Evidence for Paleoindians in Wisconsin and at the Skare Site

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The Skare site, situated along the Yahara River in southern Wisconsin, has produced evidence of human activity spanning from Paleoindian times to the early Euro-American settlement of Wisconsin. During recent excavations at the site, two Paleoindian artifacts, the base of a Folsom biface and a heavily reworked Dalton biface, were found below the plow zone. Inventories of Paleoindian sites and fluted biface distributions primarily documented in the surface archaeology of Wisconsin are examined to establish a regional settlement context for the Skare site and to investigate the nature of Paleoindian exploration and colonization of the state. Areas with the highest numbers of known Paleoindian sites and reported fluted bifaces correspond with resource-rich habitats, unique lithic raw material sources, and regions that have been the focus of Paleoindian research and fluted biface collecting. Clovis bifaces are found across the state, while Folsom bifaces are largely restricted to the southern half of the state. A comparison of Early and Late Paleoindian site distributions indicates that Paleoindian exploration of the state occurred relatively rapidly following the last glacial retreat.

Keywords: Paleoindian regional settlement patterns, fluted bifaces, Wisconsin, Skare site

The study of the peopling of the Americas during the last major stage of Pleistocene glaciation (ca. 78,000–11,550 B.P.) [1] has captured the interest of scholars since the nineteenth century and been a subject of speculation since Europeans first reached the Americas (see Williams 2002a). In North America, the exact timing of the peopling event, sometime before 12,500 B.P., is hotly contested (e.g., Bailliet et al. 1994; Dillehay 1997; Haven 1856:147; Meltzer 2004; Meltzer et. al. 1997; Merriwether et al. 1996; Schurr 2004; Williams 2002b), but there is agreement that by or shortly after ca. 11,600 B.P. (Holliday 2000) human occupation, as represented by distinctive fluted bifaces primarily from surface contexts, was broadly but unevenly spread south of the glacial ice sheets that still covered much of Canada and the northern U.S. (Anderson and Faught 1998, 2000; Morrow and Morrow 1999). The nearly continent-wide distribution of this stone tool form lends support to the commonly accepted models of Paleoindian colonization, which have people moving relatively rapidly, within one to a few millennia, across the Americas (Anderson and Gillam 2000; Barton et al. 2004; Feidel 1999; Haynes 1964; Kelly and Todd 1988; Meltzer 2004; Steele et al. 1998; Surovell 2000; Young and Bettinger 1995).

In the Great Lakes region, fluted biface finds are rare in northern Michigan, northern Wisconsin, and much of Minnesota, areas that were not deglaciated until after 11,000 B.P. (Mason 1962; Quimby 1960). In contrast, higher numbers of fluted bifaces have been found along portions of the Tennessee, Cumberland, and Ohio River valleys in the Midcontinent, in eastern Massachusetts, parts of New Jersey, Pennsylvania, Ohio, Virginia, North and South Carolina, and Florida in the East, and in south-central California and Nevada, and on the southern Plains in the West (Anderson and Faught 1998, 2000; Dincauze 1993:282; Mason 1962:233).

On-going research projects by many archaeologists continue to produce evidence that con-

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tributes to and expands our understanding of the complexities of these processes and the temporal and geographic heterogeneity of the Paleoindian archaeological record. However, further regional site and artifact distribution studies (supplemented by excavation data from a variety of site types) are needed to evaluate and refine models of the spread of people across the Americas and verify the presence of gaps and low density areas in the distribution of fluted bifaces (Anderson and O'Brien 1998; Carter et al. 1998). For example, the monumental distributional study of Anderson and Faught (1998, 2000) included 57 fluted bifaces from Wisconsin, a relatively low number that might underscore the inhospitable nature of the recently deglaciated environment, but more accurately reflects the history of research and publication on Paleoindian issues in the state.

Here, I present data on 417 fluted biface finds and 763 Paleoindian sites in Wisconsin, adding significantly to the geographic documentation of fluted bifaces. I also explore temporal and spatial patterns in the data as reported on a county-by-county basis and lay the ground work for future detailed studies of the individual environmental settings of each site. Of the known Paleoindian sites in Wisconsin, 188 are reported to have Early Paleoindian components and 580 have Late Paleoindian components. These data lend support to the rapid colonization model of Paleoindian dispersal. Complementing research in other parts of the country (e.g., Anderson and Faught 1998, 2000; Custer et al. 1983; Goodyear 1999; Haynes 2002:187, 188–189, 202–208, 222–224; Jackson et al. 2000; Lepper 1988, 1999; Shott 2005; Storck 1988; Tankersley and Morrow 1993; Wiant 1993; Young 1995), I suggest that fluted biface finds and Paleoindian sites in Wisconsin are associated with areas of the state 1) where high quality lithic raw material outcrops are available, 2) that have been the focus of professional and avocational investigation, 3) where much of the land is cultivated, and 4) that had extensive postglacial lakes in Late Pleistocene times, supporting diverse vegetation and attracting animals and humans to their shores. This distributional pattern supports arguments that these early nomadic peoples followed major river valleys as they explored the unknown land and also were attracted to resource-rich plains, basins, and lakes—areas into which groups may have settled while they familiarized themselves with the region (Anderson 1990; Anderson and Gillam 2000; Barton et al. 2004; Sauer 1944)—and they made only minimal use of land immediately south of the ice sheets (Mulholland et al. 1997; Quimby 1960:27–33).

These state-wide data also provide a coarse-grained settlement context for recent work at Skare, a controversial multi-component site in southern Wisconsin (Figure 1). This site has a substantial record of Early and Late Paleoindian use represented by a number of fluted bifaces, one of which was recovered during excavation from below the base of the plow zone, and a variety of other tool types associated with Paleoindian as-

Figure 1. County map of Wisconsin with important sites and features mentioned in the text (1 = Silver Mound, 2 = Withington, 3 = Skare, 4 = Marquette Rhyolite, 5 = Aebischer).

semblages.

PALEOINDIAN SITES AND BEHAVIORAL INFERENCES

The archaeological sites left behind by Paleoindians tend to be small, with few material culture remains that are the product of a limited set of activities or a relatively short-term occupation by people who retained usable tools and raw materials and transported them as they moved across the terrain. There are no strong empirical analogues with hunting or foraging groups in the ethnographic present that can be generalized to all Paleoindians (Hofman 1994; Kelly and Todd 1988; but see Custer and Stewart 1990 for the Northeast). Consequently, many scholars have relied on foraging theory and ecological theory to propose hypotheses about highly mobile Paleoindian settlement strategies either with frequent range shifts or tethering to certain resource rich areas (e.g., Anderson 1990, 1995, 1996; Barton et al. 2004; Binford 1980; Cable 1996; Gardner 1983; Kelly and Todd 1988; Pianka 2000). When these models are assessed against the fairly scant and incomplete archaeological record, it is clear that there was considerable heterogeneity within and between regions in terms of the kind of mobility that is inferred (e.g., Ellis and Deller 1997; Lepper 1999; Loebel 2005; Mason 1962; Meltzer 1988, 2004).

Subsistence models for Paleoindians traditionally emphasize hunting or scavenging of big game. The solid evidence for big game exploitation comes almost exclusively from excavated sites in the western U.S., many of them buried, where large numbers of mammoth, mastodon, or bison were killed and butchered with fluted bifaces and other stone tools that have been found with the faunal remains (e.g., Frison and Stanford 1982; Frison and Todd 1986; Graham et al. 1981; Grayson and Meltzer 2003; Haury et al. 1959, Haynes 1980, 1993, Hester 1972; Meltzer 2004:550; Meltzer et al. 1999). East of the Mississippi River, butchery of mammoth, mastodon, bison, and caribou has been inferred at a number of sites, but clear and unambiguous association of fluted bifaces with megafauna remains is lacking (Brush and Smith 1994; Cleland 1965; Dallman et al 1996; Ellis and Deller 2000:254–255; Fisher 1984, 1996:301; Fisher et al. 1994; Hemmings 1998; Jackson 1997; Meltzer 1988; Overstreet 1993, Overstreet, ed. 1993, 1996; Overstreet et al. 1995; Overstreet and Kolb 2002; Overstreet and Stafford 1997; Palmer and Stoltman 1976; Shipman et al. 1984; Webb et al. 1984). In both the West and the East there is evidence that other subsistence resources, including smaller animals, were used as well (see Goodyear 1999:444; Graham et al. 1981; Haynes 2002:177–180; Johnson 1991; Meltzer 1988: 21–25, 1993). In short, the model of Paleoindians as big game hunters was developed largely from buried sites in the West and consequently may not be appropriate for the archaeological record east of the Mississippi.

In contrast to the West, the Paleoindian archaeological record in the East, primarily represented in the surface archaeological record and typically as isolated finds, commonly has been interpreted as denoting a diverse set of activities, including short-term habitations, lithic raw material procurement, and hunting (Anderson 1990; Dincauze 1993:280; Kelly 1995; Lepper 1999). Short-term habitations and small hunting sites would have a low visibility in the archaeological record, unless they were repeatedly used, thereby creating palimpsests that have a higher visibility. Quarry-workshop sites are fairly well documented because of their relatively high visibility, a consequence of frequent use and higher artifact discard rates. A number of scholars working in the eastern U.S. have explored the relationship between stone procurement and settlement patterns to infer the spatial extent of Paleoindian foraging ranges (e.g., Custer et al. 1983; Dincauze 1993; Gardner 1983; Hill 1994; Howard 1988; Loebel 2005; Morrow 1995).

Some scholars have suggested that small Paleoindian bands periodically joined together into larger groups to share information, exchange mates, engage in communal hunting, and conduct rituals (Anderson 1990; Ellis and Deller 2000; Hofman 1994; Kelly 1995). These gatherings may have entailed Paleoindians converging on the same locality year after year or every few years. Given the needs of animals and humans for water, it is expected that many of these aggregation sites would be in resource-rich lacustrine or riverine settings, perhaps also in the vicinity of spatially

restricted outcrops of high quality lithic raw material. The cumulative effects of these larger gatherings with diverse activities and repeat visits to the same locality include the discard of a larger quantity of artifacts and a greater diversity of tool types, making aggregation sites more visible in the archaeological record (Hofman 1994). In the archaeological record of the East, a small number of sites have yielded numerous fluted bifaces as well as other distinctive Early Paleoindian tools, and these sites may represent such aggregation localities.

PALEOINDIAN SITES AND FLUTED BIFACES IN WISCONSIN

The archaeological record of Wisconsin's Paleoindian peoples contains a diverse array of Early and Late Paleoindian sites, including quarry-workshops, numerous isolated finds of fluted bifaces, locations that have multiple diagnostic Paleoindian artifacts, as well as mammoth, mastodon, caribou, and bison remains, a small number of which appear to have cut marks and have been found in association with stone tools (Kepecs 2002; Long 1986; Overstreet, ed. 1993, 1996; Overstreet et al. 1995; Overstreet and Kolb 2002; Palmer 1954; Palmer and Stoltman 1976; Schultz 1986; West 1978). These sites have been found in a variety of settings, including late-glacial highstands of Lake Michigan and edges of often short-lived postglacial lakes in the eastern half of the state and the unglaciated Driftless Area in the southwestern part of the state. Reconstructing site settings is complicated by the sometimes sudden and dramatic changes in drainage patterns across the state, different and rapidly shifting vegetation and faunal communities, and megafauna extinctions that occurred at the end of the Pleistocene and into the early Holocene. The Paleoindian archaeological record of Wisconsin poses certain interpretive challenges because of the non-uniform glacial history, the dynamic and heterogeneous postglacial environments without modern analogs or proxies, and the mostly surficial record of fluted biface finds. Behavioral models of Paleoindian settlement-subsistence systems that encompass this range of variation still need to be developed for places like Wisconsin where some of the inferred behavioral phenomena are more typical of sites in the western U.S., while others correspond more closely with the nature of the archaeological record in the East.

As one approach to exploring the spatial distribution of Paleoindians in Wisconsin, I chose to look at the number of Paleoindian sites identified in the Archaeological Site Inventory (ASI) maintained by the Office of the State Archaeologist (OSA) at the Wisconsin Historical Society (WHS). In many cases the ASI database lacks information on the artifacts or site attributes that led to some of the reported Paleoindian sites being classified as having a Paleoindian component. I made no effort to verify the identification of these sites as Paleoindian, and have accepted the data as reported for inclusion in the ASI. These data were supplemented by site-specific reports of Paleoindian components in the published literature that were not always included in the ASI.

As an alternative and more conservative means of exploring the spatial distribution of Paleoindian activities across the state, I compiled data on fluted bifaces from the ASI files, published literature, and files of James B. Stoltman of the University of Wisconsin-Madison, who conducted a long-term typological study of fluted points in Wisconsin (Stoltman 1982–1994, 1991; Stoltman and Workman 1969). A number of fluted bifaces are reported only at the level of county provenience and therefore are not included in the ASI site database. In addition, some sites with fluted bifaces reported in the published literature are not classified as Paleoindian in the ASI files. As a consequence, focusing on reports of fluted bifaces captures some additional information that cannot or has not been included in the ASI database, while eliminating those sites reported as Paleoindian for unknown reasons or on the basis of distinctively early tools other than fluted bifaces. In particular, the focus on fluted bifaces makes it possible to identify areas that were more intensively used by Paleoindians or localities where these distinctive artifacts were more likely to be discarded.

Fluted Bifaces

Paleoindians used a variety of tools, but their sites generally are identified on the basis of distinctive styles of bifaces that were thinned ("fluted") by removing parallel-sided flakes from

one or both sides of the base of the biface. Fluted bifaces were replaced by finely crafted and distinctive lanceolate bifaces in Late Paleoindian assemblages. Distributional studies have shown that, in general, fluted biface finds are more common east of the Mississippi River (Anderson and Faught 1998, 2000; Anderson and Gillam 2000; Dincauze 1993; Faught et al. 1994; Mason 1997:85). In the Wisconsin ASI, three of the main types of fluted bifaces recognized by archaeologists routinely have been reported: Clovis, Gainey, and Folsom (Mason 1997:85; Stoltman 1991). In addition, many bifaces have been reported to the ASI simply as "fluted" without further typological classification.

Drawing on the typological descriptions in Morrow and Morrow (2002a), Roosa (1965), and Stoltman and Workman (1969:193–207), typical Clovis bifaces are characterized by a flute that is relatively narrow compared to the width of the blade and relatively short compared to the length of the biface (usually less than half of the total length, although resharpening of the biface has a profound effect on this ratio). The flutes generally terminate with a hinge fracture, although this was sometimes removed by lateral thinning (Bradley 1993:254). One or both sides of the biface may be fluted, and multiple flutes may have been removed from each side. Clovis and Gainey bifaces are similar in morphology and size, but can be distinguished on the basis of some attributes (Morrow and Morrow 2002a; also see Table 2.2b in Haynes 2002:83). In contrast to Clovis, the flutes removed from bifaces classified as Gainey are long and broad with feathered edges and they extend more than half the length of the biface (Deller and Ellis 1988; Stoltman 1991). A metric attribute that may be useful in distinguishing between these two types is the depth of the basal concavity: Clovis bifaces have a shallow basal concavity while eastern fluted point varieties, including Gainey, are more concave (Ellis and Deller 1997:2; Morrow and Morrow 2002b:315; Tankersley 2004:51). In addition, the tips of some Gainey bifaces are heavily ground, while Clovis bifaces typically are not (Haynes 2002:83; Morrow and Morrow 2002a:150).

Folsom bifaces are generally shorter and thinner than Clovis and Gainey bifaces. They also tend to be heavily reworked, indicative of a concern for the conservation of raw material, especially when lithic sources are not readily available (e.g., Amick 1995; Hofman 1992; Judge 1973). Not all bifaces categorized as Folsom are fluted (e.g., Hester 1972; Hofman 1992; Wilmsen and Roberts 1978; unfluted Folsom bifaces are also classified as belonging to the Midland type [Agogino 1969]), but those that are have flutes with feathered terminations, which were removed from one or both sides of the biface by a process of indirect percussion or pressure flaking (Boldurian et al. 1987; Crabtree 1966; Gryba 1988; Roosa 1965). The flute is longer than 3/5 the overall length of the biface (Stoltman and Workman 1969:203). The base and edges typically are retouched with fine pressure flaking (Crabtree 1966, Roosa 1965) and the base is usually deeply concave.

The Clovis, Gainey, and Folsom fluted biface types have different yet overlapping geospatial distributions, and Wisconsin is one of only a few states where all three types have been found. Clovis and similar fluted biface types are found across the United States, particularly the Southwest, Plains, and especially east of the Mississippi (Anderson and Faught 1998, 2000; Dincauze 1993; Faught et al. 1994; Tankersley 2004). Gainey and similar fluted bifaces have a more restricted spatial distribution and are found primarily in southern Michigan, Ohio, and Ontario (Brose 1994; Deller and Ellis 1988; Shott 1993; Simons et al. 1984; Storck 1983), but also have been reported in small numbers in Wisconsin (Stoltman 1991), Iowa (Morrow and Morrow 2002b), Missouri (Lopinot et al. 1998; Ray et al. 1998), Illinois, and more distant localities, including Maine and New York (Gramly 1999; Haynes 2002:85, 107). The Folsom type is spatially restricted to the Southwest and Plains states and east of the Mississippi in Illinois, Indiana, and Wisconsin (Mason 1997:85; Munson 1990:258–259; Stoltman 1991; Stoltman and Workman 1969; Tankersley et al. 1990:306) where finds tend to be associated with the Prairie Peninsula ecotone that was established by 9,000 B.P. (Munson 1990).

The temporal relationship among these three types is less clear. On the Plains, the available radiocarbon dates for Clovis range from 11,600–

10,900 B.P., and the dates for Folsom range from 10,900–10,100 B.P. (Holliday 2000). The small number of radiocarbon dates for fluted biface finds in secure contexts east of the Mississippi tend to be a few centuries more recent than the accepted dates for Clovis sites in the western U.S., prompting some archaeologists to suggest that the fluting technology developed in the interior of the U.S. and then spread north and east in a time transgressive fashion (Morrow and Morrow 1999:225). For fluted biface sites in the East (including Clovis, Gainey, and other types), the dates are estimated to fall roughly between 11,400 and 9,400 B.P. (Dincauze 1993; Ellis and Deller 2000:253; Haynes 1993:222–223; Lepper 1999; Mason 1997:89). Based on analogy with the dates and stratified assemblages from the West, Clovis is considered to be earlier than Folsom. There is some debate with regard to the temporal placement of the regionally restricted Gainey type, which has been suggested to fall somewhere around 10,800–10,500 B.P., and so may post-date, overlap, or be co-eval with Clovis (Lopinot and Ray 2001).

Potential Biases in the Inventories

There are a number of shortcomings to the data used in this study that complicate the process of attributing patterns to ancient land use behaviors and exploring the spatial and temporal variability of these behaviors. Problems of typological identification, lack of correspondence between reports of fluted bifaces and the information included in the ASI database, variation in survey coverages and conditions, and researcher/collector bias must be considered.

Because I chose to rely on the ASI files and published accounts of fluted bifaces, I accepted the temporal classifications and typological identifications made by other scholars and avocational archaeologists. There is tremendous diversity in fluted bifaces in the eastern U.S., and distinguishing among some of the types is difficult solely on the basis of a visual inspection. Instead it requires measurement of certain attributes. Furthermore, the Clovis and Folsom types have been in the archaeological lexicon since the late 1920s, while the presence of the Gainey type in Wisconsin was not established until the early 1990s (Stoltman 1991), which would result in an underrepresentation of Gainey in the database. Distinguishing between Clovis and Gainey can be addressed only by undertaking the enormous task of tracking down all previously reported fluted bifaces, many of which were in private collections and may no longer be available, and recording measurements and descriptive attributes according to a single protocol, an undertaking beyond the scope of this project.

In some instances there is a lack of correspondence between reports of fluted bifaces in the literature and classification of sites in the ASI as Paleoindian. For example, fluted bifaces from Crawford County are reported in a published paper (Ritzenthaler and Scholz 1951), but the ASI database does not include any Early Paleoindian sites from this county. Some sites are reported simply as Paleoindian, without a distinction between Early and Late. Lacking detailed artifact inventories, it will not be possible to narrow the temporal affiliation of these sites. There also are some cases for which the fluted bifaces have county level provenience only (e.g., Stoltman 1982–1994; Stoltman and Workman 1969; Sugden 1954). Most of these were reported early in the twentieth century, but in some cases a precise site location was not reported in order to prevent trespassing (e.g., Hill et al. 1999). Even when exact site location is not known, it is still important to include the data because they can contribute to an assessment of spatial variation in the intensity of landscape use.

I have not controlled for differential survey conditions or survey coverage, which have an impact on artifact recovery rates, because these variables have not been consistently recorded. Some counties have had far more acres of land surveyed than other counties and this also affects the probability of recovering distinctive Paleoindian tools (Mason 1997). The higher population density and frequent construction in counties with urban populations may increase the likelihood of finding archaeological materials, while the larger quantity of paved land and established lawns and parkland decrease the probability of discovery (cf. Anderson and Faught 1998; Lepper 1983, 1985; Seeman and Prufer 1984). More of the southern part of

the state is cultivated land than in the north, and the probability of finding a rare Paleoindian artifact is greater in a plowed field in the south than in the north where the ground surface is obscured by vegetation (Mason 1997). With these data, controlling for differential size of counties does not significantly alter the patterns.[2] However, for those counties that were partially or largely submerged beneath postglacial lakes, the modern size of the county may grossly over-estimate the amount of habitable land available in late Pleistocene times.

A final factor that must be considered is researcher bias. Archaeologists at a number of institutions across the state have focused on Paleoindian studies in close proximity to their home institution and these counties may have disproportionately high reports of Paleoindian sites and fluted biface finds.

Paleoindian Site and Fluted Biface Distribution Patterns in Wisconsin

Seven hundred and sixty three Paleoindian sites are reported from Wisconsin, as of November, 2006, and they occur in nearly every county in the state, with several areas having higher numbers (Figure 2; Table 1). One hundred and eighty eight of these sites are reported to have Early Paleoindian components and 580 are reported to have Late Paleoindian components (Figure 3). A total of 417 fluted bifaces are reported in the ASI files and in published and unpublished literature (Figure 4; Table 1). Of these, 115 are recorded as Clovis, 28 as Gainey, 103 as Folsom, and the remaining 171 fluted bifaces were not reported or described with sufficient detail to determine a typological classification. With the exception of one fluted Folsom base recovered from below the plow zone at the Skare site, most of the reported fluted bifaces have been collected from surface and plow zone contexts.

It is apparent from looking at Figures 2–4 that there are several places in Wisconsin where larger numbers of Paleoindian sites and fluted bifaces have been reported. For Paleoindian sites (Figure 2), there are three primary areas that have relatively large numbers. In western Wisconsin in the vicinity of La Crosse and adjacent Jackson, Monroe, Trempealeau, and Vernon counties, 23.6 percent (n=180) of the total number of Paleoindian sites for the state are concentrated. In south- and east-central Wisconsin in Calumet, Dane, Dodge, Fond du Lac, Jefferson, Manitowoc, and Winnebago counties, 29.2 percent (n=223) of the Paleoindian sites are found. Finally, Kenosha County, in far southeastern Wisconsin, has 5.5 percent (n=42) of the state total for Paleoindian sites—a sizable number for a small area.

Some of the observed pattern in site distribution can be attributed to researcher bias. Archae-

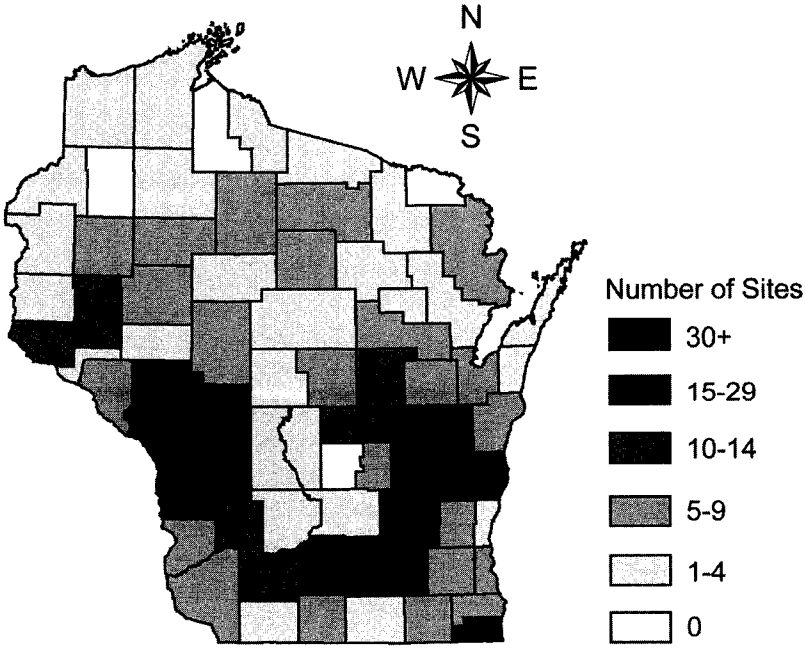

Figure 2. Counties with Paleoindian sites reported in the Wisconsin State Site Files (based on ASI and published data, November 2006).

Table 1. Number of Paleoindian Sites and Fluted Points in Wisconsin Counties as of November 2006 (note: the number of Paleo sites includes those reported as having Early and Late Paleo components as well as those for which the Paleo component was not specified).

County Name	Number of Paleo Sites	Number of Sites with Early Paleo Components	Number of Sites with Late Paleo Components	Number of Clovis Points	Number of Gainey Points	Number of Folsom Points	Number of Other Fluted Points	Total Number of Fluted Points	Reference
Adams	1	1	1	-	-	-	1	1	ASI
Ashland	-	-	-	-	-	-	-	0	
Barron	9	1	9	1	-	-	-	1	ASI; Dudzik 1991
Bayfield	1	1	-	-	1	-	-	1	ASI; Hudson 2005
Brown	7	-	7	-	-	-	-	0	ASI
Buffalo	6	2	4	-	-	2	-	2	ASI; Boszhardt 1991; Penman 1980
Burnett	2	-	1	-	-	-	-	0	ASI
Calumet	26	9	20	1	4	1	12	18	ASI; Overstreet 1991b
Chippewa	8	2	7	1	-	-	-	1	ASI
Clark	5	1	3	1	-	-	-	1	ASI
Columbia	3	-	3	-	-	-	-	0	ASI
Crawford	9	-	8	1	-	-	1	2	ASI; Ritzenthaler and Scholz 1951; Stoltman 1982–1994
Dane	50	19	39	12	-	21	17	50	ASI; Byers 1942; Sanborn and Eaton 1980; Stoltman 1982–994; UW-Madison collections; Wendt 1985; includes 1 Midland (unfluted Folsom) from Skare; does not include Kouba collection
Dodge	23	12	20	1	5	2	10	18	ASI; Anonymous 1963; Overstreet 1991a; Ritzenthaler and Scholz 1951; Stoltman 1982–1994
Door	2	1	1	-	-	-	3	3	ASI
Douglas	3	-	3	-	-	-	-	0	ASI; Dudzik 1991
Dunn	13	3	9	1	-	1	1	3	ASI; Wendt 2001
Eau Claire	4	-	2	-	-	-	-	0	ASI
Florence	-	-	-	-	-	-	-	0	
Fond du Lac	23	4	18	2	1	-	1	4	ASI; Overstreet 1991b; Stoltman 1982–1994
Forest	3	-	2	-	-	-	-	0	ASI
Grant	7	1	6	4	8	-	8	20	ASI; Stoltman 1991
Green	7	3	3	-	-	1	2	3	ASI
Green Lake	9	1	8	-	-	-	-	0	ASI; Overstreet 1991b

County Name	Number of Paleo Sites	Number of Sites with Early Paleo Components	Number of Sites with Late Paleo Components	Number of Clovis Points	Number of Gainey Points	Number of Folsom Points	Number of Other Fluted Points	Total Number of Fluted Points	References
Iowa	10	2	9	4	-	1	-	5	ASI; Overstreet et al. 2004
Iron	2	1	1	1	-	-	1	2	ASI; Dudzik 1991; Mires 1989
Jackson	31	7	28	21	7	2	2	32	ASI; Boszhardt 1991; Hill 1993
Jefferson	25	14	17	27	1	2	2	32	ASI; Anonymous 1965; Jeske 2003; Overstreet 1991a; private collection
Juneau	2	1	1	-	-	10	4	14	ASI; Anonymous 1963; Boszhardt 1991; C. E. Brown files-WHS
Kenosha	42	27	16	3	-	-	1	4	ASI; Overstreet 1991a
Kewaunee	3	-	3	-	-	-	-	0	ASI
La Crosse	37	9	27	4	-	2	1	7	ASI; Boszhardt 1991
Lafayette	4	2	2	1	-	1	1	3	ASI; Stoltman 1982–1994
Langlade	1	-	1	-	-	-	-	0	ASI
Lincoln	5	-	5	-	-	-	-	0	ASI
Manitowoc	9	1	7	2	-	1	1	4	ASI: Overstreet 1991b; Stoltman 1982–1994
Marathon	4	-	2	-	-	1	-	1	ASI; Stoltman 1991
Marinette	6	3	3	1	-	-	-	1	ASI; Anonymous 1963
Marquette	-	-	-	-	-	-	-	0	
Menominee	1	-	1	-	-	-	-	0	ASI
Milwaukee	7	2	6	-	-	-	5	5	ASI; Overstreet 1991a; Stoltman 1982–1994
Monroe	26	3	16	4	-	1	-	5	ASI; Boszhardt 1991
Oconto	4	-	4	-	-	-	-	0	ASI
Oneida	6	-	5	-	-	-	-	0	ASI
Outagamie	5	-	3	-	-	-	-	0	ASI
Ozaukee	4	-	4	-	-	-	-	0	ASI; Overstreet 1991a
Pepin	2	-	1	-	-	-	-	0	ASI
Pierce	14	3	9	-	-	-	59	59	ASI; Amick et al. 1999a
Polk	2	1	2	-	-	-	1	1	ASI; Dudzik 1991; Palmer 1954; Pond 1937
Portage	8	1	5	1	-	-	-	1	ASI
Price	6	-	5	-	-	-	-	0	ASI; Meinholz and Kuehn 1996
Racine	7	3	4	1	-	1	1	3	ASI; Overstreet 1991a; Stoltman 1982–1994

County Name	Number of Paleo Sites	Number of Sites with Early Paleo Components	Number of Sites with Late Paleo Components	Number of Clovis Points	Number of Gainey Points	Number of Folsom Points	Number of Other Fluted Points	Total Number of Fluted Points	References
Richland	14	4	8	4	1	40	1	46	ASI; Anonymous 1966; Sugden 1954; Stoltman 1991; Palmer and Stoltman 1976; Stoltman 1982–1994
Rock	2	2	-	2	-	4	-	6	ASI; Museum Archaeology Program 1960; Overstreet 1991a; Stoltman 1982–1994
Rusk	9	2	7	-	-	1	-	1	ASI; Dudzik 1991; Jones 1948
Sauk	2	-	2	1	-	-	1	2	ASI; Stoltman *c.* 1982–1994
Sawyer	1	-	1	-	-	-	-	0	ASI; Dudzik 1991
Shawano	7	-	7	-	-	-	-	0	ASI
Sheboygan	23	3	20	2	-	2	2	6	ASI; Overstreet 1991b; Stoltman 1982–1994
St. Croix	2	-	2	-	-	-	-	0	ASI
Taylor	2	1	1	-	-	-	3	3	ASI; Stoltman 1982–1994
Trempealeau	20	4	16	-	-	1	11	12	ASI; Hill et al. 1999; Boszhardt 1991
Vernon	66	6	56	2	-	-	2	4	ASI; Boszhardt 1991
Vilas	3	-	3	-	-	-	-	0	ASI
Walworth	9	4	7	1	-	2	2	5	ASI; Overstreet 1991a
Washburn	-	-	-	-	-	-	-	0	
Washington	7	2	6	2	-	-	2	4	ASI; Overstreet 1991a; Stoltman 1982–1994
Waukesha	8	5	5	3	-	-	-	3	ASI; Overstreet 1991a
Waupaca	14	2	12	2	-	-	1	3	ASI; Byers 1942; Stoltman 1982–1994
Waushara	11	1	9	-	-	-	1	1	ASI; Overstreet 1991b
Winnebago	67	11	55	1	-	3	10	14	ASI; Clark 1982; Mason 1985; Overstreet 1991b
Wood	2	-	2	-	-	-	-	0	ASI
Total	763	188	580	115	28	103	171	417	

ologists at the Mississippi Valley Archaeology Center (MVAC) at UW-La Crosse and their collaborators have contributed many hours to documenting Paleoindian finds in western Wisconsin (Amick, Boszhardt, Hensel, Hill, Loebel, and Wilder 1999; Boszhardt 1991). Archaeologists at the Great Lakes Archaeological Research Center (GLARC) in Milwaukee (Overstreet 1993) and the Kenosha Public Museum (Overstreet, ed. 1993; Overstreet et al. 1995) have been documenting the terminal Pleistocene and early Holocene archaeology and paleontology of Kenosha County and linking these finds to postglacial lake basins, Glacial Lake Algonquian strandlines, and fluctuating levels of Lake Michigan at the end of the Pleistocene (Dallman et al. 1996; Overstreet et al. 1995; Overstreet and Kolb 2002). Documentation of Paleoindian sites in counties in south-central Wisconsin can partially be attributed to the efforts of archaeologists affiliated with UW-Oshkosh, UW-Madison, Lawrence University, and other institutions (Baerreis et al. 1953; Mason 1997; Ripley 1996, 1998; Ritzenthaler 1967, 1970; Wendt 1985, 2001). Finally, the efforts of avocational collectors, who are able to repeatedly surface collect sites and often focus their efforts on one or a few localities, may also account for some of the distribution patterns seen in the data (Loebel 2005).

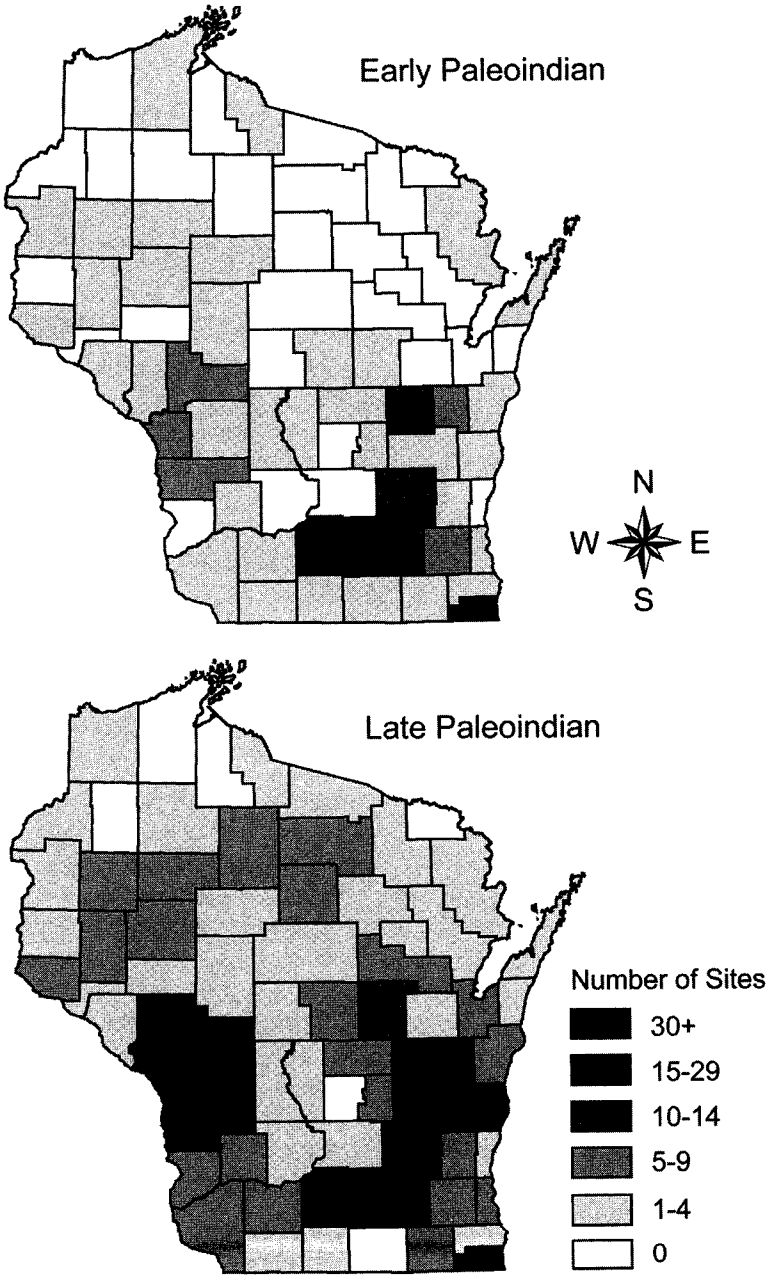

Figure 3. Early and Late Paleoindian site distribution by county (based on data in Table 1).

When only Early Paleoindian sites are considered (Figure 3), the pattern shifts, with only 15.4 percent (n=29) of the sites in Jackson, Monroe, La Crosse, Trempealeau, and Vernon counties; 14.4 percent (n=27) in Kenosha County, and

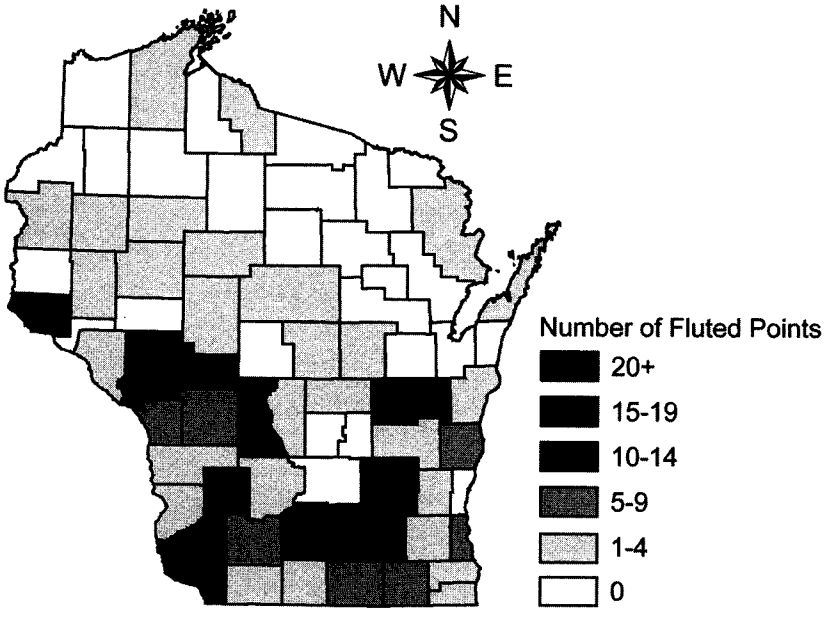

Figure 4. Fluted point distribution by county (based on data in Table 1).

37.2 percent (n=70) located in Calumet, Dane, Dodge, Fond du Lac, Jefferson, Manitowoc, and Winnebago counties. If researcher bias accounted for the variation in documented Paleoindian sites, then it is expected that the relative representation of Early Paleoindian sites would be similar to all Paleoindian sites. Because they differ, some additional factors need to be considered.

Kenosha County as a localized hot spot for reported Early Paleoindian sites may still be accounted for largely by researcher bias since most of these sites belong to the Chesrow complex (Overstreet 1993). The identification of the unfluted Chesrow bifaces as Early Paleoindian or Pre-Clovis has not been uniformly accepted (Kepecs 2002), and it has been suggested that the landforms on which Chesrow complex materials are found, which are associated with the Lake Michigan Lobe of the Laurentide ice sheet, are younger than the landforms to the west that are associated with the Green Bay Lobe and have produced Clovis and Folsom finds (Overstreet et al. 1995), which would make the Chesrow finds younger than Clovis or Folsom (but see Overstreet and Kolb 2002). Additional research is needed to clarify the cultural association of the Chesrow bifaces.

The hot spot of Early Paleoindian sites in Dane, Jefferson, Dodge, Fond du Lac, Winnebago, Calumet, and Manitowoc counties goes beyond what can be accounted for solely by reference to researcher bias. One variable that needs to be further explored is the association between Early Paleoindian sites and postglacial lakes. As the Green Bay Lobe that covered much of eastern Wisconsin receded, numerous postglacial lakes formed by glacial meltwater appeared across the landscape in low lying areas that were dammed up by glaciers and glacial debris, and many of these persisted after the flow of meltwater had ceased (Clayton and Attig 1997). Over time, the downcutting action of rivers opened outlets and many postglacial lakes drained or their basins were partially drained, sometimes quite rapidly. Some of these former lakes evolved into resource rich wetland and marsh habitats that continue to attract animals and people today. Among these persistent wetland habitats first established at the end of the Pleistocene are the Four Lakes (Mendota, Monona, Waubesa, and Kegonsa) in Dane County that are the remnants of Glacial Lake Yahara; Horicon Marsh and Lake Winnebago in Fond du Lac, Winnebago, Calument, and northern Dodge counties that are small vestiges of Glacial Lake Oshkosh; and Scuppernong Marsh, a small remnant of Glacial Lake Scuppernong, which once covered much of Jefferson, southern Dodge, and eastern Waukesha counties (Clayton and Attig 1997; Clayton et al. 1992; Hooyer et al. 2003).

The distinction between Early and Late Paleoindian sites in the ASI makes it possible to explore temporal-spatial land-use patterns in Wisconsin. Few Early Paleoindian sites are reported

for the northern part of the state, but there are a small number of Late Paleoindian sites in most counties (Figure 3). This pattern can be attributed in part to the absence of a strong research presence, lack of extensive modern development, and a lower percentage of plowed land in the northern part of the state. However, glacial history also has an impact on the pattern of known Paleoindian sites. The glaciers departed this part of the state shortly before 10,000 B.P., retreating to Ontario by 9,800 B.P. (Clayton 1984; Clayton et al. 1992; Schaetzl and Isard 2002:313). Permafrost and tundra vegetation initially characterized the recently deglaciated northwoods and were not succeeded by spruce forest until the end of Early Paleoindian times (Dudzik 1991; Jacobson et al. 1987; Mason 1962:236; Winguth et al. 2004). Given the small number of Early Paleoindian sites reported from northern counties, it appears that people began exploring this region shortly after it was free from glacial ice.

There are four primary areas in Wisconsin that have relatively large numbers of reported Paleoindian fluted bifaces (Figure 4). Pierce County in western Wisconsin has yielded 14.1 percent (n=59) of the fluted bifaces found in the state, and most of these come from a single site (Hill et al. 1999). Finds in Jackson and adjacent Trempealeau counties in west-central Wisconsin account for 10.6 percent (n=44) of the fluted biface finds in the state, while Grant and Richland counties in the southwestern part of the state have produced 15.8 percent (n=66) of the fluted biface finds. Dane, Dodge, and Jefferson counties in the southern part of the state have 24.0 percent (n=100) of the reported fluted bifaces in the state. Calumet and Winnebago counties in eastern Wisconsin also have relatively high numbers of fluted bifaces reported, accounting for 7.7 percent (n=32) of the fluted biface finds in the state.

As was the case for Paleoindian sites, some of this spatial pattern in fluted biface finds can be accounted for by researcher bias, especially the efforts of archaeologists affiliated with MVAC, UW-Oshkosh, UW-Madison, Lawrence University, and some other Wisconsin institutions (Amick, Boszhardt, Hensel, Hill, Loebel, and Wilder 1999; Boszhardt 1991; Wendt 2001). Additionally, the distribution pattern of fluted bifaces may be biased by differential survey coverage, survey conditions, geomorphology, researcher bias, and rates of artifact discard. However, there also are some clear patterns of association with resource-rich portions of the state that should be, or have been, explored in greater detail. Sites in Jackson and Trempealeau counties are in close proximity to the Hixton silicified sandstone outcrops at Silver Mound in Jackson County (Brown 1984; Porter 1961), a spatially isolated resource that repeatedly attracted Paleoindians to western Wisconsin (Hill 1994). Although a quarry site for Cochrane chert has not been identified, nodules of this high quality material, which was used by Paleoindians in far western Wisconsin, are exposed in southern Buffalo and Trempealeau counties (Boszhardt 1999; Hill et al. 1999). Paleoindian assemblages from these counties are dominated by the locally available Hixton and Cochrane raw materials, although small amounts of stone from more distant places also have been recovered (Amick, Loebel, Hill, Boszhardt, and Hensel 1993; Boszhardt 1991; Hill 1994; Hill et al. 1999). Such high quality lithic raw materials clearly attracted people, and the proximity to these resources increased the likelihood of artifact discard, contributing to the high numbers of fluted biface finds in this part of the state.

Pierce, Grant, and Richland counties in the Driftless Area also have many reports of fluted bifaces, indicating a strong presence of Paleoindians in this part of the state. Mammoth and mastodon remains have been found in Grant and Richland counties, including mastodon remains that may be associated with a Clovis fluted biface made of Hixton (Palmer and Stoltman 1976). Furthermore, many of the rivers flowing through the Driftless Area likely had large fish populations at this time.

The large number of fluted bifaces reported from Dane, Dodge, and Jefferson counties can be attributed in part to research bias, especially by archaeologists affiliated with UW-Madison and the WHS (Baerreis et al. 1953; Ripley 1996, 1998; Ritzenthaler 1967, 1970; Wendt 1985, 2002). Large portions of Dane, Dodge, and Jefferson counties were covered by postglacial lakes, and further research is needed to correlate these sites with shorelines, but the extensive post-

glacial lakes and wetlands that once existed here certainly attracted people in Holocene times. In Dane County, where the shoreline of Glacial Lake Yahara is mapped in detail (Mickelson and McCartney 1979), many of the fluted bifaces have been recovered from sites that are on the former banks of this ancient postglacial lake (Wendt 1985).

The modest number of fluted bifaces from Calumet and Winnebago counties can be attributed in part to researcher bias, with archaeologists affiliated with UW-Oshkosh and Lawrence University having a strong interest in the Paleoindian archaeological resources in this part of the state (Behm 1981; Mason 1985; Mason 1997). But, this region has been an extensive resource-rich lake and wetland area since the end of the Pleistocene and is in close proximity to Lake Michigan, factors that would have attracted people to the area (Clark 1982). Furthermore, Marquette rhyolite, which was intensively used in Late Paleoindian times, outcrops nearby in Green Lake County (Behm 1997:39), and may account for some of the large number of Late Paleoindian sites in this part of the state.

While lithic sources, such as Hixton and Cochrane, clearly attracted Wisconsin's first people to the western parts of the state, the spatial distribution of fluted bifaces made of these and other raw materials provide insights into the extended mobility range of some Early Paleoindians (see also Loebel 2005). For example, at the Morrow-Hensel site in Pierce County, 95 percent (n=59) of the fluted bifaces are made of Hixton silicified sandstone, which outcrops about 110 km to the south-south east of the site (Amick, Loebel, Hill, Boszhardt, and Hensel 1999). The lithic assemblage from the Withington site in Grant County, which is about 170 km south of Silver Mound, also is dominated by Hixton silicified sandstone (Stoltman 1993). Elsewhere in Wisconsin, other non-local raw materials appear to dominate the Paleoindian assemblages. Analysis of the lithic assemblage from the Aebischer site in Calumet County led Stoltman (1993) to conclude that most of the Early Paleoindian assemblage was comprised of Moline chert, which outcrops at a distance of about 300 km from the site.

In contrast, the fluted bifaces from Skare and other sites in Dane County, a part of Wisconsin that is deficient in locally available high quality sources of stone, are characterized by a diversity of raw materials, with no single chert type dominating the collections. Fluted bifaces from sites in Dane County are made from Burlington chert, which outcrops in the uplands adjacent to the Mississippi Valley in southeastern Iowa, west-central Illinois, and northeastern Missouri from about 280–670 km to the south of central Dane County, Moline chert, which outcrops near the confluence of the Rock and Mississippi rivers in northwestern Illinois about 200 km to the southwest, Hixton silicified sandstone, outcropping about 200 km to the northwest, Galena chert, which outcrops across much of southwestern Wisconsin and northwestern Iowa, and Prairie du Chien chert, which outcrops across southern Wisconsin (Wendt 1985). In this part of Wisconsin, relatively large numbers of fluted bifaces were thrown away, many after having been extensively resharpened. Because this area lacks ready access to preferred lithic raw materials to replace the worn out tools, the pattern of finds across Dane County may reflect discard behaviors and settlement choices that relate to phenomena other than lithic raw material procurement.

It is also instructive to compare the spatial distribution of Clovis, Gainey, and Folsom fluted bifaces (Figure 5). Clovis fluted bifaces are distributed across the state, including several counties in the northern part of the state. Gainey fluted bifaces have a more restricted distribution, but this may be due, in part, to the challenges of distinguishing between Clovis and Gainey, particularly with incomplete bifaces, and the recent recognition that Gainey fluted bifaces are present in Wisconsin (Stoltman 1991). In contrast, Folsom fluted bifaces appear to have a more limited distribution to the southern part of the state. Elsewhere in North America, Clovis has been associated with an opportunistic and generalist foraging strategy that might include greater mobility across different ecological zones (Blackmar 2001; Meltzer 1988; Webb and Rindos 1997), whereas Folsom has been linked with bison and a species-focused

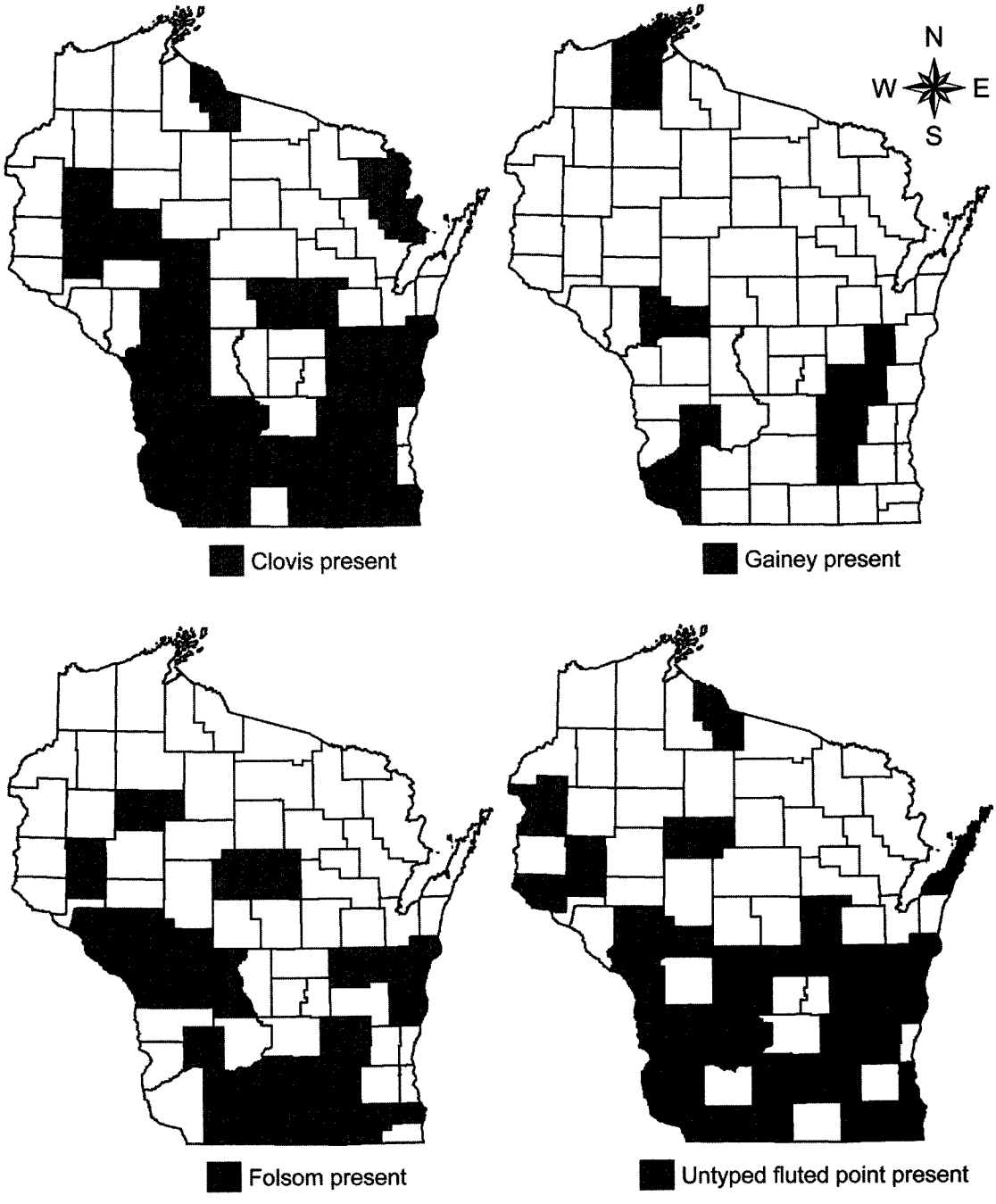

Figure 5. Clovis, Gainey, and Folsom point finds by county (based on data in Table 1).

subsistence strategy restricted to the Plains (Kelly and Todd 1988; Sellards 1952). Further work targeted at reconstructing the local Late Pleistocene environment in the vicinity of each Clovis, Gainey, and Folsom find is necessary to evaluate the relevance of this distinction for Wisconsin Paleoindians.

THE SKARE SITE

In the remainder of this paper, I explore the Late Pleistocene environmental setting and Paleoindian material record of one site in Wisconsin, Skare, and I situate this site within the larger context of Paleoindian finds across the state. For many decades, avocational and professional archaeologists have known about a site in southeastern Dane County, Wisconsin, that purportedly held evidence of a significant Paleoindian presence in the area. This site, which has variously been called the Skare site and the Kouba site, sits on ground moraine deposits at the edge of a postglacial lake (Mickelson and McCartney 1979). Today, the former lake basin to the immediate north of the site is an extensive wetland and along the western edge of the site the Yahara River flows through a narrow channel that connects Lakes Waubesa and Kegonsa, two of the four contemporary lakes that formed Glacial Lake Yahara in late Pleistocene times. Elevations at the site range from about 257.56 m amsl (845 ft) along the river to about 264.58 m amsl (868 ft) at the highest spots on the western edge of the site.

Dane County straddles the boundary between the unglaciated Driftless Area of southwestern Wisconsin and the glaciated portions of the remainder of the state, and the Skare site is about 18.5 km east of the farthest western extent of Late Wisconsin glacial ice (the Green Bay Lobe). The highly dynamic glacial history and the considerable temporal and geographic variation in resource distribution during the late Pleistocene and beginning of the Holocene complicate discussions of the ecological setting of Skare and other Paleoindian sites in the state. Some broad generalizations can be made, but the detailed multi-disciplinary studies necessary to determine the late Pleistocene setting of each locality that has yielded diagnostic evidence of Paleoindians have not been undertaken.

Glacial retreat from southern Wisconsin began sometime between 16,000 and 13,000 B.P. (Colgan 1999), with several periods of retreat and re-advance in the far southeastern corner of the state between 14,500 and 13,500 B.P. (Simpkins 1989), and a series of re-advances and retreats along the eastern part of the state between 12,950 and 11,800 B.P. (Colgan 1999:138 142). It was during the initial period of glacial retreat, between 16,000 and 13,000 B.P., that glacial meltwater flowed into the Yahara River Lowlands and formed Glacial Lake Yahara. For a short period of time, water levels in Glacial Lake Yahara were high, at about 262.1 m (860 ft), but they quickly dropped to an elevation of about 259.7 m (852 ft) (Mickelson 1983; see also Clayton and Attig 1997:56–58). Lake levels stood at this lower stage for an extended period of time, as much as a few thousand years, judging from remnant beach-like features identified in soil cores taken along the north edge of the site, before dropping to their present level of about 257.56 m amsl (845 ft) (Ripley 1996:117, 1998:799; Skare site field notes, 2002, on file at UW-Madison Wisconsin Archaeology Lab).

The initial Paleoindian use of the site may have begun around 11,000–12,000 B.P., when Glacial Lake Yahara was still at this low water stage. Pollen data and radiocarbon dated plant remains indicate that tundra was present in recently deglaciated southern Wisconsin at 13,000 B.P., with the transition to spruce forest occurring a short time later; spruce forest dominated the southern part of the state until about 10,500 B.P. when the transition to modern vegetation began (Clayton et al. 1992; Colgan 1999:146; Maher 1982; Maher and Mickelson 1996; Ripley 1996:87, 1998; Winkler et al. 1986).

Animals were certainly attracted to the shores of postglacial lakes elsewhere in southeastern Wisconsin, judging from the association between postglacial lake sediments as well as Glacial Lake Algonquian strandlines and the bones of extinct megafauna in southeastern Wisconsin (Overstreet et al. 1995; West and Dallman 1980). In unglaciated western Wisconsin, a few megafauna remains recovered in the late nineteenth and early twentieth century were reported to be associated with distinctive "blue clay" deposits that have been interpreted as remnants of terminal Pleistocene ponds (Boszhardt et al. 1993). Glacial Lake Yahara, too, would have attracted and supported a variety of aquatic and terrestrial resources that would have drawn people to its banks.

HISTORY OF INVESTIGATIONS AT SKARE

What archaeologists call the Skare site was first mentioned in a document in 1833. In this year, Lorin Miller, a surveyor with the General Land Office, crossed the Yahara River on one of his traverses across southern Wisconsin and found himself in a clearing that he described as "an old cornfield" (General Land Office, 1832–1866). By the early- to mid-twentieth century, the location had attracted the attention of avocational archaeologists, including a man named Theodore Kouba (Ritzenthaler 1966, 1967). Robert Skare, who farmed the property for many years and for whom the site is named, had an extensive collection from the site (Baerreis, et al. 1953). The site also has been visited by professional archaeologists, beginning in 1953 (Baerreis, et al. 1953) and culminating in recent years with increasingly refined documentation of the spatial distribution of material across the surface of the site (Ripley 1996, 1998; notes on file at the OSA-WHS) and excavations (Schroeder 2002). All of these projects have produced an archaeological record that indicates the Skare site was used repeatedly from Early Paleoindian to Historic times.

Kouba Collection

Theodore Kouba repeatedly visited the site over many decades and collected artifacts from the surface of the plowed field. His collection reportedly included a cache of 80 gravers (Ritzenthaler 1967), an additional 149 gravers, 77 end scrapers, seven fluted bifaces, six unfluted late Paleoindian lanceolate bifaces and bases, five Dalton bifaces, and 41 other bifaces dating to later Archaic and Woodland times (Ritzenthaler 1966). Kouba also claimed to have found two perfectly matched and unusually large Clovis points and four distinctive Sandia points at Skare (Ritzenthaler 1970) that professional archaeologists consider to be fakes or to be fraudulently associated with the Skare site (Stoltman, personal communication April 2002). Because of the unreliable provenience of these six objects and Kouba's secretiveness about the site's location, many archaeologists considered the Paleoindian component at the site to be a hoax.

When Kouba began collecting artifacts from the surface in the 1930s, he did not find any diagnostic Paleoindian materials. But, years later he did begin to find these distinctive tools and projectile points (WHS curation notes made by Joan Freeman, February 29, 1984), further contributing to the perception that the Paleoindian component was something fabricated by Kouba later in his collecting career. A mundane explanation can account for the collecting history that Kouba experienced at the site without having to call into question the authenticity of a Paleoindian component. Loess deposition and accumulation occurred at the site at the terminal Pleistocene (Ripley 1998:808), which likely led to Paleoindian artifacts being buried at a greater depth than later materials. Changes in the depth of plowing, the combined effects of plowing and erosion, and ongoing processes of soil movement brought some of these materials closer to the surface after the field had been cultivated for many years.

Like many collectors of his era, Kouba most likely bought, sold, and traded artifacts, and some of the Paleoindian artifacts that he claimed to have found at the site almost certainly had been acquired by other means. The two unusually large Clovis points and the four Sandia points may have come into his collection this way. When he donated his collections from Skare to the Wisconsin Historical Society, these objects were not included, but other Paleoindian artifacts were, suggesting that he donated only those materials he was confident came from Skare, although objects in the collection that are made of unusual raw material or are of an atypical style for the region should still be viewed with skepticism.

Wisconsin Historical Society (WHS) and UW-Madison Projects

Archaeologists from UW-Madison first visited the site in 1953 (Baerreis et al. 1953). It is unclear whether they knew this was the same site that Kouba had been collecting, but given Kouba's extreme reluctance to reveal the location of the site, it is unlikely. In addition to conducting their own surface reconnaissance, Baerreis and his colleagues recorded detailed data on the projectile points in Robert Skare's personal collection (notes on file at the UW-Madison Wisconsin Archaeology Lab). Skare's collection included diagnostic

bifaces ranging from Late Paleoindian/Early Archaic to Late Woodland/Oneota types. Baerreis et al. (1953) also report one fluted biface and two possible fluted bifaces from Skare (notes on file at the UW-Madison Wisconsin Archaeology Lab).

Between 1971 and 1981, Dan Wendt investigated areas in Dane County likely to have archaeological sites. His survey project included the Skare site, as well as eight other sites with Paleoindian components (Wendt 1985). Wendt reported on six fluted bifaces from the Skare site, all from private collections, and 19 lanceolate-shaped Late Paleoindian bifaces, most from private collections (Wendt 1985:244, 246, 240–251). The Paleoindian sites that Wendt identified in Dane County were in locations that had at one time been on or near the margins of Glacial Lake Yahara (Wendt 1985:256).

In June 1984, James Stoltman, Jeffrey Behm, and Fred Finney of UW-Madison visited the site and made a surface collection, noting that the greatest density of materials occurred along the Yahara River, a pattern replicated in 1995 by a group of dedicated avocational archaeologists who assisted with controlled surface surveys organized as part of a master's thesis project in the UW-Madison Geography Department (Ripley 1996). In 1996 and 1997, the volunteers continued to participate in controlled surface collections under the direction of the Office of the State Archaeologist at the WHS (notes on file at the OSA-WHS). The field in which the Skare site is located is about 14.2 ha (35 acres) in size and lithic debris is distributed across much of this area, with the greatest density of cultural materials in the northwestern part of the field, the area closest to water, confirming the impression that Stoltman, Behm, and Finney had in 1985 (Ripley 1996:Figure 43). Artifacts distinctive of Early Paleoindian, Late Paleoindian, Archaic, Woodland, and Oneota traditions, as well as early Historic objects, were collected during these projects. Paleoindian projectile points were spatially restricted to the northwestern part of the field at elevations above 259.7 m (852 ft), the same area that had the greatest density of lithic debris, while diagnostic Archaic artifacts were found across the western half of the field, and Woodland and Oneota materials were found in the western part of the field, mostly within 50 m of the Yahara River and at lower elevations than the Archaic and Paleoindian finds (Figure 6).

Paleoindian Artifacts from Skare

Many people have been skeptical of the Paleoindian surface finds from Skare and excavations were necessary to confirm the existence of a Paleoindian component at the site. In 2001, I placed a series of 1 x 4 meter test trenches run-

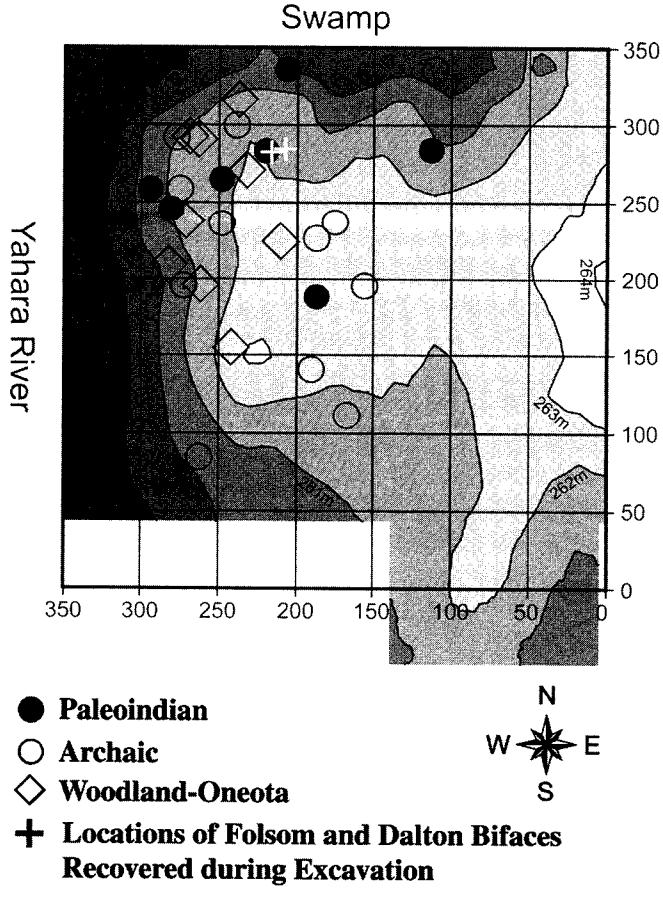

Figure 6. Locations of temporally diagnostic artifacts recovered by Ripley's 1995 survey of the Skare site.

ning east-west across a higher elevation section of the site that had the greatest density of stone flake debris and had yielded diagnostic Paleoindian material (Area A in Figure 7). Based on Ripley's (1996, 1998) geomorphology studies and Kouba's collecting experiences at the site (WHS curation notes made by Joan Freeman, February 29, 1984), I suspected that the surfaces at these higher elevations were deflated and that there would be no intact features below the plow zone. Surprisingly, at the base of the plow zone in each excavation unit, features and postmolds were identified. Excavations were expanded to explore the spatial extent of these features. All features post-date A.D. 1000, based on the association of grit-tempered pottery, including a small Madison Cord-Impressed rim sherd, corn kernels and cobs, and radiocarbon dates (Schroeder 2002). In contrast, the diagnostic cultural materials recovered from contexts outside the identified features, and below the base of the plow zone, date to Paleoindian and Archaic times. Most notably, excavations of non-feature soil matrix below the plow zone uncovered the base of a Folsom biface (Figure 8- FN01-14) that dates to Early Paleoindian times (Haynes 1964; Holliday 2000; Judge 1973), and a heavily reworked Dalton biface (Figure 8-FN01-32) that is a transitional Late Paleoindian-Early Archaic form (Goodyear 1974, 1982; Morse 1997). From the plow zone sediments excavated in this area of the site, three examples of another artifact often considered distinctive of Late Paleoindian-Early Archaic Traditions were recovered. These objects, variously called *pièces esquillée*, wedges, bipolar cores, or splintered pieces (Shott 1999), have battered edges that may be the consequence of bipolar reduction (Goodyear 1993; Shott 1989, 1999) or their use as wedges to split bone, antler, or wood (Goodyear 1974:61–63; House 1975:64–65; LeBlanc 1992; Morse 1997:44).

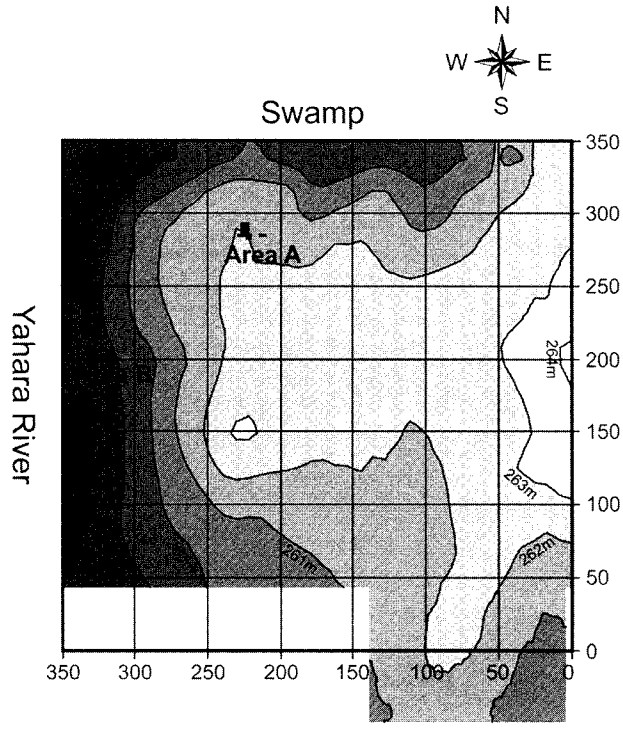

Figure 7. Locations of excavation units at the Skare site.

The surface collections made by Ripley (1996, 1998) contained a number of diagnostic Paleoindian projectile points, including Folsom fluted bifaces and unfluted types such as Agate Basin and Cody (Ripley 1996:153). Surface collections from the Skare site (Baerreis et al. 1953) that are curated in the UW-Madison Wisconsin Archaeology Lab include a number of other artifacts thought to date to Late Paleoindian times or to the earliest part of the Archaic. These objects include gravers that may have been used for incising bone, antler, and possibly wood (House 1975:63; Morse 1997:68); large scrapers with a distinctive fan shape that may have been used for hideworking (Goodyear 1974:44–45; House 1975:62; Morse and Morse 1983:78); and backed unifaces—blade-like flakes that were retouched and probably used as spokeshave scrapers to smooth bone or wood handles (Morse 1997:68). At the Sloan site in Arkansas, similar tools formed part of the Late Paleoindian-Early Archaic Dalton tool kit (Morse 1997:40–41).

From the WHS surveys and the excavations at Skare, six fluted bifaces were available for study

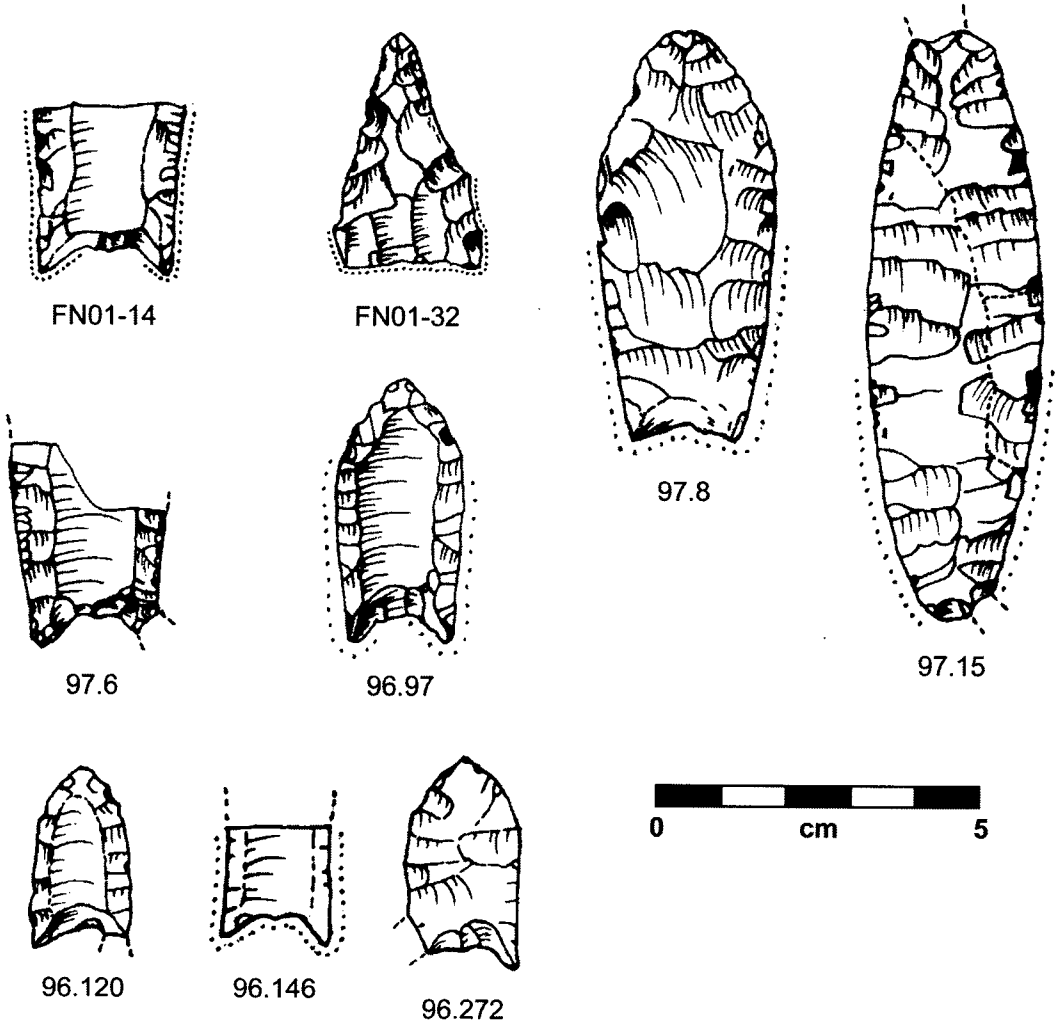

Figure 8. Paleoindian artifacts from the Skare site (Folsom bifaces: FN01-14, 97.6, 96.97, 96.120, 96.146; Midland (or unfluted Folsom) biface: 96.272; Dalton biface: FN01-32; Agate Basin biface: 97.8; possible rounded base Agate Basin biface: 97.15 [see Frison and Stanford 1982:81, Figs. 2.48a, e, j, 2.49f, j, o, 2.52h, 2.56b]).

(Table 2; Figure 8). Of these, five are fluted Folsom bifaces and one is an unfluted Midland type. Half of the bifaces were broken, most likely before they were discarded, and the remaining three bifaces were heavily reworked and quite diminutive in size, averaging 33.6 mm in length. Given these characteristics, it is likely that all of these objects had reached the end of their use-life and were discarded. These bifaces were manufactured from a diversity of raw materials, mostly non-local, with three bifaces made of Hixton silicified sandstone and one each of Galena, Moline, and Prairie du Chien cherts. This pattern of raw material usage is consistent with the high mobility patterns characteristic of Paleoindians. The distance over which materials were obtained is also consistent with inferences of high mobility. However, from the high diversity of raw materials represented, along with the wide range of distinctive Paleoindian tool types represented, it can be in-

Table 2. Metric and Descriptive Attributes of Early Paleoindian Points from Skare*.

Point Number	96-97	96-120	96-146	96-272	97-6	FN01-14
Context	Surface	Surface	Surface	Surface	Surface	Excavation: N285W210; level 1 bpz
Type	Folsom	Folsom	Folsom	unfluted Folsom	Folsom	Folsom
Max length	40.14	28.66	-	32.02	-	-
Max width	19.41	15.50	-	17.29	-	-
Dist from base to point of max width	27.67	6.29	-	15.26	-	-
Base width	15.87	14.41	16.76	-	-	20.04
Max thickness	4.97	4.69	-	4.27	-	-
Dist from base to point of max thickness	19.7	10.44	-	21.53	-	-
Blade thickness within flute scar	4.13	4.08	3.12	-	4.49	2.99
Depth of basal concavity	3.67	3.62	3.8	3.1	5.03	4.19
N flutes, obverse face	1	1	1	0	1	1
Flute length, obverse face	33.66	20.15	-	-	-	-
Flute width, obverse face	12.1	9.26	-	-	-	-
N flutes, reverse face	1	1	1	0	1	1
Flute length, reverse face	32.86	17.91	-	-	-	-
Flute width, reverse face	12.86	10.29	-	-	-	-
Extent of grinding, left edge	27.93	14.1	-	20.96	-	-
Extent of grinding, right edge	27.97	16.5	-	-	-	-
Mass (g)	4.9	2.5	1.3	2.6	3.8	3.1
Raw material	Galena chert	Hixton	Hixton	Hixton	Moline chert	banded Prairie du Chien chert
Reworking	Yes	Yes	-	Yes	-	-
Impact facture	No	No	Yes	No	Yes	Yes
Basal grinding	No	No	Yes	Yes	No	No
Breakage pattern	Complete	Complete point made from the midsection of a larger point	No unground edge present	> 7.5 mm edge grinding present; 1 corner broken off	No unground edge present	No unground edge present

* All measurements are in mm.

ferred that Skare was a place that was repeatedly used by different people over many, many years. This kind of pattern is consistent with a conclusion that the site represents a palimpsest or an aggregation locality.

CONCLUSION

The non-uniform glacial history of Wisconsin coupled with dynamic and heterogeneous postglacial environments pose considerable challenges to the investigation of Paleoindians in the state. In contrast to the western U.S. and a number of places in the East, deeply stratified and buried sites yielding Paleoindian materials are not well documented. Instead, Wisconsin has a rich surficial record of Paleoindian sites and fluted biface finds that complements the record of Paleoindian lifeways documented in other places through the excavation of stratified sites and allows for the investigation of regional patterns of land use.

By comparing the spatial distribution of Early and Late Paleoindian sites across Wisconsin, it appears that the earliest people to enter Wisconsin explored river drainages and the margins of postglacial lake basins in southern Wisconsin and made forays into the recently deglaciated northern parts of the state. By Late Paleoindian times, two areas of the state appear to have a higher number of sites—counties in western Wisconsin along the Mississippi River, near places where Cochrane chert is available today, and in the vicinity of Silver Mound and the Hixton silicifed sandstone outcrops, and counties in south-central to eastern Wisconsin where the Marquette rhyolite quarry is situated and the landscape was dominated by postglacial lakes in Late Pleistocene times. These are the same areas of the state where fluted bifaces are concentrated. Overall, as was the case with Paleoindian sites, the spatial distribution of Paleoindian fluted bifaces corresponds well with those counties that contain high quality and spatially restricted lithic resources, were dominated by postglacial lakes, have been the focus of professional and avocational investigation, and where much of the land is cultivated—increasing the probability of discovery. The spatial patterns of fluted bifaces and Early and Late Paleoindian sites also support the inference that people were exploring the northern reaches of the state shortly after the glaciers receded. Further work is necessary to characterize the settings of individual sites, especially their association with the margins of post-glacial lakes.

These data support models of Paleoindian colonization that have people moving relatively rapidly (Feidel 1999; Haynes 1964; Kelly and Todd 1988; Meltzer 2004; Steele et al. 1998; Surovell 2000; Young and Bettinger 1995). They also support arguments that these early nomadic peoples were attracted to lithic outcrops and resource-rich plains, basins, river valleys and lakes as they traveled around the unknown land (Anderson 1990; Anderson and Gillam 2000; Sauer 1944), and that people explored widely as they familiarized themselves with the unfamiliar and dynamic topography.

The Skare site is one of a small number of Paleoindian sites in Wisconsin where excavations have uncovered distinctive Paleoindian bifaces from contexts below a disturbed plow zone, findings that confirm the existence of a Paleoindian component that initially was identified on the basis of surface collections (see Jeske 2003, Mason and Irwin 1960; Overstreet et al. 2004; Yansa et al. 2006 for Late Paleoindian examples). The number of fluted bifaces recovered from surface contexts at the site, the diversity of other tool forms often associated with Paleoindian assemblages, and the wide range of raw materials represented, are consistent with an inference that the site was an aggregation locale or a place that was repeatedly used over time by Paleoindians whose migration range extended over a distance of 280 km or more. Furthermore, the site was located at the edge of a postglacial lake that persists as a wetland today, a location consistent with the expectation that Paleoindian sites with more abundant and diverse assemblages of artifacts occur in places that were characterized by stable and persistent seasonal richness in availability of plant and animal resources or lithic raw material. These findings, in conjunction with the site and fluted biface distribution data from Wisconsin, contribute to the growing body of literature documenting heterogeneity in Paleoindian settlement patterns and mobility, especially with regard to a focus on diverse resource-rich localities.

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NOTES

[1] In the following discussion, I have not transformed dates into calendrical years because of plateaus and jags in the radiocarbon calibration curve at the Pleistocene-Holocene transition, which make it difficult to assign clear calendar ages to dates (Fiedel 1999). I use B.P. to indicate I am referring to radiocarbon years before present with the recognition that these dates are younger than the associated calendrical dates by a millennium or more.

[2] When the count of fluted points is standardized by county area, the overall distribution pattern is the same as with the raw count with the exception of Milwaukee County, which, because of its small size, appears to be another "hot-spot" for fluted points. This may be due, in part, to the quantity of urban development and land renewal in the county, which increases the probability of finding rare objects like fluted points.