The Southern Red River Study Unit

Paul R. Picha, Michael L. Gregg, and Timothy A. Reed
2021

The Southern Red River Study Unit (SRRSU) is situated in southeastern North Dakota. The Red River of the North is formed by the confluence of the Bois de Sioux and the Otter Tail rivers at Wahpeton, North Dakota and Breckenridge, Minnesota (Souris-Red-Rainy River Basin Commission 1972:130). Because of its similar physiography and glacial history, drainage, and vegetation, the Bois de Sioux River can be considered part of the Red River drainage. West-central Minnesota is located directly to the east across the Red River. South Dakota lies to the south. The Sheyenne River Study Unit (SU) forms the northern border, and the James River SU forms the western border.

Description of the Southern Red River Study Unit

The SRRSU includes parts of four counties: Cass, Ransom, Richland, and Sargent. It comprises a 2,401 mi² area in the southeastern corner of the state. Figures 10.1 and 10.1A depict the boundaries and shaded relief of the SRRSU. Table 10.1 is a summary of whole and partial townships included in the SRRSU.

Drainage

The Red River Basin is a part of the Hudson Bay drainage system totaling 20,820 mi² within North Dakota (Souris-Red-Rainy River Basin Commission 1972:129). The basin in North Dakota can be further divided into nine subbasins. For the SRRSU, the most prominent drainages are the Wild Rice and a small segment of the Sheyenne River (see Figures 10.1 and 10.1A). The Red River of the North flows for some 394 river miles to the international border with Manitoba while enroute to Lake Winnipeg and ultimately Hudson Bay. Additional hydrologic information is provided in Williams-Sether (2001).

Physiography

The SRRSU crosscuts the Red River valley and Glaciated Plains physiographic regions of southeastern North Dakota (Bluemle 1989:24). A prominent scarp associated with the western margin of glacial Lake Agassiz forms the boundary between the Red River valley to the east and the Glaciated Plains region to the west.

The Red River valley is a relatively featureless plain resulting from the sedimentation of glacial Lake Agassiz (ibid.:24). Terrain is essentially flat with elevation varying only a few meters over the expansive lakebed except where Holocene drainages have downcut.

Figure 10.1: Map of the Southern Red River Study Unit.

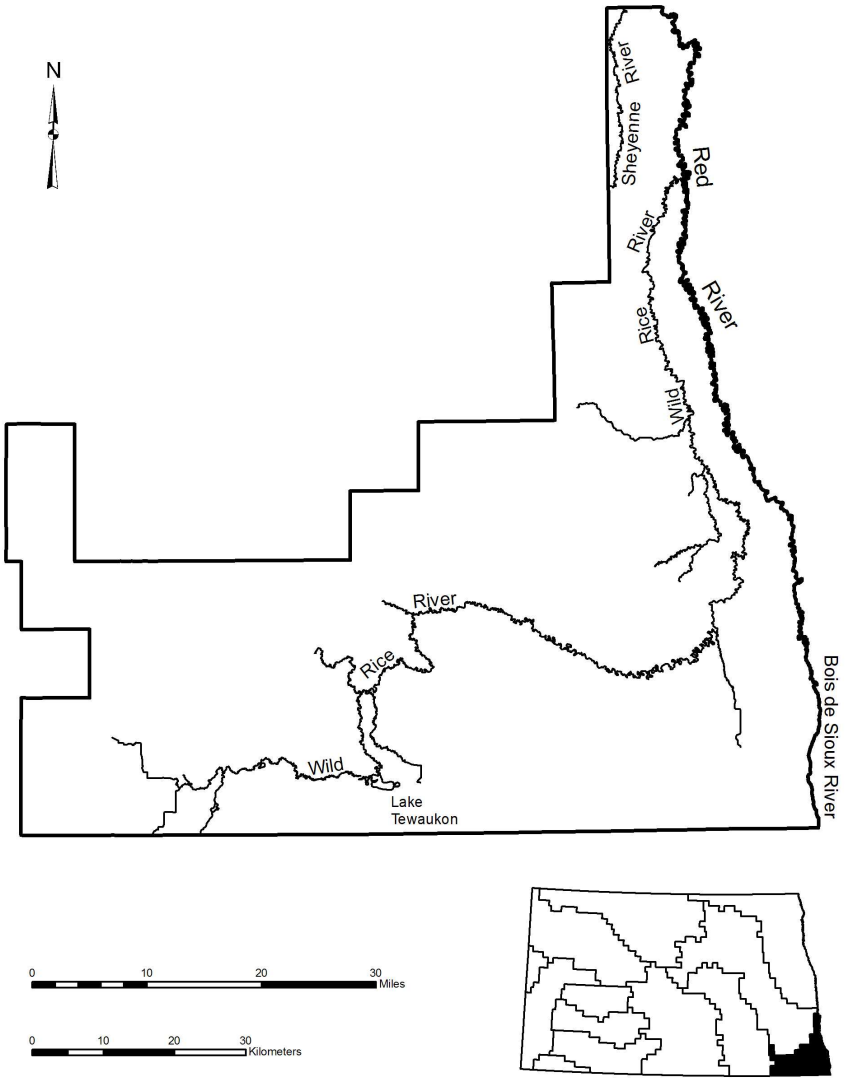


Figure 10.1A: Shaded Relief Map of the Southern Red River Study Unit.

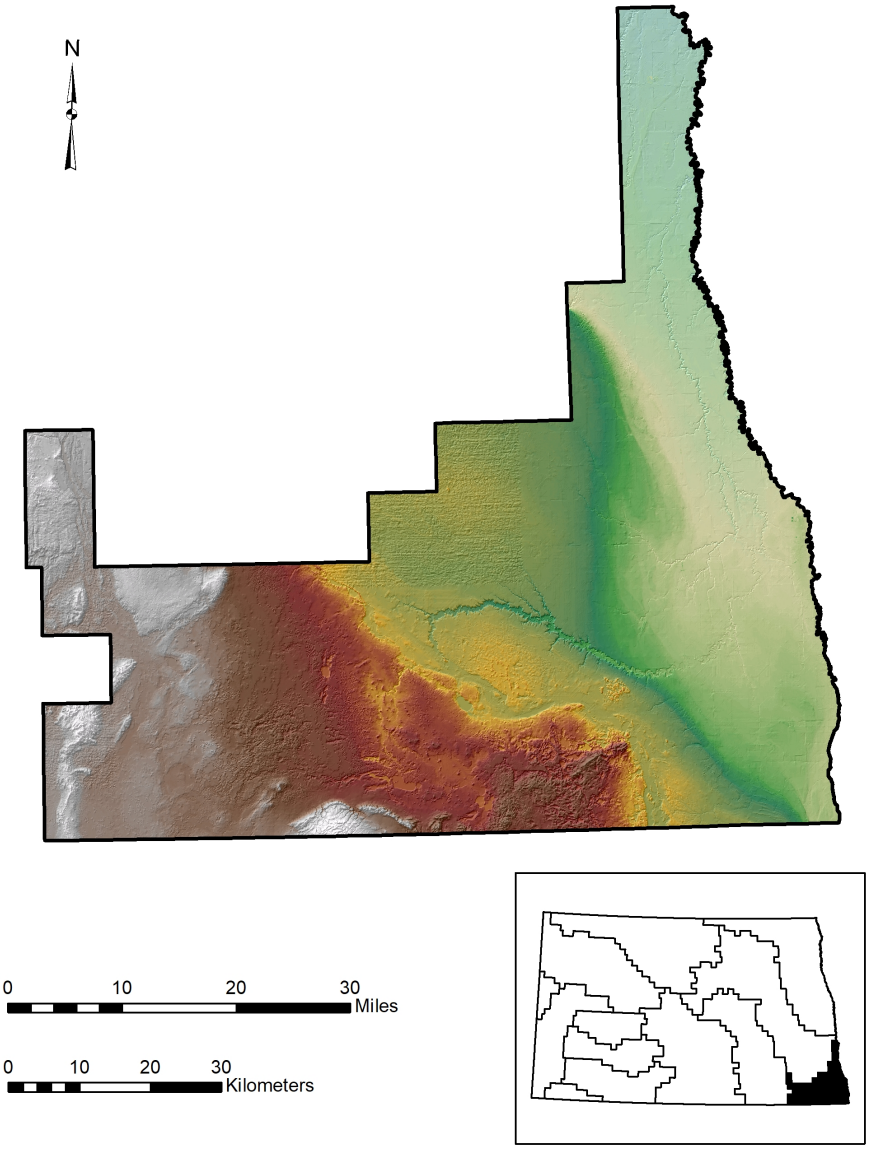


Table 10.1: Townships in the Southern Red Rive Study Unit.

TOWNSHIP	RANGE
129	47
129	48
129	49
129	50
129	51
129	52
129	53
129	53
129	54
129	55
129	56
129	57
129	58
130	47
130	48
130	49
130	50
130	51
130	52
130	53
130	54
130	55
130	56
130	57
130	58
131	47
131	48
131	49
131	50
131	51
131	52
131	53
131	54
131	55
131	56
131	57
132	47
132	48

TOWNSHIP	RANGE
132	49
132	50
132	51
132	52
132	53
132	54
132	55
132	56
132	57
132	58
133	47
133	48
133	49
133	50
133	51
133	52
133	53
133	58
134	48
134	49
134	50
134	51
134	52
134	58
135	48
135	49
135	50
136	48
136	49
136	50
137	48
137	49
138	48
138	49
139	48
139	49
140	48
140	49

The Glaciated Plains, which includes a small wedge of the Prairie Coteau, comprise gently rolling to locally steep relief terrain (cf. ibid.; Brophy and Bluemle 1983:Figure 1). The Prairie Coteau (Sisseton Hills) juts up northwestward from South Dakota.

Few prominent physiographic features other than the Sisseton Hills and tributary valleys of the Red River would have attracted prehistoric settlement. Numerous small pothole lakes dotting the landscape west of the escarpment in Richland and Sargent counties should also have offered concentrated locations of subsistence resources.

Climate

The climate is continental. It is typified by winters which are long and cold offset by short hot summers. Temperatures can vary dramatically during the annual cycle in this region of the Northeastern Plains. The average January temperature for Stutsman County is 7°F while that for July is 70°F (Larsen et al. 1964:1-2). Mean annual precipitation is 20 inches, most of which falls as rain during late spring and early summer. Frost-free days average about 140 in the south and decline to 120 as one moves north along the Red River valley (Anfinson 1990:149).

Understanding of climatic conditions in the SRRSU during the past 13,000 years is based on paleoenvironmental data collected from adjacent regions of the Northern Plains and Midwest and other areas located further afield. Table 10.2 identifies some of these studies. Meridian Technologies Inc. (2004) summarizes climatic information including frequency of drought covering the period AD 1700-2000.

The last continental glaciers had receded from the SRRSU by about 11,500 years BP. The SU had been covered by the Red River Lobe (cf. Brophy and Bluemle 1983:180; Clayton and Moran 1982:74-75; Hallberg and Kemmis 1986:66). Following recession of the ice, expansive glacial Lake Agassiz was formed (cf. Teller and Clayton 1983). Glacial Lake Agassiz figured prominently in the early prehistory of the SRRSU (cf. Buchner and Pettipas 1990; Pettipas and Buchner 1983). Early on, Lake Agassiz drained southeastward through the River Warren (now Lake Traverse, Big Stone Lake, and the Minnesota River). Lake levels fluctuated in concert with glacial re-advances. Several prominent strandlines marking former beaches are readily apparent on the ground. More strandlines are visible in oblique aerial photographs. These former beaches include McCauleyville, Campbell, Tintah, Norcross, and Herman (cf. Michlovic 1987:21).

Vegetation mosaics colonized the deglaciated terrain surrounding glacial Lake Agassiz. There were forests of spruce and deciduous trees interspersed with openings dominated by sagebrush (Ashworth and Cvancara 1983). During the following millennia, deciduous forest gave way to prairie grassland by about 9000 BP in much of the SRRSU. Stands of timber remained along prominent drainageways such as the Bois des Sioux-Red, Sheyenne, and the Wild Rice rivers. Prairie predominated until the introduction of mechanized agriculture.

Table 10.2: Studies Pertaining to Paleoenvironmental Investigations in the Northeastern Plains and Adjacent Regions.

Author (Date)	Abbreviated Title
Anfinson and Wright (1990)	Climatic Change and Culture in Prehistoric Minnesota
Ashworth and Cvancara (1983)	Paleoecology of Southern Lake Agassiz Basin
Bartlein et al. (1984)	Holocene Climatic Change in Northern Midwest
Baerreis and Bryson (1965)	Climatic Episodes and Dating Mississippian
Bernabo (1981)	Estimates of Temperature Change Last 2700 Years
Bryson (1985)	Climatic Analogs in Paleoclimatic Reconstruction
Bryson (1987)	Climates of the Holocene
Bryson et al. (1970)	Late-Glacial and Post-Glacial Climatic Changes
Grove (1988)	Little Ice Age
McAndrews (1966)	Postglacial History of Northwestern Minnesota
Rannie (1983)	Red River at Winnipeg During 19th Century
Schwert (2003)	Red River Valley: History, Geography, Planning/Management
Shay (1969)	Vegetation History, Southern Lake Agassiz Basin
Webb et al. (1983)	Holocene Changes in Vegetation in Midwest
Wendland (1978a)	Holocene Man in North America
Wendland and Bryson (1974)	Dating Climatic Episodes of the Holocene

Landforms and Soils

Table 10.3 provides a listing of pedologic and geological studies covering the four-county area within which the SRRSU is contained. Soil surveys prepared by the Natural Resources Conservation Service (NRCS) are published online (NRCS 2021c). Additionally, the North Dakota Geological Survey (NDGS) has published maps of till deposits in the Red River valley (Harris et al. 1996, 2020).

The primary landforms in the SRRSU include: (1) floodplains, (2) terraces, (3) valley walls, (4) alluvial/colluvial fans, and (5) upland plains (cf. Larsen et al. 1964; Thompson and Joos 1975). Soils found on these landforms formed under a variety of pedogenic regimes (cf. Birkeland 1984:Figures 2.1, 2.2).

Floodplains

The floodplains of the major river valleys (e.g., Red, Sheyenne, and Wild Rice) are the portions of the valleys susceptible to annual flooding. The broad, flat lacustrine plain of glacial Lake Agassiz offers little to impede overbank flow once the Red River has reached flood stage. Modern 20th century solutions to this problem include construction of levees and other diversion features.

The present-day Red River (along with the Wild Rice River) is characterized by a meandering course with numerous old channel scars. Michlovic (1987:10, citing Smith

n.d.) suggests that the Red River had assumed its laterally moving meandering coarse by about 4500 BP.

Table 10.3: Summary of Geologic and Pedologic Studies in the Southern Red River Study Unit by County.

County	Geology, NDGS[a] – Author (Date)	Pedology, NRCS[b] – Author (Date)
Cass	Arndt and Moran (1974) Klausing (1968)	Prochnow et al. (1985)
Ransom	Bluemle (1979)	Thompson and Joos (1975)
Richland	Baker (1967)	Thompson and Joos (1975)
Sargent	Nielson (1973) Bluemle (1979)	Larsen et al. (1964)
Tri-County		Omodt et al. (1966)
General[c]	Arndt (1977) Clayton and Moran (1982) Clayton, Moran, et al. (1980) Hallberg and Kemmis (1986) Harris et al. (1996) Teller and Clayton (1983) Upham (1895) Atlas Map 15, Sheyenne River (Harris 1989) USGS (n.d.)	Foss et al. (1985) Foss (n.d.) Smith (n.d.) Birkeland (1984) Holliday (1990) NRCS (1975)
[a] North Dakota Geological Survey; [b] Natural Resources Conservation Service; [c] applies to SRRSU		

Terraces

Holocene terraces occur along many tributary stream channels. Buried topsoils (paleosols) can be expected to occur in these settings. The paleosols sometimes contain archaeological remains (cf. Michlovic 1988:58).

Valley Walls

Major river valley walls are sometimes draped with a veneer of glacial till. Till is exposed along portions of the Red River drainage.

Alluvial/Colluvial Fans

These fans occur in both large and small valleys throughout the Northern Plains. Sediments deposited by permanent and ephemeral streams entering these drainageways collect in these fan formations (cf. Hajic 1990:51-57). Michlovic (1987:10) has suggested that early and middle Holocene age cultural deposits may be preserved in these settings along the lateral margins of the Red River valley.

Upland Plains

Till plains occur in upland settings west of the beach ridges. Glacial outwash is mantled over older deposits. To the east, exposures of till occur in spots on the glacial lacustrine plain.

Natural Resources Conservation Service (NRCS) official soil survey resources are available online (NRCS 2021 a, b).

- Electronic Field Office Technical Guide: https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/
- Web Soil Survey: https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/

Flora and Fauna

The Red River-Bois de Sioux and Wild Rice River valleys and the surrounding environs support a variety of plant and animal communities. Northern floodplain forest occurs along the banks of the major rivers and streams. Open gallery stands of elm-ash-cottonwood along with box elder, basswood, and bur oak predominate (Anfinson 1990:149). Much of the surrounding area prior to Euro-American contact was in tall grass (cf. *Andropogon gerardi)* prairie. Tall and medium-grass prairie extended westward from the Red River valley onto the rolling Glaciated Plains. Important plant foods present on the prairie included prairie turnip *(Psoralea esculenta)* and Indian pea *(Astragalus caryocarpus*) (cf. Michlovic 1984b:17). Wild rice *(Zizania aqautica)* was another food available for harvest along stretches of the Red and Wild Rice rivers (cf. Haberman 1978:16; Ritterbush 1990:60-63).

The riparian woodland and prairie floral communities provided habitat for various fauna. Large ungulates included bison, moose, elk, and white-tailed deer (cf. Bailey 1926; Reid and Cannon 1928). Fur-bearing mammals such as beaver, muskrat, and fox were present as well (cf. Gough 1988; Hickerson 1956). Various fish and mussel species along with turtles occur in the Red River and its tributaries (cf. Cvancara 1983). Avian species including migratory waterfowl were also common in the valley and surrounding wetlands. Many of these creatures were sources of food, furs, and feathers for native groups. Table 10.4 provides a listing of fauna remains recovered from Red River valley archaeological sites near this SU (Femco [21WL1] and Mooney [21NR29]).

Other Natural Resource Potential

Water resources were critical for supporting permanent or annual settlement. Concentrations of sites along the banks of the Red River attest to its importance. Clay deposits may have been important in certain locations during the Woodland and Plains Village periods. The extent to which the rich Red River valley silt loams were used for prehistoric garden plots remains to be assessed.

Table 10.4: Summary of Animal Remains Recovered from Archaeological Sites in the Red River Valley near the SRRSU (adapted from Michlovic 1987:15).

Class	Species
Large Mammal	Bison (*Bison bison)* Elk (*Cervus elaphus)* Deer (*Odocoileus* sp.)
Small Mammal	Squirrel (*Scuiridae*) Pocket Gopher (*Geomys*) Skunk (*Mephitis*) Beaver (*Caster canadensis*) Muskrat (*Ondatra*) Dog / Wolf (*Canis*) Raccoon (*Procyon lotor*) Badger (*Taxidea taxus*)
Birds	Ducks (*Aythyinae, Anatinae, Anatidae*) Coot (*Fulica americana*) Hawk (*Accipitridae*) Pigeon (*Columbidae*)
Fish	Pike (*Escocidae*) Catfish (*Ictaluridae*) Sucker (*Catostomidae*) Walleye (*Stizostedian* sp.) Drum (*Aplodinotus grunniens*) Sunfish (*Centrachidae*)
Turtle	Box Turtle (*Emyidae*) Snapping Turtle (*Chelydra*)

Knappable stone is available only in secondary deposits of pebbles and cobbles in glacial till, stream gravels, and the former shorelines and strandlines of Glacial Lake Agassiz. Vast extents of the former lakebed contain no sediments or clasts larger than silts. Long-term settlement in such areas would have necessitated long-distance transport of stone when needed.

In 2021 the South Dakota State Historical Society published *Tool Stone Found at South Dakota Archaeological Sites* edited by Renee M. Boen. The document contains information, photographs, and maps on raw stone materials found at archaeological sites in South Dakota and will be a valuable reference for archaeologists in North Dakota as well. Craig Johnson's *Chipped Stone Technological Organization: Central Place Foraging and Exchange on the Northern Great Plains* (2019) is likewise a valuable resource regarding lithics resources and provides important research questions for future studies. Morrow (2016) has published a detailed volume on lithic resources in Minnesota.

Overview of Previous Archaeological Work

Most of this work has been conducted in compliance with federal regulations pertaining to flood control, urban development, energy transmission, telecommunications, and transportation. Minnesota State University Moorhead and North Dakota State University have conducted several research projects in this SU.
Inventory Projects

As of 31 December 2020, there were 69 sites and 88 site leads or isolated finds recorded in the site database for the SRRSU. With the SRRSU covering a 2,401 mi² area, there is one site per 34.8 mi², or one archaeological resource per 15.3mi² if site leads and isolated finds are included. As of 31 December 2020, 11% of the SRRSU has been intensively surveyed. These figures reflect the paucity of archaeological work conducted in the southern Red River Basin rather than indicating actual site density.

> Surveys have shown that prehistoric sites in the valley are abundant. Most of the 100 new ones found in the plowed fields of Wilkin, Clay, and Norman counties of Minnesota and Cass County of North Dakota are on the levee deposits of the Red River; extrapolating from this information, we might suggest about 1,000 on both sides of the Red between Breckenridge, Minnesota, and Winnipeg (Michlovic 1988:56).

Tables 10.5 and 10.6 present data for (1) cultural/temporal affiliation(s) and (2) property types by the landforms on which they are located. Cultural material scatters are the best represented class in the sample, followed by other rock features, graves, and cairns. Only about half of the sites are assigned to a specific period, and primarily late prehistoric and Plains Woodland.

Table 10.5: Cultural/Temporal Affiliation for Archaeological Sites in the Southern Red River Study Unit, 31 December 2020.

Archaic	
Oxbow	1
Pelican Lake	1
Total	**2**
Woodland	
Sonota/Besant	3
Avonlea	3
Middle Woodland	1
Late Woodland	10
Total	**17**
Late Prehistoric	
Unspecified	20
Plains Village	1
Northeastern Plains	1
Total	**22**
TOTAL	**41**

Table 10.6: Feature Type by Landform for Archaeological Sites in the Southern Red River Study Unit, 31 December 2020.

SU 10	Cairn	CMS	Earth	Grave	Hearth	Mound	ORF	Pit	Art	Circle	TOTAL
Beach/ Riverbank		2		1							**3**
Beachline (glacial)		1									**1**
Draw		1									**1**
Floodplain		11			1			1			**13**
Hill/Knoll/ Bluff	2	7					5			1	**15**
Lacustrian plain		1									**1**
Levee		1									**1**
Other		1		1	1	1					**4**
Ridge	1	2	1					1	1	1	**7**
Saddle		1									**1**
Terrace		11					1				**12**
Upland plain	1	5				1	2				**9**
Valley wall foot slope		2		2			2	1			**7**
TOTAL	**4**	**46**	**1**	**4**	**2**	**2**	**10**	**3**	**1**	**2**	**75**
CMS=Cultural Material Scatter; Earth=Earthwork; ORF=Other Rock Feature; Art=Rock Art; Circle=Stone Circle											

Some of the earliest site surveys in the SRRSU were conducted between 1959 and 1961 by the University of Minnesota (UM). This work was part of a larger research project aimed at the prehistory of the Red River valley (cf. Johnson n.d., 1962). These and other survey reports for the SRRSU are listed in Table 10.7.

Nelson (1973) conducted archaeological reconnaissance in southeastern North Dakota. He recorded several prominent sites (e.g., 32SA101).

University of North Dakota (UND) archaeologists were involved with survey work in the proposed Garrison Diversion Unit-Southern Section in Sargent County for the Bureau of Reclamation between 1974 and 1976. The following year, Good, Kinney, et al. (1977) reported a survey conducted along 14.5 miles (23 km) stretch of the upper reaches of the Wild Rice River and the shoreline of Lake Tewaukon. No prehistoric sites were recorded along the Wild Rice River. Three prehistoric sites were found along the lake shoreline including the Lake Tewaukon site (32SA211) reported by Haberman (1978). Haberman's report describes the remains of a human burial along with a Knife River Flint (KRF) biface salvaged from the shoreline (ibid.:222-223).

Table 10.7: Summary of 1978 Prehistoric Archaeological Sample Survey in Clay County, Minnesota (adapted from Minnesota Historical Society 1981:Table 3g).

Sample Strata	Stream-Shore	Lake Agassiz Beach Ridge(s)	Intersection Beach Ridge(s) and Rivers	Away-from-Water	Total
Estimated total units in sample universe	680	1,711	128	9,322	11,841
Number of units surveyed	41	42	16	32	131
Number of units containing prehistoric sites	9	2	2	1	14
Percentage of units containing sites	22	5	13	3	11
Estimated total units in sample universe containing prehistoric sites	150	82	16	242	490

Sample survey work conducted in 1978 in Clay County, Minnesota was reported (Minnesota Historical Society 1981:29-32; Michlovic 1979c). A total of 131 (40-acre) survey units were sampled; 14 prehistoric sites were found (ibid.: Table 3g). The sample survey units were grouped according to four strata: (1) streamshore, (2) Lake Agassiz beach ridges, (3) intersection of beach ridges with rivers, and (4) away-from-water. The sample universe was estimated to cover 740 mi². Streamshore units produced the highest frequency and percentage of sites (see Table 10.8). As expected, away-from-water units contained the least number of sites.

In all, Michlovic (1979:15) reported 44 prehistoric sites were discovered during the survey in Minnesota. An additional 30 sites were documented through working with local informants and spot checks of likely locations such as stream confluences not examined during the probabilistic survey.

Michlovic (1984a) and Minnesota State University Moorhead (MSUM) continued with archaeological reconnaissance in Wilkin and southern Clay counties, Minnesota. A 12 mile (19 km) stretch of Red River frontage between the Wolverton Creek confluence near Comstock and Breckenridge, Minnesota to the south was inspected for prehistoric archaeological sites. Twenty-six previously unrecorded sites were found. Of the two known sites, Femco (21WI1) was revisited and tested (cf. Wilford 1970; see below).

Another pedestrian survey was conducted in Cass County, North Dakota, during 1986 by MSUM. A small portion of that survey falls within the SRRSU comprising portions of the Sheyenne River, Wild Rice River, and Red River drainages. Four sites were recorded within the SRRSU: two along the Red River and one each along the Wild Rice and Sheyenne rivers (Michlovic 1987).

Artz (1988a) conducted small-scale surveys of nine proposed parking areas within the Tewaukon Game Management Area, a part of Tewaukon National Wildlife Refuge in Sargent County. Four prehistoric archaeological sites, including 32SA40, were identified. It was suggested that (1) proximity to available water, (2) availability of a view, and (3) access and availability of knappable stone were important factors conditioning prehistoric settlement in the Wild Rice River valley environs (ibid.).

Deaver and Bergstrom (1989) reported a survey covering a 302 mi stretch of 40-foot right-of-way in Ransom, Richland, and Sargent counties. Five prehistoric sites and four isolated finds were recorded. Prominent among these is 32SA48, a cairn and rock feature site of ceremonial importance to the Sisseton-Wahpeton Dakota. This site is situated along the edge of the Prairie Coteau.

Floodman (1990) recorded 32RIX97 consisting of two flakes of red chert in a blowout of a dune area in the Sheyenne National Grasslands. The only other artifacts were a few scattered bone fragments, and these items were not definitively associated with the flaking debris. Of particular interest was the occurrence of two buried soils (paleosols) exposed in the dune setting. Some potential for intact cultural deposits may exist in such contexts. Gregg et al. (1991) discuss positive survey results from a physiographically similar eight mile-square (5,120-acre) tract located directly south in Brown and Marshall counties, South Dakota.

The proposed construction of an approximately 1,845-mile-long crude oil pipeline (TransCanada), originating in Canada and terminating in Illinois and Oklahoma, necessitated Class I, II, and III cultural resource inventories in eastern North Dakota (Bleier et al. 2006). Driven by a geomorphologist, the Class II inventory covered 100 percent of the original pipeline route. The Class III inventory was a 31 percent sample of the proposed pipeline route(s). The sample segments represented higher probability areas

(ibid.:ii). The pedestrian survey was supplemented by shovel probes in areas of reduced ground surface visibility. Counties within the SRRSU include portions of Ransom and Sargent. Terrain along the proposed route varies from prominent riparian forests along stream valleys to flat farmland to gently rolling plains with intermittent wetlands. More specifically, the contemporary landscape comprises cultivated fields, pasture, and fields in the Conservation Reserve Program (CRP).

The Fargo-Moorhead Metropolitan Area Flood Risk Management Project, conducted on behalf of the Flood Diversion Authority and the US Army Corps of Engineers St. Paul District resulted in two large Class III Inventories within the Southern Red River Study Unit. In total these two inventories (Bohner 2016; Bender et al 2017) account for 8,488 acres of Class III archaeological inventory conducted within the SRRSU.

The remainder of the cultural resource inventories has produced few significant archaeological sites which merit further discussion here. In summary, most of the reported cultural resource sites occur in settings near permanent water and sometimes command a view of the surrounding terrain.

As part of background studies for large-scale inventory projects, researchers should attempt to make use of Landsat imagery of groundcover available for North Dakota (cf. Reid and Johnson 1978) supplemented by aerial photographic coverage (cf. USDA 1937). LIDAR coverage should be reviewed. Recent digital imagery is available from several internet sources including the North Dakota GIS Hub (2021), https://www.gis.nd.gov/.

In general, site avoidance, rather than formal testing and/or mitigation, has been the choice of applicants. The result is initial documentation of many new sites but relatively few evaluative investigations, and therefore little new knowledge about the prehistory of North Dakota. No testing has occurred at any sites in this SU since 2006 or mitigation since 2012.

Formal Test Excavation Projects

Controlled test excavations have been reported from a few sites in the SRRSU (Table 10.8). The earliest known investigations completed in the region probably was undertaken at mounds and village sites along the Sheyenne River by W. D. Strong in the 1930s. Much of that work has not been formally reported. Two decades later, between 1959 and 1962, UM archaeologists conducted investigations at several locations in the Lake Agassiz Basin of North Dakota (Johnson n.d.; Johnson and Evans n.d.). This UM work may have included limited testing at sites along the Red, Sheyenne, and Wild Rice rivers as well as Dead Colt Creek and other places where prominent prehistoric deposits occur. Project records from this work merit review.

Table 10.8: Formal Testing Projects in the Southern Red River Study Unit, 31 December 2020.

Year	First Author	Second Author	Title	Site Number	MS #
1976	Good, K.	J. Dahlberg	Archaeology Investigations in the LaMoure-Oakes Project Area, Garrison Diversion, Sargent County, LaMoure County, and Stutsman County, ND	32SA201 32SA202 32SA203 32SA205 32SA206 32SA210	102
1998	Stine, E.	M. Cassell	Alliance Pipeline Project: Phase II Testing and Evaluation of 37 Sites in ND, Volumes I and II	32RI785	7212
1998	Stine, E.	M. Hannum	Phase II Testing and Evaluation of 21 Sites and Five Sites Revisited an Addendum to Alliance Pipeline Project: Phase II Testing and Evaluation of 37 Sites in ND	32RI786	7329
2000	Fassler, T.		Phase II Cultural Resource Investigation of Site 32RI790 at the City of Wahpeton, Richland County, ND	32RI790	7634
2001	Kelly, K.		Preliminary Report of Field Investigations of Fort Abercrombie [32RI777], Richland County, ND	32RI777	10129
2002	Penner, B.		Phase I and II Archaeological Investigations of the Proposed Replacement of the TH 10 (Main Avenue) Bridge Crossing Between Fargo, Cass County, ND and Moorhead, Clay County, MN	32CS4672 32CS4673	8321
2005	Wilson, J.		Phase I Cultural Resources Investigation of a Revised Levee Alignment and Phase II Archaeological Evaluation of 32RI799, City of Wahpeton, Richland County, ND	32RI799	9112
2006	Morrow, T.		Phase II Archaeological Testing & Evaluation of Site 32CS4999, City of Fargo, Cass County, ND, Section 205 Flood Control Project	32CS4999	9950

Test excavations were conducted in 2006 at 32CS4999 within the city of Fargo (Morrow 2006). A total of 56 body sherds and two rim sherds of prehistoric pottery were recovered through Phase II investigations. The ceramics recovered are broadly like pottery of the Late Prehistoric period found over a large region of the Northeastern Plains (ibid.: 33).

National Register of Historic Places

The National Park Service website includes sites in North Dakota listed in the National Register of Historic Places (NRHP).

Major Excavation Projects

Table 10.9: Major Excavation Projects in the Southern Red River Study Unit, 31 December 2020.

Year	First Author	Title	Site Number	MS #
1978	Haberman, T.	Archaeological Test Excavations at Lake Tewaukon (32SA211): A Protohistoric Occupation Site in Southeastern North Dakota	32SA211	962
2001	Dobbs, C.	Alliance Pipeline LP: Excavations at 32RI785, Richland County, ND, Volumes I and II	32RI785	7958
2012	Rothaus, R.	Phase III Archaeological Mitigation at Fort Abercrombie State Historic Site (32RI777), Richland County, ND	32RI777	13742

The most extensive excavations reported as of 2020 for the SRRSU were completed by UND at Lake Tewaukon (32SA211) in 1975. Haberman (1978) reported that seven excavation units were dug. The excavations revealed that the peninsula area of Lake Tewaukon was repeatedly occupied during the prehistoric and protohistoric periods. Middle and/or Late Plains Archaic deposits were buried 1.5 meters deep in XU1. Protohistoric artifacts (e.g., glass trade beads) were recovered during waterscreening activities from buried contexts (60-70 cm sd) in XU5.

Haberman (1978:21) likens the variability in projectile point styles encountered at Lake Tewaukon with corner-notched, side-notched, and stemmed specimens reported by McNerney (1970) from Blue Dog Lake in northeastern South Dakota. It remains to be seen if there are regionally distinctive styles within such restricted portions of the Northeastern Plains.

The proposed construction of an approximately 890-mile long 36-inch diameter crude oil pipeline (Alliance), in North Dakota, Minnesota, Iowa, and Illinois necessitated data recovery excavations at 32RI785 in southeastern North Dakota (Dobbs et al. 2001). The investigations revealed a significant amount of new information about the Plains Archaic period in that part of the state. Two distinct components were identified at the site including early Middle Archaic and Late Plains Archaic which may be associated with the Pelican Lake complex. In Excavation Block 8, the early Middle and Late Plains Archaic components are separated stratigraphically and can be compared to evaluate changes in the Archaic over time (ibid.:ii). Based on the available evidence, it appears the early Middle Plains Archaic component at 32RI785 represents a residential base camp(s) (cf. Binford 1980). The Late Archaic component likely functioned as a field camp focused on hunting activities (Dobbs et al. 2001:iii).

Stone Circle and Cairn Sites

As of 31 December 2020, two stone circle sites have been identified during surveys in this SU. No formal testing (at least one 1-x-1-m unit) has been conducted.

Review of the literature reveals the changing research questions addressed over time for stone circles.

The monograph on stone circle sites in *Plains Anthropologist Memoir 19* is a valuable source of information (Davis 1983). Compilations of radiocarbon dates from sites in McLean, Mercer, and Oliver counties can be found in Strait and Peterson (2007:4.6-4.8), in Mclean County (Thomas and Peterson 2010:6.2-6.3) and from Besant/Sonota sites in Deaver and Deaver (1987). A useful discussion of single stone circle site function based on ethnographic accounts is available in Gregg et al. (1983:[3]864-869). An assessment of nomadic settlement-subsistence structure and bison ecology is discussed by Hanson (1983b:1342-1417). Additional references for stone features sites can be found in the reference section of the Cultural Heritage Form.

Four stone cairn sites, two stone circle sites and ten other rock feature sites have been recorded in the SRRSU (Table 10.6). The relatively low number of stone feature sites recorded within the SRRSU may be interpreted as (1) a result of the number of surveys conducted here compared to other SU and/or (2) it may be that these types of sites have been destroyed by extensive agricultural practices employed in the region.

Publications

It is critical for archaeologists to publish their work to enhance public support and understanding of the value of conducting formal archaeological investigations. In the 2021 edition of the Archaeological Component of the State Plan, we include a table in each study unit of selected publications available to general audiences (Table 10.10). Of particular interest may be the journal of the Plains Anthropological Society (*Plains Anthropologist*) and the journal of the North Dakota Archaeological Association (*North Dakota Archaeology*), in addition to published books.

Table 10.10: Selected Published References for the Southern Red River Study Unit.

Author(s)	Year	Reference
Anderson, Laura L. (editor)	2003	*Being Dakota: Tales and Traditions of the Sisseton & Wahpeton* by Amos E. Onerod and Alanson B. Skinner. Minnesota Historical Society, St. Paul.
Anfinson, Scott F.	1979	A Handbook of Minnesota Prehistoric Ceramics. *Occasional Publications in Minnesota Anthropology* No. 5. Minnesota Archaeological Society.
Anfinson, Scott F.	1997	*Southwestern Minnesota Archaeology: 12,000 Years in the Prairie Lake Region.* Minnesota Historical Society, St. Paul.
Bakken, Kent E.	1985	Lithic Raw Materials in Northwest Minnesota. *Minnesota Archaeologist* 44:34-46.
Bakken, Kent E.	2011	Lithic Raw Material Use Patterns in Minnesota. PhD dissertation, Department of Anthropology, University of Minnesota, Minneapolis.
Cooper, L. R., and E. Johnson	1964	Sandy Lake Ware and its Distribution. *American Antiquity* 29:474-479.
DeMallie Raymond J.	1975	Joseph N. Nicollet's Account of the Sioux and Assiniboin in 1839. *South Dakota History* 5:343-359.

Author(s)	Year	Reference
DeMallie, Raymond J.	1976	Sioux Ethnohistory: A Methodological Critique. *Journal of Ethnic Studies* 4(3):77-83.
Feraca, Stephen E., and James H. Howard	1963	The Identity and Demography of the Dakota or Sioux Tribe. *Plains Anthropologist* 8(20):80-84.
Floodman, Mervin G.	2012	*Prehistory of the Dakota Prairie Grasslands: An Overview*. US Forest Service, Bismarck, North Dakota.
Gregg, Michael	1994	Archaeological Complexes of the Northwestern Plains and Prairie-Woodland Border, A.D. 500-1500. In *Plains Indians, A.D. 500-1500: The Archaeological Past of Historic Groups,* edited by Karl H. Schlesier, pp. 71-95. University of Oklahoma Press, Norman.
Gregg, Michael L., David Meyer, Paul R. Picha, and David G. Stanley	1996	Archaeology of the Northeastern Plains. In *Archeological and Bioarcheological Resources of the Northern Plains: A Volume in the Central and Northern Plains Archeological Overview*, pp. 77-90. Arkansas Archeological Survey, Fayetteville.
Gagnon, Gregory O.	2011	*Culture and Customs of the Sioux Indians.* Greenwood.
Gibbon, Guy	2003	*The Sioux: The Dakota and Lakota Nations.* Blackwell.
Henning, Dale R.	2007	Continuity and Change in the Eastern Plains, A.D. 800-1700: An Examination of Exchange Patterns. *In Plains Village Archaeology: Bison-hunting Farmers in the Central and Northern Plains*, edited by S. A. Ahler and M. Kay, pp. 67-82. University of Utah Press, Salt Lake City.
Holley, George R.	2008	Place names, Mounds and Landscape: An Interpretation of the Late Prehistoric Occupation of the Northeastern Plains. *Journal of the North Dakota Archaeological Association* (8):53-67.
Holley, George R.	2010	Oneota in the Northeastern Plains. *The Minnesota Archaeologist* 69:13-44.
Holley, George R., and Mike Simonson	2016	Incised Catlinite Tablets from the Red River Valley of the Northeastern Plains. *The Minnesota Archaeologist* 75:105-137.
Howard, James H.	1953	The Southern Cult in the Northern Plains. *American Antiquity* 19:130-138.
Howard, James H.	1954	Yanktonai Dakota Eagle Trapping. *Southwestern Journal of Anthropology* 10(1):69-74.
Howard, James H.	1966	*The Dakota or Sioux Indians: A Study in Human Ecology.* J&L Reprint Company, Lincoln, Nebraska.
Howard, James H.	1972	Notes on the Ethnogeography of the Yankton Dakota. *Plains Anthropologist* 17(58-1):281-307.
Howard, James H.	1976	Yanktonai Ethnohistory and the John K. Bear Winter Count. *Plains Anthropological Society* Memoir 11.
Jacobson, Clair	1980	A History of the Yanktonai and Hunkpatina Sioux. *North Dakota History* 47(1):4-24.
Low, Bruce	1996	Swan River Chert. *Plains Anthropologist* 41(156):165-174.
Mallery, Garrick	1987	*The Dakota and Corbusier Winter Counts.* J & L Reprints, Lincoln, Nebraska.
Michael, Ronald L.	1965	Fur Trade of the Red River Valley of the North:1763-1812. Master's thesis, University of North Dakota, Grand Forks.
Michlovic, Michael G.	1983	The Red River Valley in the Prehistory of the Northern Plains. *Plains Anthropologist* 28:23-31.
Michlovic, Michael G.	1985	The Problem of Teton migration. In *Archaeology, Ecology and Ethnohistory of the Prairie-Forest Border Zone of Minnesota and Manitoba*, edited by Janet Spector and Elden Johnson, pp. 131-145. J & L Reprints, Lincoln, Nebraska.
Michlovic, Michael G.	1988	The Archaeology of the Red River Valley. *Minnesota History*

Author(s)	Year	Reference
		51:55-32.
Michlovic, Michael G.	1990	Northern Plains-Woodland Interaction in Prehistory. In *The Woodland Tradition in the Western Great Lakes: Papers Presented to Elden*, edited by Guy E. Gibbon, pp. 45-54. Publications in Anthropology. University of Minnesota.
Nicholson, B. A.	1988	Modeling Subsistence Strategies in the Forest/Grasslands Transition Zone of Western Manitoba During the Late Prehistoric and Early Historic Periods. *Plains Anthropologist* 33(21).
Ritterbush, Lauren W.	1990	Culture Change and Continuity: Ethnohistoric Analysis of Ojibwas and Ottawa Adjustment to the Prairies. PhD dissertation, Department of Anthropology, University of Kansas, Lawrence.
Schneider, Mary Jane	1986	*North Dakota Indians: An Introduction*. Kendall/Hunt.
Skinner, Alanson	1925	Tree-Dweller Bundles of the Wahpeton Dakota. *Indian Notes* 2:66-73.
Smith, G. Hubert	1947	Trade Among the Dakota. *Minnesota Archaeologist* 13:65-69/
Spector, Janet, and Eldon Johnson	1885	*Archaeology, Ecology and Ethnohistory of the Prairie-Forest Border Zone of Minnesota and Manitoba*. J & L Reprints, Lincoln, Nebraska.
Swenson, Fern E., and Michael L. Gregg	1988	A Devils-Lake Sourisford Mortuary Vessel from Southeastern North Dakota. *Journal of the North Dakota Archaeological Association* 3:1-15.
Syms, Leigh E.	1977	The Devils Lake-Sourisford Burial Complex on the Northern Plains. *Plains Anthropologist* 24:283-308.
Treuer, Anton Steven	1994	Ojibwe-Dakota Relations: Diplomacy, War and Social Union, 1679-1862. 2 vols. Master's thesis, University of Minnesota, Minneapolis.
Wedel, M. M.	1974	LeSueur and the Dakota Sioux. In *Aspects of Upper Great Lakes Anthropology. Papers in Honor of Lloyd A. Wilford,* edited by E. Johnson, pp. 157-171. Minnesota Prehistoric Archaeology Series No. 11.
Whelan, Mary K.	1993	Dakota Indian Economics and the Nineteenth-Century Fur Trade. *Ethnohistory* 40:246-276.
Wilford, Lloyd A.	1970	*Burial Mounds of the Red River Headwaters*. Minnesota Historical Society, St. Paul.
Wood, W. Raymond	1980	Plains Trade in Prehistoric and Protohistoric Intertribal Relations. In *Anthropology on the Great Plains*, edited by W. R. Wood and Margot Liberty, pp. 98-109. University of Nebraska, Lincoln.
Wood, W. Raymond	1985	The Plains-Lake Connection: Reflections from a Western Perspective. In *Archaeology, Ecology, and Ethnohistory of the Prairie-Forest Border Zone in Minnesota and Manitoba*, edited by J. Spector and E. Johnson, 31:1-8. J & L Reprints, Lincoln, Nebraska.
Woolworth, Alan R. (compiler)	1983	The Red Pipestone Quarry of Minnesota: Archaeological and Historic Reports. *The Minnesota Archaeologist* 42(1 and 2).
Woolworth, Alan R., and N. L. Woolworth	1980	Eastern Dakota Settlement and Subsistence Patterns Prior to 1851. *Minnesota Archaeologist* 39(2):70-89.

Paleo-Indian Period

The Paleo-Indian (Paleo) period spans 9500-5500 BC when the SRRSU would have been open for habitation following glacial recession and the draining of Glacial Lake Agassiz.

Paleoenvironmental Modeling

Buchner and Pettipas (1990:51) discuss the diversity and evolution of macro- and micro-environments associated with fluctuating lake levels in the Agassiz basin. Biotic "mosaics" would have influenced initial settlement and land use by Paleo groups (cf. Guthrie 1984; Nicholas 1988). Information concerning pedologic data and associated cultural deposits are available from the USGS, NDGS, and NRCS which could be used to build a better picture of SRRSU Holocene geomorphology.

Another pertinent matter concerns current models of past climate. As Todd (1991:230) suggests,

> Repeated warnings that Pleistocene biotic communities do not have modern analogs also apply to the nature of Pleistocene seasonality. Thus, in attempting to characterize human adaptations of late Pleistocene, we cannot assume that our current perceptions of hunter-gatherer seasonal foraging patterns are directly applicable.

Cultural Chronology

The Paleo cultural chronology for eastern North Dakota including the SRRSU is the same as that proposed for the surrounding region. Terrain within the Lake Agassiz Basin during the late Pleistocene was open for settlement following glacial recession.

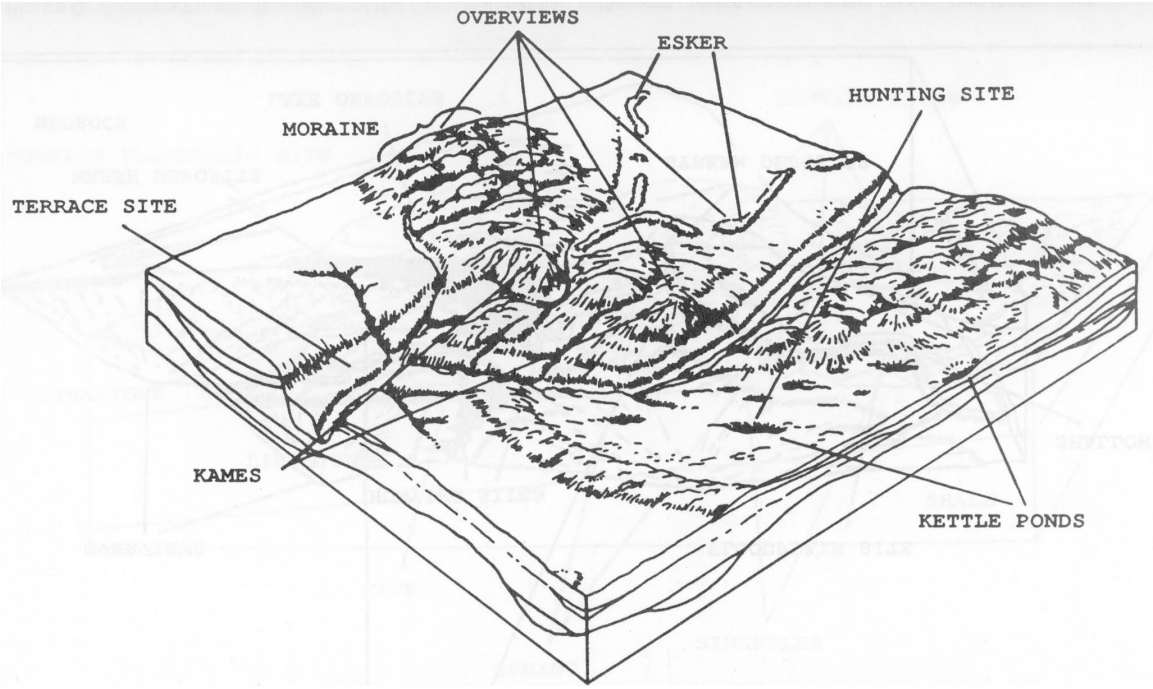
Among the known Paleo remains in the SRRSU, Johnson (1962:161-162) reported Folsom points from the Sheyenne Delta area. Munson (1990) reported fluted points from private collections in the Lake Traverse area of Minnesota. What is the range of Paleo complexes represented in private collections which have become known since Schneider's (1982f) review?

Settlement Behavior

Settlement strategies of Paleo peoples along glacial Lake Agassiz are unknown. Camps and procurement sites can be expected to occur in locations other than the often-mentioned strandline and Sheyenne Delta settings of the basin (cf. Jackson and McKillop 1991; Tankersley et al. 1990). Figure 10.2 depicts possible Paleo settlement locations plotted on the glaciated SRRSU landscape away from glacial Lake Agassiz. Continued collaborations between geomorphologists, archaeologists, geologists, and others will aid in identifying processes of early Holocene landform evolution and associated patterns of

land use in the region. Can geographic information systems (GIS) and remote sensing systems such as LIDAR be applied to modeling early Holocene landform evolution and human settlement?

Figure 10.2: Settings where Paleo Settlements may have been Situated on Glacial Landscapes within the SRRSU (from Tankersley et al. 1990:311).



Native Subsistence Practices

Discussions of subsistence include stressing the importance of incorporating prey behavior as part of studies focusing on prehistoric hunting strategies, especially for the Paleo. As Frison (1991:28, 30) states, "Human hunting behavior can be better understood through more thorough use of the many sources already at hand. These include considerations of the prey species involved, hunting group size, quantity of meat products and their condition, and butchering and processing." Many of the modern analogs and perceptions about prehistoric hunting stem from misconceptions regarding prey behavior (ibid.). Did Paleo peoples rely on "ruminophagism" (eating the prey's stomach contents) to supplement their diet as Todd (1991) suggests?

Technologies

A few fluted and parallel-flaked projectile tips are about the only solid evidence for Paleo technologies we must study in the SRRSU. Undoubtedly, stone is one of many materials utilized by early hunter-gatherers. Frison (1988) has provided evidence for a flourishing bone technology among Paleo peoples based on studies of Northwestern Plains assemblages. Johnson (1988:8) illustrates a perforated elk antler flaker tool from

the Pelican Rapids (Minnesota Woman) burial. What are diagnostic implements of these other technologies in the SRRSU?

Artifact Styles

A Plano point (Agate Basin or Angostura type) has been reported in the artifact collection at the Lake Tewaukon Wildlife Refuge Headquarters. Other reported Paleo finds in the SRRSU are rare. Schneider (1982f:33) mentions two points possibly from Richland County, North Dakota localities. Michlovic (1988:57) reports of a KRF Agate Basin point from a Clay County, Minnesota survey.

To the southeast, Munson (1990:Table 1) has reported three fluted (Folsom) points from the Lake Traverse area in Big Stone County, Minnesota. To the south, Lass (1980) lists a find of an Alberta point from 39DE9 in north-central South Dakota. Johnson (1988) indicates that later parallel-oblique flaked styles are more common in Minnesota collections. What is the range of stylistic variability in Plano assemblages usually termed Angostura (in North Dakota) or Browns Valley (in Minnesota)?

Regional Interaction

Indications of Paleo regional interaction for the SRRSU may be approached by examining raw material usage coupled with spheres of influence governing lithic projectile point stylistics (cf. Tankersley et al. 1990). The few illustrated regional specimens suggest use of principally Northern Plains lithic sources. For example, the Browns Valley Plano specimens are made of KRF, while the two fluted Folsom points from the Sheyenne Delta appear to be made from a light-colored chert (Johnson 1962:161). Michlovic (1988:57) illustrates a KRF Agate Basin point collected from a Clay County, Minnesota location. What other indicators of long-distance interaction occur in Paleo aggregates? Is the Atlantic or Gulf Coast marine shell pendant reportedly associated with the Pelican Rapids burial (Johnson 1988) of Paleo-age and, if so, what are the implications for considerations of regional interaction?

Historic Preservation Goals, Priorities, and Strategies

Efforts should be devoted to applying GIS as a modeling tool (cf. Alien et al. 1991; Kvamme and Kohler 1988) for early Holocene landform evolution and prehistoric settlement in the SRRSU. Coupled with this approach, there should be an inventory of (1) private collections and (2) updates to the existing NDCRS files (cf. Kvamme 1988).

Plains Archaic Period

Plains Archaic prehistory in the SRRSU is subdivided into Early, Middle, and Late periods. Intact Archaic age deposits have been encountered within the SU. Other dated Archaic components sampled by excavation have been reported in Minnesota along the Red River to the north (e.g., 21NR9, 21NR29; Michlovic 1984a, 1986). Most of the available information occurs as surface finds in private collections (cf. Johnson n.d.).

Paleoenvironmental Modeling

Seismic equipment was used to profile the subsurface stratigraphy of an ancient channel of the Minnesota River to the southeast of the SRRSU (Dobbs and Christianson 1991). Darwin et al. (1990) previously discussed the results of a similar investigation along the Cooper River in northern Texas.

As Bettis (1990:26) has suggested for drainage basins in northwestern Iowa, mid-Holocene cultural deposits can occur in shallowly buried contexts in the upper reaches of stream networks. However, cultural deposits of the same relative age will lie more deeply buried in the larger (higher order) valleys. Michlovic's (1984b, 1986) investigations of buried Archaic components in the Red River valley suggest that important paleoenvironmental data routinely may be collected as part of the work undertaken at these sites.

Was there a climatic shift toward more mesic conditions in the Northeastern Plains (SRRSU) that coincided with increased Hanna and Pelican Lake settlement in the region?

Cultural Chronology

To the southeast, Dobbs and Christianson (1991) report an Early Plains Archaic component at the Peterson site (21YM47) along an ancient channel of the Minnesota River in Yellow Medicine County. Investigations in 1988-1989 revealed a deeply buried bone bed. Among the recovered artifacts are three side-notched projectile points. A single radiocarbon date of 7050±120 BP has been reported (ibid.).

Early Archaic deposits have been reported at the Smilden-Rostberg site (32GF123) to the north in the Turtle River drainage in the Northern Red River SU (cf. Larson and Penny 1991). Late Archaic components occur along the Red River to the north at the Canning (21NR9) and Mooney (21NR29) sites (Michlovic 1984b, 1986). Were there times during the Plains Archaic when cultural complexes in the SRRSU were more closely affiliated with Midwestern complexes than with Northern Plains complexes?

Settlement Behavior

Johnson (1964) reported finds of Old Copper artifacts from six locations south and east of the SRRSU at elevations above the Herman beach line. These represent probable remains of both campsites and burials. Johnson (1964:16) commented,

> Prehistoric burials in Lake Agassiz beach ridges are quite common and many of the later burial mounds are built directly upon these beach ridges. This does not indicate a contemporaneity of Lake Agassiz and the burials but probably reflects the fact that the sand and gravel of the beach ridge offered a better situation for

> excavation of burial pits than did the heavy clay and silt deposits of the lake bottom itself. The beach may also have offered an easily identifiable burial site in that they are easily recognized elevations on the flat valley floor.

Michlovic (1979c:7) reported three copper projectile points from old lakebed locations in a Clay County, Minnesota survey. An updated distributional study of Old Copper materials (after Johnson 1964) from the SRRSU should be undertaken.

Native Subsistence Practices

Excavations at 32SA211 by Loendorf of UND demonstrated that the Lake Tewaukon peninsula was repeatedly occupied during the Middle and Late Archaic periods (Haberman 1978). Deeply buried deposits indicated that subsistence activities at the site emphasized hunting of large mammals, and gathering of wild fruits such as chokecherry, plum, and hawthorn.

The Hanna complex bone bed at the Canning site (21NR9) produced the remains of at least 20 bison, mostly cows and juveniles (Michlovic 1986). There were 17 beaver incisors which were either drilled or split (ibid.: 19). What other plant and animal foods along with bison comprise the diets of regional Old Copper and Pelican Lake groups?

Technologies

Native copper ore from Upper Great Lakes sources was fashioned into a variety of tools and ornaments by Archaic "Old Copper" craftspeople (cf. Mason 1981:181-195; Rapp et al. 1990). During climatically favorable periods within the Late Archaic, parts of the Red River valley may have been frequented by ever-increasing populations of Archaic settlers.

Some of the worked beaver incisors from Canning (21NR9) were drilled. Michlovic (1986:19) suggests that these may have been ornaments. It may be possible to determine if the holes in these incisors were drilled with copper implements.

As with the preceding Paleo period, little is known about Archaic shelter and architecture. Do settlements like Canning (21NR9) contain structural remains and other architectural information relevant to Archaic period housing?

Artifact Styles

The Early Plains Archaic period virtually is undocumented at present in the SRRSU. As collections from securely dated contexts such as Peterson (21YM47) along the Minnesota River drainage are reported, the range of Archaic stylistic diversity becomes illuminated. Thus, it will become possible to identify Early Archaic sites through cross-dating of point styles in collections.

The occurrence of Old Copper artifacts from scattered sites in eastern North Dakota suggests that Old Copper groups were utilizing the prairie biome. What Old Copper artifact styles occur in the SRRSU?

Other regional Middle/Late Archaic projectile point forms include materials like Parkdale Eared and corner-notched and stemmed styles. McKean Complex deposits at the nearby Canning site (21NR9) produced Hanna projectile points/cutting tools associated with a bison bone layer (cf. Michlovic 1986). Late Archaic remains associated with the regional Pelican Lake complex could be among the best represented components in the SRRSU. Seasonal bison hunting forays onto the prairie brought groups with diverse backgrounds into contact with one another.

Regional Interaction

Excavations at 32RI785 associated with the Alliance Pipeline project (Dobbs et al. 2001) determined that local and nonlocal stone tool material sources at the site varied significantly during the Middle and Late Archaic periods, and there was a shift through time in the functional make-up of the tools at the site (also suggesting a shift in site function.) The middle Early Plains Archaic component at the site showed a reliance on local material sources, specifically Swan River chert (SRC). By contrast, the Late Plains Archaic occupation at 32RI785 was dominated by nonlocal stone materials. While some local materials were present in the assemblage (orthoquartzite, Tongue River silcrete and oolitic chert), there was an increased reliance of KRF that illustrates the intense use of the KRF quarry area during the Late Plains Archaic. The presence of a small number of obsidian flakes offered further evidence of a wider trade network during the Late Archaic occupation at the site.

Evidence of a shift in site function at 32RI785 during the Middle Plains Archaic and Late Plains Archaic occupations came from the diversity of the tool functions (Dobbs et al. 2001). The Middle Archaic lithic assemblage was dominated by retouched flakes used on soft materials, suggesting hunting, butchering, hide-working, woodworking and stone tool manufacture. In contrast, almost half of the Late Archaic lithic assemblage was comprised of projectile points and knives probably used to process fauna after a hunt. Late Archaic groups that used more westerly territories may have been exploiting the Wild Rice River region more for hunting than as a residential base (Dobbs et al. 2001). In summary, the Middle Plains Archaic component at 32RI785 represents one or more residential base camps, with the Late Archaic component appearing to function as a field camp more focused on hunting activity (Dobbs et al. 2001)

The lithic aggregate from Canning (21NR9) includes locally occurring stones such as SRC as well as KRF. At Canning, KRF was used primarily for scrapers and retouched flake tools while SRC use was directed toward projectile points/cutting tools and other bifacial forms (ibid.:15).

The meager evidence presently available suggests that interaction networks for these populations were centered in the Northeastern Plains. Favorable climatic conditions

during parts of the Sub-Boreal would have stimulated settlement in the SRRSU. What are the specific source areas for the various Old Copper artifacts occurring within the SRRSU (Rapp et al. 1990)?

Historic Preservation Goals, Priorities, and Strategies

A distributional study of Old Copper artifacts within eastern North Dakota would be an important first step in compiling and updating the regional data necessary for exploring Archaic settlement patterns.

Gravel mining operations, particularly along the Agassiz strandlines, should also be monitored to avoid the needless destruction of Archaic settlements and possible cemetery locations.

Plains Woodland Period

Plains Woodland remains in the SRRSU are expected to represent the entire range of Early, Middle, and Late periods. These are Early Woodland (unnamed), Middle Woodland (e.g., Sonota, Laurel, and Malmo), and Late Woodland (e.g., Arvilla, Kathio, Blackduck, and Sandy Lake) manifestations.

Paleoenvironmental Modeling

Environmental conditions throughout the Woodland era are thought to have been periodically mesic and xeric coinciding with the Sub-Atlantic, Scandic, and Neo-Atlantic climatic episodes. It is important to remember that climatic conditions were not continuously favorable or unfavorable during these episodes. Anfinson and Wright (1990:221) suggest the onset of the Archaic-Woodland transition was not marked by any significant climatic change, "Whether or not one views the cultural transition as gradual or sudden, whether or not it is just a change in social structure and ideology, or just a change in technology, it is quite apparent that no major environmental shifts occur in the Midwest during the Transition period." However, this transition likely occurred during times of resource abundance and human population growth.

The paucity of Middle Woodland components identified in the Red River valley may be accounted for by geomorphic/hydrologic processes associated with site preservation. It has been shown that Middle Woodland cultural deposits on the natural levees adjacent to the Red River are buried by a meter or more of flood-deposited sediments. Middle Woodland deposits might be very common, but lacking present-day surface manifestations, such deposits will not be identified unless a special effort is made to explore for them. How can buried sites be identified along the Red River?

Michlovic (1984b:17) indicates, "Preliminary geomorphic and pedological studies from both the Mooney (21NR29) and Canning (21NR9) sites suggest that the longer-term climatic trends may mask some shorter climatic fluctuations which quite likely had some significant effect on the presence or abundance of certain resources in this region." For

example, during the time of the Neo-Atlantic when regional biotic resource bases were generally burgeoning and human population densities were high, there are likely to have been periods of several years when short-term droughts acted to reduce bison herds. Sites in Red River levee deposits offer good potential for refining regional paleoenvironmental models.

Cultural Chronology

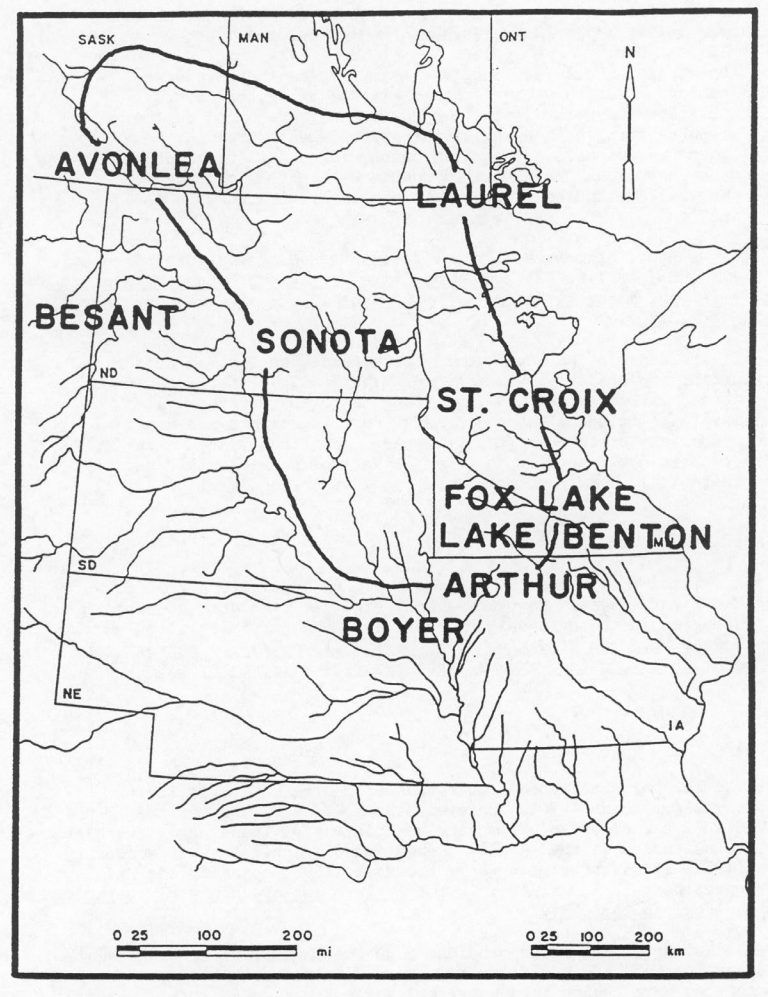
The Plains Woodland cultural chronology for the SRRSU is subdivided into Early, Middle, and Late periods. Early Woodland remains are not well known in the SU. However, their presence is suspected based on known or probable occurrences to the east, north, and west. Wilford et al. (1969:25-27) reported the Graham Lake Mound Group (21OT5) located along the Otter Tail River some 50 miles east of the SRRSU. A ceramic vessel of possible Early Woodland age was recovered from an interment containing the remains of a small child in Mound 1. Other associated artifacts included several flakes of brown chalcedony (possibly KRF) and some tiny fragments of red ochre (ibid.:26). Further afield, Early Woodland remains have been reported from the James River valley (cf. Gregg and Picha 1989b).

Middle Woodland deposits at the Dahnke-Reinke site (32CS29), just north of the SRRSU, are securely bracketed by a suite of five dates between 2200 and 1860 BP (Thompson 1990:29). These remains share affinities with both Sonota and Laurel. Malmo remains occur along the Otter Tail River and extend east to the Mille Lacs Lake region of Minnesota (cf. Gibbon and Caine 1980; Wilford et al. 1969:16-18, 21-28). Sonota components are well-represented to the west along the Sheyenne and James rivers (cf. Gregg and Picha 1989b; Haury 1990).

Terminal Middle Woodland manifestations in the Red River valley include St. Croix (Anfinson 1990:220; Gibbon and Caine 1980) and mounds grouped as part of the Arvilla complex (Johnson 1973). Figure 10.3 geographically depicts some of these regional Middle and Late Woodland complexes.

The prominent Late Woodland period marker in the SRRSU is Sandy Lake (cf. Cooper and Johnson 1964; Michlovic 1984b:33-37, 1987:64-65). Sandy Lake ceramics are a common occurrence at sites in the Red River valley and beyond. Does Sandy Lake appear to represent the most prominent Woodland manifestations here simply because it is the most recent, or does it indicate a peak of regional population density?

Figure 10.3: Major Middle Woodland Cultural Complexes of the Northeastern Plains (from Schlesier, 1994:75).



Settlement Behavior

Anfinson (1990:159) has suggested the following for Woodland settlement behavior in the Red River valley:

> Base camps should be along the major rivers where wood was common. Temporary camps should also be along the rivers. Subsistence procurement sites may be anywhere based on the type of resource sought. Lithic procurement sites may be where rivers have cut through beach ridges exposing cobble concentrations. Mound sites should be along beach ridges, as they are the only prominent topographic features in the region.

Some data in support of this settlement model has been reported by Michlovic (1979:15-17; 1985; 1987:64-67). Do Sandy Lake settlements occur with great regularity in bottomland settings in North Dakota along stretches of the Bois des Sioux River?

Similar Woodland locational behavior can be posited for surrounding regions outside of the Red River valley. Large residential sites may occur in bottomland settings along the primary waterways. Ceremonial sites (including mounds) likely occur in uplands and other prominent topographic settings (cf. Deaver and Bergstrom 1989). Temporary camps can be expected to occur in various physiographic settings wherever there would have been access to food, water, and shelter.

Native Subsistence Practices

Bison remains predominate in the few Woodland samples analyzed to date from the Red River valley. However, a host of other creatures do appear in lower frequencies in these faunal inventories (cf. Michlovic 1987:15, 66; see above). Did the Wild Rice River derive its name from harvestable quantities of this resource, and was that resource utilized by Late Woodland groups?

Technologies

Ceramic technologies were established in the region during Early Woodland times (cf. Benn 1990). However, the sources of the various constituents (i.e., clays and tempering materials) for these early ceramics have not been studied in detail. Petrographic investigations by Stoltman (1989, 1991) and others (Begg and Riley 1990) point to the utility of such approaches. For instance, were the clays employed in early ceramic production local to the SRRSU? Hollenback et al. (2014) provides updated information on clay sourcing in the Devils Lake basin.

The Red River of the North provides a unique laboratory to examine the roles of physiography and environment in Late Woodland technology. Mussel shell resources were common in the valley, while stone was not (cf. Ashworth and Cvancara 1983). Was mussel shell used to produce tools equivalent to chipped stone forms used for functionally similar tasks? Hovde (1990) has summarized shell use at the Rainbow site in northwestern Iowa indicating that projectile tips and scraping tools were fashioned from indigenous mussel shell.

Morrow (2016) investigate stone tool technologies and lithic material utilization in Minnesota, including the Red River valley. In what forms were lithic raw materials transported into valley residential sites?

The paucity of Early, Middle, and Late Plains Woodland settlements which have been sampled limits our knowledge concerning settlement landscape, including architecture. At present, little is known about the types of habitation structures which were used by these groups. What procedures should be employed to reduce the chances of failing to identify residential structural features in Woodland sites along the Red

River? Boreal forest archaeologists have had success identifying house floor areas by examining artifact distribution across 4- or 5-cm thick excavated levels rather 10-cm or 6-inch-thick levels. In settings where post holes can seldom be detected, house floors must be identified by artifact distributions rather than physical traces of house construction features. This type of excavation requires more precise vertical controls and recording than routine excavation. This is not something that would happen without special sponsor support in the world of low-bid contract archaeology.

Artifact Styles

Early and Middle Woodland ceramics found in the SRRSU conform to styles identified elsewhere in the prairie-forest ecotone of the Northeastern Plains (cf. Benn 1990). Projectile point styles common to the Woodland era include large and small side-notched forms such as Besant and Samantha (cf. Kehoe 1974). Do Early Woodland stemmed bifaces occur in local private collections?

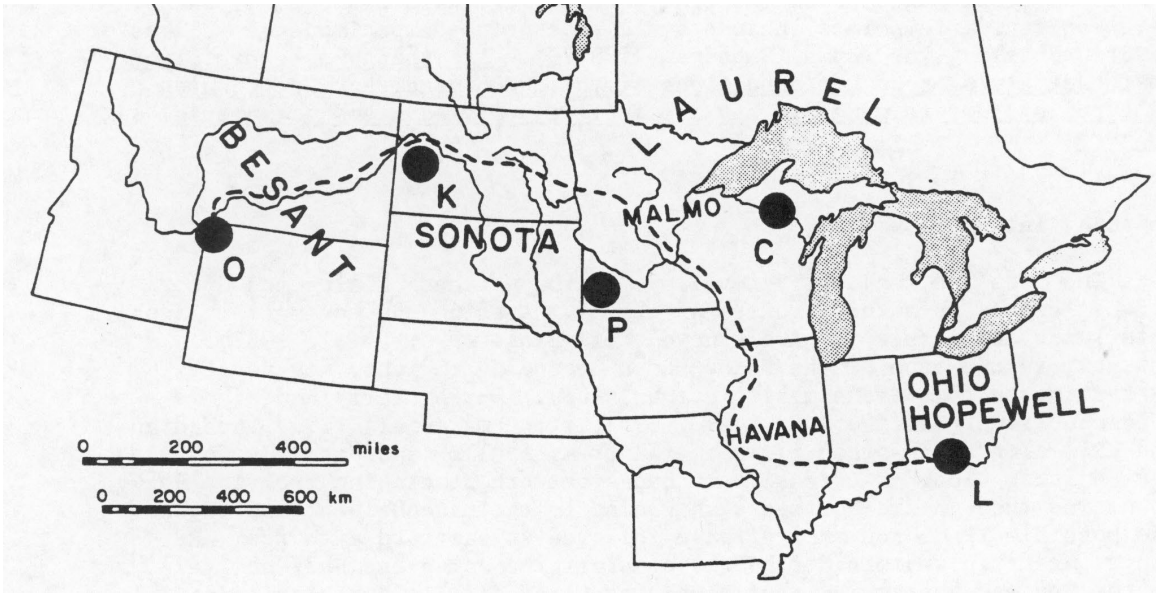
Much of the Late Woodland ceramic stylistic variability observed in the SRRSU can be subsumed under existing wares (i.e., Kathio and Sandy Lake). Late Woodland arrowpoints include small side-notched specimens as well as unnotched triangular forms (Haberman 1978:78). Are there any expectations that the natural resource conditions of the SRRSU might have acted upon cultural systems to generate any distinctively styled items of material culture?

Regional Interaction

The idea that major river valleys of the Northern Plains and Upper Midwest served as natural routes of travel fostering the movement of ideas, materials, and people is hardly novel (cf. Brose 1990; Little 1987). However, in the case of the SRRSU and surrounding regions, key aspects pertaining to this issue merit further study. During Early and Middle Plains Woodland times (ca. 400 BC-AD 600), stone materials (i.e., obsidian and KRF) along with other items (metal ores, shells, and possibly fossils) were passing along an extensive exchange network stretching from the Rocky Mountains through the Northeastern Plains to the midcontinent and beyond. One possible trade route might have followed an eastward path from KRF quarry areas in western North Dakota across the James River and Sheyenne River valleys to the Red River and continuing east along the Otter Tail River to the Mississippi River headwaters (including Mille Lacs Lake). This specific route is depicted in Figure 10.4. Interaction was likely ongoing between Middle Woodland groups with Besant, Sonota, Malmo, and Laurel material culture (cf. Clark 1982, 1984; Gregg and Picha 1989b; Thompson 1990:172). Were the early historic east-west trails across the Red River valley used during earlier Woodland times?

Later Woodland (ca. AD 600-900) trade networks were also expansive as indicated by the diversity of exotics encountered in Arvilla sites to the north (Johnson 1973). Do these exotics indicate continued or renewed long distance exchange following the decline of Hopewell after AD 400?

Figure 10.4: A Likely Route for Long-distance Exchange during the Middle Plains Woodland period. (O=obsidian, K=KRF, C=copper, L=*Leptoxis*, and P=Catlinite.; from Picha and Gregg 1989b).



Historic Preservation Goals, Priorities, and Strategies

Woodland mound sites in the SRRSU should be thoroughly documented through a concerted effort of archival research, landowner interviews, aerial photography, including LIDAR (Artz, et al 2013), and follow-up on-the-ground surveys. What other unreported exotic materials occur in Middle Woodland collections from the region?

Plains Village Period

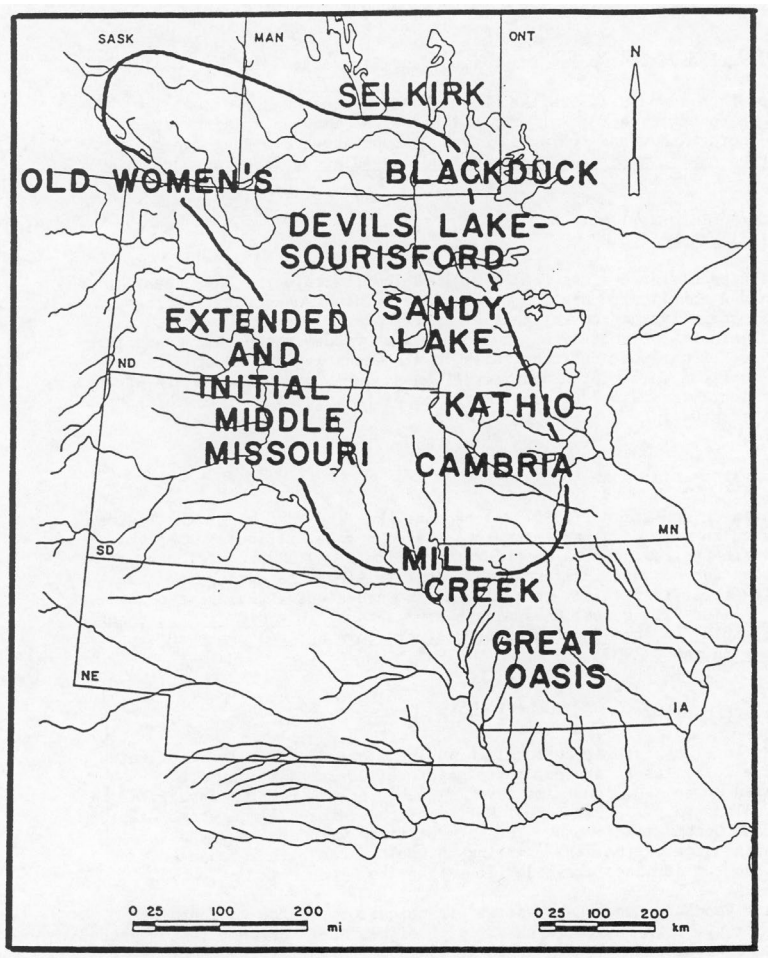
Late prehistoric times (ca. AD 1000-1600) within the SRRSU seem to have been a complicated mix and coalescence of diverse cultural influences. Some taxonomic indications of this diversity are denoted by use of terms such as "Mississippianization" and "Sandyeota" to describe items exhibiting admixtures of material culture traits in the archaeological record. Shay (1990) outlines some of the behavioral consequences of intra- and inter-group interaction. The major cultural complexes of the middle part of this period are illustrated in Figure 10.5.

Paleoenvironmental Modeling

Anfinson and Wright (1990:224) propose that the "demise of the Plains Village cultures of southwestern Minnesota cannot be attributed solely to climatic change, although a deteriorating climate may have contributed to other stresses on these cultures. The most telling argument against the climatic factor is the fact that Blue Earth Oneota was thriving when the eastern Plains Village cultures disappeared." In the SRRSU, what

roles did climate change and soils play in the adoption of prehistoric corn agriculture by Plains Villagers?

Figure 10.5: Later Prehistoric Complexes in the Northeastern Plains, AD 1200-1400 (from Schlesier, 1994:84).



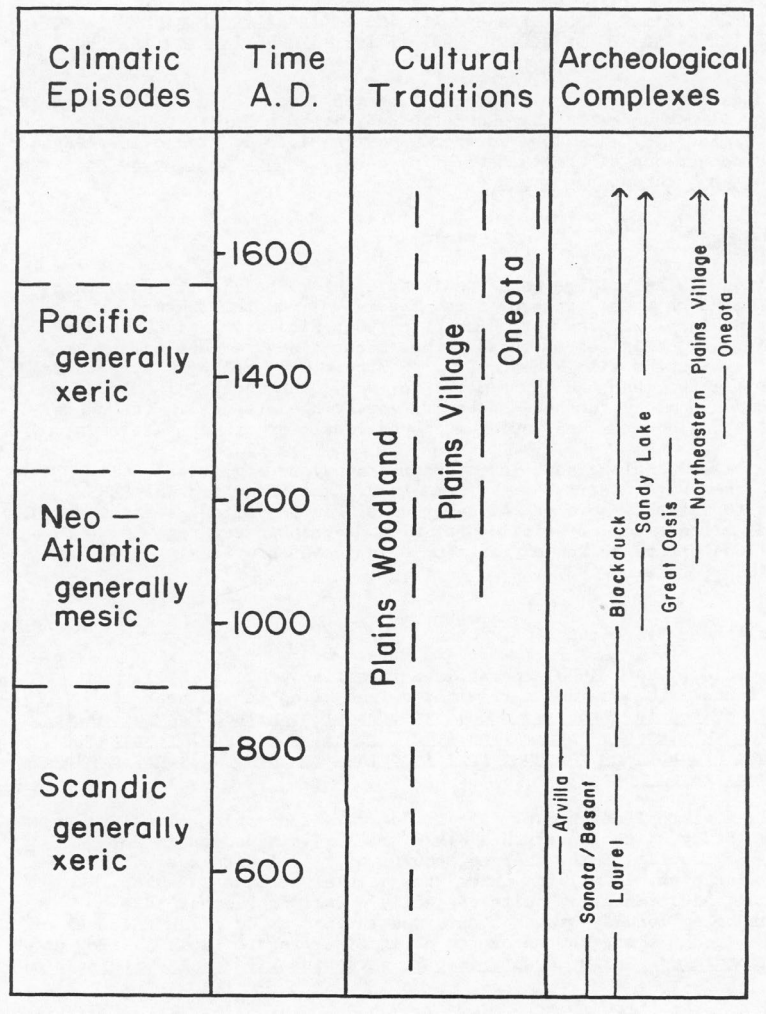
Cultural Chronology

The late prehistoric cultural chronology for the SRRSU is illustrated in Figure 10.6. As indicated, three major cultural traditions are identified on an AD 1400-time level. These include remains associated with Late Woodland (e.g., Sandy Lake), Northeastern Plains Village (some Cambria-like), and Oneota traditions. The lack of sites with absolutely dated components dictates that the existing chronology has been formulated primarily from artifact cross dating within the SU.

Late Woodland Sandy Lake pottery is ubiquitous in the southern Red River valley. Cord-roughened sherds with either shell or grit temper abound in regional collections (cf. Michlovic 1984b). Investigators should be on the lookout for distinctive types of Sandy Lake ware within the SRRSU.

Northeastern Plains Village materials occur at Lake Tewaukon (32SA211) and sites in the Red River valley as well. Johnson (1962:165) alludes to Cambria-like materials from an unnamed site near Fort Abercrombie. What is the distribution of tool-impressed and trailed Northeastern Plains Village ceramic-bearing sites in the SRRSU? Does it totally overlap that of Sandy Lake?

Figure 10.6: Late Prehistoric Cultural Chronology for Eastern North Dakota (from Schlesier 1994, adapted from Gregg, 1994a).



Oneota ceramics have been recovered from the Femco Mounds (21WL1) and the McCauleyville Mounds (21WL2) along the Red River in Wilkin County, Minnesota (Wilford 1970:15-21). Further investigations by Michlovic (1984a) suggest the occurrence of Oneota habitation as well. How well does the proposed cultural chronology work with respect to on-going investigations within the SRRSU?

Settlement Behavior

Fortified Plains Village encampments have yet to be identified within the SRRSU, although these types of sites are known from the Sheyenne River and Maple River drainages nearby (cf. Michlovic 1988; Michlovic and Schneider 1988). Temporary campsites of these groups occur along reaches of the Red-Bois des Sioux and the Wild Rice rivers. Semi-permanent villages like those found along the Sheyenne and Maple rivers might not have been in flood-prone bottomlands along the Red River. However, low-lying settings in the dense gallery forests along the Red River would have been reasonable for winter settlement.

Future research along some lower order drainages (e.g., Dead Colt Creek) and other water bodies (e.g., Swan Lake, Lake Fedge) in the SRRSU could serve to identify more of the spectrum of Plains Village settlement types. A detailed study of existing aerial photographic coverage (ca. 1939-1968) of the region may turn up evidence of previously unrecorded site locations (cf. Svec 1987).

Native Subsistence Practices

Michlovic's (1984a, 1988) investigations provide the largest samples of faunal remains thus far gathered from sites in and near the SRRSU. Subsistence activities and site function at 32RI785 can be inferred from the small sample of animal bone and tool assemblage recovered at the site (Dobbs et al. iii). Further testing programs should specifically include provisions for collection of subsistence information (i.e., floral, and faunal remains). It is known that products of the hunt were important to local Villager groups but what about garden crops?

There is very limited subsistence data concerning plant use from sites in the SU. Haberman's (1978:153-154) discussion is the rare instance. He identified the charred remains of wild fruits including chokecherry and plum, as well as maize from samples at Lake Tewaukon (32SA211). Haberman questions whether this cultigen was locally grown or obtained through trade given the lack of horticultural tools among the recovered artifact aggregate (ibid.).

How did local soil conditions influence prehistoric gardening strategies within the SRRSU?

Technologies

An aspect of Cambria lithic technology which merits further study concerns an aggregate of five projectile points of yellow jasper associated with Burial No. 10 from Round Mound (21TR1) located along the east shore of Lake Traverse (Wilford 1970:1-6, 27-29). The specimens all appear to be made on small flakes with only minimal modification. These items are like certain Middle Mississippian forms from locales further south (cf. Farnsworth et al. 1991). The role of part-time specialization in

production of Plains Village commodities such as ceramic vessels as well as items from chipped stone, shell, and bone is worthy of additional investigation (cf. Pauketat 1987).

Artifact Styles

Petrographic analyses of native ceramics from Upper Mississippi valley contexts outlined by Stoltman (1991) suggest that locally made "look alikes" can be differentiated from their nonlocal Mississippian counterparts. Studies of this sort coupled with the collection of basic quantitative sherd data will figure importantly in deciphering patterns of culture contact and regional interaction in the SRRSU.

Similarly, are there significant differences in lithic technology between early Plains Village assemblages from Lake Traverse-Big Stone Lake and Cambria of Minnesota (Gibbon 1991) and assemblages from contemporaneous Village cultures in the SRRSU?

Regional Interaction

Michlovic (1990) has addressed Northeastern Plains-Woodland regional interaction looking particularly at media such as exchange, ceremonialism, and aspects of material culture (e.g., native ceramics). It is well known that several commodities, including both durable and perishable items as well as information, were being exchanged throughout the midcontinent during late prehistoric times (cf. Hall 1980; Johnson 1986; Wood 1980). However, the role(s) played by various contemporaneous settlements in the SRRSU at any point in time, say AD 1250, 1400, or 1550, remains to be clarified. Syms' (1977, 1985) important contributions in this regard seriously need to be considered.

Historic Preservation Goals, Priorities, and Strategies

Many of the once conspicuous earthen mounds and possible village settlements located in the SRRSU have likely been damaged or destroyed by decades of land leveling and gravel pit activities. Local landowners who have acted in good conscience should receive recognition for preservation of these important sites.

Plains Equestrian Period/Fur Trade Period

Equestrian Period developments in the SRRSU were initiated by the introduction of Euro-American trade material and the horse in the early-mid 18th century, and terminated largely by 1860, or shortly thereafter (cf. Howard 1976). The grasslands of the Northeastern Plains became the core territory of groups such as the Yankton and Yanktonai Dakota. The James River Rendezvous and Lake Traverse-Big Stone Lake seasonal gatherings were important territorial events (cf. Howard 1972; Woolworth 1986).

Paleoenvironmental Modeling

The Neo-Boreal climatic episode is suggested to have been cooler and periodically moister with reference to the late 20th century (cf. Bamforth 1990). Concomitantly, regional biomass buildup, including increases in bison density is posited. Penman (1988) has recently argued that cooler conditions may have influenced the abandonment of corn agriculture in the Upper Mississippi valley at this time. Regional climatic conditions during the period can be inferred from several lines of evidence. Archival research utilizing the journals of early visitors such as Alexander Henry and John Bourke, among others, may provide salient climatic information (cf. Gough 1988; Rannie 1983; White 1977). Studies of climatically sensitive fauna (i.e., terrestrial gastropods) from contexts such as along the Wild Rice River may provide relevant data for aiding paleoecological reconstruction concerning these issues (cf. Baerreis 1990; Barber 1988). Periods of drought have been identified in climatic reconstructions after AD 1700 in the SRRSU.

Cultural Chronology

Chronological sequences of the protohistoric period in the SRRSU can be further developed and refined with a continued effort devoted to interdisciplinary archaeological and ethnohistorical investigations (cf. Johnson 1985; Michlovic 1985; Ritterbush 1990). Additional research at sites containing culturally stratified deposits such as those sampled at Lake Tewaukon undoubtedly will serve to provide important information regarding late prehistoric and protohistoric cultural developments in the region.

Inventories of relatively undisturbed pasture lands in the Sisseton Hills along the North Dakota-South Dakota border would likely produce stone circle and other rock feature sites associated with Yankton and Yanktonai use of this region (cf. Rood and Rood 1984). Concerted coordination with cooperating agencies such as the NRCS in historic preservation will serve to promote the mutual goals of all involved groups.

Settlement Behavior

Middle Dakota (Yankton and Yanktonai) bands controlled much of the territory within the SRRSU during the period AD 1700-1860 (Howard 1976:5; Warren 1986:147-149). Temporary seasonal encampments may be expected throughout the SRRSU that were occupied during the spring, summer, and fall. Winter camps of the Dakota were likely selected from the more attractive Red River forested bottoms and other protected locations such as along Lake Tewaukon (cf. Haberman 1978). As late as AD 1883, tipi encampments occurred near present-day Cogswell in Sargent County (White 1903, cited in Deaver and Bergstrom 1989).

Native Subsistence Practices

Discussions pertaining to regional post-contact subsistence strategies appear in the works of Howard (1966), Warren (1986), and Woolworth (1986). Independent

confirmation of native subsistence practices merit study with larger samples from sites in the SRRSU. Did native participation in the fur trade alter pre-existing subsistence practices (e.g., the late adoption of gardening by some nomadic Middle Dakota groups)? Is the SRRSU an area where large communal bison hunts were occurring?

Technologies

By AD 1800, and likely decades earlier, Euro-American trade goods and other merchandise would have been available from trading posts/forts such as along Lake Traverse (cf. Nute 1930:379). What impacts did these goods have on native technologies as reflected in the material culture of sites such as Lake Tewaukon and/or did impacts on cultures within the SRRSU differ appreciably from impacts documented by archaeological investigations at Plains Villages sites in the Middle Missouri subarea?

Artifact Styles

The nearby Catlinite quarries in southwestern Minnesota were extensively utilized by Equestrian groups including the Middle Dakota (cf. Woolworth 1983). What is the distribution of Catlinite artifacts in the SRRSU? What specific styles or design motifs can be linked to various Yankton and Yanktonai bands?

Archival research on fur trade stores and provisions quartered at posts and stations such as Lake Traverse could provide information for sleuthing out diagnostic artifact styles at regional sites. Local collections should be examined with this goal in mind.

Regional Interaction

The Red River valley served as a major north-south transportation route (e.g., Red River Trail) throughout the protohistoric period (cf. Gilman et al. 1979; Swagerty 1988). Other ancillary routes followed beach strandlines (Ridge Trail). Existing manifestations of trade routes should be formally recorded as part of the state site files.

Historic Preservation Goals, Priorities, and Strategies

Ritterbush (1991a:41-46) outlined data gaps and research questions regarding the fur trade in northeastern North Dakota. Many of the same concerns apply to the SRRSU as well. Were the Métis a factor in later cultural developments in the SRRSU?

Prioritization of Historic Preservation Goals in the SRRSU

This section presents a list of prospective research projects which have been mentioned above. The list is prioritized according to research merit, feasibility, and broadness of scope.

1. Conduct additional research at sites containing culturally stratified deposits such as those sampled at Lake Tewaukon to provide important

baseline information regarding prehistoric and protohistoric cultural developments in the region.

2. Apply GIS as a modeling tool (cf. Allen et al. 1990; Kvamme and Kohler 1988) for early Holocene landform evolution and prehistoric settlement in the SRRSU.

3. Conduct a distributional study of Old Copper materials (after Johnson 1964) from the SRRSU.

4. Develop a procedure for locating buried sites along the Red River.

5. Perform a distributional study of tool impressed and trailed Northeastern Plains Village ceramic-bearing sites in the SRRSU and compare this distribution with that of Sandy Lake.

6. Conduct archival research focusing on the journals of early visitors (e.g., Alexander Henry and John Bourke) to bring together information regarding protohistoric cultural developments and climatic conditions (cf. Ball 1984; Gough 1988; Meridian Environmental Technology Inc. (2004); Rannie 1983; White 1977).

7. Conduct a distributional study of Catlinite artifacts in the SRRSU. Attempt to determine if there were styles or design motifs linked to the various Yankton and Yanktonai bands.

8. Conduct multidisciplinary research to determine the nature of climatic conditions in the Northeastern Plains (SRRSU) during the eras of Hanna and Pelican Lake settlement in the region.

9. Assess whether Sandy Lake represents the most prominent Plains Woodland manifestations here simply because it is the most recent or because it coincides with a peak of regional population density.

10. Assess the role of part-time specialization in production of Plains Village commodities such as ceramic vessels as well as items from chipped stone, shell, and bone (cf. Pauketat 1987).