Roosevelt. After forty years and visits by thousands, neglect motivated a 2003 move under the auspices of the Army Corps of Engineers, in consultation with tribal and park representatives, to Horsethief State Park. In 2012 these 27 boulders, cleaned then moved again, joined other petroglyphs displaced by The Dalles Dam in the1950s to become part of the Temani Pesh-wa Trail. Today this display, along with the nearby Tsagaglalal petroglyph, is a popular heritage attraction." *Academia.edu*.

Beavert, Virginia, editor
1974 *The Way it Was (Anaku Iwacha)(Yakima Legends)*. The Consortium of Johnson O'Malley Committees, Region IV, State of Washington. Franklin, NC: Franklin Press. 225 pp.

Keywords: Horsethief Lake State Park (45KL58), Columbia River, Washington, northwest United States. North America. Yakama (Yakima) legend. The Window Rock. Tsagaglalal. *MNA*.

Becker, Jay
1958 Vantage Indian Drawings said Left by Hopi Tribe. *Ellensburg Record*, 13 May, 51(96):1. Ellensburg, WA.

Keywords: Vantage, Columbia River, Washington. Northwest. United States. North America. Hopi. *MNA, KBORE.*

Bell, J.F.
1979 The Pictographs of Slocan Lake. In CRARA '77: Papers of the Fourth Biennial International Conference of the Canadian Rock Art Research Associates, edited by Doris Lundy. *Heritage Record,* (8):23–48. Victoria: British Columbia Provincial Museum.

Keywords: Slocan Lake, southwest British Columbia, Columbia Plateau, Canada. North America. Kootenay region. Pictographs. Design. Style. *LMRAA*. *RABNPV*, *Biblio*.

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2020 Authorities Seek Help in Finding Rock Art Vandals. *Bend Bulletin*, 30 November. Bend, OR. <https://www.bendbulletin.com/localstate/environment/authorities-seek-help-in-finding-rock-art-vandals/article_7f03a3a6-3359-11eb-82ab-83e2b20fcecf.html>. Accessed 14 May 2022.

Keywords: Deschutes National Forest, Oregon, Columbia Plateau, northwest United States. North America. Cultural resource management. Conservation and preservation. Vandalism. *MNA*.

Benson, Arlene
1985 Modoc 75. *Rock Art Papers, San Diego Museum Papers,* 2(18):133–142. San Diego, CA: San Diego Museum of Man.

Keywords: CA-MOD-75. Devil's Garden, Alturas, Northeastern California. Modoc Plateau. United States. North America. Modoc. Pit River. Achumawi. *LMRAA, BSABSR*.

Benson, Arlene, and Floyd Buckskin

1986 *The Place of the Teetering on a Pole: An Ajumawi Narrative Involving the Sun, Moon, the North Star and South Star*. Paper presented to Society for California Archaeology Rock Art Symposium. 15+ pp.

Keywords: Din-Hin-Na-Oose, The Place Of The Teetering Pole, Fall River Valley, Medicine Lake Highlands, Modoc County. United States. North America. This manuscript is accompanied by a letter from Arlene Benson to Evelyn Newman and Bob Mark. Achumawi ethnography. Archaeoastronomy. Charmstones. Cupule. Cairns. Jumping rocks. *RCSL (correspondence and photo copy).*

1987 How the Seasons Began: An Ajumawi Narrative Involving Sun, Moon, North Star, and South Star, edited by W.C. Krup, *Griffith Observer*, 51(7):2–15. Los Angeles, CA: Griffith Observatory Publication.

Keywords: Northeastern California. Pit River. Modoc National Forest. United States. North America. Ajumawi (Achumawi) Indian. Creation myth. Legend. An Ajumawi narrative involving Sun, Moon, North Star and South Star. *LMRAA, BSL, BSABSR.*

1992 Achumawi Jumping Rocks and the Concept of the Test. *American Indian Rock Art*, XV:31–38. San Miguel, CA: American Rock Art Research Association.

Keywords: Fox Mountain, Din-Hin-Na-Oose, Alturas, Pit River, Northeastern California. Shasta and Modoc Counties. United States. North America. Cupule. Achumawi (Ajumawi). Pitted boulder. Jumping rocks. Ethnography. *LMRAA, BSABSR.*

Benson, Arlene, and Tom Hoskinson

1993 Transformations: Preparing the Land. *American Indian Rock Art*, XII:37–46. San Miguel, CA: American Rock Art Research Association.

Keywords: Lower Colorado-Gila River area, Arizona. Southwest. Mid-Columbia Region, Toppenish, Washington. Northwest. United States. North America. Shamanism. Transformation. Myth. Hokan. Yakama (Yakima). Rock feature. Ground drawing. Cupule. Shrine. Offering. *LMRAA.*

Bettis, Greg

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Keywords: Willamette Falls, Sherar's Bridge, Gentry's Landing, Horsethief Lake, Columbia River, Washington, northwest United States. North America.

1986b *Indian Rock Art of the Lower Deschutes River*. Rock Art Research, October. Portland, OR. 18 pp.

Keywords: Badger Creek, The Buddha Site, The Sherars Bridge Petrograph Panel, Jones Canyon, Rattlesnake Canyon, Lower Deschutes River, Oregon, Columbia Plateau, northwest United States. North America. Catalog of drawings of rock art elements. *LMRAA, RCSL* (revised 1987), *NADB #1298404.*

1987 Indian Rock Art Designs from Oregon, Washington, Arizona, and Utah. *Rock Art Research*, March. Portland, OR. 34 pp.

Keywords: Mid-Columbia River, Horsethief Lake State Park (45KL58), Wishram, Jones Canyon, Macks Canyon, Guano Creek, Thunderbird Lake, Jack Lake Rim, Long Lake, Oregon. Cape Horn, Petroglyph Canyon, Roosevelt (45KL14), Washington. United States. North America. Catalog of drawings of rock art elements. *RCSL, NADB #12984048.*

Bettis, Greg, and Jan Bettis

1985 Rock Art. *Screenings,* 34(11). Portland: Oregon Archaeological Society.

Keywords: Horsethief Lake, Columbia River, Washington, northwest United States. North America.

Bettis, Greg, and Timothy Brady

1989 *Legacy in Stone: Images from the Past*. Monograph. 3 pp.

Keywords: Columbia River, Washington. Northwest. United States. North America. Tsagaglalal. General public introduction to rock art. *LMRAA*.

Bjork, Carl

1997 Why Here? *Bay Area Rock Art News*, December, XV(2):1, 7. San Francisco, CA: Bay Area Rock Art Research Association.

Keywords: Big Painted Cave, Symbol Ridge, Juniper Cave, Gillem's Bluff, Petroglyph Point (CA-MOD-1), Lava Beds National Monument. Horse Mountain. Boles Creek. Modoc County, California. United States. North America. Setting: landscape. Geographical setting: acoustics. Micro-climate. Celestial viewing and sighting (archaeoastronomy). Proximity to occupation site. *LMRAA.*

Boreson, Keo

1975a *Rock Art of the Pacific Northwest*. Master's thesis, October, pp. 1–61, University of Idaho. Moscow, ID.

Keywords: Idaho, Oregon, Washington, Pacific Northwest. Columbia River. United States. North America. Physical location and type distribution patterns. *LMRAA, NADB #1331684*.

1975b Treaty Rock An Interpretive Rock Art Site. *The Washington Archaeologist,* 14(4):2.

Keywords: Coeur d'Alene, Idaho, Columbia Plateau, northwest United States. North America.

1976a A Bibliography of Petroglyphs/Pictographs in Idaho, Oregon, and Washington. *Northwest Anthropological Research Notes*, 10(1):123–146. Moscow, ID: Laboratory of Anthropology, University of Idaho.

Keywords: Idaho, Oregon, Washington, Pacific Northwest, Columbia River, northwest United States. North America. Regional bibliography compiled in 1972. Especially strong in local newspaper citations. *LMRAA (photo copy).*

Abstract: "This work is a study of rock art and its behavioral significance for anthropological study. Observations are made regarding the distribution of rock art in the Pacific Northwest, both generally and by type. Native American rock art interpretations, obtained from historic and ethnographic literature, are then compared and placed into the spatial and temporal framework of the Salishan expansion hypothesis.

The paper originally appeared as a Master's thesis [Boreson 1975b] completed in September of 1975 at the University of Idaho. For additional information on rock art consult the thesis, which also has an appendix containing quotations from which the interpretive information was obtained."

1976b Rock Art of the Pacific Northwest. *Northwest Anthropological Research Notes*, 10(1):90–122. Moscow, ID: Laboratory of Anthropology, University of Idaho.

Keywords: Idaho, Oregon, Washington, Pacific Northwest, Columbia River, northwest United States. North America. Physical location and type distribution patterns. Paper originally appeared as Boreson's Master's thesis, University of Idaho, September 1975. *LMRAA (photo copy).*

1984a A Descriptive Summary and Management Recommendations for the Rock Art at 10NP287 Nez Perce County, Idaho. Report on file at Idaho State Historic Preservation Office. Moscow: University of Idaho.

Keywords: Site 10NP287, Nez Perce County, Idaho. Columbia Plateau. United States. North America. Cultural resource management. Conservation and preservation. *IDSHPO*.

1984b *The Rock Art of the Lower Salmon River*. Cheney: Archaeology and Historical Services, Eastern Washington University.

Keywords: Lower Salmon River (Idaho, Washington), Columbia Plateau, northwest United States. North America. *Biblio.*

1989a Documentation and Management Recommendations of the Treaty Rock Site (10KA44), Kootenai County, Idaho. Short Report 176. On file at Idaho State Historic Preservation Office. Cheney: Archaeological and Historical Services, Eastern Washington University.

Keywords: Treaty Rock Site (10KA44), Coeur d'Alene Lake, Couer d'Alene River, Spokane River, Post Falls, Kootenai County, Idaho. Columbia Plateau. United States. North America. Cultural resource management. Conservation and preservation. Historic Period rock art. Vandalism. Coeur d'Alene Tribe. *IDSHPO*.

1989b Documentation of Rock Art Site 10NP287, Nez Perce County, Idaho. Short Report SR-182. On file at Idaho State Historic Preservation Office. Cheney: Archaeological and Historical Services, Eastern Washington University.

Keywords: Site 10NP287, Nez Perce County, Idaho. Columbia Plateau. United States. North America. Survey. Documentation. *IDSHPO*.

1990a Chapter 4: Rock Art. In *A Cultural Resources Overview, Sampling Survey, and Management Plan, Colville Indian Reservation, Okanogan and Ferry Counties, Washington,* edited by Stan Gough. *Eastern Washington University Reports in Archaeology and History*, 100(74):83–134. Cheney: Eastern Washington University.

Keywords: San Poil Indian Picture Trees (45FE8), Swawilla Pictographs (45FE300), Hell Gate Pictographs (45FE301), Omak Lake Pictographs (45OK384), Goose Lake Pictographs (45OK394), Disautel Pictographs (45OK396), Piekin Pictographs (45OK411), Belvedere Pictograph (45OK707), No Name (45OK708), Smith-Condon Pictographs (45OK709), Coyote Creek Pictograph (45OK710), Kartar #2 Pictographs (45OK711), Kartar #1 Pictographs (45OK712), Crusoe Spring Pictographs (45OK713), Hopkins Canyon Pictographs (45OK715), Parmenter Creek Pictographs (45OK779), Omak Mountain, McBeth, Coyote Creek, Omak Lake Road, Omak Lake. Okanogan and Ferry Counties, Washington. Columbia River. Northwest. United States. North America. *Biblio*.

1990b *Serrated Edges on Petroglyph Boulders*. Paper presented at the 33rd Annual Northwest Anthropological Conference, Bellingham, WA. U.S. Forest Service. Paper on file at Pacific Northwest Regional Office. Portland, OR.

Keywords: Columbia Plateau. United States. North America. Rock feature incorporation: serrated edges. *Biblio*.

1994a Documentation of Pictographs at Sites 45OK82, 45OK392 AND 450K603, Okanogan National Forest, Washington. Unpublished manuscript, March. Okanogan National Forest, Okanogan, Washington. 43 pp.

Keywords: 45Ok82, 45ok392, and 45Ok603. Okanogan National Forest, Washington. Columbia Plateau. Northwest United States. North America. Site report. Ethnographic accounts. Dating: pigment and lichen analysis. Methow and Okanagan Indians. Cascade Interior Salish. Power quest. Columbia Plateau Style rock art. Arc, rayed arc, tally mark, rake, undulating line, winged form, anthropomorph, and quadruped motif(s). *LMRAA (photo copy).*

1994b Methods and Materials for Manufacturing Petroglyphs and Pictographs in the Interior of the Pacific Northwest. In *Rock Art Studies in the Americas,* edited by Jack Steinbring. Papers from the Darwin Rock Art Congress, Oxbow Monograph, 45:107–109. Oxford, U.K.: Oxbow Books.

Keywords: Kettle Falls, Columbia River, Washington. Lake Pend Orielle, Alberton on the Clark Fork River, Buffalo Eddy (45AS14) on the Snake River, Shorts Bar on the Salmon River, and Jarbridge Site which is in the Great Basin of Southern Idaho. Pacific Norhtwest. United States. North America. Methods of manufacture. Cupules (with ethnography quoted from Teit, 1900:320). Incised lines (tool grooves). Petroglyphs. Pictographs. *LMRAA*.

1998 Rock Art. In *Handbook of North American Indians, Vol. 12, Plateau,* edited by Deward E. Walker, Jr., pp. 253–270, 611–619. Washington: Smithsonian Institution.

Keywords: Columbia Plateau, Washington, northwest United States. North America. *Biblio*.

n.d. *The Alberton Petroglyph Site, 24MO505, Western Montana.* Manuscript on file. Cheney: Archaeological and Historical Service, Eastern Washington University.

Keywords: Alberton Petroglyph Site, 24MO505, western Montana. United States. North America. Columbia Plateau culture. *Biblio*.

Boreson, Keo, and Warren R. Peterson

1985 The Petroglyphs at Lake Pend Orielle, Bonner County, Northern Idaho. In *Eastern Washington University Reports in Archaeology and History*, 100(49). Technical Report to Archaeological and Historical Service, U.S. Army Corps of Engineers. Cheney, WA. 80 pp.

Keywords: Lake Pend Orielle, Bonner County, Northern Idaho, Columbia Plaeau, northwest United States. North America. Bear paws. *Biblio*.

Brettman, Allan

2006 Ignorance Endagers 300-Year-Old Native Rock Art. *The Oregonian*, 25 November. Portland, OR.

Keywords: Columbia River, Vancouver, Washington, northwest United States. North America. Petroglyph damage.

2006 Deadline Missed in Tribal Rock Art Fines. *The Oregonian*, 27 November. Portland, OR.

Keywords: Columbia River, Vancouver, Washington, northwest United States. North America. Petroglyph damage.

Brink, Jack W.

1980 The 17% Solution: New Pictographs at the Zephyr Creek Site, Alberta. *Canadian Rock Art Research Association Newsletter,* May, edited by Tim Jones, 13:5–15. Saskatoon: Canadian Rock Art Research Association.

Keywords: Zephyr Creek Site, Alberta, Canada. North America. Columbia Plateau cultural sphere. *LMRAA, MNA*.

1981 Rock Art Sites in Alberta: Retrospect and Prospect. In *Alberta Archaeology: Prospect and Retrospect,* edited by T.A. Moore, pp. 69–81. Lethbridge: Archaeological Society of Alberta.

Keywords: Writing-on-Stone, Stevens Rock, Crowsnest Cave, Table Butte, Pine Coulee, 25 Ranch, Zephyr Creek, Mystic Cave, Okotoks Erratic, Grotto Mountain, Spray Canyon, Airdrie Erratic, King Buffalo Jump, Carstairs Coulee, Cline River, and Snake Indian (Devona) Cave, Alberta. Canada. North America. Columbia Plateau cultural sphere (at Zephyr Creek). *CRARA, LMRAA, MNA*.

2011 Disappearing Dreams at the Zephyr Creek Rock Art Site, Alberta. *Canadian Journal of Archaeology*, 35(2):193–231. Canadian Archaeological Association. ISSN: 0705-2006.

Keywords: Zephyr Creek, Alberta, Canada. North America. Columbia Plateau cultural sphere. *Refdoc.fr, RASNWV, MNA.*

Butler, B. Robert

1957 Art of the Lower Columbia Valley. *Archaeology*, 10(3):158–159. New York, NY: Archaeological Institute of America.

Keywords: The Dalles, Columbia River, Washington, northwest United States. North America. Site description. *RANMAB, Biblio*.

1959 Lower Columbia Valley Archaeology: A Survey and Appraisal of Some Major Archaeological Resources. *Tebiwa*, 2(2):6–24. Pocatello: Idaho State University Museum.

Keywords: Oregon, Washington, Pacific Northwest. Columbia River. United States. North America. Tsagaglalal (She-Who-Watches). *MNA*.

Cain, Thomas H.

1946 *Petroglyphs of the State of Washington*. Master's thesis, University of Arizona, Tucson.

Keywords: Washington, Columbia River, northwest United States. North America. RANMAB.

1950 *Petroglyphs of Central Washington*. Seattle: University of Washington Press. 57 pp.

Keywords: Columbia River, central Washington. Northwest. United States. North America. Classic site inventory. *LMRAA*.

Caldwell, Warren W.

1953 The Archaeological Survey of the Okanagan and Similkameen Valleys of British Columbia. *Anthropology in Bitish Columbia*, 4:10–25.

Keywords: Okanagan and Similkameen Valleys, British Columbia, Canada. North America. *WELLM.*

Camp, Al

2001 Pictographs Inspire Tonasket Artist. *The Chronicle*, 21 August:C1. Omak, WA.

Keywords: Okanogan County, Washington. Columbia Plateau. Pacific Northwest. United States. North America. Brad Hughes, artist, interprets pictographs in contemporary paintings. *LMRAA.*

Carlisle, Kendra

2007 Central Place Foraging and the Winter Village: A Settlement Pattern Analysis in the Lower Salmon River Canyon of Idaho. Masters thesis, Oregon State University, Corvallis. <https://ir.library.oregonstate.edu/concern/graduate_thesis_or_dissertations/73666709v>. Accessed 19 May 2022.

Keywords: Lower Salmon River Canyon, Hells Canyon, Idaho. Oregon. Columbia Plateau. United States. North America. Subsistence, mobility, prehistoric, lithic analysis, rock art, rock shelter, faunal analysis, pit house.

Abstract: "Hunter-gatherers depend on naturally occurring resources and, in order to survive, must overcome resource procurement challenges inherent in their environment. One challenge relates to the temporal and spatial availability of resources, which hunter-gatherers address, in part, through the strategic use of space to position themselves for optimal access to necessary resources. This can be seen on the Columbia River Plateau in northwest North America where late Holocene hunter-

gatherers solved problems of resource acquisition associated with seasonality and geographic variability by utilizing a subsistence-settlement strategy known as the 'winter village pattern.' There is minimal archaeological research addressing local and sub-regional variations in the winter village pattern. This thesis explores how winter economic activities could have factored into the selection of late Holocene winter village locations in the lower Salmon River Canyon, Idaho. It provides a GIS modeling methodology applicable to further research and contributes to a greater understanding of the archaeological record of both the canyon and the Plateau. The winter village is viewed as a central location from which foraging activities could take place to supplement winter food stores. Models are developed in GIS, based on an analysis of game habitat in the environments surrounding winter village sites, showing various levels of hunting payoff expected under a central place foraging strategy. These models are used to evaluate the degree to which ancillary economic concerns played a role in positioning winter villages, assuming that locations were chosen to potentially minimize travel time to areas in the landscape with expected high densities of game. The models are also used to examine how the payoff-related movement of economically motivated hunters could be expected to differ according to variation in the structure and distribution of game habitat. Results of the analysis show that in portions of the canyon where the environmental structure creates spatial inconsistency in the type and distribution of game habitat, villages may have been positioned to facilitate easy access to areas in the landscape providing a relatively greater chance of hunting success. General predictions for hunter mobility strategies and the spatial distribution of hunting-related archaeological sites are made based on the models. The predictions generated by this GIS method are well suited for evaluation by future archaeological survey. The methodology employed in the analysis can be applied throughout the Columbia River Plateau to sites of varying ages in an examination of the economic aspects of the relationship between hunter-gatherer subsistence and settlement, and thus enhance archaeologists' ability to reconstruct past lifeways." *IDSHPO.*

Cash Cash, Phillip Minthorn

2004 To Witness Creation: A Southern Columbia Plateau Rock-Art Ethnography. Report submitted to the USDA Forest Service, Pacific Northwest Regional Office, Portland, in fullfillment for a "Heritage of Civil Rights" grant.

Keywords: Columbia Plateau, northwest United States. North America. Ethnography *Biblio.*

2006 *Tiim'enim*': Indigenous Conceptions of Columbia Plateau Rock-Art. In *Talking with the Past: The Ethnography of Rock Art*, Chapter 7, Oregon Archaeological Society Press Publication, 16:143–157. Portland: ISBN: 0-9764804-3-3.

Keywords: Oregon. Washington. Columbia River. United States. North America. Ethnography. An Indigenous Native American interprets several rock art images. *LMRAA.*

Cassidy, Stephen C.

1992 Do the Cranbrook Petroglyphs Speak? In *Ancient Images, Ancient Thoughts: The Archaeology of Ideology,* edited by S. Goldsmith, S. Garvie, D. Selin, and J. Smith, pp. 331–336. Proceedings of the 23rd Annual Chacmool Conference, Archaeological Association, University of Calgary.

Keywords: Cranbrook Petroglyph Site, Kootenay River, British Columbia, Canada. North America. *AL@RLG.*

Cassidy, Steve, and Jackie Cornford

1980 The Cranbrook Petroglyphs. In Selected Papers from the 33rd Annual Northwest Anthropological Conference, pp. 38–39. Bellingham: Department of Anthropology, Western Washington University.

Keywords: Site DiPw1, Columbia Plateau, Interior British Columbia, Canada. North America. Petroglyphs. *MNA.*

Caywood, L.R.

1952 *Photographic Collection of Petroglyphs within the Spillway: Construction Area of The Dalles Dam.* Manuscript on file, National Park Service, San Francisco, CA.

Keywords: The Dalles, Columbia River, Washington and Oregon. Northwest United States. North America. Photographs of a rock art site, now inundated. *NADB #1332384, Office of Historic Preservtion. Olympia, WA.*

Chelan Valley Mirror

1964a Indian Rock Writing will be Moved. *Chelan Valley Mirror*, 20 April 72(25):9. Chelan, WA.

Keywords: Wells Dam, Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Salvage archaeology. Removed from *in situ. KBORE.*

1964b Petroglyphs at Wells are Largely Salvaged. *Chelan Valley Mirror*, 24 September, 73(46):8. Chelan, WA.

Keywords: Wells Dam, Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Salvage archaeology. Removed from *in situ. KBORE.*

1964c Indian Rock Writing will be Moved. *Chelan Valley Mirror*, 8 October, 72(48):1. Chelan, WA.

Keywords: Wells Dam, Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Salvage archaeology. Removed from *in situ. KBORE.*

Choquette, Wayne

1979 Heritage Resources Impact Assessment of Proposed Coal Developments in the East Kootenay Region of British Columbia. *Annual Report for the Year 1976, Provincial Archaeologist Office*. Newfoundland and Labrador: Provincial Archaeologist Office.

Keywords: East Kootenay, British Columbia, Canada. North America. Incised figures and paintings found in two rock shelters. *CRARA.*

Clark, Ella E.

1953a *Indian Legends of the Pacific Northwest.* Berkeley and Los Angeles: University of California Press. 225 pp.

Keywords: Washington. Oregon. Columbia River. Pacific Northwest. United States. North America. A collection of more than 100 tribal tales (myths, legends), including at least two which explain the origin of particular rock art sites. *LMRAA.*

1953b The Ever-Watchful Eye. In *Indian Legends of the Pacific Northwest*, pp. 108–109. Berkeley and Los Angeles: University of California Press.

Keywords: The Dalles, near the village of Wishram, Columbia River, Washington. Oregon. Pacific Northwest. United States. North America. Wishram Indian. A legend is given to explain the origin of an "eye" motif petroglyph. *LMRAA.*

1953c The Painted Rocks at Naches Gap. In *Indian Legends of the Pacific Northwest*, pp. 109–110. Berkeley and Los Angeles: University of California Press.

Keywords: Naches River, Columbia Plateau, Washington. Oregon. Pacific Northwest. United States. North America. Yakama (Yakima) Indian. A legend is given that explains that pictographs were painted by Wahteetas, ancient little people. Guardian spirit. *LMRAA*.

Clark, Gerald J.

1971 The Public Image of Archaeology in Washington State. *Northwest Anthropological Research Notes*, 5(2):181–200. Moscow: Laboratory of Anthropology, University of Idaho.

Keywords: Spokane, Washington, Pacific Northwest, Columbia Plateau, northwest United States. North America. History of research, Olaf Opsjon, Nordic runes, Norse (see p. 19). *MNA*.

Clark, L.

1990 *Deschutes National Forest Cultural Resources Protection Plan: Progress Report for Phase I and Phase II*. USDA Forest Service, Pacific Northwest Region, Deschutes National Forest.

Keywords: Deschutes National Forest, Oregon. Columbia Plateau. Pacific Northwest. United States. North America. Cultural resource management plan. All 100 rock art sites surveyed showed signs of vandalism. Conservation and preservation. *Biblio.*

Claasen, Cheryl, editor

2016 *Native American Landscapes. An Engendered Perspective*. Knoxville: University of Tennessee Press. ISBN-13: 978-1621902539, ISBN-10: 1621902536. 290 pp.

Keywords: Cumberland Plateau, Mojave Desert, Mexican Gulf Coast, Hawaii, United States. British Columbia, Canada. North America. Gender. Landscape. *Academia.edu.*

Cleghorn, John C.

1959 Historic Water Levels of Tule Lake, California-Oregon and Their Relation to the Petroglyphs Klamath County. *Museum Research Papers*, Vol. 1. Klamath Falls, OR: Klamath County Museum. 10+ pp.

Keywords: Petroglyph Point, Tule Lake, Klamath County, Modoc County, California, Oregon. United States. North America. Including plates, figures, and map. Modoc rock art. *WELLM, LMRAA.*

Cline, Walter, R.S. Commons, M. Mandelbaum, R. H. Post, and L.V.W. Walters

1938 Religion and World View. *The Sinkaietk of Southern Okanagon of Washington*, *General Series in Anthropology*, 6:136–138. Menasha, WI.

Keywords: Okanagan, Washington, Columbia River, northwest United States. North America. Interior Salish ethnography. See pages 138, 143–145, per Loendorf 1994. Winter dance. Trance. Cure (medicine). "Only people with strong power painted pictures on rock. One did not do this until he had sung his power song at his first winter dance. When he painted these pictures, he had with him a friend who knew their meaning and who could later call upon him for aid from the pictures. The painter said to his friend, 'I'm painting these here so that if you ever have any illness or get hurt you can call on me to help you.' The painter's companion told other members of the tribe that so-and-so had painted the pictures, which thus served as a kind of advertisement. Often both men made rock paintings at the same time. There was no formal obligation in such friendship, though the two shaman usually remained friends for life and told their trouble to one another.These pictures, in some vague way, assisted the painter to employ his power, especially to cure sickness, but the cure itself did not have to take place near the paintings."

Coburn, Larry Winthrop

1975 *A Theoretical Framework for Investigating the Relationship of Pictographs to Mythology in the Northern Plains*. Master's thesis, Washington State University, Pullman.

Keywords: Northern Plains. United States. North America. Spokane Indian. Vision quest, a source of power. Columbia Plateau cultural sphere.

Cole, David L.

1953 *Photographic Collection of Petroglyphs in the Petroglyph Canyon Area of The Dalles*. Photographs on file, National Park Service, San Francisco, CA.

Keywords: Petroglyph Canyon, The Dalles, Columbia River, Washington. Northwest United States. North America. Photograph collection. *NADB #1332383.*

1956 Further Recommendations for the Removal of Petroglyphs in The Dalles Reservoir Area. Unpublished manuscript, U.S. Army Corps of Engineers and National Park Service, Eugene, OR.

Keywords: The Dalles Reservoir, Washington. Northwest. Columbia River. United States. North America. Cultural resource management. Conservation and preservation. *KBORE*.

1958 Report on the Removal of Petroglyphs in The Dalles Dam Reservoir Area. Unpublished manuscript, National Park Service, Eugene, OR.

Keywords: The Dalles Reservoir, Washington. Columbia River. Northwest. United States. North America. Cultural resource management. Conservation and preservation. *KBORE, NADB #1332118*.

Cole, David, and Jack R. Hegrenes, Jr.

1953 Report on the Petroglyphs of The Dalles Reservoir. Unpublished manuscript, U.S. National Park Service, San Francisco, CA. 12+ pp.

Keywords: Petroglyph Canyon, The Dalles Reservoir, Columbia River, Washington (Oregon). Northwest. United States. North America. Cultural resource management. Conservation and preservation. Innundation. This report by two graduate students, University of Oregon, Anthropology Department, contains 14 pages of black and white photographic plates of The Dalles petroglyphs prior to innundation, and all are crossed referenced to detailed locations on a scale map. Specific petroglyph boulders are identified for recommended removal. The photographic reproductions in this report are of poor quality. *RANMAB, WELLM, NADB #1332462 and #5601549, LMRAA, Biblio*.

Colley, A.G.

1924 *Handwritten Notes on Pictographs in Washington State and California*. Manuscripts in the Archaeological Archives, File #048. Hearst Museum of Anthropology, University of California, Berkeley.

Keywords: California and Columbia River, Washington, northwest United States. *Internet*.

1926 *Pictograph Studies. Seventy-Eight Characters and Notes, Columbia River Section*. Manuscript on file, Cat. #180-L-107, Nevada State Museum, Las Vegas.

Keywords: Columbia River. Washington. Oregon. Northwest United States. North America. Pictographs. *MNA*.

Columbia River Archaeological Society

1920–1941 *Official Minutes (10/5/20–1/24/41)*. Wenatchee: North Central Washington Museum.

Keywords: Rock Island (45DO301), Columbia River, Wenatchee, Washington. United States. North America. Containing notes relevant to the salvage archaeology

and removal of petroglyph boulders. Also commision of a salvage photo expedition prior to innundation. Moved from in situ. *Biblio*.

Confederated Umatilla Journal

1996 Stone Comes Home. *Confederated Umatilla Journal*, 22 August:26.

Keywords: Wallula Stone (45WW44). Portland. Umatilla Indian Reservation. Oregon. Wallula, Mid-Columbia River, Washington. Northwest. United States. North America. Cultural resource management. Conservation and preservation. Repatriation. Native American Graves Protection and Repatriation Act (NAGPRA). Umatilla Indian. *Biblio*.

Cornford, Jackie

1979 A Plan for Petroglyph Park, Nanaimo, British Columbia. *Canadian Rock Art Research Association Newsletter,* 12:54–55. Dalmeny: Canadian Rock Art Research Association.

Keywords: Nanaimo Petroglyph Park, British Columbia, Canada. North America. Cultural resource management. Conservation and preservation. *LMRAA, PCARB*.

Conway, Thor

1993 *Painted Dreams. Native American Rock Art*. Minocqua, WI: North Wood Press. 160 pp.

Keywords: The Dalles, Ozette, Washington, Columbia River, northwest United States. Tsagaglalal (She-Who-Watches).

Copp, S.

1980 A Dated Pictograph from the South Okanagan Valley in British Columbia. *Canadian Rock Art Research Association Newsletter*, (14):44–48. Canadian Rock Art Research Association.

Keywords: Mccall Site (Dhqv-48), Okanagan Valley, British Columbia, Canada. North America. Interior Salish territory. A dated pictograph. Portable rock art. *LMRAA, Biblio.*

Corner, John

1968 *Pictographs (Indian Rock Paintings) in the Interior of British Columbia*. Vernon, B.C.: Wayside Press, Ltd. 131 pp.

Keywords: Interior of British Columbia (includes sites on Kootenay Lake, Upper Arrow Lake, Lower Arrow Lake, and Columbia Lake constituting the headwaters of the Columbia River), Western Canada. North America. Pictographs site inventory. *LMRAA.*

Cressman, L.S.

1937 *Petroglyphs of Oregon*. University of Oregon Publications in Anthropology, 2. Eugene: University of Oregon. 78 pp.

Keywords: Oregon. Columbia Plateau. Northwest United States. North America. Classic survey. Site descriptions, distribution, chronology. *LMRAA, NADB #1290732.*

Crosser, Frank, and Sue Crosser

1999 Balloon Site Rock Art Report. Unpublished manuscript, Oregon Archaeological Society, Portland.

Keywords: Balloon Site. Columbia River. Northwest. United States. North America.

Crotty, Helen K.

1979 Rock Art of the Modoc Territory. *American Indian Rock Art*, V:22–35. El Toro, CA: American Rock Art Research Association.

Keywords: Tule Lake, (Petroglyph Point, CA-MOD-1), Modoc County, Northeastern California. Lava Beds National Monument. United States. North America. Klamath. Modoc Style rock art. Regional overview. *LMRAA (photo copy).*

1981 Petroglyph Point Revisited: A Modoc County Site. In *Messages from the Past*: *Studies in California Rock Art*, UCLA Institute of Archaeology Monograph, XX:141–168. Los Angeles: Regents of University of California.

Keywords: Mod-1, Petroglyph Point, Lava Beds National Monument, Modoc County, Northeast California. Klamath Basin. Tule Lake. United States. North America. Petroglyph element inventory. Site survey. Review of previous research. *LMRAA, NADB #925164.*

Crouch, J. Carlisle

1936 Report of Preliminary Archaeological Reconnaissance—Lava Beds National Monument, November 18–December 4, 1935. Manuscript on file, National Park Service, Cultural Resources Repository, Washington, D.C.

Keywords: Fern Cave, Lava Beds National Monument, Modoc County, California. United States. North America. *DBNPS.*

Cundy, Harold J.

1938 Petroglyphs of North Central Washington. Manuscript on file, MsSC 271A, Tacoma: Washington State Historical Society. <www.washingtonhistory.org/research/collection-item/?search_params=search_term%3D%2522rock%2Bart%2522&im=94864>. Accessed 15 November 2021. 209 pp.

Keywords: North central Washington. Columbia River. Northwest United States. North America. Columbia Plateau culture area. "Bound manuscript volume documenting the painted and carved rock art located in north central Washington State; 209 pages and 49 plates, illustrated with original water color sketches and photographic prints (plates), based upon investigations made by Harold J. Cundy, during the period from autumn 1927 to the spring of 1938." Indians Ms Box 3 ART 4B. *KBORE, Internet.*

n.d. *Field Sketches*. 6 pp.

Keywords: Whale Island, Mid-Columbia River. Washington. Northwest. United States. North America. Reproductions of Cundy's sketches. Assembled by Bill Layman. *LMRAA.*

Curtin, Jeremiah

1912 *Myths of the Modocs/Latkakawas*. Boston, MA: The Colonial Press, C.H. Simons & Company. <http://archive.org/stream/mythsmodocs00curtrich/mythsmodocs00curtrich_djvu.txt>. Accessed 14 June 2015. 389 pp.

Keywords: Klamath Lake, northeastern California. Southern Oregon. United States. North America. See pages 1–16 for Modoc cultural mythoology. *LMRAA (photo copy), Internet.*

Curtis, Edward S.

1911 *The North American Indians: The Nez Perces*, *Wallawalla, Umatilla, Cayuse, The Chinookan Tribes*, *Volume 8.* Seattle, WA: E.S. Curtis.

Keywords: The Dalles, Columbia River. Northwest United States. North America. She-Who-Watches. Legend of Tsagaglalal rock image, pages 145–146.

David, Robert James

2005 *Rock Art as Shaman's Tools: Testing and Refining Landscape Symbolism Models in the Klamath Basin*. Master's thesis, Portland State University, Portland, OR.

Keywords: Klamath Basin, Oregon. Northwest. United States. North America. Shamanism. *Biblio.*

2010 The Archaeology of Myth: Rock Art, Ritual Objects, and Mythical Landscapes of the Klamath Basin. *Archaeologies: Journal of the World Archaeological Congress*, 6(2):372–400. New York, NY: Springer Publishing. ISSN: 1555-8622 (print version), ISSN: 1935-3987 (electronic version).

Keywords: Klamath Basin, Oregon. United States. North America. Modoc rock art. *Biblio.*

2012a *The Landscape of Klamath Basin Rock Art*. Doctoral dissertation, University of California, Berkeley. <https://www.academia.edu/7338981/The_Landscape_of_Klamath_Basin_Rock_Art>. Accessed 14 June 2014. 62 pp.

Keywords: Klamath Basin, California, Oregon. Northwest. United States. North America. Setting: Landscape. Modoc. Klamath. Shamanism. "Kiuks." Doctor. Myth. Ethnography. *Biblio, Academia.edu, RASNWV.*

2012b The Holding Hands Petroglyph Site: A New Case Study for Power-Seeking Rituals on the Modoc Plateau. *American Indian Rock Art,* 38:53–62. Glendale, AZ: American Rock Art Research Association. ISBN: 978-0-9767121-9-0.

Keywords: Holding Hands Petroglyph Site, Modoc Plateau, Goodlow Mountains, Langell Valley, Lost River, Klamath County, Oregon. United States. North America. Modoc rock art. Shamanism. *LMRAA.*

2016 *Spirit Fire and Lightning Songs: Looking at Myth and Shamanism on a Klamath Basin Petroglyph Site.* Contributions of the University of California Archaeological Research Facility, Berkeley, No. 66. Berkeley: University of California. ISBN: 978-0-9890022-2-6. <http://escholarship.org/uc/item/3v65f77m>. Accessed 12 May 2016. 90 pp.

Keywords: Tule Lake, 4-Mod-22, Klamath Basin, northeastern California. United States. North America. Archaeology, rock art, Indigenous archaeology, shamanism, Native American, myth and ethnography, Klamath Basin archaeology, Klamath-Modoc archaeology, Klamath-Modoc shamanism, petroglyph. *LMRAA (digital download), Biblio.*

David, Robert James, and Margaret W. Conkey

2021 Location is (Almost) Everything: Rock Art Differences Across the Sacred Landscape of the Klamath Basin (Oregon/California, USA). In *Perspectives on Differences in Rock Art,* edited by Jan Magne Gjerde and Mari Strifeldt Arntzen, pp. 444–458. Sheffield, U.K.: Equinox Publishing. ISBN-13 (Hardback): 9781781795606; ISBN (eBook): 9781781799192. <https://www.equinoxpub.com/home/view-chapter/?id=31907>. Accessed 23 April 2021.

Keywords: Klamath Basin, California, Oregon, northwest United States. North America. Landscape context. *Internet, LMRAA.*

David, Robert James, and James D. Keyser

2008 A New Ethnographic Reference for Klamath Basin Rock Art: Shamans' Incantations and Sacred Rocks. *INORA, International Newsletter on Rock Art*, (50):26–27. Foix: Comite International d'Art Rupestre (CAR-ICOMOS). ISSN: 1022-3282. <http://www.international.icomos.org/centre_documentation/inora/inora50/inora-50-5.pdf>. Accessed 4 October 2012.

Keywords: Klamath Basin, Columbia Plateau, Oregon. Northwest. United States. North America. Ethnography. Shamans' incantations. *LMRAA.*

David, Robert James, and Melissa L. Morgan

2014 Old Man Owl: Myth and Gambling Medicine in Klamath Basin Rock Art. *Rock Art and Sacred Landscapes (One World Archaeology)*, 8:163–176. New York, Heidelberg, Dordrecht, London: Springer. ISBN: 978-1-4614-8405-9 (Print), 978-1-4614-8406-6 (Online). DOI: 10.1007/978-1-4614-8406-6. Accessed 31 October 2013.

Keywords: Sprague River Valley, Klamath Basin, Oregon, United States. North America. Modoc mythology. Owl myth. *Internet, LMRAA.*

Dawson, E.J.

1929 *Petroglyphs on Tule Lake, Modoc County (File #273).* Berkeley: Archaeological Research Facility, University of California.

Keywords: CA-MOD-1, Tule Lake, Modoc County, California. United States. North America. Sketches. *UCBARF, BSABSR.*

Dean, J. Claire

1996 A Basic Condition Assessment of the Sherar's Bridge Petroglyph Site, Wasco County, Oregon. Report on file, June. Warm Springs: The Confederated Tribes of the Warm Springs Reservation of Oregon. 15+ pp.

Keywords: Sherar's Bridge, Wasco County, Oregon. Columbia Plateau. Northwest United States. North America. Cultural resource management. Conservation and preservation. Condition assessment. *Biblio.*

2012 10NP287 (Red Elk Pictograph Site), Conservation Project 2012, Final Report. Report on file with Idaho State Historic Preservation Office.

Keywords: Red Elk Rock Shelter Site (10NP287) in the vicinity of Lewiston, Idaho. Columbia Plateau. United States. North America. Cultural resource management. Conservation and preservation. Vandalism. Graffiti. *IDSHPO.*

Delgado-Morris, Jessica

2019 *Rock Imagery: A Cultural Landscape Analysis in the Yakima Uplands.* Master's thesis, Cultural and Environmental Resource Management, Central Washington University, Cheney. <https://digitalcommons.cwu.edu/etd/1307>. Accessed 19 October 2020.

Keywords: Joint Base Lewis-McChord-Yakima Training Center (YTC), Columbia River, Washington, northwest United States. North America. Viewshed analysis. Cultural landscape. Root harvest. Geographic Information Sciences (GIS). *OATD.*

DeLeon, Mark

1994 Low Densities and Low-Lifes: The No Snake Creek Pictographs. 47th Annual Northwest Anthropological Conference, Spokane, Washington, March 31–April 2. *Northwest Anthropological Research Notes*, 28(1):46. Moscow: Laboratory of Anthropology, University of Idaho.

Keywords: Chewuch River, Okanogan National Forest, Washington, Columbia Plateau, northwest United States. North America. Abstract, only. Pictographs. Lichenometry.

Abstract: "On a small, lichen encrusted boulder in the middle reach of the Chewuch River is a pictograph panel displaying several motifs common to the Columbia Plateau. The angled boulder face, on which the pictographs occur, forms a meager shelter, at the base of which a test excavation recovered artifacts. These artifacts represent the only collection to date, albeit sparse, from a controlled excavation in the Chewuch drainage. The presence of the lichens (cryptograms, or what a Forest Service botanist winsomely calls the lower life forms) prompts questions about the utility of lichenometry to archaeology. Observations on the cultural material and lichenology are presented." *MNA, Internet.*

Denison, James S.

1878 *Letter to Samuel Gatschet.* Document No. 315, Bureau of American Ethnology.

Keywords: United States. North America. Klamath informant related that pictographs were made by Indian doctors and inspired fear of the doctors' supernatural powers. Shamanism (per David Whitley, quoting Dennison in Chapter 7: Art and Belief, *Seeing and Knowing,* Blundell et al. 2010). Ethnography. *Biblio.*

ca. 1878 *Pictures on Rock at Kta-Iti, or Kaa-i Tupakshi*. National Museum of Natural History. NMNH-2372_box9_f55_oregon_08740700_note. 4 pp.

Keywords: Standing Rock, Klamath, Lake County, Oregon, United States. North America. Columbia Plateau cultural sphere.

Dewdney, Selwyn

1962 Pictograph-Recording Project in Alberta and Saskatchewan. Report and materials on file. Glenbow-Alberta Institute Archives, Calgary.

Keywords: Alberta. Saskatchewan. Canada. North America. *BCSRA*.

n.d. *Records made from Field Studies of all the Known Rock Art in Alberta and Southern Saskatchewan up to 1963*. Materials on file. Calgary: Glenbow-Alberta Institute Archives.

Keywords: Alberta and Southern Saskatchewan, Canada. North America. 45 24 in. x 30 in. sheets of full size and scale reproductions, in water color, line drawing, and conté chalk. *BCSRA*.

Donner, Shirley

1977 The Glyphs of Vernita. *The Washington Archaeologist,* 21(2-3):5. Seattle: Washington Archaeological Society. <http://www.chaz.org/Arch/WASHINGTON_ARCHAEOLOGIST/WAS_21-2_and_3.pdf>.

Keywords: Vernita, near Hanford Reach, Columbia River, central Washington, northwest United States. North America. Lines, dots, and "x" motif(s). Map interpretation. *Internet*.

Donovan, John

1963 Pitted Boulder at Underwood. *Screenings*, 12(10). Portland: Oregon Archaeological Society.

Keywords: Underwood, White Salmon River, Washington, Columbia River, northwest United States. North America. Pitted boulder. *MNA*.

Dorn, Ronald I., and Carolynne Merrell

2006 *New Chronometric Findings at Buffalo Eddy Petroglyph Site, Washington*. Unpublished manuscript. Spalding, ID: Nez Perce National Historical Park.

Keywords: Buffalo Eddy (45AS14) is 18 miles south of Asotin, Snake River, Washington on Snake River Road, Nez Perce National Historic Park, Washington (Idaho). Columbia Plateau. Northwest. United States. North America.

Downing, Alfred

1889 The Pictured Rock of Lake Chelan. *The Northwest (Later Smalley's Magazine),* 7(10):3–4.

Keywords: Lake Chelan (45CH66), Cascade Mountains, Washington. Columbia Plateau. Northwest United States. North America. *KBORE.*

Dreyfuss, Simeon

1983 A Prism of Carved Rock—Dalles Area Rock Art as an Insight into Native American Cultures. *Pacific Northwest Quarterly*, 74(2):69–76. <https://www.jstor.org/stable/40490771>. Accessed 19 August 2019.

Keywords: The Dalles, Columbia River, Washington (Oregon). Pacific Northwest. United States. North America. *SCI, WoS, JSTOR*.

Duncan, Mary Ann

1977 Archaeological Tests of Impact of Horsethief Lake Petroglyph Interpretive Facility on 45K159 and 45K158. Report on file. Olympia: Washington State Parks and Recreation.

Keywords: Horsethief Lake (45K158 and 45K159), Columbia River. Washington. Northwest United States. North America. *NADB #1330323*.

1979 Archaeological Assessment of the Proposed Horsethief Lake Interpretive Facility. R*econnaissance Reports*, No. 25. Seattle: Office of Public Archaeology, University of Washington.

Keywords. Horsethief Lake State Park (45KL58), Columbia River. Washington. Northwest United States. North America. Cultural resource management. Conservation and preservation. Trail (foot path). Viewing platform. *MNA*.

Dutton, Helen

1963 Petroglyphs Join Petrified Ginkgos. *Seattle Times* [Pictorial Section], 86(18):27. Seattle, WA.

Keywords: Wanapum Recreation Area, Ginko Petrified Forest near Vantage, Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Dam construction. Salvage. Inundation. *MNA*.

Eidsness, J.P., Louise Johnson, and Ken Hay

1989 *Archaeological Site Record: CA-Sis-1479, Juniper Cave*. Redwood National Park, 21 June and 28 June. Arcata, CA. 9 pp.

Keywords: Juniper Cave, CA-SIS-1479, Lava Beds National Monument, Siskiyou County, California. United States. North America. Archaeological site record. Surveyed for National Historic Register nomination. Pictograph on cave wall with associated rock feature (cairn). Archaeoastronomy. Summer solstice observation. Modoc "prayer cairn." This report includes a one page copy of "When the Universe Speaks" by Modoc Indian Raymond Faithful—a description of the solstice event, first published in *Lakota Oyate-Ki* (1988), Lakota Oyate-Ki Cultural Club, Oregon State Penitentiary, Salem, Oregon. *LMRAA (photo copy)*.

Eidson, Rex

1961a Signs of Life. *Science of Man*, 15:152–154. Mentone.

Keywords: Wakemape Mound, The Dalles, Washington. Columbia River. Northwest United States. North America. Site description. *RANMAB*.

1961b Last Days of Petroglyph Canyon. *Science of Man*, October, 16(1):84–187. Mentone.

Keywords: Petroglyph Canyon, just upstream from Wakemape Mound, The Dalles, Washington. Columbia River. Northwest United States. North America. Site description, petroglyphs now destroyed (inundation) by the construction of The Dalles dam. *LMRAA, RANMAB*.

Eller, T., Robert Mierendorf, and S. Gough

1981 A CR Survey and Site Testing along the Bonneville Power Administration's Proposed Chief Joseph Dam-East Omak-Tonasket and Grand Coulee-Keller Transmission Lines, Douglas, Ferry, Okanogan Counties, WA. Report to Bonneville Power Administration. Cheney: Eastern Washington University.

Keywords: Chief Joseph Dam-East Omak-Tonasket and Grand Coulee-Keller Transmission Lines, Douglas, Ferry, Okanogan Counties, Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Survey. Pictographs. Rock feaure: Rock alignment. *IDSHPO*.

Elrod, Morton John

1908 Pictured Rocks: Indian Writings on the Rock Cliffs of Flathead Lake, Montana. *Bulletin University of Montana,* No. 46, *Biological Series,* No. 14, pp. 3–30. Missoula: University of Montana. <https://archive.org/details/bulletin15univ/page/n333/mode/2up?view=theater>. Accessed 16 March 2021.

Keywords: Flathead Lake, Montana. Northwest United States. North America. Site description with map showing location. Columbia Plateau culture. *LMRAA* (*photo copy*).

Eng, Jordan

2017 The Significance of Linear Grooves at Petroglyph Site DjRi-31 near Yale, B.C. In *Archaeology of the Lower Fraser River Region,* Chapter 3, edited by Mike K. Rousseau, pp. 25–30. Burnaby, B.C.: Simon Fraser University Archaeology Press. <http://archpress.lib.sfu.ca/index.php/archpress/catalog/view/72/42/1802-1>. Accessed 26 May 2019.

Keywords: Petroglyph Site DjRi-31 near Yale, Lower Fraser River Region, British Columbia, Canada. North America. Groove motif(s). *Internet.*

Erickson, R.

1947 Oregon City Petroglyphs. *Geological Society of the Oregon Country Newsletter*, (June):54–55.

Keywords: Willamette Falls, Columbia Plateau, Oregon. Northwest United States. North America. Includes illustration.

Evers, Dietrich

1993 Indian Petroglyphs of the Northwest. *Adoranten Arsskrift For*, pp. 36–44. Tanumshede: Scandinavian Society for Prehistoric Art. ISSN: 0349-8808.

Keywords: Washington. Columbia River. Northwest. United States. British Columbia, Canada. North America. *Biblio*, *LMRAA*.

Erwin, Richard P.

1930 Indian Rock Writing in Idaho. *Twelfth Bienniel Report of the Board of Trustees of the State Historical Society of Idaho, 1929–1930*, pp. 34–111. Boise: Idaho State Historical Society.

Keywords: Idaho (includes Columbia Plateau), northwest United States. North America. Broad discussion includes site map and numbered site inventory with photographs and descriptions. Interpretations draw heavily on "Indian sign language." Photos frequently show chalking. *LMRAA*.

Featherson, Debra

1993 *Pictographs of the Methow Valley–Field Study 1993.* Unpublished manuscript. Twisp. 25+ pp.

Keywords: Chewack River (45 Ok 392), No Snake Creek (45 Ok 603), Black Canyon (45 Ok 34), Weeman Bridge (45 Ok 82), Okanogan County, Methow Valley, Washington. Columbia Plateau. Northwest United States. North America. Personal journal resulting from author's participation in the Passport in Time, Field Survey by USDA Forest Service. Keo Boreson. Harold Cundy. Thomas Cain. Includes notes, newspaper clippings, and site report forms. *LMRAA.*

Fentress, Jeff

1991 The Boles Creek Project. *Bay Area Rock Art News*, September, IX(2):7–8. San Francisco, CA: Bay Area Rock Art Research Association.

Keywords: Boles Creek, CA-MOD-74, Modoc National Forest, Northeastern California. United States. North America.

Site description. Arlene Benson's recording project. Lightning strikes. Magnetic anomalies. *LMRAA.*

1994 A Glimpse of Oregon Rock Art. *Bay Area Rock Art News,* January, XII(I):2. San Francisco, CA: Bay Area Rock Art Research Association.

Keywords: Port Orford, and Picture Gorge, Dayville, Oregon. Buffalo Eddy (45AS14), Washington. Columbia Plateau. Northwest United States. North America. Regional overview. A northern occurrence of Pecked Curvilinear Nucleated (PCN) petroglyphs and cupules at Port Orford. *LMRAA.*

Feyhl, Kenneth J.

1987 Chief Joesph Inscription. *Archaeology in Montana*, 28(2):61–63. Missoula: Montana Archaeological Society. ISSN: 0044-8591

Keywords: Montana. United States. North America. Historic Inscription: Chief Joseph. Nez Perce. Columbia Plateau culture. *RABNPV, NADB #925256 and #5190253.*

Finley, James

2005 Playing Vikings and Indians. The Saga of Spokane's Runic Rock. *Columbia: The Magazine of Northwest History*, Summer, 19(2):29–35. Tacoma: Washington State Historical Society. <https://www.washingtonhistory.org/wp-content/uploads/2021/01/2005-v19-n2-final.pdf>. Accessed 6 November 2021. ISSN: 0892 3094.

Keywords: Spokane, eastern Washington. Columbia Plateau. Northwest United States. North America. Viking interpretation now discredited. Rune. Runic. Olaf Opsjon. *LMRAA, MNA.*

Freeman, Paul

1994–1998 *Videos of Rock Art Field Trips: IV. Other Western States Sites, 4a–4h: Oregon, Washington, and Western Montana. The Columbia River Basin Area.* Paul Freeman Collection, Bay Area Rock Art Archive, 44 minutes. Berkeley: Bancroft Library, University of California.

Keywords:
a. 09/1998 Or-Linn Cy: Cascadia State Park Cave. Oregon. 06/1004 The Dalles and The Columbia River Narrows, Washington.
b. 06/1994 WA-YK 86: Cowiche Creek Pictographs, Naches River (Yakima Style), Washington.
c. 06/1994 WA-CH-224: Tumwater Canyon Pictographs, Wenatchee River, Washington.
d. 06/1994 WA-CH-nkn: Scott McManus's site above Cashmere, at Bill Layman and Susan Evan's home in Wenatchee, Washington.
e. 06/1994 WA-OK-418: Buckhorn Bend Pictograph Site (Black Canyon Creek and Methow River), Washington.
f. 06/1994 WA-OK-47: Weeman Bridge, Methow River, Washington.
g. 09/1998 WA-LI-22: Long Lake Dam, and WA-SP-34: 5 Mile Prairie Sites, near Spokane River, Washington.
h. 09/1998 MT-Flathead Canyon: Kilo Pictographs, Ashley Creek Valley near Kalispell, Montana.
The Columbia River Basin, United States. North America. *UCB.*

1997 *Videos of Rock Art Field Trips: II. California Sites, 19 a–b: Northeastern California, 1997.* Paul Freeman Collection, Bay Area Rock Art Archive, 56 minutes. Berkeley: Bancroft Library, University of California.

Keywords:
a. 6/1997 Modoc Field Trip, including: Ca-SHA-0039 (Church Rock), CA-SIS-0001 (Symbol Bridge), CA-SIS-0022 (Big Picture Cave), CA-SIS-nkn (Sonin 40, Juniper Cave),

CA-SIS-0002 (Gillem's Bluff), CA-SIS-nkn (Hospital Rock), CA-MOD-0001 (Petroglyph Point), CA-MOD-0158 (Horse Mountain), CA-MOD-0075 (Boles Creek).
b. 7/1997 Ahjumawi Lava Springs State Park, including: CA-SHA-0661 (Big Bend Petroglyphs).
Siskiyou, Modoc, Shasta Counties, California. United States. North America. *UCB.*

Garrison, Philip

1996 *Waiting for the Earth to Turn Over. Identity and the Late-Twentieth-Century American West*. Salt Lake City: University of Utah Press. ISBN-10: 087480518X, ISBN-13: 978-0874805185. 150 pp.

Keywords: Horsethief State Park (45KL58), The Dalles, Columbia River, Washington. United States. North America. Tsagaglalal. Bill Layman. Harold Cundy. See chapter, "Eavesdropping," pages 19–29. Essay. Prose. *LMRAA.*

Gates, G.R.

1980 A Preliminary Report on the Prehistoric Rock Art of the Modoc National Forest. *Journal of the Modoc County Historical Society*, 2:79–104.

Keywords: Modoc National Forest, California. United States. North America. *Biblio.*

Gatschet, Albert S.

1878 Rock Inscriptions in Patten's Valley, near Gaston, Oregon. Manuscript, NMNH-2372_box9_f54_oregon_note, Natural Museum of Natural History. <https://collections.si.edu/search/detail/ead_component:sova-naa-ms2372-ref380?q=Gatschet+&record=13&hlterm=Gatschet%2B&inline=trued>. Accessed 14 November 2021. 6 pp.

Keywords: Gaston, Patton Valley, Oregon, Columbia Plateau, northwest United States. North America. Tualatin (Atfalati) Indians. Unpublished description with illustrations. *MNA.*

Gavin, Mabel M.

1966 Okanogan Cliffs Bear Ancient Art. *Wenatchee Daily World*, 61(262):8.

Keywords: Okanogan, Washington, Columbia Plateau, northwest United States. North America. *MNA.*

Glinert, Jill Elaine

2008 Behavioral Implications of Rock Art along the Lower Columbia River: Rock Art Images, Ethnographies and Motivation for the Creation of Owl Iconography. Master's thesis, Prescott College, Prescott, AZ. 228 pp.

Keywords: Lower Columbia River, Washington, Oregon. Pacific Northwest, United States. North America. Owl motif(s). Ethnography. *Worldcat.org.*

Goodfellow, G.G.

1928 Pictographs of the Similkameen Valley of British Columbia. *Museum Notes*, 3(2):14–16. Vancouver, B.C.: Art, Historical, and Scientific Association.

Keywords: Similkameen Valley, British Columbia, Cananda. North America. *Biblio.*

Grant, Campbell

1967 *Rock Art of the American Indian*. New York, NY: Promontory Press. 178 pp.

Keywords: Arctic, Northwest Coast, Columbia-Fraser Plateau, Great Basin, California, Southwest, Mexico, Great Plains, Eastern Woodland, Northern Woodland. United States. North America. Survey of rock art on the continent by region. See Chapter 12: The Columbia-Fraser Plateau, pp. 92–99.

1983 *The Rock Art of the North American Indians, The Imprint of Man Series*, edited by Emanuel Anati. Cambridge, U.K.: Cambridge University Press. 124 pp.

Keywords: North America. Arctic, Northwest Coast, Columbia-Fraser Plateau, Great Basin, California, Southwest, Mexico, Great Plains, Eastern Woodland, Northern Woodland. United States. North America. Survey of rock art on the continent by region with 62 color plates. *LMRAA, BSL,* see *BSABSR* for summary.

Hainstock, R.L.

1981 Sermons in Stone, Part VII, Pictographs. *Nicola Valley Historical Quarterly*, 4(3/4):4–5. Merritt, B.C.: Nicola Valley Archives Association.

Keywords: Nicola Lake, British Columbia, Canada. North America. Pictographs. Interior Salish. *LMRAA.*

Hair, Calley

2020 Two Petroglyphs to Leave Grant House near Fort Vancouver to be Closer to Place of Origin. *The Columbian*, 31 July, Vancouver, B.C. <https://www.columbian.com/news/2020/jul/31/two-petroglyphs-to-leave-grant-house-near-fort-vancouver-to-be-closer-to-place-of-origin/#:~:text=Two%20petroglyphs%20that%20have%20sat,Historical%20State%20Park%20in%20autumn>.

Keywords: Grant House, Fort Vancouver, Columbia Hills State Park, Columbia River, Washington. Northwest. United States. North America. Removed from *in situ*. Returned to location nearer place of origin. *MNA*.

Hall, Inez

1958 Indian Carvings Signified End of Tribal Friendship. *Washington County News-Times*, 8 May. Forest Grove, OR.

Keywords: Gaston, Patton Valley, Oregon, Columbia Plateau, northwest United States.

Hann, Don

2012 The Walls of Time: The Significance of Landscape to Upper John Day River Rock Art. Draft Master's thesis, Malheur National Forest, John Day, OR.

Keywords: Upper John Day River, eastern Oregon. Columbia Plateau. Northwest United States. North America. Landscape: setting. *Biblio.*

2013a Implied Narrative: Rock Art, Landscape, and Myth at Picture Gorge, Oregon. *American Indian Rock Art,* 39:101–113. Glendale, AZ: American Rock Art Research Association. ISBN: 978-0-9888731-0-1.

Keywords: Site 35GR12, Picture Gorge, John Day River, eastern Oregon. Columbia Plateau. Northwest United States. North America. Implied narrative. North Oregon Rectilinear Style pictographs. Pictographs in association with unique rock features. Myth. *LMRAA.*

2013b Is the Medium the Message? Petroglyphs and Pictographs as Cultural Markers at the Interface of the Great Basin and Columbia Plateau in Oregon. In *Ancient Hands Around the World, International Federation of Rock Art Organizations 2013 Proceedings,* edited by Peggy Whitehead and Mavis Greer. *American Indian Rock Art*, 40:1215–1234. Glendale, AZ: American Rock Art Research Association. ISBN: 978-0-9888730-1-8.

Keywords: Upper John Day River Basin and Harney Basin, in the southern Columbia Plateau and northern Great Basin, eastern Oregon United States. North America. Cultural boundary markers. *LMRAA, ALL.*

Hann, Don, and Gordon Bettles

2006 House of the Rising Sun: Using the Ethnographic Record to Illuminate Aspects of Klamath Basin Rock Art. In *Talking with the Past: The Ethnography of Rock Art,* Chapter 9, Oregon Archaeological Society Press Publication, 16:176–199. Portland: Oregon Archaeological Society. ISBN: 0-9764804-3-3.

Keywords: Klamath Basin, Oregon. Ufie Hill, Tule Lake, House of the Rising Sun, northeastern California.United States. Ethnography. Sacred geography. Klamath/Modoc rock art. Concentric circle motif(s). A particular cave with scratched and incised petroglyphs is related to a mythic story collected by ethnographers in the late 1800s from Ko-a-lak'-a, a Modoc woman. *LMRAA.*

Hann, Don, James D. Keyser, and Phillip Minthorn Cash Cash

2003 Columbia Plateau Rock Art: A Window to the Spirit World. In *The Ethnography of Rock Art,* edited by David S Whitley. Walnut Creek, CA: Alta Mira Press.

Keywords: Columbia Plateau, Washington, northwest United States. North America. Ethnography. *Biblio.*

2010 Columbia Plateau Rock Art: A Window to the Spirit World. In *Rock Art of the Oregon Country: Honoring the Lorings' Legacy,* edited by James D. Keyser and George Poetschat. Oregon Archaeological Press Publication, 18:1–24. Portland: Oregon Archaeological Society. ISBN 978-0-9764804-8-8.

Keywords: Columbia Plateau, Columbia River, Washington, Oregon. Northwest. United States. North America. Shaman. Vision quest. Pigments. Hunting. Magic. Mortuary practice. Mythology. Ethnography. *LMRAA*.

Hann, Don, and Daniel Leen

2017 *Pushing the Boundaries: The Pictographs & Petroglyphs of Oregon's Harney Basin*. Oregon Archaeological Society Press. ISBN: 978-0-9915200-2-2.

Keywords: Harney Basin, Blue Mountain Range, southeastern Oregon. Northern Great Basin. United States. North America. Paiute. Klamath. Modoc. Report constructed around the detailed drawings produced by Daniel Leen in the 1980s. *LMRAA*.

Harman, Jon

1997 Modoc Summer Solstice Trip. *Bay Area Rock Art News*, December, XV(2):1–2. San Francisco, CA: Bay Area Rock Art Research Association.

Keywords: Big Painted Cave, Symbol Ridge, Juniper Cave, Gillem's Bluff, Petroglyph Point (CA-MOD-1), Lava Beds National Monument. Horse Mountain. Boles Creek. Modoc County, California. United States. North America. Modoc rock art. Heart of the creator motif(s). *LMRAA.*

Harris, J.

1949 Indian Pictographs of South Central British Columbia. *Thirteenth Annual Report of the Okanagan Historical Society*, pp. 22–23. Vernon, B.C.: Okanagan Historical Society.

Keywords: South Central British Columbia, Canada. North America. *Biblio.*

Hauge, Muriel Jean

1986 100 Years of Yakima Indian Nation Art. Master's thesis, Central Washington University, Ellensberg. <https://digitalcommons.cwu.edu/etd/1555/>. Accessed 7 September 2021. 77 pp.

Keywords: Washington, Columbia River, northwest United States. North America. Yakama (Yakima) rock art. See Prehistoric Art, pp. 24–30. *MNA*.

Hauser, Paul

1957 Petroglyph at City Hall Suggests Buddhist Rites. *The Oregonian*, 22 March, LIII(1). Portland, OR.

Keywords: Columbia River, Portland, Oregon. Northwest United States. North America. Petroglyph boulder on display at city hall. Buddhist interpretations of symbols suggested. *LMRAA*.

Hedden, Mark

1956a Descriptive Catalogue of Petroglyph Prints for the University of Washington from The Dalles Dam Reservoir. Unpublished manuscript, Burke Memorial Museum, University of Washington, Seattle.

Keywords: The Dalles, Columbia River, Oregon. Washington. Northwest United States. North America. *KBORE, MNA*.

1956b The Mountain Sheep of Petroglyph Island, Unpublished manuscript, Washington State Museum, University of Washington, Seattle.

Keywords: Petroglyph Island, Washington. Columbia River. Northwest United States. North America. *RANMAB*.

1956c Petroglyphs of The Dalles Area. Unpublished manuscript, Oregon Archaeological Society, Portland.

Keywords: The Dalles, Columbia River, Washington, northwest United States. North America. *Biblio*.

1957 Petroglyphs. *Craft Horizons*, 17(5):29–31. New York, NY.

Keywords: The Dalles, Columbia River, Oregon. Washington. Northwest United States. North America. *RANMAB, MNA*.

1958 "Surface Printing" as a Means of Recording Petroglyphs. *American Antiquity*, 23(4):435–439. Salt Lake City, UT: Society for American Archaeology.

Keywords: The Dalles, Washington, Columbia River, northwest United States. North America. Documentation. Recording methodology: rubbing, surface printing. *RANMAB, Internet*.

1964 Summary of a Study of Prehistoric Petroglyphs Recorded within The Dalles Reservoir, Columbia River, Oregon. Grant #1527 from the Wenner-Gren Foundation for Anthropological Research. Report on file. Portland: Oregon Archaeological Society.

Keywords: The Dalles Reservoir, Horsethief Lake, Washington, Columbia River. Northwest United States. North America. *MNA*.

2002 For the Record. *Eastern States Rock Art Research Association Newsletter*, 7(1):6. Eastern States Rock Art Research Association.

Keywords: The Dalles, Columbia River, Washington. Pacific Northwest. United States. North America. The Oregon Archaeological Society plans a publication of Hedden's photographs and archival material relating to the pre-dam innundation of these petroglyph sites. The archival materials are on file at the Burke Museum, Seattle, Washington. *LMRAA*.

Heizer, Robert F.

1972 Catalogue of Manuscripts Deposited in the Archaeological Research Facility. *Reports of University of California Archaeological Survey*, (75):43–63. Berkeley: Department of Archaeology, University of California.

Keywords: California. Including Files: #15 CA-MOD-1 (Petroglyph Point, Modoc County); #27 California; #45 CA-SLO-79 Painted Rock (P-40-000079); #51 CA-MNT-86; #58 Modoc and Lassen Counties; #59 Naval Ordinance Station, Inyokern, Inyo County; #61 California; #114 CA-SBA-508; #132 California; #146 Northern California; #157 California;

#242 CA-PLA-26; #244 Central California and Western Nevada; #247 Rocky Hill, Tulare County; #250 Lagomarsino, Storey County, Nevada; #252 Fresno And Tulare Counties; #273 Tule Lake, Modoc County; #292 Fresno And Tulare Counties; #300 Brooks Island, Contra Costa County; #312 Mouse Tank Nv-Cl-145, Picnic Nv-Cl-146, and Atlatl Rock Nv-Cl-1, Nevada; #319 California; #345 Arizona and Nevada; #386 Kern County; #408 Modoc Lava Beds National Monument; #409 Inyo and Mono Counties; #411 California; #415 Chalfant, Swansea, Inyo County; #432 Colorado River. United States. North America. Catalog of research files containing notes, photographs, drawings, and manuscripts. Bibliography. Petroglyphs. Pictographs. Incised pebbles, portable rock art. Rain rocks. Modern Petrography (Western Message Petroglyphs). Rock feature. Intaglio (geoglyph), ground figure. *LMRAA (photo copy).*

Heizer, Robert F., and Martin A. Baumhoff

1962 *Prehistoric Rock Art of Nevada and Eastern California University of California. Anthropological Records*. Berkeley: University of California Press. 412 pp.

Keywords: Nevada and Eastern California. Great Basin. Nevada Counties—Churchill, Clark, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Licoln, Lyon, Mineral, Nye, Pershing, Storey, Washoe, and White Pine. California Counties—Inyo, Lassen, Modoc, Mono, Placer, and Plumas. United States. North America. Classic study of hunting hypothesis. Deer, antelope, bighorn sheep. Styles—Great Basin Representational, Great Basin Abstract, Great Basin Painted, Great Basin Scratched, Puebloan Painted, and pit-and-groove. Cupule. *LMRAA, BSL,* see *BSABSR* for summary, *NADB #925171.*

Heizer, Robert F., and C. W. Clewlow, Jr.

1973a *Prehistoric Rock Art of California. Texts and Plates*, *Vol. 1*. Ramona, CA: Ballena Press Publications. 149 pp.

Keywords: Amador, Butte, Calaveras, Contra Costa, El Dorado, Fresno, Humboldt, Imperial, Inyo, Kern, Lake, Los Angeles, Lassen, Madera, Mendoc Inyo, Merced, Modoc, Mono, Monterey, Mariposa, Nevada, Orange, Placer, Plumas, Riverside, Sacramento, Santa Barbara, San Bernardino, San Diego, Channel Islands (San Nicolas, Santa Cruz), Santa Clara, Shasta, Sierra, Siskiyou, San Luis Obispo, Stanislaus, Trinity, Tulare, and Tuolumne Counties, California. United States. North America. Great Basin Petroglyph Style. Central Sierra Petroglyph Style. North Coast Petroglyph Style. Southwest Coast Petroglyph Style. Northeast Painted Style. South Coast Range Painted Style. Southwest Coast Painted Style. Santa Barbara Painted Style. Southern Sierra Painted Style. *LMRAA,* see *BSABSR* for summary*, RCSL (photo copy), NADB #1062147, ICOMOS.*

1973b *Prehistoric Rock Art of California, Figures*, *Vol. 2*. Ramona, CA: Ballena Press Publications. 149 pp.

Keywords: Amador, Butte, Calaveras, Contra Costa, El Dorado, Fresno, Humboldt, Imperial, Inyo, Kern, Lake, Los Angeles, Lassen, Madera, Mendoc Inyo, Merced, Modoc, Mono, Monterey, Mariposa, Nevada, Orange, Placer, Plumas, Riverside, Sacramento, Santa Barbara, San Bernardino, San Diego, Channel Islands (San Nicolas, Santa Cruz), Santa Clara, Shasta, Sierra, Siskiyou, San Luis Obispo, Stanislaus, Trinity, Tulare, and Tuolumne Counties, California. United States. North America. Great Basin Petroglyph Style. Central Sierra Petroglyph Style. North Coast Petroglyph Style. Southwest Coast Petroglyph Style. Northeast Painted

Style. South Coast Range Painted Style. Southwest Coast Painted Style. Santa Barbara Painted Style. Southern Sierra Painted Style. *LMRAA, NADB #1062147, ICOMOS.*

Heizer, Robert H.

1942 A Decorated Mortar in Columbia Valley Art Style. *The American Anthropologist*, 44(3):534–537. Washington, D.C.: Anthropological Society of Washington.

Keywords: Columbia River valley, Washington, northwest United States. North America. Mobiliary (portable) art. Decorated mortar. Stone carvings. *MNA*.

Hill, Beth, and Ray Hill

1974 *Indian Petroglyphs of the Pacific Northwest*. Seattle: University of Washington Press. 314 pp.

Keywords: Puget Sound, Prince Rupert, Alaska, Lower Columbia River, The Dalles, Washington. Pacific Northwest United States. North America. Culture, religion, design distribution, site inventory. Includes "historic ship" motif(s). *LMRAA, BSL, NADB #1402708*.

Hill-Tout, Charles

1978 *The Salish People: The Local Contributions of Charles Hill-Tout: The Thompson and Okanagan*, *Vol. 1.* Vancouver, B.C.: Talonbooks.

Keywords: British Columbia Plateau, Canada. Washington. Northwest. United States. North America. Thompson Indian. Okanagan Indian. Rock paintings were made by local shamans (see p. 48, per David Whitley, *INORA*, 2000). Ethnology. *Biblio (first published 1900).*

Hinds, Norman E. A.

1952 Evolution of the California Landscape. *State of California Division of Mines Bulletin*, December, No. 158. San Francisco: State of California Division of Mines. 240 pp.

Keywords: California. Sierra Nevada. Basin-Ranges. Mojave Desert. Colorado Desert. Modoc Plateau. Cascade Range. Klamath Mountain. Great Valley. Coast Ranges. Transverse Ranges. Peninsular Ranges. Sea floor. United States. North America. Geologic history. *LMRAA, BSL.*

Hines, Donald M.

1992 *Ghost Voices: Yakima Indian Myths, Legends, Humor and Hunting Songs.* Issaquah, WA: Great Eagle Publishing. ISBN-10: 096295392X, ISBN-13: 978-0962953927. 435 pp.

Keywords: Columbia River, Washington. Northwest United States. North America. Yakama (Yakima) Indian. Medicine men [shamans] made and used rock art, and could interpret it (see pp. 104–107, 331–332, per David Whitley, *INORA*, 2000). Ethnography. *Biblio, Internet.*

1993 *Magic in the Mountains: The Yakima Shaman: Power and Practice*. Issaquah, WA: Great Eagle Publishing. ISBN-10: 0962953938, ISBN-13: 978-0962953934. 252 pp.

Keywords: Columbia River, Washington. Northwest United States. North America. Yakama (Yakima) Indian. An Indian doctor [shaman] whose spirits painted the pictures on the rock, painted one of the rock art designs on the face of a woman who he was curing (see p.103, per David Whitley, *INORA*, 2000). Ethnology. *Biblio*.

Hinze, Hans-Peter

2015 Wo der Rabe die Sonne an den Himmel Brachte Felsbildabriebe durch Dietrich Evers an der Nordamerikanischen Nordwestküste und in der Columbia-River-Regions. *Botschaften in Stein. Dokumentiert, Interpretiert und Experimentiert Gedenkschrift zum 100. Geburtstag des Felsbildforschers und Experimentalarchäologen,* No. 68, edited by Dietrich Evers, Hans-Jürgen Beier, and Hans-Peter Hinze, pp. 143–168. Lagenweissbach, Germany: Beier & Beran, Archaeologische Fachliteratur. ISBN 978-3-95741-018-4.

Keywords: Columbia River, Washington, Oregon, northwest United States. North America. Dietrich Evers. Photography. History of research. *Acacemia.edu*.

Hittell, Mrs. Theodore H.

1893 California's Pictographs and Hieroglyphics. *Science* (new series), 17 March, 21(528):146–147. American Association for the Advancement of Science. <http://science.sciencemag.org/content/ns-21/528/146>. Accessed 1 December 2018.

Keywords: Donner Summit, fourteen miles south of Donner Lake, Headwaters of the North Fork of the American River, Sierra Nevada mountains, California. Walker River, Revielle, Nevada. The Dalles, Columbia River, Oregon (Washington), Zuni, New Mexico, Oakly Springs (Willow Springs, Tuba City), Arizona, United States. North America. *Internet*.

Hollenbeck, Jan L., and Susan L. Carter

1986 A Cultural Resource Overview: Prehistory and Ethnography, Wenatchee National Forest. Wenatchee, WA: USDA Forest Service, Wenatchee National Forest.

Keywords: Domke Falls pictograph site, Tumwater Petroglyph site, and Tumwater Canyon Pictographs (45CH224), Wenatchee National Forest, Washington, Columbia Plateau, northwest United States. North America. Inventory. Brief descriptions. *MNA*.

Hopson, E.G.

1920 High Writings on Lake Shore. *The Oregonian*, 20 November. Portland, OR.

Keywords: Big Eddy, Lake Chelan (45CH66), Columbia River, Washington. Northwest United States. North America. *MNA*.

Horner, John B.

1919 Prehistoric Inscriptions on the Columbia. In *Oregon–Her History, Her Great Men, Her Literature*, pp. 234–235. Corvallis, OR: Gazette Times Press.

Keywords: Arlington, Oregon, Columbia River. Northwest United States. North America. *MNA*.

1920 Ancient Races in Oregon had Many Styles of Worship. *The Oregonian*, 15 February. Portland, OR.

Keywords: Columbia River, Oregon, Washington, northwest United States. North America. Interpretation. Sun worship. *MNA*.

1923 Remarkable Inscriptions by Ancient Oregonians are among Attractions of Mighty Columbia River. *The Oregonian,* 1 April. Portland, OR.

Keywords: Columbia River, Cascadia Cave, Oregon, Roosevelt (45KL14), Washington, northwest United States. North America. Interpretation. Sun worship. Calendar stone. Lizard motif(s). *MNA*.

1925 Sherman and Wasco Citizens Pay Honor to Memory of Old Sun-Worshipers Who Lived on Columbia. *The Oregonian,* 26 April. Portland, OR.

Keywords: Columbia River, Big Eddy, Washington, Oregon, northwest United States. North America. Interpretation. Sun worship. Wishram. *MNA*.

1928 Sun Worship Among the Ancient Columbians. In *Days and Deeds in the Oregon Country*, pp. 39–47. Portland, OR: J.K. Gill Co.

Keywords: Columbia River, Washington, Oregon, northwest United States. North America. Interpretation. Sun worship. Wishram. Umatilla. *MNA*.

1931 Earliest Religions in Oregon. In *Oregon History and Early Literature*, pp. 14–22. Portland, OR: J.K. Gill Co.

Keywords: Columbia River, Washington, Oregon, northwest United States. North America. Interpretation. Sun worship. Phallic worship. Fire worship. Wishram. *MNA*.

1932 Petroglyphs in Arlington District Cast Light on Primitive Dwellers of Oregon. *The Oregonian*, 11 September. Portland, OR. <https://www.academia.edu/61804345/Glyphland_The_strange_story_of_a_century_of_speculation_and_promotion_and_the_unlikely_journey_of_the_Roosevelt_Washington_petroglyphs>. Accessed 12 May 2022.

Keywords: Roosevelt (45KL14), Arlington, Columbia River, Oregon, Washington, northwest United States. North America. Domestication. Age. *Academia.edu*.

Howard, J.D., and C.A. Higgins

1925–1932 *Petroglyphs at CA-MOD-1.* File #15. Unpublished research file, Archaeological Research Facility, University of California, Berkeley.

Keywords: CA-MOD-1 (Petroglyph Point), Tule Lake, Modoc County, California. United States. North America. Collection of various photographs, drawings and articles. *UCBARF, BSABSR*.

Hughes, Steven H.

2020 *Lost Rock Art of the Columbia River*. In *Patina,* Vol. 1 and Vol. 2. Salt Lake City: Utah Rock Art Research Association. <http://www.utahrockart2.org/pubs/patina/2020-Hughes_LOST_ROCK_ART_OF_THE_COLUMBIA_RIVER_volume_One.pdf and http://www.utahrockart2.org/pubs/patina/2020-Hughes_LOST_ROCK_ART_OF_THE_COLUMBIA_RIVER_volume_Two.pdf>. Accessed 20 September 2021. Vol. 1: 253 pp., Vol. 2: 263 pp.

Keywords: MP123 (between Cliffs and Towal), below John Day River 2 mi., John Day River confluence, John Day River 1 mi. upstream, MP133 - Isle 1 mi. below Rock Creek, Fountain Bar, Mp135.5 below Sundale, MP139, Roosevelt Site 45KL14, MP148, MP158 McCredie, The Dalles, Columbia River, Washington, John Day River, Oregon, northwest United States. North America. 477 photographs taken by amateur photographer, Howard F. Hughes (1903–1967) at 19 petroglyph and pictograph sites circa 1957. Digital photo archive from original 35mm Kodachrome film processed as slide transparencies. These sites are now largely inundated with some of the petroglyph boulders having been salvaged and moved from *in situ*. Accompanying maps with GPS coordinates of approximate locations are included.

Hyder, William D., and Georgia Lee

1990 Modoc Rock Art: A Reevaluation. *American Indian Rock Art*, XVI:237–252. National Park Service, American Rock Art Research Association, and University of Texas, Austin.

Keywords: Fern Cave, Petroglyph Point (CA-MOD-1), Lava Beds National Monument, Modoc County, northeast California. Klamath Basin. Tule Lake. United States. North America. Modoc Style rock art. Klamath. *LMRAA*.

Istvanffy, Denes G.

1962 Painted Rock Sites. *The Trowel and Screen*, 3(10):7. Billings, MT: Billiings Archaeological Association.

Keywords: Painted Rock Sites (24LA5), west shore of Flathead Lake, Lake County, Montana. United States. North America. Ethnography: Baptiste Mathias, signatures of the spirits. Straight lines are signifiers of time. Malouf Style I. Columbia Plateau culture. *LMRAA*.

Jacobs, Jim

1993 Petroglyphs Losing Ground to Time, Trash and Graffiti. *Seattle Time*s (Pictorial section), 26 September. Seattle, WA. <archive.seattletimes.com/archive/?date=19930926&slug=1723031>. Accessed 15 May 2022.

Keywords: Buffalo Eddy petroglyphs (45AS14), 14 miles south of Asotin, Snake River, Washington, Idaho, northwest United States. North America. Cultural resource management. Conservation and preservation. Nez Perce. National Park Service. Graffiti. Vandalism. *MNA*.

Johnson, Robyn L.

1998 *A Stylistic Analysis of Pictographs and Petroglyphs in Hells Canyon*. Master's thesis, University of Montana, Missoula. 81 pp.

Keywords: Hells Canyon, Idaho, Oregon, and Washington, defined as the upper reach of the Lower Snake River between the confluence of the Power and the Salmon Rivers, northwest United States. Columbia Plateau. North America Style analysis. *Internet, OATD*.

Johnson, Tony A., and Adam McIssac

2013 Lower Columbia River Art. In *Chinookan Peoples of the Lower Columbia*, edited by Robert T. Boyd, Kenneth M. Ames, and Tony A. Johnson, pp. 199–225. Seattle: University of Washington Press.

Keywords: Lower Columbia River, Washington, Oregon, northwest United States. North America. Chinookan art styles. Tsagaglalal (She-Who-Watches). *MNA*.

Jones, Tate, and Martin E. McAllister

2019 The Use of 3D Laser Scanning in Forensic Archaeology to Document Unauthorized Archaeological Damage. In *Forensic Archaeology*, edited by K. Moran and C. Gold, pp. 223–234. Cham, Switzerland: Springer. <https://link.springer.com/chapter/10.1007/978-3-030-03291-3_14>. Accessed 22 March 2019.

Keywords: Red Elk Rock Shelter (10NP287), Lewiston, Idaho. Columbia Plateau. United States. North America. Cultural resource management. Conservation and preservation. Forensic archaeology. 3D laser scanning. Vandalism. Looting.

Abstract: "This chapter addresses the use of 3D laser scanning to document unauthorized archaeological damage in lieu of conventional archaeological documentation methods. The first use of 3D laser scanning in archaeological damage assessment occurred in the Red Elk Rock Shelter case investigation. Due to the complexity of the site involved and the damage to it, conventional archaeological documentation methods would have been extremely time-consuming and expensive. As a result of this case, the basic benefits of 3D laser scanning to document archaeological damage became immediately apparent to the archaeologists involved. These benefits will be fully described in the following discussion of 3D laser scanning and in case studies of its use." *GoogleScholar*.

Kaiser, David A.

2010 Tunnel Vision: The Rayed Arc Motif in Columbia Plateau Rock Art Interpreted as Transitional Entoptic Imagery. In *Rock Art of the Oregon Country Honoring the Lorings' Legacy,* edited by James D. Keyser and George Poetschat. Oregon Archaeological Society Press Publication, 18:25–34. Portland: Oregon Archaeological Society. ISBN 978-0-9764804-8-8.

Keywords: Columbia Plateau, Washington, Oregon. Northwest United States. North America. Rayed arc motif(s). Entoptics. Western Columbia Plateau Style. Trance. *LMRAA, RASNWV.*

2016 Willamette Falls: Rock Art at the End of the Oregon Trail. *American Indian Rock Art,* edited by Ken Hedges, 42:15–24. San Jose, CA: American Rock Art Research Association. ISBN: 978-0-988730-3-2.

Keywords: Willamette Falls, Columbia Plateau, Oregon. Northwest United States. North America.

2017 Cannibal Woman on the Columbia—Exploring a Mythological Motif. *American Indian Rock Art*, edited by Ken Hedges and Mark A. Calamia, 43:1–9. San Jose, CA: American Rock Art Research Association. ISBN: 978-0-9888730-4-9.

Keywords: Crawford Point, Miller Island, John Day Bar, Four O'clock Rapids, Blalock Rapids, and Vantage, Columbia River, Washington, northwest United States. North America. Cannibal Woman motif(s). Myth. Indian doctor. Shaman. *LMRAA*.

Kaiser, David A., and Julia Cleary

2020 Image Rock: Rediscovering a Petroglyph in the High Cascades. *Journal of Northwest Anthropology*, 54(2):165–174.

Keywords: Image Rock, Table Rock Wilderness area of the Cascade mountain range near Molalla, western Oregon, northwest United States. North America. Columbia Plateau culture sphere. *GoogleScholar*.

Kaiser, David A., and James D. Keyser

2010 Rood Canyon Rockshelter: Biographic Rock Art in the Southeastern Columbia Plateau. In *Rock Art of the Oregon Country Honoring the Lorings' Legacy,* edited by James D. Keyser and George Poetschat, Oregon Archaeological Press Publication, 18:67–92. Portland: Oregon Archaeological Society. ISBN 978-0-9764804-8-8.

Keywords: Rood Canyon, Southeastern Columbia Plateau, Lonerock, Blue Mountains, east-central Oregon. Northwest United States. North America. 44 pictographic elements representing iconic Columbia Plateau Tradition and Columbia Plateau Biographic Tradition rock art. *LMRAA.*

2018 A Tale of Two Sites: Comparing Two Columbia Plateau Pictograph Sites. In *American Indian Rock Art,* edited by David A. Kaiser and James D. Keyser, 44:45–58. San Jose, CA: American Rock Art Research Association. ISBN: 978-0-988730-5-6.

Keywords: Spedis Creek (45KL81), The Dalles, Columbia Hills State Park, Columbia River, Washington and Harris Canyon (35SH274), Deschutes, Oregon, northwest United States. North America. Inter-site comparison, multi-purpose site, vision quest site. *LMRAA*.

Keaveny, Shannon

2002a Shamanic Rock Art: Tribal Elders from the Columbia River Basin Share Their Knowledge with World Scholars. *Spilyay Tymoo [Coyote News],* 14 September, pp. 8, 12. Warm Springs, OR. <https://oregonnews.uoregon.edu/lccn/sn93050507/2002-09-19/ed-1/seq 8/#words=art+ART+Art+ROCK+rock+Rock>. Accessed 15 November 2021.

Keywords: Columbia River, Washington, Oregon, northwest United States. North America. Indigenous knowledge. Worldview. Shamanism. Warm Springs. Yakama (Yakima). Oral History. Ethnography. *Internet*.

2002b Tribes Consider Petroglyph Relocation Plan. *Spilyay Tymoo [Coyote News],* 26 December, 27(26):1, 3. Warm Springs, OR. <https://oregonnews.uoregon.edu/lccn/sn93050507/2002-12-26/ed-1/seq-1/#words=Petroglyph+petroglyph+petroglyphs>. Accessed 15 November 2021.

Keywords: Celilo Falls, The Dalles Dam, Petroglyph Canyon, Horsethief State Park (45KL58), Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Removal from *in situ*. Confederated Tribes of Warm Springs, Yakama Nation, Umatilla, Nez Perce. Army Corps of Engineers. *Internet*.

2006a Shamanistic Rock Art: Tribal Elders from the Columbia River Basin Share Their Knowledge with World Scholars. In *Talking with the Past: The Ethnography of Rock Art*, Oregon Archaeological Society Press Publication, 16:328–332. Portland: Oregon Archaeological Society. ISBN: 0-9764804-3-3.

Keywords: Columbia River, Washington. Oregon. Northwest United States. North America. Ethnography. Article reprinted from *Spilyay Tymoo*, tribal newspaper for the Confederated Tribes of the Warm Springs Reservation of Oregon, 14 September 2002. Reviews Native participation in the 6 September 2006 forum, The Shamans of Prehistory: New Perspectives on World Rock Art, Portland State University. *LMRAA*.

2006b New Theories Shed Light on Tribal Rock Art. In *Talking with the Past: The Ethnography of Rock Art Oregon*, Oregon Archaeological Society Press Publication, 16:327–328. Portland: Oregon Archaeological Society. ISBN: 0-9764804-3-3.

Keywords: Columbia River Plateau. United States. North America. Ethnography. Article reprinted from *Spilyay Tymoo*, Tribal newspaper for the Confederated Tribes of the Warm Springs Reservation of Oregon, 14 September 2002. Reviews Native participation in the 6 September 2006 forum, The Shamans of Prehistory: New Perspectives on World Rock Art, Portland State University. *LMRAA*.

Kelly, John W.

1929 Mystery of Klamath Basin. *The Oregonian,* 10 November:2, 4. Portland, OR.

Keywords: Petroglyph Point, Klamath Basin. Southeast Oregon, northwest United States. North America. Columbia Plateau cultural sphere. *MNA*.

Kennedy, Barbara

1979a Initial Attempts at Conservation Work at Rock Art Sites in British Columbia. In CRARA '77: Papers of the Fourth Biennial International Conference of the Canadian Rock Art Research Associates, edited by Doris Lundy. *Heritage Record,* (8):285–292. Victoria: British Columbia Provincial Museum.

Keywords: Monsell Site, Yellow Point Road (DgRx8). Petroglyph Park (DgRx6). Sproat Lake (DhSf1). Cyclops (DiRb23). Trees (DiRb2). Deer Corral (D9Ra7). British Columbia, Canada. North America. Cultural resource management. Conservation and preservation. *LMRAA, RABNPV, Biblio.*

1979b Report on the Removal of the Pictograph DlPg-3. *Regional Advisor Newsletter*, 3(1):7–10.

Keywords: DlPg-3, Fernie, southeastern British Columbia, Canada. North America. Conservation and preservation. Removal of pictograph panel due to road widening.

Kennedy, B., and S. Cassidy

1981 The Cranbrook Petroglyphs. *Datum*, 6(2):6–7. Victoria: Archaeological Sites Advisory Board of British Columbia.

Keywords: Cranbrook, southeast British Columbia. North America. *Biblio.*

Kennedy, B., and Doris Lundy

1976 Rock Art Conservation: The Sproat Lake Petroglyphs. *Datum*, 2(2):8–10. Victoria: Archaeological Sites Advisory Board of British Columbia.

Keywords: Sproat Lake, British Columbia, Canada. North America. Cultural resource management. Conservation and preservation. *CRARA.*

Kennedy, Dorothy, and Randall Bouchard

1998a Lillooet. In *Handbook of North American Indians, Vol. 12, Plateau*, edited by Deward E. Walker, Jr., pp. 174–190. Washington: Smithsonian Institution.

Keywords: British Columbia Plateau, British Columbia, Canada. North America. Lillooet Indian. Vision quest. Puberty training. Adolescents painted pictographs of their visions on rock bluffs, stones or trees (see p. 184, per David Whitley, *INORA*, 2000). Ethnograpphy.

1998b Northern Okanagan, Lakes and Colville. In *Handbook of North American Indians, Vol. 12, Plateau,* edited by Deward E. Walker, Jr., pp. 238–252. Washington: Smithsonian Institution.

Keywords: British Columbia Plateau, Okanagan, British Columbia, Canada. North America. Vision quest. Puberty training. Adolescents painted pictographs of their visions on rock bluffs or boulders (see p. 249, per David Whitley, *INORA*, 2000). Ethnography.

Keyser, James D.

1981 Pictographs at the DesRosier Rockshelter. *Plains Anthropologist*, 26(94):271–276. Lincoln, NB: Plains Anthropological Society. ISSN: 0032 0447.

Keywords: DesRosier Rockshelter, Montana. United States. North America. Columbia Plateau cultural sphere. *Biblio, MNA.*

1989 The Magic of the Hunt. *The Longbow*, 6(3):12–13.

Keywords: Washington, Oregon, Columbia Plateau, northwest United States. North America. Hunting magic. *MNA.*

1990 Tsagaglalal, She Who Watches: Rock Art as an Interpretable Phenomenon. *Journal of Interpretation*, 14(2):S1–S4.

Keywords: Horsethief State Park (45KL58), Columbia River, Washington. Pacific Northwest. United States. North America. Tsagaglalal motif(s). *Biblio.*

1992a Western Montana Rock Art: Images of Forgotten Dreams. *Montana: The Magazine of Western History*, 42(3):58–69.

Keywords: Western Montana, United States. North America. Columbia Plateau culture. *NADB #5191413. Biblio.*

1992b *Indian Rock Art of the Columbia Plateau*. Seattle: University of Washington Press. 138 pp.

Keywords: Columbia River Plateau. British Columbia. Oregon. Washintgton. Central Idaho. Western Montana. Hell's Canyon. United States. North America. Animal figures. Human figures. Tally marks. Geometric designs. Rayed arc, twins, horse, motif(s). Faces. Bear tracks. Pit and groove. Tsagaglalal. *LMRAA, HLH.*

1993 Remnants of a Vanished Culture: Columbia River Rock Art. *Columbia: The Magazine of Northwest History*, 71:28–36. Tacoma: Washington State Historical Society. ISSN: 0892 3094.

Keywords: Central Washington. Columbia River. Northwest United States. North America. Yakima Polychrome Style. Central Columbia Plateau Style. Long Narrows Style. North Oregon Rectilinear Style. Tsagaglalal, human figures, faces, mythical beings, animals, bear tracks, rayed arcs and rayed circles, polychrome rayed figures, stars, linear geometric figures, tally marks, motif(s). Vision quest. Shamanism. *LMRAA (photo copy).*

1994 *Indian Petroglyphs of the Columbia Gorge, The Jeanne Hillis Rubbings*. Clinton, TN: J.Y. Hollingsworth Company. 25 pp.

Keywords: The Dalles, Columbia River Gorge. Washington. Oregon. Northwest United States. North America. General introduction to the rock art of the region, illustrated with the photographs of Jeanne Hillis' rubbings. The Hillis collection of rubbings is now held at Skamania Lodge. *LMRAA*.

2005 Pictographs of the High Cascades: Rock Art of Western Oregon. Umpqua National Forest Heritage Report HRD-04-027. Umpqua National Forest. Portland, OR. 83 pp.

Keywords: Dog Creek Cave (35D)266), Randy's Rockshelter (35D)262), Little Bend Creek Rockshelter (35DO19), Medicine Creek Rock Shelter (35DO9), Cascade Mountains, western Oregon. Northwest. United States. North America. Study of four painted rock shelters. Ethnographic accounts. *Biblio, LMRAA*.

2007a Direct Evidence for the Use of Indirect Percussion in Petroglyph Manufacture. *INORA, International Newsletter on Rock Art*, 49:25–27. Foix: Comite International d'Art Rupestre (CAR-ICOMOS). ISSN: 1022-3282. <http://www.icomos.org/centre_documentation/inora/inora49/inora-49.pdf>. Accessed 22 April 2017.

Keywords: Horsethief Lake, Columbia Hills State Park (formerly Horsethief State Park, 45KL58), Columbia River, Washington. Northwest. United States. North America. Techniques of petroglyph manufacture: indirect percussion. Chisel stone found relating to use in indirect percussion manufacture of petroglyphs. *LMRAA*.

2007b A Newly Recognized Tsagaglalal Figure from the Columbia River. *Screenings*, 56:34–35. Portland: Oregon Archaeological Society.

Keywords: Columbia River, Washington, Northwest. United States. North America. Tsagaglalal motif(s). *Biblio*.

2010 Fisher's Landing Rock Art: An Evaluation of the Petroglyphs at 45CL6. In *Rock Art of the Oregon Country: Honoring the Lorings' Legacy,* edited by James D. Keyser and George Poetschat, Oregon Archaeological Press Publication, 18:35–66. Portland: Oregon Archaeological Society. ISBN 978-0-9764804-8-8.

Keywords: Fisher's Landing (45CL6), Clark County, Columbia River, Vancouver, Washington, Oregon. Northwest. United States. North America. OAS survey, mapping and recording project under contract to private land owner. Fifty-one culturally modified boulders including the bas-relief "beaver bowl." Beaver, human, elk, geometric, and cupule motif(s). "Minature water landscape" boulder carved such that water flows in channels between two carved bowls. Effigy carvings. "Spine stones." "Ribstones." Salmon run, fertility, vision quest, shaman's art. *LMRAA*.

2012 A Newly Recognized Tsagaglalal Figure from the Columbia River. *Screenings*, 61(2):1–3. Portland: Oregon Archaeological Society.

Keywords: Columbia River, Washington, Northwest. United States. North America. Tsagaglalal motif(s). *Biblio*.

2016 Rock Art as a Landscape. In *Rock Art: A Vision of a Vanishing Cultural Landscape*, pp. 104–106. Boulder, CO: Johnson Books. ISBN 978-1-55566-465-7.

Keywords: Pittsburg Landing, Hells Canyon, Snake River, Columbia River, Washington, northwest United States. North America. Petroglyphs on flood deposited basalt boulders. *LMRAA*.

2017 The Cut Bank Creek Survey: New Sites in Central Montana (USA). *INORA, International Newsletter on Rock Art*, 78:13–20. Foix: Comite International d'Art Rupestre (CAR-ICOMOS). ISSN: 1022-3282.

Keywords: Cut Bank Creek, central Montana, Northern Plains, United States. North America. Regional survey (six sites). Historic rock art. Blackfoot Indian. Crow Indian. Vertical Series Tradition. Foothills Abstract Tradition. Columbia Plateau Tradition. Biographic Narrative Art. "Calling Card" type site. *LMRAA.*

2018 Tsagaglalal, She Who Watches: Rock Art as an Interpretable Phenomenon. In *Narratives and Journeys in Rock Art: A Reader,* edited by George Nash and Aron Mazel, pp. 636–644. Oxford, U.K.: Archaeopress. ISBN: 978-1-78491-560-5.

Keywords: The Dalles, Horsethief State Park (45KL58), Columbia River, Washington. United States. Far western North America. Tsagaglalal, She-Who-Watches motif(s). Revised and expanded version of James D. Keyser, *Journal of Interpretation*, 1990. S1-S4. *LMRAA*.

2021 A First Look at the Vissotzky Petroglyphs: A New Site Type in Western Montana. *American Indian Rock Art*, 47:17–24. American Rock Art Research Association.

Keywords: Vissotzky petroglyph site, western Montana. United States. North America. Columbia Plateau cultural sphere. *MNA.*

Keyser, James D., and Phillip Minthorn Cash Cash

2002 A Carved Quirt Handle from the Warm Springs Reservation: Northern Plains Biographic Art in the Columbia Plateau. *Plains Anthropologist*, 47(180):51–59. Lincoln, NB: Plains Anthropological Society. ISSN: 0032 0447. <http://www.questia.com/library/1P3-110457004/a-carved-quirt-handle-from-the-warm-springs-reservation>. Accessed 19 August 2012.

Keywords: Warm Springs Reservation, Columbia Plateau, Oregon. Northern Plains. United States. North America. Plains Biographic art on carved quirt handle. Nez Perce. Sioux Indian. *LMRAA (photo copy).*

Keyser, James D., David A. Kaiser, and David L. Minick

2019 *Visions for Life and Death. Pictographs of the Lower Columbia River*. Oregon Archaeological Society Press Publication 26, Portland: Oregon Archaeological Society Press. ISBN-10: 0991520041, ISBN-13: 978-0991520046. 111 pp.

Keywords: Lower Columbia River, Harris Canyon, Spedis Creek (45KL81), Washington, northwest United States. North America. Survey. Documentation. Iconography. Interpretation. Regional styles comparison. *LMRAA*.

Keyser, James D., and George C. Knight

1976 The Rock Art of Western Montana. *Plains Anthropologist*, 21(71):1–12. Lincoln, NB: Plains Anthropological Society. ISSN: 0032 0447.

Keywords: Western Montana. Northwest United States. North America. Twenty-nine sites described. Salish. Vision quest. Columbia Plateau culture. *DBNPS, NADB #9252230.*

Keyser, James D., Carol Pedersen, Greg M. Bettis, George Poetschat, and Helen Hiczun

1998 Owl Cave. *Columbia Plateau Rock Art*, Oregon Archaeological Society Press Publication, 11:81–116. Portland: Oregon Archaeological Society.

Keywords: Owl Cave, Washington, Columbia Plateau. Northwest. United States. North America. Human, handprint, animal, spirit figure, rayed circle, dot groups, tally mark, abstract, lines and line group, and blob motif(s). Scratched petroglyphs. Scalloped (faceted) edge petroglyphs. *LMRAA*.

Keyser, James D., and George Poetschat

1998 Butte Creek Rock Art: New Discoveries on the Columbia Plateau. *INORA, International Newsletter on Rock Art*, 2:18–15. Foix: Comite International d'Art Rupestre (CAR-ICOMOS). ISSN: 1022-3282.

Keywords: Butte Creek (35wh37 and 35wh38), Oregon, Columbia Plateau. Northwest. United States. North America. Columbia Plateau Tradition, North Oregon Rectilinear, Yakima Polychrome, Long Narrows (or Columbia River Conventionalized) and Biographic Art traditions (an influence from the Northern Plains) styles. Guardian spirit quest. Shaman's rituals. Curing or mortuary activities. *LMRAA*.

2004 The Canvas as the Art: Landscape Analysis of the Rock-Art Panel. In *The Figured Landscapes of Rock-Art: Looking at Pictures in Place,* edited by Christopher Chippindale and George Nash, pp. 118–130. Cambridge, U.K.: Cambridge University Press. ISBN-10: 0521524245, ISBN-13: 978-0521524247.

Keywords: Horsethief Butte, Washington, Columbia River. Northwest. United States. North America. Setting: landscape analysis. Rock feature incorporation. *LMRAA*.

Keyser, James D., George Poetschat, Phillip Minthorn Cash Cash, Don Hann, Helen Hiczun, Roz Malin, Carol Pederson, Carol Poetschat, and Betty Tandberg

1998a *Columbia Plateau Rock Art*. Oregon Archaeological Society Press Publication, 11. Portland: Oregon Archaeological Society. 116 pp.

Keywords: Steiwer Ranch and Rattlesnake Shelter, Butte Creek, Oregon. Owl Cave, Washington. Columbia Plateau. Northwest United States. North America. Columbia Plateau Tradition. Vision quest. Shamanism. Morturary art. Biographic Tradition. *LMRAA.*

2007 *Columbia Plateau Rock Art.* Oregon Archaeological Society Press Publication, 11. Portland: Oregon Archaeological Society. 116 pp.

Keywords: Steiwer Ranch and Rattlesnake Shelter, Butte Creek, Oregon. Owl Cave, Washington. Columbia Plateau. Northwest United States. North America. Columbia Plateau Tradition. Vision quest. Shamanism. Morturary art .Biographic Tradition. *LMRAA.*

Keyser, James D., George R. Poetschat, Phillip Minthorn Cash Cash, Don Hann, Helen Hiczun, Roz Malin, Carol Pedersen, Cathy Poetschat, Betty Tandberg, with contributions by Frank Crosser, Paul Lawson, Pat Lyttle, Carolynne Merrell, Richard Reay, and Larry Summers

1998b The Butte Creek Sites: Steiwer Ranch and Rattlesnake Shelter. *Columbia Plateau Rock Art,* Oregon Archaeological Society Press Publication, 11:1–80. Portland: Oregon Archaeological Society.

Keywords: Steiwer Ranch and Rattlesnake Shelter, Butte Creek, Oregon. Columbia Plateau. Northwest United States. North America. Human, handprint, animal, spirit figure, rayed arc, arc, rayed circle, circle, rake, ladder cross, tally mark, grid, abstract, thin red line, blob, stick figure human, shield bearing warrior, thin line stick figure, horsemen, projectile point, zigzag, barbell, curvilinear maze, dot and line figure, and dot motif(s). Setting: spatial arangement. Vision quest. Shamanism. Mortuary art. Biographic Tradition. *LMRAA.*

Keyser, James D., George Poetschat, Helen Hiczun, Pat McCoy, and Betty Tandberg

2006 The Beaver Bowl: Ethnographic Evidence for a Northwest Coast Shaman's Petroglyph. In *Talking with the Past: The Ethnography of Rock Art*, Chapter 8, Oregon Archaeological Society Press Publication, 16:158–175. Portland: Oregon Archaeological Society. ISBN: 0-9764804-3-3.

Keywords: Fisher's Landing (45CL6), Clark County, Washington, Lower Columbia River, Portland Basin, northwest United States. North America.

Keyser, James D., George Poetschat, and Michael W. Taylor, editors

2006 *Talking with the Past: The Ethnography of Rock Art*. Oregon Archaeological Society Press Publication, 16. Portland: Oregon Archaeological Society. ISBN: 0-9764804-3-3. 380 pp.

Keywords: Oregon. Washington. Columbia River Plateau. Northwest. Klamath Basin. California. United States. North America. Southern Africa. British Columbia. Canada. Spain. France. Valcamonica, Italy. Southern Europe. Symposium papers. Ethnography. Rock art scholars dialogue with traditional Indigenous elders from the Columbia Plateau region to exchange understandings about the role of rock art in the lives of ancient peoples. *LMRAA.*

Keyser, James D., George Poetschat, and Michael W. Taylor

2006a Editor's Introduction. In *Talking with the Past: The Ethnography of Rock Art,* Chapter 1, Oregon Archaeological Society Press Publication, 16:1–8. Portland: Oregon Archaeological Society. ISBN: 0-9764804-3-3.

Keywords: Oregon. Washington. Columbia River Plateau. Northwest. Klamath Basin. California. United States. North America. Southern Africa. British Columbia. Canada. Spain. France. Valcamonica, Italy. Southern Europe. Symposium papers. Ethnography. Rock art scholars dialogue with traditional Indigenous elders from the Columbia Plateau region to exchange understandings about the role of rock art in the lives of ancient peoples. *LMRAA.*

2006b Field Trip Discussions. In *Talking with the Past: The Ethnography of Rock Art*, Chapter 2, Oregon Archaeological Society Press Publication, 16:11–28. Portland: Oregon Archaeological Society. ISBN: 0-9764804-3-3.

Keywords: Oregon. Washington. Columbia River Plateau. Northwest. Klamath Basin. California. United States. North America. Southern Africa. British Columbia. Canada. Spain. France. Valcamonica, Italy. Southern Europe. Ethnography. Rock art scholars dialogue with traditional Indigenous elders from the Columbia Plateau region to exchange understandings about the role of rock art in the lives of ancient peoples. *LMRAA.*

Keyser, James D., and Michael W. Taylor

2002 *Visions on Stone: The Rock Art of the Columbia Plateau.* Oregon Archaeological Society Press Publication, 12. Portland: Oregon Archaeological Society Press. 30 pp.

Keywords: Washington, Oregon, Columbia Plateau, northwest United States. North America. *MNA.*

2006 The Blade Cuts Two Ways: Using Ethnographic Analogy to Interpret the Columbia Plateau Scratched Style. In *Talking with the Past: The Ethnography of Rock Art*, Chapter 10, Oregon Archaeological Society Press Publication, 16:200–224. Portland: Oregon Archaeological Society. ISBN: 0-9764804-3-3.

Keywords: Washington. Oregon. Columbia River Plateau. United States. North America. Ethnography. Columbia Plateau Scratched Style. Scalloped (faceted) (modified) rock edge motif(s). An analog to ritual gashing. *LMRAA.*

Keyser, James D., Michael W. Taylor, and Geroge R. Poetschat, editors

2004 *Echoes of the Ancients. Rock Art of The Dalles-Deschutess Region*. Oregon Archaeological Society Press Publication, 14. Portland: Oregon Archaeological Society. 115 pp.

Keywords: The Dalles, Deschutes, Columbia River, Washington, Oregon. Northwest. United States. North America. Columbia Plateau Style, Yakima Polychrome Style, Long Narrows Style, Columbia Plateau Scratched Style. Cupules. Private vs. public sites. Vision quest. Shamanism. Mortuary art. Hunting magic. Mythology. Harris Latice analysis. *Biblio, LMRAA*.

Keyser, James D., Michael W. Taylor, George Poetschat, and David A. Kaiser

2008 *Visions in the Mist: The Rock Art of Celilo Falls*. Oregon Archaeological Society Press Publication, 17. Portland: Oregon Archaeological Society Press. ISBN: 978-0-9764804-5-7. 90 pp.

Keywords: Celilo Falls, The Dalles (Wishram Road 45KL60, 45KL65, 45KL1194, 45KL1195, 45KL1196, 45KL1198, 45KL60, Celilo Bridge 45KL77, Shadow Cave 45KL77a, Eightmile Butte 45KL1197), Columbia River, Oregon, Washington. Columbia River Gorge. Northwest. United States. North America. Ten sites were recorded and reported here. Face, mask, handprint, mountain sheep, spirit figure, bird, lizard, spider, tally mark, Yakama (Yakima) star, geometric figure, circle, arc, line, dot, abstract, blob, smear, modified edge, wall painting (i.e., red wash) motif(s). Columbia Plateau Tradition. Yakima Polychrome Style. Central Columbia Plateau Style. Columbia Plateau Scratched Style. Northwest Coast Tradition. Columbia River Conventionalized Style. Vision quest. *LMRAA*.

Keyser, James D., and David S. Whitley

2000a A New Ethnographic Reference for Columbia Plateau Rock Art: Documenting a Century of Vision Quest Practices. *INORA, International Newsletter on Rock Art,* 25:14–20. Foix: Comite International d'Art Rupestre (CAR-ICOMOS). ISSN: 1022-3282.

Keywords: Columbia River, Oregon (Washington). Northwest. Montana, Nothern Plains. United States. North America. Ethnography. David Whitley. Vision quest. Shamanism. Puberty ritual. *LMRAA*.

2000b Amendment. *INORA, International Newsletter on Rock Art,* 27:24. Foix: Comite International d'Art Rupestre (CAR-ICOMOS). ISSN: 1022-3282.

Keywords: Miller's Island, Columbia River, Washington. Northwest. United States. North America. See "A New Ethnographic Reference…" by J.D. Keyser and D.S. Whitley, *International Newsletter on Rock Art*, 25:14-20. "In a recent summary of ethnographic references to Columbia Plateau rock art, the authors inadvertently used information from an Indian informant that was confidential. The informant would rather not have been quoted on this subject and he would rather not have had this information made public. Prior to publication the authors were unaware of his desires.

We apologize for any breach of trust." Intellectual cultural property. Ethics. *LMRAA*.

Kiefer, Kathy

1991 Rock Art Recording on the Columbia River: Interview with Arlie Osling. Typescript. *Oral and Ethno History Principles* 30, November. Susan Ellis-Lopez Heritage College. 10 pp.

Keywords: The Dalles Dam, Priest Rapids Dam (Whale Island), Roosevelt (45KL14), Scammon's site, Columbia River, Washington and Oregon. Northwest. United States. North America. Documentation. Recording methodology: rubbings. Arlie Ostling. Wanapum Indian. Grant County Public Utility District. *LMRAA* (*photo copy*).

1998 Cultural Resource Management for the 21st Century: Finding Center. *Practicing Anthropology*, 20(3):9–12. Society for Applied Anthropology. <https://www.jstor.org/stable/24781278>. Accessed 12 May 2022.

Keywords: Priest Rapids, Whale Island, Columbia River, Washington, northwest United States. Cultural resource management. Conservation and preservation. Wanapum. *Smowhala*. Grant County Public Utility District. Indigenous property rights. Indigenous worldview. Cultural consultation. Museum exhibition. *MNA, JSTOR.*

King, Larry

2002 Conservation and Management Concerns in the Development of Rock Climbing Recreation Areas at Three Central Oregon Pictograph Sites. *American Indian Rock Art*, 28:63–72. Tucson, AZ: American Rock Art Research Association.

Keywords: Stout Cave (aka Pictograph Cave, Prineville BLM District), Charcoal Cave Number One and Hidden Forest Cave (Bend/Fort Rock Ranger District), Central Oregon, Columbia Plateau. Northwest. United States. North America. Cultural Resource Management. Conservation and Preservation. Rock climbing enthusiasts are threatening pictographs in lava tube caves. Installation of climbing bolt anchors. Sticky rubber climbing shoes, hand chalk. Visitor studies in 1997 and 1999 documented number of visitors, length of stay, and visitor activities. Cave closures and road closures have slowed visitor impacts. Vandalism of posted signs. Bouldering.

Abstract: "In 1992–1993, rock climbers in Central Oregon installed approximately 290 bolted climbing anchors in five lava tube cave entrances. Three of these caves are known archaeological sites containing prehistoric pictographs. In some cases climbing routes have been placed directly over Native American rock art panels. Efforts to preserve these pictographs have met with limited success due to sign vandalism, climber non-compliance, and an intensive lobbying effort to keep these caves open for climbing. The Bend/Fort Rock Ranger District is in the process of developing an environmental assessment and management plan for these sites." *LMRAA.*

Kitsap Sun

2001 Indian Pictographs: Archaeologists Study Rock Paintings. *Kitsap Sun*, 27 December. Bremerton, OR. <https://products.kitsapsun.com/archive/2001/12-27/0063_indian_pictographs__archaeologist.html>. Accessed 15 May 2022.

Keywords: Wells Dam (45OK62), Okanogan-Wenatchee National Forest, Lake Chelan, Columbia Plateau, north central Washington, northwest United States, North America. Colville Tribe. Oral history. Mary Marchand, Lucy Mary Iswald. *MNA, Internet.*

Klug, Linda

1998 45KL667: Stocks-Schroder Pictographs. Report on File. Ellensburg: Department of Anthropology, Central Washington University.

Keywords: 45KL667, Stocks-Schroder Pictographs, Columbia River, Washington. Northwest. United States. North America. *Biblio*.

Krieger, Herbert W.

1927 Archaeological Investigations in the Columbia River Valley. In *Explorations and Fieldwork of the Smithsonian Institution in 1926*, pp. 187–200. Washington: Smithsonian Institution.

Keywords: Roosevelt (45KL14), Columbia River Valley, Washington. Northwest United States. North America. Archaeological context. *MNA*.

1928 Prehistoric Inhabitants of the Columbia River Valley. In *Explorations and Fieldwork of the Smithsonian Institution in 1927*, pp. 133–140. Washington: Smithsonian Institution.

Keywords: Columbia River Valley, Washington. Northwest United States. North America. *RANMAB*.

1934 Salvaging Early Cultural Remains in the Valley of the Lower Columbia River. In *Explorations and Fieldwork of the Smithsonian Institution in 1934*, pp. 53–56. Washington: Smithsonian Institution.

Keywords: Spearfish Indian Village, lower Columbia River, Washington. Northwest United States. North America. Elk motif pictograph. *RANMAB*.

Kruger, Darius

2005 Pictographs in Upper Similkameen Traditional Territory: A Guided Tour. *The Midden*, 37(4):5–8. <///Users/leighmarymor/Downloads/15867-Article%20Text-14354-1-10-20160609.pdf>. Accessed 15 May 2022.

Keywords: Similkameen River, British Columbia, Columbia Plateau, Canada. North America. Penticton Indian Band. Upper Similkameen Band. Indigenous interpretation.

Abstract: "My name is Darius Dean Thunder Elk Kruger. I am a member of the Penticton Indian Band. My father is Richard Dean Kruger, also a member of the Penticton Indian Band. My grandmother is Anne Allison and is also a Penticton Indian Band Member; originally, however, she was from the Lower Similkameen. I am 11 years old and in grade 6 at Skaha Lake Middle School in Penticton. I have been volunteering and attending programs of the Upper Similkameen Indian Band Archaeology Department since I was three years old. If you think that is young, my friend Willy has been doing this since he was one." *MNA*.

Large, Dr. R. Geddes

1952 Coastal Wanderings. *Historical and Scientific Association Museum and Art Notes*, April, 2(2):1–33. Vancouver, B.C.

Keywords: Spiller Channel, British Columbia, Canada. Also, Kitkiata or "Old Hartley Bay," on Douglas Channel. North America. Petroglyphs typically found at the mouth of salmon streams. To mark fishing rights. *LMRAA.*

LaSarge, Diana R.

2002 The Wallula Stone's Journey: A Cooperative Effort Between Tribal, City and Federal Governments. *American Indian Rock Art*, 28:57–62. Tucson, AZ: American Rock Art Research Association.

Keywords: Wallula Stone (45WW44). Portland. Umatilla Indian Reservation. Oregon. Wallula, Mid-Columbia River, Washington. Northwest. United States. North America. Cultural resource management. Conservation and

preservation. Repatriation. Native American Graves Protection and Repatriation Act (NAGPRA). Umatilla Indian. *LMRAA*.

Layman, William D.

1984 Rock Art of the Mid-Columbia—The Early Documentation of Harold J. Cundy Between 1927 and 1938. Unpublished manuscript, 30 June. 16 pp.

Keywords: Mid-Columbia River, North-Central Washington. Northwest United States. North America. American Association for State and Local History grant-in-aid application. Non-funded. Harold J. Cundy. Historical documentation. *LMRAA (photo copy).*

1986 The Rock Art of Rock Island Rapids: A Historical Overview. *American Indian Rock Art*, 11:76–87. El Toro, CA: American Rock Art Research Association.

Keywords: Rock Island Rapids (45DO301), Mid-Columbia River, Washington. Northwest United States. North America.

1988 The Columbia Before It Was Tamed. In *Columbia: The Magazine of Northwest History*, 1(3):32–42. Tacoma: Washington State Historical Society. ISSN: 0892 3094.

Keywords: Central Washington. Columbia River. Northwest United States. North America. Pre-dam history. *LMRAA*.

1994 Drawing with Vision: The Pioneering Rock Art Investigations of Washington's Harold Cundy. Unpublished manuscript, 30 May. International Rock Art Congress, Flagstaff, AZ. 12 pp.

Keywords: North Central Washington. Columbia River. Northwest United States. North America. Harold Cundy. Documentation. History of research. *LMRAA*.

1998 Drawing with Vision. *Columbia: The Magazine of Northwest History*, 12(10):23–32. Tacoma: Washington State Historical Society. ISSN: 0892 3094.

Keywords: Central Washington. Columbia River. Northwest United States. North America. Documentation. Harold J. Cundy. Mid-Columbia River. Columbia River Archaeological Society. "How a raging river was opened to steamboat traffic." *LMRAA*.

1999 Riverplaces as Sacred Geography: The Pictographs and Petroglyphs of the Mid-Columbia River. In *Great River of the West: Essays on the Columbia River,* edited by William L. Lang and Robert C. Carriker, pp. 53–75. Seattle: University of Washington Press.

Keywords: Mid-Columbia River, Washington. Northwest. United States. North America. Setting: landscape, sacred geography. *Biblio*.

2002 *Native River: The Columbia Remembered*, Pullman: Washington State University Press. 195 pp.

Keywords: Priest Rapids (Chalwash Chilni), Sentinel Gap, Vantage, Picture Rocks Bay, Skookumchuck Canyon (Crescent Bar), Spanish Castle, Buffalo Cave (45KT63), Cabinet Rapids, Rock Island (45DO301), Azwell (45OK62), Columbia River, Washington. Northwest. United States. North America. A historical account of the pre-dam history of the mid-Columbia River. Illustrated with historic photographs, many published for the first time here. Emphasis is on the river's topography, Indigenous inhabitants—their sacred places, stories, and habitations—early explorers, and early navigation—especially steam boats. Innundated rock art sites are featured. Wanapum Indian. Colville Federation. Interior Salish. Sahaptin. *LMRAA*.

2003 River of Memory. *Columbia: The Magazine of Northwest History*, 17(11):7–24. Tacoma: Washington State Historical Society. ISSN: 0892 3094.

Keywords: Rock Island (45DO301), Priest Rapids, Columbia River, Central Washington. Northwest United States. North America. Pre-dam history. Wanapum Indian. *LMRAA*.

2013 *The Petroglyphs of Chalwash Chilni: Sacred Island of the Columbia*. Ephrata, WA: Grant County Public Utility District, No. 2.

Keywords: Chalwash Chilni (Whale Island), Priest Rapids, Mid-Columbia River, Washington, northwest United States. North America. Inundated petroglyphs. *MNA*.

2015 *Inundated Pictographs and Petroglyphs of Wanapum Reservoir, Columbia River: The Vantage Sites, 45KT38, 45KT39, 45KT40, 45KT41*. Ephrata, WA: Grant County Public Utility District, No. 2.

Keywords: 45KT38, 45KT39, 45KT40, 45KT41, Vantage, Wanapum Reservoir, Mid-Columbia River, Washington, northwest United States. North America. Inundated petroglyphs. *MNA*.

2016a Inundated Rock Image Sites of Priest Rapids and Wanapum Reservoirs, Volume III, Additional Sites. Unpublished report on file. Priest Rapids Dam, WA: Wanapum Heritage Center Repository. 115 pp.

Keywords: Corral Rockshelter; Hanford Railroad; Stewart Rapid; Sentinel Bluff; Hermit's; Vantage Bridge; Vantage, Beverly Road (45GR49); Bluff Trail; French Rapids; Scammon Ranch; Hinman Cliff; Wild Rose; Simmonds Graveyard (45GR130); Lodgepole Rapids; West Bar; Crescent Bar (45GR127); Kern Ranch; Spanish Castle (45KT51); Tarpiscan Creek; Old Sawmill; Douglas Creek; Columbia River Station (45DO300); Cabinet Rapids; Basaltic Rock, Columbia River, Washington, northwest United States. North America. Inundated sites. Columbia Basin Style. Yakima Polychrome Style. Scratched Style. History of research. Olaf Opsjon, Harold J. Cundy, Thomas Cain, Brian Holmes. "Completed under contract with Grant County PUD. This volume, covers 25 sites that are inundated within the Priest Rapids and Wanapum reservoirs. The primary goal of the project was to identify and show all known information and documentations that pertains to these sites, covering documentations from 1921 to 1957. For permission to access this report, contract Wanapum Heritage Center Repository." *MNA*.

2016b Inundated Rock Image Sites of Priest Rapids and Wanapum Reservoirs: Supplement. Unpublished report on file. Priest Rapids Dam, WA: Wanapum Heritage Center Repository. 16 pp.

Keywords: Priest Rapids Lake, Lake Wanapum, Columbia River, Washington, northwest United States. North America. Preinundation aerial photographs, Grant PUD. "Completed under contract with Grant County PUD. This supplement work to document, known data of 31 inundated rock image sites of Priest Rapids and Wanapum reservoirs. The supplement follows a series of aerial surveys done by the Department of Army in 1945 and 1946 from rivermile 401 to rivermile 431. The supplement includes site numbers, rivermile markers and distribution of types of rock images of each site. Oblique photographs taken by Grant County PUD and a series of color photographs taken by T.A. Weaver show river features prior to the creation of the two reservoirs. For permission to access this report, contract Wanapum Heritage Center Repository." *MNA*.

Layton, Robert

2001 Ethnographic Study and Symbolic Analysis. In *Handbook of Rock Art Research,* edited by David S. Whitley, pp. 311–331. Walnut Creek, Lanham, New York, Oxford: Alta Mira Press. ISBN-10: 0742502562, ISBN-13: 978-0742502567.

Keywords: World. Columbia Plateau, Washington (Oregon). Willowsprings, Arizona. Petroglyph National Monument, New Mexico. United States. South Africa. Southern Africa. North America. Ethnography. Vision quest. Shamanism. Spirit Helper. Iconology. Setting: location in the landscape. Interview guidelines for ethnographic inquiry. Critical use of earlier ethnography. Cultural continuity and change. Clan signatures. *LMRAA.*

2006 Habitus and Narratives of Rock Art. In *Talking with the Past: The Ethnography of Rock Art*, Chapter 5, Oregon Archaeological Society Press Publication, 16:73–99. Portland: Oregon Archaeological Society. ISBN: 0-9764804-3-3.

Keywords: Keep River, Australia, Australasia. Stein River, British Columbia, Canada. Kanab Creek, Utah. United States. North America. Oceania. Ethnography. Culture is not monolilthic. Each individual internalizes what he understands to be the values and meanings organized in their community, and expresses that understanding through their own actions, i.e., Habitus. *LMRAA*.

2008 Structure and Performance in Art and Language. In *Actes du Colloque International de Toulouse. Art Rupestre et Communication. Espaces Symboliques, Territoires Culturels. Préhistoire, Art et Societes,* edited by Georges Sauvet and Carole Fritz, *Bulletin de la Societe Prehistorique Ariege-Pyrenees*, 63:147–157. Tarascon: Societe Prehistorique Ariege-Pyrenees. ISBN: 02459523.

Keywords: Keep River, northern Australia. Australasia. Oceania. Stein River, British Columbia, Canada. North America. Europe. Distribution. Animal motif(s). Ethnography. Evolution of art and language. *LMRAA.*

2012 Rock Art, Identity, and Indigeneity. In *A Companion to Rock Art,* edited by Jo McDonald and Peter Veth, Companions to Archaeology, pp. 439–454. Hoboken, NJ: Wiley-Blackwell Publishing. ISBN 10: 1444334247, ISBN 13: 9781444334241.

Keywords: Australia, Australasia. Stein River Valley, British Columbia, Canada. Zuni, New Mexico, United States. North America. Oceania. Contemporary Indigenous people's interpretations of rock art. Ongoing use, reuse, and cultural renewal. Oral traditions. Indigenous intellectual property (control of Indigenous knowledge). Land rights. *LMRAA.*

Leatherman, Kenneth E.

1940 *Report on Archaeological Excavations at Petroglyph Point, June–July, 1940.* Washington: National Park Service.

Keywords: Petroglyph Point (CA-MOD-1), Lava Beds National Monument, Modoc County, California, United States. North America. Archaeological context. Excavation. *NADB #2000374.*

Lee, Georgia

1989 The Lava Beds, California, Rock Art Project. *La Pintura*, XV(3):9, 14. El Toro, CA: American Rock Art Research Association.

Keywords: Lava Beds National Monument, Klamath County, Modoc County, Northeastern California. Fern Cave. Petroglyph Point. United States. North America. Modoc. Northern Painted Style and petroglyph site described. *LMRAA, RCSL.*

1992 The Role of Drawing in Rock Art Documentation. *American Indian Rock Art*, XVII:63–67. El Toro, CA: American Rock Art Research Association.

Keywords: Lava Beds National Monument (Petroglyph Point, CA-MOD-1), Modoc County, northeast California. United States. North America. Research methodology. Drawing. *LMRAA.*

Lee, Georgia, and William D. Hyder

1990 Relative Dating and the Rock Art of Lava Beds National Monument. *Proceedings for the Society for California Archaeology*, 3:195–205. San Diego: Society for California Archaeology. ISSN: 0897-0947.

Keywords: Petroglyph Point (CA-MOD-1) and Fern Cave (CA-MOD-17), Tule Lake, Lava Beds National Monument, Modoc County, California. Klamath Basin. United States. North America. Modoc rock art. Relative chronology derived from study of climatic conditions which would have affected lake levels and cave wall saturations. *LMRAA, AATA.*

Lee, Georgia, Bill Hyder, and Arlene Benson

1988 *The Rock Art of Petroglyph Point and Fern Cave, Lava Beds National Monument Lava Beds National Monument*. Report PX8400-7-0694 and PX8410-8-0185.

Keywords: Petroglyph Point (CA-MOD-1) and Fern Cave, Lava Beds National Monument, Modoc County, California. United States. North America. *Biblio, NADB #2000810.*

Leechman, Douglas

1954 Some Pictographs of Southeastern British Columbia. In *Transactions of the Royal Society of Canada, 3rd Series*, XLVIII(Sec. II):77–85. Ottawa: Royal Society of Canada.

Keywords: Southeastern British Columbia, Canada. North America. *RANMAB.*

Leechman, Douglas, Margaret Hess, and Roy L. Fowler

1955 Pictographs in Southwestern Alberta. *National Museum of Canada Bulletin*, 136:36–53. Ottawa: National Museum of Canada.

Keywords: For Columbia Plateau cultural sphere, see Zephyr Creek. Also includes: Pine Coulee, Okotoks, Cayley, 25 Ranch, Oldman River, White Man Pass, Grotto Mountain, Calgary, Cochrane, Writing on Stone, Pendant d'Oreille, southwestern Alberta, Canada. North America. *WELLM, CRARA, LMRAA, MNA.*

Leen, Daniel G.

1984 Rock Art Sites. In A*rchaeological Investigations at Nonhabitation and Burial Sites, Chief Joseph Dam Project, Washington*, pp. 13–58. Seattle, WA: U.S. Army Corps of Engineers. <https://apps.dtic.mil/sti/pdfs/ADA166011.pdf>. Accessed 15 May 2022.

Keywords: Site 45-D0-208, Site 45-D0-325, Site 45-D0-441 (Heffernan), Site 45-00-442 (Brandt Homestead), Site 45-OK-14 (south of Condon's Ferry), Site 45-OK-17 (Rufus Woods Lake), Site 45-0K-1 70 (aka Deadman's Eddy, 45-OK-74 and 45-OK-170), Site 45-OK-181 (vicinity of Condon's Ferry), Site 45-OK-234 (northeast of the Rufus Woods Lake shoreline and just north of the Nespelem River), Site 45-OK-240 (Armstrong Canyon near Nespelem Bar), Site 45-CK-504 (Peter Dan Creek), Site 45-OK-505 (above Rufus Woods Lake), Chief Joseph Dam, Columbia River, Douglas, and Okanogan counties, Washington, northwest United States. North America. Archaeological survey. *MNA.*

1988 *An Inventory of Hells Canyon Rock Art, Vol. 1*. U.S. Forest Service Contract Study, Wallowa-Whitman National Forest. Enterprise, OR: Hells Canyon Recreation Area. 207 pp.

Keywords: Hells Canyon Recreational Area, Wallowa-Whitman National Forest, Oregon. Snake River. Columbia Plateau. Northwest United States. North America. Site documentation. Nez Perce. Shoshonean. Sahaptin. Cayuse. Palouse. Umatilla. Hells Canyon Painted Style. Curvilinear Abstract Style. Hells Canyon Cupule Style. Drawn Black Linear Abstract Style. Scratched Angular Abstract Style. Bibliography. *LMRAA.*

1991 *Hells Canyon Archaeological Resource Protection Act Monitoring: Corridor and Adjacent Tributary Streams*. Enterprise, OR: Hells Canyon National Recreation Area, U.S. Forest Service.

Keywords: Site OR4N48E, Hells Canyon, northeastern Oregon and western Idaho, Columbia Plateau, northwest United States. North America. Scratched Style petroglyphs (p. 49). *Biblio*.

Leiberg, John B.

1893 Petroglyphs at Pend d'Oreille, Idaho. *Science*, 22:156. Washington: American Association for the Advancement of Science. ISSN: 0036-8075 (print), 1095-9203 (online).

Keywords: Pend d'Oreille, Idaho, United States. North America. Columbia Plateau Culture Area. *WELLM, LMRAA (photo copy of typescript).*

Lennartz, Florence

n.d. (ca. 1970) *Petroglyphs Calling*. Self-published booklet. 10 pp.

Keywords: The Dalles Reservoir, Columbia River, Oregon, Washington, northwest United States. North America. Documentation. Petroglyph rubbings. *MNA*.

Leo, Maria Domenica

2001 Hells Canyon Rock Art: Styles and Sacred Symbolism From Hells Canyon to the Salmon River: Archaeological Survey of Hells Canyon. *Applied Paleoscience.* Report on file with Idaho State Historic Preservation Office.

Keywords: Hells Canyon Recreational Area, Wallowa-Whitman National Forest, Oregon. Snake River. Salmon River, Columbia Plateau. Northwest. United States. North America. Style. Ideology (sacred). *IDSHPO*.

Lerman, Norman H.

1954 *Okanagan (Salish) Ethnology*. Seattle: Melville Jacobs Collection, University of Washington Library Archive.

Keywords: British Columbia Plateau, British Columbia, Canada. North America. Okanagan. Ethnography. "[W]hen a person has a power he paints a picture (pictograph) of it." "[P]ictographs were done by kids on their spirit quest, a painting represents a kid's power" (per David Whitley, quoting Lerman, *INORA*, 2000, see pp. 99, 142, 191), and "A child who painted these [pictographs] could be depended upon to [become a] doctor [shaman]" (see p. 191). *Biblio*.

Le Roy, Bruce

1982 Central Washington Rock Art: A Call for Letters of Support. *La Pintura*, VIII/IX(4):12. El Toro, CA: American Rock Art Research Association.

Keywords: Central Washington. Columbia River. Northwest United States. North America. Call for support from Washington State Historical Society to finance the publication of Harold Cundy's work located in the Washington State Archives. *LMRAA, RCSL.*

Lewis, Randy (K'ayaxan), and William D. Layman

2020 *Rock Island of the Columbia River. The Foundation of Our World*. Wenatchee, WA: Native River Fund, Wenatchee Valley Museum and Cultural Center. ISBN: 978-0-578-56630-6. 55 pp.

Keywords: Rock Island (45DO301), Mid-Columbia River, Columbia Plateau, east central Washington, northwest United States. North America. Ethnography. Geographic context. Rock art. Historic photographs. Innundation. Petroglyphs moved from *in situ*. Randy Lewis. Bill Layman. *LMRAA*.

Lloyd, Francis E.

1896 Petroglyphs in Patton's Valley. *The Oregon Naturalist,* 3(6):84–85.

Keywords: Gaston, Oregon, Columbia Plateau, northwest United States. Tualatin (Atfalati) Indians. *KBORE*.

Loendorf, Lawrence L.

1994 Finnegan Cave: A Rock Art Vision Quest Site on Montana. In *Shamanism and Rock Art in North America,* Special Publication No. 1, edited by Solveig A. Turpin, pp. 125–137. San Antonio, TX: Rock Art Foundation, Inc.

Keywords: Finnegan Cave (24MA1146) along Cherry Creek on the Flying D Ranch, Montana, compared to Hell's Canyon, Snake River, Oregon, Idaho, Columbia Plateau, northwest United States. North America. Rock art elements here are similar to the Hell's Canyon Painted Style (Leen 1988). Vision quest. Interior Salish. Columbia Plateau culture. *LMRAA, Biblio*.

Loendorf, Lawrence, Mark Willis, Greg White, Laurie White, and Claire J. Dean

2015 *Wildhorse Cliff Petroglyph Site (45WT242), Snake River, Washington: Rock Image Documentation, May 2014*. Submitted by Applied Earthworks to the United States Army Corps of Engineers, Walla Walla District.

Keywords: Wildhorse Cliff Petroglyph Site (45WT242), Snake River, Washington. Columbia Plateau. Northwest United States. North America. Site documentation. *Biblio.*

Loring, J. Malcolm

1967 Prehistoric Rock Art of the Mid-Columbia River. *Screenings*, 16(5-6). Portland: Oregon Archaeological Society.

Keywords: Mid-Columbia River, Oregon. Washington. Northwest United States. North America. *KBORE.*

Loring, J. Malcolm, and Louise Loring

1982 *The Oregon Country Part 1: Columbia River and Northern Oregon*. UCLA Institute of Archaeology Monograph (XXI). Los Angeles, CA: UCLA Institute of Archaeology. 325 pp.

Keywords: Asotin, Benton, Clark, Franklin, Klickitat, Skamania, Walla Walla, Yakima, and Nez Perce Counties, Washington. Baker, Clackamas, Clatsop, Columbia, Deschutes, Crook, Gilliam, Grant, Jefferson, Lane, Linn, Morrow, Sherman, Umatilla, Union, Tillamook, Wallowa, Wasco, Washington, Wheeler, and Yamhill Counties, Oregon. Columbia Plateau. Pacific Northwest, United States. North America. Site index and survey. *LMRAA, BSL, HLH, NADB #1292719.*

1983 *The Oregon Country Part 2: Southern Oregon.* UCLA Institute of Archaeology Monograph (XXI). Los Angeles, CA: UCLA Institute of Archaeology. 355 pp.

Keywords: Coos, Curry, Douglas, Harney, Jackson, Klamath, Lake, And Malheur Counties, Oregon. Swan Lake Reservoir, Washoe County, Nevada. Map Rock, Canyon County, Idaho. Columbia Plateau. Pacific Northwest, United States. North America. Site index and survey. *LMRAA, BSL, HLH, NADB #1292721.*

Lothson, Gordon A.

1992 Archaeological Survey of Buffalo Eddy. Prepared for Asotin County, Asotin, Washington. Moscow: Department of Anthropology, University of Idaho.

Keywords: Buffalo Eddy (45AS14) is 18 miles south of Asotin, Snake River, Washington, on Snake River Road, Nez Perce National Historic Park, Washington (Idaho). Columbia Plateau. Northwest. United States. North America. *Biblio.*

Lothson, Gordon A., and Bruce L. Lothson

1991 *Buffalo Eddy: Buffalo Bar Archaeology, Vol. 1 and Vol. 2*. Pullman, WA: Cougar Consulting. 146 pp. and Appendices.

Keywords: Buffalo Eddy, Buffalo Bar (45AS14), Captain Jack, Snake River, Washington, Columbia Plateau. Northwest United States. North America.

Loubser, Johannes H.N.

1997a Conservation Management Plan of Twenty Places with Rock Imagery along the Snake River, Hells Canyon, Idaho and Oregon. *New South Associates Technical Report*. Portland, OR: U.S. Forest Service-Recreation.

Keywords: Snake River, Hells Canyon, Idaho and Oregon. Columbia Plateau. Northwest United States. North America. Cultural resource management. Conservation and preservation. *Bancroft.*

1997b Management of Rock Imagery Along the Snake River, Hells Canyon, Idaho and Oregon. Portland, OR: U.S. Forest Service-Recreation.

Keywords: Hells Canyon, Snake River, Idaho and Oregon. Columbia Plateau. Northwest United States. North America. Cultural resource management Conservation and preservation *Biblio.*

1998 Documentation of Eight Places with Rock Imagery, Lava Beds National Monument. Manuscript on file. Arcata, CA: National Park Service.

Keywords: Lava Beds National Monument, Modoc County, California. United States. North America. *Biblio, Bancroft.*

1999 The Establishment of a Rock-Art Monitoring Program at Two Sites on Miller Island, Columbia River, Oregon. New South Associates Technical Report. Portland, OR: U.S. Forest Service-Recreation.

Keywords: Millers Island, Columbia River, Oregon (Washington). Northwest. United States. North America. Cultural resource management. Conservation and preservation. Monitoring program. *Bancroft.*

2002 Tripping on the Snake or on a Quest for Visions Forgotten. Report to the Hells Canyon National Recreation Area Contract #53-04M3-0-0057. New South Associates, Inc., and Hells Canyon Recreation Area Stone Mountain, Georgia and Clarkston.

Keywords: Hells Canyon, Snake River, Washington. Northwest. Columbia Plateau. United States. North America. Dating. *Biblio, MWRBRAD.*

2006 Rock Art, Physical Setting, and Ethnographic Context: A Comparative Perspective. In *Talking with the Past: The Ethnography of Rock Art Oregon,* Chapter 11, Oregon Archaeological Society Press Publication, 16:225–253. Portland: Oregon Archaeological Society. ISBN: 0-9764804-3-3. <https://www.academia.edu/14044482/Rock_Art_Physical_Setting_and_Ethnographic_Context_A_Comparative_Perspective>. Accessed 27 July 2015.

Keywords: Central Tasmania. Central South Africa. California. Washington. Oregon. Columbia Plateau. United States. British Columbia, Canada. *LMRAA, Academia.edu.*

2011 First Interval Assessment of the Miller Island Pictograph Monitoring Project, Sites 45KL62 and 4563, Klickitat County, Washington. Stratum Report to USDA Forest Service, Columbia River Gorge National Scenic Area. Hood River, OR.

Keywords: Miller Island Pictograph Monitoring Project, Sites 45KL62 and 4563, Klickitat County, Washington. Columbia River. Northwest United States. North America. Cultural resource management. Conservation and preservation. Conditions assessment. *Biblio*.

2017 The Watson Petroglyph Complex as an Enduring Place in Southeastern Oregon, United States of America. *Journal of Arid Environments*, 143:4–9. Amsterdam: Elsevier. <https://doi.org/10.1016/j.jaridenv.2017.03.008>. Accessed 2 May 2017.

Keywords: Watson Petroglyph Complex, southeast Oregon, Columbia Plateau, Great Basin, United States. North America. *ScienceDirect, TIB.*

Loubser, Johannes H. N., and J. Damp

2020 Restoration Activities at a Rock Imagery Archaeological Site at McNary Lock and Dam Operating Project, Washington. Harris Environmental Group Report to U.S. Army Corps of Engineers. Walla Walla, WA.

Keywords: McNary Dam, Washington, Columbia River, northwest United States. North America. Cultural resource management. Conservation and preservation. Restoration. *Biblio*.

Loubser, Johannes H.N., James D. Keyser, and B. Yazzolina

2000 The Establishment of a Rock Art Monitoring Program at Two Site on Miller Island (Colombia River, Oregon, USA). *INORA, International Newsletter on Rock Art,* 25:11–14. Foix: Comite International d'Art Rupestre (CAR-ICOMOS). ISSN: 1022-3282.

Keywords: Miller Island, Columbia River, Oregon (Washington). Northwest United States. North America. Cultural resource management. Conservation and preservation. Multi-year photo documentary project. *LMRAA, Bancroft.*

Lucas, Georgean

1965 Preserving Prehistoric Art. *The Desert Magazine*, September, 28(7&8):18–19. El Centro, CA: Desert Publishing Company.

Keywords: Columbia River, Washington and Oregon. Northwest United States. North America. Recording methodology. Author describes technique for making rubbings. *LMRAA (photo copy), JHL.*

Lundy, Doris Marion

1974 *The Rock Art of the Northwest Coast.* Master's thesis, Simon Fraser University, Burnaby, B.C. <http://summit.sfu.ca/item/4415>. Accessed 27 2019. 363 pp.

Keywords: Yakutat Bay in the Gulf of Alaska south to The Dalles on the Columbia River, Washington. Oregon. Northwest Coast. United States. North America. Regional survey. Tlingit. Tsimpsian. Haida. Bella Coola. Kwakiutl. Nootka. Coast Salish. Chinook. Northwest Coast Style. Distribution. *LMRAA.*

1977 The Gibbs Creek Petroglyphs: Rock Art in the Lillooet Area. Report to Caribou College. Kamloops, B.C.: Caribou College.

Keywords: Gibbs Creek, Lillooet, Stein River, British Columbia, Canada. North America. *Biblio.*

1978 Petroglyphs of the Middle Fraser River. In *Forty-Second Annual Report of the Okanogan Historical Society*, pp. 21–26. Vernon, B.C.: Okanagan Historical Society.

Keywords: Fraser River, British Columbia, Canada. North America. *Biblio.*

1979 The Petroglyphs of the British Columbia Interior. In CRARA '77: Papers of the Fourth Biennial International Conference of the Canadian Rock Art Research Associates, edited by Doris Lundy, *Heritage Record*, (8):49–69. Victoria: British Columbia Provincial Museum.

Keywords: Atlin Lake, Charlie Lake, Carnbrook Area, Spahats Creek, Soda Creek, Chilcotin River, Lone Cabin Creek, Big Bar Creek, Yale Area, Stein River, Spuzzum Area, Moran Area, Gibbs Creek Area, Fraser River, Interior British Columbia, Canada. North America. Sixteen sites described. *LMRAA.*

1983 Styles of Coastal Rock Art. In *Indian Art Traditions of the Northwest Coast,* edited by Roy L. Carlson, pp. 89–97. Burnaby, B.C.: Archaeology Press, Simon Fraser University.

Keywords: Columbia River, Washington and Oregon, northwest United States. North America. Northwest Coast art. Columbia River Conventionalized Style. *MNA*.

Lyman, William

1903 The Painted Rocks of Lake Chelan. In *Proceedings of the American Antiquarian Society, 21 October, 1902*. Worcester, MA: Press of Charles Hamilton.

Keywords: Lake Chelan (45CH66), Columbia River, Cascade Mountains, Washington, northwest United States. North America. Pictographs. *MNA*.

Lynch, Mike

1978 The Rock Island Glyphs: Their Past, Present and Future. School assignment, 17 March. Columbia River Indians Course.

Keywords: Rock Island Rapids (45DO301), Columbia River, Washington. Northwest. United States. North America. Cultural resource management. Conservation and preservation. Author recounts the story of the inundation of the Columbia River at Rock Island Rapids, and the role played by the members of the Columbia River Archaeology Society in removing petroglyph boulders and photographing others soon to be drowned. Current locations of the salvaged petroglyph boulders and photographs are given, where known. Moved from *in situ. LMRAA (photo copy*).

MacDonald, Bruce A.

1979 The Inscribed Rock near Spuzzum, British Columbia. *Epigraphic Society Occasional Publications* 7, Part 2, (149):93–99. Arlington, MA: Epigraphic Society.

Keywords: DKRi6, Fraser River, Spuzzum, British Columbia, Canada. North America. Epigraphy. (Not) Ogam. *LMRAA.*

MacDonald, Brandi Lee, David Stalla, Xiaoqing He, Farid Rahemtulla, David Emerson, Paul A. Dube, Matthew R. Maschmann, Catherine E. Klesner, and Tommi A. White

2019 Hunter-Gatherers Harvested and Heated Microbial Biogenic Iron Oxides to Produce Rock Art Pigment. *Scientific Reports,* 9. Article no. 17070. London: Nature Publishing Group. <https://doi.org/10.1038/s41598-019-53564-w>. Accessed 27 June 2021. ISSN: 2045-2322.

Keywords: Babine Lake, British Columbia, Canada. North America. Pigment analysis. Iron oxides. Aquatic microbial iron mats. *GoogleScholar*.

Mack, Cheryl, and Larry King

2002 Parting the Waters—Re-discovering the Goose Lake Petroglyphs. *American Indian Rock Art*, 28:57–62. Tucson, AZ: American Rock Art Research Association.

Keywords: Goose Lake, Gifford Pinchot Forest, Washington, Columbia Plateau. United States, North America. *LMRAA*.

Mader, Erna, and Don Rose

1973 Field Trip to The Dalles Area. *Screenings*. Portland: Oregon Archaeological Society.

Keywords: The Dalles, Oregon. Washington. Columbia River. Northwest United States. North America. *KBORE*.

Malouf, Carling I.

1953 Pictographs and a Rock Shelter near Dayton, Montana (Sites 24LA3 and 24LA4). In *Archaeological Sites in the Flathead Lake Region, Montana: A Symposium. Anthropology and Sociology Papers,* 15:25–27. Missoula: Montana State University Press.

Keywords: 24la3 and 24la4, Near Dayton, Flathead Lake Region, Montana.

Northwestern Plains. United States. North America. Also published as *Flathead Lake Lookout Museum Papers*, No. 8. Lakeside, Montana. Columbia Plateau culture. *Biblio*.

Abstract: "Red pictographs contained animal and human type figures."

1961 Pictographs and Petroglyphs. *Archaeology in Montana*, 3(1):1–13. Missoula: Montana Archaeological Society. ISSN: 0044-8591.

Keywords: Montana. United States. North America. Columbia Plateau cultural sphere. Distribution, type, age, and possible uses. *NMLAB/P 2542, RANMAB, NADB #925233 and #5190437, Biblio, MNA*.

Malouf, Carling I., and Thain White

1952 *Recollections of Lasso Stasso. Anthropology and Sociology Papers 12*. Missoula: Montana State University Press. 16 pp.

Keywords: Flathead Lake Region, Montana. Northwestern Plains. United States. North America. Columbia Plateau cultural sphere. Kootenai Indian. Myth. *MNA*.

1953 The Origin of the Pictographs. In *Archaeological Sites in the Flathead Lake Region, Montana: A Symposium. Anthropology and Sociology Papers*, 15:30–31. Missoula: Montana State University Press.

Keywords: Flathead Lake Region, Montana, northwestern Plains. United States. North America. Ethnography. Kutenai. Power. Vision quest. Guardian spirits (put their names on the rock). *RABNPV, Biblio*.

Maniery, James Gary, Jerald J. Johnson, and Dorothea J. Theodoratus

1981 Overview Lava Beds National Monument. Archaeological District Order Number PX 8000-0-0694. San Francisco, CA: National Park Service, Western Region. 33 pp.

Keywords: (Petroglyph Point, CA-MOD-1), Tule Lake, Lava Beds National Monument, Modoc County, California. United States. North America. Archaeological overview written to accompany the assessment of the monument for inclusion in the National Register for Historic Places. *NADB #1045514, LMRAA (photo copy).*

Marantos, Jeanette

1984 Petroglyphs: A Glimpse of the Past. *Wenatchee World,* 22 October. Wenatchee, WA.

Keywords: Rock Island (45DO301), Columbia River, Wenatchee, Washington. Northwest United States. North America. Central Washington Museum rock art exhibit, curated by Bill Layman. *LMRAA (photo copy).*

Mark, Robert, and Evelyn Billo

1998 Two Stray Quadrupeds at Weitchpec. In *Rock Art Papers San Diego Museum Papers,* No. 35, 13:155–156. San Diego, CA: San Diego Museum of Man.

Keywords: Weitchpec, CA-HUM-173, Humboldt County, Klamath River, California. United States. North America. Quadruped motif(s). *LMRAA.*

Marymor, Leigh

2004 B.C. Rock Art Field Guide Recalled. *La Pintura*, 30(4):16–17. Tucson, AZ: American Rock Art Research Association.

Keywords: British Columbia, Canada. North America. Cultural resource management. Conservation and preservation. Tourism. GPS. Field guide. Upper Similkameen First Nation. *LMRAA.*

Masten, Ruth, Glenn Hartmann, and Jean P. Yearby

1985 Photograph. Written Historical and Descriptive Data. Alberton Pictograph, HAER MT-44. Denver, CO: Historic American Engineering Record, National Park Service, Rocky Mountain Regional Office. <https://tile.loc.gov/storage-services/master/pnp/habshaer/mt/mt0100/mt0146/data/mt0146data.pdf>. Accessed 6 November 2021. 2 pp.

Keywords: Alberton Pictograph, Alberton, Missoula County, western Montana. United States. North America. Columbia Plateau culture. *LoC*.

Mattila, Walter

1957 Heavy Equipment Removes Carvings from Columbia Walls. *Oregon Sunday Journal*, 10 February:Front page. Portland, OR.

Keywords: The Dalles, Columbia River, Washington. Northwest. United States. North America. Describes the use of heavy equipment (crane, bulldozer, barge) to remove petroglyph boulders from The Dalles prior to inundation by the rising dam waters. *Biblio*.

Mattson, Dan

1988 Vandalized Rock Art Sites Visited by Members. *Spilyay Tymoo [Coyote News]*, 23 September:3. Warm Springs, OR.

Keywords: Shearar's Bridge, Columbia Plateau, United States. North America. Vandalism.

McAllister, Martin E.

2010 Archaeological Damage Assessment Report: Unauthorized Damage to Archaeological Resources at the Red Elk Rock Shelter Site in the Vicinity of Lewiston, Idaho. Report to the U.S. Army Corps of Engineers, Contract No. W912EF-10-P-5049. Archaeological Damage Investigation & Assessment. Missoula, MT.

Keywords: Red Elk Rock Shelter Site (10NP287), in the Vicinity of Lewiston, Idaho. Columbia Plateau. United States. North America. Cultural resource management. Conservation and preservation. Condition assessment. *GoogleScholar*.

McLary, Tom

2007 Cascadia Cave Holds Significant Native American History. *Smoke Signals*, 1 May:6,7. Grand Ronde, OR. <https://oregonnews.uoregon.edu/lccn/sn93050714/2007-05-01/ed-1/seq-11/#words=petroglyphs+Petroglyphs>. Accessed 15 November 2021.

Keywords: Cascadia Cave (aka Indian Cave), near Sweet Home, Oregon, Cascade Mountains, northwest United States. North America. Columbia Plateau culture area. Kalapuya Indian. Molalla Indian. Bear claw motif(s). Cultural resource management. Conservation and preservation. Vandalism. *Internet*.

McClellan, George Brinton

1853 *George Brinton McClellan Papers: Notebooks, 1842–1885; Engineer's field book, 1853*. Manuscript/Mixed Material. Washington: Library of Congress. <https://www.loc.gov/item/mss318980284/>.

Keywords: Painted Rock, Columbia River, Washington, northwest United States. North America. See Image no. 23.

McClure, Richard H., Jr.

1978 An Archaeological Survey of Petroglyph and Pictograph Sites in the State of Washington. *Archaeological Reports of Investigation*, September. Olympia, WA: The Evergreen State College. <http://archives.evergreen.edu/1976/1976-26/Publications/McClure%20Richard%201978.pdf>. Accessed 8 September 2013. 108+ pp.

Keywords: Washington. Northwest. Adams, Asotin, Benton, Chelan, Clallam, Clark, Columbia, Cowlitz, Douglas, Ferry, Franklin, Garfield, Grant, King, Kitsap, (Vantage) Kittatas, Klickitat, Lincoln, Mason, Okanogan, Pierce, Skamania, Spokane, Stevens, Thurston, Walla Walla, Whatcom, Whitman, and Yakima Counties. Columbia River. United States. North America. Regional survey. Site descriptions. *LMRAA, NADB #1331685.*

1979a Dating Petroglyphs and Pictographs in Washington. Paper presented at the 32nd Annual Northwest Anthropological Conference, Eugene, Oregon, March 22–24. 25 pp.

Keywords: Washington. Columbia River. Northwest United States. North America. Dating. Tsagaglalal. Horse motif. Circle or arc with rays. *LMRAA (photo copy), NADB #1331686.*

1979b The Tsagaglalal Motif in Rock Art of the Lower Colombia River. *American Indian Rock Art*, V:173–189. El Toro, CA: American Rock Art Research Association.

Keywords: Lower Columbia River. Wasco County, Oregon. Klickitat County, Washington. Northwest United States. North America. Tsagaglalal motif. *LMRAA (photo copy).*

1979c Master Site File: Chelan Pictographs 45 CH 225, 9 May. Pullman: Washington State University. 2 pp.

Keywords: 45 Ch 225, Chelan County, Washington. Columbia Plateau. Northwest United States. North America. Site record. *LMRAA (photo copy).*

1980 Anthropomorphic Motifs and Style in Plateau Rock Art. Paper presented at the 33rd Annual Anthropological Conference, Bellingham, Washington, March 27–29. Portland, OR: U.S. Forest Service, Pacific Northwest Regional Office.

Keywords: Columbia Plateau. United States. North America. Anthropomorph motif(s). *Biblio.*

1981 Paired Anthropomorphs of Central Washington. *American Indian Rock Art*, VI:I36–47. El Toro, CA: American Rock Art Research Association.

Keywords: Mid-Columbia River, Wenatchee, Washington, northwest United States. North America. Twins motif(s). *LMRAA.*

1984 *Rock Art of The Dalles-Deschutes Region: A Chronological Perspective*. Master's thesis, Department of Anthropology, Washington State University. Pullman. 190 pp.

Keywords: The Dalles-Deschutes region, Columbia River, Klickitat County, Washington. Sherman, Wasco, and Gilliam Counties, Oregon. The Dalles, John Day River, Mill Creek. Northwest United States. North America. Interior Plateau culture. Rock art and cultural sequence. Chronology. Dating. Site inventory. Tsagaglalal motif. *LMRAA (photo copy).*

M'Gonigle, Michael, and Wendy Wickwire

1988 *Stein: The Way of the River*. Vancouver, B.C.: Talonbooks. 192 pp.

Keywords: Stein River Valley, Litton, British Columbia, Canada. Thompson River. Frasier River. North America. Interior Salish. Cultural resource management. Conservation and preservation. Political action. Environmental battle to save the Stein River Valley from clear-cut logging. Pictographs. Vision quest. *LMRAA.*

McKelvie, B.A.

1940 Characters Found on Rock may Prove Earliest Runic. *Vancouver Province*, 31 August:11.

Keywords: DKRi6, Fraser River, Spuzzum, British Columbia, Canada. North America. Epigraphy. Runic. *Biblio.*

McWhorter, L.V.

1907 Recommends Permanency. *The Yakima Herald*, 31 July. Yakima, WA.

Keywords: Naches Gap, Washington, Columbia River, northwest United States. North America. Cultural resource management. Conservation and preservation. Photos. Restoration. *MNA*.

1908a Was Not Work of Vandalism. *The Yakima Herald*, 9 October. Yakima, WA.

Keywords: Naches Gap, Washington, Columbia River, northwest United States. North America. Cultural resource management. Conservation and preservation. Photos. Restoration. *MNA.*

1908b *Natches Gap*. L.V. McWhorter Papers, Item #1552. Pullman: Washington State University Library Archives.

Keywords: Naches Gap, Washington, Columbia River, northwest United States. North America. Photos, tracings, notes. *KBORE*.

1908c *Natural Sized "Pictographs" Naches Gap Tracings Done Summer 1908. Intended to be Done in Colors, as Indicated on Tracings, Now Dimmed by Age (August 5, '37)*. L.V. McWhorter Papers, Item #306. Pullman: Washington State University Library Archives.

Keywords: Naches Gap, Washington, Columbia River, northwest United States. North America. Nine tracings. *KBORE*.

1925 *Pictographs, Selah, 1925*. L.V. McWhorter Papers, Item #494 E. Pullman: Washington State University Library Archives.

Keywords: Selah (45YK47), Yakima County, Columbia River. Washington, northwest United States. North America. Photographs. *KBORE*.

Merrell, Carolynne L.

1994 Introduction to Kittle Rockshelter, Its Pictographs and Site Potential. In 47th Annual Northwest Anthropological Conference, Spokane, Washington, March 31–April 2. *Northwest Anthropological Research Notes*, 28(1):66. Moscow: Laboratory of Anthropology, University of Idaho.

Keywords: Site 10LE75, Idaho Plateau, Columbia Plateau, northwest United States. North America. Pictographs. Documentation. Digital enhancement.

Abstract: "Kittle Rockshelter was registered on 9 September 1993 as Smithsonian number 10-E-75. This rockshelter contains at least seventeen previously unrecorded pictographs. The motifs display anthropomorphs and zoomorphs including buffalo. Other surfaces are too obscure to identify without detailed research other than to note pigment application. Several pictographs are located on columnar basalt projections from the ceiling. Many are loose and are expected to drop to the shelter floor as the natural deterioration of the shelter continues. In presenting these motifs, the effect of digital enhancement techniques is demonstrated and comparisons are made with pictographs from elsewhere on the Columbia Plateau." *MNA, Internet.*

2003 Buffalo Eddy: A Confluence of Influence as Seen Through its Petroglyphs and Pictographs. *American Indian Rock Art*, 29:21–31. Tucson, AZ: American Rock Art Research Association.

Keywords: Buffalo Eddy (aka 45AS14 in Washington State and aka 10NP29 in Idaho), south of Lewiston, Snake River, Idaho. Columbia Plateau. Northwest United States. North America. Female anthropomorph, big horn sheep, V-bodied anthropomorph, curvilinear and geometric abstract, modified serrated edge motif(s).

Petroglyph panels predominate, but two pictograph panels occur here. Great Basin, Interior Plateau, Great Plains, and Lower Columbia River influences are all found at this site. *LMRAA.*

Meyers, Donald W.

2020 It Happened Here: Vandalism Leads to Closure of Painted Rocks Park. *Yakima Herald-Republic*, 6 January. Yakima, WA. <https://www.yakimaherald.com/news/local/happened/it-happened-here-vandalism-leads-to-closure-of-painted-rocks-park/article_5dfe3e34-8dc4-5b8b-9146-115bc5b0262c.html>. Accessed 16 May 2022.

Keywords: Indian Painted Rocks State Park, Powerhouse Road, Yakima, near Naches River, Columbia Plateau, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Vandalism. Graffiti. Park closure. *Internet.*

Micnhimer, D. Russel, and LeeAnn Johnston

2010 *Where to See Rock Art: Washington-Oregon-Idaho*. West Haven, CT: Pendulum Press. ISBN 978-0 9740105-0-5. 145 pp.

Keywords: Washington, Oregon, Idaho. Columbia River. United States. North America. Guide book. Including various sites where petroglyphs have been moved from *in situ. Biblio, LMRAA.*

Miles, Don

1970a Kettle Falls: A Reader's Commentary on a Site on the Columbia River. *The Washington Archaeologist*, 14(1):2–5. Seattle: Washington Archaeological Society.

Keywords: Kettle Falls, Columbia River, Washington. Northwest. United States. North America. *KBORE.*

1970b Reader's Commentary: An Unrecorded Pictograph on the Upper Palouse River. *The Washington Archaeologist*, 14(3):5. Seattle: Washington Archaeological Society.

Keywords: Upper Palouse River, Washington. Columbia Plateau. Northwest United States. North America. Map. Photograph. Pictograph panel, red ochre. *KBORE.*

1975 Ancient Art in the Valley of the Snake. *The Washington Archaeologist*, 19(4):1. Seattle: Washington Archaeological Society.

Keywords: Along the Snake River at Buffalo Eddy (45AS14), Moon Cove and south bank of the river across from Steptoe Canyon near Clarkston, Washington. Columbia Plateau. Northwest United States. North America. Brief note. *Internet.*

Miller, Jay

1998 Middle Columbia River Salishans. In *Handbook of North American Indians, Vol. 12, Plateau,* edited by Deward E. Walker, Jr., pp. 253–270. Washington: Smithsonian Institution.

Keywords: Mid-Columbia River, Washington. Northwest United States. North America. Okanagan (Salish) Indian. Shamans advertise their power with pictographs. Power to cure illnesses (quotes Cline 1938:143–144) (see p. 259, per David Whitley, *INORA*, 2000). Ethnography. *Biblio.*

Minick, David L., and James D. Keyser

2018 Seeing is Finding: The Value of DStretch for Recording Columbia River Rock Art at Spedis Creek and Harris Canyon. *American Indian Rock Art,* edited by David A. Kaiser and James D. Keyser, 44:29–44. San Jose, CA: American Rock Art Research Association. ISBN: 978-0-988730-5-6.

Keywords: Spedis Creek (45KL81), The Dalles, Columbia Hills State Park, Columbia River, Washington and Harris Canyon (35SH274), Deschutes, Oregon, northwest United States. North America. Documentation. Digital photo enhancement. DStretch. Yakima Polychrome Style. Columbia. *LMRAA.*

Mitchell, Suzanne

2006 *Minding the Gap: An Exploration into the Social Landscapes of Rock Art at Stuart Lake/Nak'al Bun, British Columbia*. Master's thesis, University of Northern British Columbia, Canada. 202 pp.

Keywords: Stuart Lake/Nak'al Bun, British Columbia, Canada. North America. Social landscape. *Internet, RASNW4.*

2013 Being on the Move: Rock Art Production and Use in Dakelh Traditional Territory. In *Ancient Hands Around the World, International Federation of Rock Art Organizations 2013 Proceedings,* edited by Peggy Whitehead and Mavis Greer, *American Indian Rock Art,* 40:585–600. Glendale, AZ: American Rock Art Research Association. ISBN: 978-0-9888730-1-8.

Keywords: Stuart Lake or Nak'al Bun, Dakelh Traditional Territory, British Columbia, Canada. North America. Fifteen sites located on water's edge, all accessible by water craft. Contemporary ethnographic accounts. *LMRAA, ALL.*

2015 *At the Water's Edge: An Integration of Ethnographic and Archaeological Methods in the Study of Rock Art in Northern Central British Columbia, Canada*. Doctoral dissertation, University of Leicester, Leicester, England. <http://hdl.handle.net/2381/32448>. Accessed 17 April 2018.

Keywords: Northern Central British Columbia, Canada. North America. Ethnography. Archaeological context. *GoogleScholar.*

Mohs, Gordon

1981 An Assessment and Evaluation of Heritage Resources in the South Thompson River Valley of British Columbia. *Occasional Papers*, 8:80–83. Heritage Conservation Branch, British Columbia, Canada.

Keywords: South Thompson River Valley, British Columbia, Canada. North America. Five brief site descriptions. *LMRAA. CRARA.*

Moncure, Peyton

1961 Western Montana Picture Writing. *Great Falls Tribune*, 10 December:13–14.

Keywords: Perma, Flathead Indian Reservation, Montana. Northwestern Plains. United States. North America. Columbia Plateau culture. *Biblio.*

1963 Pictographs near Perma. *Archaeology in Montana*, 5(3):8–9. Missoula: Montana Archaeological Society. ISSN: 0044-8591.

Keywords: Perma, Flathead Indian Reservation, Montana. Northwestern Plains. United States. North America. Columbia Plateau culture. *RABNPV, NADB #5190476.*

Montgomery, Marcia

2012 Research Summary Regarding the Establishment of the Petroglyph Monument at Priest Rapids. Manuscript on file. Grant County Public Utilities District.

Keywords: Priest Rapids, Columbia River, Washington. Northwest. United States. North America. Cultural resource management. Conservation and preservation. *Biblio.*

Moore, T.A., editor

1981 *Alberta Archaeology: Prospect and Retrospect*. Lethbridge: Archaeological Society of Alberta. 108 pp.

Keywords: Writing-on-Stone, Stevens Rock, Crowsnest Cave, Table Butte, Pine Coulee,

25 Ranch, Zephyr Creek, Mystic Cave, Okotoks Erratic, Grotto Mountain, Spray Canyon, Airdrie Erratic, King Buffalo Jump, Carstairs Coulee, Cline River, and Snake Indian (Devona) Cave, Alberta. Canada. North America. Columbia Plateau cultural sphere (at Zephyr Creek). *LMRAA, MNA.*

Morice, A.G.

1893 *Notes, Archaeological, Industrial, and Sociological on the Western Denes. Transactions of the Canadian Institute*, 4:1–222.

Keywords: Stuart Lake, British Columbia, Canada. North America. Upper Carrier Indian. Athapaskan. Western Dene. Pictographs. See citations in Thomas H. Richards, 1978. *Biblio.*

Muench, David, and Polly Schaafsma

1995 *Images in Stone*. San Francisco, CA: Brown Trout Publishers, Inc. ISBN 10: 156313442X, ISBN 13: 9781563134425. 191 pp.

Keywords: Great Basin, Mojave Desert, Green River, Colorado River, Little Colorado River, San Juan River, Gila River, Rio Grande River, Columbia River, Anza Borego Desert. California. Arizona. Nevada. New Mexico. Utah. Oregon. Washington. Baja California, Mexico. United States. North America. Photo journalism with essay and comments by Polly Schaafsma. Includes Navajo rock art. *LMRAA, HNRAR.*

Muldoon, Katy

2004 Preserving a Past, Finding a Future. *OregonLive.com*, 3 August. 3 pp.

Keywords: The Dalles, Columbia River, Horsethief State Park (45KL58), Washington. Northwest. United States. North America. Jeanne Hillis petroglyph rubbings ca. 1956–1957. *LMRAA (digital copy).*

Nankivell, Simon, and David Wyse

2003 *Exploring B.C.'s Pictographs: A Guide to Native Rock Art in the British Columbia Interior*. Burnaby, B.C.: Mussio Ventures, Ltd. 159 pp.

Keywords: Columbia Plateau. British Columbia, Canada. North America. Tour guide. Cultural resource management. Conservation and preservation. This mass market trade paperback is an example of a publication which promotes public visitation to rock art sites on First Nation, public, and private lands, without regard to the existence of management strategies in place to protect the sites. Brief sections on interpretation, shamanism and an "icon dictionary" are all poorly constructed. *LMRAA.*

National Park Service

n.d. Scope of Work: Documentation of Rock Art. Lava Beds National Monument Attachment No. 0001.

Keywords: Symbol Bridge (CA-SIS-1/3), Antelope Well (CA-SIS-20/21), Big and Little Painted Caves (CA-SIS-22/23/24), Bearpaw Cave (CA-SIS-29/30/H), Captain Jack's Cave (CA-SIS-146/H), Juniper Cave (CA-SIS-1479, Ship Cavern and Symbol Cave/ Copper Rock Cavern), Lava Beds National Monument, Modoc County, Siskiyou County, California. United States. North America. Contract specifications issued by the National Park Service designed to seek professional services to complete the documentation of eight rock art sites within the monument (see Loubser 1998). Includes archaeological site records for the eight sites. All of these caves had been recorded previously by Eidsness (1989, 1990). *LMRAA (photo copy).*

Nesbitt, J.K.

1946 B.C.'s Petrified Puzzle. *The Montreal Standard,* 23 November.

Keywords: DKRi6, Fraser River, Spuzzum, British Columbia, Canada. North America. Epigraphy. *Biblio.*

Nesbitt, Paul Edward

1968a *Petroglyphs of the Snake River*. Master's thesis, Washington State University, Pullman.

Keywords: Snake River, Idaho. Columbia Plateau. Northwest. United States. North America. *KBORE*.

1968b Stylistic Locales and Ethnographic Groups: Petroglyphs of the Lower Snake River. *Occasional Papers of the Musuem,* 23. Pocatello: Idaho State University. 33+ pp.

Keywords: Lower Snake River, Idaho. Buffalo Eddy (45AS14). Palouse Pictographs. Snake River, Washington. Columbia Plateau. Northwest United States. North America. Regional survey. Stylistic locales and ethnographic groups. *LMRAA, RCSL, NADB #1332234.*

Newman, Sandra

1985 Petroglyphs Rescued. *Screenings,* 34(8). Portland: Oregon Archaeological Society.

Keywords: John Day Dam, Mt. Hood Community College, Oregon. Washington. Columbia River. Northwest United States. North America. Cultural resource management. Conservation and restoration. *MNA*.

Newman, Thomas M.

1966 Cascadia Cave. *Occasional Papers of the Idaho State University Museum,* No. 18. Pocatello: Idaho State University Museum. 49 pp.

Keywords: Cascadia Cave, western Cascade Range, northwest Oregon, northwest United States. North America. Columbia Plateau cultural sphere. Mollala. Archaeological context. *MNA, NADB*.

New York Times

1926 Says Norse Crossed America in 1010 A.D. *New York Times*, 6 July:1. New York, NY. <https://www.nytimes.com/1926/07/06/archives/says-norse-crossed-america-in-1010-ad-professor-opsjon-asserts.html>. Accessed 6 November 2021.

Keywords: Spokane, Washington, Columbia Plateau, northwest United States. North America. Claims for Nordic authorship. Olaf Opsjon. Viking burial. *MNA*.

Nicholas, M. Leona

1927 Legends and Stories of Religion Woven by Indians Somewhat Similar to those Born in Greece and Rome. *The Oregonian*, p.19. Portland, OR.

Keywords: Columbia Plateau, northwest United States. North America. Stone carvings. Rock art. Vision quest. *MNA*.

Nissen, Karen M., and Eric W. Ritter

1986 Cupped Rock Art in North-Central California: Hypothesis Regarding Age and Social / Ecological Context. *American Indian Rock Art*, 11:58–75. El Toro, CA: American Rock Art Research Association.

Keywords: Upper Sacramento, Trinity, and Klamath River Drainages, North Central California. United States. North America. Cupule. Pitted boulders. Pit and groove. Baby rock. Rain rock. *LMRAA,* See *BSABSR* for summary*, CDA.*

Nordquist, Del

1958a Remarks About the Emblem of the Washington Archaeological Society. *The Washington Archaeologist*, 1(5):4. Seattle: Washington Archaeological Society.

Keywords: The Dalles Dam, Columbia River, Washington, northwest United States. North America. Tsagaglalal (She-Who-Watches). *MNA*.

1958b Petroglyphs on Face of a Basalt Boulder North of Site 45-KT-6: Petroglyphs from Basalt Columns at Sentinel Bluff South of East Beverly (Now Destroyed). *The Washington Archaeologist*, 2(4):9. Seattle: Washington Archaeological Society.

Keywords: 45-Kt-6. Sentinal Bluff, East Beverly, Columbia River, Washington. Northwest. United States. North America. *WELLM*.

1960 Unrecorded Petroglyphs from Sentinel Bluff. *Washington Archaeologist*, 4(8):2–8. Seattle: Washington Archaeological Society.

Keywords: Sentinal Bluff, Priest Rapids Dam, Central Columbia River, Washington. Northwest. United States. North America. *RANMAB, NADB #1332320*.

1962a An Approach to Stylistic Analysis of Petroglyphs, Part I. *Washington Archaeologist*, 6(5):5–9. Seattle: Washington Archaeological Society.

Keywords: Washington, Columbia River. Northwest United States. North America. Stylistic analysis. Element inventory. *RANMAB, RABNPV* (Gives spelling as "Norquist" and citation as 6(5):5–9).

1962b An Approach to Stylistic Analysis of Petroglyphs, Part II. *Washington Archaeologist*, 6(6):6–12. Seattle: Washington Archaeological Society.

Keywords: Washington, Columbia River. Northwest United States. North America. Stylistic analysis. Element inventory. *RANMAB, RABNPV* (Gives spelling as "Norquist"), *NADB #1332334*.

1962c An Approach to Stylistic Analysis of Petroglyphs, Part III. *Washington Archaeologist*, 6(8):2–11. Seattle: Washington Archaeological Society.

Keywords: Washington, Columbia River. Northwest United States. North America. Stylistic analysis. Element inventory. *RANMAB, RABNPV* (gives spelling as Norquist).

1965 Petroglyphs at Roosevelt, Washington. *Washington Archaeologist*, 9(2):16–40. Seattle: Washington Archaeological Society.

Keywords: Roosevelt (45KL14), Washington. Northwest. Columbia River. Some petroglyph boulders have been removed from the encroaching waters of John Day Dam, to a park one mile east of Roosevelt on HWY 8. United States. North America. Includes illustrated petroglyph element catalog. Quadrupeds, human forms, reptiles, birds, insects, animal paws, ovals, circles, rectangles, triangles, zig-zags, wavy lines superiorly spurred arcs, lines, and dot cluster motif(s). *LMRAA, KBORE, NADB #1331755*.

Okanagon County Historical Society

1968 Cover Photograph. *Heritage*, June, 6(3):Cover. Okanagon County Historical Society, WA.

Keywords: Wells Dam, Okanagon County, Columbia River. Washington. Northwest United States. North America. Pictographs. *LMRAA (photo copy)*.

Omak Chronicle

1964a Near Wells Dam. Indian Paintings will be Preserved. *Omak Chronicle*, 7 May, 54(47):3.

Keywords: Azwell (45OK62), near Wells Dam, Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservaion and preservation. Dam construction. Inundation. Moved from *in situ*. Salvage archaeology. *MNA*.

1964b Petroglyphs at Wells are Largely Salvaged. *Omak Chronicle*, 4 June, 57(43):3.

Keywords: Azwell (45OK62), near Wells Dam, Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservaion

and preservation. Dam construction. Inundation. Moved from *in situ*. Salvage archaeology. *MNA*.

0psjon, Oluf

1919 Photograph and Ephemera Collection (L2003-28). Eastern Washington State Historical Society Archives, Northwest Museum of Arts & Culture, Spokane.

Keywords: Spokane, Washington, Columbia Plateau, northwest United States. North America. Photo archive. Oluf (aka Olof, Olaf) Opsjon. History of research. Norse. Nordic runes. *MNA*.

The Oregonian

1920 Picture Writings Found Upon Rocks / Cliffs Reveal Prehistoric History in Characters. *The Oregonian*, 9 November:14. Portland, OR.

Keywords: Roosevelt (45KL14), Arlington, Columbia River, Oregon, Washington, northwest United States. North America. *MNA*.

1929 Cliffs of Columbia Hold Key to History: Modern Rosetta Stone Yet Unfound, May Open New Page of Human Life Antedating Anything Known to Date. *The Oregonian,* Section 2, 1 December:2. Portland, OR. <http://homepages.rootsweb.com/~westklic/cliffkey.html>. Accessed 16 May 2022.

Keywords: Roosevelt (45KL14), Arlington, Columbia River, Oregon, Washington, northwest United States. North America. *MNA*.

Oregon Museum of Science and Industry

1968 *Stone Age Art: Columbia River Petroglyphs*. Portland: Oregon Museum of Science and Industry.

Keywords: The Dalles, Columbia River. Oregon. Washington. Northwest United States. North America. Museum catalog. Portfolio. Fifteen black and white photographs of petroglyph stone castings with introduction and price list. Many of the castings were taken from petroglyphs prior to innundation. *LMRAA, Biblio*.

Orne, Stanley

1926 Professor's Norse 'Runes' Believed Work of Indians. *The Oregonian,* 11 July. Portland, OR.

Keywords: Rock Island (45DO301), Columbia River, Washington, northwest United States. North America. Viking Runes. Olaf Opsjon. Petroglyphs. *MNA*.

Osbourne, Douglas

1967 Archaeological Tests in the Lower Grand Coulee, Washington. *Occasional Papers of the Idaho State University Museum*, No. 20. Pocatello: Idaho State College. 83 pp.

Keywords: Pictograph Cave (45GR78), Pictograph Spring (45GR91), South Cave (45GR94), Lower Grand Coulee, Washington, northwest United States. North America. Pictographs. Archaeological context. *MNA*, *Amazon*.

Ostling, Arlie G.

1959 Pictographs of Whiskey Dick. *Washington Archaeologist*, 3(1):5–8. Seattle: Washington Archaeological Society.

Keywords: Whiskey Dick (45KT23), Shookumchuck Canyon, Columbia River, Washington. Northwest. United States. North America. *RANMAB*.

Pardee, Loe

1937 Indian Artists' Work Centuries Ago in Washington Still Visible. *Spokane Press*, 25 June. <https://content.libraries.wsu.edu/digital/collection/clipping/id/4718/#:~:text=1.,-Newspaper&text=Indian%20artists'%20work%20centuries%20ago%20in%20Washington%20still%20visible%20%2F%20by,on%20a%20wall%20of%-20rock>. Accesed 16 May 2022. 1 p.

Keywords: Columbia River, Columbia Plateau, Washington, northwest United States. North America. Includes map of petroglyph and pictograph site distribution. Washington State Library Digital Collection, Resource Identifier sh138-590. *MNA*, *Internet*.

Patterson, Carol

1996 Study of Petroglyph Images Associated with the Sweat Lodge of the Columbia Plateau. *National Pictographic Society Newsletter*, November:8–9. Winslow, WA: National Pictographic Society.

Keywords: Beverly Juction, Beverly Gap, Washington, Columbia River. Northwest. United States. North America. Sweat lodge motif(s). Harold Cundy. *LMRAA*.

1997 Investigation of the Áčay Qciik Petroglyph Site Grant County, Washington. Report submitted to Grant County Public Utility District and on file at Bureau of Land Management, Wenatchee, Washington.

Keywords: Áčay Qciik Petroglyph Site (Magpie Rocks, aka Huntzinger Bar), Beverley, Grant County, Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. National Historic Register nomination. Geology. Hydrology. Ecology. Archaeological context. Ethnohistory. Ethnography. Survey. Documentation. Mapping. Wanapum Band. *MNA*.

Patterson-Rudolph, Carol

1999 The Importance of Songs in Native American Culture: Song Signatures in Native American Prehistoric Art. In News 95—International Rock Art Conference Proceedings. Unpaginated. Pinerolo: Centro Studie Museo d'Arte Prehistorica.

Keywords: Ring Lakes, Wind River Range, Wyoming. Columbia River Basin. Utah. Great Basin. Colorado. United States. North America. "Evidence of songs portrayed in the rock art appears at vision quest sites... where the Shoshoni came to vision quest." Song boards. *LMRAA*.

Pearkes, Eileen Delehanty

2002 *The Geography of Memory. Recovering Stories of a Landscape's First People*. Nelson, B.C.: Kutenai House Press. 95 pp.

Keywords: Columbia River. Revelstoke. Arrow Lakes. Slocan Lake. Kootenay River. British Columbia, Canada. North America. Sinixt (Arrow Lakes) Indian. Interior Salish. Brief mentions of pictographs (see cover photo). More to do with setting: cultural landscape. *LMRAA.*

Peterson, Ernest

1929 The Indian's Newspaper—Roosevelt Sedan Visits Petroglyph Area at Roosevelt Wash.: They are a Form of Thought Writing. *Oregon Journal,* 20 October. Portland, OR. <https://www.academia.edu/61804345/Glyphland_The_strange_story_of_a_century_of_speculation_and_promotion_and_the_unlikely_journey_of_the_Roosevelt_Washington_petroglyph>. Accessed 12 May 2022.

Keywords: Roosevelt (45KL14), Columbia River, Washington. Northwest. United States. North America. Cultural resource management. Conservation and preservation. Tourism promotion. *Academia.edu*.

Pickering, Charles

1848 *United States Exploring Expedition during the Years 1838, 1839, 1840, 1841, 1842. Under the Command of Charles Wilkes, U.S.N., Volume IX: The Races of Man and their Geographic Distribution.* Philadelphia, PA: C. Sherman.

Keywords: Columbia River, northwest. United States. North America. Wilkes Expedition. Early recorded rock art images (pp. 41–42). *MNA*.

Poetschat, George, and James D. Keyser
2007 Mobiliary Carvings as a Key to Northwest Coast Rock Art. *Journal of Northwest Anthropology*, 41(1):19–36.

Keywords: Pictograph Cave. Alaska. Northwest Coast. The Dalles, Columbia River. Portland Basin. Washington. Columbia Plateau. United States. North America. Mobiliary (portable) rock art. Woodworm and raven images. Beaver Bowl. Tsagaglalal. A Protohistoric death cult guardian spirit figure.

Abstract: "The Northwest Coast culture area has a rich tradition of mobile or mobiliary art, including stone sculpture, which has yet to be broadly compared to the equally widespread regional rock art tradition. Three case studies where we compare rock art images to mobile art show the value of this approach. These include Tsagaglalal, a Protohistoric death cult guardian spirit figure; the Woodworm and Raven images in Alaska's Pictograph Cave; and the Beaver Bowl, a bas-relief petroglyph carved in the Portland Basin section of the lower Columbia River. Comparison of these pictographs and petroglyphs to mobile pieces opens up new understandings of these ancient images, and illustrates a new line of enquiry for rock art scholars in many other areas of the continent." *MNA, Biblio.*

Poetschat, George, James D. Keyser, David A. Kaiser, Robin Harrower, and Anthony Farque
2010 Interpreting Cascadia Cave: An Upstream Struggle. *American Indian Rock Art,* (36):59–70. Tucson, AZ: American Rock Art Research Association. ISBN: 978-0-9767121-7-6.

Keywords: Cascadia Cave, on private land one mile east of Cascadia State Park, Willamette Valley, South Santiam River, Oregon. Northwest. United States. North America. Two hundred images including 50 bear paw motif(s) occur in a rock shelter whose entrance is shaped like a fish (Salmon). Columbia Plateau cultural sphere. *LMRAA.*

Poetschat, George, James D. Keyser, Betty Tandberg, Helen Hiczun, and Pat McCoy
2003 The Beaver Bowl: A Shaman's Petroglyphs in the Northwest Coast Art Tradition. *American Indian Rock Art*, 29:33–42. Tucson, AZ: American Rock Art Research Association.

Keywords: Fisher's Landing (45CL6), Clark County, Columbia River, Portland Basin, Vancouver, Washington. Northwest. United States. North America. Beaver Bowl motif(s). Zoomorphic stone sculpture images recur on small mobiliary pieces, large boulders, and in petroglyphs. Northwest Coast Art Tradition. Stone effigy bowls. Chinookan Culture. Shaman's paraphanalia. *LMRAA.*

Powell, Todd W.
1999 Pictures from the Past: Northwest Rock Art. *Horizon Air*, June, 10:6–7, 10–14, 41. Seattle, WA: Paradigm Communications Group.

Keywords: Columbia Plateau, Washington, Oregon, Pacific Northwest. United States. North America. Jim Keyser. David Whitley. Regional overview. Shamanism. *LMRAA.*

Powers, Alfred
1935 Petroglyphs and Pictographs or Indian Picture Writing. In *History of Oregon Literature*, pp. 24–26. Portland, OR: Metropolitan Press.

Keywords: The Dalles, Columbia River, Washington, Oregon, Pacific Northwest, United States. North America. Wishram. *MNA.*

Rader, Chris

2020a Native Americans Revered Rock Island. Rock Island has Cultural Significance. *Confluence*, Spring, 3(6):13–16. Wenatchee, WA: Native River Fund, Wenatchee Valley Museum and Cultural Center. ISBN: 978-0-578-56630-6.

Keywords: Rock Island (45DO301), Mid-Columbia River, Columbia Plateau, east central Washington, northwest United States. North America. Ethnography. Geographic context. Rock art. Landscape context. Randy Lewis. Bill Layman. Mythology. Red Star. Blue Star. Spexman. *LMRAA*.

2020b Rock Island Petroglyphs are Prized: Rock Island has Cultural Significance. *Confluence*, Spring, 3(6):7–11. Wenatchee, WA: Native River Fund, Wenatchee Valley Museum and Cultural Center. ISBN: 978-0-578-56630-6.

Keywords: Rock Island (45DO301), Mid-Columbia River, Columbia Plateau, east central Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Innundation. Petroglyphs moved from *in situ*. Bill Layman. *LMRAA*.

Ranck, Glenn

1926 Tribal Lore of Wishram Indians Rich in Traditions of Columbia. *The Sunday Oregonian,* 7 February. Portland, OR.

Keywords: Columbia Plateau, Oregon. Northwest United States. North America. Wishram Indian. Medicine man (shaman) used unseen power to paint a pictograph during the night and was found the next morning at the rock art site, deep in trance. Ethnography (per David Whitley, *INORA*, 2000). *Biblio*.

Rau, Charles

1881 Rock Markings in Arizona, Utah, and Oregon. In *Observations on Cup-Shaped and Other Lapidarian Sculptures in the Old World and America. Contributions to North American Ethnology*, 5:65–66. Department of the Interior, U.S. Geographical and Geological Survey of the Rocky Mountain Region, J.W. Powell in charge. Washington, D.C.

Keywords: Arizona. Utah. Klamath Basin, southeast Oregon. United States. North America. Includes K'mukamtsh. Early report with illustrations. Columbia Plateau cultural sphere. *LMRAA, MNA*.

Relander, Click

1956 *Drummers and Dreamers*. Caldwell, ID: Caxton Printers.

Keywords: Priest Rapids, Vantage, Washington, Columbia River, northwest United States. North America. Wanapum. Sacred Island. Little people made petroglyphs. *MNA*.

Rice, David G.

1977 National Register of Historic Places Nomination Form, Nez Perce Snake River Archaeological District. Boise: Idaho State Archaeological and Historic Inventory, Idaho Historical Society. <https://history.idaho.gov/wp-content/uploads/2018/09/Nez_Perce_Snake_River_Archaeological_District_78001086.pdf>. Accessed 16 May 2022. 16 pp.

Keywords: Nez Perce Snake River Archaeological District (10NP26, 10NP29, 10NP43, and 10NP47), Snake River, Columbia Plateau, Idaho (Oregon), northwest United States. North America. Cultural resource management. Conservation and preservation. National Register of Historic Places nomination. Pictographs. Winter village sites. *MNA*, *Internet*.

Rice, Harvey S., J.A. Ross, and R. H. McClure, Jr.

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

Keywords: 45ST9 and 45ST162, Spokane Indian Reservation, Stevens County, Washington, Columbia Plateau, northwest United States. North America. Spokane. Survey and documentation. Pictographs. *MNA*, *Internet*.

Richard, Terry

2004 Gorge Petroglyphs Moved to Place of Honor. *The Sunday Oregonian,* 28 March. Portland, OR.

Keywords: Columbia Hills State Park, The Dalles Dam, Washington, Columbia River, northwest United States. North America. Cultural resource management. Conservation and preservation. *MNA*.

Richards, Leverett G.

1935 Mystery of Ancient Carved Lava Boulder Unsolved. *The Sunday Oregonian,* 30 June. Portland, OR.

Keywords: Portland, Columbia River, Oregon. Northwest. United States. North America. Beaver Bowl motifs (aka sacraficial stone). *Biblio*.

1953 American Indian Highway Marked by Road Signs. *The Sunday Oregonian*, 29 March. Portland, OR.

Keywords: Wakemap Mound, Columbia River, Oregon. Northwest. United States. North America. Petroglyphs. *MNA*.

Richards, T.H.

1978 A Pictographic Survey of Southeast Stuart Lake, British Columbia. In *Selected Research Reports and Activities of the Heritage Conservation Branch, Annual Research Report*, (1):133–165. Ministry of Provincial Secretary and Government Services, Heritage Conservation Branch, British Columbia.

Keywords: On the north shore between Ft. St. James and Pinchie Bay, southeast Stuart Lake, British Columbia, Canada. North America. Pictographs. Upper Carrier Indians. Athapaskan. Vision quest. Guardian spirit. Ethnography. Fish, beaver, bear, caribou, winged (bird), stick, slash, circle, arrow motif(s). Similar to Lundy's Interior Rock Art Style. *Biblio, CRARA, LMRAA.*

1979 Preliminary Report of a Pictograph Survey of Southeastern Stuart Lake. *Resource Information Heritage Conservation Branch*. Victoria, B.C.

Keywords: Stuart Lake, British Columbia, Canada. North America. Upper Carrier Indian. Athapaskan. Pictographs. *Biblio.*

Rubin, Rick

1986 She Who Watches. *Northwest Magazine*, 28:4. *Sunday Portland Oregonian,* 28 September. Portland, OR.

Keywords: Columbia River, Washington. Northwest. United States. North America. Tsagaglalal motif(s). *Biblio.*

Ritter, Eric W.

1999 Boundary, Style and Function: Extrapolations from Keno, Oregon Petroglyphs. *American Indian Rock Art*, 25:81–100. San Miguel, CA: American Rock Art Research Association.

Keywords: Site 35kl1901, Keno Petroglyphs, Klamath River Canyon, South East Oregon. United States. North America. Paper explores the cultural boundaries and interaction spheres between the Klamath,

Modoc, and Shasta peoples. Polychrome pictographs. Klamath, Modoc, and Shasta ethnography. Shamanism. Vision quest. *LMRAA.*

Ritter, Eric W., Jon Harman, Jennifer Rovanpera, Devin Snyder, Elisa Correa, and Sheila Harman

2018 Investigating the Co-Occurrence of Petroglyphs and Pictographs on the Volcanic Tablelands of Northeastern California. *American Indian Rock Art,* edited by David A. Kaiser and James D. Keyser, 44:69–88. San Jose, CA: American Rock Art Research Association. ISBN: 978-0-988730-5-6.

Keywords: CA-MOD-19, BLM site #40.14.30.01, CA-MOD-4738, CA-MOD-161, Devil's Garden, Likely Tablelands, Volcanic Tablelands, Modoc Plateau, northeastern California, United States. North America. The study documents co-occurrence of petroglyphs and pictographs. *LMRAA.*

Ritzville Journal Times

1936 Ancient Hieroglyphics Found Near Harder's. *Ritzville Journal Times*, 30 September. Ritzville, WA. <https://content.libraries.wsu.edu/digital/collection/clipping/id/10756/rec/1>. Accessed 16 May 2022. 1 p.

Keywords: Harry Harder Ranch, near Dragoon Springs, near Macall, Adams County, Washington, Columbia Plateau, northwest United States. North America. Washington State University Library Digital Archive resource identifier sh143-96.

Abstract: "Hieroglyphics and rock carvings which indicate that there may have been life in Adams county thousands of years ago were discovered on the Harry Harder ranch near Macall last week, Harder reported this week." *MNA*, *Internet.*

Root, Gordon

1946 European Asks About Rock Markings Here. *Victoria Colonist*, 5 November:11.

Keywords: DKRi6, Fraser River, Spuzzum, British Columbia, Canada. North America. Epigraphy. *Biblio.*

Rudolph, Carol

1995 Sacred Sites, Sacred Spaces. *National Pictographic Society Newsletter*, February:1–3. Winslow, WA: National Pictographic Society.

Keywords: Mid-Columbia River, Washington, northwest United States. North America. Partial transcript given from, "A Forum on Rock Art, Whose Property, Whose Culture?" Ethics of commercial and reproduction of rock art images. *LMRAA.*

Schaafsma, Polly

1995 Art in the Landscape, an Introductory Essay. In *Images in Stone*, pp. 11–17. San Francisco, CA: Brown Trout Publishers. ISBN 10: 156313442X, ISBN 13: 9781563134425.

Keywords: Great Basin, Mojave Desert, Green River, Colorado River, Little Colorado River, San Juan River, Gila River, Rio Grande River, Columbia River, Anza Borego Desert. California. Arizona. Nevada. New Mexico. Utah. Oregon. Washington. Baja, California. Mexico. United States. North America. Photo journalism with essay and comments by Polly Schaafsma. The essay is a general overview of the cultural contexts for the art depicted in this volume. *LMRAA.*

Schumacher, Paul J.F.

1964 Photographic Collection of Fort Okanogan Site (Site Features, Petroglyph and Physiographic Views). Manuscript on file, National Park Service, San Francisco, CA.

Keywords: Fort Okanogan, Washington. Columbia Plateau. Northwest United States. North America. *NADB #1332382, Office Of Archaeological And Historic Preservation, Olympia, Washington.*

Scott, Shane J.

2003 Archaeological and Cultural Resources Monitoring of the Washington Shore of The Dalles Pool: A Project Completed by the Confederated Tribes of the Yakama Nation, Spring 2003. Prepared for the members of the Wana Pa Koot Koot Working Group and the U.S. Army Corps of Engineers, Portland District Contract # DACW57-02-P-0414. Toppenish, WA: Confederated Tribes of the Yakama Nation.

Keywords: The Dalles, Columbia River Gorge, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Condition assessment. *MNA*, *Worldcat.org*.

Seaman, N.G.

1940 An Amateur Archaeologist's 50 Years in Oregon. *Oregon Historical Quarterly*, 41(2):147–159.

Keywords: Columbia River, Washington, Oregon, northwest United States. North America. Spearfish, water devil motif(s). Tsagaglalal (She-Who-Watches). Classification. *MNA*.

1967 Petroglyphs and Pictographs. In *Indian Relics of the Pacific Northwest*, *Part V*, pp. 215–241. Portland, OR: Binfords and Mort.

Keywords: Columbia River. Washington. Oregon. Northwest. United States. North America. *Biblio*.

Seattle Post-Intelligencer

1999 Rock Art Sites and Ettiquette. *Seattle Outside: Getaways*. *Seattle Post-Intelligencer,* 3 June. Seattle, WA.

Keywords: Horsethief Lake State Park (45KL58), Painted Rocks, Ginko State Park at Vantage, Long Lake Pictographs, Columbia Snake River Dam, Washington. Columbia River Plateau. United States. North America. Popular guide. Site directions. Guidelines for site visits. *LMRAA (download copy).*

Silver, Constance S.

1982 The Pictographs of Fern Cave, Lava Beds National Monument: Agents of Deterioration and Prospects for Conservation. Contract PX 8000-1-0552 (MS# 1509), 27 January. San Francisco, CA: National Park Service, Western Regional Office. 13 pp.

Keywords: Fern Cave, Lava Beds National Monument, Modoc County, California. United States. North America. Cultural resource management. Conservation and preservation. Natural deterioration. Growth of microflora (moss). Test applications of biocide, Mystox. *DBNPS, PCARB, NADB #1042734, LMRAA (photo copy).*

Simonsen, Bjorn

1980 British Columbia. Rock Art Activity in British Columbia. *Canadian Rock Art Research Association Newsletter,* November, edited by Tim Jones, (14):2–3. Saskatoon, Saskatchewan, Canada: Canadian Rock Art Research Association.

Keywords: Cranbrook Petroglyph Site, Weldwood Petroglyph Site (Gabriola Island), Petroglyph Park (Nanaimo), British Columbia, Canada. North America. Cultural resource management by the Heritage Conservation Branch, British Columbia. *LMRAA.*

Smith, Harlan I.

1906 Preliminary Notes on the Archaeology of the Yakima Valley, Washington. *Science (new series),* 6 April, 23(588):551–555. Washington: American Association for the Advancement of Science. <http://science.sciencemag.org/content/23/588/551>. Accessed 1 December 2018.

Keywords: Yakima Valley, Washington, Columbia River. Northwest United States. North America. *Internet.*

1910 Archaeology of the Yakima Valley. *Anthropological Papers of the American Museum of Natural History*, 6(Part 1):117–138.

Keywords: Cowiche Creek (45YK86), Naches River, Yakima Valley, Washington, Columbia Plateau, northwest United States. North America. Pictographs. Petroglyphs. Mobiliary (portable) art. Incised designs. *MNA.*

1927 A List of Petroglyphs in British Columbia. *The American Anthropologist* (*New Series*), 29(4): 605–610. Anthropological Society of Washington. <http://www.jstor.org/stable/661226>. Accessed 27 May 2012.

Keywords: British Columbia, Canada. North America. Site inventory. "... a certain amount of information is on file at the Victoria Memorial Museum, Ottawa." *LMRAA (photo copy), Internet.*

Smith, Marian W.

1943 Columbia Valley Art Style. *The American Anthropologist*, (45):158–160. Anthropological Society of Washington.

Keywords: Columbia River, Washington, Oregon, northwest United States. North America. Northwest Coast rock art style. *MNA.*

1946 Petroglyph Complexes in the History of the Columbia—Frazer Region. *Southwestern Journal of Anthropology*, 23:306–322.

Keywords: Columbia region, Washington, Oregon, northwest United States. North America. *RANMAB.*

Solland, Sonja O.

1976 Horsethief Lake State Park. *State Parks Capital Projects. Archaeological Site Investigation—1976*, *Reconnaissance Reports*, December, 10:25–38, 43. Seattle: University of Washington, Office of Public Archaeology, Institute for Environmental Studies.

Keywords: Horsethief Lake State Park (45KL58), Columbia River, Washington. Northwest. United States. North America. Tsigaglalal motif(s). Cultural resource management. Conservation and preservation. Environmental report initiated by the proposal to install a visitor trail to the petroglyphs, and projected impacts of increasing visitation. *LMRAA.*

Spier, Leslie

1930 *Klamath Ethnography. University of California Publications in American Archaeology and Ethnology*, 30(1):1–338. Berkeley: University of California.

Keywords: Klamath Basin, California. United States. North America. Klamath Indians refer to rock art as shaman's paraphernalia. Sites are maintained by shamans and repainted by shamans' assistants, see p. 142 (per David Whitley, quoting Spier, in Chapter 7: Art and Belief*, Seeing and Knowing*, Blundell et al. 2010). Ethnography. *Biblio.*

Spilyay Tymoo

1995 Petroglyph in Danger of Eroding. *Spilyay Tymoo [Coyote News]*, 3 March:10. Warm Springs, OR. <https://oregonnews.uoregon.edu/lccn/sn93050507/1995-03-03/ed-1/seq-10/#words=petroglyph+Petroglyph>. Accessed 15 November 2021.

Keywords: Crooked River Petroglyph, Round Butte Dam, Cove State Park, Oregon, Columbia Plateau, northwest United States. North America. Cultural resource management. Conservation and preservation. Removed from *in situ*. Weathering. Erosion. *Internet*.

2003 Rubbings Show Lost Petroglyphs. *Spilyay Tymoo [Coyote News]*, 7 August, 28(16):1. Warm Springs, OR. <https://oregonnews.uoregon.edu/lccn/sn93050507/2003-08-07/ed-1/seq-1/#words=petroglyph+petroglyphs+Petroglyphs>. Accessed 15 November 2021.

Keywords: Celilo Falls, The Dalles Dam, Petroglyph Canyon, Horsethief State Park (45KL58), Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Repatriation. Rubbings made during the 1950s and 1960s have been repatriated from Mt. Hood Community College to the Warm Springs Museum. *Internet.*

Spokane Daily Chronicle

1911a Discover Hieroglyphics on Big Stone in Columbia River Bottom. *Spokane Daily Chronicle*, 15 June, 25(250):4. Spokane, WA.

Keywords: Columbia River, Washington, northwest United States. North America. *MNA*.

1911b Mystery Enshrouds Indian Script on Little Spokane Cliff. Historical Society Will Make Effort to Decipher Quaint Picture Writing. *Spokane Daily Chronicle*, 15 June, 30(217):5. Spokane, WA.

Keywords: Little Spokane River (45SP31), Columbia Plateau, Washington, northwest United States. North America. *MNA*.

1916 Northwest Indian Hieroglyphs Mean Nothing, Asserts Expert. Ethnologist Calls Signs Along Columbia and on Colville 'Idle Markings.' *Spokane Daily Chronicle*, 30 May, 30(241):2. Spokane, WA.

Keywords: Columbia River, Colville, Washington, northwest United States. North America. *MNA*.

1919a Painted Rock Mystery Puzzles Indians: Strings Symbols Near Here Survive Ages. Present-Day Redskins as Much in Dark as Whites on Weird Characters. *Spokane Daily Chronicle*, 21 May, 33(208):16. Spokane, WA.

Keywords: Spokane area, Columbia Plateau, Washington, northwest United States. North America. *MNA*.

1919b Start to Unravel Indian Mystery. Strange Stories of Painted Rocks to be Translated by Experts. *Spokane Daily Chronicle*, 8 July, 33(249):16. Spokane, WA.

Keywords: Spokane area, Columbia Plateau, Washington, northwest United States. North America. *MNA*.

1919c Says Painted Rocks Were Work of Early Teutonic Explorers. Not Indian Signs At All Says Dishman Man—Columbia River Relics Just the Same kind He Traced to Ancestors of Germans. Sees Work of Learned Scientists in Drawings. *Spokane Daily Chronicle*, 8 July, 33(258):24. Spokane, WA.

Keywords: Spokane area (45SP34), Columbia Plateau, Washington, northwest United States. North America. German ancestors. *MNA*.

1925a Students of Indian Lore are Baffled by Rock Drawings Found Near Spokane. Indelible Red Pigment Used to Paint Figures at A.S. White Home. *Spokane Daily Chronicle*, 1 June, 39(225):1. Spokane, WA.

Keywords: A.S. White Home, near Spokane, Columbia Plateau, Washington, northwest United States. North America. Red pigment. *MNA*.

1925b Indian Carvings to be Studied by O.L. Opsjon. Expert on Runic Carvings Will Devote Time to Indian Lore. *Spokane Daily Chronicle*, 3 November, 40(38):1. Spokane, WA.

Keywords: Spokane area (45SP34), Columbia Plateau, Washington, northwest United States. North America. Runic carvings. Olaf Opsjon. *MNA*.

1927 Studies Ancient Picture Writings. Whether Made by Indians or Prehistoric Scandinavians Not Certain. *Spokane Daily Chronicle*, 26 August, 41(292):16. Spokane, WA.

Keywords: Spokane (45SP34), Columbia Plateau, Washington, northwest United States. North America. Scandinavian (Viking). Runic. *MNA*.

Spokesman-Review

1906 Strange Indian Rock Carvings. *Spokesman-Review*, 11 March, Section 2, 23(269):3. Spokane, WA.

Keywords: Columbia Plateau, Washington, northwest United States. North America. *MNA*.

1907 Paints Over Painted Rocks. Anxious to Have A Museum. *Spokesman-Review*, 30 July, 25(45):5. Spokane, WA.

Keywords: Cowiche Creek (45YK86), Naches River area, Yakima River Basin, Columbia Plateau, Washington, northwest United States. North America. *MNA*.

1910 Signs Mar Painted Rocks. Naches Grange Would Stop Mutilation of Scenic Spot. *Spokesman-Review*, 4 September, 28(81):6. Spokane, WA.

Keywords: Cowiche Creek (45YK86), Naches River area, Yakima River Basin, Columbia Plateau, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. *MNA*.

1919 Lake Photos of Hieroglyphics. Park in Grand Coulee. *Spokesman-Review*, 37(43):8. Spokane, WA.

Keywords: Grand Coulee, Columbia River, Washington, northwest United States. North America. *MNA*.

1950 Indian Paintings New Attraction. Parks Will Improve Historic Site on Little Spokane. *Spokesman-Review*, 12 March, 67(302):10. Spokane, WA.

Keywords: Little Spokane River (45SP31), Washington, Columbia Plateau, northwest United States. North America. *MNA*.

1957 Ancient Indian Markings Being Defaced. *Spokesman-Review*, 3 February, 74(265):16. Spokane, WA.

Keywords: Buffalo Eddy (45AS14) is 18 miles south of Asotin, Snake River, Washington on Snake River Road, Nez Perce National Historic Park, Washington (Idaho). Columbia Plateau. Northwest. United States. North America. Cultural resource management. Conservation and preservation. Vandalism. Graffiti. *MNA*.

Sprague, Roderick

1967 A Preliminary Bibliography of Washington Archaeology. *Northwest Anthropological Research Notes*, 1(1). ISSN 0029-3296.

Keywords: Columbia River, Columbia Plateau, Washington, northwest United States. North America. Bibliography. Rock art studies. *MNA, Biblio*.

Abstract: "The basic criterion for inclusion in this bibliography has been largely a negative one; was there any serious objection to including it? Anything pertaining to the State of Washington in the following areas of study was included: archaeology, archeology, early man,

historical archaeology, dates and dating techniques as applied to archaeological sites and materials, identification of zoological and botanical remains from archaeological sites, osteology, craniometry, anthropometry, pictographs, petroglyphs, rock art, archaeological museums and collections, private museums and collections, amateurs and their work, pothunters and pothunting, relic collectors, vandals, reports of pending research or excavations, news of archaeological societies, formal papers presented at meetings, manuscripts, reviews of any of the above, and anything else that has become available. Reports of archaeologists residing in Washington but not working within Washington archaeology have not been included."

1983 Rock Art Studies on the Columbia River. *Quarterly Review of Archaeology*, 4(3):2.

Keywords: Columbia River, Washington, Oregon, northwest United States. North America. Rock art studies. Reprinted, pp. 146–148 in *The Interpretation of Prehistory,* Peabody Museum of Salem, 1989. *MNA.*

Squier, R.J., and G.L. Grosscup

1952 An Archaeological Survey of Lava Beds National Monument, California, 1952. Lava Beds National Monument. Tulelake, CA.

Keywords: Lava Beds National Monument, Siskiyou County, Modoc County, California. United States. North America. Archaeological survey. *Biblio.*

Spinden, H.T.

1908 Petroglyphs and Pictographs of the Nez Perce. In *Memoirs of the American Philosophical Society, Vol. II (1907–1915), Part 3*, pp. 231–233. Philadelphia, PA: American Philosophical Society.

Keywords: Columbia Plateau, Washington, northwest United States. North America. Nez Perce vision quest. Ethnography. Girls made rock paintings during vision quests to portray objects seen in their dreams or connected with their ceremonies (per David Whitley in Chapter 7: Art and Belief*, Seeing and Knowing,* Blundell et al. 2010). *RABNPV, Biblio.*

Splawn, Andrew Jack

1917 The Legend of Sup-tah-hees (Painted Rocks) on Nah-cheez River. In *Ka-mi-akin—The Last Hero of the Yakimas*. Portland, OR: Kilham Stationary and Printing.

Keywords: Naches Gap, Washington, Columbia River, northwest United States. North America. Vision quest. Legend.

State of Washington

n.d. Geological, Tribal, Historical Monuments in the State of Washington. A Recreational Resource. Pamphlet. State of Washington.

Keywords: Columbia River, Washington. United States. North America. Tourist pamphlet. Includes illustrations, and probably text, by Harold Cundy. *LMRAA.*

Steinbring, Jack

1979 Late Archaic Dynamics Through Cross-Media Rock Art Comparisons. *American Indian Rock Art,* V:155–172. El Toro, CA: American Rock Art Research Association.

Keywords: The Dalles-Deschutes, Oregon. Columbia Plateau. Northwest United States. North America. Typology. Classification. Style. Context. Portable rock art. Archaic culture. Atlatl. Incised boatstone. Bannerstone. Gorget. *LMRAA (photo copy), BCSRA.*

Stinsman, E. Stanley

n.d. *Salish Indian Paintings from North Central Washington mostly from Okanogan County.* Manuscript with illustrations on file. Portland: Oregon Historical Society.

Keywords: Okanogan County, north central Washington, Columbia River, northwest United States. North America. Documentation. History of research. Harold Cundy. Salish Indian. *MNA*.

Straley, Wilson, and Albert S. Hotze

1944 Petroglyphs and Pictographs near Vantage, Washington. *Hobbies*, 49(4):103–104.

Keywords: Vantage, Washington, Columbia River, northwest United States. North America. *WELLM, KBORE, LMRAA*.

Strange, William C.

1985 The Solstice Observatory at Juniper Cave. In *Utah Rock Art Papers,* presented at the 4th Annual Symposium 1984, IV:55–58. Salt Lake City: Utah Rock Art Research Association.

Keywords: Juniper Cave, Tule Lake, Lava Beds National Monument, Northeast California. United States. North America. Solstice. Poetics. Modoc. *LMRAA*.

1989 Tsagaglalal and Her Wicked Sister: A Study in Contexts. In *Rock Art Papers*, *San Diego Museum Papers,* No. 24, 6:111–119. San Diego, CA: San Diego Museum of Man.

Keywords: The Dalles, Oregon, Columbia River. Pacific Northwest. United States. North America. Tsagaglalal motif. Coyote myth. Context. LMRAA.

1992a Touchstone: A Strong Role for Rock Art in Native American Studies. *American Indian Rock Art*, XVII:124–129. El Toro, CA: American Rock Art Research Association.

Keywords: Cowitchie Creek (aka Cowitche Creek, 45YK86), Yakima, Columbia River, Washington, northwest United States. North America. Interpretation. Ideology. Myth. "How the Indians got their mouths." *LMRAA*.

1992b Naramata and the Eskimo Tease. *American Indian Rock Art*, XVIII:113–118. San Miguel, CA: American Rock Art Research Association.

Keywords: Naramata and Chute Lakes Road, central British Columbia, Canada. North America. Ethnocentricity. Research methodology. *LMRAA*.

Strong, Emory

1957 Site LL 13. *Screenings*, 6(3). Portland: Oregon Archaeological Society.

Keywords: Fisher's Landing (45CL6, aka LL 13), Clark County, Columbia River, Portland Basin, Vancouver, Washington. Northwest. United States. North America.

1959 *Stone Age on the Columbia*. Portland, OR: Binford and Mort.

Keywords: Oregon, Washington, Columbia River, northwest United States. North America. Rock art (see pp. 103–113). Stone carvings. *MNA*.

Strong, William Duncan

1945 The Occurrence and Wider Implications of a "Ghost Cult" in the Columbia River Suggested by Carvings in Wood, Bone and Stone. *The American Anthropologist*, 47:244–261. Washington: Anthropological Society of Washington.

Keywords: Columbia River, Washington, northwest United States. North America. Ghost cult. *WELLM*.

Strong, William Duncan, and W. Egbert Schneck

1925 Petroglyphs near The Dalles of the Columbia River. *The American Anthropologist,* 27:76–90. Washington: Anthropological Society of Washington.

Keywords: Petroglyph Canyon, The Dalles, Columbia River. Washington. Oregon. Northwest. United States. North America. First report of this site in the literature. Anthropomorphs, bighorn sheep, elk, deer, horse, wolf, coyote, water animals, geometric, motif(s). One bison pictograph. An affinity with Great Basin styles is noted and are attributed

here to the Snake (Shoshoni) Indians. *LMRAA (photo copy).*

Strong, William Duncan, W. Egbert Schneck, and Julian H. Steward

1930 Archaeology of The Dalles-Deschutes Region. *University of California Anthropological Records*, 29(1). Berkeley: University of California Press. 154+ pp.

Keywords: The Dalles-Deschutes Region, Columbia River. Washington. Oregon. Northwest. Petroglyph Canyon. United States. North America. Regional survey. Petroglyphs (pp. 127–137). Distribution. Type. Purpose. Salish. Two plates, one map. *LMRAA, RCSL (Coyote Press facsimile).*

Supernant, Kisha

2017 Archaeological Petroforms of the Lower Fraser River Canyon. In *Archaeology of the Lower Fraser River Region,* Chapter *2*, edited by Mike K. Rousseau, pp. 13–24. <http://archpress.lib.sfu.ca/index.php/archpress/catalog/view/72/42/1801-1>. Accessed 26 May 2019.

Keywords: Lower Fraser River Region, British Columbia, Canada. North America. Rock feature: Petroforms. *Internet.*

Swanson, Earl H., Jr.

1958–1959 Archaeological Survey of the Methow Valley, Washington. *Tebiwa*, 2(1):72–83. Pocatello: Idaho State University Museum.

Keywords: Methow River Valley (45OK34 and 45OK47), Columbia Plateau, north central Washington, northwest United States. North America. Survey. MNA.

Swartz, B.K., Jr.

1963 Klamath Basin Petroglyphs. In *Archives of Archaeology, Vol. 21*. Washington, D.C. and Madison, WI: Society for American Archaeology and the University of Wisconsin Press. 650 pp.

Keywords: Klamath Basin, Northeastern California and Southeastern Oregon. United States. North America. Regional survey with site inventory ("Though difficult of access this is a crucial work that contains data found no where else." B.K. Swartz, Jr.). *Biblio.*

1978 Klamath Basin Petroglyphs. Revised and Abridged. In *Ballena Press Anthopological Papers,* Vol. 12. Socorro, NM: Ballena Press Publications. 54+ pp.

Keywords: Klamath Basin, Northeastern California and Southeastern Oregon. United States. North America. Regional survey with site inventory. *LMRAA, RCSL.*

1998 A Comparative Design Element Analysis of Klamath Basin (Modoc), Southern Sierra (Yokuts) and Santa Barbara (Chumash) Pictograph Styles, California–Oregon. In *Rock Art Studies in the Great Basin, Coyote Press Archives in Great Basin Prehistory*, Vol. 1, pp. 113–124. Salinas, CA: Coyote Press.

Keywords: Klamath Basin. California. Oregon. United States. North America. Element analysis. Compared with Chumash and Yokuts rock art. *LMRAA.*

Taylor, Michael W.

2014 A Unique Petroglyph / Pedestrian Tunnel Re-Connects a City to its Waterfront. *INORA, International Newsletter on Rock Art*, 70:27–29. Foix: Comite International d'Art Rupestre (CAR-ICOMOS). ISSN: 1022-3282. <http://www.icomos.org/images/Inora_70_2014_p._27-29_Taylor.pdf>. Accessed 22 April 2017.

Keywords: Washougal, Columbia River, Washington. Pacific Northwest. United States. North America. Reproductions exhibited in public space. *LMRAA.*

2017 Rescuing the Rocks: Saving the Grant House Boulders. *Screenings*, 66(11):1–4. Portland: Oregon Archaeological Society.

Keywords: The Dalles Dam, Columbia Hills State Park, Washington, Columbia River, northwest United States. North America. Cultural resource management. Conservation and preservation. *MNA*.

Taylor, Michael W., and James D. Keyser

2000 Columbia River Rock Art Sites Surveyed by OAS-ASCO Team. *Screenings*, 49(1):22. Portland: Oregon Archaeological Society.

Keywords: Fisher's Landing (45CL6), Clark County, Columbia River, Portland Basin, Vancouver, Washington. Northwest. United States. North America. Beaver Bowl motif(s). *Biblio*.

2003 The Columbia Plateau Scratched Style: A Preliminary Interpretation. *American Indian Rock Art,* 29:11–20. Tucson, AZ: American Rock Art Research Association.

Keywords: Hells Gate Landing (45KL810), Miller Island (45KL63, 45KL73, 45KL269), Washington, Oregon, Columbia Plateau. United States. North America. Columbia Plateau Scratched Style (incised). Rock feature incorporation: modified cracks, modified edges. Rectilinear abstract forms predominate. Analogy to ethnographic reports of ritual gashing of the human body. *LMRAA*.

Taylor, Michael W., James D. Keyser, and Phillip Minthorn Cash Cash

2008 The Roles of Women in Columbia Plateau Rock Art. *American Indian Rock Art*, 34:133–154. Tucson, AZ: American Rock Art Research Association. ISBN: 978-0-9767121-5-2.

Keywords: Cloumbia Plateau, Washington, Oregon, Idaho. Northwest. United States. British Columbia, Canada. North America. Gender. Women's vision questing and shamanism. Summary of ethnography related to women's use of production of, and knowledge of, the meaning of rock art sites. *LMRAA*.

Tazioli, Terry

2003 A Rare Collection Puts Petroglyphs and Pictographs in the Public Eye. *Seattle Times*, 2 October. Seattle, WA. <archive.seattletimes.com/archive/?date=20031002&slug=nwwskamania020>. Accessed 12 May 2022.

Keywords: Columbia Hills State Park (formerly Horsethief Lake State Park), The Dalles, Columbia River, Washington, northwest United States. North America. Documentation. Jeanne Hillis rubbings (now located at Dolce Skamania Lodge in Stevenson). Cultural resource management. Conservation and preservation. Dam construction. Inundation. *Internet*.

Teit, James A.

1896 A Rock Painting of the Thompson River Indians, British Columbia. *American Museum of Natural History Bulletin*, 8(12):227–230. New York, NY: American Museum of Natural History.

Keywords: Thompson River, British Columbia, Canada. North America. Vision quest. Thompson River Indians. Ceremony of purification and to make offerings to secure good luck. Record their offerings and ceremonies on a boulder (see pp. 227–230, per David Whitley in Chapter 7: Art and Belief, *Seeing and Knowing*, Blundell et al. 2010). Ethnography. *RANMAB, Biblio.*

1900 *The Jesup North Pacific Expedition. The Thompson Indians of British Columbia Memoir of the American Museum, Part IV, Vol. 1*. Merritt, B.C.: Nicola Valley Museum Association. 408 pp,

Keywords: Thompson River, British Columbia, Canada. North America. Cupules (see p. 320), adolescent boys who "…made round holes in rocks in boulders with a jadeite adze, which was held in the hand. Every night he worked at these until the holes were two or

three inches deep…. This was believed to make the arm tireless and the hand dextrous in making stone implements of any kind." Ethnography. *LMRAA.*

1906 The Lillooet Indians. *Publications of the Jesup North Pacific Expedition*, 2(5):282. New York, NY: American Museum of Natural History.

Keywords: British Columbia Plateau, Canada. Washington. Northwest United States. North America. Lillooet Indian. Ethnography. Adolescent puberty. Paintings were made on rocks and trees to record their dreams (per David Whitley in Chapter 7: Art and Belief*, Seeing and Knowing,* Blundell et al. 2010). Vision quest. *Biblio.*

1909 The Shuswap. *Memoirs of the American Museum of Natural History Publications of the Jesup North Pacific Expedition*, 2(7):447–789. New York, NY: G.E. Stechert and Co.

Keywords: Okanagan Valley, British Columbia, Canada. North America. Rock art created on vision quests by both genders. Pictographs. Dendroglyphs. *MNA.*

1918 *Notes on Rock Paintings in General,* 1-2. Unpublished typescript on file, National Archives of Canada, Ottawa.

Keywords: Columbia Plateau, British Columbia. Canada. Northwest. North America. Salish tribes and Kutenai Indian. Vision quest. Puberty ceremony. Attainment of *manitou* (power). Painted pictures on cliffs or boulders nearby. Records of visions, things obtained as guardians. Ethnography. Includes compilation notes by Grant Keddie, 1982, Royal B.C. Museum). *Biblio.*

1930 The Salishan Tribes of the Western Plateau. *Bureau of American Ethnology Annual Report,* (45):23–396. Washington: Smithsonian Institution.

Keywords: Columbia Plateau. Northwest United States. North America. Coeur d'Alene Indian. Ethnography. Vision quest. Records of objects seen in dreams, guardian spirits. Power transmitted from the object depicted to the person making the picture. Puberty ceremony. Okanagan Indian. Youths of both sexes and adults made pictures to record remarkable dreams (see p. 194, 283 per David Whitley in Chapter 7: Art and Belief*, Seeing and Knowing,* Blundell et al. 2010). *Biblio.*

Thompson, Thomas Lyn

1993 *Rock Art Site Management and Design Theory on Public Lands with Application to Petroglyph Point, Lava Beds National Monument, California*. Master's thesis, Department of Landscape Architecture, University of Oregon, Eugene.

Keywords: Petroglyph Point (CA-MOD-1), Lava Beds National Monument, Modoc County, California. United States. North America. Conservation and preservation. Cultural resource management. Historic landscape architecture. Modoc. Klamath. *LMRAA.*

Travis, Helga Anderson

1976 *Tumbleweed Trails*. Prosser, WA: Prosser-Record-Bulletin.

Keywords: Upper Columbia River, Washington, northwest United States. North America. Petroglyphs. *MNA.*

Turnbull, Elise G.

1979 Similkameen Pictographs. *Westworld*, 5(2):46.

Keywords: Similkameen River, British Columbia, Canada. Northwest. North America. *CRARA.*

U.S. Army Corps of Engineers, Walla Walla District

n.d. Design Memorandum No. 28—Lower Granite Master Plan. Lower Granite Lake. A Master Plan for the Management of All Natural and Manmade Resources of Lower Granite Lock and Dam. U.S. Army Corps of Engineers, Walla Walla District. <https://www.nww.usace.army.mil/Portals/28/docs/library/LowerGraniteMasterPlan.pdf>. Accessed 12 May 2022.

Keywords: Lower Granite Reservoir, Lower Granite Lake, Columbia Plateau, Oregon, northwest United States. Cultural resource management. Conservation and preservation. Management plan. Dam construction. Inundation. Removed from *in situ*. Salvage archaeology. Three petroglyph locations are discussed. *Internet.*

U. S. Department of Interior, Bureau of Land Management

2000 Rock Art of Native California: A Guide to Rock Art Sites on BLM Lands in California, Visitor's Guide. Sacramento, CA: Bureau of Land Management.

Keywords: Yuha geoglyphs, Palo Verde petroglyphs, Corn Springs petroglyphs, Mule Canyon geoglyphs, Mule Tank petroglyphs, Blythe geoglyphs, Surprise Tanks petroglyphs, Black Canyon petroglyphs, Red Mountain petroglyphs, Steam Wells petroglyphs, Poison Canyon petroglyph boulders, Canebrake pictographs, Slippery Rock petroglyphs, Painted Rock pictographs, Fossil Falls petroglyphs, Ayers Rock pictographs, Fish Slough petroglyphs, Chidago Petroglyphs, Red Canyon petroglyphs, Chalfant petroglyphs (north of Bishop, Owens Valley), Belfast petroglyphs, Upper Smoke Creek petroglyphs, Rock Creek petroglyphs, Petroglyph Point (Lava Beds National Monument, Modoc County), California. United States. North America. Visitor's guide (pamphlet). Presents information similar to the BLM California rock art web site <http://www.ca.blm.gov/caso/Recreation/archtour/rockart.html>. Cultural resource management. Conservation and preservation. BLM, through its web site and this printed visitor guide, is promoting cultural tourism to 25 rock art sites on BLM lands. *MELVYL, LMRAA.*

Vancouver Columbian

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Keywords: The Dalles, Columbia River, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Dam construction. Inundation. Salvage archaeology. *MNA.*

Vancouver Province

1946 Rock Markings above Spuzzum are not Ogham. *Vancouver Province*, 6 November:2.

Keywords: DKRi6, Fraser River, Spuzzum, British Columbia, Canada. North America. Epigraphy. (Not) Ogam (Ogham). *Biblio.*

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1986 Rock Art Diversity in Hells Canyon. *American Indian Rock Art*, 11:89–99. El Toro, CA: American Rock Art Research Association.

Keywords: Granite Creek. Bernard Creek. Buffalo Eddy (45AS14). Pittsburg Landing. Hells Canyon, Snake River, Idaho and Oregon. Columbia Plateau. Northwest United States. North America. *LMRAA.*

Walker, Merle F.

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Keywords: Juniper Cave, Lava Beds National Monument, Modoc County, California. United States. North America. Archaeoastronomy. Solstice. *ALOD, Biblio.*

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1979 *A Survey of North American Indian Rock Art.* Graz: Akademische Druck- und Verlagsanstalt.

Keywords: United States. North America. Classic survey of North American rock art with 750 photographs, 200 line drawings. Bibliography. For Columbia-Frazer Plateau, see pp. 40–49. *LMRAA, BSL, PCARB, RWVB, BCSRA*.

Werner, Roger H., Jay Flaherty, John W. Dougherty, and Mark A. Byars

1995 Field Inventory, Mapping, and National Register District Evaluation, Miller Island, Vols. I–III. Report to USDA Forest Service, Columbia River Gorge National Scenic Area, Contract No. 43-04H1-3-0943. ASI Cartography and Geographic Information Systems. Stockton, CA.

Keywords: Miller Island, The Dalles Dam reservoir, Columbia River, Klickitat County, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. National Register District evaluation. Survey. Documentation. Mapping. *MNA.*

Whitley, David S.

1994 Ethnography and Rock Art in the Far West: Some Archaeological Implications. In *New Light on Old Art: Recent Advances in Hunter-Gatherer Rock Art*, UCLA Institute of Archaeology Monograph, 36:67–74. Los Angeles: UCLA Institute of Archaeology.

Keywords: Western United States. California. Washington. Columbia River. Great Basin. Southwest United States. North America. Ethnographic interpretations. Rock baby. Water baby. Mountain man. Mountain dwarf. Vision quest. Shaman. Death. Trance. Puberty rites. Neuropsychology. Ethnography and style. Chronology. Rock art and ethnolinguistic groups. *LMRAA.*

1998 Finding Rain in the Desert: Landscape, Gender and Far Western North American Rock-Art. In *The Archaeology of Rock Art,* edited by Christopher Chippindale and Paul S.C. Tacon, pp. 11–29. Cambridge, U.K.: Cambridge University Press. ISBN: 0-521-57256-8 (hardback); ISBN: 0-521-57619-9 (paperback).

Keywords: Coso Range, Ridgecrest, California. Great Basin. Columbia Plateau. United States. North America. Setting: landscape contexts. Rock art sites as sacred places in the landscape, as portals into the sacred realm, rock art placed in relation to rock surface features. Gender symbolism of the landscape (mountaintops are masculine, low places feminine. Mountaintops tend to be devoid of rock art because the art was generally placed by males in "female" gendered landscapes). Rain making. Shamanism. Ethnography. Puberty ritual. Bighorn sheep motif(s). Indigenous logic of symbolic inversions. Coso rock art. *LMRAA.*

2000 Use and Abuse of Ethnohistory in the Far West. *International Rock Art Congress Proceedings*, 1:127–154. Tucson, AZ: American Rock Art Research Association.

Keywords: Southern Sierra Mountains, south central California. Columbia Plateau. United States. North America. Ethnography. David Whitley counters criticism leveled against his use of ethnographic accounts to support his "Shamanistic theory" of rock art (Angus Quinlan. Alanah Woody. Rick Bury). Shaman's Caches. Yokuts rock art. Vision quest. *LMRAA*.

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Keywords: Southwestern California. Great Basin. Columbia Plateau. United States. North America. Ethnography. Takic speakers rock art. Rites of Passage. Trance. Shamanism. Puberty rituals. Vision quest. *LMRAA*.

2010 Art and Belief: The Ever-Changing and the Never-Changing in the Far West. In *Seeing and Knowing: Understanding Rock Art with and without Ethnography,* edited by G. Blundell, C. Chippendale, and B. Smith, pp. 116–137. Johannesburg: Wits University Press. ISBN 978 1 86814 513 3.

Keywords: Southern Sierra Mountains, western California and Coso Range, Mojave Desert, eastern California. Columbia Plateau, Washington, Oregon (Far West). United States. North America. Cultural continuity. Shamanism. Ethnography from especially the Columbia River Plateau and the Southern Sierra Mountains. Argues that bighorn sheep and entoptic (abstract) designs indicate a long period of cultural stasis, while hunters with bows and pattern body anthropomorphs point to cultural change in the last 2,000 years. Argues that unique patterns in "pattern bodied anthropomorph motifs" were the result of invidual identifiers—each motif authored by, or indicating, an individual shaman. Coso rock art. *LMRAA, Biblio*.

2013 Department of Defense-Wide Inventory of Rock Art Sites and Assessment of Management Practices. Department of Defense, Legacy Resource Management Program. Project Number 11-480. <https://www.denix.osd.mil/cr/lrmp/factsheets/reports-and-other-products/department-of-defense-wide-inventory-of-rock-art-sites-and-assessment-of-management-practices-report-legacy-11-480/>. Accessed 3 August 2018. 152 pp.

Keywords: California. Great Basin. Columbia Plateau. Pacific Northwest. Arctic. Southwest. Great Plains. Eastern Woodlands. Northern Woodlands. Hawaii. United States. North America. Cultural resource management. Conservation and preservation. *Internet*.

Whitley, David S., and Jean Clottes

2005 In Steward's Shadow. Histories of Research in the Far West and Western Europe. In *Discovering North American Rock Art,* edited by C. Chippendale, D.S. Whitley, and L.L. Loendorf, pp.161–177. Tucson: The University of Arizona Press.

Keywords: California, Great Basin, Columbia Plateau, Far Western United States. Western Europe. North America. Rock art studies. History of research. *LMRAA*.

Whitley, David S., Johannes H.N. Loubser, and Don Hann

2004 Friends in Low Places: Rock-Art and Landscape on the Modoc Plateau. In *The Figured Landscapes of Rock-Art: Looking at Pictures in Place,* edited by Christopher Chippindale and George Nash, pp. 217–238. Cambridge, U.K.: Cambridge University Press. ISBN-10: 0521524245, ISBN-13: 978-0521524247.

Keywords: Schonchin Butte, Petroglyph Point, *Gmok'am'c's* House (House of the Rising Sun), Lava Beds National Monument, Modoc Plateau. California. Oregon. United States. North America. Setting: altitude (elevation). Ethnography. Vision quest. *LMRAA.*

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Keywords: Columbia River, Oregon, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Dam construction. Inundation. Moved from *in situ. Biblio.*

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Keywords: Old Lady Rock (aka Old Lady Chinook, Wind Rock, Weather Rock, Rain Rock), Roosevelt (45KL14), Arlington, Columbia River, Oregon, Washington, northwest United States. North America. Cultural resource management. Conservation and preservation. Dam construction. Inundation. Moved from *in situ. Biblio.*

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Keywords: Site 35GM88, John Day Reservoir, Oregon, Columbia Plateau, northwest Washington. North America. Cultural resource management. Conservation and preservation. Survey. *MNA. r42.*

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Keywords: Columbia River Gorge National Scenic Area, Oregon, Washington. Pacific Northwest. United States. North America. Cultural resource management. Conservation and preservation. Vandalism. *Worldcat.org.*

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Keywords: Washington, Columbia Plateau. Northwest. United States. North America. *MNA.*

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Keywords: Rock Island (45DO301), Columbia River, Wenatchee, Washington. Northwest. United States. North America. North Central Washington. Museum rock art exhibit, curated by Bill Layman. Report of dedication ceremonies. *LMRAA (photo copy).*

Woodward, John A., and Faye Speciale
1982 *The Ancient Painted Images of the Columbia Gorge*. Ramona, CA: Acoma Books. 94 pp.

Keywords: Columbia River Gorge, Oregon and Washington. Northwest United States. North America. Pictographs. *LMRAA. HLH.*

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1965 An Introduction to the Archaeology of Alberta. *Proceedings, Denver Museum of Natural History,* No. 11, p. 134. Denver, CO: Denver Museum of Natural History.

Keywords: Zephyr Creek Site, Alberta, Canada. North America. Columbia Plateau cultural sphere. *Biblio.*

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Keywords: Columbia Plateau, Washington, northwest United States. North America. Sun worship. Clarence Bunnel. *MNA.*

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1993 *They Write Their Dreams on the Rock Forever, Rock Writings in the Stein River Valley of British Columbia.* Vancouver, B.C.: Talonbooks. 299 pp.

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Keywords: Canadian Shield, southern British Columbia, Canada. North America. Ontology. Anishinaabeg and Cree. Coast and Interior Salish. Rock art studies. Images, landscapes, and rock art. *Amazon.com, LMRAA.*

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Abbreviation	Source of Citation
AATA	<http://aata.getty.edu/nps/?cid=gci007>. Abstracts of International Conservation Literature, Getty Conservation Institute (World).
ABMBAR	(Antonio Beltran Martinez) Bibliografia por Materias, 2. Arte Rupestre, Caesaraugusta, 2008, 79:238–258.
Academia.edu	<https://www.academia.edu/>. Social network site for sharing academic research (World).
Africabib.org	<https://africabib.org/>. Bibliographic database (Africa).
AHCBS	<http://www.ahc.gov.au/infores/HERA/index.html>. Australian Heritage Commission Bibliography Series, No. 2. *Australia's Rock Art*, Second Edition. Produced by HERA (Heritage Australia Information System), 1990. Also, Australian Heritage Bibliography (formerly HERA).
AHS	Arizona Historical Society Library. Tucson, AZ.
AIO	Anthropological Index Online.
AL@RLG	Anthropological Literature @ RLG (periodical database).
ALL	Amy Leska Library.
ALOD	Anthropological Literature on Disc. Tozzer Library, Harvard University, President & Fellows of Harvard College (G.K. Hall & Co.), 1994.
AMAZON	<http://www.amazon.com>. Online book search service.
APGODQ	Art Parietal. Grottes Ornees du Quercy, Michel Lorblanchet, 2010. Bibliography.
APPBNG	"An Annotated Petroglyph and Pictograph Bibliography of Nevada and the Great Basin," Alvin R. McLane, 1993.
ARADC	"An Annotated Petroglyph and Pictograph Bibliography of Nevada and the Great Basin," Alvin R. McLane, 1993.
ARBVC	Bibliografia sull'Arte Rupestre e sui Contesti e Ritrovamenti Preistorici e Protostorici della Valle Camonica, 2005, Alberto Marretta and Raffaella Poggiani Keller.
ARDP	Bibliography in Rainer Hostnig, "Arte Rupestre de Peru," *Consejo Nacional de Ciencia y Tecnologia*, Lima, 2003.
ARMOCA	Bibliography in Marin Kunne and Mathias Strecker, editors, *Arte Rupestre de Mexico Oriental y Centro America*, 2003.
ARP	Bibliography in A. Laming-Emperaire, "La Signification de l'Art Rupestre Paleolithique," Editions A. & J. Picard, Paris, 1962.
ARPRB	Arte Rupestre del Perú—Referencias Bibliográficas (Enero 2020), Ranier Hostnig.
BANCROFT	<http://bancroft.berkeley.edu/collections/rockart.html>. Additions to the Rock Art Studies database offered by users of the database, and accessed through the UCB Bancroft Library's website (discontinued).
BARAA	Bay Area Rock Art Archive, University of California, Berkeley, Bancroft Library.
BARAMP	"Bibliografía de Arte Rupestre del Arco Mediterráneo Peninsular (1950–2002)" in *Quaderns de Prehistòria i Arqueologia de Castelló*, 2001, Francesc Gusi i Jener.
BARAS	"Bibliografia dell'Arte Rupestre dell'Africa Settentrionale," Laura Guerra, 1991, *Studi per l'Ecologia del Quaternario*, 13:105–139.

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Abbreviation	Source of Citation
BBPS	"Breve Bibliografia de los Petroglifos Sudamericanos," Ricardo Eduardo LAtcham, 1927.
BCSRA	Tim E. H. Jones, May 2004, Bibliography of Canadiane Shield Rock Art, Saskatchewan Archaeological Society, Saskatoon, Saskatchewan. Unpublished manuscript. Updated April 2017.
BDL	Bill Drake Library. Nevada City, CA.
Biblio	Citations selected from references cited by various authors.
BKB	"Rock Carvings and Inscriptions in the Northern Areas of Pakistan, Selected Bibliography," Martin Bemmann and Ditte Koenig, April 14, 1997. Internet posting to the Rock Art Newsgroup (Rock-Art@ASU.edu).
BMHDBC	<http://www.rupestreweb.info/bibliomuseohrd.html>. Boletin del Museo del Hombre Dominicano. Bibliografía comentada (Dominican Republic).
BMRAP	"Bibliografía sobre Manifestaciones Rupestres de la Amazonia Peruana" in *I Congreso Internacional Arte Rupestre Amazónico*, 24–27 Setiembre de 2019, Chachapoyas, Ranier Hostnig, 2019.
BNRA	<http://rockart.ncl.ac.uk/bibliography.asp>. Accessed 12 March 2011. Bibliography of Northumberland Rock Art (England).
BPA	<http://www.aimebocquet.com/page7m.htm>. Bibliographie de Préhistoire Alpine: France, Suisse et Italie: Art Rupestre (European Alps).
BPA_c	<http://www.aimebocquet.com/page7n.htm>. Bibliographie de Préhistoire Alpine: France, Suisse et Italie: Pierres à Cupules (European Alps).
BPNEP	"Books and Papers on North European Petroglyphs." Originally prepared for a lecture series at the Christian-Albrecht University, Kiel, Germany, 1989/1990. Updated 9 October 1996.
BPRA	Bibliography of Portugese Rock Art, 1916–1998. <http://www.utad.geira.pt/irac/ingles/bibliogratia/contents/biliogratia.html>.
BPS	<https://sabaudia.bibli.fr/index.php?lvl=notice_display&id=64591>. Bibliothèques Patrimoniales de Savoie (France).
BRAM	"Bibliography on Rock Art Management Consideration and Management Plan Reports," Dan McCarthy, 1992. American Rock Art Research Association.
BRANL	"Bibliography of Rock Art in Natal and Lesotho: 1874-1981." Marilyn A. Cherry, 1982.
BRRNB	"Bibliografia sobre Registros Rupestres no Nordeste do Brasil," Alice Aguiar, Clio 11, 1996.
BSAABGS	"Bibliography of the South African Archaeological Bulletin and the Goodwin Series 1-68," Duncan Miller, 1995. University of Cape Town, Department of Archaeology, African Studies Library.
BSAAP	Bibliography of South American And Antillean Petroglyphs, C.N. Dubelaar. *Foundation for Scientific Research Publication* No. 5, Aruba, 1991.
BSABSR	Bill Sonin Annotated Bibliography and Site Reference.
BSARB	"Bibliografia sobre Arte Rupestre Brasileira," Rosangela Albano, 1982, in *Arquivos do Museu de Historia Natural*, Vol IV–V, Belo Horizonte/MG / 1979/80. Universidade Federal de Minas Gerais.
BSARRM	"Bibliografía sobre Arte Rupestre de la Región de Murcia hasta 1996."
BSL	Bill Sonin Library (Donated to the Bay Area Rock Art Archive, Bancroft Library, University California, Berkeley).
CASI-RASC	California Archaeological Site Inventory. The Rock Art Sites of California, Office of Historic Preservation, Department of Parks and Recreation, 1988.
CCIC	California Central Coast Information Center.

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Abbreviation	Source of Citation
CDA	"Bibliography of Rock Art Site Reports" in *Rock Art in Arizona*, Homer Theil, 1995. Center for Desert Archaeology. The State Historical Preservation Office.
CEDC	<http://www.ccsp.it/Files/catalogo%20edizioni%20del%20centro%202010.pdf>. Catalogo Edizioni del Centro, Centro Camuna di Studi Preistorici, Capo di Ponte, Italy.
CIHPA	Cambridge Illustrated History of Prehistoric Art, Paul G. Bahn, 1998. Cambridge University Press
Citeulike	Citeulike is a free service for managing and discovering scholarly references. <http://www.citeulike.org/search>.
COL	<http://www.coloradohistory-oahp.org/programareas/paac/classinfo/RockArtBG.pdf>. Colorado Historical Society, "Rock Art References: Colorado and Surrounding Regions."
CRARA	Canadian Rock Art Research Association.
CREAP	<http://www.creap.fr/bibliographies.htm>. Centre de Recherche et d'Etudes pour l'Art Préhistorique Bibliography (France).
DAPHNE	Data in Archeology, Prehistory and History on the Net. <http://www.daphne.cnrs.fr/daphne>
DELAB	"Bibliography" in *Dighton Rock: A Study of the Written Rocks of New England*, Edmund Burke Delabarre, 1928, pp. 313–352.
DBNPS	"An Annotated Rock Art Bibliography, Sources Relevant to National Park Service Areas," compiled by Debra A. Berke.
DialNet	<http://dialnet.unirioja.es/>. Publications search engine (Spain).
DYB	Bibliography posted to the Rock Art Newsgroup (Rock-Art@ASU.edu), Dirk Hyuge, 8 October 1999.
EAB	Emmanuel Anati Biblography, Selected list of Scientific Publications, manuscript.
EBPC	Estudio Bibliométrico de la Producción Científica sobre la Pintura Rupestre Postpaleolítica en España. Arte Levantino y Pintura Esquemática (1907–2010), Mateo Saura, Miguel Ángel, 2012.
EBSCOhost	<https://connect.ebsco.com/s/loginpage?language=en_US>. Publications search engine.
eLibrary.ru.	<https://www.elibrary.ru/keyword_items.asp?id=399395&show_option=0>. Academic literature search engine (Russia).
EPA	<http://europreart.net/>. EuroPreArt: European rock art bibliography/online searchable database (Europe).
FHCCA	"Bibliography" in Four Hundred Centuries of Cave Art, Abbe H. Breuil, 1952.
GetInfo	<https://www.tib.eu/en/. new>. Website for: German National Library of Science and Technology. GetInfo is the portal for science and technology and provides access to more than 160 million data sets from specialised databases, publishers, and library catalogs (Germany).
GoogleScholar	<https://www.google.com>. Publications search engine (World).
HLH	Hollis Library Catalog, Harvard University.
HNRAR	A History of Rock Art Research, David M. Brugge, 2000. Paper presented to the American Rock Art Research Association Conference, Phoenix AZ.
IIA	Bibliography in Paul G. Bahn, Images of the Ice Age, Oxford, 2016.
IAAL	Israel Antiquities Authority Library online catalog.

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Abbreviation	Source of Citation
ICOMOS	Arte Ruspestre—Rock Art. Bibliographie, ICOMOS, n.d. Spiral bound computer data print out, Paris, approximately 585 citations.
INFORMIT	<http://search.informit.com.au/>. RMIT Publishing's Informit service is the leading source of online full text, multimedia, and index databases that deliver the most authoritative research from Australia, New Zealand, and the Asia Pacific region (Australia, New Zealand, Asia Pacific).
INFOTRAC	Magazine and newspaper database, available at the Oakland Public Library.
INTERNET	Electronic files downloaded from miscellaneous sources on the Internet.
IPTR	<https://comum.rcaap.pt/handle/10400.26/5221>. Repositório Comum: IPT—Instituto Politécnico de Tomar (Portugal).
JHL	John Harmon Library. Pacifica, CA.
JSTOR	"Used by millions for research, teaching, and learning. With more than a thousand academic journals and over 1 million images, letters, and other primary sources, JSTOR is one of the world's most trusted sources for academic content." <http://www.jstor.org>.
KBORE	"A Bibliography of Petroglyphs/Pictographs in Idaho, Oregon and Washington." Keo Boreson, 1976.
KLCB	Bibliography, Kevin L. Callahan, November 1996. Unpublished nanuscript.
KRAI	<http://www.kimberleyfoundation.org.au/qantas-rock-art-research-index/>. Kimberley Rock Art Index (Western Australia).
LJMM	References, mainly Namibia Rock Art, L. Jacobson, McGregor, 30 January 1998, Museum, Kimberley, South Africa (personal e-mail).
LoC	Library of Congress online catalog.
LMRAA	Leigh Marymor Rock Art Archive. Point Richmond, CA.
Maney	Online publishing platform. <www.Maneyonline.com>.
MELVYL	University of California, 9 Campus computer catalog.
Mendeley	<http://www.mendeleycom/features/>. Publications search engine.
MIP	Magazine Index Plus, a computer database, available at the Oakland Public Library.
MNA	References submitted by the RASBdb users online at Museum of Northern Arizona.
MWRBRAD	Marvin W. Rowe, 2012, "Bibliography of Rock Art Dating." *Rock Art Research*, 29(1):118–131.
Musnaz (MNA)	References submitted via the Museum of Northern Arizona Rock Art Studies Bibliographic Database website.
NADB	"National Archaeological Database." The Archaeology and Ethnography Program, hosted online by the Center for Advanced Spatial Technologies under cooperative agreement with the National Park Service. Last queried on 8 February 1998. (Useful note: when searching this database on the Internet, use the "expanded" search feature which indicates where many of these manuscripts are stored.)
NMLAB	New Mexico Laboratory of Anthropology Library, Sante Fe.

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Abbreviation	Source of Citation
OATD	<https://oatd.org/>. Open Access Theses and Dissertations database.
PAHBA	<http://www.persee.fr/web/revues/home/prescript/article/jafr_0037-9166_1962_num_32_1_1355#>. "Publications de l'abbé Henri Breuil sur l'Afrique." *Journal of the Societe Africanistes*, 1962, (32)1:75–90, Champion, P.
PALE	"Publications d'Annette Laming-Emperaire." *Journal de la Société des Américanistes*, 1980, (67):23–28.
PAPPM	"Proyecto Atlas de Pictografias y Petrograbados. Mexico." Bibliography. Maria del Pilar Casado Lopez, 1987.
PCARB	"Proyecto Atlas de Pictografias y Petrograbados. Mexico." Bibliography. Maria del Pilar Casado Lopez, 1987.
PCLP	"Pavel Červíček (1942–2015) List of Publications on Rock Art," in *Egypt and the Levant*, 2018.
Persee	<http://www.persee.fr/web/revues/home>. Publications search engine (France).
PFL	Paul Freeman Library, San Francisco, CA. (This collection of books has been donated to the Santa Barbara Museum of Natural History Library.)
PRANSA	"Bibliography," in *Prehistoric Rock Art of Northern Saudi Arabia*, Majeed Khan, 1993. Ministry of Education, Department of Antiquities and Museums, Kingdom of Saudi Arabia, pp. 199–224.
PRANZ	"Bibliography," in *Prehistoric Rock Art of New Zealand*, Michael Trotter and Beverley McCulloch, 1971, A.H. & A.W. Reed.
Proquest	<https://explore.proquest.com/login>. Publications search engine, including disserations and theses.
Questia	<http://www.questia.com/>. Online library (discontinued service).
RABDN	<http://archaeologydataservice.ac.uk/catalogue/adsdata/arch-836-1/dissemination/pdf/ERA_Bibliography.pdf>. Accessed 1 April 2011. *Rock Art Bibliography of Durham and Northumberland*, compiled by the Northumberland and Durham Rock Arf Project, Keith Eliott, Kate Sharpe, and Aron Mazel. Updated July 2008.
RABNPV	"Rock Art Bibliography for the Northwestern Plains and Vicinity." *Archaeology in Montana*, 24(2):107–142. Linea Sundstrom, 1983.
RAISB	"Rock Art of India. A Selective Bibliography," Misra, Shrivastava, and Reham, Serial Publications, New Delhi, 2011.
RANMAB	"Rock Art North of the Mexican-American Border, An Annotated Bibliography," George R. Mead, 1968.
RASESAL	"Rock Art of South-Eastern South Africa and Lesotho: 1806–1997: An Annotated Bibliography," 1998, Karin Herbert, *Natal Museum Journal of Humanities*, 10:33–149.
RASNW2	"Rock Art Studies. News of the World 2," 2003, P. Bahn and A Fossati, editors. Oxbow Books, London. Various bibliographies.
RASNW3	"Rock Art Studies. News of the World 3," 2008, P. Bahn, N. Franklin, and M. Strecker, editors. Oxbow Books, London. Various bibliographies.
RASNW4	"Rock Art Studies. News of the World 4," 2012, P. Bahn, N. Franklin, and M. Strecker, editors. Oxbow Books, London. Various bibliographies.
RASNW6	"Rock Art Studies. News of the World 6," 2021, P. Bahn, N. Franklin and M. Strecker, editors. Archaeopress. Various bibliographies.
RCSL	Rupestrian Cyberservices Library. Flagstaff, AZ (Robert Mark and Evelyn Newman).
Refdoc.fr	<http://www.refdoc.fr>. Publications search engine (France).

GLOSSARY. ROCK ART STUDIES BIBLIOGRAPHIC DATABASE: KEY TO SOURCES FOR CITATIONS. (cont.)

Abbreviation	Source of Citation
ResearchGate	<https://www.researchgate.net>. Online academic search engine (World).
Revues	<https://www.openedition.org/8913?lang=en>. Publications search engine.
RPPSCAb	Rock Paintings and Petroglyphs in South and Central Africa, 1959–1970, Irene Anderson, 1971.
RPPSCAb1	Rock Paintings and Petroglyphs in South and Central Africa, 1947, B.J. Craig.
RPPSCAb2	Rock Paintings and Petroglyphs in South and Central Africa, 1947–1958, Ingrid Rosenkranz, 1958.
RUA	<http://rua.ua.es/dspace/>. Repository of the University of Alicant (Spain).
RUL	<https://repositorio.ul.pt/simple-search?query=arte+rupestre>. Repositório da Universidade de Lisboa (Portugal).
RWVB	"Vermont Rock Art Bibliography," posted to the Rock Art Newsgroup (Rock-Art@Asu.edu), Rex Weeks, 28 February 2000.
SARS	Symbolisme et Art Rupestre au Sahara, Jean-Loic Le Quellec, 1993, L'Harmattan. Bibliography.
SCI	Science Citation Index: Web of Science. Scientific journal database.
ScienceDirect	<https://www.sciencedirect.com/>. Online academic search engine.
SHB	Stan Hendrickx Bibliogrpahy on the Rock Art of Egypt and Sudan. Excel spreadsheet.
SIARB	Sociedad de Investigacion del Arte Rupestre de Bolivia.
SWMBRL	Southwest Museum Braun Research Library. Los Angeles, CA.
TIB	<https://www.tib.eu/en/>. Technische Informationbibliothek. Publications search engine (Germany).
TDX	Tesis Doctorals en Xarxa. Database.
TFO	<http://www.tandfonline.com/openaccess>. Taylor and Francis. Online journal search engine.
UCB ANTHRO	University of California, Berkeley, Anthropology Library.
UCBARF	University of California, Berkeley, Anthropology Library.
UCB-BANCROFT	University of California, Berkeley, Bancroft Library.
UCB MAIN	University of California, Berkeley, Main Library.
UCLARAA	University of California Rock Art Archive.
UCrea	<https://repositorio.unican.es/xmlui/>. Repositorio Abierto de la Universidad de Cantabria (Spain).
UNCOVER	Online computer database of academic journals and periodicals.
UofCLib	<https://repositorio.unican.es/xmlui/>. Repositorio Abierto de la Universidad de Cantabria (Spain).

GLOSSARY. ROCK ART STUDIES BIBLIOGRAPHIC DATABASE: KEY TO SOURCES FOR CITATIONS. (cont.)

Abbreviation	Source of Citation
UPL	University of Pennsylvania Library Catalog.
UVAP	Bibliography appended to Jean Clottes, "Une Vie d'Art Prehistorique," 2016. More than 1,000 citations.
WoS	Web of Science, journal search. <https://apps.webofknowledge.com/WOS_GeneralSearch_input.do?product=WOS&search_mode=GeneralSearch&SID=5FtzwvsuZFqNzFZtzFN&preferencesSaved=>. Web of Science search engine.
WELLM	Klaus Wellmann, *The Artifact*, 16(1) and 17(4).
WOODR	"Bibliography of Utah Rock Art," Dodre W. Woodruff, 1985.
Worldcat.org	Literature search engine.
Zenodo	<https://zenodo.org/>. Academic search engine.

ACKNOWLEDGMENTS

The "Columbia Plateau Cultural Area Rock Art Bibliography" is the result of collaboration among a great number of contributors, and builds on the earlier efforts of bibliographers such as Roderick Sprague (1967) and Keo Boreson (1976). The foundation of the current bibliography was compiled over many years by the primary author through his efforts in compiling the Rock Art Studies Bibliographic Database (RASBdb).

The RASBdb and the current thematic bibliography have benefited from contributions by scores of database users, too numerous to name individually here. Be it known that each are remembered and appreciated. Immense assistance has been provided by co-authors Jim Keyser and David Kaiser in providing additional citations to the literature and introductory remarks that contextualize the literature, providing a framework to better understand the time, place, and peoples to whom these cultural expressions belong. In this latter regard, Bill Layman, Columbia River historian, has been especially helpful in holding the centrality of these cultural expressions, the sacred spaces in which they are found, their ancestral creators and their present day descendants in full frontal heart and mind.

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William D. Layman has created historically-themed books and exhibits on the Columbia River, place-based community sculpture, and various theatrical regional memory activism projects. An independent researcher, he has written extensively on the history of rock art recording in the Mid-Columbia region, with a particular interest in inundated rock art sites of the river. He is author, along with P'Squosa/Wenatchi Randy Lewis, of *Rock Island of the Columbia River: The Foundation of Our Lives*, a book featuring the first rock art salvage archaeology project in the Pacific Northwest, done before the creation of Rock Island Dam in 1931.

To view color photographs of the figures included in this article, please visit the Current Issues page on our website (www.northwestanthropology.com/current-issues) (password: JONA2022).

Fruit Trees and Orchards on Historic Sites: Documentation and Treatment Recommendations

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Abstract *Grafted fruit trees were brought westward with the settlers for subsistence and commercial purposes in the 1800s. Many of these grafted fruit trees are still alive on historic sites that are reaching the end of their natural life (Figures 1a and 1b). These historic trees may have rare or unknown cultivars of fruit. After reading nearly a thousand site records spanning from 1946 to 2019, fewer than ten had a notation of "fruit trees" with no further information. Domesticated plants and trees on historic sites have not been properly documented or identified during the recording and assessment of archaeological sites because a convenient means for accomplishing this task has not been available to archaeologists. The Olmsted Center for Landscape Preservation and the International Society of Arboriculture have created forms for this purpose. These forms are presented in this article for use in the field to document historic fruit trees. The literature states that fruit trees and orchards are living biotic cultural resources (Firth 1985), features (Dolan 2009:149; NPS n.d.), non-renewable resources, and/or biological features (NPS 1998) that contribute to the integrity and significance of historic sites. Documenting historic fruit trees is the first step in the effort to preserve, rehabilitate, restore, or reconstruct, in the same way that mitigation is done for traditional cultural materials and sites which is consistent with the Secretary of Interior Standards (NPS 1998; Grimmer and NPS 2017:3; 36 CFR 68), and as a due diligence effort of the National Historic Preservation Act (36 CFR 800), avoidance is not enough. Fruit trees containing rare varieties of fruit must be sent for germplasm storage, in the same way that a rare artifact is accessioned at a museum.*

Keywords Fruit trees, cultural resource management, National Register for Historic Places, biotic cultural resources, tree evaluation forms.

Introduction

This article discusses historic fruit trees using a botanical-archaeological perspective and provides information on the documentation of trees in the field setting, an introduction to forms for this purpose, how trees contribute to site eligibility, and treatment recommendations.

Fruit trees were introduced to America in the form of seed, with the arrival of the Europeans in the 1600s (Dolan 2009:4). By the 1800s, grafted fruit trees with improved fruit cultivars were brought westward with the nurserymen and settlers for commercial and subsistence purposes (Routson and Nabhan 2007:6). Fruit orchards were planted


Figure 1a (left) and **Figure 1b** (right). The Old Apple Tree near Fort Vancouver in 2019, and in 2020 after it had perished with a new propagated tree next to it. The diameter breadth height (DBH) was 31 inches at 194 years old.

on homesteads to mark land claims (Dolan 2022, pers. comm.).

After reading over 1,000 Oregon site records, less than 10 records with the notation of "fruit trees" with no further information were found. This finding was the inspiration for this article. The lifespan of a domesticated apple (*Malus*) is known to be 150 years old (Dolan et al. 2012:40). Therefore, trees planted in the 1850s by settlers would now be 173 years old in the year 2023. The oldest known (seedling) apple tree in the Pacific Northwest at Fort Vancouver died in the year 2020 at an estimated age of 194 years old (Figures 1a and 1b) (Giuliani-Hoffman 2020). This tree was maintained and propagated before it died. Migicovsky et al. (2021) discuss the genetic bottle neck that is occurring due to commercialization and market demands of fruit. Routson et al.'s 2009 study found that the number of historic fruit trees and the varieties they contain on historic sites is currently unknown in the Midwest. Research shows the same is true in the Pacific Northwest. Therefore, this article provides information to aid archaeologists, contractors, land managers, students, and volunteers in documenting historic trees. Documenting historic fruit trees is the first step in the effort to preserve, rehabilitate, restore, or reconstruct, in the same way that mitigation is done for traditional cultural materials and historic sites, which is consistent with the Secretary of Interior Standards (NPS 1998; Grimmer and NPS 2017:3; 36 CFR 68), and as a due diligence effort of the National Historic Preservation Act (36 CFR 800).

Literature Review

Over a thousand Oregon site records from 1946 to 2019 were read by the author. The notation of "fruit trees" was seen on fewer than ten records, with no further documentation of the trees. This research demonstrates that documentation is lacking concerning fruit trees on historic sites.

The Olmsted Center for Landscape Preservation 2017 tree assessment form covers all aspects needed to document a tree's condition. This form was created specifically for recording

historic fruit trees. It is simple enough to be filled out by those without training in plant sciences. Page 2 of the Olmsted form divides the tree into 5 zones—beginning at the ground and working up to the branches and crown (Figure 3b). After quick observations, appropriate boxes can be checked. Page 1 is the assessment with mitigation recommendations that should be completed after the page 2 examination of the tree (Figure 3a).

The International Society of Arboriculture (ISA) (2017) form is intended for hazard trees and is more suitable for use by ISA certified arborists and forestry staff. However, the ISA form is appropriate for assessing historic fruit trees but is more comprehensive. Page 1 of the ISA form (Figure 2a) divides the tree into zones and asks about aspects of the tree within those zones. The ISA form also asks questions about the landform and environment that could potentially impact the tree(s). Page 2 of the ISA form (Figure 2b) is the assessment and mitigation recommendations on the likelihood of failure of the tree. The form also provides a simple tree diagram for sketching in aspects of the tree.

Dolan's 2009 publication, *Fruitful Legacy: A Historic Context of Orchards in the United States, with Technical Information for Registering Orchards in the National Register of Historic Places*, provides in-depth examples of how fruit trees qualify for the National Register of Historic Places in Chapter 5, beginning on page 149. Examples for Criterion A events can include orchards associated with settlement, prohibition, or the Gold Rush. Settlers planted orchards to mark their land claims and for subsistence purposes (Dolan 2022, pers. comm.). Also under Criterion A is the association with horticultural innovation (155), i.e., the development of new and improved fruit varieties, grafting, pruning techniques, and commercialization, which contributed to Oregon's early economy.

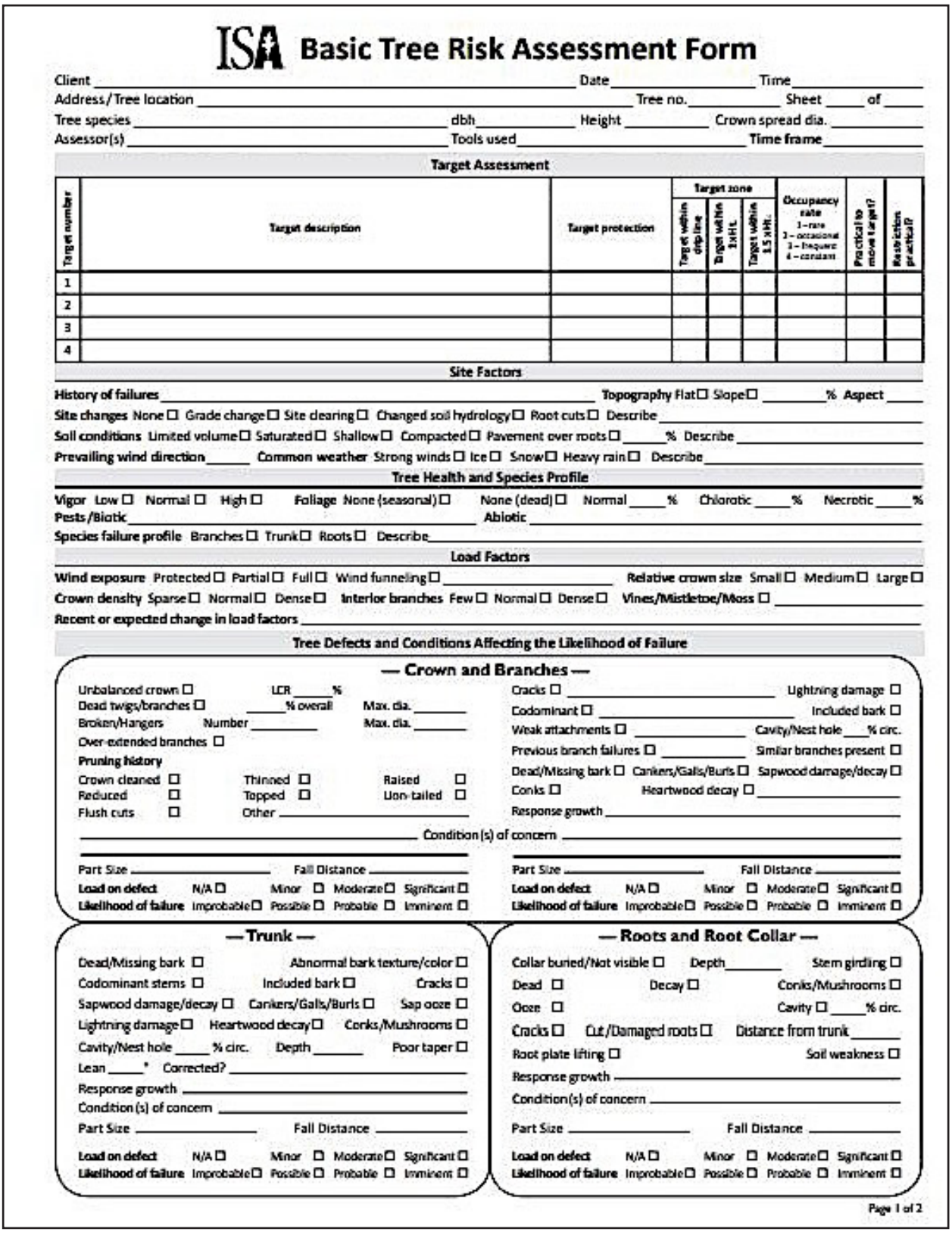
Under Criterion B, orchards can be found significant when associated with persons who played an important role in early horticulture innovation, such as Luelling, Stark, and the Hudson Bay Company (Dolan 2009).

Criteria C of the National Register includes orchards or individual fruit trees that are a part of a larger garden design or demonstrate horticulture innovation with rare or one-of-a-kind fruit varieties.

Under National Register Criterion D, fruit trees can be eligible for yielding information about the period of historic occupation. Fruit trees are sometimes the only remaining evidence of a heritage or an ethnic group's occupation. The trees themselves, the variety of fruit they produce, and the agricultural practices of historic groups (Dolan 2009:177) may make them eligible for nomination. The author recommends that the identification of the variety should be attempted during the initial site assessment and included in the management/mitigation recommendations (ISA 2017:2).

Landscape Lines 12: Treatment of Plant Features is an undated National Park Service publication (NPS n.d.). The purpose of the publication is to provide guidance for creating a Cultural Landscape Report (CLR), and how to perform a vegetation survey of the landscape. It discusses strategies for evaluating vegetation as features, and how the plants can contribute to the eligibility of a historic landscape. This paper also addresses historical research in regards to vegetation, the documentation of existing conditions, inventorying and mapping of vegetation. The paper recommends collaborating with botanists and/or horticulturalists to identify plants.

The Historic Orchard and Fruit Tree Stabilization Handbook, by Dolan et al. (2012), was compiled by the National Park Service in collaboration with California State Parks. This book is a contextual study of orchards within the California State Parks system in cultural landscapes. The study determined that between the years 1880–1945, the apple was the most important fruit from an economic standpoint. The handbook's intended audience is land managers and grounds maintenance staff.



ISA Basic Tree Risk Assessment Form

Client _____ Date _____ Time _____

Address/Tree location _____ Tree no. _____ Sheet _____ of _____

Tree species _____ dbh _____ Height _____ Crown spread dia. _____

Assessor(s) _____ Tools used _____ Time frame _____

Target Assessment

Target number	Target description	Target protection	Target zone: Target within dripline	Target zone: Target within 1xHL	Target zone: Target within 1.5xHL	Occupancy rate (1 – rare, 2 – occasional, 3 – frequent, 4 – constant)	Practical to move target?	Restriction practical?
1								
2								
3								
4								

Site Factors

History of failures _____ Topography Flat ☐ Slope ☐ _____% Aspect _____

Site changes None ☐ Grade change ☐ Site clearing ☐ Changed soil hydrology ☐ Root cuts ☐ Describe _____

Soil conditions Limited volume ☐ Saturated ☐ Shallow ☐ Compacted ☐ Pavement over roots ☐ _____% Describe _____

Prevailing wind direction _____ Common weather Strong winds ☐ Ice ☐ Snow ☐ Heavy rain ☐ Describe _____

Tree Health and Species Profile

Vigor Low ☐ Normal ☐ High ☐ Foliage None (seasonal) ☐ None (dead) ☐ Normal _____% Chlorotic _____% Necrotic _____%

Pests/Biotic _____ Abiotic _____

Species failure profile Branches ☐ Trunk ☐ Roots ☐ Describe _____

Load Factors

Wind exposure Protected ☐ Partial ☐ Full ☐ Wind funneling ☐ _____ Relative crown size Small ☐ Medium ☐ Large ☐

Crown density Sparse ☐ Normal ☐ Dense ☐ Interior branches Few ☐ Normal ☐ Dense ☐ Vines/Mistletoe/Moss ☐ _____

Recent or expected change in load factors _____

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown ☐ LCR _____%

Dead twigs/branches ☐ _____% overall Max. dia. _____

Broken/Hangers Number _____ Max. dia. _____

Over-extended branches ☐

Pruning history

Crown cleaned ☐ Thinned ☐ Raised ☐

Reduced ☐ Topped ☐ Lion-tailed ☐

Flush cuts ☐ Other _____

Cracks ☐ _____ Lightning damage ☐

Codominant ☐ _____ Included bark ☐

Weak attachments ☐ _____ Cavity/Nest hole ___% circ.

Previous branch failures ☐ _____ Similar branches present ☐

Dead/Missing bark ☐ Cankers/Galls/Burls ☐ Sapwood damage/decay ☐

Conks ☐ Heartwood decay ☐ _____

Response growth _____

_____ Condition(s) of concern _____

Part Size _____ Fall Distance _____

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☐

Likelihood of failure Improbable ☐ Possible ☐ Probable ☐ Imminent ☐

Part Size _____ Fall Distance _____

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☐

Likelihood of failure Improbable ☐ Possible ☐ Probable ☐ Imminent ☐

— Trunk —

Dead/Missing bark ☐ Abnormal bark texture/color ☐

Codominant stems ☐ Included bark ☐ Cracks ☐

Sapwood damage/decay ☐ Cankers/Galls/Burls ☐ Sap ooze ☐

Lightning damage ☐ Heartwood decay ☐ Conks/Mushrooms ☐

Cavity/Nest hole _____ % circ. Depth _____ Poor taper ☐

Lean _____° Corrected? _____

Response growth _____

Condition(s) of concern _____

Part Size _____ Fall Distance _____

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☐

Likelihood of failure Improbable ☐ Possible ☐ Probable ☐ Imminent ☐

— Roots and Root Collar —

Collar buried/Not visible ☐ Depth _____ Stem girdling ☐

Dead ☐ Decay ☐ Conks/Mushrooms ☐

Ooze ☐ Cavity ☐ _____% circ.

Cracks ☐ Cut/Damaged roots ☐ Distance from trunk _____

Root plate lifting ☐ Soil weakness ☐

Response growth _____

Condition(s) of concern _____

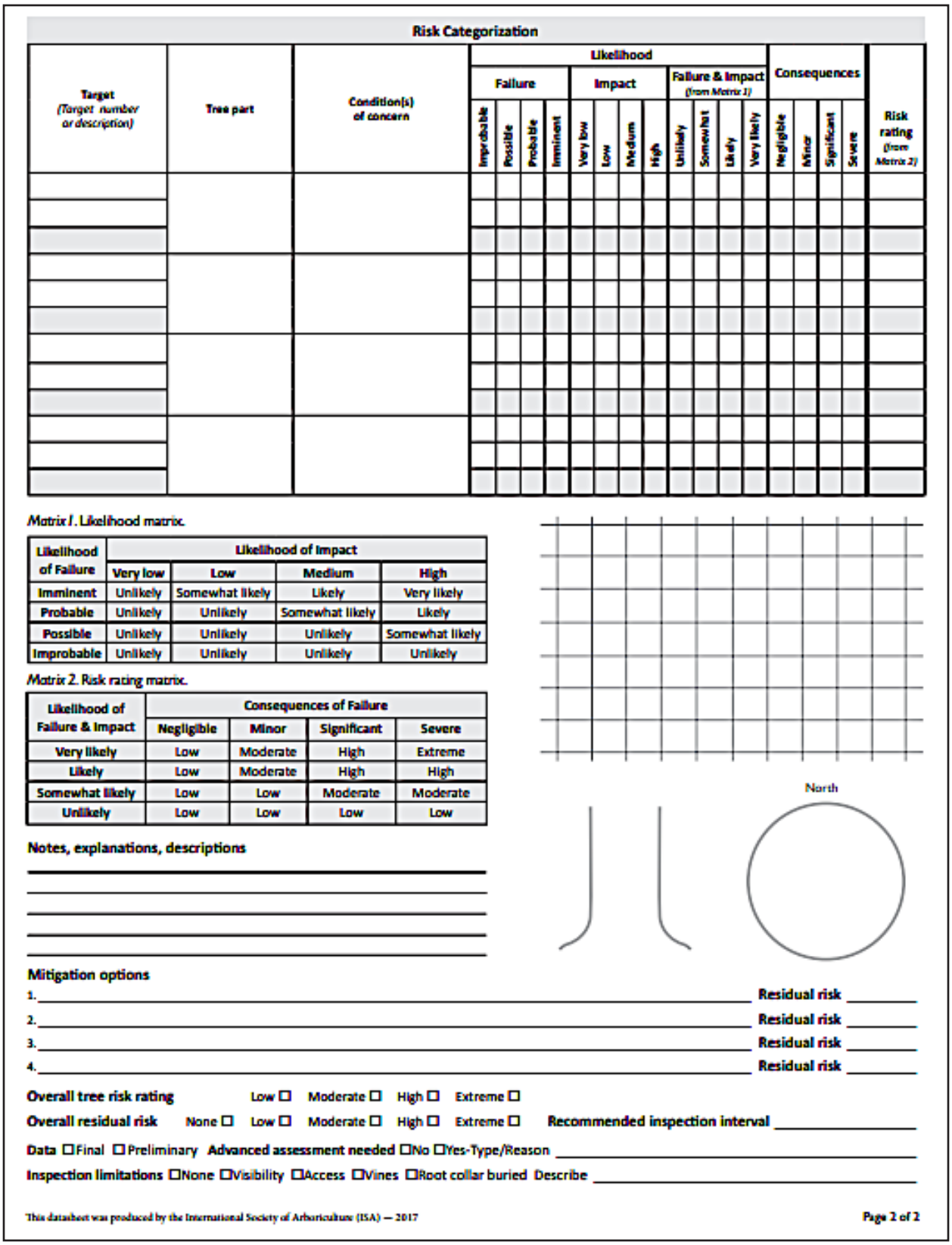
Part Size _____ Fall Distance _____

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☐

Likelihood of failure Improbable ☐ Possible ☐ Probable ☐ Imminent ☐

Page 1 of 2

Figure 2a. Provided courtesy of International Society of Arboriculture (ISA). The ISA's Basic Tree Risk Assessment Form, page 1.



Risk Categorization

Target (Target number or description)	Tree part	Condition(s) of concern	Likelihood: Failure: Improbable	Failure: Possible	Failure: Probable	Failure: Imminent	Impact: Very low	Impact: Low	Impact: Medium	Impact: High	Failure & Impact (from Matrix 1): Unlikely	Somewhat	Likely	Very likely	Consequences: Negligible	Minor	Significant	Severe	Risk rating (from Matrix 2)

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact: Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure: Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

North

Notes, explanations, descriptions

Mitigation options

1. _____ **Residual risk** _____
2. _____ **Residual risk** _____
3. _____ **Residual risk** _____
4. _____ **Residual risk** _____

Overall tree risk rating Low ☐ Moderate ☐ High ☐ Extreme ☐

Overall residual risk None ☐ Low ☐ Moderate ☐ High ☐ Extreme ☐ **Recommended inspection interval** _____

Data ☐Final ☐Preliminary **Advanced assessment needed** ☐No ☐Yes-Type/Reason _____

Inspection limitations ☐None ☐Visibility ☐Access ☐Vines ☐Root collar buried **Describe** _____

This datasheet was produced by the International Society of Arboriculture (ISA) — 2017

Page 2 of 2

Figure 2b. Provided courtesy of International Society of Arboriculture (ISA). The ISA's Basic Tree Risk Assessment Form, page 2.

The book provides guidance on assessing the condition of trees, maintenance, stabilization, repair techniques, germplasm identification, and storage. The book provides a field form (43), similar to the Olmsted form (Figures 3a and 3b). The authors state the book was guided by the National Historic Preservation Act of 1966, and the treatment guidance is based on the Secretary of Interior Standards for preservation, restoration, rehabilitation, and reconstruction. The book tells us that historic fruit trees are significant within the context of land settlement and agricultural history of California and are, therefore, living biotic cultural resources.

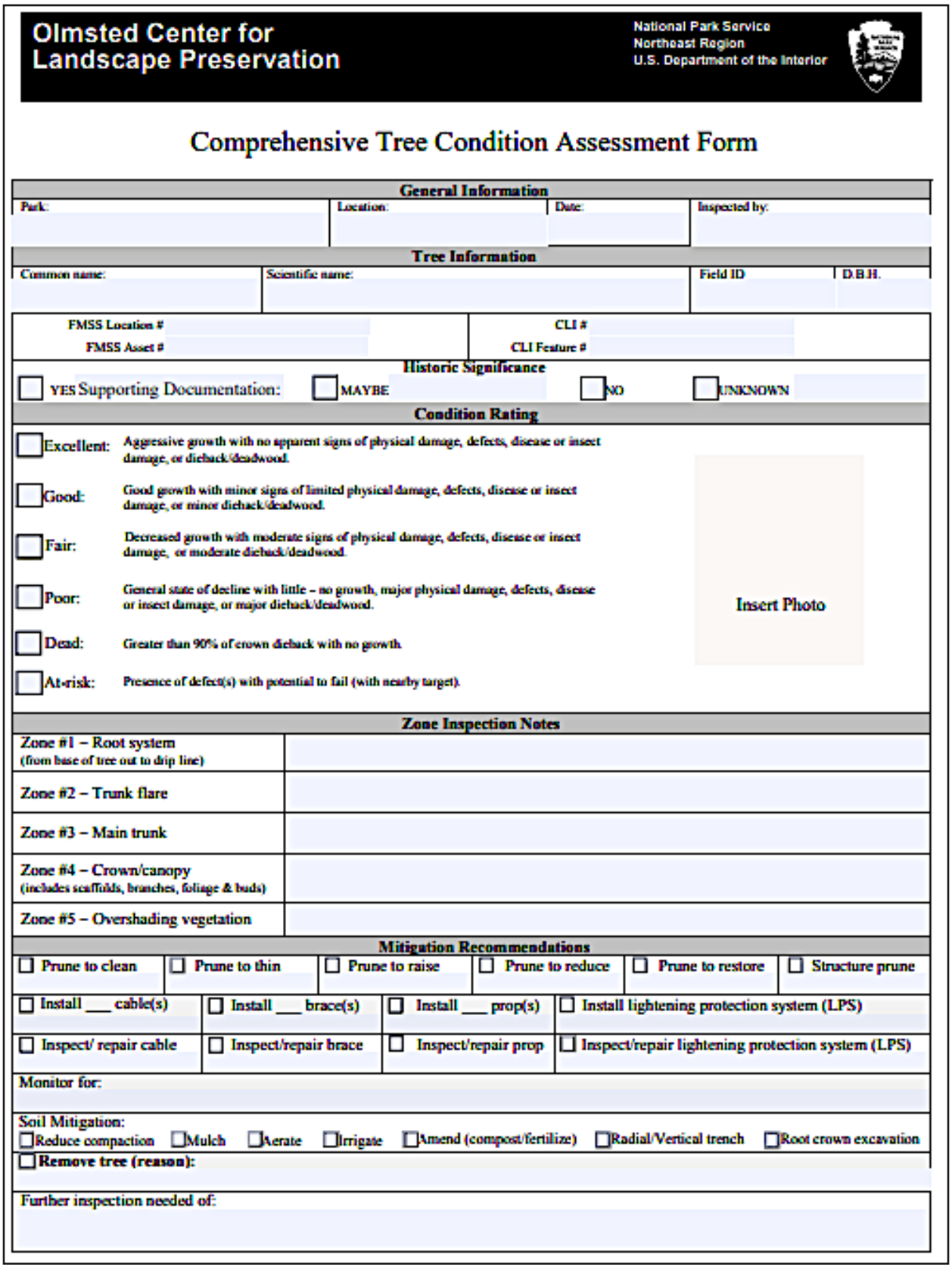
Routson and Nabhan's (2007) Orchard Management Plan is a template that can be used to create an orchard management plan for an agency or client. Routson and Nabhan (2007) suggest integrating the orchard plan into the entire district's vegetation treatment plan. The report was created for Fruita Rural Historic District within Capitol Reef National Park. This 103-page report begins with the historic overview of orchards in the United States. The authors write about the history of fruit in the region of study and discuss the condition of the trees using the Olmsted condition rating system. They summarize the report with management recommendations for the orchards. The authors provide a list of nurseries where fruit trees can be purchased for in-kind replacement (Dolan et al. 2012; NPS n.d.). The report cites a Cultural Landscape Report previously authored by Gilbert and McKoy (1997) for the Fruita Rural Historic District. The appendix has good examples of photographs of fruit from the historic orchards in the Fruita Rural Historic District.

Methods

The author read over 1,000 Oregon site records and found less than 10 that mention "fruit trees," with no further information about the trees. A search of the Oregon State Historic Preservation Office (OSHPO) database for the keywords "orchard," "apple," and "pear" was conducted. In most cases the word "tree" or "orchard" were not one of the keywords added to the record. Historically published literature on fruit trees were reviewed. National Park Service publications were read and found to be the most relevant source of information. Industry professionals were interviewed via in-person and by email. Coursework in arboriculture, botany, and forestry were taken as part of the Interdisciplinary Master's program at Oregon State University. Site visits to parks, historic sites, and old homesteads to observe fruit trees planted during historical times occurred during thesis research from 2017 to 2020 (Burk 2020). This accumulation of knowledge provided inspiration for further study of historic trees using a botanical-archaeological perspective.

Discussion

The documentation of historic fruit trees is a form of knowledge preservation that becomes part of the archaeological record that has historic value and makes contributions to National Register nomination, regardless of their condition at the time of initial recording (Dolan 2022, pers. comm.). Fruit trees on National Register eligible sites are considered living biotic cultural resources (Firth 1985; Savage and Pope 1995; Lee et al. 1999; NPS n.d.) and/or "historic genetic material" (NPS 1998). Domesticated fruit trees require human intervention to survive. Mitigation recommendations that are not followed through can have an adverse effect on the integrity of the historic site. The extent of rare varieties on historic sites is still currently unknown (Routson et al. 2009) throughout the Pacific Northwest. It is also unknown how many have perished due to climate change, drought, wildfire, wildlife pressure, insects, and diseases (Routson and Nabhan 2007; Routson et al. 2009; Stimpson 2022). Due to



Olmsted Center for Landscape Preservation

National Park Service
Northeast Region
U.S. Department of the Interior

Comprehensive Tree Condition Assessment Form

General Information

Park:	Location:	Date:	Inspected by:

Tree Information

Common name:	Scientific name:	Field ID	D.B.H.

FMSS Location #	CLI #
FMSS Asset #	CLI Feature #

Historic Significance

☐ YES Supporting Documentation: ☐ MAYBE ☐ NO ☐ UNKNOWN

Condition Rating

☐ Excellent:	Aggressive growth with no apparent signs of physical damage, defects, disease or insect damage, or dieback/deadwood.
☐ Good:	Good growth with minor signs of limited physical damage, defects, disease or insect damage, or minor dieback/deadwood.
☐ Fair:	Decreased growth with moderate signs of physical damage, defects, disease or insect damage, or moderate dieback/deadwood.
☐ Poor:	General state of decline with little – no growth, major physical damage, defects, disease or insect damage, or major dieback/deadwood.
☐ Dead:	Greater than 90% of crown dieback with no growth.
☐ At-risk:	Presence of defect(s) with potential to fail (with nearby target).

Insert Photo

Zone Inspection Notes

Zone #1 – Root system (from base of tree out to drip line)	
Zone #2 – Trunk flare	
Zone #3 – Main trunk	
Zone #4 – Crown/canopy (includes scaffolds, branches, foliage & buds)	
Zone #5 – Overshading vegetation	

Mitigation Recommendations

☐ Prune to clean	☐ Prune to thin	☐ Prune to raise	☐ Prune to reduce	☐ Prune to restore	☐ Structure prune

☐ Install ___ cable(s)	☐ Install ___ brace(s)	☐ Install ___ prop(s)	☐ Install lightening protection system (LPS)
☐ Inspect/ repair cable	☐ Inspect/repair brace	☐ Inspect/repair prop	☐ Inspect/repair lightening protection system (LPS)

Monitor for:

Soil Mitigation:
☐ Reduce compaction ☐ Mulch ☐ Aerate ☐ Irrigate ☐ Amend (compost/fertilize) ☐ Radial/Vertical trench ☐ Root crown excavation

☐ **Remove tree (reason):**

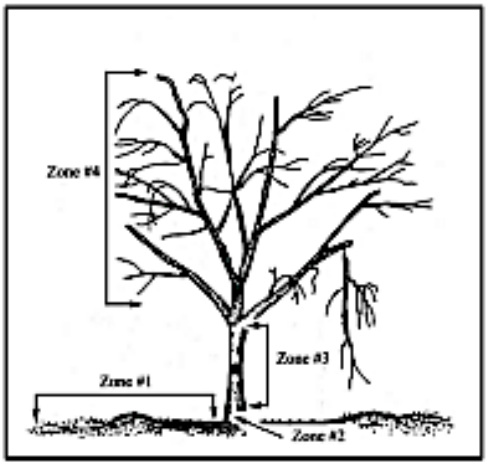
Further inspection needed of:

Figure 3a. The Olmsted Center National Park Service Tree Assessment Form, page 1.

Olmsted Center for Landscape Preservation
ARBORIST TRAINING PROGRAM

National Park Service
Northeast Region
U.S. Department of the Interior

Tree Assessment
Zone Inspection



Zone #1: ROOT SYSTEM (base of trunk out to dripline)

- ☐ severed root
- ☐ soil erosion
- ☐ lowered soil grade
- ☐ raised soil grade
- ☐ soil compaction
- ☐ fungal fruiting body (mushroom)
- ☐ damaged surface root
- ☐ paving over root system

Zone #2: TRUNK FLARE

- ☐ lack of trunk flare
- ☐ presence of insects or disease
- ☐ mechanical injury
- ☐ fungal fruiting body (mushroom)
- ☐ cavity
- ☐ girdling/kinked root
- ☐ decay or dead tissue
- ☐ swollen or sunken area

Zone #3: MAIN TRUNK

- ☐ decay or dead tissue
- ☐ presence of insects or disease
- ☐ mechanical (or fire) injury
- ☐ crack/split /seam
- ☐ nesting hole
- ☐ fungal fruiting body (mushroom)
- ☐ cavity
- ☐ swollen or sunken area
- ☐ prominent lean
- ☐ loose/cracked bark

Zone #4: CROWN (includes scaffold, branches, and foliage/buds)

- ☐ dead/diseased/dying
- ☐ tight v-crotch/included bark
- ☐ hangers
- ☐ decay
- ☐ cavity
- ☐ fungal fruiting body (mushroom)
- ☐ nesting hole
- ☐ broken branches/stubs
- ☐ excessive end weight
- ☐ wounds
- ☐ presence insect/disease
- ☐ crack/split/seam
- ☐ loose/cracked bark
- ☐ overshading/encroaching vegetation

Figure 3b. The Olmsted Center National Park Service Tree Assessment Form, page 2.

commercialization and market demand, there is a bottleneck of genetic diversity occurring (Migicovsky et al. 2021). Rare varieties and strains should be preserved (germplasm) for future fruit and plant biodiversity, as some have natural resistance to pests and diseases. Rare varieties qualify under Criterion C for horticulture innovation and may yield information to scientific study under Criterion D.

Therefore, this article is a call to archaeologists, cultural resource land managers, archaeological field technicians, contractors, students, and volunteers to document and preserve historic fruit trees as biotic cultural resources (Firth 1985; Dolan et al. 2012; NPS n.d.) and contributing features (Dolan 2009; NPS n.d.) as a due diligence effort of the National Historic Preservation Act (36 CFR 800).

The forms presented in this article are provided courtesy of International Society of Arboriculture (Figures 2a and 2b) and the Olmsted Center for Landscape Preservation (Figures 3a and 3b). Archaeologists, without specialized training in the plant sciences, can complete an initial assessment of fruit trees with the Olmsted form. The ISA form is more suitable for use by those trained in the plant sciences (Figures 2a and 2b), and it is intended for hazard trees. Both forms begin by asking for the identification of the tree. To properly identify a tree, we must begin with a short introduction of the Linnaean taxonomic hierarchical naming system, developed in the 1700s by the Swedish botanist Carl Linnaeus (L.), who initially named many of the plants. This is the standardized naming system for all living (biotic) life forms, because common names are not precise enough for scientific study, especially given the number of species across the world. The Linnaean hierarchical naming system is shown for apple (Table 1).

Table 1. Linnaean Hierarchical Naming System for Apple.

Kingdom	Plantae
Clade	Angiosperms
Order	Rosales
Family	Rosaceae
Genus	Malus
Species	domestica
Citation of Botanist	(Borkh) (Linnaeus)(L.)
Variety/Cultivar	Red Delicious

To write the botanical name of the tree properly on the assessment form, it must be underlined if handwritten, i.e., Malus. When typed, botanical names should be italicized and enclosed in parenthesis (*Genus species*). The genus is always capitalized, and the species' name is always lower case and abbreviated, i.e., (sp. or spp.). Writing only the genus on the form and noting the type of fruit (i.e., apple, pear, cherry) is acceptable for the initial documentation and Oregon SHPO reporting. Below are examples of the Linnaean taxonomic naming system also known as the "botanical name" for apple and commonly occurring trees on historic sites:

- Common Name (*Genus species* botanist variety name)
  - Apple (*Malus domestica* Borkh var. "Red Delicious")
  - Apricot (*Prunus armeniaca*. L.)
  - Black Locust (*Robinia pseudoacacia*)
  - Cherry, Sour (*Prunus cerasus* L.)
  - Cherry, Sweet (*Prunus avium* L.)
  - Hazelnut (*Corylus* L.) (Figure 4)
  - Oaktree (*Quercus* spp.)
  - Peach (*Prunus persica* L., Batsch)
  - Pear (*Pyrus* spp. L.)
  - Plum/Prune (*Prunus domestica* L.)
  - Quince (*Cydonia* oblonga Miller)
  - Walnut and Pecan (*Juglans* L.).

Identification to the species and cultivar level requires the specialization of a botanist, horticulturist, or arborist. Identification of the fruit variety should be done early in the site

Figure 4. *Fungi* growing on Hazelnut (*Corylus*) root crown at Dorris Ranch in Springfield, Oregon.

evaluation process to determine if the tree contains a rare variety of fruit (Dolan et al. 2012:45; Dolan 2022, pers. comm.; NPS n.d.:15). One can enclose a sample in a clipboard to have a plant or tree expert at the office identify it later (NPS n.d.). For identification purposes the sample should include a small branch with flowers, leaves, catkins, fruit, seeds, and a close-up photograph of the specimen (Figures 6a and 10a). Identification of the cultivar or variety (i.e., "Red Delicious") requires further specialization with samples of the fruit buds, leaves, and/or ripened fruit depending on the method of identification (i.e., DNA analysis or based on the morphology of the fruit) (Figure 6b). Figure 5 is a list of places that can perform this service. Rare varieties add integrity and contribute to site eligibility (Dolan 2009; Dolan et al. 2012; NPS n.d.). If the laboratory or conservator concludes that it is a rare cultivar, they will likely want a germplasm sample for preservation, re-propagation, or future scientific studies, especially if the environment is no longer conducive to the fruit tree or orchard's survival.

Tree Documentation and Treatment Recommendations

The forms provided in this article were courtesy of the Olmsted Center for Landscape Preservation 2017 (Olmsted) and the International Society of Arboriculture. Both the Olmsted and the ISA forms divide the tree into zones (Figures 2a–3b); both forms begin with the root zone and work toward the crown. Install a tree identifier using a small aluminum tag around a branch for future identification purposes (Figure 10b). Without training in the plant or tree sciences, one can approach the assessment of a historic tree with a concept of the ideal tree: A textured woody bark, branches extending out from the trunk, bearing fruit, with shiny green leaves.

The root zone extends from the trunk to beyond the canopy, and most of the roots are within the first foot of sediment. Aspects of the tree's health can be seen in the root zone. Examine the ground for mushrooms (*fungi*), encroaching vegetation, saturated soil, stand-

Pear Cultivar Identification and Germplasm Storage USDA-ARS National Clonal Germplasm
Repository 33447 Peoria Rd.
Corvallis, OR 97333-2521 Tel: (541) 738-4214
https://www.ars.usda.gov/pacific-west-area/corvallis-or/national-clonal-germplasm-repository/

Apple/Cherry Cultivar DNA Identification and Germplasm Storage
USDA-ARS Apple Collection
21 Crabapple Drive, Geneva, NY 14456
Tel: (315) 787-2244
https://www.ars.usda.gov/northeast-area/geneva-ny/plant-genetic-resources-unit-pgru/

Apple cultivar identification and orchard conservancy
Temperate Orchard Conservancy P. O. Box 529, Molalla, OR 97038
http://www.temperateorchardconservancy.org/about/almaty-farm/

Figure 5. List of places that can assist in identification of fruit varieties and provide germplasm storage.

ing water, areas of raised soil, holes, irrigation systems, grade differences, and dropped fruit (Dolan et al. 2012:48).

Mushrooms can be a sign of decay, especially if they are on the tree itself (Figure 4). Encroaching vegetation should be mowed and re-spread as mulch around the base of the tree (Dolan et al. 2012). Saturated soil can indicate water leaks that can lead to instability of the tree roots in saturated soil, causing the tree to topple. In the mitigation section on the form, one should recommend that water leaks should be diverted or repaired. Historical irrigation systems are associated with the orchard as a contributing feature. Raised soil may be an indicator that the tree is in the process of toppling, as the roots press against the soil surface. For this situation, the recommendation might be to support the tree by propping it up, to prevent it from falling over (Dolan et al. 2012).

Dropped fruit are useful for identifying the tree genus and variety from early summer through winter. Dried fruit can sometimes be seen hanging from a branch or caught in a tree trunk. Fruit trees naturally drop immature, un-pollinated fruit in late May to June. The most advantageous time to perform the initial assessment is when the tree is bearing fruit from early summer through fall, as the physical fruit can aid in the identification of the tree, i.e., apple (*Malus*), pear (*Pyrus*), or cherry (*Prunus*). To document and describe the fruit, measure a good representative specimen and photograph a cross-section with a scale (Figures 6a and 6b) (Routson and Nabhan 2007:64). Blemishes on the fruit can indicate insect infestation and/or diseases. Samples of the fruit with blemishes can be taken to the botanist or arborist for identification and to determine the appropriate treatment (Figure 6a). Trees left untreated can spread to nearby commercial orchards. Some pathogens have two hosts, such as Apple Cedar Rust (*Gymnosporangium juniperi-virginianae*) that can infect conifers as well.

The next zone on the forms is called the Root Crown (ISA 2017) (Figures 2a, 3a, and 4). This is the transition area between where the tree meets the ground surface and where the trunk begins. On an ideal tree, this area is tapered and is larger than the trunk. If this trunk flare (Dolan et al. 2012; Olmsted 2017) is not apparent, it may be buried, or is a trait of

Figure 6a. Photograph of a bisected apple. A long-conical shaped apple with an infestation with a Codling moth (*Cydia pomonella*) on a tree in the Willamette Valley commercial orchards.

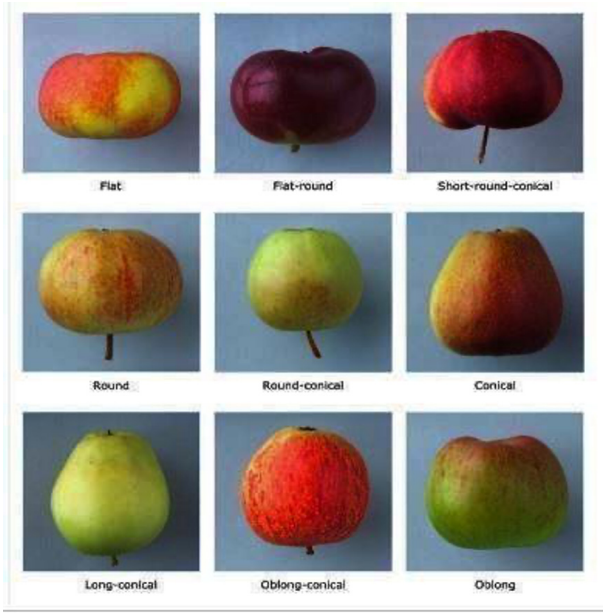


Figure 6b. Image of fruit shapes courtesy of FruitID.com.

the tree species. A lack of taper is considered a defect on the ISA (2017) form (Figures 2a and 2b). The recommendation in this case is to expose the buried trunk flare and re-cover the root zone with a thin layer of mulch to allow oxygen to the roots. Another defect is a root growing overtop of the other roots—this is called a "girdling root" by arborists (Dolan et al. 2012:50). Girdling roots must be cut away from the trunk flare. Small woody stems growing from the base of the grafted trunk need to be pruned off. If left to grow, the suckers or epicormic shoots will out-compete the graft (Dolan et al. 2012:49, 74). Seedling trees were used before rootstock was invented and will outlive the graft. The presence of mushrooms (*fungi*) indicate that the tree has internal rot, such as the Barcelona Hazelnuts at Dorris Ranch in Springfield, Oregon, and are being replaced with a disease resistant variety of hazelnut (*Corylus*) (Figure 4). If the tree is leaning or looks unbalanced, document the angle and aspect of the lean. In the mitigation section on the Olmsted form (Figure 3a), a leaning tree will need stabilization with propping until it can be re-propagated. The tree can continue to live in a compromised state for many years but would be considered in poor condition (Dolan et al. 2012:41, 82) (Figure 3a).

A tree that has toppled, but is still alive, presents a good opportunity for vegetative re-propagation by burying the limb with soil; it may grow new roots from the branch within a five-year period, experienced personally by the author. An assessment of a toppled/live tree is fair to poor if it has new growth in its compromised condition (Dolan et al. 2012).

The trunk of the tree is the next zone. The trunk of a perfect tree should have a roughened woody or smooth bark, commonly covered with moss or lichens is not considered a defect. The first measurement of this zone is from the ground surface to where the branches begin (Dolan et al. 2012:51). This will indicate how the tree was pruned during the Historic Period. The second measurement will be the circumference, by wrapping a tape below the lowest scaffold limbs (Figure 7) (Dolan et al. 2012:46).

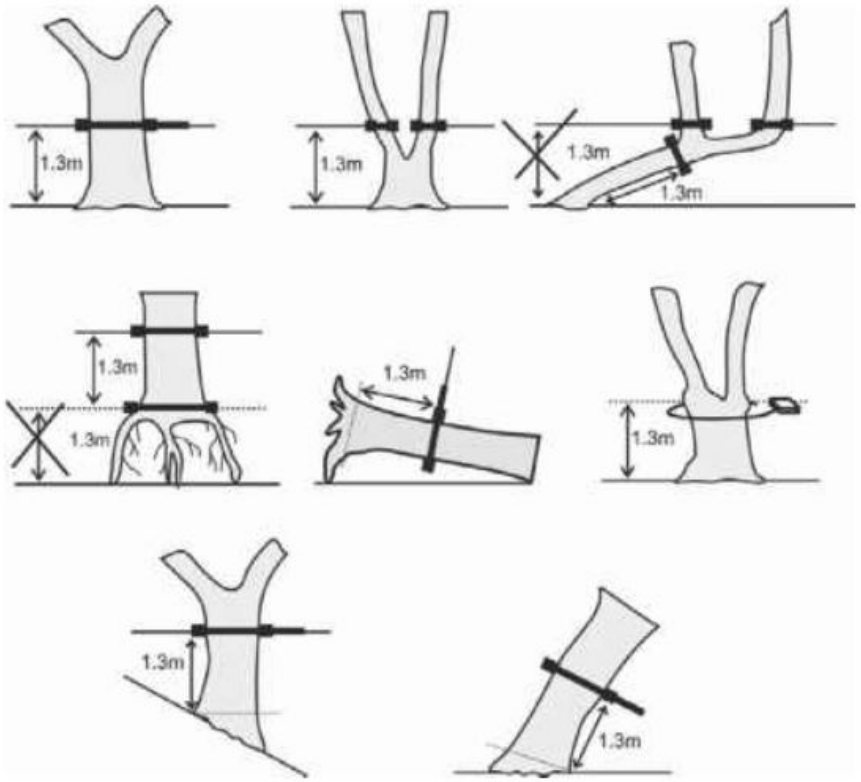


Figure 7. Measuring the circumference of a tree. Courtesy of Richard Lemmons' (2022) "Above Ground Biomass of Trees." <https://www.climate-policy-watcher.org/carbon-stocks>./

MEASURING DBH OR GBH FOR TREES OF DIFFERENT SHAPES AND FORMS

For taller historic trees, the diameter breadth height (DBH), a standard measurement for forestry applications, is measured at 1.35 m or 4.5 feet above the ground surface (upslope) (Dolan et al. 2012:46)(Figure 7). The circumference in inches, divided by 3.14 (pi), gives the diameter breadth height (Figure 7). Write this measurement on the assessment form; the tree can be re-measured during future reassessments and the rate of growth can become useful for dating trees without causing harm or coring. Cavities on the tree trunk can be the result of pruning wounds that the tree was unable to seal (Shigo et al. 1977; Dolan et al. 2012:79). The dimension of the opening and the new bark that is growing over (compartmentalizing) the hole is good documentation (Figure 8). This compartmentalization (CODIT) is the tree's response to wounding and its attempt to seal out decay (Figures 9a and 9b) (Shigo et al. 1977:2). Other defects to note on the trunk of the tree include bumps, burls, mushrooms (Figure 4), insects, and/or holes (Figure 10b) (Dolan et al. 2012). Aspects of the bark that are a sign of decline include cracks; loose, missing chunks of bark; or small holes in a pattern or series are caused by a bird, common name of Sap Sucker, genus (*Sphyrapicus* spp.) (Figure 10b) (Shigo et al. 1977). This is considered a defect that cannot be treated and can allow decay to enter the tree. The presence of a thick sap-like fluid ooze, *Gummosis*, is an indicator of an insect infestation or disease, such as the bacteria *Cytospora* canker, which is contagious and can spread to nearby commercial orchards. Insects deliver diseases to trees including ants, aphids, bees, beetles, termites, and weevils. Another indication of an infestation is a fine sawdust-looking substance called frass on or around the tree trunk. To mitigate, the recommendation should be to re-propagate the tree and send germplasm to a facility for preservation.

Embedded objects are occasionally seen on or in historic trees. Common embedded objects include fencing wire and insulators. The tree will compartmentalize around an object

Figure 8. Measurement of compartmentalization (CODIT) (Shigo et al. 1977).

Figure 9a (bottom left) and **Figure 9b** (bottom right). Trees that have compartmentalized wounds (Shigo et al. 1977). Figure 9a was photographed at Oregon State University Campus. Figure 9b was photographed at Jason Lee Mission Willamette State Park.

Figure 10a (left). Measurement of new growth at the end of the limb.
Figure 10b (right). A metal identification tag wrapped around the trunk, girdling the historic tree. The metal band was removed after the photograph was taken. The holes are created by the Sap Sucker (*Sphyrapicus* spp.) bird.

leaned and left against it (Figure 8) (Shigo et al. 1977). This is another form of compartmentalization (CODIT) that can be a useful indicator of historic activity; the rate of growth around the object can be measured over time (Figures 8, 9a, 9b). Evidence of previous pruning can result in cavities or holes in the trunk that have not compartmentalized, due to low vigor or a tree that is unhealthy (Figures 9a and 9b) (Shigo et al. 1977:2). The cavities become homes for birds and insects. Mitigation for this should be to treat the tree for insects and diseases, stabilize the tree, and determine if the fruit variety is of a rare type. Removing the fruit annually helps break the insect cycles.

The next zone is the limbs or co-dominant stems on the assessment forms. Limbs help the tree obtain balance. If the branches appear to be lop-sided or over-extended, this can cause the tree to lean or fall over during inclement weather. Broken, split, dead, or hanging branches are an indicator of heavy fruit loads and wildlife attempting to access the fruit. These conditions can be corrected with pruning and fences (Dolan et al. 2012).

A measurement of the new growth on the tip of the branch (Figure 10a) is a good indicator of the tree's health and vigor. If there is no new growth in the spring, the tree is unhealthy. On the other hand, *fungi* growing on the limbs and missing bark are indications of internal rot, poor vigor, and that the tree is declining (Figure 4). The condition rating would be fair to poor. If the tree is determined to be a rare variety, the recommendation should be re-propagation. Rare cultivars can yield data for scientific study (Migicovsky et al. 2021) and qualify under Criterion C of the National Historic Register (Dolan 2009). On the contrary, newly sprouted branches, new growth seen at the end of branches (Figure 10a) (Dolan

et al. 2012:41), and sealed wounds (Figures 9a and 9b) are a sign of good vigor. Similarly, the crown of the tree should be full of leaves. Dead or broken hanging branches with dead leaves or without leaves altogether is called dieback by arborists, and indicates root disease, a lack of nutrients and water, or something else wrong with the tree. Pruning and maintenance can assist the tree to live longer.

In an ideal tree, the leaves should be dark green and free of blemishes such as foliage spots, discoloration, distortion, blisters, holes, or laciness. Blemishes on the fruit or leaves are a sign of insect infestation and/or disease (Dolan et al. 2012:53). Large masses of webbing on branches are an infestation of tent caterpillars (*Malacosoma californicum*) that should be removed promptly, as they can infect and defoliate an entire orchard, and can spread to nearby commercial orchards. Figure 6a shows an apple infested with Codling moth (*Cydia pomonella*). Examining the underside of leaves with a hand lens can reveal small insects or insect eggs that can be treated with sprays. This would be an aspect to note in the recommendations. Encroaching vegetation on the trunk, clinging to branches, or overtaking the canopy of the tree—such as mistletoe (*Phoradendron*), Ivy (*Hedera*) or blackberries (*Rubus*)—should also be noted in the recommendation section.

Finally, document the number of historic fruit trees, measure the spacing between the trees, count the number of species (apple, pear) present, and draw a sketch map of the trees in relation to other features (Dolan 2009:149; NPS n.d.) such as foundations, structures, irrigation ditches (Bae et al. 2016), agricultural machinery (Dolan et al. 2012:53; NPS n.d.:4). This documentation helps interpret our understanding of past peoples' tastes, subsistence practices, and mechanization of the agricultural industry (Dolan 2009; NPS n.d.:4).

To keep track of an individual tree that has been assessed, attach a small metal datum tag around a branch, but not the trunk (Figure 10b), with the corresponding number written on the assessment form. At a minimum, photograph the tree and fruit (Figure 6a), measure tree cavities and diameter of the trunk, and treatment recommendations (Figure 8).

Fruit Trees and the National Register of Historic Places Criterion

Although cultural resource management (CRM) has evolved over the last 50 years, more is yet to be considered. Researching historical records for an undertaking may reveal the presence of fruit trees on General Land Office homestead contracts, agricultural records, letters, and in historic photographs (NPS n.d.). Fruit trees contribute to the integrity of historic sites and hold qualities that coincide with National Register criteria (Dolan 2009; Dolan 2022, pers. comm.). Fruit trees can be features. Orchards can be features or sites. Irrigation systems associated with orchards are features. Fruit trees define the boundaries between yards and pastures. Trees wrap around objects placed or attached to them, such as fence wire; fence insulators; electricity, telegraph, or phone lines. Fruit trees add information to the historic site record. It was common for people to plant multiple varieties that ripen throughout the year, such as an early transparent, a mid-summer for fresh eating, cider and vinegar making, and a late ripening baking apple that stores through the winter. Pruning techniques also varied depending on the use, such as for hand-picking domestic use or for picking with mechanized equipment for commercial economic purposes. An orchard creates a pattern on the landscape that is associated with the historic context of the place, setting, and/or other aspects of integrity. The historic landform must reflect the National Register criterion (Savage and Pope 1995; Lee et al. 1999):

1. Associated with historic events that contribute to broad patterns, such as settlement or development of an area or horticulture commercialization (Dolan 2009:154–155). Apple (*Malus*), pear (*Pyrus*), quince (*Cydonia*), and

most species of (*Prunus*) are not native to the Pacific Northwest and had to be intentionally transported and planted (Burk 2020) during the settlement of the West because of the Homestead Act of 1862 (Dolan 2009).

2. Associated with significant persons in history, such as persons that contributed to early development of horticulture within a local area or state (Savage and Pope 1995; Lee et al. 1999). Fruit trees or orchards that are on the grounds or in gardens of a significant person in history contribute to the integrity of the site (Dolan 2009:160).
3. Representative work of a master, horticulture innovation, rare genotypes of fruit (biological significance), pruning configuration, or as part of a landscape design (Savage and Pope 1995; Lee et al. 1999; Dolan 2009:164–175).
4. May yield information important during the Historical Period. The trees may be the only remaining evidence of a historic occupation. Settlers planted orchards to mark homestead claims; therefore, fruit trees are physical evidence of a historic occupation (Dolan 2009:176–178).

Managing orchards of historic fruit trees as living biotic cultural resources or contributing features requires an interdisciplinary, adaptive approach (Kato and Ahern 2008:543) because archaeologists lack the specialized training of arborists and botanists. Maintenance and preservation of historic orchards can be accomplished in collaboration with agency forestry and botany departments.

Undocumented orchards with rare varieties of fruit may still be alive on historic sites (Routson et al. 2009). Grafted fruit trees containing rare varieties need to be identified, documented, and preserved because they can add biodiversity to modern fruit varieties, add integrity to historic sites, and contribute to site eligibility, even if the tree is in poor condition (Dolan 2022, pers. comm.), and as a due diligence effort of the National Historic Preservation Act (36 CFR 800). Trees in poor condition need to be sent for germplasm storage in the same way that a rare artifact is accessioned at a museum. Archaeologists can approach the initial documentation of these trees as traditional features (Dolan 2009:149; NPS n.d.:6) and/or as biotic cultural resources (Kato and Ahern 2008:543; NPS n.d.:1).

The most advantageous time to perform the initial assessment is when the tree is bearing fruit in the summer and fall, as the physical fruit can aid in the identification of the tree species (i.e., apple, pear, or cherry). If the forms appear too daunting or time consuming, some suggestions are:

- Hire volunteers, seasonals, or interns to document the trees and perform the minimum stabilization measures (i.e., pruning, stabilization, and treating diseases and insects);
- Collaborate with agency hazard tree crews to perform the assessments, as it is a similar concept as identifying hazard trees;
- Prioritize measurements of the circumference, scars, defects, collection of a sample, and photographs of the tree and fruit (Figure 6a), and continue to avoid it for mitigation purposes;
- Map the location of the trees in relation to the other historic features (Dolan 2009:149; NPS n.d.);
- Document the historic orchard as if it will be destroyed by wildfire, so the orchard could be re-created from notes and sketch maps (Stimpson 2022);
- Send germplasm of rare cultivars to a repository for conservation (Figure 5) (Dolan et al. 2012; Bae et al. 2016), in the same way one would send an artifact to a museum.

Conclusion

Domesticated plants and trees on historic sites have not been properly documented or identified during the recording and assessment of archaeological sites because a convenient means for accomplishing this task has not been available to archaeologists. Fortunately, the Olmsted Center for Landscape Preservation and the International Society of Arboriculture (2017) have created forms for this purpose. These forms are presented in this article for use in the field to document historic fruit trees. Permission was granted courtesy of the Olmsted Center for Landscape Preservation (2017) and the International Society of Arboriculture (2017) for the use of these forms in this manner (Figures 2a–3b). Domesticated fruit trees require human intervention to survive. Mitigation recommendations that are not followed through can have an adverse effect on the integrity of the historic site. Fruit trees that were intentionally planted during the historic occupation are living (biotic) cultural resources (Firth 1985; NPS n.d.) and contributing features (Dolan 2009; Dolan et al. 2012; NPS n.d.). The extent of rare varieties on historic sites is still currently unknown (Routson et al. 2009) throughout the Pacific Northwest. Rare fruit cultivars can yield data for scientific study (Migicovsky et al. 2021) and qualify under Criterion C of the National Historic Register as horticulture innovation (Dolan 2009). The preservation of rare cultivar germplasm in a repository is equivalent to the curation of artifacts in a museum. Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to take into consideration their impacts on historic sites (Grimmer and NPS 2017; NPS n.d.:2; 36 CFR 800 of the National Historic Preservation Act); avoidance is not enough.

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Calculating Return Rates for Habitats in the Great Basin

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Abstract *Occupants throughout the terminal Pleistocene/early Holocene (TP/EH) (~16,000–8300 cal B.P.) of the northwestern Great Basin encountered numerous habitat types as they traveled across the landscape. We currently do not know what the most suitable habitats were, or which habitat types the people chose to settle. This article addresses these questions through the preliminary lens of an ideal distribution model by calculating suitability, a proxy for caloric return rates, in four different habitats—wetlands, riparian zones, lakes, and uplands—with seven food resources found in the Great Basin. This research indicates that uplands should be the most suitable habitats for people to settle, having the highest caloric return available throughout the year.*

Keywords Great Basin, Younger Dryas, Western Stemmed Tradition, behavioral ecology, ideal free distribution, Oregon, Paleoindian.

Introduction

Seas of sagebrush and windswept playas spring to mind when someone mentions the Great Basin. As barren as the Great Basin seems, it is home to several diverse habitats such as rocky tablelands, marshes, lakes, and streams that have persisted over thousands of years. The earliest people in the northwestern Great Basin during the terminal Pleistocene/early Holocene (TP/EH) (~16,000–8300 cal B.P.) encountered these vibrant habitats and settled in them, having the agency to choose habitats with resources that best fit their needs annually. The earliest human settlements seem to occur near pluvial lakes and wetlands (Willig and Aikens 1988; Beck and Jones 1997; Jenkins et al. 2016; Smith and Barker 2017), and later settlements occur in uplands settings, far from water (Layton 1970; Aikens et al. 1977; Smith 2022). Currently, we do not understand why the first people in the northwestern Great Basin chose to settle in those habitats.

Researchers have established nutritional data and return rates for important resources in the Great Basin (Simms 1987; Raymond and Sobel 1990; Kelly 2014); however, calculating these return rates within different habitats has not been directly linked to Paleoindian settlement choices. Calculating average return rates for wetland, riparian zone, lake, and upland habitats can help researchers develop predictions of which habitats were initially important to Paleoindians. In this

article, I consider seven resources occurring in four habitats and use a suitability calculation to develop predictions of human distribution based on which habitats yield high caloric return rates. Habitats are then ranked based on return rates and can be applied to human behavioral ecology models to help predict the habitat settlement choices early groups made in the northwestern Great Basin.

Background

We know the environment throughout the TP/EH changed significantly in the Great Basin (Grayson 2011; Smith and Baker 2017). Proxy records of analyzed pollen from stratified lakes and caves show that during the Bølling Allerød (~14,700–12,900 cal B.P.) the climate was wetter than today, and the Younger Dryas was colder in the winters and warmer in the summers after ~11,000 cal B.P. (Minckley et al. 2004). By the early Holocene, the climate became consistently drier.

The earliest dated archaeological sites occur where TP/EH pluvial lakes and wetlands were located. Paisley Five Mile Point Caves 2 and 5, in the Summer Lake Basin, provide evidence for people settling in the northwestern Great Basin by ~14,200 cal B.P. (Jenkins et al. 2012; Jenkins et al. 2016; Blong et al. 2020). Other well-dated Younger Dryas sites, such as Connley Caves and Cougar Mountain Cave in the Fort Rock Basin, were near shallow lakes and wetlands prior to ~10,350 cal B.P. (Freidel 1993). By the early Holocene, people who inhabited cave and rockshelter locations near water move locations to the uplands. Little Steamboat Point-1 (LSP-1) Rockshelter in the north Warner Valley Basin (Smith 2022), Dirty Shame Rockshelter in southeastern Oregon (Aikens et al. 1977), Hanging Rock Shelter (Layton 1970), and Last Supper Cave (Smith 2008) in northern Nevada are first occupied in the early Holocene. During the early Holocene, these sites were located in sagebrush steppe and rocky upland canyon habitats. This change in location of sites during the early Holocene suggests people started expanding their range of habitats.

Excavations of these early sites have expanded our understanding of Paleoindian subsistence throughout the TP/EH. Direct evidence of Paleoindian diets comes from coprolites from Paisley Caves. Blong and colleagues (2020) used a multiproxy analysis to examine nine coprolites from Paisley Caves aged to the Younger Dryas and early Holocene. The results show Western Stemmed Tradition (WST) occupants of Paisley Caves consumed plants, such as seeds and leafy greens, small mammals, fish, and insects (Blong et al. 2020). Small game faunal assemblages, such as rabbits, marmots, waterfowl, are also found indirectly in hearths in caves and rockshelters (Smith and Barker 2017). Large mammal faunal assemblages, such as artiodactyls, occur at caves and rockshelters in the northwestern Great Basin (Pinson 2007); however, we may only be seeing part of the picture, as people hunted larger animals in open-air settings. Due to poor preservation at open-air sites, it is impossible to know the true degree of large mammal subsistence.

Ethnographic data show that Indigenous peoples from the northwestern Great Basin such as the Northern Paiute, Klamath, and Modoc relied on different habitats seasonally for subsistence (Barrett 1910; Spier 1930; Fowler 1992). The Cattail-eaters of western Nevada targeted microhabitats for subsistence resources based on seasonal availability; these included eggs and waterfowl collected in the spring and summer and cattail collected in the fall (Fowler 1992). Different habitats offered many resources to Indigenous peoples but at different times of the year, creating a need to relocate on a seasonal basis. Kelly (2014:44) states that "… hunter-gatherer diet is systematically related to environmental characteristics." As environments change, people often adjust their diets to include what foods are in season.

To understand Paleoindian settlement patterns, researchers can apply human behavioral ecology (HBE) models to predict choices people should make under different environmental conditions. HBE applies evolutionary ecology models to the study of human behavior using a

hypothetico-deductive research strategy based on neo-Darwinian theory (Winterhalder and Smith 2000). HBE models can create quantitative testable hypotheses that connect principles of human evolution by natural selection (Winterhalder and Smith 2000). These models allow researchers to analyze human foraging strategies; mating systems; and spatial organization, such as settlement patterns.

The ideal free distribution (IFD) model provides a framework to analyze settlement patterns by developing predictions about how people chose to distribute themselves across landscapes (Fretwell and Lucas 1969; Fretwell 1972; Sutherland 1983). First used in ecological biology, the IFD has been addressing anthropological problems for over 15 years (e.g., Kennett et al. 2006; Winterhalder et al. 2010; Codding and Jones 2013; Jazwa et al. 2013, 2016; Hildebrandt and Ruby 2016; Tremayne and Winterhalder 2016; Jazwa and Jazwa 2017; Yaworsky and Codding 2018; Harvey 2019; Codding et al. 2021). The ideas of the model are similar to other distribution models, such as the patch choice model (MacArthur and Pianka 1966) and marginal value theorem (Charnov 1976).

The IFD model use measures of habitat suitability to produce testable predictions about settlement and mobility (Jazwa and Collins-Elliot 2021). Habitat suitability refers to the "goodness" of a habitat (Fretwell and Lucas 1969). Available food resources, exposure to hazards (such as predators), and overall livability in a habitat determine suitability (Winterhalder et al. 2010). Researchers calculate habitat suitability by using spatial distribution of resources in an environment and other cultural variables (Jazwa and Collins-Elliot 2021). The predictions of the model are that the initial people in a region should settle in a habitat with the highest overall initial suitability. As more people enter into a habitat, suitability decreases due to the depletion of resources. When suitability has decreased in the original habitat, newcomers make the choice to expand to the habitat with the second highest suitability.

In this article, I do not build an IFD model, but create a habitat suitability ranking system that I can later apply to physical basins in the Great Basin. I calculate suitability by multiplying the abundance of seven food resources by their return rates. Habitats with the highest suitability will be ranked first. Habitats with the lowest suitability will be ranked last. The limitations of this ranking system are that there are no known resource abundance data from the TP/EH, so the calculations are based on modern and ethnographic data. Thus, the suitability calculation is only an estimate for return rates of habitats, but still allow for a general ranking system to be created.

Materials and Methods

The first step to ranking the habitats is to characterize them and the resources found within to evaluate the potential caloric abundance. A habitat refers to a geographically bounded natural space where certain organisms can live or visit. The major habitats I include in this study are wetlands, riparian zones, lakes, and uplands. While other habitats exist in the Great Basin, these are most commonly associated with WST sites (Layton 1970; Pinson 2007; Smith and Barker 2017; Rosencrance 2019; Bradley et al. 2020; Reaux 2020; Smith et al. 2020; Smith 2022), suggesting that early groups frequented them.

I chose resources based on ethnographic accounts of people harvesting them in the northwestern Great Basin (Coville 1897; Spier 1930; Kelly 1932; Wheat 1967; Couture et al. 1986; Fowler 1992; Kelly 2001). These include mule deer (*Odocoileus hemionus*), bighorn sheep (*Ovis canadensis*), pronghorn (*Antilocapra americana*), jackrabbits (*Lepus californicus*), waterfowl, cattail (*Typha latifolia*), and tui chub (*Gila bicolor*). These resources occur in several different habitats and at different times of the year. I base the density, return rates, and seasonal availability on prior research (Simms 1987; Raymond and Sobel 1990; Fowler 1992; Kornfeld 1994; Kelly 2001; Knell and Hill 2012;

Barnett and Martinez 2019). There are hundreds of other resources that occur in these habitats; however, focusing on a select few can help inform predictions of caloric return per basin.

Habitats

Wetlands

Wetlands make up a small percentage of area in the Great Basin but are important habitats for many organisms. There are many types of wetlands, such as marshes, swamps, and bogs, but the general term "wetland" is used to assign value and for managing lands by federal land management agencies. Wetlands are defined by the Federal Geographic Data Committee (FDGC) (2013) as, "… lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or land is covered by shallow water." Wetlands have three attributes: (1) hydrophytic vegetation (aquatic plants); (2) undrained hydric soil; and (3) wetland hydrology (FDGC 2013). Emergent wetlands are different but important because they contain emergent plants that are rooted herbaceous hydrophytes. Hydrophytes are perennial and dominate emergent wetlands, allowing for predictable available food sources. Emergent wetlands are also known as marshes, wet meadows, fens, prairie potholes, and sloughs (FGDC 2013). Table 1 shows resources found in wetlands.

Riparian Zones

According to the U.S. Fish and Wildlife Service (USFWS) (2009), riparian zones are transitional areas between wetlands and uplands. Hydrologic features that run through these zones are perennial but can also be intermittent (USFWS 2009). Riparian zones have more vegetative species than in surrounding areas, and these species are often more robust (USFWS 2009). Different vegetative species provide safe areas for large and small species at different times of the year. Table 2 shows resources found in riparian zones.

Lakes

Lakes are important habitats for fish and waterfowl, though other animals also take advantage of them. Lakes are defined as having a surface area of more than five acres (Sanderson et al. 1973). Bodies of water smaller than five acres are considered ponds. Deepwater is also a factor in differentiating a lake from wetlands. According to the United States Geological Service (USGS) (2021), many characteristics of a lake affect the amount of water it holds, including climate, soil (groundwater flow), physiography, and morphometry. Shallower sections of lake edges sometimes foster more vegetation. Table 3 shows resources found in lakes.

Upland Zones

As the name implies, uplands are higher elevation habitats with little to no above ground water. The limited water creates perennial bunchgrasses and sagebrush communities. Soils in upland zones are "… rocky, thin, low in organic matter, and high in minerals" (The Oregon Conservation Strategy 2021). Uplands are just as important as wetlands for certain taxa including rabbits, sage grouse, and big horn sheep. Table 4 shows resources found in uplands zones.

Food Resources

Mule Deer (Odocoileus hemionus)

Today, mule deer are common throughout North America and were widespread in the Great Basin during early historic times (Grayson 2011). Mule deer move seasonally but spend a lot of time in uplands. They are not wetland-dependent but visit wetlands where they graze in sedge-dominated seasonal wetlands and wet meadows (Gammonley 2004). Riparian zones are also important for thermal cover in the summer, and mule deer frequent wetlands, especially during harsh winters or summers (Lohman 2004). I suggest that mule deer visit wetlands during the summer, fall, and winter (Gammonley 2004; Broughton et al.

Table 1. Wetland Resources.

Resource	Return rate (kcal/hr)	Density (Ind/ha)	Available seasons
Mule Deer (*Odocoileus hemionus*)	17,971–31,450	0.08	Summer, fall, winter
Waterfowl	1,975–2,709	6.83	Spring, summer, fall, winter
Cattail roots (*Typha latifolia*)	269–3,299	0.3	Spring, summer, fall, winter
Tui Chub (*Gila bicolor*)*	750–7,514	1.68	Spring, summer, fall, winter

Note: Return rates for mule deer, waterfowl (Kelly 2014; Simms 1987); return rates for cattail (McGuire and Stevens 2017); return rates for tui chub (Raymond and Sobel 1990); mule deer density (Nevada Department of Wildlife [NDOW]); cattail density (Knell 2007:87); waterfowl density (Barnett and Martinez 2019); tui chub density (Raymond and Sobel 1990). *Tui chub numbers based on net catching.

Table 2. Riparian Zone Resources.

Resource	Return rate (kcal/hr)	Density (Ind/ha)	Available seasons
Mule Deer (*Odocoileus hemionus*)	17,971–31,450	0.08	Summer, fall, winter
Waterfowl	1,975–2,709	6.83	Spring, summer, fall, winter
Cattail roots (*Typha latifolia*)	269–3,299	0.3	Spring, summer, fall, winter

Note: Return rates for mule deer, waterfowl (Kelly 2014; Simms 1987); return rates for cattail (McGuire and Stevens 2017); mule deer density (NDOW); cattail density (Knell 2007:87); waterfowl density (Barnett and Martinez 2019).

Table 3. Lake Resources.

Resource	Return rate (kcal/hr)	Density (Ind/ha)	Available seasons
Mule Deer (*Odocoileus hemionus*)	17,971–31,450	0.08	Summer, fall, winter
Waterfowl	1,975–2,709	6.83	Spring, summer, fall, winter
Cattail roots (*Typha latifolia*)	269–3,299	0.3	Spring, summer, fall, winter
Tui Chub (*Gila bicolor*)*	750–7,514	1.68	Spring, summer, fall, winter

Note: Return rates for mule deer, waterfowl (Kelly 2014; Simms 1987); return rates for cattail (McGuire and Stevens 2017); return rates for tui chub (Raymond and Sobel 1990); mule deer density (NDOW); cattail density (Knell 2007:87); waterfowl density (Barnett and Martinez 2019); tui chub density (Raymond and Sobel 1990). *Tui chub numbers based on net catching.

Table 4. Upland Resources.

Resource	Return rate (kcal/hr)	Density (Ind/ha)	Available seasons
Mule Deer (*Odocoileus hemionus*)	17,971–31,450	0.1	Spring
Pronghorn (*Antilocapra americana*)	15,725–31,450	0.040	Spring, summer, fall, winter
Bighorn Sheep (*Ovis canadensis*)	17,971–31,450	0.077	Spring, summer, fall, winter
Jackrabbits (*Lepus californicus*)	13,475–15,400	0.030	Spring, summer, fall, winter

Note: Return rates for mule deer, pronghorn, bighorn sheep, jackrabbits (Kelly 2014; Simms 1987); mule deer and bighorn sheep density (NDOW); pronghorn, jackrabbit (Knell 2007:87).

2008; Elston et al. 2014), moving to the uplands in the spring.

Bighorn Sheep (Ovis canadensis)

According to Broughton and colleagues (2008:1917), "Bighorn sheep in arid settings… require free water sources within close proximity to plant forage, thermal protection, and rocky escape terrain." In western Nevada, bighorn sheep vary in herd size and location over the course of a year, with most sheep living higher than 2,400 m above seal level during the summer and staying within 3–5 km of watering holes (Kelly 2001). In the winter, herds move to lower canyons. Bighorn sheep hunting would be predictable in the late fall–early winter when multiple sheep could be captured at one time (Kelly 2001). Ethnographically, bighorn sheep were not hunted frequently, though early logistical groups brought them from mountains to valley camps where their hides and horns had different uses (Fowler 1992). I suggest that bighorn sheep stay in uplands annually.

Pronghorn (Antilocapra americana)

Whitaker and colleagues (2019:86) write that pronghorn, "… prefer forbs, then shrubs, then grasses, and rarely feed extensively in one place." In the winter, pronghorn form large herds but separate into smaller groups during the rest of the year (Whitaker et al. 2019). They avoid soft wet ground because they lack a dew claw. Deer and elk have dew claws, which provide traction in wet environments (Whitaker et al. 2019). Collins (2016) tracked pronghorn in the northern Great Basin and showed that pronghorn follow a north-south gradient, using fall migration routes frequently and repeatedly. Typically, pronghorn use higher elevations during summer months and descend to lower elevations during the winter (Collins 2016:109). Ethnographically, pronghorn were hunted communally. Hunts were guided by a shaman who would go out a day ahead, come back with a location, and lead the hunting party to the herd. The hunters would use a brush corral or sagebrush cord and club the animals to death or shoot them with arrows (Fowler 1992:76–77). In this study, I suggest pronghorn are available in the uplands during the summer and fall, visiting wetlands and lakes during the winter and spring.

Jackrabbits (Lepus californicus)

Jackrabbits were important food resources in the Great Basin as they could be hunted in various ways (Kelly 2001). Jackrabbits are abundant in areas that support sagebrush, greasewood, and salt brush and occupy the same habitat year-round (Fowler 1992). Ethnographically, Jackrabbits were hunted communally, and hunts involving nets could last 10–15 days (Fowler 1992). These drives were usually conducted in the fall when meat and pelts were in the best condition (Kelly 2001). I suggest jackrabbits occupy the uplands annually.

Waterfowl

Fowler (1992) estimates that 12 to 18 million ducks visit the Great Basin wetlands annually, with highest use in the summer. Waterfowl seem to prefer a 1:1 ratio or 1:2 ratio of foliage cover to water, making wetlands more suitable than open water (Kelly 2001). However, in the winter, shallow wetlands can freeze so larger, deeper lakes become concentrated with waterfowl (Gammonley 2004). Waterfowl were abundant in wetland areas of Cattail-eater country, and the Cattail-eaters took advantage of the abundance (Fowler 1992). Hunters used nets or blunt-tipped arrows to take waterfowl individually, though they sometimes also used a communal drive technique (Kelly 2001). In this study, I assume that waterfowl occur throughout the year in both lakes and wetlands.

Cattail (Typha latifolia)

Cattails are available in marshes and offer an average return rate of 3,299 kcal/hour (McGuire and Stevens 2017). The bulbs of cattails act as energy reserves which are easily digestible and expedient for humans to procure (McGuire and Stevens 2017). Cattails were harvested year-

round, with spring roots having lower return rates than winter roots (McGuire and Stevens 2017). According to McGuire and Stevens (2017), 1 acre of cattail can produce nearly 6,650,000 calories. The Cattail-eaters of western Nevada gathered cattail roots in the spring and fall, noting that they were best in the fall (Fowler 1992:65). I suggest cattail are available annually but use two different return rates for spring/summer collection and fall/winter collection.

Tui Chub (Gila bicolor)

Tui chub are minnows that adapt to multiple environments including fresh to alkaline water. They live in large open bodies of water and streams, rivers, and marshes. They prefer to school in shallow waters (Raymond and Sobel 1990). Tui chub reproduce rapidly, averaging 23,300 eggs a year with spawning taking place between April and August depending on warm spring weather (Raymond and Sobel 1990). People used gill netting and dip netting to capture tui chub in shallow lakes (Raymond and Sobel 1990; Fowler 1992:61–62). In this study, I suggest tui chub are available annually.

Methods

To create a suitability calculation, I used the abundance calculation initially developed by Kornfeld (1994) and adapted by Knell and Hill (2012). It is a quantitative estimate using kilocalorie per hectare (kcal/ha) of overall environmental zone productivity which provides a proxy for a caloric return-rate per habitat (Knell and Hill 2012). The caloric return-rate allows a comparison of resource availability between habitats. The calculation for kcal/abundance is as follows:

$$A = D \times W \times K \times C$$

where A = abundance in kilocalories per hectare, D = plant or animal resource density per hectare (ind/ha), W = edible weight in kilograms (kg/ind) of an average plant or animal taxa, K = kilocalories per kilogram (kcal/kg) for each plant or animal, and C = cull rate estimates the harvest loss rate that a plant or animal can sustain (Knell and Hill 2012:43). Table 5 lists the values for the seven resources I include in my model.

Table 5. Variables and Data Used to Calculate Resource Abundance.

Common Name	Density (Ind/ha)	Edible Weight (kg/ind)	Caloric Yield (kcal/kg)	Cull Rate	Abundance (kcal/ha)
Mule Deer (uplands)	0.1	34	1258	0.08	342
Mule Deer (wetlands)	0.08	34	1258	0.08	274
Desert Bighorn Sheep	0.077	34	1258	0.08	264
Pronghorn	0.04	24	1078	0.08	124
Jackrabbit	1.05	1.0	1078	0.5	336
Waterfowl	6.83	0.65	948	0.25	1,052
Cattails, roots (spring)	0.3	0.002	300	0.25	0.045
Cattails, roots (winter)	0.3	0.002	3700	0.25	0.555
Tui Chub (nets)	1.68	0.025	1250	0.25	1312

Note: Deer and bighorn density (NDOW); pronghorn (Knell 2007); jackrabbit density (Fowler 1992:77); waterfowl density (Barnett and Martinez 2019); tui Chub density (Raymond and Sobel 1990); edible weights for animals and plants (Simms 1987:45); caloric yield (Simms 1987:45); cull rates (Knell 2007; Knell and Hill 2012); tui chub caloric yield (Fowler 1992:61).

I use modern density data as a proxy for past resource density, acknowledging the limitations associated with long-term change in how species interact with habitats. Additionally, animal densities are not distributed evenly across a landscape. Since mule deer occupy both wetland and upland habitats, two density rates are needed to show the differences between the habitats. To do this, I used mule deer population estimates in hunt units managed by Nevada Department of Wildlife (NDOW).

To understand whether there is a correlation between mule deer estimates and water sources, I used the Wetland Map of Nevada, provided by the Desert Research Institute (DRI). I imported a Nevada hunt unit shapefile, a Nevada mule deer population shapefile, and Nevada wetland shapefile into ArcGIS Pro. While my study area is in Oregon, Nevada artiodactyl density data was most accessible for this project. I chose a hunt unit (Number 213) that contained less than 1% water to represent the upland habitat. I divided the area of the hunt unit by the population estimate to find the population of mule deer in an upland area. Next, I chose another hunt unit with wetlands and divided the area of that hunt unit by the population estimate (of deer and bighorn sheep). Next, I multiplied the divided population estimates by the total habitat area in each unit. I took pronghorn densities from Knell and Hill's (2012) study since I assume pronghorns do not visit wetlands or lakes regularly.

I collected the edible weights in kilograms and caloric yields for resources from Simms (1987) unless noted in Table 5. I used newer rates whenever possible, but Simms (1987) still provides the most uniform data for this project. I used Knell and Hill's (2012) cull rate to estimate the loss rate plants or animals sustain over a year. Cull rates are relevant to my project because they provide the element of realism of loss (i.e., predation or old age) of a taxon in a habitat.

In the previous section, when defining the habitats, I determined when a resource was available for harvest using both ethnographic accounts and modern data about those resources. I used the resource abundance from Table 5 and multiplied them by the return rates of each resource per habitat and per season to calculate when the minimum and maximum abundance rate would occur throughout the year (Table 6). There are flaws with these methods, as loosely assigning animals and plants to habitats based on seasonality is not always going to be accurate. Variability of climate per year can change spatial distribution of migrating animals or cause some plants not to produce. However, Paleoindians certainly could have distinguished which habitats had more resources available than others (Knell and Hill 2012).

Results

Table 5 shows the abundance calculations of all the food resources. Waterfowl have the highest density at 683 (ind/ha) but have the second lowest caloric yield at 948 (kcal/kg). Tui chub also have a high density at 168 (ind/ha) with a caloric yield of 1250 (kcal/kg). Mule deer, bighorn sheep, and pronghorn have similar densities and caloric return rates. Jackrabbits have a high density of 260 (ind/ha) and a high caloric return (1078 kcal/kg), but they only occur in one habitat. Cattail roots in the winter has the highest caloric yield (3700 kcal/kg), but because the density is so low, their abundance does not contribute much to a habitat.

Table 6 shows an interesting trend. Throughout the seasons, wetlands and lakes have the same number of kilocalories per hectare. Uplands have a similar suitability as wetlands and lakes; however, upland numbers expand in the spring when mule deer are added. Riparian zones have the lowest kilocalories per hectare. Based on the results of Table 6, in terms of suitability ranking, uplands should rank number one with 131,297,358 kcal/ha, wetlands and lakes should be tied for second with 103,708,086 kcal/ha, and riparian zones rank in third with 60,338,614 kcal/ha.

Table 6. Summary of Seasonal kcal/ha Resource Abundance in Each Habitat.

Fall				
	W	**RZ**	**L**	**UP**
N	4	3	4	3
Sum/Total	29,313,270	18,470,902	29,313,270	28,598,844
Minimum	7,985,903	7,001,903	7,985,903	11,221,844
Maximum	21,327,366	11,468,998	21,327,366	17,377,000
Winter				
	W	**RZ**	**L**	**UP**
N	4	3	4	3
Sum/Total	29,313,270	18,470,902	29,313,270	28,598,844
Minimum	7,985,903	7,001,903	7,985,903	11,221,844
Maximum	21,327,366	11,468,998	21,327,366	17,377,000
Spring				
	W	**RZ**	**L**	**UP**
N	3	2	3	4
Sum/Total	15,770,096	4,927,728	15,770,096	45,500,826
Minimum	3,061,712	2,077,712	3,061,712	17,367,926
Maximum	12,708,384	2,850,016	12,708,384	28,132,900
Summer				
	W	**RZ**	**L**	**UP**
N	4	3	4	3
Sum/Total	29,311,450	18,469,082	29,311,450	28,598,844
Minimum	7,985,766	7,001,766	7,985,766	11,221,844
Maximum	21,325,684	11,467,316	21,325,684	17,377,000
Total Sum	**103,708,086**	**60,338,614**	**103,708,086**	**131,297,358**

Note: W=wetland, RZ=riparian zone, L=lake, UP=upland, N=number of resources per habitat per season.

Discussion

In this study, I have created a suitability calculation to rank four habitats that occur in the Great Basin to determine how people may have chosen where to settle during the TP/EH. I assume that calculated abundance provides a proxy to evaluate which habitats are most suitable for people based on caloric return. The results show that uplands have the highest suitability out of the four habitats in the study. Wetlands and lakes come in second with riparian zones being ranked third. Based on predictions of the IFD model, the first people entering a new region should choose the habitat with the highest initial suitability, and here, uplands are the highest ranked. Wetlands and lakes are comparable in suitability, only being ~27,000 kcal/ha behind uplands. These results are interesting as archaeological evidence shows that the earliest sites in the Great Basin occur around pluvial lakes and wetlands (Willig and Aikens 1988; Beck and Jones 1997; Jenkins et al. 2016; Smith and Barker 2017), and early Holocene sites are associated with uplands (Layton 1970; Aikens et al. 1977; Smith 2022). These calculations are purely estimates but other archaeological studies might shed light on these results.

In the spring, uplands had the highest suitability because of the abundance of artiodactyls. Middleton and colleagues' (2014) research demonstrate that Paleoindian points are associated with Great Basin Carved Abstract (GBCA) petroglyphs commonly found in the uplands of the northwestern Great Basin. Their results show a strong correlation with WST points, GBCA, and sagebrush-upland environments. The authors note that low sage communities may act as a proxy for geophytes because both taxa need well-draining soil (Middleton et al. 2014). The evidence supports the notion that Paleoindians settled in the uplands during seasonal rounds to hunt and harvest root crops (Middleton et al. 2014). Larger mammals have higher return rates, especially if they are hunted communally (Hockett et al. 2013). Perhaps hunting artiodactyls in the uplands when root crops were available for harvest created suitable habitats for early people.

While the density of fish and waterfowl make the suitability higher in lakes, the fact that these resources occur in the same habitat throughout the year make them predictable. The Great Basin was an optimal habitat for migrating waterfowl on the Pacific Flyway during the late Pleistocene as lakes and marshes dominated the region (Moss and Erlandson 2013). Waterfowl would have been abundant throughout the year, as migrating waterfowl, and non-migrating waterfowl, presumably used these lakes and marshes as prime breeding grounds (Moss and Erlandson 2013). Additionally, bird meat is fattier than large game and full of micronutrients that would have been important for fetal development (Hockett 2007). If people targeted waterfowl for their high return rates in addition to their abundance, then lakes and wetlands would have contained predictable high-quality resources for people.

Zeanah (2004) and Elston and colleague's (2014) research on male and female foraging goals are relevant here. The researchers suggest that men and women might logistically hunt in uplands for high-risk resources, such as artiodactyls. When high-risk resources are procured, females may break away and gather low-risk resources in wetlands, such as cattail and fish. Determining where to settle should be determined by the women's foraging goals (Zeanah 2004); however, Elston and colleagues (2014) suggest that large game were available in wetlands during different seasons, making logistical hunting trips unwarranted. People may have settled in habitats with multiple predictable resources available.

There are limitations to these calculations. First, adding more food resources will undoubtedly help to develop predictions of suitability more accurately. Only using seven resources gives a rough estimate of the foods that people might encounter in certain habitats, and it does not

provide the full picture. Incorporating more plant species may increase abundance rates in riparian zones, wetlands, or uplands. We certainly know that foragers did not only eat meat (McDonough 2019), and they would have likely enjoyed a balanced diet. Adding resources such as seeds, roots, leafy greens, smaller mammals, and even insects might show different suitability ranking per habitat.

Finally, this suitability calculation can be applied to physical areas in the Great Basin. For example, if there is ten hectares of wetland in a basin, the total abundance of a wetland can be multiplied by ten to estimate the calories available to people settling in that wetland. I can then develop predictions of the IFD model to evaluate how people settled in the Great Basin during the TP/EH based on known archaeological sites. Again, an assumption of the IFD model is that people are free to settle any habitat at any time. Once the population density increases, the habitat will become less suitable and newcomers should move to the next most suitable habitat. Based on this study, I expect that the most suitable and earliest sites will be located in uplands; however, wetlands and lakes have high suitability as well and more predictable resources. Seasonality likely plays a huge role in how we see people settling on a landscape. Incorporating more details on resource migration and habits during the different seasons will likely generate more detailed predictions of the model.

Conclusion

We know people were settling in the northwestern Great Basin by ~14,200 cal B.P. (Jenkins et al. 2012, 2016; Blong et al. 2020), but our knowledge of why they chose to settle in certain habitats is limited. Here, I calculate suitability by combining return rates with estimates of resource abundance to rank four habitats: wetlands, riparian zones, lakes, and uplands. I included seven common food resources that early people may have targeted. These estimates are preliminary and can be applied to develop predictions of settlement distribution by using ideal distribution models.

My results suggest that upland habitats are highly suitable and provide high caloric returns. These returns are likely due to the return rates of large mammals that would be available at different times of the year for people to procure. Wetlands and lakes also produced high caloric returns because of high fish and waterfowl densities and that were predictable throughout the year. Future work will consist of adding more food resources, especially ones that would represent a balanced diet in different habitats. Despite some caveats with using modern and ethnographic data for food resources, my study shows it is possible to make estimates of return rates from different habitats. We currently do not know what habitats were most suitable for the first people in the northwestern Great Basin; however, using models can help researchers develop predictions of which habitats were likely more suitable for people during the TP/EH.

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Megan McGuinness recently finished her M.A. at the University of Nevada, Reno working with Dr. Geoffrey Smith and Dr. Christopher Jazwa. Her interests include human mobility patterns in the northwestern Great Basin, Western Stemmed Tradition, geoarchaeology, and environmental studies. Her thesis used geoarchaeology and Western Stemmed Tradition point dates to decern when people were occupying the northwestern Great Basin and what habitats people may have preferred based on return rates from important plant and animal resources.

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Violence, Structure, and Agency in Labor Market Segmentation Among Mexican Migrant Farmworkers

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Abstract *Medical anthropologists have long used the concept of structural violence to investigate the suffering of marginalized groups. Following Paul Farmer (1996, 2004), anthropologists such as Nancy Scheper-Hughes (1992), Philippe Bourgois (2001, as well as Bourgois and Scheper-Hughes 2004), and Seth Holmes (2013) have critically analyzed the ways that unfair political economic structures create injury and illness with comparable effects to a gunshot or a stab wound. This research has expanded beyond the concept of structural violence to include a whole spectrum, or violence continuum. As productive as this research has been, it has primarily emphasized patterns of violence that move downward from social structure, thus leading to an overly deterministic approach that conceals the role of agency. This article uses the case of the migrant farmworker experience in labor markets to advocate for a renewed analysis of the violence continuum that appreciates the role of violent practices in the production of structure, as well as vice versa, in a process of mutual causality that has not been emphasized. This concept of violence is first outlined in detail, and subsequently explored through examination of labor market segmentation among migrant farmworkers in the United States adding to the work already done by medical anthropologists using the traditional version of the violence continuum paradigm (Holmes 2013).*

Keywords Structural violence, immigration, farm work, labor market segmentation, medical anthropology.

Introduction

What role does violence play in the construction of labor markets? While historically many forms of labor market construction have involved direct coercive violence, such as slavery, the indirect violence structuring labor markets today often remains unexamined. This article attempts to utilize anthropological theories of violence, in conjunction with labor market segmentation theory, to explore how various forms of violence contribute to the construction and regulation of labor markets, specifically migrant farmworker labor markets in the United States.

In the last three decades, theoretically informed anthropological analyses of violence have grown precipitously, in both quality and quantity. In particular, the concepts of structural violence (Galtung 1969, 1975; Farmer 1996, 2004) and the violence continuum (Bourgois 2001; Bourgois and Scheper-Hughes 2004) have

had a significant impact in the field, relating different forms of violence (political, structural, symbolic, and everyday) to one another and to political-economic structures within (neoliberal) capitalism. Other researchers have successfully drawn on this body of work in their analyses of suffering and violence in myriad field circumstances. For example, Holmes (2013) provides a powerful analysis of health disparities among Triqui migrant farmworkers in the United States, connecting their different kinds of social suffering to their position within an ethnicity- and citizenship-based hierarchy in U.S. farm work. Holmes attempts to show the different forms of violence faced by Triqui migrants, whether it be political violence coming from the Mexican military, structural violence in the form of neoliberal restructuring and "free trade" policies, the everyday violence of racism and subordination within the ethnic hierarchy of farm work, or the symbolic violence normalizing these other forms of violence. He takes care to demonstrate how no individual actor within this system *wills* violence, but rather it is dictated by the structural constraints of the system itself.

Holmes at once refers to the market imperatives of U.S. agriculture, the political violence of the state against the Indigenous in Southern Mexico, the decades-long process of neoliberalization in Mexico and the Global South, and the long history of racialization of migrants in the U.S. all as components of the determining structure. While all of these variables are relevant, their precise relationship is underspecified in Holmes' work, and several things remain unclarified. For one, the fact that neoliberal policies displaced Indigenous smallholder farmers in rural Mexico does not explain how this was significant to the neoliberal project there, or the mechanisms by which profit is extracted from migrants via their displacement and economic dislocation. Stating that the structural violence of free trade policies is what drives migrant displacement still leaves us asking what structures impelled these economic reforms in Mexico, and to what ends. Whether or not this violence was ancillary to particular labor markets in the neoliberal period, or whether it was merely incidental violence, collateral damage so to speak, is an important question, and one that requires a different kind of approach. One might say that Holmes investigated the role of labor markets in the production of migrant suffering; another question entirely is the role of migrant suffering in the production of labor markets.

The case of Holmes' widely-read study makes a broader point about the operational utility of the violence continuum as a theory with explanatory value. Does this theory have the potential to be more than a taxonomic system for naming different forms of violence, or can it tell us something about why particular kinds of violence happen, and what ends they might serve? In the interest of pursuing the latter, this article proposes the conjunctural use of labor market segmentation theory (LMST) with an augmented version of the violence continuum in order to examine the relationship between different forms of violence and labor market formation. LMST has serious potential in mapping the contours of violent practices as necessary to the formation of capitalist labor markets. Firstly, it shows violent practices to be a structuring force in their own right, not just a result of structuring processes; many unequal structures could not exist without the ongoing recurrence of violence. Second, it helps show how the precise connections between specific forms of violence and specific market, industrial, and labor configurations, such as the unique violence specific to migrant farmworkers in our industrial agricultural system, constitute a structure-violence matrix where both elements interpenetrate and produce one another in specific, historically and geographically contingent ways. Thirdly, LMST gives us insight into the kinds of political action that can seriously hope to ameliorate violence; in other words, what power relations and structures must be altered in order to really undermine extant regimes of violence?

In this article, Holmes' widely-cited study serves as a point of departure from which to explore the relationships between violence and

labor markets. As the title of Holmes' ethnographic text makes clear, the fresh fruits available to consumers of U.S. produce come at the cost of the broken bodies of migrant laborers. Using the theories of the violence continuum and LMST in conjunction, we can begin to ask why this deal was struck, how it is maintained, and what the conditions of its overturning might look like.

Theoretical Review

Theories of Violence

One prominent antecedent of many contemporary medical-anthropological theories of violence can be found in the work of Paul Farmer, specifically his use of the concept of structural violence (1996, 2004). While Farmer did not invent the term (that distinction belonging to Johan Galtung, 1969), he did bring it to a new audience and a fertile field of inquiry. Following Farmer, scholars such as Bourgois (2001) used this violence concept in conjunction with others to develop the idea of a "violence continuum," in which multiple strands of violent practices interact and mutually influence each other.

Bourgois' four forms are direct political violence, structural violence, symbolic violence, and everyday violence. Direct political violence refers to targeted, avowed, and visible violence, such as military or police repression. Structural violence, drawing largely on Farmer (1996, 2004), refers to "chronically, historically entrenched political-economic oppression and social inequality" (Bourgois 2001:8). Symbolic violence, developed from Bordieu's concept (Bordieu and Wacquant 2004), refers to the misrecognition of social hierarchies as naturally existing and therefore justified, ranging from race and ethnicity to gender. Everyday violence, adapted from Scheper-Hughes' (1992) work, describes expressions of violence on the daily, interpersonal level which mask structural inequalities.

In Farmer's work and in the scholarly tradition that followed, including Holmes (2013), structural violence played a key role in highlighting the absence of choice for victims in the emergence of disease outbreaks such as AIDS and tuberculosis. It combatted individualized notions of responsibility for personal health and disease, demonstrating the structural barriers to health faced by vulnerable populations. While of course doing much good in drawing attention to the broad structural conditions leading to negative health and life outcomes in marginalized individuals, populations, and nations, the relationship between violent practices and structures remains underspecified, with an implication that violence is performed indifferently *on* victims *by* structures in a unidirectional, top-down flow. Structures do not have agency; however, to attribute violence to structures, as if they exist and can act without the necessary participation of agents, is both strategically self-defeating (a problem discussed further in the conclusion) and analytically spurious. A multi-dimensional understanding of the relationship between violent practices and social structures is key to understanding why violence occurs when it does, where it does, and how it does, and what consequences it has for social structure.

Violence: Between Structure and Agency

Violent practices do not simply emerge from structures as if acting out a pre-scripted inequality, but rather violent practices (emerging and existing independent of structures) enable the production and reproduction of structures that come to operate through them and depend upon them for their continued existence.

Patterns of violence are constitutive of social structure, but rather than a concrete instantiation of an abstract social reality, these concrete actions are the sites on which abstract social realities are created. They are not direct products of structure, instead emerging from complex interactions of multiple structural fields and numerous agents. Structure is incapable of "doing" anything by itself; it is the landscape in which agents act, and agents may always act outside of, or in opposition to, structures. Out-

comes of structure, if they can be called such, are always probabilistic and contingent in nature, never deterministic. Structure *does* provide an evolving context in which violent practices adapt and change, with violent practices in turn feeding into social structure, adapting it, and so on—but at every instance, agents have the choice to act in opposition to structure, rather than reproducing it.

One way of understanding the interdependent quality of violence and structure is in terms of existential imperatives. As social structures emerge—for example, markets—they do so under historically and geographically specific conditions (technology, capital, competition, labor, etc.). As those conditions evolve, a result of any number of factors, structures can be threatened, and their existential conditions (for example, a segmented labor supply) might disappear. The deterioration of existential conditions can produce any number of outcomes, from the withering of structures to their adaptation. Agents benefiting from certain structural conditions (for example, capitalists benefiting from easily exploitable labor markets) are prone to act in defense of these structures however they can—including violence. This too, though, is not predetermined but dependent on the agency of the actors in question, and could always be different.

Adapting the Violence Continuum

Whither the violence continuum? To better capture the relationship between violence and structure, the concepts of structural violence and the violence continuum must be reworked to some degree. One important observation is that political, everyday, and symbolic violence are themselves clearly structure-producing and -shaping phenomenon, often rather important ones. Given this fact, what was called structural violence in Bourgois' model must be understood very differently. For Bourgois and others, the importance of structural violence was to emphasize the indirect consequences of inequality, which have effects tantamount to the violence of a gunshot or stab wound. The distinction between this kind of indirect violence and other, more clearly visible forms is still desirable and necessary. However, this should obscure the fact that direct, symbolic, and everyday violence, as well as indirect violence, are fundamentally structural in that they *produce* structures. To that end, what Bourgois called "political" and "structural" violence, shall instead be called here direct and indirect violence, terms which accurately reflect the differences between the two.

To reiterate, direct violence is visible, avowed, and acknowledged, while indirect violence is invisible; disavowed; and, if acknowledged, naturalized and politically neutralized. These two form the primary tier of violence, with everyday and symbolic violence forming a secondary, or reactive, tier, seeing as they by definition emerge in circumstances where primary tier violence has already taken place. Each of these four kinds of violence has the capacity to structure social relations, doing so to different degrees in different contexts. For this reason, structurality may be conceived as being a kind of continuous variable that all forms of violence possess to greater or lesser degrees, rather than a categorical *type* of violence. Calling a form of violence structural ought to be a statement about its *relations to specific structures*, not a quality of the practice itself. This does not mean that violence only exists in relation to a particular structure, only that we must be precise when we speak of the structural quality of violence.

While distinctions of terms such as these may seem trivial, recognizing the structuring qualities of all modes of violence is critical to the project explored here, and continuing to use a unidirectional and simplistic concept of structural violence is an impediment to those goals.

Labor Market Segmentation Theory

Theories of labor market segmentation date back to the 1950s, beginning with Kerr's (1954) study of internal labor markets. Through several successive generations of theorization, a well-developed body of work has emerged which

seeks to re-evaluate theorizations of the labor market in a fashion critical of the synchronic and highly abstracted competitive models which define neoclassical approaches (Doeringer and Piore 1971; Gordon 1972; Gordon, et al. 1982; Marsden 1986; Rubery 1992). Following Reich et al. (1973:359), segmentation is "the historical process whereby political-economic forces encourage the division of the labor market into separate submarkets, or segments, distinguished by different labor market characteristics and behavioral rules." While contemporary theories of LMS extend beyond political-economic drivers of the phenomenon, the important claim remains consistent: there does not exist one labor market, regulated by competitive pressures and through wage signals, but rather several different labor markets, constructed under historically and geographically specific circumstances, each with different rules of engagement and process. Quoting Peck (1996), "[t]he conception of the labor market as a complex, not to say contradictory institutional structure could hardly be further from the neoclassical image of a self-equilibrating labor market in which individual actors pursue rational self-interest within a framework of free competition" (46). Today, multiple causal threads which lead to segmentation are considered important, including the traditional emphasis on institutions and political-economic pressures, but also including such things as the family and the sphere of social reproduction, labor union activity, the presence of marginalized groups in the population, technological development, and much else.

As stated above, LMST embraces multiple causal threads in its understanding of the labor market. These different threads have been grouped by segmentation theorists into three main conceptual categories: supply-side factors, demand-side factors, and state-regulatory factors.

Early approaches were limited to mainly demand-side variables, emphasizing technological limitations and industrial development as key variables (Doeringer and Piore 1971). Later theorists, such as Reich et al. (1973), emphasized segmentation as a labor control strategy, and linked it to processes of monopolization within capitalism. By the late 80s and early 90s, without abandoning this earlier work, theorists were drawing on ideas of social reproduction and occupational socialization, as well as state influence. Peck (1996) emphasized the spatiality of segmentation processes as connected with processes of uneven development, highlighting local influences on labor market structures. Altogether, this literature does not form one body of theory, but rather "a cluster of models and theoretical approaches" (Rubery 1992:246). Following Peck (1996), investigation of labor market structures must be done empirically and in a manner appreciative of the historical and geographic contingencies involved. *A priori* theorization of labor market structures without this investigation of specific conditions is not possible.

A History of Migrant Farm Labor Segmentation in the United States

This section divides the history of migrant farm labor segmentation into two parts, before and after the passage of the Immigration Reform and Control Act (IRCA) in 1986. To some degree this is an arbitrary delineation, but the IRCA has several advantages as a turning point. IRCA created a new model of immigration policy, in response to a "crisis" of undocumented immigration—an outgrowth of consequences of the 1965 Hart-Celler Act, itself in some important ways influenced by the cultural representations of undocumented migration developed in the days of Operation Wetback (discussed below) and earlier. That said, the IRCA had significant, if unintended, consequences for the structure of migrant labor markets and ushered in a new, if unexpected, regime of migration policy, which would continue through to the present. In order to understand that regime, then, we need to look at the 40 years preceding the passage of IRCA, a period which includes both the Bracero Program and its fallout.

The Bracero Program was a two-decade foray into state-managed migrant labor contracting which had profound consequences for all subsequent migration of Mexicans to the United States. Beginning under labor shortages during WWII, the purpose of the initial Bracero Program was short-term in scope. Growers were desperate to find a cheap labor source for the harvest, and were reticent to raise wages, concerned that such wage increases would stick around after the war. At the same time, Mexico was experiencing significant economic disruption for the rural poor, increasingly displaced by modernization projects. The consequent high unemployment was a real problem for the corporatist Mexican state, and the safety valve of emigration was a tempting fix. In addition to a legal program, the Bracero period also saw the first large-scale flows of undocumented migrants from Mexico to the United States, many of whom were former or future Braceros. Growers often employed a mixed workforce, thus maximizing their flexibility, although undocumented laborers were cheaper and more easily controlled (Henderson 2011). When Bracero contracts were withheld, which happened for many reasons, growers now turned to undocumented labor to fill the gap.

The idea of undocumented migration was still very new in this period, illegal entry having only been established as a crime less than two decades prior (Ngai 2004). There were still no formal quotas on western hemisphere migration to the United States for the entire duration of the Bracero Program. That said, this period did see the first large-scale deportation spree in U.S. history, Operation Wetback (1953–1954), and the surrounding discourses of exclusion. The idea of a "wetback invasion" took hold in the population, and didn't leave, even after the "crisis" was declared resolved. In reality, many of the deportations which took place were symbolic, a process known as "drying out the wetbacks." Undocumented workers were taken to the border, instructed to place one foot on Mexican soil, and then welcomed back into the United States under Bracero contracts. For this and other reasons, Operation Wetback was one of the key developments in U.S. migration policy that shaped everything that came after (Mize and Swords 2011).

Employer control over Braceros was near absolute under the program. In the words of one Texas grower, "we used to buy our slaves, now we rent them from the government" (quoted in Henderson 2011:82). After a brief experiment with railroad work, Braceros were limited to agricultural work. Employer-pegged contracts meant that workers could not switch jobs, and could be dismissed by employers for any number of reasons, from rowdiness to suspected union organizing. Oftentimes, in camps predominated by undocumented workers, immigration raids were called in just before payday, and the majority of workers deported without wages. Living conditions were squalorous and pay was frequently withheld. In principle, Braceros were supposed to be able to appeal to the U.S. government for such abuses, but in reality this was beyond the abilities of most Braceros. Braceros were also attractive because of their families—still in Mexico and an anchor pulling migrants back home at the end of their contract.

Remittances grew in this period to become one of Mexico's chief sources of U.S. dollars. The separation of the labor process from the sphere of social reproduction (the home) allowed Braceros' families to survive on a fraction of the cost of living within the United States, lowering the effective subsistence wage (Burawoy 1976).

The formation of a population which people *expected* to be subordinated, including members of that population themselves, was a lasting legacy of the Bracero Program. In addition to fueling xenophobic discourses (such as the "wetback invasion" narrative), people came to associate Mexican migrants with this type of work and these types of conditions. The families of Braceros became connected to parts of the United States they themselves had never been, and came to expect the lifestyle associated with having a remitting migrant sending home money from abroad. As the children of Braceros came

of age, they faced the same expectations. Instead of working traditional family plots, this was the way that work passed from generation to generation—through transnational migrant-employer networks. This development was perhaps the most lasting consequence of the Bracero Program, as it would keep the migration pipelines running well after the Bracero Program itself ended.

In sum, the Bracero Program allowed growers to establish a nearly watertight segmented market, from which migrants could rarely escape. A displaced population with little English language experience or knowledge of U.S. socioeconomic norms was invited far from their homes, to work under tightly controlled conditions, with few rights, and no accountability for their employers.

Their subordination was legally instantiated, and if they went outside the law, they did not find better working conditions but worse ones. Moreover, this fed back into the realm of social reproduction, and the children of migrants were often siphoned into the same occupations.

In 1964, the Bracero Program finally ended. This took place in the context of civil rights legislation in the same year, and the abolition of the 1924 national quota model of migration regulation in 1965. The number of Bracero contracts had at this time been declining for many years, and the undocumented population (greatly reduced under Operation Wetback a decade before) was growing again. Ending the Bracero Program, it was hoped, would moderate some of the extra-legal flows (an idea that seems somewhat silly in retrospect). The 1965 Hart-Celler Act, which overhauled U.S. migration policy, also placed a quota on Mexican migration (something that had never been done before). The result was that legal pathways for Mexican migration to the U.S. dropped to a fraction of their size practically overnight. Naturally, this coincided with the latest round of modernization in the Mexican agricultural sector, known as the Green Revolution, which brought industrial farming south of the border. This model required high capital inputs, irrigation infrastructure, high pesticide and fertilizer use, proprietary seed genetics, mechanization, and a reduction in agricultural employment. This kind of development drove rural inequality through the roof, and the only available solution to lost livelihoods for many was migration, now largely the illegal kind (Barry 1995).

Migration in the post-Bracero period was defined by the twin dynamics of economic stress in Mexico and tightening hostility in the United States. Growers, of course, were anything but hostile, and fiercely argued their right to use migrant labor (Henderson 2011). By this time, Mexican labor had been integrated into agriculture for so long that there was no domestic labor force capable of filling the gap—that is, unless wages and working conditions were improved. Rather than do this, however, growers maintained their illicit labor networks and increased them to new proportions. The precipitous growth of the undocumented population naturally met with inflammatory rhetoric from politicians and pundits, and this unease had its impact on legislation eventually.

Ultimately, the IRCA emerged from these considerations. The 1965 rollover in immigration policy left an unstable dynamic in labor migration, and once economic hardship returned to the United States in the 1970s, old cultural discourses of exclusion boiled over. In 1979, the Carter administration oversaw the beginning of an investigation into undocumented migration that carried into the 1980s, and ended up recommending three provisions to dealing with the problem: employer sanctions for those hiring undocumented workers, amnesty and legal residency for undocumented residents of the United States, and a closing of "back door" (illicit) migration coupled with a slight opening of "front door" (legal) migration. These provisions formed the bedrock of the IRCA, signed into law by President Reagan in 1986 (Bean and Khuu 2020).

The unintended consequences of this law were momentous and set a new direction for U.S. immigration policy. The employer sanctions

provision, so long fought for by organized labor, ended up losing most of its teeth in the negotiation process, and consequences were easily avoided by the adoption of new employment practices like subcontracting. These subcontracting systems took advantage of socially connected migrants, who acted as labor brokers and crew bosses.

These crew bosses were typically migrants with a long migration history, some with legal status gained through IRCA. They were slightly more secure than the routine waves of young, poor, indebted, and socially isolated male migrants that made up the bulk of migration flows, and they had connections with employers as well as migrants (Horton 2016). All wages were paid on a group contract and dispersed by the crew bosses. This intermediate layer between migrants and companies insulated the latter and made the former even more expendable—competition within and between crews was harsh, and anyone caught slacking or taking breaks (even to use the bathroom or drink water) was castigated not only by their boss, but by their crewmates as well (Holmes 2013; Horton 2016).

IRCA's sanctions operated by mandating paperwork checks, but ones that were easily avoided. Crew bosses often worked as "identity" brokers as well as labor brokers, connecting undocumented migrants with fake or borrowed documents (Horton 2016). Working under somebody else's name or social security number was an easy way to get around document checks—and it accrued benefits to the person whose identity was being used, making loaning one's legal documents out a popular side hustle for migrants with legal status.

IRCA also attempted to "close the back door" of undocumented migration by increasing Border Patrol funding and beginning the militarization of the southern border. Halting undocumented migration was to some degree always a pipe dream (see Andreas 2000), but it was still effective political rhetoric, and engaged those cultural representation of the "migration threat" that had fueled IRCA in the first place. This made life more and more difficult for migrants, heightening their risk of deportation. It also began to make crossing the border more expensive, which in the short term had relatively few impacts, but within a decade had driven up the cost of border smuggling significantly (Massey et al. 2003). By adding to the debt burden of undocumented migrants, this made them intensely vulnerable to exploitation (Horton 2016). Often times it was crew bosses or other social connections who provided loans for migrants to pay smugglers, and migrants entered the country indebted to their employers.

Heightened danger and costs to border crossing also discouraged circular migration, favoring permanent residency for migrants, an ironic consequence (Massey et al. 2003). This and other consequences of the IRCA were exacerbated by subsequent legislation in the 1990s that dramatically heightened border militarization (through such programs as Operation Gatekeeper, among others), further excluded migrants from public services (see for example the 1996 Illegal Immigration Reform and Immigrant Responsibility Act), and added criminal status to many activities when they were performed by undocumented migrants. This is why it is useful to speak of the IRCA as beginning a new "regime" of migration policy—many of the tendencies first legally codified in IRCA were intensified under subsequent legislation, but the pattern was the same. As demand for migrant farm labor remained relatively constant, state restrictions grew, making the supply more and more vulnerable, precarious, and exploitable.

Concurrent to these changes in migration policy were yet another round of economic reforms in Mexico, these of a distinctly neoliberal nature. The integration of the U.S. and Mexican economies that began with the 1982 debt crisis and culminated in the North American Free Trade Agreement left millions, especially in the countryside, with no ability to support themselves aside from migration (Barry 1995). The new Mexican economy was structured in what Delgado-Wise and co-authors have called the "cheap-labor export-led model," with economic enclave (*maquiladora)*

manufacturing and migration as the two primary forms of labor export (Delgado-Wise and Covarrubias 2007; Delgado-Wise and Cypher 2007). Over the course of the 1990s, the atmosphere of hostility in the U.S. grew hotter and hotter, with such movements as the "Save Our State" initiative in California propelling themselves through xenophobic rhetoric. The adoption of "Prevention Though Deterrence" policies lead to the deaths of countless migrants by blockading urban ports of entry and guiding migrants into the most dangerous parts of the border. Violence by indirect means was the toolkit of this policy set, using landscapes as weapons against migrants (Slack et al. 2016). The United States federal government in this period, following Jason de Leon (2015:84), "knowingly created a border security infrastructure that puts people in harm's way." After 9/11, this militarization took on the mantle of anti-terrorism, with undocumented migrants increasingly being cast as dangers to society, criminals, and potential terrorists. The creation of the Department of Homeland Security in 2002, which took responsibility for border security from the Immigration and Naturalization Service (INS), lead to a skyrocketing in budget and the development of what has been called the "Immigration Industrial Complex" (Golash-Boza 2009a, 2009b; Trujillo-Pagan 2014) This new phase in the disciplining of migrants extended the same model of segmentation to new heights, and turned it into a billion-dollar industry.

Discussion

In examining evidence of migrant farm labor segmentation in the United States, several important variables become visible. Each of these variables evolved throughout the period analyzed, and had a consequent effect on the changing structure of market segmentation in the period. By tracing their historical trajectories, I hope to paint a dynamic picture of migrant farm labor's segmentation since WWII, which can then be analyzed using the violence continuum.

Demand-side Factors

Demand factors have been strong and long-standing. Unfree labor had long played an important role in the agricultural economy of the American South, and though the model of guaranteeing this labor had changed in different periods, the need has not gone away (Henderson 2011). As David Bacon (2008:90) has it, "U.S. Agriculture is addicted to a vast reservoir of cheap labor… African Americans made up the rural labor force of the south, first as slaves, then as sharecroppers and tenant farmers, and finally as wage laborers." In the southwestern United States, industrial agriculture has, especially since the Bracero Program, relied on immigrant labor from south of the border. Industrial agriculture requires high volumes of short-term laborers in order to make a profit, and high control over that labor is key to success. Stalling during the harvest season can cost thousands to millions of dollars in lost crops, and thus labor agitation represents a serious threat. For this reason, growers always wanted more laborers than necessary, preferably ones that could be easily divided and did not have access to political representation.

Employment practices also play an important role in market structures, through such means as guestworker programs, employee recruitment, and contracting systems. Guestworker programs are one of the most interesting forms of labor market segmentation, because they are performed with direct state and private cooperation, and because they institutionalize otherwise informal systems of labor regulation. The transition from formal guestworker programs to informal and undocumented migration is of interest as well, and discussed below.

Supply-side Factors

Before migrants ever cross the border, legally or otherwise, they have already gone through many experiences which pushed them in this direction. Mexico's tumultuous economic history during the twentieth century led to the economic displacement of millions, uprooted

first by Mexico's dreams of modernization, then by the failure of that dream, and finally by the new solution of economic integration embraced in the 1980s. This cross-generational pattern of migration left a strong legacy in rural Mexico, where migration became an expectation for many.

Many former farmers, forced to abandon their farms by agribusiness competition, chose farm labor as a way to maintain their attachment to the land. The conjunction of this with a migrant habitus (Wacquant 2016; Holmes 2013), passed down from parents to children, pushed generation after generation into the same kinds of jobs. For those who moved permanently to the United States, this was sometimes escapable— barriers like a lack of education, English language skills, and familiarity with socioeconomic conventions had big impacts on the foreign-born, but little for those who were born or grew up in the United States. This dynamic implies that a rural migrant habitus is a somewhat important variable in the maintenance of labor supply.

State Policy

State policy, by regulating means of formal entry, has a huge influence on the prospects for all migrants. A whole host of legal structures mediate between laborers and employers, shaping the market. Guestworker programs are one such structure. A lack of guestworker programs, coupled with restrictive immigration policy, form another. Constructions of citizenship (and all the rights that go with it, such as unemployment insurance, education, and access to healthcare) are not written in stone, and they have evolved significantly over the course of the last century. The flip side of noncitizenship is deportability, even for those with legal status. This deportability has long been an asset of employers of undocumented labor, allowing for harsh discipline of their workforce alongside endemic abuse and outright wage theft. While this doesn't mean that the state can truly prevent entry, it can greatly shape the experience of migrants once they are here, legal or otherwise. The state can also exert a degree of influence over growers, though control would be a generous term. For example, growers fought tooth and nail against the inclusion of the employer sanctions provision in the 1986 IRCA, which penalized employers who used undocumented labor (Choe 2001). Nevertheless, the provision was included, albeit in a porous way that allowed for easy avoidance. Agribusiness adapted to this change in legal landscape not by hiring fewer undocumented workers, but instead it prompted a shift in employment practices to avoid accountability under the law. So, while the state may attempt to influence different actors in the market, ultimately this influence is almost always circumnavigable and produces unintended outcomes.

It is also important not to forget the existence of cultural and representational practices that shape distinctions between groups, create social norms that regulate employment expectations, and limit what is and is not possible for different groups of people. The concept of habitus was briefly mentioned above, and it also falls into this category. Racial ideologies have played a profound role in the history of Mexican migration to the United States, and the mapping of ethnic hierarchies, citizenship hierarchies, and workplace hierarchies onto one another is of profound importance to segmentation (Bourgois 1988; Holmes 2013). Cultural practices have a recursive element, in that they constitute the social fields that influence state policy, industrial structures, labor supply formation, etc. Given the relationship between anti-immigrant xenophobia and restrictive immigration practices, and between the latter and segmentation in migrant labor markets, cultural and representational practices deserve serious consideration in this analysis.

Theoretical Synthesis: Violence and Segmentation

Having reviewed the historical details of how segmentation has worked in the instance of migrant farm labor, we can now look to understanding the role of violence in this pro-

cess. There is good reason to say that violence, of various sorts, is what makes migrant farm labor's segmentation possible. Migrants navigate a landscape of violent practices that define their choices, and guide them into particular forms of employment that are in turn structured by violence.

The first key form of violence to consider is the indirect violence of uneven development that undermined rural livelihoods in each of the periods discussed, limiting opportunities for survival in the traditional means. Rural development, through such projects as the Green Revolution, relies on the disruption of extant socio-environmental arrangements to progress. The transfer of rural populations from independent subsistence communities to wage-labor markets by economic force is the basic driver of out-migration in many cases, producing the proto-segmented labor pools necessary for segmentation to occur. This type of violence is structural in Galtung's (1969, 1975) sense as well as the one outlined in this article.

The violence of uneven development drove migrants into the Bracero Program, seeking new sources of subsistence in a high-unemployment society. However, those programs too were laced with violent practices such as abuse, wage-withholding, racism, and requirements to work in dangerous conditions and to live in unhealthy ones. These were forms of direct violence that were perceived as justified given the racial hierarchies misrecognized by employers and laborers alike as natural-symbolic violence. This symbolic violence became embedded in a cross-generational habitus that understood and expected abuse as normal, and lead new generations into the same kinds of arrangements. While racism and abuse within farm labor was endemic, beyond farm work migrant labor was even more marginalized and not accepted for a very long time. Mexicans were associated with a particular section of the labor hierarchy, as well as a particular section of the citizenship hierarchy, and deviating from this position heightened their abuse. During the Bracero period, it was outright illegal for Mexican laborers to work outside agriculture in many instances. The growth of undocumented migration under the Bracero period and in following years redefined these hierarchies in new terms, and with new cultural representations. As new rounds of uneven development in Mexico occurred under neoliberalism, volumes of migration ballooned, and these cultural representations gained more and more power. Today, what Hagan, Levi, and Dinovitzer (2008) have called the "Crime-Immigration Nexus" continues to drive this process.

Anti-immigrant rhetoric and deportation practices serve as a helpful example. Under the Bracero Program, deportation was used by employers strategically, as a means of disciplining workers and keeping them vulnerable. In order to accomplish this, a discourse of the dangers of undocumented migration had to be constructed, and undocumented migrants associated with danger and criminality. A consequence of this was genuine concern over undocumented migration in the population, which boiled over once in the 50s, prompting Operation Wetback; again in 70s, prompting the IRCA; again in the 1990s, prompting Operation Gatekeeper and its ilk; and yet again after 9/11. In each instance, acts of direct violence were performed by specific actors out of convenience and a perceived opportunity at extra profits, but in each instance violent practices got away from those employing them and took on a life of their own. Over time, structures emerged which sustain these citizenship-workplace hierarchies and practices of enforced precarity, such as deportation. The "Immigration Industrial Complex" is a terrifying example of how this has run amok in immigration policy, with billions of dollars being spent each year with little show for it except thousands dead along the border, and thousands more in detention facilities (Golash-Boza 2009a, 2009b; Trujillo-Pagan 2014). The criminalization of migration has other violent consequences on migrants' lives, beyond the immediate threat of deportation. Horton (2016) has documented the effects of the chronic stress of undocumented

living in conjunction with farmwork. Since the mid-1990s, the systematic exclusion of migrants from basic social services, such as social security, education, and healthcare, constitutes an egregious violation of human rights and a system of indirect violence.

The reliance of these kinds of labor markets on proto-segmented labor pools is also of interest. While obviously industrial agriculture did not bring about economic disruption in Mexico so as to exploit the peasants displaced by this process, it is significant that without that displacement, another source of it would have been necessary. This implies that, while segmentation clearly operates at different scales from such long-run processes as uneven national development, it relies on these processes to work. In other words, structures of segmented labor markets develop under conditions of violence, and thus they require ongoing violence as time goes on to be sustained.

Conclusion

What use is this knowledge? If it is true that the profitability of industrial agriculture is linked to segmented markets, which are in turn linked to ongoing violent practices, we cannot truly hope to eliminate violent practices without dismantling those structures within our societies that rely on them—but this is not enough. We are dependent upon social structures, such as unjust labor markets, for our very survival, and escaping our dependence on violent practices is a positive project as well as a negating one. New structures must be erected which both meet the needs of people and do not rely on violence for their ongoing survival. For those concerned specifically with immigrant livelihoods and rights, developing an alternative agricultural model would go a long way to dealing with violent practices that marginalize migrants from our society through such symbolic violences as racism. An alternative model of agriculture that does not require violence to sustain itself is perhaps very far away from our current reality, but it does exist. One of the key barriers to change within agriculture is the lack of political voice for those who are most intimately connected with the injustices of that system—namely, migrants. Giving political voice and power to migrant farm labors would allow for more equitable forms of agricultural production to emerge. This is the first, but not the only step in ridding our production systems of violence.

There is a temptation, demonstrated well by Holmes, to identify the violence experienced by migrants under this system as without an agent. This problem is the intellectual child of Farmer's structural violence concept, which sought to show how those individuals were suffering from their inequalities as much as their infections. While Farmer was undoubtedly right in a certain sense (it is equally inaccurate to blame victims of poverty for the condition as it is to blame abstract structure), displacing blame (and therefore, in a sense, agency) onto structures is self-defeating. Following Wacquant, what good may come of adopting "a concept that somehow diffuses responsibility in order to expand its ambit" (Wacquant 2004:322)?

Holmes and Farmer both propose an approach to addressing the issues they analyze, what they call pragmatic solidarity. By joining with the everyday struggles of the oppressed, it is argued, we can begin to denaturalize their social suffering. Holmes goes a step further in his admiration for a friend whose public advocacy for migrants resulted in her loss of employment, and whose solidarity "went beyond the pragmatic to challenge power structures and representations that are harmful to migrant farmworkers" (Holmes 2013:192). What is powerful about this approach is that it (correctly) observes that acts of human agency in opposition to oppressive structures are the only thing capable of changing these structures. Conversely, what prolongs the existence of unjust structures is acts of human agency which reify and support them. Pragmatic solidarity must involve recognizing the ways in which our lives and habitus are dependent,

in a sense, on the suffering of others—how the fresh fruits we eat are predicated on the broken bodies of migrants. Illuminating the history of this bargain, and denaturalizing the oppressive structures which sustain it, must also examine where, in every instance, acts of violence which continue to structure our societies are located—and they are not located in the abstract realm of social structures, as Holmes and Farmer maintain, but in the concrete realm of human interaction and human choice.

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ABOUT THE AUTHOR

Lark Cummings recently graduated from Eastern Washington University with two bachelor's degrees in Anthropology and Geography. His interests include agriculture, immigration, and the anthropology of labor, as well as urban and economic geography. While taking the 2022–2023 school year off to pursue other projects, he plans to pursue a graduate degree in anthropology and continue studying immigrant labor markets and the role of violence therein.

This article was originally submitted to the 2022 Northwest Anthropological Conference Student Paper Competition and was awarded first place in the undergraduate category.

Inchelium Cultural Research Center

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Abstract *An Indigenous cultural research center is readying to open in the town of Inchelium, Washington, located on the banks of the Columbia River at the eastern edge of the Colville Reservation. In 2013, tribal member Kaye Perkins Hale coordinated with Nancy Michel to store, oversee, protect, and share Kaye's decades-long research and archive—including books, files, notebooks, genealogies, and oral and written histories about her people and tribe. Despite setbacks and hardships spurred by the global pandemic and regional wildfires, a board of directors was assembled to fulfill the requirements necessary to gain status as a non-profit research center. The Inchelium Cultural Research Center (ICRC) is a community-based library located on a federally recognized reservation. ICRC is not an enterprise, subsidiary, or representative of the tribe, rather serves the tribal community of Inchelium as an independent, state incorporated, tribal member-led 501(c)(3). ICRC is preparing to open its doors to share and connect historical resources and cultural knowledge with the Inchelium community and the general public.*

Keywords Inchelium Cultural Research Center; Inchelium, Washington.

Undeterred by a series of momentous roadblocks, an Indigenous cultural research center is readying to open in the town of Inchelium located on the banks of the Columbia River at the eastern edge of the Colville Reservation in Washington (Attachments 1–3).

WAY'—a Salish "hello" from the Inchelium Cultural Research Center (ICRC) Board of Directors: *Everything that has ever happened to us in the past brings us here—informs our purpose, who we are, and greets you today*.

Travel back with us to 2013 when tribal member Kaye Perkins Hale asked her friend, Nancy Michel, to store, oversee, protect, and share Kaye's decades-long research and archives. The boxloads of books, files, notebooks, genealogies, oral and written histories about her people and her tribe were transported into Nancy's converted garage. A support team organized the collection and searched for a suitable building in Inchelium to permanently house the library.

The stored collection, perched atop a hill overlooking the town, was threatened during the catastrophic Labor Day fires of 2020. The fires swept eastern Washington. Fueled by high winds and intense summer heat, the rain-starved landscape burst into flames which began to seed new fires all over eastern Washington. Two towns south of Spokane, Malden and Pine City, were leveled within hours. Separate fires started in Inchelium and moved up the Hall Creek draw toward Nancy's home. (Nearby neighbors' rural homes were destroyed.) The flames reached within ten feet of the foundation where the vulnerable archives were kept. The tribal fire department arrived in time.

Pitched into both a fire and a pandemic, the dreamers of a cultural research center turned

these roadblocks into steppingstones. The board of directors, a group geographically widespread from Revelstoke, B.C., to Olympia, Winthrop, Spokane, and Inchelium, WA, was compelled to move forward. Virtual travel on Zoom enabled monthly planning meetings.

Step by step the board consistently fulfilled all the many requirements to gain status as a non-profit research center whose mission is to "create an accessible, welcoming space for research, sharing and dialogue; to provide community members an opportunity to store and contribute to the shared cultural record of our homeland; and to foster a meaningful connection between the community and the history of Indigenous groups of and around Inchelium" (Attachment 4).

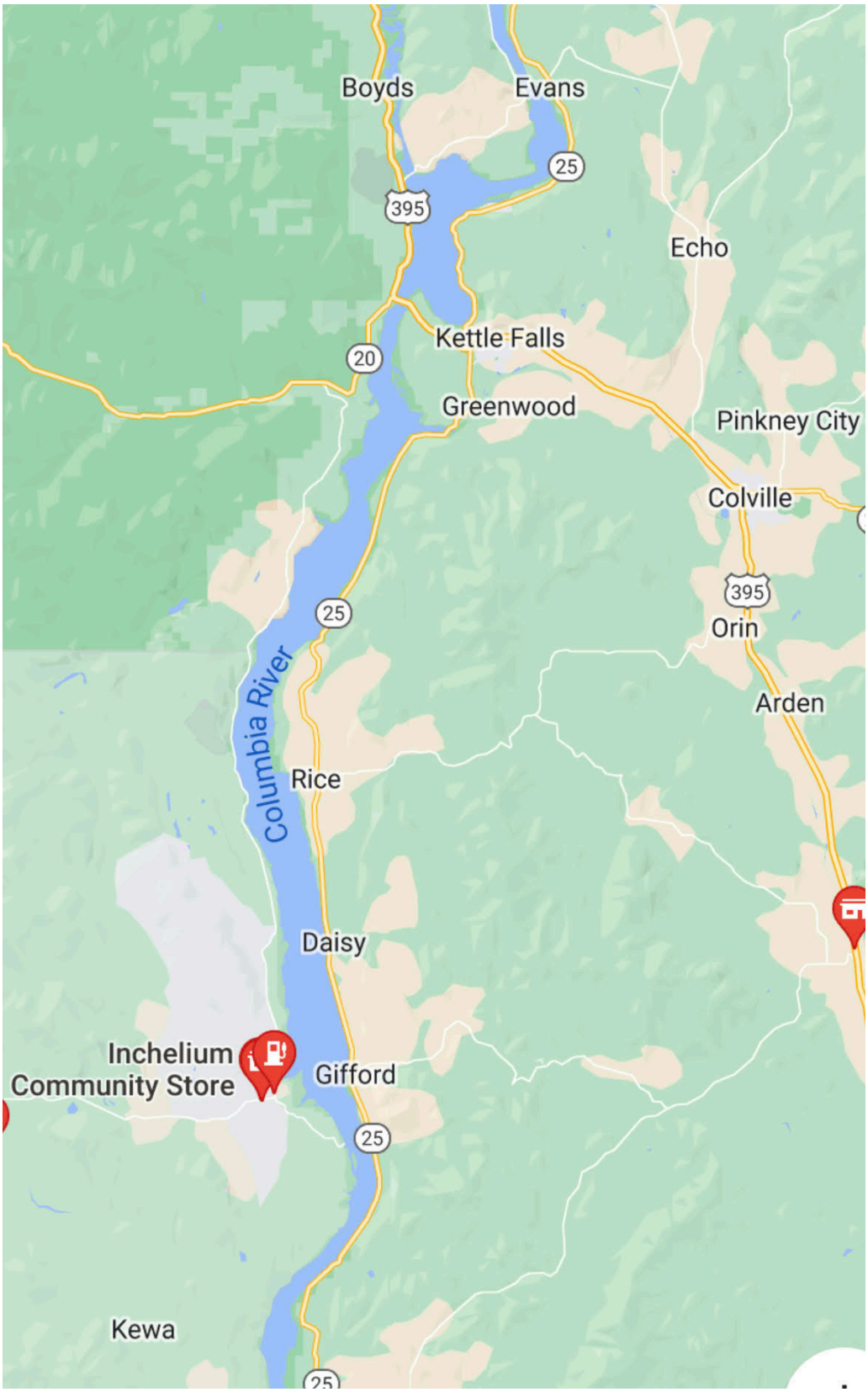
The center is a community-based library located on a federally recognized reservation. Multiple members of the board are enrolled or descendants of the surrounding Confederated Tribes of the Colville Reservation. ICRC is not an enterprise, subsidiary, or representative of the tribe, rather serves the tribal community of Inchelium as an independent, state incorporated, tribal member-led 501(c)(3)(Attachment 5).

To date there is a lot of activity to report: the archive collection continues to grow. Encouraged by the Assistant Digital Archivist, Washington State Archives, Larry Cebula, and fueled by the urgency of preservation, we have begun digitizing the collection that is not yet in electronic format. Cebula, Eastern Washington University's history professor, also cleared the way for one of his master's students to do an internship with ICRC. The graphics for our logo and brochure were designed by a Sinixt descendent (Attachment 6). A 5-year lease has been negotiated with the Colville Confederated Tribes (CCT) for the tenancy of an in-town building; collaboration with the public schools and the Language House has been initiated; internships with upper-grade students are being offered. A community book event is scheduled for late fall 2022 to celebrate our open house, and the publication of Eileen D. Pearkes' history of the Sinixt (Arrow Lakes) tribe, *The Geography of Memory: Reclaiming the Cultural, Natural and Spiritual History of the Snayackstx (Sinixt) First People* (2022, Rocky Mountain Books), which is an expanded edition of Pearkes' 2002 book, *The Geography of Memory: Recovering Stories of a Landscape's First People* (Kutenai House Press). A generous grant from The Association of Tribal Archives, Libraries, and Museums was awarded to ICRC this spring. The Interim Executive Director has been hired. A website is in development—although not live yet, it has a valid domain: incheliumcrc.org. The ICRC is on Facebook under its full name. Organization memberships are available. The brochure is being brought up to date. Donations, including memorials, are providing additional support for the cultural research center's implementation and outreach.

The ICRC Board is in the driver's seat—the destination is in view.

limlmtx (thank you) *JONA* editors for sharing the good news about ICRC!

Photograph of Kaye Perkins Hale (1935–2022) who supplied the extensive research and foundational archives (and inspiration) for ICRC.



Attachment 1. Map of the Inchelium location along the Upper Columbia River (south of Kettle Falls).

Attachment 2. Drone photograph of the town of Inchelium taken by Derrick LaMere (Sinixt), Indigenous filmaker and owner of Warypony Pictures.

Attachment 3. Newly leased Inchelium Cultural Research Center building, which is connected to the tribal trading post store and located across the street from the Inchelium Community Health Center at 38 Short Cut Road, Inchelium, WA 99138. Plans include a sign and artwork on the outside of the building.

COMING SOON!

Inchelium Cultural Research Center (ICRC)

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ICRC is a library and archive serving the Inchelium area. We have made great strides in planning to protect and preserve documents and artifacts that are evidence of our Upper Columbia River culture. These will be made available for viewing in-house to community members and researchers. Presently, we are searching for a home in Inchelium to house our growing collection of print and non-print items. These attest that we have always existed on our ancestral landscape – and remain.

Keep Us In Mind for historical items that need a home such as:

- Historical photos, family photos and oral history recordings and transcripts
- Family history research, genealogy documents
- Historical reference books and documents such as maps, government correspondence, and family records
- Artifacts relevant to areas of our ancestors including but not limited to regalia, beadwork, baskets and Tribal art

ICRC's Mission:

To create an accessible welcoming space for cultural research, sharing and dialogue

To provide community members with an opportunity to store and contribute to the shared cultural record of our homeland; and

To foster a meaningful connection between our community and the history of Indigenous groups of and around Inchelium

ICRC has many tasks ahead, but does not want to miss opportunities to protect fragile and valuable items for future generations. For more information contact Nancy Michel, President, (H) 509-722-5135 (C) 509-690-4773 nancymichel@hotmail.com.

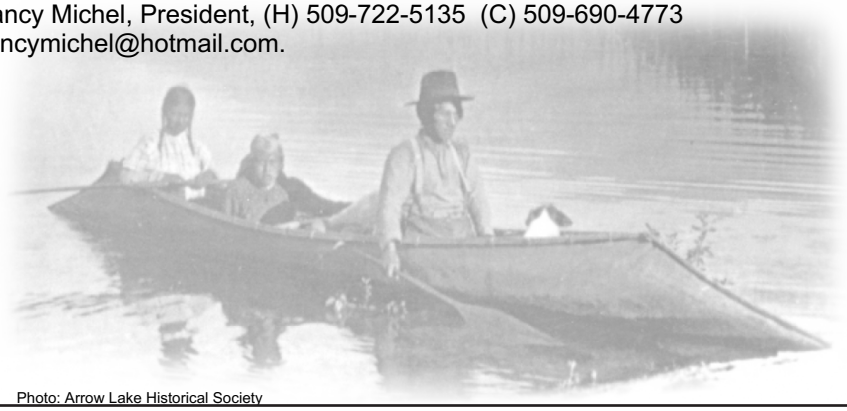

Photo: Arrow Lake Historical Society

Attachment 4. Announcement of Inchelium Cultural Research Center.

Inchelium Cultural Research Center

Inchelium Cultural Research Center Receives $48,235 Award from The Association of Tribal Archives, Libraries, and Museums

Inchelium, WA – The Inchelium Cultural Research Center [ICRC] received a $48,235 grant through the Association of Tribal Archives, Libraries, and Museums (ATALM) American Rescue Plan: Humanities Grants for Native Institutions. This grant opportunity is intended to help Native Cultural Institutions to recover from the COVID-19 pandemic and provide humanities programming to their communities. Funds were provided by the National Endowment for the Humanities (NEH) as part of the American Rescue Plan Act of 2021 passed by the U.S. Congress.

Funds support the **Sharing and Connecting Historical Resources and Cultural Knowledge with the Inchelium Community** project that will increase access and outreach to its permanent collections through exhibitions and programming – online, in-person, and outdoors. The Research Center will work with the Inchelium Language and Culture Association, Indigenous knowledge keepers, schools, and local youth groups to share and connect historical resources and cultural knowledge with the Inchelium community and the general public.

ABOUT THE ORGANIZATION

***The Inchelium Cultural Research Center** is a community-based library located on a federally recognized reservation. Multiple members of the board are enrolled or descendants of the surrounding Confederated Tribes of the Colville Reservation. The ICRC is not an enterprise, subsidiary, or representative of the tribe, rather, serves the tribal community of Inchelium, Washington, as an independent, state incorporated, tribal-member led 501(c)(3).

ATALM
Association of Tribal Archives, Libraries, & Museums

NATIONAL ENDOWMENT FOR THE HUMANITIES

Attachment 5. Press release: Inchelium Cultural Research Center receives grant.

ICRC's Mission:

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To provide community members with an opportunity to store and contribute to the shared cultural record of our homeland; and

To foster a meaningful connection between our community and the history of Indigenous groups of and around Inchelium.

CANADA

USA

Inchelium Cultural Research Center
P. O. Box 206, Inchelium, WA 99138

Inchelium Cultural Research Center

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Photo: Arrow Lake Historical Society

Attachment 6. First edition of the Inchelium Cultural Research Center brochure designed by Marsha McInnis (Sinixt).

ICRC is a library and archive serving the Indigenous community of the Inchelium area, as well as other non-Indian researchers throughout Canada and the United States. We have made great strides in planning to protect and preserve documents and artifacts that are evidence of our Upper Columbia River culture. These will be made available for viewing in-house to community members and researchers. Presently, we are searching for a home in Inchelium to house our growing collection of print and non-print items. These attest that we have always existed on our ancestral landscape – and remain.

Keep us in mind for historical items that need a home such as:

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- Artifacts relevant to areas of our ancestors including but not limited to regalia, beadwork, baskets and Tribal art

ICRC ANNUAL MEMBERSHIP APPLICATION

Name _____

Address _____

_____

City _____

State/Province _____ Zip _____

Phone _____

E-mail _____

☐ New Membership $20
☐ Renewal Membership $20

☐ $ _____ In Memory Of:

_____

☐ $ _____ In Honor Of:

_____

Please send application with your check payable to:

ICRC
P.O. Box 206
Inchelium, Wa., 99138

The Inchelium Cultural Research Center (ICRC) is a 501(c)(3) tax exempt organization. No material goods or services have been provided in exchange for your membership and/or contribution. Tax I.D.#38-4168217

Attachment 6. (cont.) First edition of the Inchelium Cultural Research Center brochure designed by Marsha McInnis (Sinixt).

Northwest Anthropological Conference Proceedings 2022

Northwest Anthropological Conference Proceedings 2022

Journal of Northwest Anthropology
Special Publication #6

The *Journal of Northwest Anthropology* (*JONA*) is pleased to present the *2022 Northwest Anthropological Conference Proceedings*. This is the second year that *JONA* has teamed with the Northwest Anthropological Association to publish the conference papers and posters.

Following the approach we took for the inaugural year, we have included all of the papers and posters submitted to us for inclusion; all have been published as submitted, with minor editing and style changes as needed.

We firmly believe that the NWAC Proceedings has the potential to play a major role in disseminating the contributions of anthropological research to peoples of the Northwest.

By publishing the NWAC Proceedings, we have an opportunity to build a Northwest anthropology community that includes this diverse group of people.

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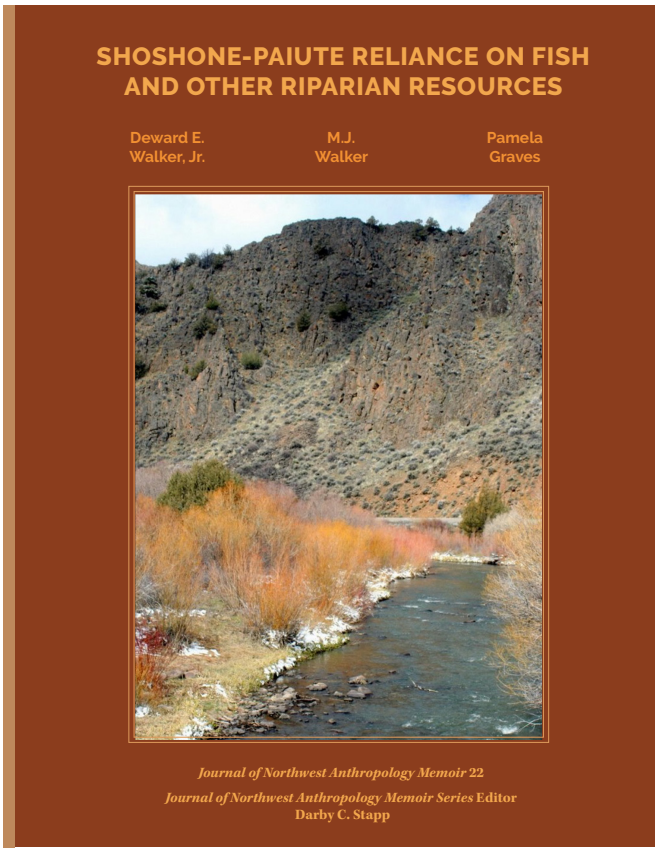
NORTHWEST ANTHROPOLOGY

Northwest Anthropological Association

Shoshone-Paiute Reliance on Fish and Other Riparian Resources

Deward E. Walker, Jr. M.J. Walker Pamela Graves

JONA Memoir 22



The Shoshone-Paiute of the Duck Valley Indian Reservation (DVIR) are traditional fishing Tribes of the northern Great Basin at the virtual upper end of the salmon migration route through Washington, Oregon, Idaho, and into Nevada. The Tribes have been increasingly deprived of salmon by the sequence of dams constructed during the nineteenth and twentieth centuries, resulting in significant cultural, dietary, and even economic losses. The Shoshone-Paiute have, in fact, been among those Tribes most affected by the reduction in fish passage due to dams, irrigation, industrialization, and other factors such that they do not have local access to salmon at this time. Because of these developments, the Shoshone-Paiute have been forced to increasingly expand their geographic range to the far reaches of their homeland and beyond in search of still existing salmon runs.

Phase I of this research reviews the published literature concerning Shoshone-Paiute fishing and documents the processes by which the Shoshone-Paiute have systematically been deprived of their fishing resource through the developments, their loss of ready accessibility to this vital resource on the DVIR, the continuing importance of fish to the Shoshone-Paiute people, and the Tribes' claims of fishing rights to realize changes in the dams' operation or other mitigation measures. It is clear that the right of the Shoshone-Paiute to continue fishing remains in effect despite the absence of fish runs proceeding from the Pacific to their homeland. Phase II examines three river systems in the Great Basin: the Owyhee, the Bruneau, and the Jarbidge and attempts to suggest potential traditional fishing sites and areas based on several criteria.

AVAILABLE AT NORTHWESTANTHROPOLOGY.COM/STOREFRONT OR AMAZON.COM

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