



KIVA

Journal of Southwestern Anthropology and History

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/ykiv20>

Na'nilkad bee na'niltin – Learning from Herding: An Ethnoarchaeological Study of Historic Pastoralism on the Navajo Nation

Wade Campbell

To cite this article: Wade Campbell (2021) *Na'nilkad bee na'niltin* – Learning from Herding: An Ethnoarchaeological Study of Historic Pastoralism on the Navajo Nation, KIVA, 87:3, 295-315, DOI: [10.1080/00231940.2021.1893456](https://doi.org/10.1080/00231940.2021.1893456)

To link to this article: <https://doi.org/10.1080/00231940.2021.1893456>



Published online: 03 Mar 2021.



Submit your article to this journal [↗](#)



Article views: 302



View related articles [↗](#)



View Crossmark data [↗](#)

***Na'nilkad bee na'niltin* – Learning from Herding: An Ethnoarchaeological Study of Historic Pastoralism on the Navajo Nation**

WADE CAMPBELL 

Department of Anthropology, Harvard University
campbell01@g.harvard.edu

The scale and intensity of Navajo (Diné) sheepherding in the American Southwest has varied substantially over the centuries. In the 150 years since the signing of the Navajo Treaty of 1868, a variety of internal and external pressures have impacted the traditional pastoral practices of Diné communities. Phase 1 of the Early Navajo Pastoral Landscape Project focused on ethnoarchaeological investigations of the history, settlement patterns, and pastoral land usage of one Navajo family in Black Mesa Chapter, Arizona, Navajo Nation. This article presents the project's findings and discusses their implications within the context of local and regional events, as well as methodological concerns relevant to the identification of sheepherding sites across the Navajo Nation and beyond.

La escala e intensidad del pastoreo Navajo (Diné) en el suroeste de los Estados Unidos ha variado sustancialmente a lo largo de los siglos. En los 150 años transcurridos desde la firma del Tratado Navajo en 1868, una variedad de presiones internas y externas han impactado las prácticas pastoriles tradicionales de las comunidades Diné. La Fase 1 del Proyecto "Paisaje Pastoral del Navajo Temprano" se centró en las investigaciones etnoarqueológicas de la historia, los patrones de asentamiento y el uso de la tierra pastoril de una familia Navajo en el Black Mesa Chapter, Arizona, en la Nación Navajo. Este artículo presenta los hallazgos del proyecto además de analizar sus implicaciones en el contexto de eventos locales y regionales, así como explora relevantes preocupaciones metodológicas para la identificación de sitios de pastoreo en la Nación Navajo y más allá.

KEYWORDS Diné, Navajo, Black Mesa, sheepherding, pastoralism, ethnoarchaeology, historical archaeology, reservation period

In 1973, the anthropologist Gary Witherspoon wrote an article describing the *Diné* (or Navajo) as a “sheep-minded” people for whom said animals provided many forms of security – economic, social, even psychological. Five decades later, sheep and “sheep-mindedness” remain celebrated aspects of contemporary Diné culture, beacons of “traditional life” amid the hubbub of the twenty-first century Navajo Nation. It is undeniable, however, that the context, practice, and intensity of modern Navajo sheepherding have changed dramatically since Witherspoon’s article. Indeed, the relationship between Diné people and their livestock has continually adapted and grown since Navajos first acquired sheep and goats in the seventeenth century.

Better understanding this unique developmental trajectory and Navajo pastoralism’s impacts on the history and culture of the American Southwest stands as the principal goal of the Early Navajo Pastoral Landscape Project (ENPLP). In this, the ENPLP primarily focuses on analyzing the “pastoral landscape” created by Diné communities’ incorporation of herding practices into preexisting social and economic systems circa A.D. 1700. This framework emphasizes the identification of non-zooarchaeological markers like areas of dung-rich soil and herding infrastructure (e.g. corrals, driveways, or watering features) to discuss pastoralist land use more broadly (Chang and Koster 1986; Honeychurch and Makarewicz 2016). Applying a pastoral landscape framework, however, demands that researchers possess a level of familiarity with the practice of herding and the different types of archaeological markers it leaves behind.

As it stands, researchers currently lack data suitable for discussing early Navajo pastoralism through a pastoral landscape framework. However, the continued herding of heritage breed Navajo-Churro sheep by Diné ranchers across the Navajo Nation offers a unique ethnohistoric lens through which to begin this process. Inspired by the work of pastoral researchers elsewhere (e.g. Chang 1992; Hammer 2014; Wright 2016), the ENPLP sought to better understand the intricacies of nineteenth through twenty-first century Diné pastoral land use strategies to determine if their archaeological manifestations could serve as interpretive analogs suitable for examining similar practices in the seventeenth and eighteenth centuries. Following this logic, I began work in 2018 with an immersive six-month-long period of participant observation and archaeological reconnaissance with a ranching family in *Kits’iilí*, or Black Mesa Chapter, Navajo Nation (Figure 1).

The primary goal of the ENPLP Phase 1 research was to gain an ethnoarchaeological understanding of the daily actions and decisions of sheepherding, as well as to document the history, settlement patterns, and pastoral land usage of one contemporary Navajo herding family. This article shares the results of the ethnoarchaeological survey and contextualizes them through a discussion of the local history and herding developments in northeastern Black Mesa, as well as observations regarding the archaeological signatures of herding sites that are relevant for future pastoral studies across the Navajo Nation and beyond.

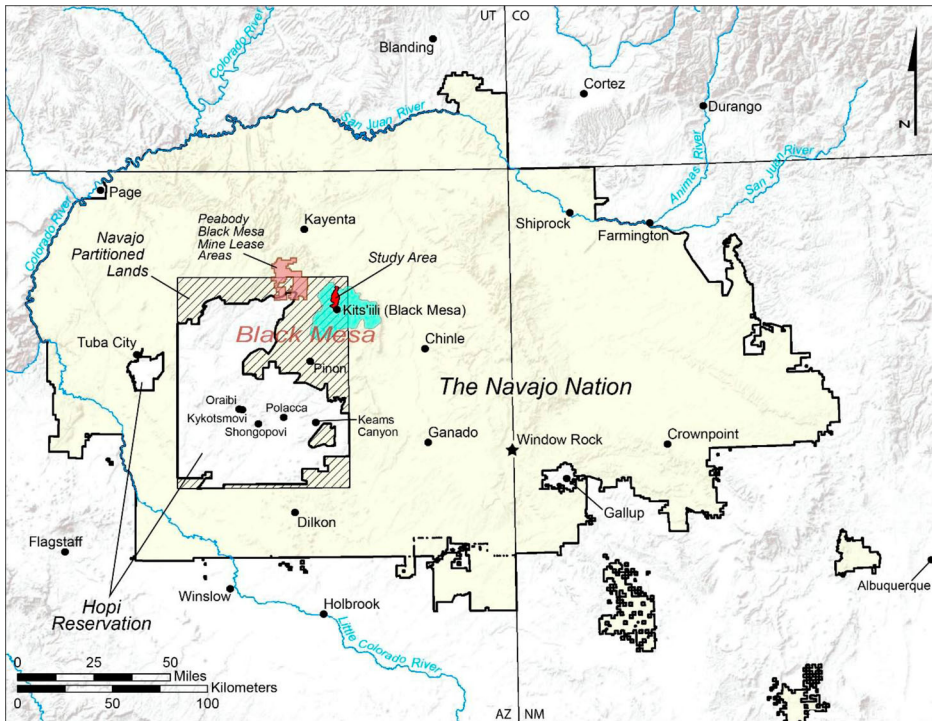


FIGURE 1. Map showing the ENPLP Phase 1 study area in relation to the greater Navajo Nation and the Four Corners region of the American Southwest.

Background

Kits'iilí and Northeastern Black Mesa

The community of Kits'iilí is located in the central portion of the Navajo Nation atop *Dzilíjín*, or Black Mesa, a large formation covering more than 5,400 square miles (13,985 km²) in northeastern Arizona. Kits'iilí is the seat of Kits'iilli/Black Mesa Chapter, one of the Navajo Nation's 110 local governmental units, and is located within BIA Grazing District 4. The area is regarded as very remote and rural, with ranching forming the traditional economic activity for most of the chapter's 200 residents (Yurth 2012).

Black Mesa Chapter occupies the northeastern corner of Black Mesa and is characterized by rugged topography flanking the upper reaches of the Oraibi Wash drainage system. The elevation varies from approximately 2315 m (7600 ft) along the northeastern mesa rim to 1920 m (6300 ft) in the Oraibi Wash floodplain to the southwest. The main wash and its tributaries are heavily incised and commonly reach between 9 and 15 m deep; erosional sinkhole networks are present along some drainages. Vegetation in the floodplains is dominated by forage plants including greasewood (*dúwózhüshzhün*), sagebrush (*ts'ah*), and four-winged saltbrush (*dúwózhülbáú*), while the hills are covered by dense piñon-juniper woodland (*chá'ot; gad*) interspersed with stands of Gamble oak

(*chéch'il*), cliffrose (*awéets'áál*), and mountain mahogany (*tsé'esdaazii*). Small groves of aspens (*t'iisbái*) are found near springs close to the mesa rim, which overlooks the greater Laguña Creek-Chinle Valley lowlands to the north and east.

Early History of Northeastern Black Mesa

The northeastern portion of Black Mesa has seen relatively little archaeological research compared to the former coal mine lease areas to the west or the Hopi mesas to the south. Yet as the chapter's Navajo name (*Kits'iilí*; “shattered stone house”) indicates, there is widespread evidence for Ánaasázi occupation throughout the area.¹ Although limited in scope, cultural resource management projects have identified numerous Basketmaker and Kayenta Ánaasázi (c. A.D. 550–1300) sites along the upper Oraibi Wash drainage ranging from simple artifact scatters to small multi-room pueblos (Kakos 1993). Kits'iilí Ruin (AZ-D-12-1) is the principal site in the area and consists of an 800 m², J-shaped masonry pueblo occupying a hilltop at the junction of the Main and West forks of Oraibi Wash. The site's architecture and ceramic assemblage indicate a late Pueblo III period occupation between at least A.D. 1265 and 1285 (Gilpin 1990). Northern Black Mesa and the adjacent Tsegi region were depopulated between A.D. 1150 and 1300 due in part to environmental shifts in the region and it is likely that the upper Oraibi Ánaasázi community was caught up in these population movements (Dean 2002; Powell 2002).

Diné History of Northeastern Black Mesa – Pre-Long Walk (A.D. 1868)

The transitional period between the heyday of Ánaasázi settlement and large-scale Navajo presence on Black Mesa is poorly understood. Colwell and Ferguson (2017) have argued that Navajo settlement west of Chinle Wash was negligible before A.D. 1840. Early Navajo-focused archaeological research across the Navajo Nation remains extremely limited, however, and substantial work is needed to verify these claims. Thirty-seven Navajo archaeological sites were identified along upper Oraibi Wash and adjacent drainages as part of the wide-ranging Navajo Land Claims (NLC) research during the 1940s and 1950s (Navajo 1960). Using the NLC data, Kemrer (1974) determined that Navajo settlement on Black Mesa dated to at least A.D. 1703 and likely earlier. In the upper Oraibi Wash valley, evidence for Navajo settlement becomes clearer during the first half of the nineteenth century, with 17 sites tree-ring dating to the A.D. 1830s onwards (Navajo 1960:Exhibit 520W).

Although Spanish interactions with the Hopi on the southern edge of Black Mesa are well documented, the early history of Euro-American activity to the north is unclear. The first recorded activities date to the first half of the nineteenth century when Vizcarra's 1823 punitive mission against western Navajos ventured north and west of Hopi (Brugge 1964). Oral histories detail additional Hispanic and Ute raids throughout this period in the upper Oraibi Wash drainage, which served as a key travel corridor across the mesa (Kelley and Francis 2019a:122–130). In 1859, a U.S. Army expedition to Navajo Mountain crossed the northern edge of Black Mesa, likely passing Kits'iilí Ruin (Walker and Shepherd 1964:79–90). Increased U.S. military pressure throughout the 1850s culminated in Kit Carson's scorched earth campaign of 1863 and a series of forced relocations to

Fort Sumner, New Mexico. While some 8,300 Diné made the 560 km (350 mile) “Long Walk” to *Hwééldi* – “the place of suffering” – between 1863 and 1868, many families resisted these efforts by fleeing to the rugged uplands of Navajo territory, including northern Black Mesa (Ackerly 1998; Roessel and Johnson 1973).

Diné History of Northeastern Black Mesa – Post-Long Walk (A.D. 1868)

Following the Navajo Treaty of 1868 and the end of hostilities with the United States, Navajo families returned to the Four Corners region. Although a small reservation was established in 1868, many families (re)settled beyond its boundaries, including on Black Mesa (Russell 1983). Navajo families rebuilt their herds from government stock or recovered animals from non-interned relatives and continued to engage in the same economic activities as earlier in the century, including trade with the Hopi, limited raiding with the Utes, and an intensive form of mobile agropastoralism (Iverson 2002:66–71). Beginning in the 1870s and becoming more common after 1910, however, trading posts established on the reservation provided a ready source of Euro-American goods and a market for Navajo wool, livestock, and crafts sales (Kelley and Francis 2019a). Kits’iilí was incorporated into the growing reservation following the presidential order of 1884 and recognized as a chapter unit in 1922 (Eck 1982).

Despite its remoteness, the Kits’iilí area has been affected by several major events in twentieth century Navajo history. The 1918–1920 influenza epidemic saw a 12 percent mortality rate in Navajo communities across the reservation, including isolated camps on Black Mesa (Brady and Bahr 2014; Gillmor and Wetherill 1934:228; Reagan 1921). The imposition of the Livestock Reduction Programs of 1933–1936 and the creation of permitted grazing districts in 1936 by the Bureau of Indian Affairs constrained traditional herding practices in the region (Henderson 1989), although it remained the key economic activity in Kits’iilí.

The U.S. push to extract coal from northern Black Mesa and the ensuing Navajo-Hopi Land Dispute has affected the region since the 1950s. The western half of Black Mesa Chapter (including the study area) fell within the disputed territory designated in 1962 as the Joint Use Area (JUA) and subsequently as part of the Navajo Partitioned Lands (NPL) in 1974. Following preparations during the 1960s, Peabody Coal opened two large surface mines in 1970 and 1973 on a 64,000 acre (25,900 ha) lease in the JUA twenty kilometers west of Kits’iilí. Although operations ceased in 2019, the mines have left the Black Mesa N-aquifer severely depleted and the land only partially reclaimed (Iverson 2002:242–244; Kelley and Francis 2019a:258–262).

Learning from Herding

Phase 1 of the ENPLP consisted of six months of participant observation and archaeological reconnaissance at a Navajo homesite and “sheep camp” in Kits’iilí, Black Mesa Chapter, Navajo Nation. Preparatory work began on January 28, 2018 with formal ethnoarchaeological research commencing on March 20 following approval of the project by the Navajo Nation Human Research Review Board. Phase 1 fieldwork was completed on August 9, 2018.

The ethnographic fieldwork component consisted of active participation in the daily life of the R./T./H. extended family sheep camp under the direction of A.R. Herding activities focused on the daily grazing of approximately 200 sheep and goats, as well as the less intensive management of several dozen cattle. The family grazing area totals approximately 13 square miles (34 km²) and corresponds broadly to the lower portions of the West Fork of Oraibi Wash and the entirety of Red Point Wash. Due to the drought conditions that characterized the winter of 2017 and most of 2018, lambing was intentionally avoided, although spring shearing, summer sales, and other ranch tasks continued as usual. Informal interviews were conducted throughout the course of these activities and during later research phases.

Two sets of archaeological activities were conducted during Phase 1. The first activity involved the preliminary identification and reconnaissance of herding infrastructure and other archaeological features of interest while conducting the daily herding round or engaged in other ranch activities. These sites were all revisited during the second activity, an intensive site recording campaign conducted from July 31 to August 9, 2018. Activities during this 10-day period consisted of formal site documentation, drone photography, GPS mapping, and dendroarchaeological sampling. Additionally, GPS collars (“sheePS units”) were placed on two sheep beginning in March 2018 to more accurately record where and how the herd moved about the landscape.

Ethnoarchaeological Survey Results

The project identified a total of 52 historic Navajo sites within the study area (Figure 2). The recorded occupation of these sites spans a minimum 135 year period from A.D. 1884 to the present day. The sites were classified into five categories: sheep camps, temporary/seasonal camps, sweatlodges, ceremonial sites, and unique/isolated sites (Figure 3).

Fifteen of the sites are multicomponent “sheep camps” used by one or more extended family groups. As defined here, “sheep camps” consist of a variable number of structures and features clustered around a habitation structure and an identifiable corral feature. The larger camps display a great deal of diversity in their internal composition, with habitation types including one or more traditional *hogan*-type dwellings, brush shelters, or tent platforms. Thirty-two different hogans were identified and include forked stick, cribbed, corbelled, palisaded, and framed varieties (Jett and Spencer 1981), with different types sometimes present within the same site. In addition to the corral, other structures and features include shadehouses, sweatlodges, cooking hearths, middens, and a variety of arboreal elements like storage platforms and butchering racks. Twelve habitation structures without nearby corral features appear to represent isolated seasonal or temporary camp sites that may have been associated with pastoral activities.

Twenty-one corrals were identified throughout the study area ranging from ~400 m² to 3,750 m² in size. Sixteen corrals are part of larger sheep camp complexes, while four appear to be isolated corrals. While five semi-intact corrals possess complex wooden superstructures similar to those identified elsewhere on

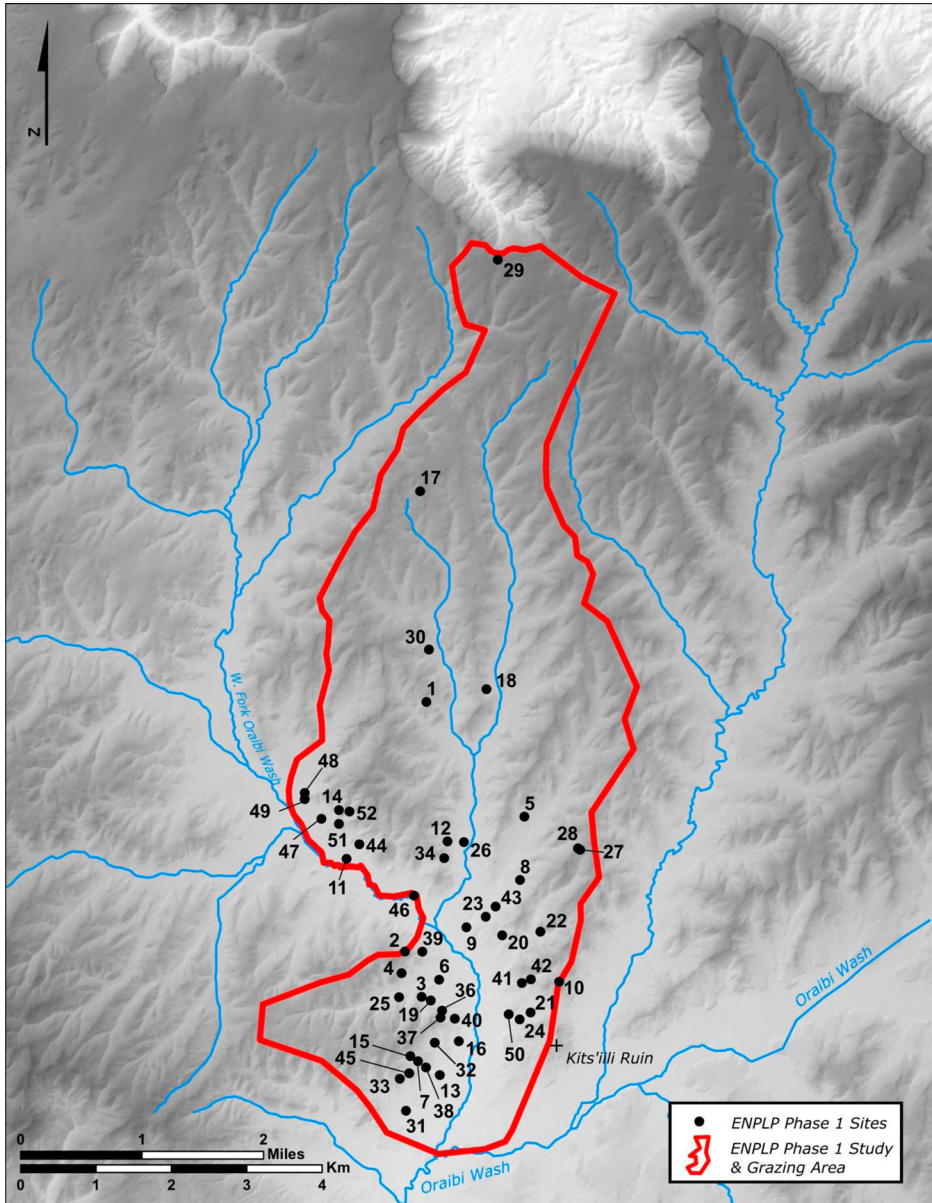


FIGURE 2. Distribution of Navajo sites identified during the ENPLP Phase 1 work.

Black Mesa (Russell and Dean 1985), the remaining corrals lacked readily identifiable architectural remains. These lower visibility corrals are distinguished by distinct soil and vegetation differences relative to the surrounding environment (e.g. wolfberry [*Lycium pallidum*], a plant which favors nutrient-rich disturbed soils) or the presence of partially buried log and stone alignments. A corral's transformation from a high-visibility to low-visibility structure can occur rapidly. Aerial imagery of the ENPLP_{T-4I} sheep camp site clearly shows the site in use in

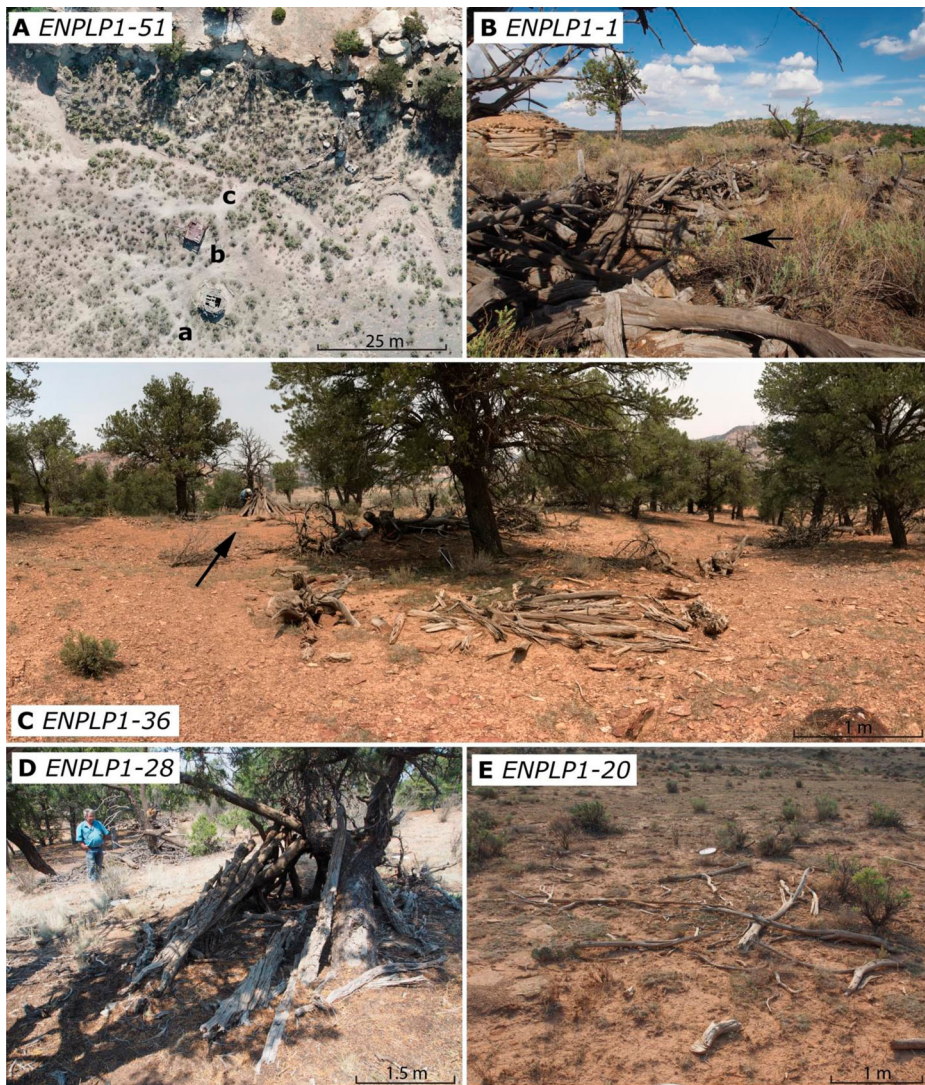


FIGURE 3. Example site types – A: Summer camp with hogan (a), shed (b), and 50 m-wide corral built against rocky ridge (c); B: Winter camp corral with hogan in background. Arrow indicates lamb pens incorporated into walls; C: Sweatlodge site with collapsed (*foreground*) and standing (*arrow*) structures; D: Isolated forked stick hogan built into live tree; E: Collapsed 1950s/60s brush shelter.

October 1952 and inactive or abandoned in October 1967; oral histories describe non-local individuals harvesting the corral and surrounding trees for firewood, effectively destroying the site (Figure 4; cf. Brugge 1994:49).

Fifteen sweatlodges were also identified, with the majority consisting of a semi-intact timber superstructure and two accompanying rock piles linked to the heating process (a stockpile and a thermally-altered discard pile). In a few cases, however, no timbers remained, and the paired rock piles provide the only evidence for an

earlier sweatlodge structure. Eight sweatlodges form parts of larger sheep camp complexes and are often situated more than 100 meters away from the main activity areas. Three other sweatlodge sites each contain the clustered remains of a sweatlodge structure and numerous rock piles, suggesting they represent specialized long term or ceremonial use areas.

The remains of at least six large ceremonial sites dating from the latter half of the twentieth century are located within the study area. The remains are typical of those associated with the Enemy Way and Mountaintop Way ceremonies (Brugge and Gilpin 2008). In particular, materials associated with the final portion of the Mountaintop Way include a large diameter piled brush ring that resembles a brush corral enclosure (Haile 1946; Matthews 1887; Reagan 1934). While ceremonial sites can be overlooked or misidentified (Warburton and Begay 2002:179), they tend to be situated in open locations suitable for accommodating the large numbers of people who attend these ceremonies.

A number of isolated features and structures are dispersed throughout the area, including: two *chiih* (red ochre) mines, a rock art panel with Navajo and Hopi

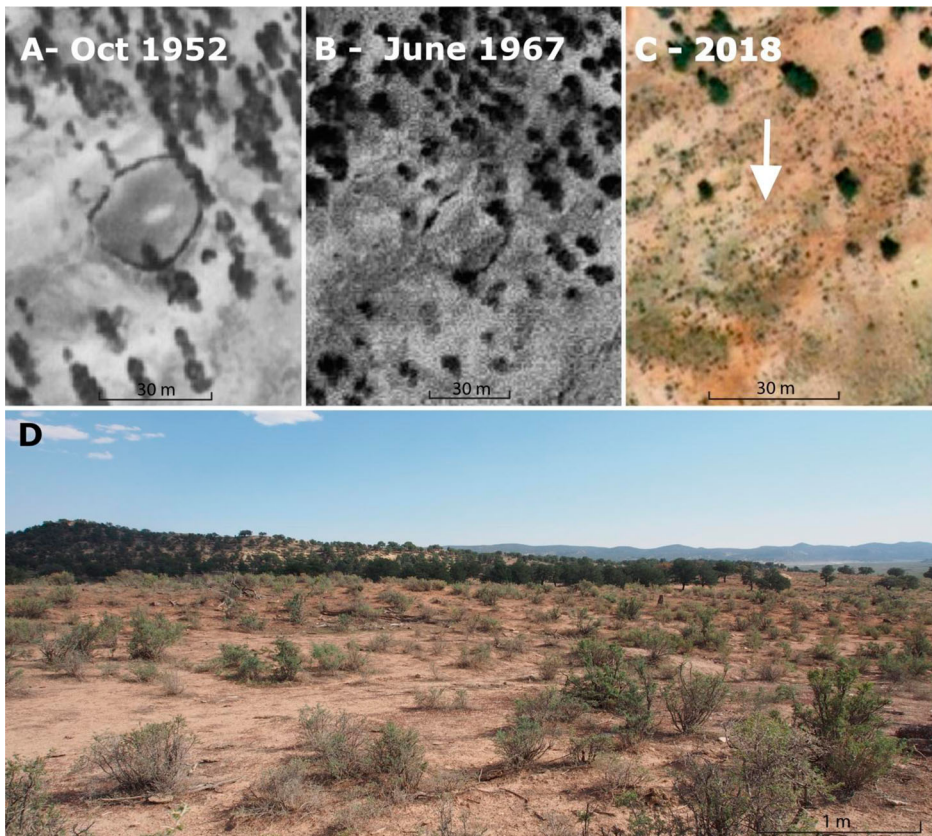


FIGURE 4. Remotely sensed imagery series capturing the transformation of the ENPLP1-41 sheep camp into a low visibility archaeological feature within seven decades (A-C). Image D shows the corral's current state as viewed in the direction indicated in Image C.

inscriptions, the remains of a mid-twentieth century log bridge, and four cairns. Six water control features are located throughout the study area. One is a small dammed bedrock depression of unknown age while the majority are large earthen dams and stock tanks built with heavy machinery. Oral histories and aerial imagery analyses indicate that most were built with government assistance during the 1950s although one large dam just west of the study area predates 1951. Oral histories note that this feature was raised earlier in the twentieth century by F.H., the former head of the R./T./H. family, whose efforts earned him the title *Hastiin Be'ak'id*, “Reservoir Man.”

Dendroarchaeological Sampling Results

A total of 101 dendroarchaeological samples were collected from 21 Navajo sites within the ENPLP Phase 1 study area and submitted to the University of Arizona Laboratory of Tree-Ring Research (LTRR) for analysis and dating. Following Towner’s (2016) discussion of Navajo wood use practices, a concentrated effort was made to identify and sample CMT (culturally modified tree) features (e.g. ax-cut limbs or stumps) closely associated with sites in addition to architectural wood. Although the regional Black Mesa tree-ring chronology is well-developed, only 23 samples from 15 sites yielded dates (Table 1); however, half of these samples came from CMTs at sites that otherwise contained no other datable material or had architectural samples that did not date.

Discussion

The ENPLP and the History of Northeastern Black Mesa

Despite the fact that northeastern Dziłjiiin is often described as one of the most remote portions of the Navajo Nation (e.g. Russell 1983; Yurth 2012), the ENPLP Phase 1 findings attest to the Kits’iilí area’s continued entanglement in broader social, political, and economic developments over the years, as well as the resilience of the traditional pastoral lifeway through these events. These interactions are perhaps best approached through the tree-ring data, which reveal a pair of interdecadal trends connected to local, regional, and national events (Figure 5).

The first trend relates to pre – and post-Long Walk era activities in the Kits’iilí area. ENPLP1-30, a small camp identified ethnographically as one of the first local sites built by F.H., was the project’s oldest securely dated Navajo site. Growth season cutting dates from five CMTs associated with a cribbed hogan indicate it was built in the spring of 1884 or 1885. Another small sheep camp (ENPLP1-18) returned a single non-cutting date of 1871+vv; oral tradition and the condition of the structure suggests that it too was built around the same time period by a different extended family group. Neither of these early sites are located in the main West Fork valley travel corridor but instead sit some 3.5 km away up a pair of tributary drainages. In contrast, the large multicomponent sheep camps that overlook the main valley plain were constructed in the early through mid-twentieth century.

TABLE 1.
CROSS-DATED ENPLP PHASE 1 TREE-RING SAMPLES

Field ID	LTRR ID	Wood type	Site No.	Site name	Structure/ feature	Function/ Type	Inner Ring Date (A.D.)1	Outer Ring Date (A.D.)2, 3	In-field notes on wood element surface attributes	Tool marks	LTRR analyst Notes
4	PBM-8086	Piñon	ENPLP1-40	Tsé Dez Aha Summer Camp	Tent Platform	Fork; Loose Log	1815	1949vv	True Outside; Weathered	Metal ax cut	–
7	PBM-8089	Piñon	ENPLP1-40	–	Corral	Upright Post	1837+	1969vv	True Outside; Weathered	“ ”	–
9	PBM-8091	Juniper	ENPLP1-32	South Grave Hogan Camp	Ramada	Upright Post	1816+	1910 + vv	True Outside; Weathered	“ ”	Abundant sapwood; cutting
12	PBM-8094	Juniper	ENPLP1-32	–	Ramada	Upright Post	1838	1912vv	True Outside; Weathered	“ ”	Abundant sapwood; cutting
22	PBM-8104	Piñon	ENPLP1-15	Hidden Hogan Camp	CMT (near hogan)	Ax-cut Limb	1871	1920B inc	Bark; Patina	“ ”	Growth season
24	PBM-8105	Piñon	ENPLP1-15	–	CMT (near sweat)	Ax-cut Limb	1578	1731++vv	Weathered	“ ”	–
31	PBM-8112	Piñon	ENPLP1-45	Wedge Camp	CMT (near hogan)	Ax-cut Limb	1578	1920++vv	Bark; Patina; Weathered	“ ”	–
36	PBM-8117	Piñon	ENPLP1-33	Southwest Corral	CMT (near corral)	Ax-cut Limb	1746 ± p	1925 + B comp	Bark; Patina; Weathered	“ ”	Dormant season
40	PBM-8121	Juniper	ENPLP1-42	Tsezoli Tacheeh	Sweatlodge	Door Jamb Fork	1841	1916 + B inc	Bark	“ ”	Growth season
43	PBM-8124	Piñon	ENPLP1-41	Tsezoli Camp	CMT (near corral)	Ax-cut Limb	1763	1918vv	Bark	“ ”	–
46	PBM-8127	Piñon	ENPLP1-20	K.Y. Camp	Sweatlodge	Ax-cut Limb	1835±	1970 + vv	Beetle Galleries; Weathered	“ ”	Sapwood present; near-cutting (?)
53	PBM-8134	Juniper	ENPLP1-20	–	Brush Shelter	Loose Limb; Upright Post	1896	1956 + vv	Beetle Galleries; Weathered	“ ”	Sapwood present; near-cutting (?)
66	PBM-8147	Piñon	ENPLP1-29	Rim Camp	Forked Stick Hogan	Leaner Log	1805±	1928 + vv	Beetle Galleries; Weathered	“ ”	–
68	PBM-8149	Piñon	ENPLP1-29	–	Corral	Loose Log	1604p	1822++vv	Beetle Galleries	“ ”	–

TABLE 1.
CONTINUED

Field ID	LTRR ID	Wood type	Site No.	Site name	Structure/feature	Function/ Type	Inner Ring Date (A.D.) ¹	Outer Ring Date (A.D.) ^{2, 3}	In-field notes on wood element surface attributes	Tool marks	LTRR analyst Notes
70	PBM-8151	Juniper	ENPLP1-30	Sliding House Camp	CMT (near hogan)	Ax-cut Limb	1750 ± <i>p</i>	1884 + B inc	Bark; Beetle Galleries; Patina; Weathered	" "	Growth season
71	PBM-8152	Piñon	ENPLP1-30	–	CMT (near hogan)	Ax-cut Limb	1701 ± <i>p</i>	1884 + B inc	Bark; Beetle Galleries; Patina; Weathered	" "	Growth season
72a	PBM-8153	Piñon	ENPLP1-30	–	CMT (near hogan)	Ax-cut Limb	1639 ± <i>p</i>	1885++B inc	Bark; Beetle Galleries; Patina; Weathered	" "	Growth season
75	PBM-8156	Juniper	ENPLP1-30	–	CMT (near hogan)	Ax-cut Limb	1738 ± <i>p</i>	1883 + LB inc	Bark; Beetle Galleries; Weathered	" "	Growth season
80	PBM-8161	Juniper	ENPLP1-18	Béégashii Jolgali Camp	CMT (near corral)	Ax-cut Stump	1649 ± <i>p</i>	1871 + vv	Weathered	" "	Sapwood present; near-cutting (?)
83	PBM-8165	Piñon	ENPLP1-39	Ts'ah Deskidi Camp	Sweatlodge	Forked Log (West)	1809±	1945vv	Bark; Beetle Galleries; Patina; Weathered	" "	–
88	PBM-8169	Piñon	ENPLP1-3	Broken Reservoir Camp	CMT (near corral)	Ax-cut Limb	1830 ± <i>p</i>	1900 + vv	Bark; Beetle Galleries; Patina; Weathered	Metal ax cut	–
94	PBM-8175	Piñon	ENPLP1-19	K.R. Brush Shelter	CMT (near shelter)	Ax-cut Limb	1857 ± <i>p</i>	1967B inc	Bark; Patina; Weathered	" "	Growth season; cutting
97	PBM-8178	Juniper	ENPLP1-36	Tacheeh Cluster	Sweatlodge	Leaner Log	1864±	1944r inc	Bark; Patina; Weathered	" "	Growth season; cutting

¹*p*: pith ring present (±: ring count necessary). ²*B*: bark; *L*: surface patination; *vv*: no way of estimating outside from last ring; *+*: one or more rings missing near end of sample that cannot be checked due to shortness of ring series; *++*: ring count necessary past last datable point; *comp/inc*: complete/incomplete final ring (i.e. cut during dormant/growth periods). ³The symbols *B*, *G*, *L*, *c*, and *r* indicate cutting dates in order of decreasing confidence; the *+* and *++* symbols are mutually exclusive but can be used in combination with all other symbols (Speer 2010:163); outer ring symbols determined by laboratory analysis.

Tree-Ring Dates by Year

173	1
...	
182	2
...	
187	1
188	<u>3445</u>
189	-
190	0
191	<u>0268</u>
192	<u>0058</u>
193	-
194	<u>459</u>
195	6
196	<u>79</u>
197	0

FIGURE 5. Stem-and-leaf plot illustrating the temporal distribution of cross-dated ENPLP Phase 1 dendroarchaeological samples by year (underlining indicates cutting date).

This settlement pattern echoes Kremer's (1974:126–140) observation that pre-1868 Navajo sites across Black Mesa were frequently positioned in hidden or defensible settings due to the constant threat of Ute and Euro-American raids. Intriguingly, the ENPLP identified four additional small single habitation sites (ENPLP1-4, 15, 27, and 28) in “hidden” settings similar to those described above (e.g. wooded rincons or high ridgetops). Although the sites did not successfully cross-date, all four lack Euro-American materials and possess forked stick hogans or cribbed log shelters built into live trees, a type of “camouflage” noted at many pre-1868 Navajo sites previously identified on Black Mesa (Kemrer 1974:138–139). Taken together, these factors suggest that ENPLP1-4, 15, 27, and 28 might represent pre-internment or internment-era sites, while ENPLP1-18 and 30 are better understood as examples of site reuse or pragmatic settlement planning in the uncertain decades following internment.

The second trend is connected to the 1918–1920 influenza pandemic's impact on Navajo communities. Two large sheep camp complexes in the main valley (ENPLP1-8 and 32) were noted to contain several *hok'ééghan*, or burial hogans. Oral histories state that the sites were abandoned due to widespread illness sometime prior to 1930. Because such sites are traditionally avoided by Diné during everyday activities, Phase 1 work at the sites was limited to simple recording and the dendroarchaeological sampling of non-habitation features like shadehouses, corrals, and CMTs. Although ENPLP1-8 did not date, two near-cutting dates from ENPLP1-32 reveal the shadehouse was built circa 1912, strongly suggesting that both sites were abandoned during the 1918–1920 pandemic. Additionally, both sites contain focal buildings that are unlike others identified by the survey – namely, the largest forked stick hogan in the study area (8) and a short construction combining cribbed walls and leaning brush (32). While no attempt was made to date either structure, it is possible that their “atypical” nature reflects usage in

ceremonies organized by inhabitants attempting to treat an influenza patient (e.g. Brady and Bahr 2014:474–476; Mitchell 2001:128–134).

Historic Diné Herding Practices in Northeastern Black Mesa

The methodology employed during the ENPLP Phase 1 work resulted in a unique ethnoarchaeological dataset whose details capture the dynamism and resiliency of one traditional Diné family's sheepherding activities in the Kits'iilí area throughout the twentieth century. When considered alongside past political developments and economic trends, four distinct periods of shifting pastoral land use strategies are evident in the ENPLP Phase 1 study area and provide a framework suitable for comparison with other studies of Navajo pastoral land use (Figure 6). The periods are summarized as follows:

Period 1 (c. A.D. 1880–1940): This phase represents that late 1800s period of “classic” highly mobile Navajo herding detailed in the “Son of Old Man Hat” (Dyk 1938). A single family group identified with a particular home region but frequently (re)occupied different camps while moving herds between pastures over a multiweek transhumant cycle. Land tenure was fluid with multiple family groups using the same areas and structures at various times as part of larger mobile herding rounds; access was secured through kin or clan relationships (Kelley and Francis 2019b). Oral traditions describe members of the F.H. family descending the north rim of Black Mesa in the summer to graze their herd in the Laguña Creek drainage below Chilchinbito, where they had relatives. These roughly 50 mile roundtrip journeys appear to have ended around 1940 following the establishment of the BIA grazing districts (1936) and permitting system (1940), which defined the north rim of Black Mesa as the boundary between District 4 (Black Mesa) and District 8 (Kayenta) and prohibited movement between them.

Period 2 (c. A.D. 1940–1970s): The contraction of family herding to current grazing areas saw greater investment in camp infrastructure, although habitation continued to be spread across different camps. A local seasonal round developed utilizing multiple summer camps in the main Oraibi Wash valleys with movement to specialized winter camps in the forested uplands near the mesa rim. The return of Navajo World War II veterans initiated a postwar development boom across the reservation (Iverson 2002:180–226). ENPLP tree-ring dates document increased domestic construction activities throughout the study area at the same time that roads and large earthen reservoirs were being built in Kits'iilí under the leadership of W.H., a returned veteran and son of F.H. Oral traditions recount shifting herd composition in response to wool and mohair prices at trading posts, as well as federal wool incentive payments. During the 1950s and 1960s, one summer camp gradually emerged as the primary family homesite, a pattern noted elsewhere on Black Mesa (Russell 1983:57–64). Following the opening of the Peabody Black Mesa and Kayenta Mines (1967 and 1973) and Black Mesa Community School (1977), the transition away from herding as the primary economic opportunity increased as local wage work and education became options.

Period 3 (A.D. 1970s–1990s): The local multi-day summer herding round and upland winter camps continued to be used, although the primary homesite area

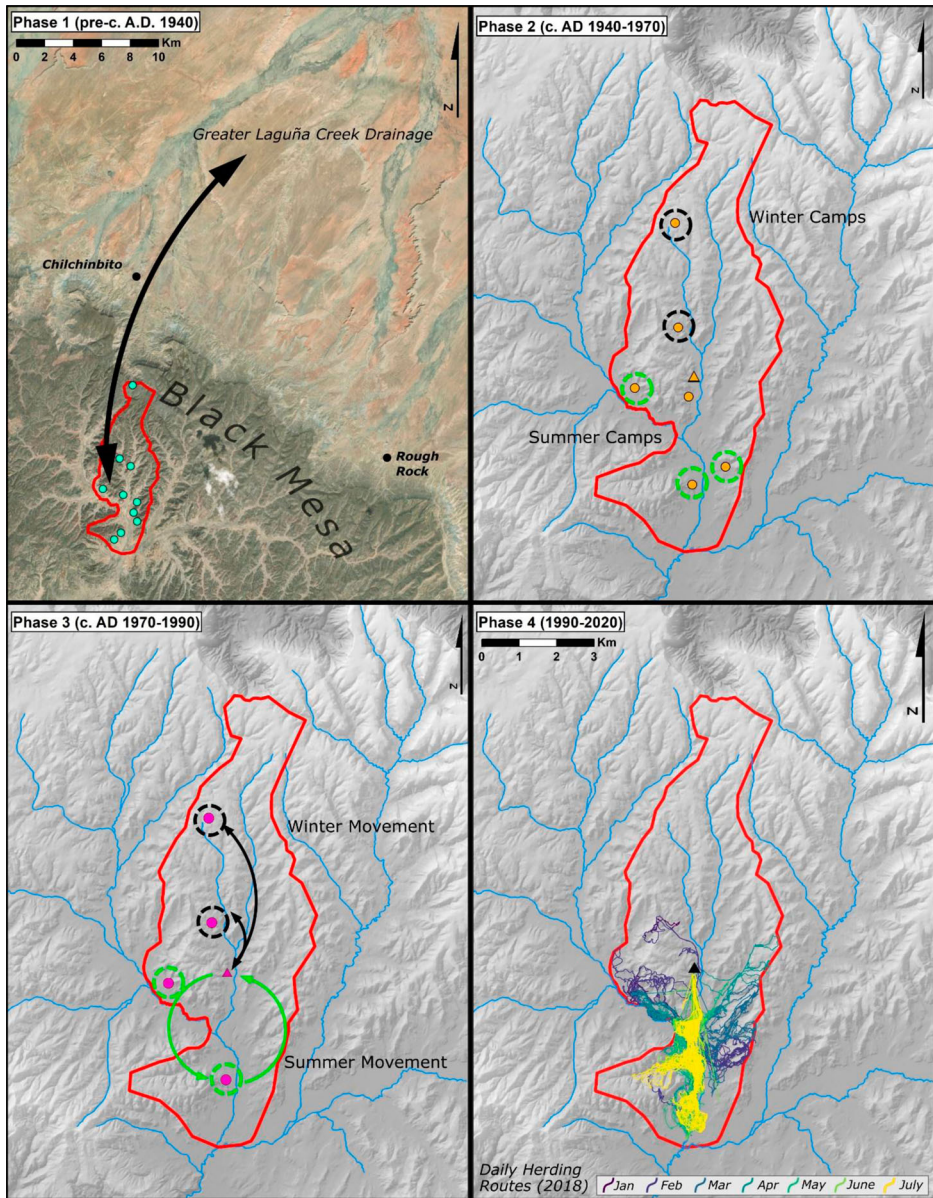


FIGURE 6. Settlement and herding phases noted within the ENPLP Phase 1 study area. In Phases 2 and 3, green and black circles around sites denote summer and winter camps, respectively, while the green and black arrows in Phase 3 indicate summer/winter herd movement. The individual lines in Phase 4 correspond to daily herding activities during the 2018 fieldwork.

Note: The Phase 2, 3, and 4 images are scaled the same.

now served as the center for long term habitation and corralling. The family's grazing permits were cancelled as part of an October 1973 court order leading to the 1974 creation of the Navajo Partitioned Lands [*Hamilton v. MacDonald*,

Civ. 579-PCT (D. Ariz. 1972)]. While herding continued throughout the NPL, wage work and education away from Black Mesa emerged as primary activities for most families in the region. This combination of factors increasingly led to herding activities being conducted by older family members, with support from relatives (especially children) during the summer months or for larger communal tasks like shearing.

Period 4 (A.D. 1990s-Today): This phase has been characterized by an intensification of the Phase 3 conditions over the past three decades. Currently, wage work and education away from Kits'iilí form the primary focus for the majority of the extended family. As a result, daily herding is now conducted by one or two individuals using the primary homesite as the year-round "home base." As experienced during the 2018 fieldwork, persistent drought conditions during this period (Woodhouse et al. 2010) have also influenced herding practices and herd management strategies. Combined with lower wool prices and the end of wool subsidy payments, these factors have influenced a shift towards smaller sized herds comprising meat goats and churro sheep. In 2018, A.R.'s herd represented one of the largest collections of livestock in the area, with the majority of families maintaining between 5 and 50 head. As of August 2020, the reissuance of NPL grazing permits remains stalled due to concerns about proposed range management and herd size policies conflicting with basic livelihood concerns (Krisst 2020).

Observations on Navajo Pastoral Archaeology

Over the past four centuries, the intensity and practices associated with Navajo herding in the greater Four Corners region have varied substantially across time and space. As the previous discussion demonstrates, contemporary herd sizes on Black Mesa have decreased since the turn of the twentieth century. These smaller herd management practices arguably provide good analogs to explore the actions of incipient Navajo pastoralists building herds circa A.D. 1700. Observing the patterns and choices underlying the locations of contemporary/historic herding infrastructure can help identify potential archaeological signatures of pastoral activities at older Navajo sites. The sheep camp corral forms the central focus of this effort, as the repeated use of an area for animal containment increases visibility through a series of transformations, including the construction of penning structures, dung deposition, chemical alteration of soils, and the introduction of nonlocal plant species (Chang and Koster 1986:115–119; Kuznar 2001; Russell and Dean 1985).

In the ENPLP Phase 1 study area, sheep camps were most commonly located in the following four settings: on moderate (0–13°) slopes along treelines overlooking valleys; at the base of steep ridges, rock outcrops, or overhangs which form partial enclosures; at the head of narrow draws with openings blocked off; and on heavily wooded hilltops. The first three locations were associated with summer camps, while the latter setting provided natural windbreaks and fuelwood for winter usage (Russell and Dean 1985:10–13). Within sites, the position of a sheep camp corral can vary substantially; ENPLP Phase 1 corrals were

located between 10 and 100 m from the nearest associated habitation, with half being within 30 m. The condition of the corrals in the study area ranged from in-use to deteriorated and near-invisible. Recognizing spatially discrete vegetation differences (e.g. dense stands of forage plants like saltbrush or colonizing plants like wolfberry) with associated structural remains (e.g. semi-buried timber or rock alignments) represents the best in-field identification method for low-visibility animal enclosures. All corrals identified during the Phase 1 fieldwork were less than ~110 years old, suggesting that additional methods (e.g. geochemical or micromorphological analyses [Shahack-Gross 2011]) are needed to more confidently identify similar features at older sites.

Conclusion

The temporally distinct settlement patterns and associated shifts in Navajo pastoralism seen in the Kits'iilí study area provide a framework for understanding the influence of broader political and economic concerns on rural portions of the Navajo Nation. The data discussed here echo observations from the Black Mesa coal mine lease area that while herding traditionally played a central role in the daily life of northern Black Mesa, energy development and job opportunities in the 1960s and 1970s prompted a restructuring of traditional systems of land tenure and grazing (Warburton and Begay 2002). The ENPLP Phase 1's narrower focus, however, provides an example of how some Diné family groups in the area have consistently negotiated these challenges in order to maintain pastoral livelihoods to this day. These data should also be comparable with the earlier ethnoarchaeological work conducted on other parts of the reservation throughout the 1970s and 1980s (e.g. Boyer 1983; Kelley 1986; Vogler et al. 1982), setting the stage for future work that attempts to understand how different Diné communities have responded to similar events across both time and space. Indeed, archaeological studies of other overlooked aspects of Diné history – those families who resisted the Long Walk, who settled the western and northern frontiers of Navajoland, or who entered the short-lived Spanish missions during the Drought of 1748 – all have the potential to speak to the continued resiliency of the *k'è* based kinship ties that have traditionally guided Diné communities.

The data presented here also demonstrate the dynamic nature of traditional Navajo sheepherding practices through time. Recent historical and archaeological studies of pastoralism in the Southwest have focused on Euro-American or non-Navajo native herders (Gulliford 2018; Hangan and Jaquay 2020; Hopkins et al. 2016). The brief discussions of the data presented here serve as a reminder that pastoral studies are not a monolithic project but rather exhibit a great deal of complexity at multiple scales. The difficulty in identifying low-visibility herding sites demands a great deal of attention from archaeologists interested in analyzing the mechanics of herding systems. Firsthand experience with the demands of herding activities and their final archaeological manifestations provide archaeologists with the tools to engage in these activities more confidently.

As the ENPLP Phase 1 findings demonstrate, the geospatial patterns apparent in the Kits'iilí data, including those related to camp locations, corral size, and herding rounds, provide archaeologists with contextual data to begin developing models for interpreting the deeper past. By quantifying these attributes, the potential herding landscapes of past Diné communities can be modeled and investigated in new ways, including seventeenth century Navajo sites, where evidence suggests that the very same “sheep-mindedness” Witherspoon noted on the Navajo Nation was once at play there too.

Note

- 1 This paper follows the Navajo Nation Heritage and Historic Preservation Department's guidelines in using the term “Ánaasázi” when referring to the ancestral populations of the Four Corners region. For in-depth statements concerning the term and its connections with Navajo people, see Walters and Rogers 2001; Warburton and Begay 2005, and Thompson and Towner 2017.

Acknowledgments

The author is indebted to A.R. and the entire R./T./H. family, especially W.H., V.S., R.L. and M.D. Ahéhee' shima. Many thanks to Ron Towner, Danielle Huerta, Will Tsosie, and Richard Begay, as well as Rebecca Renteria, Danielle Lucero, and everyone else who has listened to me talk at great length about this work. A special thanks to Solsire Cusicanqui for her help with the Spanish abstract. The fieldwork was supported in part by a Harvard University Native American Program grant, a Ford Foundation Pre-doctoral Fellowship, and a National Science Foundation DDIG (No. 1824983). The research plan and the manuscript were approved by the Navajo Nation Heritage and Historic Preservation Department (Ethnographic Research Permit C17033-E) and the Navajo Nation Human Research Review Board (NNR 18.299; NNP 21.701). My thanks to Tom Rocek, Miranda Warburton, and Klara Kelley for their reviews – any mistakes that remain are wholly my own.

Disclosure Statement

No potential conflict of interest was reported by the author.

Funding

This work was supported by National Science Foundation [grant number 1824983].

ORCID

Wade Campbell  <http://orcid.org/0000-0002-1341-3811>

References

Ackerly, Neal W.

- 1998 A Navajo Diaspora: The Long Walk to Hwéeldi. Dos Rios Consultants, Inc., Silver City, NM. <http://bloodhound.tripod.com/longwalk.htm>, accessed August 6, 2020.

Boyer, Jeffrey Lynn

- 1983 Up to This Line of Bluffs: Navajo Pastoralism, Wealth and Land Tenure in the Archaeological Record. The University of New Mexico. Unpublished master's thesis, Department of Anthropology, University of New Mexico, Albuquerque.

Brady, Benjamin R., and Howard M. Bahr

- 2014 The Influenza Epidemic of 1918–1920 among the Navajos: Marginality, Mortality, and the Implications of Some Neglected Eyewitness Accounts. *American Indian Quarterly* 38(4):459–491.

Brugge, David M.

- 1964 Vizcarra's Navajo Campaign of 1823. *Arizona and the West* 6(3):223–244.
1994 *The Navajo-Hopi Land Dispute: An American Tragedy*. University of New Mexico Press, Albuquerque.

Brugge, David M., and Dennis Gilpin

- 2008 Navajo Ritual Histories, Organization, and Architecture: Implications for Archaeology. In *The Archaeology of Regional Interaction: Religion, Warfare, and Exchange across the American Southwest and Beyond*, edited by Michelle Hegmon, pp. 361–380. University Press of Colorado, Boulder.

Chang, Claudia

- 1992 Archaeological Landscapes: The Ethnoarchaeology of Pastoral Land use in the Grevena Province of Greece. In *Space, Time, and Archaeological Landscapes*, edited by Jacqueline Rossignol, LuAnn Wandsnider, pp. 65–89. Plenum Press, New York.

Chang, Claudia, and Harold A. Koster

- 1986 Beyond Bones: Toward an Archaeology of Pastoralism. *Advances in Archaeological Method and Theory* 9:97–148.

Colwell, Chip, and T. J. Ferguson

- 2017 Tree-Ring Dates and Navajo Settlement Patterns in Arizona. *American Antiquity* 82(1):25–49.

Dean, Jeffrey S

- 2002 Late Pueblo II-Pueblo III in Kayenta-Branch Prehistory. In *Prehistoric Culture Change on the Colorado Plateau: Ten Thousand Years on Black Mesa*, edited by Shirley Powell, Francis E. Smiley, pp. 121–157. The University of Arizona Press, Tucson.

Dyk, Walter

- 1938 *Left Handed, Son of Old Man Hat: A Navajo Autobiography*. Harcourt Brace, New York.

Eck, Norman K.

- 1982 *Contemporary Navajo Affairs: Navajo History, Volume III, Part B*. Rough Rock Demonstration School, Navajo Curriculum Center, Rough Rock, AZ.

Gillmor, Frances, and Louisa Wade Wetherill

- 1934 *Traders to the Navajos: The Story of the Wetherills of Kayenta*. Riverside Press, Cambridge, MA.

Gilpin, Dennis

- 1990 Kiit Siili Field Notes - May 1987 and October 1990. Ms. on file. Flagstaff, AZ.

Gulliford, Andrew

- 2018 *The Woolly West: Colorado's Hidden History of Sheepscapes*. Texas A&M Press, College Station, TX.

Haile, Berard

- 1946 *The Navaho Fire Dance, or Corral Dance: A Brief Account of its Practice and Meaning*. St. Michaels Press, St. Michaels, AZ.

Hammer, Emily

- 2014 Local Landscape Organization of Mobile Pastoralists in Southeastern Turkey. *Journal of Anthropological Archaeology* 35:269–288.

- Hangan, Margaret, and Barbara G. Jaquay
 2020 Historic Sheep Grazing in Arizona*. *Kiva* 86(2):168–175.
- Henderson, Eric
 1989 Navajo Livestock Wealth and the Effects of the Stock Reduction Program of the 1930s. *Journal of Anthropological Research* 45(4):379–403.
- Honeychurch, William, and Cheryl A. Makarewicz
 2016 The Archaeology of Pastoral Nomadism. *Annual Review of Anthropology* 45:341–359.
- Hopkins, Maren P., Chip Colwell, and T. J. Ferguson
 2016 Laguna Shepherding. *Kiva* 82(3):278–322.
- Iverson, Peter
 2002 *Diné: A History of the Navajos*. University of New Mexico Press, Albuquerque.
- Jett, Stephen C., and Virginia E. Spencer
 1981 *Navajo Architecture: Forms, History, Distribution*. The University of Arizona Press, Tucson.
- Kakos, Peter J
 1993 An Archaeological Survey of 77 homesites and 26.80 miles of Water Service Line for the Indian Health Service near Kitsillie, Navajo County, Arizona (IHS NA-92-A02). NNAD 92-268. Navajo Nation Archaeology Department, Window Rock, AZ.
- Kelley, Klara B.
 1986 *Navajo Land Use: An Ethnoarchaeological Study*. Academic Press, Orlando.
- Kelley, Klara, and Harris Francis
 2019a *A Diné History of Navajoland*. The University of Arizona Press, Tucson.
 2019b Diné Clans and Climate Change: A Historical Lesson for Land Use Today. *American Indian Culture and Research Journal* 43(1):55–82.
- Kemrer, Meade Francis
 1974 The Dynamics of Western Navajo Settlement, A.D. 1750-1900: An Archaeological and Dendrochronological Analysis. Unpublished PhD dissertation, Department of Anthropology, University of Arizona, Tucson.
- Krisst, Rima
 2020 ‘So Much Confusion’: Dził Yijiin Residents Say 10 Sheep Unit Reg Threatens Way of Life. *The Navajo Times*, February 27. <https://navajotimes.com/rezpolitics/so-much-confusion-dzil-yijiin-residents-say-10-sheep-unit-reg-threatens-way-of-life/>, accessed August 6, 2020.
- Kuznar, Lawrence A.
 2001 Ecological Mutualism in Navajo Corrals: Implications for Navajo Environmental Perceptions and Human/plant Coevolution. *Journal of Anthropological Research* 57(1):17–39.
- Matthews, Washington
 1887 The Mountain Chant, A Navajo Ceremony. In *Fifth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution, 1883-84*, pp. 379–468. Government Printing Office, Washington, DC.
- Mitchell, Rose
 2001 *Tall Woman: The Life Story of Rose Mitchell, a Navajo Woman, c. 1874-1977*. Edited by Charlotte J. Frisbie. University of New Mexico Press, Albuquerque.
- Navajo, Tribe
 1960 *Before the Indian Claims Commission, the Navajo Tribe of Indians, Petitioner v. the United States of America, Defendant (Docket no. 229): Plaintiff's Exhibits 520A– 520W*. On microfilm. James E Rogers College of Law Library, University of Arizona, Tucson.
- Powell, Shirley
 2002 The Puebloan Florescence and Dispersion: Dinnebito and Beyond, A.D. 800-1150. In *Prehistoric Culture Change on the Colorado Plateau: Ten Thousand Years on Black Mesa*, edited by Shirley Powell, Francis E. Smiley, pp. 79–117. The University of Arizona Press, Tucson.
- Reagan, Albert B.
 1921 The “Flu” among the Navajos. *Transactions of the Kansas Academy of Science (1903-)* 30(2):131–138.

- 1934 A Navaho Fire Dance. *American Anthropologist* 36:434-437.
- Roessel, Ruth, and Broderick Johnson (editors)
- 1973 *Navajo Stories of the Long Walk Period*. Navajo Community College Press, Tsaile, Arizona.
- Russell, Scott C
- 1983 *The Navajo History and Archaeology of East Central Black Mesa, Arizona (CRMP-83-046)*. Navajo Nation Papers in Anthropology, Number 21. Navajo Nation Archaeology Department, Window Rock, AZ.
- Russell, Scott C., and Jeffrey S. Dean
- 1985 The Sheep and Goat Corral: A Key Structure in Navajo Site Analysis. *Kiva* 51(1):3-18.
- Shahack-Gross, Ruth
- 2011 Herbivorous livestock dung: formation, taphonomy, methods for identification, and archaeological significance. *Journal of Archaeological Science* 38:205-218.
- Speer, James H.
- 2010 *Fundamentals of Tree-Ring Research*. University of Arizona Press, Tucson.
- Thompson, Kerry F., and Ronald H. Towner
- 2017 Navajo Archaeology. In *Oxford Handbook of Southwestern Archaeology*, edited by Barbara J. Mills, Severin Fowles, pp. 481-494. Oxford University Press, New York.
- Towner, Ronald H.
- 2016 Arboreal Archaeology and Early Navajo Land Use. *Journal of Archaeological Science: Reports* 6:342-350.
- Vogler, Lawrence E., Dennis Gilpin, and Joseph K. Anderson (editors).
- 1982 *Gallegos Mesa Settlement and Subsistence: A Set of Explanatory Models for Cultural Resources on Blocks VIII, IX, X, and XI, Navajo Indian Irrigation Project, Vol. 1*. Navajo Nation Papers in Anthropology, Number 12. Navajo Nation Cultural Resource Management Program, Window Rock, AZ.
- Walker, Captain J.G., and Major O.L. Shepherd
- 1964 *The Navajo Reconnaissance: A Military Exploration of the Navajo Country in 1859*. Edited by L.R. Bailey. Westernlore Press, Los Angeles.
- Walters, Harry, and Hugh C. Rogers
- 2001 Anasazi and 'Anasází: Two Words, Two Cultures. *Kiva* 66(3):317-326.
- Warburton, Miranda, and Richard M. Begay
- 2002 The Navajos and Black Mesa. In *Prehistoric Culture Change on the Colorado Plateau: Ten Thousand Years on Black Mesa*, edited by Shirley Powell, Francis E. Smiley, pp. 164-181. The University of Arizona Press, Tucson.
- 2005 An Exploration of Navajo-Anasazi Relationships. *Ethnohistory* 52(3):533-561.
- Witherspoon, Gary
- 1973 Sheep in Navajo Culture and Social Organization. *American Anthropologist* 75:1441-1447.
- Woodhouse, Connie A., David M. Meko, Glen M. MacDonald, Dave W. Stahle, and Edward R. Cook
- 2010 A 1,200-Year Perspective of 21st Century Drought in Southwestern North America. *Proceedings of the National Academy of Sciences* 107(50):21283-21288.
- Wright, Joshua
- 2016 Households Without Houses: Mobility and Moorings on the Eurasian Steppe. *Journal of Anthropological Research* 72(2):133-157.
- Yurth, Cindy
- 2012 Rising from the Ruins: Black Mesa Getting Some Long-Waited Improvements. *The Navajo Times*, November 8. <https://www.navajotimes.com/news/chapters/110812bla.php>, July 15, 2020.