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PALEOINDIAN PERIOD ARCHAEOLOGY OF GEORGIA

DAVID G. ANDERSON, R. JERALD LEDBETTER, AND LISA O'STEEN

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PALEOINDIAN PERIOD ARCHAEOLOGY OF GEORGIA

By

David G. Anderson
National Park Service, Interagency Archaeological Services Division

R. Jerald Ledbetter
Southeastern Archeological Services

and

Lisa O'Steen
Watkinsville

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I.

INTRODUCTION

PURPOSE AND ORGANIZATION OF THIS PLAN

The first unequivocal evidence for human occupation in the Southeastern United States dates to around 11,500 years ago during the PaleoIndian period, when assemblages characterized by fluted lanceolate projectile points appeared widely over the region. These points and other materials found with them are assumed to represent the remains of human groups entering the region from the west, spreading out beyond passages in the northern ice sheets (Figure 1). In this document, evidence collected to date about early human populations in the Georgia area is summarized and used to develop guidelines by which the management of Georgia's PaleoIndian archaeological record may proceed. The condition of these resources is evaluated, and the impacts of current and future land use practices are considered. Specific procedures for the identification, evaluation, protection, preservation, and investigation of PaleoIndian sites in Georgia are advanced.

This report has been prepared as part of a comprehensive planning process for the management and protection of Georgia's archaeological and historic resources, described in *A Vision for the Future - The Georgia Historic Preservation Plan*, published by the Department of Natural Resources' Historic Preservation Section. It has been produced following guidelines advanced by the Office of the State Archaeologist and published in *A Strategy for Cultural Resource Planning in Georgia* (Crook 1986). Every effort has been made to make this plan relevant to preservation and research concerns within Georgia.

The regional and national implications and importance of Georgia's PaleoIndian archaeological record have also been addressed. In the preparation of this document, the PaleoIndian literature from across Eastern North America was consulted, to place the Georgia record in its proper areal context. PaleoIndian operating plans have been prepared in several other Southeastern states, and these documents were of considerable assistance in the development of the Georgia plan. In particular, PaleoIndian operating plans were examined from Arkansas, Florida, Kentucky, Louisiana, Mississippi, Tennessee, and West Virginia (Broster 1987; Davis 1982; Dunbar n.d.; Gardner 1987; McGahey n.d.; Smith et al. 1983; Tankersley 1987). This has permitted the examination and evaluation of Georgia's PaleoIndian archaeological record from both a local and regional perspective. Such a perspective is particularly critical given the wide-ranging movements of these early peoples, who frequently moved across two or more state lines. As such, the recommendations presented here for the management of Georgia's PaleoIndian archaeological record are comparable with recommendations in operating plans in place or under development throughout the region.

In this introductory chapter, matters of paleoenvironment and chronology are examined. A discussion of the Late Pleistocene landscape is included to emphasize the fact that Georgia was a very different place during the PaleoIndian era than it is today, and to familiarize the reader with the conditions facing early human groups. How archaeologists identify PaleoIndian occupations in Georgia follows, including methods by which earlier and later sites within this period are recognized. Chapter II provides a detailed review of PaleoIndian research conducted to date in

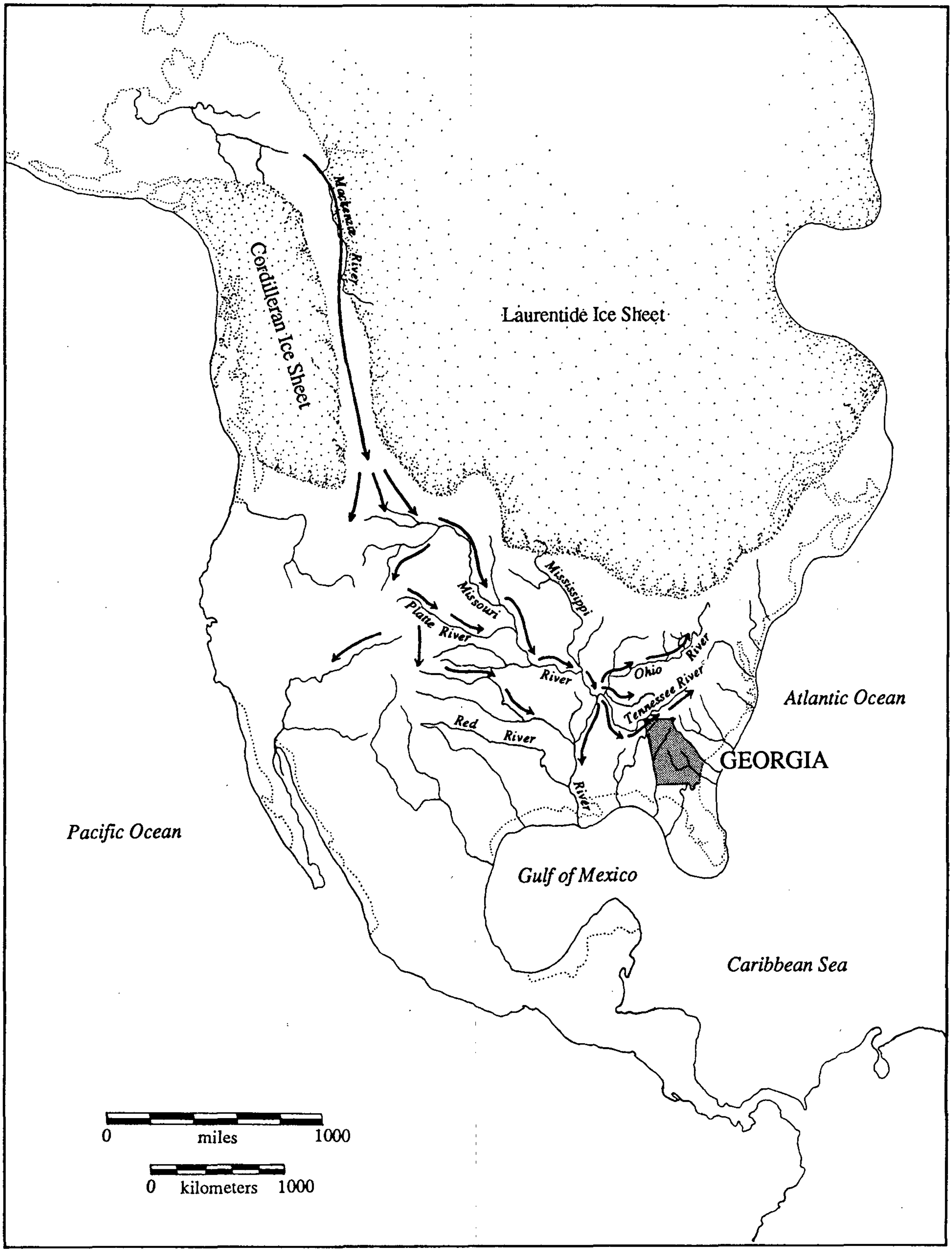


Figure 1. Georgia at the Time of Initial PaleoIndian Settlement of the Eastern Woodlands.

Georgia, and some of the major research findings. In Chapter III, primary data on diagnostic PaleoIndian artifacts from the state are presented for the first time. This information, consisting of measurements and illustrations of Early, Middle, and Late PaleoIndian projectile points, should be of considerable interest to many Georgia residents and to archaeologists throughout the country. Chapter IV concludes the report with an extended discussion of procedures that should be considered in the management and investigation of the Georgia PaleoIndian archaeological record.

ENVIRONMENTAL CONDITIONS DURING THE PALEOINDIAN PERIOD

The initial human occupation of the Georgia area in all probability occurred between 15,000 and 11,000 years before the present (B.P.), during the Late Glacial era. At that time sea levels were 70 or more meters lower than at the present, and the Atlantic and Gulf shorelines were considerably seaward of their present location. As the continental ice sheets retreated in the north, water was returned to the oceans and large sections of the continental shelf were inundated. By 9000 B.P. sea level was within a few meters of its present elevation. Widespread extinctions accompanied these environmental changes in North America, specifically the loss of 33 genera of large mammals, including the Equidae and Camelidae (horses and camels), and all the members of the order Proboscidea (elephants) (Martin 1984:361-363). Contemporary analyses indicate that these extinctions were essentially complete by ca. 10,000 years ago, and possibly as early as 10,500 to 10,800 B.P. (Mead and Meltzer 1984:447; Grayson 1987), shortly after widespread evidence for human settlement appears in the New World archaeological record. The relationship between these human and animal populations is a matter of considerable controversy (Martin and Klein 1984). While human predation of megafauna has been conclusively demonstrated at a number of locations, most notably in the Southwest and on the Great Plains, to date only minimal evidence for megafaunal exploitation has been recovered from the eastern United States (Clausen et al. 1979; Webb et al. 1984).

Recent broad-scale paleoenvironmental analyses from the lower Southeast indicate that major changes in vegetational communities have also occurred over the last 15,000 years. The period from 12,000 to 10,000 B.P., in particular, the time of postulated initial human settlement, was one of great change, because "the relatively patchy environment was shifting to one of latitudinally and elevationally segregated zones" (Kelly and Todd 1988:232). In Georgia north of 33 degrees N latitude, roughly the latitude of Macon, northern hardwoods such as oak, hickory, beech, birch, and elm replaced the Full Glacial spruce/pine boreal forest during this period (Figure 2) (Delcourt and Delcourt 1985, 1987). Over this same interval, temperatures were becoming warmer in summer and colder in winter, and precipitation was increasing (Holman 1982, 1985a, 1985b; Watts 1980). The vegetational matrix was thus changing rapidly, trending from a patchy boreal forest/ parkland towards a homogeneous, mesic oak-hickory forest. In ecological terms, the vegetation was changing from immature, or coarse-grained, to mature, or fine-grained (Pianka 1978). The best available evidence suggests that this transition was complete over much of the lower Southeast by shortly after 10,000 B.P., and almost certainly by 9000 B.P. (Boyd 1989; Davis 1983:172-173; Delcourt and Delcourt 1983:269, 1985:19, 1987; Larsen 1982:208-222; Watts 1971:687, 1980:195).

South of 33° N latitude in Georgia and across much of the Southeast outside of peninsular Florida, there is evidence to suggest that a hardwood canopy was in place considerably earlier, perhaps throughout much of the previous glacial cycle (Delcourt and Delcourt 1983, 1985, 1987; Webb 1987). Although traditionally viewed as a time of major paleoenvironmental change, the late Pleistocene/early Holocene in this part of the lower Southeast (prior to the Hypsithermal Interval) appears to have been characterized by stable regional oak-hickory vegetational communities (Figure 2). Only during the mid-Holocene Hypsithermal Interval, from ca. 8000 - 4000 B.P., did

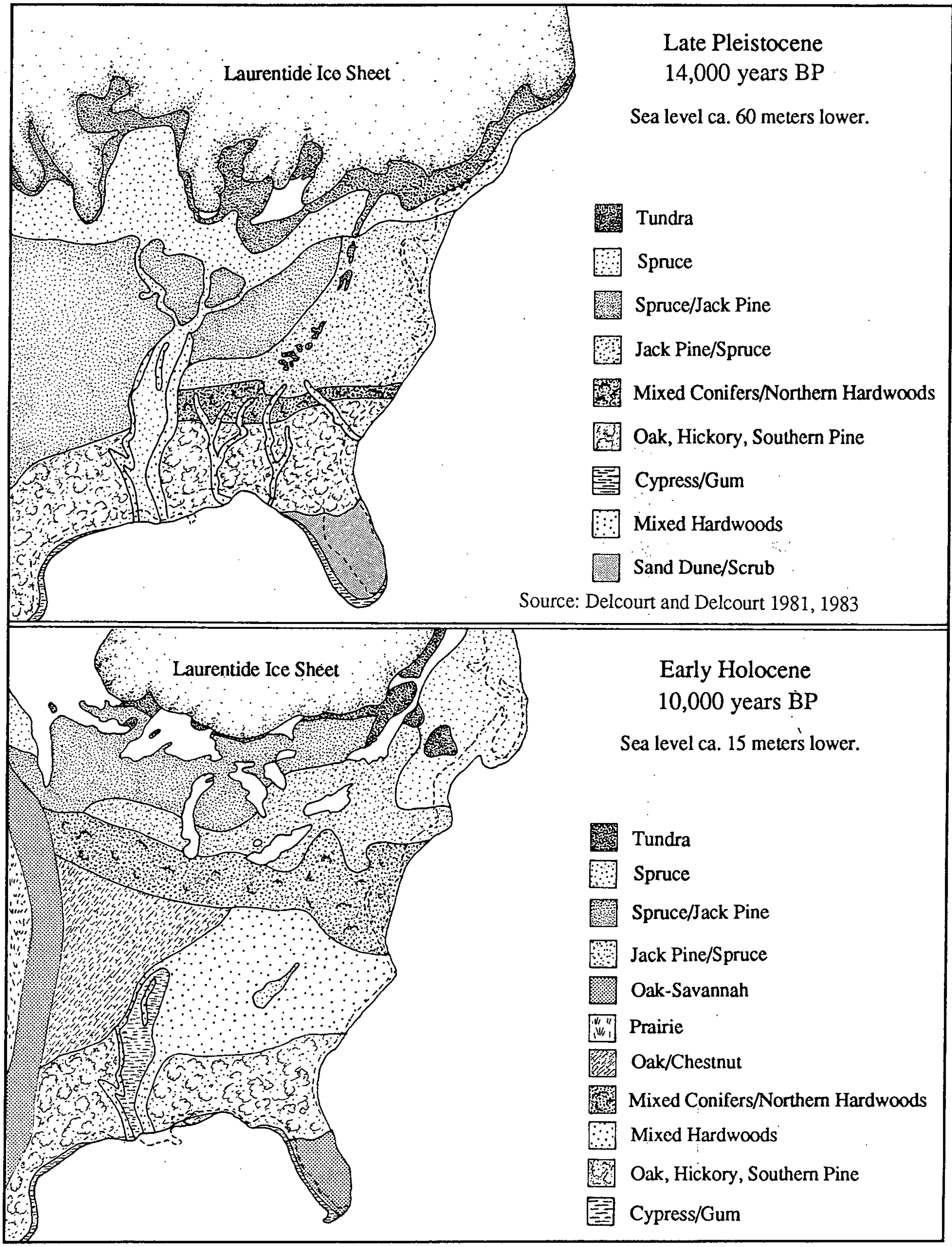


Figure 2. Reconstructed Paleovegetational Communities in the Southeast at 14,000 and 10,000 B.P.

southern pine communities begin to emerge in the sandy interriverine uplands; this was also the period when extensive riverine swamps began to emerge (Brooks et al. 1986; Davis 1983; Delcourt and Delcourt 1985, 1987; Delcourt et al. 1983; Foss et al. 1985; Howard et al. 1980; Knox 1983; Segovia 1985; Wright 1976).

Biotic resource structure has been shown to strongly influence prehistoric group size, technological organization, and mobility patterns. This has been documented on both a global scale (Binford 1980; Kelly 1983; Shott 1986a) and within the lower Southeast (Cable 1982; Anderson and Hanson 1988). The patchy forest structure north of 33 degrees latitude and south of the ice sheets/tundra margin shortly after 12,000 B.P. in the Eastern Woodlands, including in the Georgia area, would have been ideally suited for what have been called logistically-organized collector adaptations (after Binford 1980). That is, patchy environments are best exploited by groups radiating out from central base camps, and staying at short-term camps as long as necessary to collect resources prior to returning to the home base. This adaptation is known as a collector strategy, since task groups go out for extended periods in the collection of resources, which they then bring back to their settlement. While groups practicing collector strategies do move their base camps, they usually do so only when local resources are depressed or exhausted to the point where the costs of moving are less than those of finding food. The archaeological record of collector groups includes base settlements and extended resource procurement camps. These adaptations are commonly characterized by highly formalized toolkits, assemblages that would have been most advantageous during extended resource procurement forays.

Collector or logistically-based adaptations are, in fact, assumed by many researchers to characterize initial PaleoIndian groups in North America. PaleoIndian toolkits over the region are renowned for their well executed artifacts, including superbly executed bifaces as well as hafted end and sidescrapers, gravers, spokeshaves, adzes, denticulates, and other tool forms. These artifacts were curated, that is, they were carried about from place to place and reused as necessary until they were worn out. These tools were frequently made of high quality lithic raw material, which would have facilitated reworking and hence helped conserve raw material (Goodyear 1979). Movement over large areas also characterized these early populations, with group ranges centered on quarries or other particularly desirable environmental features where home bases appear to have been located (Gardner 1989). Once resources in the base camp/logistic station procurement zone began to become exhausted, however, relocation of the base settlement may have required a fairly extended move (Kelly 1983; Shott 1986a).

In the homogeneous hardwood canopy south of latitude 33 degrees, on the Gulf and lower South Atlantic slopes, in contrast, less evidence for Early PaleoIndian settlement might be expected, since the initial founding populations were apparently not technologically and organizationally adapted to such an environment. This, as we shall see in Chapter III, is indeed the situation that has been observed archaeologically; much of the lower Southeast outside of Florida (which is has its own unique environmental conditions) appears to have been largely unoccupied until late in the PaleoIndian era or even into the subsequent Archaic period.

The homogeneous forest cover in the lower Southeast south of latitude 33 would, however, have been highly conducive to what have been described as residentially mobile foraging adaptations, that is, adaptations where people foraged over the landscape, readily and repeatedly moving their residences as food in their immediate area became exhausted (after Binford 1980). Archaeological assemblages from foraging adaptations are dominated by numerous short-term camps and by what are called expedient assemblages, composed of tools that were casually made, used, and then discarded on an *ad hoc* or situational basis. Formal, curated tools tend to be rare in such assemblages, as is the use of high quality lithic material unless it happens to outcrop locally. While foraging groups may, like collectors, move over large areas, each individual move tended to be fairly limited, typically no greater than necessary to place the residence near undepleted resources (Kelly 1983; Shott 1986a).

As the hardwood canopy expanded from its refugia below latitude 33 in the lower Southeast, and resource structure changed throughout the region, foraging adaptations appear to have been literally forced upon the resident human populations. This spread of the deciduous canopy, as noted previously, was occurring during the PaleoIndian period, from ca. 12,000 to 10,000 years ago, and the initial populations thus had to adjust to rapidly changing environmental conditions. The cultural changes that occurred in response are beginning to be recognized in the archaeological record, and it is during the PaleoIndian period that foraging adaptations, traditionally assumed to have developed later, in the Early or Middle Archaic periods, are now thought to have emerged in the Southeast (Anderson and Hanson 1988; Meltzer 1988, Meltzer and Smith 1986). The paleoenvironmental record, accordingly, indicates that the PaleoIndian period was one of great change, both culturally and environmentally.

CHRONOLOGICAL CONSIDERATIONS

PaleoIndian period components in the lower Southeast in the vicinity of Georgia have been provisionally grouped into three broad temporal categories, corresponding to Early, Middle, and Late or transitional PaleoIndian subperiods (Anderson et al. 1987, n.d.; O'Steen et al. 1986:9) (Figure 3). The first subperiod, the Early PaleoIndian, is thought to date from ca. 11,500 - 11,000 B.P. and is characterized by fluted chipped stone projectile points similar to the classic Southwestern Clovis forms (Sellards 1952; Wormington 1957). The points are relatively large lanceolates with nearly parallel ground haft margins, slightly concave bases, and single or multiple flutes that rarely extend more than a third of the way up the body. Points that resembled the classic Clovis type but for which some minor typological uncertainty existed, as was common for many of the broken specimens, were assigned to a possible Clovis category, and were also attributed to the Early PaleoIndian subperiod.

Smaller fluted forms, most of which appear to be extensively resharpened Clovis points, have been noted in both Georgia and South Carolina, mostly in the Piedmont regions of these states, and have been provisionally called Clovis Variants (Michie 1977:62-65). Their chronological placement is unknown, but is assumed to fall within the Early or Middle PaleoIndian subperiods. In the current study, Clovis Variants were assigned a transitional Early/Middle PaleoIndian temporal category. The same placement was accorded fluted points where it was impossible to discern whether the artifacts in question were classic Clovis points or later Middle PaleoIndian types such as Suwannees or Simpsons. These latter specimens were described as Clovis/Simpson types. While the period of manufacture of these forms, particularly the Clovis Variants, cannot be determined at the present, the transitional morphology of the Clovis/Simpson-like forms suggests an Early Middle PaleoIndian age, sometime around or shortly after ca. 11,000 B.P.

The second major subperiod, the Middle PaleoIndian, is thought to date from ca. 11,000 - 10,500 years B.P. and is characterized by smaller fluted points, unfluted lanceolate points, and fluted or unfluted points with broad blades and constricted haft elements. Identifiable forms include the Cumberland, Suwannee, and Simpson types, and the probable transitional Clovis Variant and Clovis/Simpson forms noted previously. Cumberlands in this survey are identical with the original type formulation (Lewis 1954), consisting of narrow, deeply fluted, slightly waisted lanceolates with faint ears and a slightly concave base. Unambiguously sorting the remaining large waisted fluted and unfluted lanceolate points with broad blades and faint-to-pronounced ears similar to the Florida Suwannee and Simpson types proved more difficult. The type descriptions and illustrated specimens for these forms exhibit considerable morphological

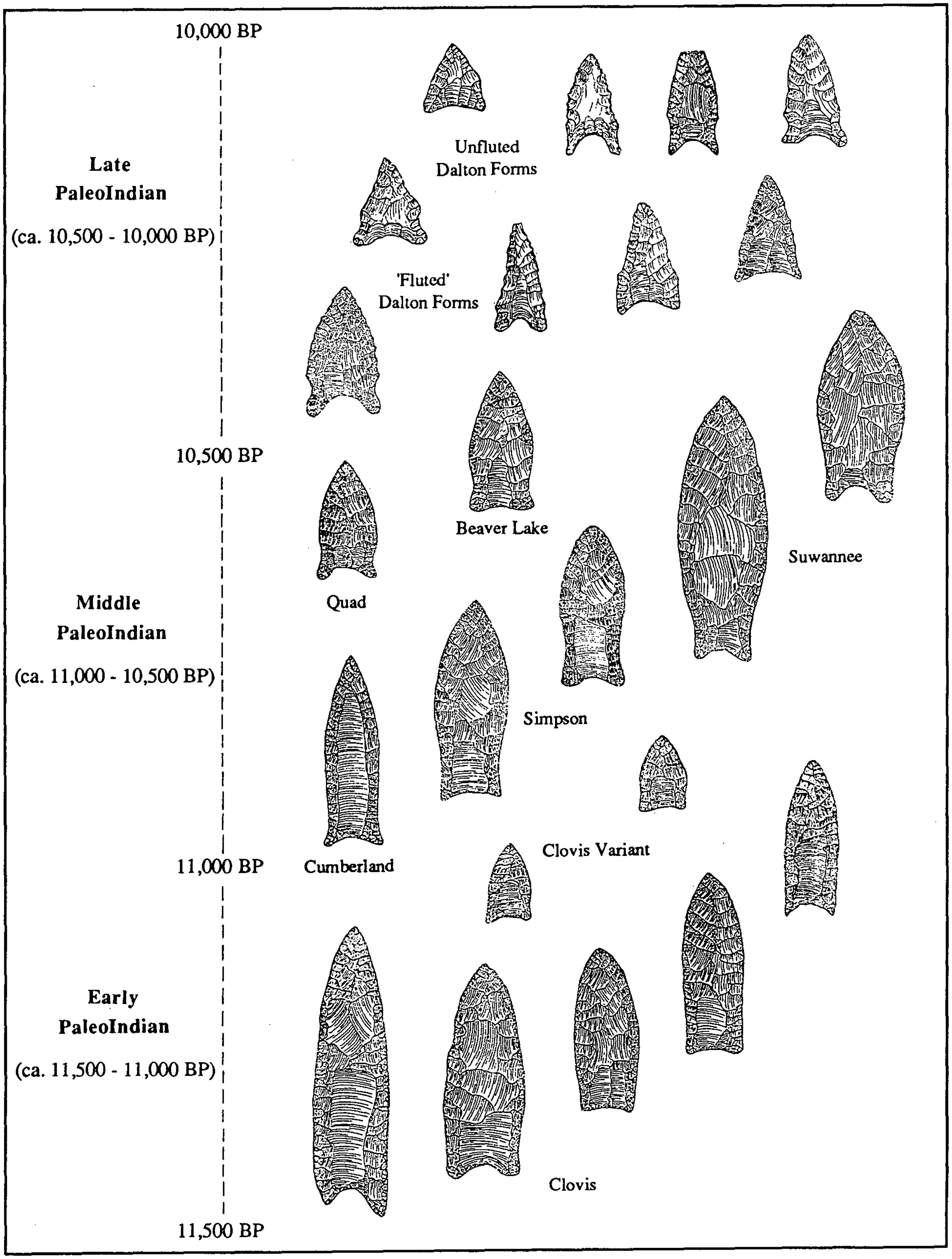


Figure 3. PaleoIndian Chronology and Diagnostics in the Eastern Woodlands.

overlap (Simpson 1948:11-15; Bullen 1958, 1962; 1975a:55-56). Attempts with several investigators familiar with these Florida types failed to produce consistent sorts of the Georgia forms. For these reasons, in the present study Simpsons refer to fluted and Suwannees to nonfluted waisted and eared lanceolate points otherwise meeting the type criteria.

Unfluted lanceolate points, which were observed in low incidence during the survey, were also given a Middle PaleoIndian period temporal placement. This is perhaps the least secure chronological assignment made during the survey, and should be viewed accordingly. While a few of the unfluted lanceolates resemble plano-like forms from the Great Plains PaleoIndian tradition, and may be distantly related in some way, most were broken and may be little more than early stage manufacturing rejects of other, fluted forms. Considerable temporal overlap of all of the Middle PaleoIndian forms is probable, and it is also possible that some or all of the forms here assigned to the Middle PaleoIndian period may have continued in use after 10,500 B.P., into Late PaleoIndian Dalton times.

The third subperiod, the Late PaleoIndian, dates from ca. 10,500 to 9,900 years B.P., and is characterized by Dalton and presumedly related points, including the Quad and Beaver Lake types (Morse 1971, 1973; Goodyear 1974; 1982:390; Justice 1987:35-44). Classic Dalton points are characterized by a lanceolate blade outline, at least in the earliest stages of tool life, and a concave base that is occasionally well thinned (sometimes to the point of true fluting) and ground on the lateral and basal margins. Blade edges may be incurvate, straight, or excurvate, and are frequently serrated. Cross-sections are flattened and biconvex. Beaver Lake points are small, slightly waisted lanceolates with very faint ears, a weakly concave base, and moderate basal thinning (DeJarnette et al. 1962:47,84; Cambron and Hulse 1964:A-7; Justice 1987:35-36). Quad points are small lanceolates with distinct ears, a concave base, and pronounced basal thinning, sometimes to the point of appearing fluted (Soday 1954:9; Cambron and Hulse 1964:A-73; Justice 1987:35-36).

The Beaver Lake and Quad types were assigned a transitional Middle/Late PaleoIndian temporal placement, as were Dalton points exhibiting basal "fluting" or, more properly, pronounced thinning scars. The morphological similarity with earlier forms, particularly the presence of basal thinning, suggests an earlier occurrence than unfluted Dalton forms. The association of fluted and unfluted Dalton points in presumably contemporaneous assemblages, such as the Sloan site in Northeast Arkansas (Morse 1975a), however, suggests this is not invariably the case. Considerable temporal overlap in the range of occurrence of these forms is probable.

The Late PaleoIndian temporal placement for Dalton forms in general follows from arguments developed by Goodyear (1982), who examined extant radiocarbon determinations for these point types, as well as their stratigraphic occurrence. Late PaleoIndian populations lived in a time of environmental change, when late Pleistocene flora and fauna were being replaced by modern species. The Dalton point and accompanying tool kit retains many characteristics of earlier assemblages; however, the presence of serrations and evidence for resharpening to exhaustion suggest technological differences in the use of these bifaces, when compared with earlier PaleoIndian points (Goodyear 1974, 1982). These changes are increasingly linked to the emergence of foraging, generalist adaptations over the region (Claggett and Cable 1982; Goodyear 1982; Meltzer and Smith 1986; Morse 1975a, 1975b; Smith 1986).

While this tripartite Southeastern PaleoIndian sequence is generally accepted, its details remain to be confirmed through stratigraphic excavations and absolute dating. Although there is a general consensus that the large 'classic' Clovis lanceolates precede the more waisted or eared fluted or nonfluted forms in the region (Gardner 1974:18, 1989; Gardner and Verry 1979;

Goodyear et al. 1979:90-96; McGahey 1987:7-8; Morse and Morse 1983:60-65; O'Steen et al. 1986:9), the temporal range, ordering, and extent of co-occurrence of the various PaleoIndian forms remain to be securely established (e.g., see commentary by Barber and Barfield 1989; Griffin 1977:5; Meltzer 1988:15). The three major subperiods are, however, assumed to approximately equate with human populations initially exploring and settling the region for the first time (Early PaleoIndian), establishing regional population concentrations and cultural variants (Middle PaleoIndian) and, finally, making the switch to Holocene conditions and the subsequent Archaic period way of life (Late PaleoIndian).

II.

PREVIOUS PALEOINDIAN ARCHAEOLOGICAL RESEARCH IN GEORGIA

INTRODUCTION

Widespread awareness and acceptance of the great antiquity of human settlement in the New World did not come about until the 1920s, when a number of projectile points were found embedded in the ribs of an extinct form of bison near Folsom, New Mexico. The Folsom discovery provided unequivocal evidence that human beings were present in North America in the Late Pleistocene (Figgins 1927). The projectile points found in direct association with *Bison antiquus* at Folsom and, several years later, with mammoth remains at the Dent site in Colorado (Figgins 1933) were characterized by pronounced basal thinning or fluting. Chronological subdivision of these early occupations was first achieved at Blackwater Draw near Clovis, New Mexico in the mid-1930s (Sellards 1952; Wormington 1957). At this site larger, more weakly fluted forms called Clovis points were found associated with mammoth, and stratigraphically below smaller and later Folsom forms associated with *Bison antiquus* (Hester 1972). In 1934 work also began on the Lindenmeier site in Colorado, where thousands of artifacts were found in association with extinct Pleistocene fauna such as camel and bison (Wilmsen and Roberts 1978).

By the mid-1930s the great age and distinctive appearance of the Clovis and Folsom projectile points associated with late Pleistocene human occupations were common knowledge among American archaeologists. Fluted points were soon identified from all across the United States, indicating early human settlement was widespread. One of the first reports from the Southeast was by Bushnell (1935:35), who described fluted points found in surface collections in Virginia (see also Reinhart 1989:157). The occurrence and distinctive nature of these artifacts in the Southeast had been previously recognized by Brown (1926:132-134), who gave the name Coldwater points to fluted points found in Mississippi. At the time Brown was working, the age of these artifacts was unknown (McGahey 1981). Closer to Georgia, Wauchope (1939) described a number of fluted points he had found in the 1920s near Columbia, South Carolina, from the vicinity of the Taylor site (Figure 4). Reports of surface finds of PaleoIndian artifacts from across the Southeast appeared with increasing frequency in the 1940s and 1950s, and nearly every statewide summary in the famous compendium *Archeology of Eastern United States* (Griffin 1952), that was assembled in the late 1940s, began with a discussion of local fluted points.

INITIAL PALEOINDIAN RESEARCH IN GEORGIA

The Early Flint Industry at Macon

Archaeologists in Georgia, as in the rest of the United States, were caught up in the implications of the Late Pleistocene discoveries in the Southwest. Antonio J. Waring (1968a), in a highly personal account, summarized early efforts aimed at discovering evidence for PaleoIndian occupation in Georgia. Waring, a physician, was a lifelong avocational archaeologist who produced an outstanding record of research and publication. A native of Savannah, Waring early on became associated with professional archaeologists working in Georgia and elsewhere. As an undergraduate at Yale in the mid-1930s, Waring visited the Smithsonian several times a year in the

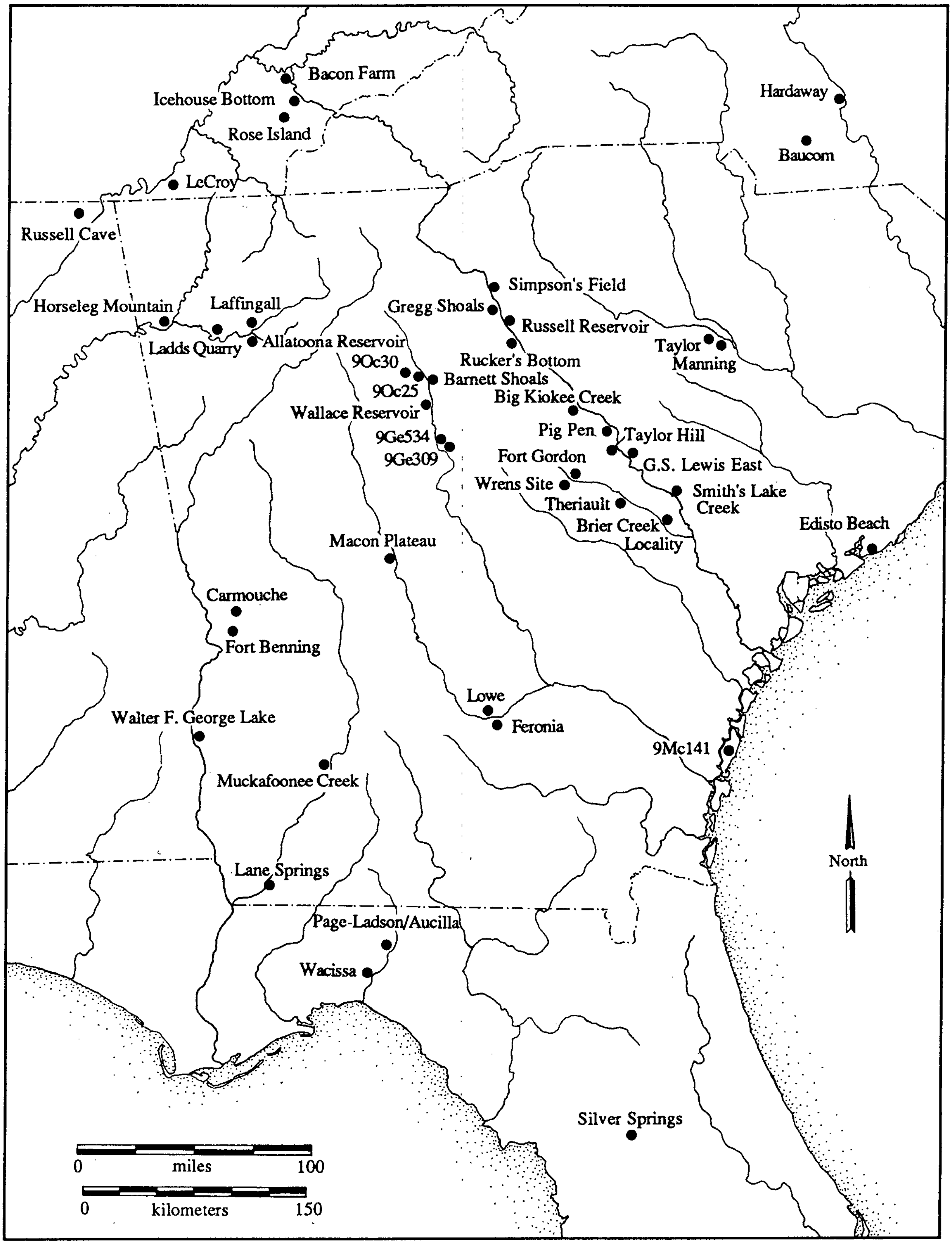


Figure 4. Sites and Localities Yielding PaleoIndian Remains in and Near Georgia.

course of his travels to and from school. An acquaintance of Frank Roberts, he was able to examine the Lindenmeier materials each year as they came in from the field. This association, and his involvement with work at Macon Plateau, led to an early and strong interest in PaleoIndian remains in Georgia.

From the mid-1930s to 1940, an unusual amount of professional archaeological investigation was conducted in Georgia, under the auspices of federal relief programs. Major excavations were undertaken at coastal sites, including a number near Savannah, and in the interior near Macon. A major survey encompassing much of northern Georgia was also undertaken at this time by Robert Wauchope (1966). A history of this activity, not surprisingly, was produced by Waring (1968b:295-298), who spent as much of his free time as possible with these projects. Many of the younger researchers involved in these projects, including Joseph R. Caldwell, Charles H. Fairbanks, James A. Ford, Jesse D. Jennings, Robert Wauchope, and Gordon R. Willey, were later to be ranked among the country's most prominent professional archaeologists. Interest in the state's PaleoIndian occupations arose largely as a result of this early federal relief work.

During stratigraphic excavations at Macon Plateau in 1935, A. R. Kelly found a large Clovis point fragment and a number of other stone tools in the deepest artifact-bearing levels (Figure 5). The fluted point, found at about the same time that excavations were underway at the Lindenmeier and Blackwater Draw sites in the Southwest, was one of the first Clovis points found in Eastern North America in stratigraphic context. Waring has provided a personal account of the discovery:

> Dr. A. R. Kelly in 1935, back in the happy wasteful old days of WPA archaeology was excavating the area just west of the Council Chamber at the Ocmulgee Fields site near Macon. Deep in the weathered tan sand, well below pottery, he was finding considerable evidence of an early flint industry... in controlled excavation, in a pre-pottery context, he found about two-thirds of a fine, large fluted point (Kelly, 1938, p. 7). I personally just missed the discovery and then spent the summer sitting on the edge of the excavations in the forlorn hope that more fluted points would be found (Waring 1968a:237).

The early flint industry at Macon was described in Kelly's 1938 publication *Preliminary Report on Archaeological Explorations at Macon, Georgia.* In it, Kelly (1938:2,3) noted the discovery of "several thousand worked flints" from a probable "early hunter people" in the lower levels of a number of units. The assemblage, in clear preceramic context, occurred over a wide area, and was characterized by specialized scrapers and flake cutting tools, a range of side and corner-notched points, and one well made Clovis point (Figure 5). The fluted point, for those interested in seeing it, is on display just inside the front door of the visitors' center at the Ocmulgee National Monument in Macon.

Several dense concentrations of heavily patinated chert debitage, that were interpreted as flint knapping areas, were noted within the general scatter at Macon. The presence of the side and corner notched Bolen and Palmer/Kirk forms in same horizon as the Clovis point, however, indicated that the deposits were mixed, possibly the result of having been laid down on a stable land surface with minimal deposition during these periods. Although "a progressive increase in mean patination from [the] original plateau surface to the lower soil zones" (Kelly 1938:5) was reported, unfortunately, the PaleoIndian component at Macon could not be separated from subsequent Early Archaic materials, which were equally weathered. Heavy patination on local cherts is considered to this day a good indicator of early components in the Georgia area.

Only one fluted point was found at Macon Plateau, in spite of a massive excavation effort. The investigations were thus the first to indicate the apparent scarcity of fluted points on sites of

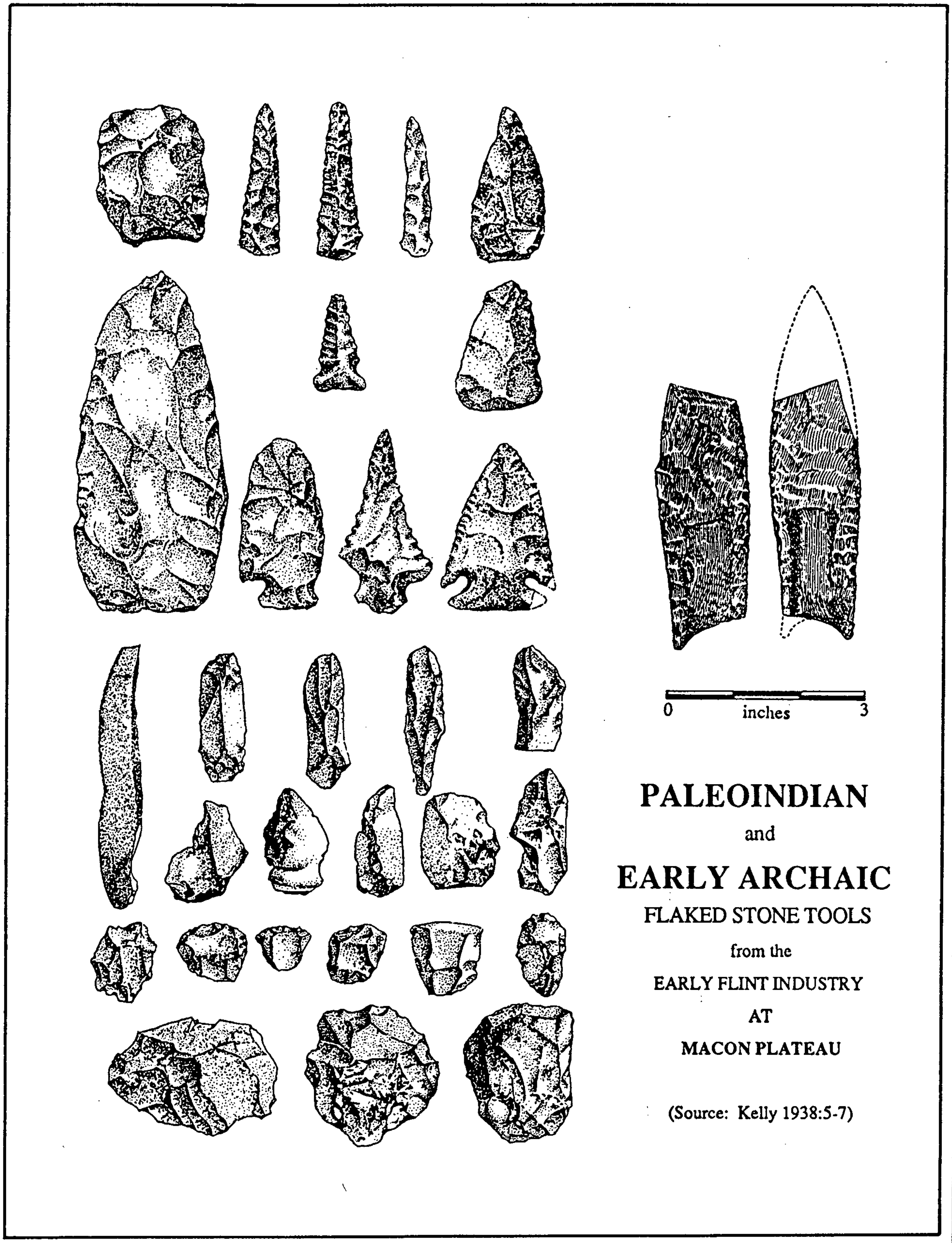


Figure 5. PaleoIndian and Early Archaic Artifacts from the Early Flint Industry at Macon Plateau.

this time level in many areas of the lower Southeast. This pattern, markedly different from that observed in the Plains and in the Northeast where dense kill sites have been reported, has prompted some investigators to suggest Southeastern PaleoIndian populations were highly mobile, generalized foragers only rarely leaving the dense concentrations of remains archaeologists associate with sites (Meltzer 1984:354, 1988).

Early Efforts With Private Collections

Waring (1968a:237-238) noted that the Macon Clovis find prompted considerable local interest in discovering evidence for PaleoIndian occupations in Georgia. Private collections were examined for the presence of fluted points and one major find was reported. This was the discovery of ten to fifteen fluted points in a private collection from along Brier Creek in the eastern part of the state:

> ...one specific collection produced a lot of excitement. It belonged to an old preacher in Wrens, Georgia — the father of the novelist Erskine Caldwell. He was an ardent collector, and among his arrowheads all picked up along the headwaters of Brier Creek, were ten or fifteen beautiful fluted points. He confessed that they came from a single site. I saw them once during one of my many trips with Kelly. Caldwell was a hard-bitten, secretive, distrustful old man — the type and print of a local relic collector. He carried to his grave the location of that site. We only know that it is near Wrens, and a local Boy Scout will probably stumble on it some day. It may prove to be of extraordinary interest, or it may prove to be simply another eroded knoll (Waring 1968a:237).

The location of this site remains unknown. So few PaleoIndian sites yielding ten or more fluted points exist anywhere in North America that the rediscovery of this site would be of major significance. The story illustrates the importance of examining and recording data in private collections, as well as the problems and frustrations professional archaeologists face when dealing with collectors who refuse to document their collections, that is, record where their artifacts were found. Ultimately, it illustrates how major chapters of Georgia's heritage can be lost through selfish or secretive behavior.

With the exception of the Macon point, surface finds of PaleoIndian artifacts, many from private collections, comprised the bulk of the evidence for PaleoIndian occupation in Georgia for many years. In 1952 the compendium volume *Archeology of Eastern United States* was published under the editorship of James B. Griffin. Articles summarizing contemporary knowledge of the prehistoric record were presented for each state. Two articles were included encompassing Georgia, "The Archeology of Eastern Georgia and South Carolina" by Caldwell (1952:312-321) and "Creek and Pre-Creek" by Fairbanks (1952:285-300). Caldwell (1952:Figure 167) illustrated a number of Georgia fluted points in the Smithsonian Institution collections. Included among these specimens were several from Big Kiokee Creek in Columbia County near Augusta that had been donated to the National Museum by a collector. These have been reexamined and are included in the current fluted point survey (Chapter III, SGA #11-17). Caldwell (1952:312), reflecting the early state of knowledge, noted that the finds were essentially "random surface occurrences, without Pleistocene associations, and their relation, if any, to the western types is not clear." Fairbanks' (1952:285) article included a brief description of the Macon flint industry discovered by Kelly, and noted that a number of fluted points were to be found in the state in private collections.

Waring continued to record fluted points in the Georgia area, describing four from Beaufort County, South Carolina in 1961, and noting the presence of four other points in Georgia in 1965

(Waring 1961, 1965). The Georgia points included three from a site in Richmond County that were housed in the Washington County, Georgia Civil War Museum at the time (unfortunately, these have since been stolen, John R. Whatley: personal communication 1990), and a fourth from a site in Burke County "on the edge of what is called Boiling Springs on Birdville Plantation" (Waring 1965:14). In 1968 Waring's (1968a) posthumous paper summarizing early PaleoIndian research in Georgia appeared. In this paper Waring (1968a:238) implied that the Brier Creek area, with its rich chert quarries, was probably an early focus for settlement in Georgia.

White (1988:25-34), complementing Waring's effort, recently summarized several early observations about PaleoIndian occupations in Georgia. White (1988:29) noted that in 1948 Kelly found an unfluted "folsomoid" projectile point (SGA #196) together with heavily patinated stone tools, including endscrapers, choppers, and blades, at the Lane Springs site on Spring Creek in Decatur County (Kelly 1950). The assemblage, which included later Archaic projectile points, was found eroded from the creek bank, and was thus not in secure context. About the same time a fluted point was reported that had been found at the Bull Creek site near Columbus in the 1930s (Patterson 1950; White 1988:30). The point remains unexamined, but has been illustrated in a professional publication, and was entered into the current survey (SGA #207) (DeJarnette 1975: Figure 14, 1A). The presence of several other isolated fluted points from the state was noted by White, including an observation by Carl F. Miller report that fluted points had been found along Big Kiokee Creek in Columbia County (presumably SGA #11-17, from the Smithsonian collections).

The Archaeological Survey of North Georgia

At the same time that major excavations were underway at Macon and other sites in central and coastal Georgia, a large-scale WPA archaeological survey project was underway in northern Georgia under the direction of Robert Wauchope (1966). In his classic volume *Archaeological Survey of Northern Georgia* describing this work and its results, Wauchope (1966:1-4) outlined the state of knowledge about the PaleoIndian period in Georgia in the early 1960s. Although he noted that many Clovis, Cumberland, Dalton, and Hardaway points were present in private collections in the state, due to an absence of assemblages recovered in secure excavation context he concluded that "we know next to nothing about the Paleo-Indian inhabitants of this particular region" (Wauchope 1966:3). The Macon point, while found *in situ*, was regarded as little more than an isolated artifact due to the absence of a clear association with the other materials found with it.

A number of probable Clovis and later PaleoIndian points were found during the survey or given to Wauchope by private collectors during the course of the investigations (Wauchope 1966:99-101). Unfortunately, Wauchope sorted and described his materials using morphological categories, making typological determinations difficult in most cases. Four fluted and 11 unfluted points are described as fitting his "Indented-Base Lanceolate" category, while another four fluted and 81 unfluted points are placed under his "Indented Base, Constricted Blade Lanceolate" category (Wauchope 1966:99-101). Line drawings or photographs of the eight fluted points are present in his report. Four of these "fluted" points, however, were recovered in clear Woodland context from a single site, and are thought to be later forms (see pp. 30-31 below) Accordingly, only four of Wauchope's eight fluted points were entered into the current survey (SGA #183, 184, 189, and 190). Measurements and final typological determinations will need to be made for all of these artifacts at some date. Without a reanalysis of the original materials, in fact, it is also not possible to determine the typological and temporal affiliation of the 92 unfluted lanceolate points. While some appear to be PaleoIndian in age, others resemble later Archaic and Woodland forms. Similarly, while a number of Dalton points appear to be illustrated within Wauchope's (1966:102-104) "Indented Base Isosceles Triangular" category, until analyses of these artifacts can be undertaken, their affiliation and dating must likewise remain in doubt. So little material from the

PaleoIndian period was found during the North Georgia survey, none of it in secure excavation context, that Wauchope (1966:3, 433) believed only the site locational data was of value. He began the concluding chapter of his report, in fact, with the post-PaleoIndian, Archaic period. The numbers of projectile points of probable PaleoIndian age that were collected during this survey is appreciable, however, and indicates that a reanalysis of the collections would greatly augment our knowledge of PaleoIndian occupations in the northern part of the state.

The Legacy of Early Investigations

Although the excavations at Macon Plateau and the ensuing flurry of interest in local collections represented some of the first modern work undertaken on Eastern PaleoIndian, little follow-up research was accomplished until quite recently. With the exception of the results presented in the few published papers from the period, early work with PaleoIndian materials in Georgia was unsystematic, and many of the artifacts and associated notes have since been lost. The early assemblages at Macon Plateau, for example, have never been analyzed or reported beyond Kelly's preliminary statement, and measurements for the Macon Clovis are presented in this report for the first time (Chapter III, SGA #1). So little was known about the PaleoIndian in Georgia as recently as the early 1970s that a symposium on Georgia prehistory, held in 1972 in honor of A. R. Kelly, began with the Archaic period, with only minimal discussion of earlier PaleoIndian occupations (DePratter 1975).

RECENT PALEOINDIAN RESEARCH IN GEORGIA

Since the early 1950s, a tremendous amount of archaeological research has been conducted in Georgia. Much of this work has been the result of an increasing federal commitment to documenting the nation's heritage. The growth of the Department of Anthropology at the University of Georgia and the appointment of archaeologists at other schools and private museums in the state, positions created, in part, in response to the increased federal involvement in archaeology, have led to increased research activity throughout the state (Bailey 1986). Most recently, the hiring of professional archaeologists in oversight and management roles within the state government itself, in response to federally mandated cultural resource management activity, has further accelerated the pace of research. As a result, current knowledge of the early, PaleoIndian occupation of Georgia is far greater than it was one or two generations previously. Findings from the work conducted during this period are summarized in the pages that follow.

In this synthesis, all major archaeological projects yielding significant PaleoIndian remains that have been conducted in the state through 1988 are summarized. In addition, a number of reports of isolated PaleoIndian artifacts found during projects directed to other goals are also documented. When it has been possible to obtain information about these finds, they have been entered into the ongoing PaleoIndian projectile point survey described in Chapter III. While the review of major projects is comprehensive, the presentation of information on isolated PaleoIndian artifacts is not. To achieve that goal, a thorough review of the entire published and unpublished literature from the state would be necessary, in conjunction with a major program of collections analysis (given identification errors evident in many reports). Such an undertaking is, unfortunately, far beyond the scope of the present project. Because research directed to existing collections and reports will need to be undertaken to document the state's PaleoIndian archaeological record, as well as extant evidence for later occupations, guidelines for such an effort are included Chapter IV.

PALEOINDIAN REMAINS EXAMINED DURING SURVEY PROJECTS

Lake Allatoona and Laffingal Surveys

Lake Allatoona covers portions of Bartow, Cherokee, and Cobb Counties along the western edge of the Piedmont in northwestern Georgia. The reservoir covers a maximum of 11,000 acres along the Etowah River and the tributaries of Allatoona Creek, Little River, and Stamp Creek (Figure 6). The Corps of Engineers owns an additional 26,000 acres of predominantly woodlands around the lake. The reservoir area had been examined in the late 1940s by archaeologists from the Smithsonian Institution's River Basin Survey under the direction of Joseph R. Caldwell (1957), who found no PaleoIndian materials. During the winter of 1985-1986 an intensive archaeological survey of 32,141 acres (13,013 ha) in the reservoir tract was conducted by Southeastern Archaeological Services, Inc. (SAS) (Ledbetter et al. 1987). Because the waters of the lake were exceptionally low during this period, numerous shoreline sites were recorded and consequently large artifact collections were accumulated. Many of these lake sites had been previously investigated during the Smithsonian Institution project.

The SAS survey at Lake Allatoona recorded 1063 archaeological sites. Five of these sites produced Early or Middle PaleoIndian lanceolate points, while four others produced Late PaleoIndian points. These numbers include sites recovered during the survey and points recorded from earlier survey collections. Previously undocumented points from private collections were also recorded during the project. Private collections accumulated from years of collecting along the lakeshore and surrounding uplands provided a large sample of diagnostic points from all time periods.

The results of an intensive survey of a 400 acre tract in the uplands near Lake Allatoona were integrated into the Allatoona report. The Laffingal tract lies to the north of Lake Allatoona and encompasses a broad upland ridge above an upland spring (Figure 6) (Ledbetter and Smith 1986). This type of landform was not present within the government-owned property of Lake Allatoona. The Laffingal survey produced a substantially higher PaleoIndian site density than encountered along the lake margins, a site density approximately 60 times greater than that observed in the reservoir. Whether this is due to the differing depositional environments of the two areas (i.e., the upland deposits tend to be shallow while earlier remains are likely to be deeply buried in the floodplain), differential collector behavior (the margins of the reservoir are intensively collected by amateurs, while the Laffingal tract is more remote), or differences in PaleoIndian land use remain unknown. The distribution of PaleoIndian sites recorded during the Allatoona and Laffingal projects is shown in Figure 6, and examples of PaleoIndian material from these areas are illustrated in Figure 7. Thirteen of the artifacts from these two projects have been incorporated into the SGA PaleoIndian Artifact Recording Project (SGA #20-28, 185-188).

Caldwell (1957) noted that fluted points were very rare in northwest Georgia and none were found during the survey and excavations conducted at Lake Allatoona by the River Basin Surveys. Wauchope (1966) illustrates what appear to be fluted and unfluted PaleoIndian lanceolates from north Georgia, but until these artifacts can be examined, few can be conclusively assigned to the PaleoIndian period. A small number of early points are recorded from the lake area from later survey projects. A Late PaleoIndian Dalton-like point was identified in a utility right-of-way survey, from a quarry site that was relocated during the SAS survey (Meier 1984). One fluted point made from chert was recorded by the SGA PaleoIndian Artifact Recording Project from near the Stamp Creek site. A large artifact collection donated by Mary Stover Griffin to the University of Georgia Laboratory of Archaeology contains one fluted point and one Dalton from the lake area. The Clovis point in the Stover collection, made from Fort Payne chert, was found in the Proctors Bend area along the Etowah River.

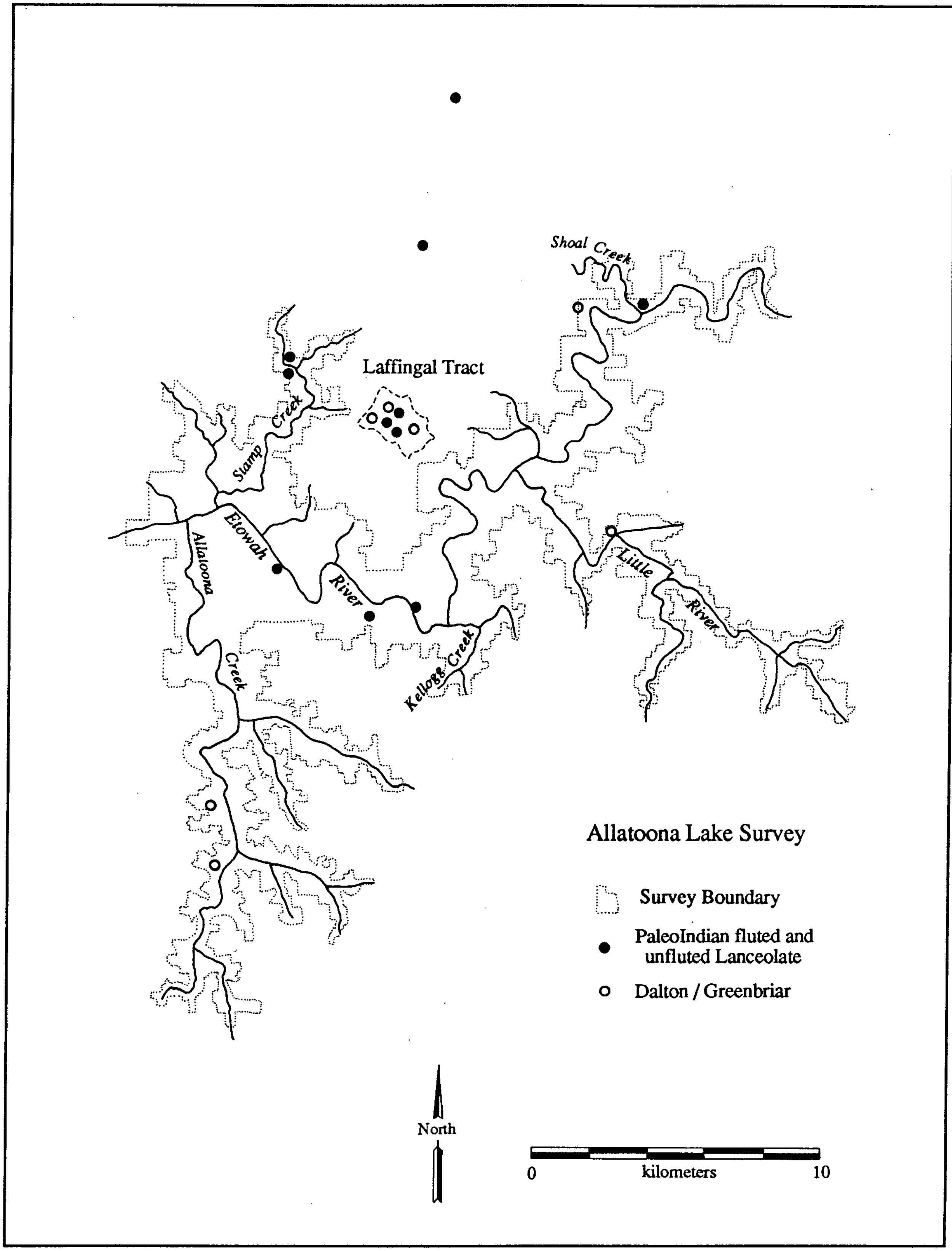
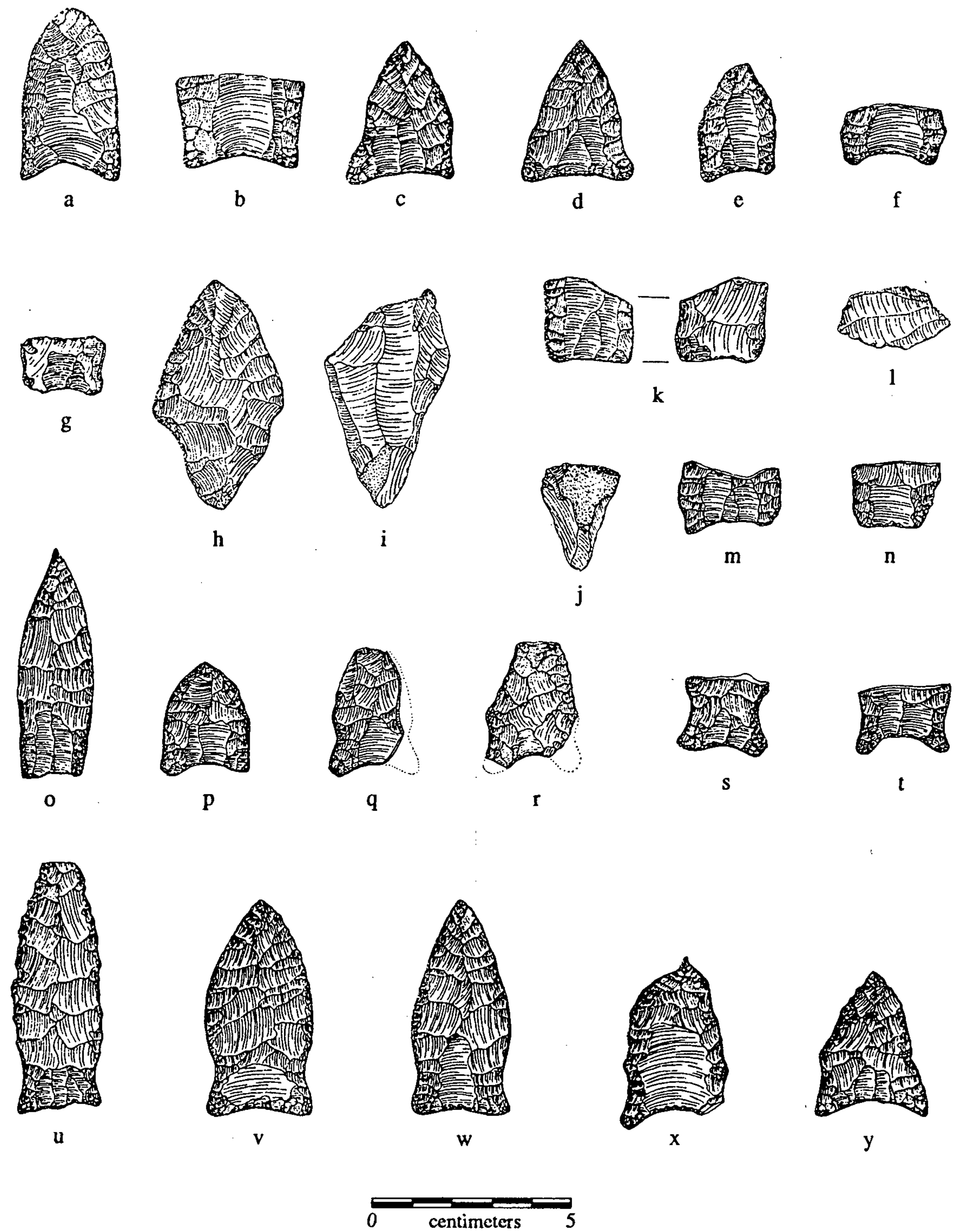


Figure 6. PaleoIndian Site Occurrences in the Lake Allatoona and Laffingal Survey Tracts, Northwest Georgia.



a,b,e,f. Clovis points, Lake Allatoona Reservoir; c,d Dalton points, Lake Allatoona Reservoir; g-j, l Flake tools, 38Ck381; k Clovis, 9Ck381; m,p Clovis Variant, Laffigal area; n,o Clovis? Laffingal area; q,r Dalton points, Laffingal area; s Greenbriar/Beaver Lake, Laffingal area; t Quad; Laffingal area; u,x,y Dalton; v,w Beaver Lake.

Figure 7. PaleoIndian Artifacts from the Lake Allatoona and Laffingal Survey Tracts, Northwest Georgia.

Three PaleoIndian sites containing fluted projectile point fragments were located during the SAS survey. One point, of a dark chert, was found near the Stamp Creek site; one quartz point was recovered from the uplands edge above the Etowah River near Proctors Bend; and one dark chert point and associated tools were recovered from a logging clearcut in the uplands above the mouth of Shoal Creek. This last site (9Ck381) had, unfortunately, been destroyed by logging machinery, but the tools recovered from pushed debris piles represent the best evidence of a PaleoIndian lithic assemblage in the Allatoona Reservoir. The fluted point from the site had been broken and used as a wedge. Other tools, more expedient in nature, were made from quartz and chert. The tool assemblage suggests butchering and bone working activities and is significant because of its similarity to tool assemblages recovered from excavation contexts along the upper Oconee River (O'Steen et al. 1986).

Three Middle PaleoIndian sites were found in the uplands of Cherokee County during the Laffingal Survey. These sites contained unfluted lanceolate points, two of quartz and one of chert, within surface lithic scatters mixed with Archaic material. The three presumed Middle PaleoIndian sites were located around a large springhead in an area also extensively utilized by later Early and Middle Archaic groups. A private collection from the Laffingal area contained points from two additional PaleoIndian sites along the continuous ridge divide extending north of Laffingal.

The only additional Middle PaleoIndian artifact noted in area collections was an unfluted lanceolate point found on a multicomponent site on the Etowah River, downstream from Allatoona Dam at the mouth of Two Run Creek. The survey evidence indicates sparse use of the Allatoona area during the Early and Middle PaleoIndian periods. Low density lithic scatters were found in the uplands and at the edge of the floodplain. Buried floodplain sites may be present but undetected. Points of these periods were manufactured from lithic materials from both the Piedmont and the Ridge and Valley physiographic provinces, with a substantially greater reliance on quartz than during the following Early Archaic period.

Late PaleoIndian points recovered from the Allatoona area during the 1985-1986 surveys and identified in private collections consisted of Dalton and related forms. Two Late PaleoIndian Dalton points were recovered during the SAS survey in Lake Allatoona, and three were recovered in the uplands during the Laffingal survey. The illustrative and descriptive information in the earlier surveys in the region by Wauchope (1966) and Caldwell (1957) is such as to preclude positive identification of Dalton components, at least until their collections can be re-analyzed. Neither author specifically discussed a Dalton tradition, thus the descriptive categories, and even the illustrations, may be confused with later triangular or lanceolate Woodland forms.

Little can be said about Dalton site distribution within the Allatoona area except that the points are scarce. One of the two sites found in the reservoir by the SAS team was from the floodplain of Allatoona Creek while the other came from high above the Etowah River. Three other Dalton points were identified in private collections. One Dalton point, of unspecified provenience, was identified in the private shoreline collections that were inspected. The Stover collection contained one chert Dalton from the area of 9Co22 on Allatoona Creek. One other point was recorded from a site near a major tributary confluence downstream from Allatoona Dam. Points were likewise rare in the uplands near the Laffingal tract. An examination of private collections from the uplands of Cherokee County produced only five Daltons. The combined data suggest limited utilization of the area during the Late PaleoIndian period. There is no evidence for a substantial increase in utilization of the area by Dalton people compared to the preceding periods.

A fragmentary point typologically similar to the Greenbriar (Lewis and Kneberg 1961) and Beaver Lake point types was found during the SAS Allatoona survey, at the edge of the uplands on the Little River. No other points like this were seen in collections from the reservoir area, but three similar points were observed in collections from the uplands of Cherokee County and one in a collection from a floodplain area in Bartow County. These points are medium to large lanceolate points with shallow side notches and a well ground straight to incurvate base. Their precise chronological position is unknown, but a Late PaleoIndian placement is indicated (DeJarnette et al. 1962; Griffin 1974). Similar point forms, typed Russell Cave, have been found in the lowest level of Russell Cave. Both Greenbriar and Russell Cave points appear to be variations of a single point style. Significantly, all of the Greenbriar-like points from the Allatoona area were made from chert, a departure from the near equal use of quartz and chert observed on other PaleoIndian lanceolates and Daltons from the area.

The combined reservoir-upland survey, excavation, and collector data provide a firm foundation for assessing the intensity of PaleoIndian occupation in the Lake Allatoona area. There is no indication of intensive utilization of the area and no evidence for intensively utilized sites. All recorded sites seem to be no more than light lithic scatters. The small number of tools recovered from site 9Ck381 may be typical of the lithic deposits of a PaleoIndian site in the area. There appears to be more evidence for exploitation of the uplands than along the river, but this increase seems to be a Middle to Late PaleoIndian phenomenon. Most examples of Early PaleoIndian fluted Clovis-like points were recovered from lower elevations. The upland settlement is dominated by Clovis Variants, Dalton and Greenbriar-like points.

Oglethorpe County Clearcut Surveys

PaleoIndian and Early Archaic remains have been examined by Freer (1989) and Ledbetter (1988a) from eight intensively surveyed timber company clearcut tracts in Oglethorpe County, Georgia between the Oconee and Broad Rivers. The survey areas were located in the interriverine uplands of the central Piedmont and encompass an area of approximately 1600 ha. Two of the tracts in the Oconee watershed contain quarry sites of high quality Piedmont chert (Ledbetter et al. 1981). Barnett Shoals, identified as a base camp area during the Late PaleoIndian and Early Archaic periods, is located immediately to the west along the Oconee River (O'Steen et al. 1986). Four Late PaleoIndian Dalton sites and two Middle PaleoIndian sites were found in the clearcut tracts. A fifth Dalton site and two additional Middle PaleoIndian sites have been recorded in the state site files from areas just outside the boundaries of the tracts. PaleoIndian sites were found predominantly in clearcuts nearest the Oconee and Broad Rivers and near outcrops of high grade lithic material. Early Archaic sites, by contrast, were found in every clearcut tract. Seven of the nine PaleoIndian points recovered in Oglethorpe County are made from locally available Piedmont chert and quartz while the remaining two are made from Coastal Plain chert. Four of these points have been entered into the present survey while the rest remain to be entered (SGA #118-121).

An Archeological Survey of the Ocmulgee Big Bend Region

In 1977 Snow presented a summary of information he and his colleagues had collected from 320 sites over a twenty county area of central Georgia in the vicinity of the Big Bend of the Ocmulgee River (Snow 1977a, 1977b). Much of the data was recovered from extensive timber clearcuts. Eight Clovis sites were reported, the majority on higher elevations overlooking valley bottomlands. This distribution was undoubtedly due to survey conditions in the areas examined, which were for the most part shallow soils on upland clearcut tracts. Snow did note, however, the discovery of fluted points during dredging operations on the Oconee River at Mount Vernon, on the Little Ocmulgee at the confluence of the Little Ocmulgee and the Ocmulgee River, and at Rocky Hammock on the Ocmulgee River. Fairly appreciable use of the bottomlands was indicated, although many of the sites are assumed to have either eroded into the channel or remain deeply buried. Sites postdating Clovis found during the survey yielded components characterized by Suwannee (N=1), Dalton (N=13), Santa Fe (N=6), Tallahassee (N=7), and Beaver Lake points (N=2) (Snow 1977a:7). With the exception of Dalton, most of the point types were found in riverine site locations. The Dalton points were more widespread and were frequent in the interior around springheads in the pine barrens.

Chattahoochee River Surveys

Several major survey projects undertaken in western Georgia and adjoining portions of Alabama along and near the Chattahoochee River have failed to locate evidence for PaleoIndian remains. These results may be due to any number of factors, including poor surface visibility or extensive prior collection but they may also indicate areas in the state where PaleoIndian occupation was comparatively minor. Recent survey and excavation in the Walter F. George Reservoir and the contiguous Eufaula National Wildlife Refuge on the lower Chattahoochee River, for example, have failed to locate any Early or Middle PaleoIndian diagnostics (DeJarnette 1975; Knight and Mistovich 1984:212-213; Mistovich and Knight 1986; Schnell and Knight 1978), although small numbers of Late PaleoIndian Dalton points have been noted (DeJarnette 1975: 73, 196; Knight and Mistovich 1984:60). Comparable results have been observed in surveys in the Oliver Basin (McMichael and Kellar 1960) and the nearby Rother L. Harris Reservoir along the Tallapoosa River in Randolph County, Alabama (Knight and O'Hear 1977). In the Oliver Reservoir survey one possible fluted point was found at site 1LE8 in Alabama (McMichael and Kellar 1960:88). No pre-Early Archaic artifacts were found during the investigations in the Rother L. Harris Reservoir.

In another example of an intensive survey from the lower Chattahoochee, a 2200 acre tract on Fort Benning in Chattahoochee County was examined by archaeologists from New World Research, Inc. No PaleoIndian remains were found, in keeping with the pattern observed in previous work. The authors suggested the low incidence of Early and Middle PaleoIndian components along the lower Chattahoochee might be due to sampling error: "the Paleo-Indian finds documented to date appear to be occurring in the margins of the river valley, while the concentration of effort has been in the river valley proper" (Thomas et al. 1983:10). Alternatively, the Late Pleistocene environment in the area may not have been particularly attractive to the region's PaleoIndian inhabitants.

PaleoIndian artifacts also appear to be fairly rare in the west Georgia Piedmont along the central portion of the Chattahoochee River. Only three PaleoIndian artifacts, one Dalton, one Hardaway, and one Beaver Lake point were found in 174 km of powerline transect surveys yielding 244 sites (Steinen and Pullen 1977; Steinen 1978; Johnson 1981). Early remains also appear to be rare in the central Georgia Piedmont. Only two Late PaleoIndian Dalton points were found during a survey of ca. 12,000 acres in upland Monroe County (Fish et al. 1978:40). A total of 327 sites were found during this project, which was located just to the west of the Ocmulgee River. Remains dating to the subsequent Early Archaic period were somewhat more common, with 17 specimens recovered.

Satilla Basin Survey

A survey and examination of materials from 115 sites in the upper Satilla Basin by Blanton (1979) demonstrated an unusually low incidence of PaleoIndian remains in this part of the state, a finding reinforced by the results of the present survey (Chapter III). A Santa Fe projectile point and a small egg-shaped stone with a small pit or depression at one end were found at the Jack Wildes site (9Bc16) (Blanton 1979:46). "Egg stones" have been observed on a number of sites in the Big Bend area to the north, and are thought to be bolas weights (Whatley 1986). Blanton noted that a similar artifact was found at the Cavern Site, Silver Springs, Florida, in apparent association with Clovis and Suwannee points (Neill 1971). A number of highly weathered but otherwise nondiagnostic formal unifacial scraping and graving tools were observed that may date to the PaleoIndian period. These artifacts tended to be more common in the interriverine area.

Five Dalton projectile points were recorded during the survey, all of heavily patinated white chert. All of the Dalton sites were located in interior settings away from the main channel of the Satilla. More than thirty Early Archaic Bolen and Kirk projectile points were found duirng the same survey, indicating appreciable population increase or utilization of the area was occurring (Blanton 1979:47).

Flint River Overview

Elliott (1989) has recently prepared an overview of archaeological research conducted along the Flint River in Georgia which provides useful information on the occurrence of PaleoIndian remains in this part of the state. Component information was reviewed and summarized from 55 archaeological survey and 33 testing or excavation reports from the 12 counties comprising Georgia's Flint River watershed. The review encompassed all reports of investigation housed in the manuscript collections with the state site files at the University of Georgia, Athens.

PaleoIndian sites found by the literature search were identified by the presence of Clovis, Suwannee, Dalton, Hardaway, and Beaver Lake projectile points (Elliott 1989:6). PaleoIndian points were found throughout the project area, but only as isolated finds or upon sites for which little information was available. The area around Albany, Georgia, with its high-grade chert deposits, appears to have seen somewhat greater use, although there is little evidence in these reports for intensive occupation during the period.

Elliott subdivided the drainage into lower, middle, and upper sections, and into riverine and interriverine zones. In the lower part of the drainage, a few Middle and Late PaleoIndian sites were found, characterized by Suwannee and Tallahassee points (White 1981). PaleoIndian components were generally rare; no PaleoIndian artifacts were found, for example, in a survey of yielding 89 sites in Grady and Mitchell Counties (Fish and Mitchell 1976). Limited evidence for PaleoIndian material was found at the Cooleewahee Creek site in Baker County, and at the Muckafoonee Creek in Dougherty County described below (Elliott 1982). The middle portion of the drainage had seen comparatively far less investigation. One Clovis (SGA #92) and a number of Dalton points were observed during recent survey activity along the Flint River channel conducted by John Worth. Early assemblages were equally sparse along the upper Flint River, although evidence for Late PaleoIndian occupation was noted.

Savannah River Overview

Recently an overview of PaleoIndian occupations along the Savannah River has been prepared as part of research synthesis activities associated with the cultural resource program on the Department of Energy's Savannah River Site (SRS) in the upper Coastal Plain of South Carolina (Brooks and Brooks n.d.; Sassaman et al. 1989). Suwannee and Simpson bifaces were reported to be most common in the Coastal Plain, with discoveries from both riverine and interriverine areas. Noting a low incidence of Dalton points in the Coastal Plain, Brooks and Brooks (n.d.) suggest that the Suwannee type may be a Florida and lower Atlantic Coastal Plain equivalent of Dalton (see also Goodyear et al. 1989:38). An analysis of locational data from 22 sites in the Coastal Plain portion of the drainage where PaleoIndian points had been recovered noted an occurrence over a range of landforms. An association with what are now interior wetlands was particularly evident in the interriverine area. Given this apparent patterning, it was suggested that PaleoIndian settlement in the vicinity of the SRS was characterized by high residential mobility, with base camps in the riverine zone and logistical foray/camps in the uplands (Brooks and Brooks n.d.).

In a discussion of PaleoIndian remains on the SRS, the recovery of isolated Dalton points at two sites, G. S. Lewis East (Hanson 1985) and Pen Point (Sassaman n.d.), from approximately a meter below the surface and stratigraphically below Palmer/Kirk materials was noted (Brooks and Brooks n.d.). In all, one Clovis, one fluted point base of unknown type, and five Daltons have been recovered during investigations to date on the SRS (Sassaman et al. 1989). Both fluted points were isolated finds from upland contexts. Of the five Daltons, in contrast, four of the five came from the alluvial terrace along the Savannah, while only the fifth came from the interior, on a major stream terrace. An analysis of the geomorphological setting of the PaleoIndian material indicated that the first terrace above the active floodplain could be subdivided into two parts (Brooks and Brooks n.d.; Brooks et al. 1986; Brooks and Sassaman 1989). Dalton remains were most likely at the base of the T1a terrace, which began developing at the beginning of the Holocene, while earlier PaleoIndian remains would be expected only on the T1b or higher terraces (Figure 8). Areas in the vicinity of relict confluences with the Savannah River, and particularly upslope and northeast from swales between the T1a and T1b and T1b and T2 features were considered particularly favorable settings for the discovery of early sites. The work demonstrates the importance of incorporating informed geoarchaeological analyses in PaleoIndian site discovery programs.

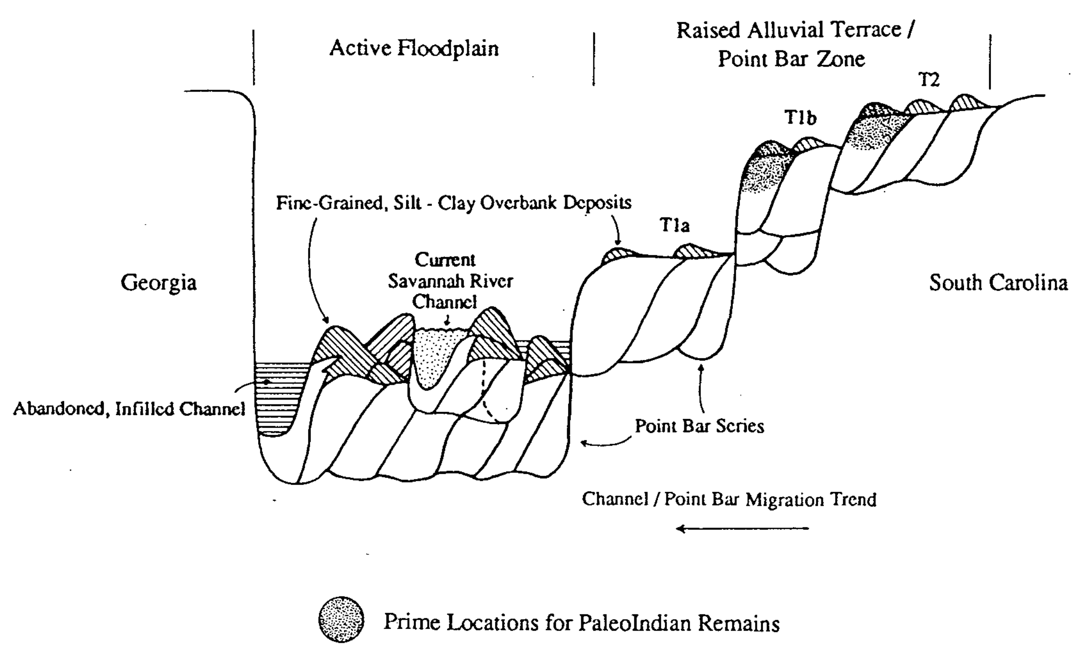


Figure 8. Probable Location of PaleoIndian Components in the Vicinity of the Department of Energy's Savannah River Site in the Upper Coastal Plain of South Carolina.

PaleoIndian Assemblages in the Sea Island Area

Fluted points are reported rarely in and near the Sea Island area of Georgia. During the Late Pleistocene this area would have been well inland, however, since sea levels were up to 70 meters lower than at present, and even by the start of the Holocene 10,000 years ago were still ca. 10-15 meters below their present stand (Howard et al. 1980; Colquhoun et al. 1980). That PaleoIndian peoples made use of the now-submerged portions of the Southeastern Coastal Plain is increasingly clear. Submerged sites have been found in the Tampa Bay area of Florida (Goodyear et al. 1983) and a fossil elephant rib with possible stone tool cut marks was recently washed up on Edisto Beach, South Carolina (Goodyear et al. 1989:26-27). Along the Georgia coast, a large black chert fluted point was dredged up in a shrimp trawler's net in waters from ca. 6 to 8 meters deep between Ossabaw and Wassaw Islands in Chatham County in 1983 (Ray 1986). The artifact (SGA# 160) was examined by Ray Crook, who thought it was a local caramel-colored material stained black by long submersion. The artifact appears to be unfinished, as evidenced by an absence of both lateral and basal grinding and the lack of fine secondary flaking around the margin. The discovery of the point, which exhibited minimal erosion or watersmoothing (beyond the probable discoloration), strongly suggests that relatively undisturbed PaleoIndian assemblages may be present in Georgia's offshore waters.

Evidence for use of the Sea Island area during the PaleoIndian period is sparse. The base of a possible PaleoIndian projectile point was recovered from the surface of a freshly graded access road on site 9McI41 in the Harris Neck National Wildlife Refuge (Braley et al. 1985:8,94). No other artifacts were found nearby, and no shell fragments were noted, indicating the artifact was outside of the later midden that was the focus for the investigations. The fragment (SGA #207) is basally thinned but lacks lateral or basal grinding. A survey on Skidaway Island in 1975 located 101 sites, none of which dated earlier than the Late Archaic in age (DePratter 1978). Intensive surveys of Ossabaw Island by Pearson (1977) and along Floyd Creek in Camden County by Kirkland (1979) yielded similar results. All of these surveys were directed to later prehistoric occupations, however, and the negative results undoubtedly reflect some collecting bias (i.e., surveyors keying in on shell debris). In each case, though, earlier remains would have been collected if encountered, and these projects indicate a very real dearth of early assemblages in the coastal area.

The Horseleg Mountain Site

A possible fluted point (SGA #195) and a number of formal unifacial and bifacial tools were reported by Manley (1968) from the Horseleg Mountain site in Floyd County. The site, on Horseleg Mountain (since renamed Mount Alto), is in the uplands overlooking the Coosa River to the west of Rome in the Ridge and Valley physiographic province. A number of springs rise in the area, and a major bed of low grade black chert runs along the ridge defining the western margin of the site. These two factors undoubtedly combined to make the area attractive to prehistoric populations. Large quantities of debitage are found in the area, the result of extensive quarrying and stone tool manufacturing behavior.

General surface collections were made at the Horseleg Mountain site on an intermittent basis over a period of a year and half. While numerous remains of later, Archaic occupations were found, mostly along the river, the presence of a number of well made hafted endscrapers near the chert outcrop suggested the presence of one or more small PaleoIndian campsites. In all, 38 endscrapers, 17 sidescrapers, 32 spokeshaves, 16 gravers, and seven burins were found, together with one point fluted on one side, and several other basally thinned forms similar to the Paint Rock Valley type from Alabama (Manley 1968:58-59). The nature of the tools suggested affinities with materials from classic Eastern PaleoIndian assemblages, including from the Hardaway site in

North Carolina. Although the site was thought to have been intensively collected in the past, Manley believed that undisturbed portions remained, particularly in lower-lying terrain that had been covered by a small lake, formed by the damming of a local spring.

PaleoIndian Artifacts in Private Collections

A number of reports describe PaleoIndian artifacts observed in private collections. One Clovis and one Dalton point were reported by Fish (1976:18, 77), for example, in private collections from site 9Ef26 in Effingham County, near the confluence of Ebenezer Creek with the Savannah River. These artifacts have been assigned numbers in the current survey (SGA #202, 203), although no measurements or drawings are available at the present. Goad (1977:36) likewise reported the presence of "two Clovis style projectile points and several Dalton points" in private collections from site 9Mi4 in Miller County in Southwest Georgia (SGA #197, 1989; see also Fish and Fish 1977:9). Smith (1977:63) reported the discovery of a Clovis point in the vicinity of the Lee-Terrell County line northwest of Albany. Bullen (1975b:52) illustrated three Suwannee-like forms he saw in a private collection from Early County in southwest Georgia (SGA #199-201).

Fluted point finds are frequently reported in archaeological journals, particularly in the pages of the *Central States Archaeological Journal*, which prints reports submitted by collectors from across the Eastern United States. A large Clovis point (SGA# 176) from just south of Perry, Georgia was reported in this manner by Rudolph (1980). Sometimes such finds are reported in county histories or newspaper accounts. Jordon (1976), in a review of Wayne County history, reports the find of a "rare Clovis point" near Alleck's Island of the south bank of the Altamaha River. In cases like this, the relocation and measurement of the specimens may prove difficult if the owners of the collections have moved or died, or if the artifacts have been traded or sold.

PALEOINDIAN REMAINS FOUND IN EXCAVATION CONTEXT

Excavations in Ocmulgee Bottoms

In conjunction with highway salvage operations associated with the construction of Interstate 16, a series of deep test units were excavated at the Ocmulgee Bottoms site (9Bi23) from December 1961 through June 1962 (Ingmanson 1964; Nelson et al. 1974). The area examined was located in the river floodplain within the boundaries of Ocmulgee National Monument. An extensive program of geological and soils analyses was conducted and reported in conjunction with the excavations, marking some of the first geoarcheological analyses undertaken in the state (Cosner 1973). A large area was examined, with at least 54 20x20 ft test units opened to depths of from 2.2 to 12.2 ft, with the average depth in the neighborhood of 7 ft (Cosner 1973:3).

Although many of the units were found to be either disturbed or too shallow (modern flood deposits extended to almost seven feet in most units), six units provided a well defined sequence of materials ranging from the Early Archaic through the Late Archaic periods. The only PaleoIndian materials found during the excavations were two Dalton points, although unfortunately they came from units largely devoid of material and were omitted from the seriation (Nelson et al. 1974:15). The excavations documented the presence of deeply stratified floodplain deposits in the central Georgia area, however, and indicate the depths (up to 12 feet) at which materials may be found.

Marine Corps Supply Center Site

Smith (1977:63; n.d.) has described the discovery of a possible PaleoIndian site during construction operations at the Marine Corps Supply Center near Albany in 1973. Approximately

200 lithic artifacts were uncovered from a dark gray midden level during bulldozing operations. Artifacts recovered included "point bases that appeared to have been fluted or thinned, Dalton-like points, and unifacial tools" (Smith 1977:63). The site was reported to have been largely destroyed by the construction activity.

The Kinchafoonee Site

Kinchafoonee is a probable early site near Albany, Georgia, that was tested in the mid-1950s (Smith 1977:63-64). The site is located near the Flint River on the Dougherty-Lee County line. The fieldwork was conducted by DeBaillou, who left no written report, although Smith was able to obtain a description of the excavation from an informant. Approximately six feet of deposits were present, and Smith's summary of the work noted that "weathered flint blades, knives, and choppers but no projectiles occurred in the four to six foot level" (Smith 1977:64).

The Standing Boy Flint Industry

Another early horizon from Southwest Georgia, the Standing Boy flint industry, was initially defined by McMichael and Kellar (1960:133-155) from site 9Me205 in the Oliver Basin along the lower Chattahoochee River, and was described in some detail by Huscher (1964). The site yielded materials ranging in time from the Early Archaic period through the Mississippian, and while the deposits were somewhat mixed, some stratification was evident. The industry consists of "beveled and notched points, unifacial knives, blades, plano-convex endscrapers, and utilized flakes" (DePratter 1975:9). While the associated projectile points clearly date to the Early Archaic period, some of the formal unifacial tools may be found in PaleoIndian assemblages. A heavily patinated chert Dalton point is, in fact, present in the collections from 9Me205 that are maintained at the University of Georgia. The nature of the PaleoIndian component on the site remains unknown.

Lee County Chert Quarry

In 1985 archaeologists from Southeastern Archeological Services, Inc. conducted test excavations on a chert quarry site in Lee County in conjunction with the placement of a utility pole (Rudolph and Gresham 1985). A two-by-two meter test unit was opened and yielded over 20,000 pieces of chert. A large proportion of the material came from the lower levels and could date to the PaleoIndian period. Although no diagnostic artifacts were found, twenty-three unifacial tools were recovered from these lower levels. Ten of these were scrapers and the remainder were notched forms that appeared to have been created from use rather than intentional retouch, possibly from use in quarrying activities.

Samples of heat treated chert from the lower levels were submitted for thermoluminescence (TL) dating. A date of 11,700 ±1900 B.P. (UF-7b) was obtained, for a range of from 13,600 to 9,800 B.P. The date was tentatively accepted as correct because of the depth at which the sample was acquired (level 8) and the heavily patinated appearance of the artifact. Unfortunately, two additional samples from the same level submitted after the completion of the report yielded dates of 6100±800 B.P. (UF-7c) and 42,000±5000 B.P. (UF-7d) Gresham (personal communication 1989) concluded that the age of the deposits was probably between 6000 and 11,000 years, but that TL dating was an unreliable method of determining their absolute age.

The Muckafoonee Site

Stratified Archaic and PaleoIndian materials were found at the Muckafoonee site in Dougherty County near Albany in 1982 during testing operations conducted by archaeologists from Soil Systems, Inc. in conjunction with an examination of proposed borrow areas (Elliott

1982). The site, which extended over an area of about 1 ha, was located on a terrace of Muckafoonee Creek, just north of the confluence of the creek with the Flint River. Major chert outcrops were located both to the southeast, on the Flint River, and immediately to the west of the site along Muckafoonee Creek. The site appears to have been a major quarry/workshop area.

Two deep backhoe trenches and two 1x1 m squares and one 2x2 m square were opened at the site during the testing operations, with all fill passed through 0.64 cm (1/4 inch) mesh. Artifacts spanning the Late Archaic to the PaleoIndian period were found at depths of up to 90 cm below the surface. Several small clusters of rock that may reflect the scattered remains of hearths were also noted (Elliott 1982:26). While some mixing was evident, probable PaleoIndian materials were found only at depths of from 60 to 90 cm. The only diagnostic projectile point recovered from these levels was a single fluted point, found from 70 to 80 cm (SGA #194). Three other preforms were found in these levels together with a number of formal unifacial scraping and graving tools. A tremendous quantity of chert debitage was recovered in the three test units, and intermediate and late stage biface manufacture appears to have been occurring. All of the stone was of local origin, and presumably came from the nearby outcrops. The vast majority of the debitage consisted of interior flakes, suggesting that initial core reduction occurred elsewhere, probably at the outcrops in conjunction with quarrying activity.

The Lowe Site

PaleoIndian materials were recovered during excavations conducted at the Lowe site (9Tf139) in 1985, in conjunction with a Georgia Department of Transportation bridge replacement project (Crook 1987). The Lowe site was located on a low sand ridge to the north of and overlooking the Ocmulgee River swamp. Two unfluted lanceolate point bases were found in a small block unit opened at the site (SGA #210, 211; Crook 1987:54), although they were mixed with later Archaic and Woodland materials. A Dalton point (SGA #212) was found at a depth of 93 cm below the ground surface in one unit. Six side and corner notched points were also found, indicating appreciable use of the area during the succeeding Early Archaic period. The Feronia PaleoIndian locality (pp. 42-43) is located a few kilometers to the southeast, across the river, and the materials at Lowe may be related to the intensive Middle and Late PaleoIndian use of that area.

The Pig Pen Site

Two fluted lanceolate fragments (SGA #213, 214) were found at the Pig Pen site in Richmond County (9Ri158; Ledbetter 1988b). The site area is on a ridge overlooking shoals in the Savannah River. One of the fluted points was found during machine stripping while the other came from the ground surface. A late stage lanceolate preform with a deep flute-like thinning flake on one face was also found on the surface and is also probably PaleoIndian in age. A retouched nipple was present on the base of this biface that presumably would have been used as a striking platform to remove a flute on the opposite face had production not been abandoned.

Two unfluted Dalton points (SGA #215, 216) were also found in surface/plowzone contexts at the Pig Pen site, together with 11 Palmer/Kirk Corner Notched forms (Ledbetter 1988b:75). The recovery of PaleoIndian and Early Archaic projectile points at the site is in agreement with previous survey data from this portion of the Savannah River. The presence of large numbers of early points in this general setting may be due to the proximity of Coastal Plain chert sources to the south in Allendale County, South Carolina and Burke County, Georgia, and metavolcanics and quartz in the adjoining Piedmont. The presence of Middle and Late PaleoIndian bifaces coupled with a general absence of other formal tool forms such as unifaces or gravers suggests scattered, limited-activity camps. The site location offered an excellent vantage point for a large portion of the adjoining shoals. These shoals would have attracted both aquatic and terrestrial species, and during this period the site may have been an area where individuals conducted brief hunting and gathering forays (Ledbetter 1988b:109).

The Theriault Site

From mid-July to mid-September 1966 an extensive program of excavations was conducted at the Theriault chert quarry site along Brier Creek (9BK2) in Burke County, Georgia, under the overall direction of Dr. William E. Edwards, then the South Carolina State Archaeologist. A report on the work was prepared by Paul Brockington (1971), who was a crew member on the project. A total of 64 5x5 foot squares were excavated in four blocks at the site, with all fill removed in six inch arbitrary levels and screened through 1/4 inch mesh. Approximately 1200 pounds of debitage were recovered, together with 120 projectile points. Materials were found to a depth of 36 inches and were found to be fairly well stratified, although some mixing was evident.

An exceptionally large and well made fluted point (SGA #2; Figure 17:b) was found at a depth of 30 to 34 inches, just above the sterile clay (Brockington 1971:29). The point resembles classic western forms, and is similar in size and overall appearance to the point found at Macon Plateau. Two Dalton points were also found during the excavations, one at a depth of 36" on the top of the clay subsoil, and a second in the 18-24" level. A Hardaway Blade, possibly a Dalton preform, was also found in the 18-24" level (Brockington 1971:29). Unfortunately, because of its rich archaeological deposits, the site has attracted considerable attention, and Brockington (1971:38) reported that the deposits had been completely destroyed by looters within three years of the completion of the 1966 excavations.

The Taylor Hill Site

The Taylor Hill site (9Ri89) is a dense, stratified Archaic and PaleoIndian site located on series of low knolls overlooking Phinizy Swamp in the Savannah River floodplain near Augusta, in Richmond County. The site was originally located by George Lewis and other members of the Augusta Archaeological Society, and was briefly examined during preliminary survey work associated with a proposed highway corridor (Ferguson and Widmer 1976; Bowen 1979). The site was subsequently tested in 1980 by archaeologists from Southeastern Wildlife Services, Inc, under contract from the Georgia Department of Transportation (Elliott and Doyon 1981:123-156). The testing included a controlled surface collection of approximately 18,100 m^2, and the excavation of 11 2x2 m and one 1x1 m test units.

Stratified Middle and Late PaleoIndian and Early Archaic deposits were identified at depths of from 30 to 70 cm below the present ground surface. Four features were identified in the subplowzone deposits, including two rock clusters that may represent the remains of hearths. The density of artifactual material recovered was extremely high. In all, 565 tools were found in the subplowzone levels in the 12 test units, including one Clovis (SGA #4), a fluted preform (SGA #179), two Daltons (SGA # 177, 178), three Bolen Side Notched, and four Palmer Corner Notched points (Elliott and Doyon 1981:149, 154). The remaining tools included spokeshaves, gravers, hafted end scrapers, side scrapers, and a range of multi-functional tools. Large quantities of debitage were also found, indicating a considerable amount of tool manufacture and maintenance occurred. The density of materials recovered, in fact, is among the highest reported from this time level in Eastern North America (Meltzer 1984:212).

Given the high diversity of flake tools and the variety of raw materials, the site has been interpreted as a residential camp (Elliott and Doyon 1981) or a specialized logistical camp (Anderson and Hanson 1988). The site is in an ideal location for settlement, on the Fall Line ecotone between the Piedmont and Coastal Plain. The area is rich in both biotic and lithic resources and may have been an aggregation locus. Further work at this site, one of the best preserved PaleoIndian sites in the state, would undoubtedly produce valuable information about the early inhabitants of the region (see Chapter IV, pp. 103-104).

The Carmouche Site (9Me21)

Carmouche is a multicomponent stratified site with approximately 70 cm of cultural deposits on a high toe ridge and terrace overlooking Upatoi Creek, 22 km east of Columbus and 10 km south of the Fall Line in the Fall Line Hills District of the Upper Coastal Plain (Gresham et al. 1985). The site was located in the constriction of a broad floodplain that would have allowed many important food resources to be conveniently gathered together in one place. The location would also serve as an ideal staging area for game drives. If hunters were stationed on the terrace, game would have been vulnerable when driven through the narrow constriction (Gresham et al. 1985:212).

Occupations dating from the Late PaleoIndian through the Mississippian periods were identified in the deposits at Carmouche, although unfortunately, as is the case with many Sand Hills sites, bioturbation has greatly mixed the assemblage. The site was excavated when threatened by a Fort Benning construction project. The area examined, 353 square meters, represents the most extensive non-riverine excavation undertaken in the western Fall Line Hills of Georgia. The site contained a few points that were convincingly Dalton in appearance as well as a larger number of points that showed characteristics of both Dalton and certain Woodland triangular points. Because of limitations placed upon the stratigraphic data resulting from the mixed deposits, the focus of the analysis of the presumed early materials was typological in orientation.

During the excavation of the site a number of serrated, triangular, concave-based points were recovered. The points were made of both chert and quartz and many exhibited basal and lateral grinding of the hafting area. Typologically these points were nearly identical to the Tallahassee point type identified in northern Florida and tentatively associated with the Late PaleoIndian - initial Early Archaic (Neill 1963; Bullen 1975a:45). Because most of these points occurred in the lower levels, the possibility of an early occupation on the site, preceding the later Woodland and Mississippian components, was evaluated. Because Woodland artifacts occurred in some quantity in these lower levels, however, the possibility that some or all of the Tallahassee points might actually date to the Woodland period was also examined.

A review of the published literature on the Tallahassee and other similar concave-based points proved unsatisfactory:

> Much of the popularly accepted chronology of concave-base points is derived from morphological comparisons supplemented with sparse and inconclusive stratigraphic evidence (Gresham et al. 1985:137).

Discrepancies were noted in cited descriptions of the Tallahassee-like point, indicating that the type was not unambiguously defined and that it has changed from the initial definition by Neill (1963). Also, the characterization of the point as a Dalton-like point is based on morphological similarities and not on stratigraphic contexts.

Detailed attribute analyses were conducted on the Tallahassee points and morphologically similar points from the Carmouche site. Recorded attributes were compared to published descriptions for triangular points over all time periods, in an effort to determine whether the points were contemporary with Dalton or were triangular points of the Early Woodland period. Gresham and his colleagues concluded that Tallahassee points are morphologically more similar to Daltons and other Late PaleoIndian/initial Early Archaic forms in the Southeast than to Woodland period concave based points. However, since the Carmouche points were not found in features or in good stratigraphic context, the morphological similarities were not considered conclusive evidence of an early dating for the Tallahassee type.

The age of the Tallahassee point type and similar Carmouche points remains open. Dunbar (personal communication 1989), who has examined Florida's PaleoIndian archaeological record in detail, believes the Tallahassee point to be later, and not PaleoIndian in age. Because the temporal affiliation of the Carmouche Tallahassee-like points was not resolved by Gresham et al. (1985), the points were re-examined during the course of the present study, and contact was made with Georgia avocational and professional archaeologists who have dealt with the issue of Tallahassee and similar serrated Woodland forms, specifically David Chase, Frankie Snow, and John Whatley. The reanalysis did not alter the conclusions made by Gresham and his colleagues that morphologically many of the Carmouche points are late PaleoIndian and Early Archaic point forms better described as Dalton variants than Tallahassees (Figure 9).

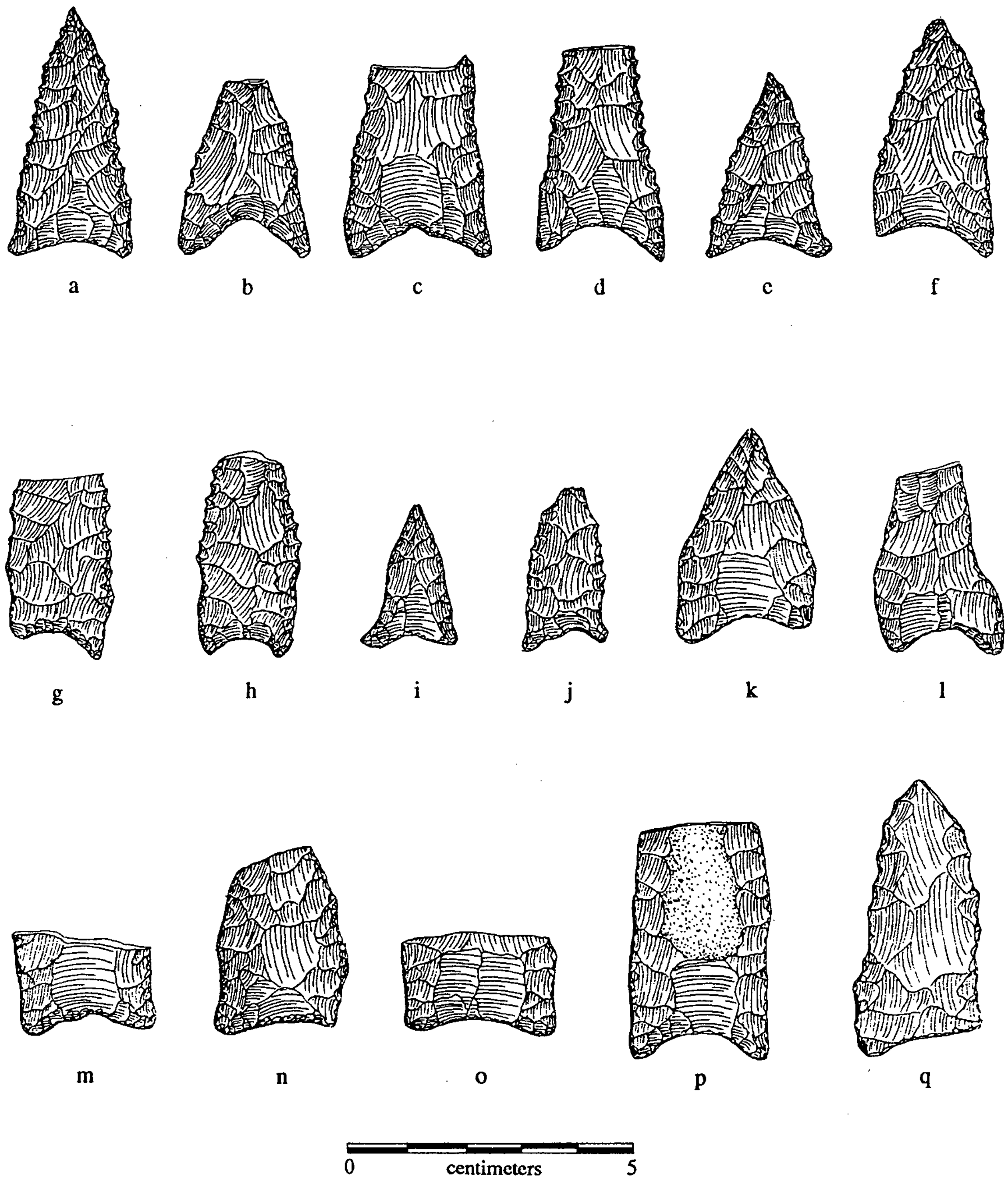
Chase has noted that a projectile point form associated with Cartersville pottery at Fort Benning was "a rather large and thin slope-shouldered triangle with serrated edges" (Chase 1964:10). However, basal grinding was not an attribute of these points (David Chase: personal communication 1989). Collections from Chattahoochee and Muscogee Counties housed at the University of Georgia Laboratory of Archaeology were searched for points similar to Chase's description. Serrated triangular points were found in collections along with Woodland pottery but the points lacked the haft-area grinding present on many of the Carmouche points.

Frankie Snow has acquired a substantial amount of point data from the Ocmulgee/Big Bend area of the central Coastal Plain of Georgia (Snow 1977a, 1977b). Tallahassee point illustrations provided by Snow are very similar to the Carmouche points, and site data that he provided showed an extremely high co-occurrence between Tallahassee points and Woodland pottery. Unfortunately all of the illustrated examples were from surface contexts and a high proportion of these were from multicomponent sites that also had other PaleoIndian or Early Archaic diagnostics present. John Whatley has examined the position of Tallahassee points in the Georgia Coastal Plain and has concluded that they are Woodland in age (Whatley 1988). According to Whatley the Tallahassee is a Woodland triangular projectile point that is well made and serrated but lacks basal and lateral haft grinding. The presence of grinding identifies a Dalton point (John S. Whatley: personal communication 1989).

There thus appears to be a consensus of opinion that there are serrated points with concave bases in both the PaleoIndian/Early Archaic and Woodland period in Georgia, and that grinding of the haft area is not present on the Woodland forms. However, this has yet to be demonstrated with excavated material from stratified or single component contexts. As Gresham et al. (1985) noted, application of the Tallahassee point type has changed over time. Today it is being applied to points dating to two distinct time periods. We recommend that use of the Tallahassee type name be restricted only to unground, Woodland period forms.

Garrow and Associates Investigations Along Brier Creek

An extensive program of survey, testing, and large scale excavation was conducted at a number of sites along Brier Creek from 1984 through 1986 by archaeologists from Garrow and Associates, Inc. (Elliott and O'Steen 1987). The work was funded by Georgia Power Company and was conducted in conjunction with the construction of powerlines associated with the Plant Vogtle generating station. The sites examined were located between ca. 4 and 16 km upstream from the confluence of Brier Creek, and were in proposed construction areas. Little PaleoIndian material was found during the project. One unfluted PaleoIndian lanceolate was recovered in excavation context, at site SN-05, and isolated Dalton points were reported at two other sites.



a.- f. Tallahassee; g.- h. Subtype A; i.- j. Subtype B; k.- l. Subtype C; m.- o. Subtype D; p. Subtype E; q. Subtype F.

Figure 9. Tallahassee and Incurvate Base Subtypes from the Carmouche Site. (from Gresham et al. 1985)

The absence of PaleoIndian materials was unexpected, given the earlier recovery of an Early PaleoIndian Clovis point at the Theriault site a few kilometers upstream (Brockington 1971). The absence of appreciable PaleoIndian materials in the general vicinity renders difficult interpretations of Theriault as a PaleoIndian period quarry/base camp, about which early peoples might have been "tethered", or that they might have returned to on a regular basis. The Brier Creek terrace, Elliott and O'Steen tentatively advanced, may have been unsuitable for occupation during these early periods. The Brier Creek work represents some of the most extensive prehistoric investigations undertaken in the State of Georgia. The project led to the production of a large number of survey, testing, and mitigation reports, although unfortunately the results of this work remain to be summarized and published.

PaleoIndian Occupations in the Wallace Reservoir Area

O'Steen, Ledbetter, Elliott, and Barker (O'Steen et al. 1986) have recently prepared an overview of PaleoIndian settlement in the Georgia Piedmont, based on data from the Wallace Reservoir, and adjoining interriverine areas along a 60 km stretch of the Oconee River watershed. The Oconee watershed has a dendritic stream drainage pattern formed by streams whose flow has incised into weathering volcanic and metamorphic bedrock. The Oconee and Apalachee rivers are the main waterways within the study area, and these rivers are fed by a multitude of smaller drainages. Shoals and broad areas of floodplain occur at irregular intervals along the Oconee. The uplands are dissected and have characteristic red clay soils derived from weathered granite, gneiss, and schist. The stream drainage pattern and lithic resources in the study area are essentially unchanged since the Full Glacial period, although changes in the character of the Oconee floodplain have occurred (Brook 1981). The rate of erosion of the upper ridge slopes and subsequent sedimentation in the floodplains has been accelerated by historic period land use, with the result that in some areas over 1 m of sediment has been deposited in the past two centuries (Trimble 1974). Stone resources available within the Piedmont portion of the river drainage include quartz and chert formed by non-sedimentary processes (Ledbetter et al. 1981); sedimentary cherts occur farther south along the Oconee drainage in the Coastal Plain province.

The primary data are based on the 1977-78 survey of a 4,670 hectare clearcut in the Wallace Reservoir basin (Fish and Hally 1983; Wood and Lee 1973). The Wallace Reservoir survey included a full surface reconnaissance of upland and floodplain areas along the Oconee and Apalachee Rivers. A ten percent sample of the alluviated portion of the reservoir was examined by a systematic backhoe testing program (Ledbetter 1978). This subsurface testing was supplemented by the examination of burn burials, which are large pits deeply excavated into the floodplain by clearcutting crews, and used to burn leftover debris. Additional survey data for the Oconee River region has been acquired from a series of recent upland surveys (e.g., O'Steen 1986), published reports on work in the Oconee National Forest (Wynn 1982:95), and collector interviews.

Functional Types of PaleoIndian Sites

Ninety-one PaleoIndian sites yielding 141 diagnostic hafted bifaces were identified in the study area, including nine Early PaleoIndian (N=11 points), 14 Middle PaleoIndian (N=24 points), 67 Late PaleoIndian Dalton (N=106 points), and three indeterminate PaleoIndian components. O'Steen and her colleagues (1986) differentiated four general types of PaleoIndian sites in the upper Oconee watershed, based on site location, site size, and tool assemblages.

Type 1 - Short Term Camps

These are usually small sites with tool assemblages composed of a narrow range of formal (shaped tools with bifacial or unifacial retouch) and expedient (minimally retouched or utilized flake tools) butchering and processing tools made from both local and nonlocal raw materials. Bifacially flaked knives manufactured primarily from locally available raw materials are common. Tool kits are highly curated and portable. These small processing sites are common throughout the PaleoIndian period, but are, in the absence of diagnostic points, inseparable from Early Archaic sites.

Type 2 - Quarry Camps

The second site category is clearly quarry-related. The lithic assemblages are characterized by quarry debris, exhausted/discarded formal tools (i.e., typically bifaces and unifaces of exotic raw materials), and utilized, formal and expedient tools made from the local raw materials. In contrast to the usual characterization of quarry assemblages associated with later periods, aborted and discarded preforms are rare. There are clear indications that tools were manufactured and used at these quarry sites, as evidenced by bifaces that were broken during manufacture, then modified into different tools. The wide variety of tools recovered from these sites indicates that some of these small quarry areas were used for a variety of functions in addition to the procurement of raw materials. It is possible, considering the small size of many Piedmont quartz and chert deposits, that many of these quarry sites were exploited only during these very early periods; some of these outcrops could have been depleted in only a few visits.

Type 3 - Residential Camps

Residential sites appear to be quite rare, and were represented by a cluster of large sites adjacent to Barnett Shoals at the northern end of the survey area. Tool diversity is high, as is the diversity of raw materials. Tools are manufactured primarily from locally available quartz and chert, but a variety of non-local raw materials are also present. Formal unifacial tools are abundant; hafted, unifacial scrapers were the most common tool type in these assemblages, with most made from local Piedmont chert. Projectile points are found in a variety of manufacturing and resharpening stages, and considerable morphological variation is evident. A variety of other tool types are also present, suggesting either long-term or repeated occupation of these areas.

Type 4 - Kill Sites

Kill sites, areas where PaleoIndian hunters ambushed large animals, have not been conclusively identified in the Georgia Piedmont. Gramly (1982:95) has presented an excellent example of this site type in the eastern United States in his discussion of the Vail site in Maine, where a PaleoIndian habitation and related kill site were identified. The kill site contained several fluted point fragments (primarily distal portions) that cross mended with fluted point bases recovered from the habitation area (Gramly 1982:113). Sites of this type may exist in the lower Southeast, but they have not been recognized. Isolated finds of fluted points, however, are fairly common, and may represent individual kill sites or short-duration foraging camps (Meltzer 1988). A few isolated PaleoIndian points were observed in collections from the study area, but given their context and minimal associations, interpretation is difficult. Large animal kill site locations within the Georgia Piedmont would be expected near springs and in drainages, but could have been located at any place game was available.

Major PaleoIndian Assemblages in the Wallace Reservoir

O'Steen and her colleagues (1986) summarized exacavation data at PaleoIndian sites examined during the Wallace Reservoir project. Two tested sites in the southern portion of the reservoir, 9Ge309 and 9Ge534, produced fluted point deposits, while a third site 9Mg28, in the middle portion of the reservoir, produced Dalton materials.

Site 9Ge309

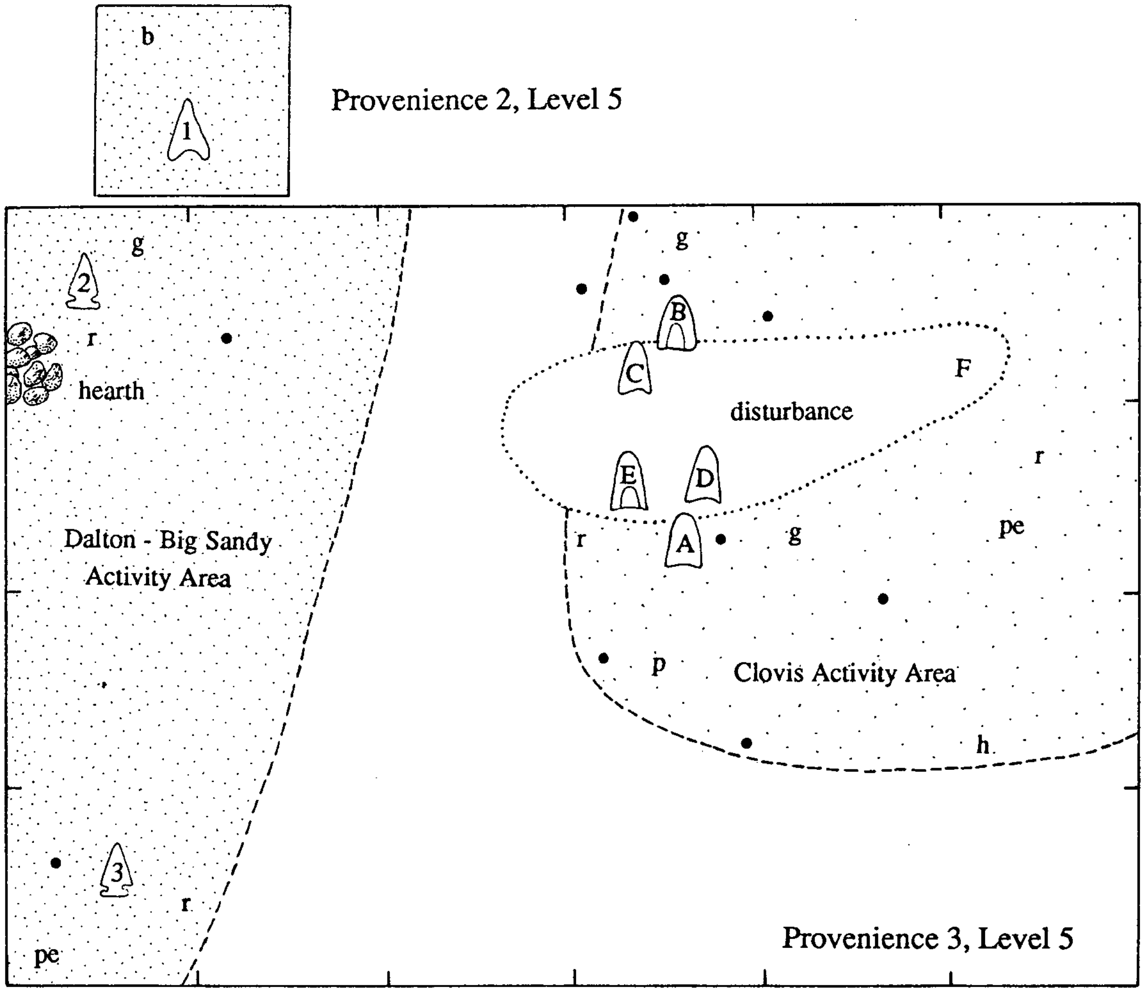
Site 9Ge309 was an example of a short-term camp occupied during the Early and Late PaleoIndian periods. The site was located on a levee adjacent to Richland Creek, near the confluence of the creek with the Oconee River. Initially tested during the intensive program of backhoe work designed to locate early and buried components in the reservoir (Ledbetter 1978), the site was later examined in detail under the direction of Paul Webb. The site was characterized by a ca. 30 cm thick Woodland and Late Archaic midden deposit over ca. 60 cm of Early Archaic and PaleoIndian materials. A 1x1 m test and a 4x6 m block unit were opened in 10 cm levels with all diagnostic artifacts piece-plotted. Two horizons were evident in the deposits, a Late PaleoIndian Dalton zone from ca. 75-85 cm in depth, and an earlier Early PaleoIndian horizon from ca. 85-95 cm in depth (Figure 10). Each zone was delineated by the presence of artifact concentrations and by raw material distributions. While quartz and chert were present in both zones, orthoquartzite and metaquartz were restricted to the Dalton zone, and metavolcanics to the Early PaleoIndian zone.

A single orthoquartzite Dalton point was recovered in the level from 75 to 85 cm. An orthoquartzite side notched point was found less than a meter away at a depth of 82 cm, suggesting a contemporaneity for these forms. The two bifaces and several other tools were found clustered around a rock cluster in the northwest corner of the unit that may represent the remains of a hearth. A scatter of lithic debris extended for 2 m to the east and across the unit to the south. A second small group of tools was found in the southwest corner of the block that may or may not have been associated with the other materials. The artifact density in this zone was fairly low, considerably less than the density observed in the higher Early Archaic levels. The Dalton zone had a distinctive lithic raw material signature as well. Formals tools were made of orthoquartzite and light colored chert only, with quartz present only as expedient tools.

Two Early PaleoIndian Clovis points were found at 9Ge309 (SGA #53, 54), one in the early Archaic levels, and the second at the base of the 85-95 cm level. Although some animal disturbance was evident, an artifact scatter ca. 4.5 to 5.0 m across was identified in this level, with most of the tools coming from an area less than 4.0 m in diameter. One fluted point and two probable fluted point fragments, from points broken at the haft, came from this area. The points and other tools were manufactured from Ridge and Valley chert, Coastal Plain chert, quartz, and metavolcanic material. No features were observed in the Early PaleoIndian zone, although rock clusters from probable hearths were observed in the higher levels. The debitage recovered from the zone consisted of small bifacial thinning flakes, with no evidence of initial manufacture. Tool use, maintenance, and discard were inferred. All of the tools recovered from the Early PaleoIndian zone were broken or worn out. The three hafted biface basal fragments that were found may have been broken at another location, since no distal blade fragments were found in the area. The biface assemblage at 9Ge309 suggests discard during re-hafting activities. Butchering and bone and hide processing are suggested by the type of tools found at the site.

Site 9Ge534

Another example of a short term camp examined during the Wallace Reservoir survey was 9Ge534, initially identified during clear-cutting operations by the exposure of a single exotic chert fluted point (SGA #60) and a small amount of quartz debris. The site is located on a second terrace and was found to have a maximum extent of ca. 10 m in diameter. Two 10 m long backhoe trenches were opened across the site during the deep testing program, locating a ca. 15 cm thick occupation surface at the base of the modern alluvium (Ledbetter 1978). A rock cluster approximately 60 cm in diameter and 10 cm thick, that appears to be the remains of a hearth, was found in this level. A total of 18 tools and four debitage fragments were found, with all but the



1 Dalton, 75-85 cm
2 Big Sandy, 82 cm
3 Big Sandy, 75-85 cm
b Bifacial knife
g Graver
h Hematite (pigment)
p Perforator
pe <u>Pieces Esquillees</u>
r Retouched flake
Utilized flake

A Lanceolate biface+, 85-95 cm
B Clovis biface, 85-95 cm
C Lanceolate biface*, 75-85 cm
D Clovis base*, 35-55 cm
E Lanceolate biface*, 65-75 cm
F Hafted spokeshave*, 35-55 cm

* Distubed context - rodent burrow
+ Cross mends

Scale: Block is 4 by 6 meters
(Stippled areas denote extent of debitage concentrations)

Figure 10. PaleoIndian Occupation Areas Identified at 9Ge309.

fluted point made from locally available crystal or vein quartz. The small amount of debris recovered indicates that specially prepared formal cores may have been used to produce flakes for expedient or formal tools.

Site 9Mg28

A small Late PaleoIndian Dalton assemblage was recovered from an area approximately 6 m in diameter on the Joe Bell site (9Mg28), located at the confluence of the Apalachee and Oconee Rivers in the Wallace Reservoir. The PaleoIndian materials were found at the base of the plowzone during machine stripping operations designed to locate later period features. Debris was found scattered about a hearth that measured approximately 1.2 x 1.5 m. Artifacts recovered from this feature included fire cracked rock, several stone tools, and a number of pieces of small shatter and thinning flakes of quartz (N=61) and Coastal Plain chert (N=6). Late stage biface manufacture or maintenance is indicated by this assemblage.

An orthoquartzite Dalton point, a quartz adze, and an Edgefield scraper, an expanding stemmed corner notched biface, and a utilized flake of Coastal Plain chert were plotted near the hearth. The hafted biface resembles Early Archaic Kirk or Hardin types. The cooccurrence of these forms, if not due to reoccupation, suggests a transitional PaleoIndian/Early Archaic age for the assemblage, and specifically the contemporaneity of artifact types traditionally assumed to belong to different periods. The Dalton component at 9Mg28 is interpreted as a specialized, short-term activity area. The small amount of manufacturing debris and the notable scarcity of utilized flakes suggests that formal bifaces were used for the range of tasks that took place at this site. Alternatively, the absence of immediately available raw materials may have necessitated the curation of flake tools for subsequent use.

Barnett Shoals

The most extensive evidence for PaleoIndian settlement in the Wallace Reservoir area was found at a cluster of sites in the northern portion of the study area adjacent to Barnett Shoals. The sites were shallow surface scatters, permitting extensive collection and mapping. The largest site, 9Oc25, was approximately 600 m long and extended over an area of 12.2 ha on a broad terrace and adjacent levee of the Oconee River (Figure 11). The site, located below the constriction formed by Barnett Shoals, was repeatedly occupied throughout the prehistoric and protohistoric eras. Seven Early or Middle PaleoIndian fluted and unfluted lanceolates and 20 Late PaleoIndian Dalton points were found at the site, together with a large number of formal unifacial tools that may be associated with either the PaleoIndian or Early Archaic components represented on the site. SGA #103-107 represent a partial sample of the points recovered from this area; the remainder have yet to be entered into the survey.

A total of ten PaleoIndian sites are located around Barnett Shoals, on the broad terrace below the shoals, or in the uplands overlooking them. The cluster extends over approximately two square kilometers, along a two km stretch of the river. Three of the sites produced Early or Middle PaleoIndian diagnostics while Late PaleoIndian Dalton points were found at all ten. Hafted unifacial scrapers were the most common tool type found on these sites (N=122), and 68 percent of these were made of locally available Piedmont chert. Projectile points were found in a variety of manufacturing and resharpening stages. The considerable stylistic variation evident over the diagnostic point forms together with the large number of formal and expedient tools recovered indicates long-term or repeated use of the shoals area by PaleoIndian populations. While these sites may well represent residential sites, unambiguous evidence for this is not presently available. Nevertheless, the quantity of PaleoIndian material recovered, the diversity of the tool forms present, and the size of the sites themselves is currently unique in Piedmont Georgia, and the area

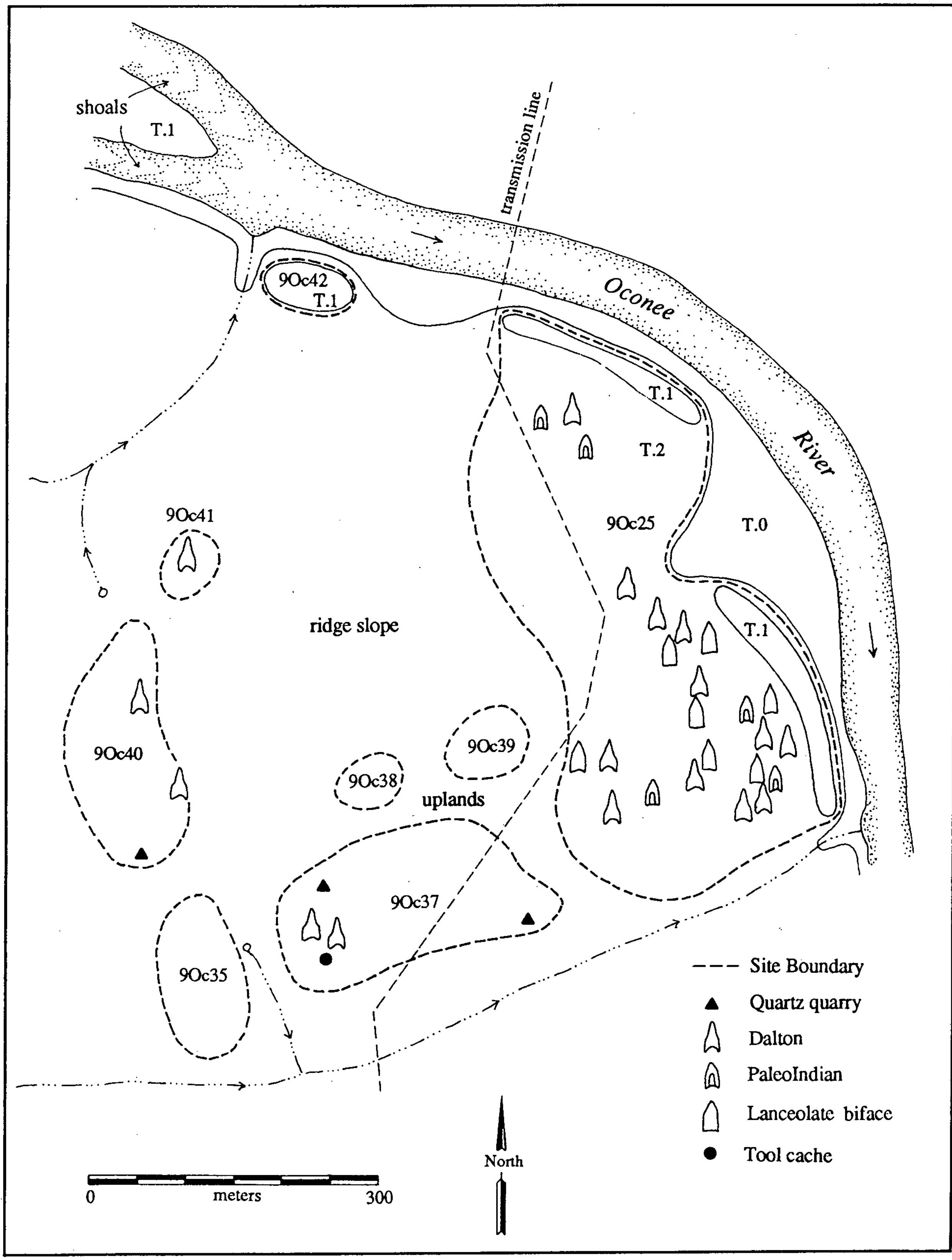


Figure 11. Site 9Oc25, A Possible PaleoIndian Base Camp Along the Upper Oconee River.

is interpreted as a residential base settlement.

Observations About PaleoIndian Settlement from the Wallace Sample

Ninety-one PaleoIndian sites yielding 95 components were identified in the Oconee River survey sample. Most of the components are predominantly short term or limited activity sites. Quarry-related sites were less common, but may be underrepresented simply because diagnostic points are only infrequently found on these sites. Eight of the 24 quarry site collections from Wallace Reservoir did not contain diagnostic bifaces, but contained unifacial or flake tools that could be considered either PaleoIndian or Early Archaic. Residential camp sites were also uncommon. Sites were grouped by four types of landform, specifically levee, terrace, uplands edge, and uplands. A gradual expansion in the geographic occurrence and number sites over time is indicated. Early PaleoIndian sites are located primarily in the floodplain, with the remainder of the sites at the uplands edge. Middle PaleoIndian sites still appear frequently in the floodplain, but there is evidence for exploitation of the upland or interriverine areas. Late PaleoIndian Dalton sites show a continued decrease in floodplain sites, with a majority of the sites at the uplands edge or in the uplands. These data suggest that by Late PaleoIndian Dalton times populations were utilizing upland areas more frequently. The concentration of sites at shoals is also evident; shoals comprise only about 10 percent of the river channel in the survey area, but lie adjacent to most of the Early PaleoIndian sites identified along the Oconee.

Another major factor affecting PaleoIndian site location in the Oconee River survey area is proximity to relatively high quality lithic deposits, particularly quartz and chert. Early and Middle PaleoIndian sites consistently occur near these outcrops, a pattern not observed with Dalton sites. The use of local as opposed to extralocal raw material increases dramatically over time in the Wallace Reservoir sample. Early PaleoIndian diagnostics are predominantly of extralocal materials (63.6%), while these materials occur with much lower incidence in Middle PaleoIndian (29.2%) and Late PaleoIndian Dalton (39.6%) diagnostics (O'Steen et al. 1986:53). Interestingly, Ridge and Valley cherts, with source areas to the north and northwest, were observed only in the northern portion of the study area. Groups using this material appear to have had little interaction or direct movement beyond this area.

The Wallace Reservoir data, in conjunction with the results of the ongoing fluted point survey (Chapter III), suggest that the Coastal Plain and Ridge and Valley physiographic provinces may have been more heavily utilized than the Piedmont during the earlier part of the PaleoIndian period. Piedmont Early and Middle PaleoIndian points tend to be small and extensively resharpened; broken points were often modified and used as scrapers, wedges, and gravers; and broken blades were often fashioned into new, but smaller, bifaces. The extensive reworking of local assemblages suggests, possibly, that the area was on the fringes of settlement networks centered in other areas. This strategy of lithic conservation appears consistently on sites of the period, but is not as prevalent in the following Early Archaic period (O'Steen 1983).

Previous studies have identified areas in the Southeast where large numbers of Early and Middle PaleoIndian points have been found (Anderson 1990; Dunbar and Waller 1983; Futato 1982; Johnson 1989; MacCord 1982; McCary 1986; McGahey 1987; Meltzer 1984, 1988; Perkinson 1971, 1973; Rolingson 1964; Turner 1989; Williams and Stoltman 1965). These areas are hypothesized to have been the location of PaleoIndian population concentrations. The greatest numbers of fluted points closest to the Piedmont of Georgia occur in northern Florida, the Atlantic Coastal Plain, and in the Ridge and Valley province. The Georgia Piedmont may thus represent a relatively unoccupied area between two or more population concentrations. Raw material distributions (based on the occurrence of raw materials on diagnostic projectile points), furthermore, suggest that interaction between these areas was fairly minimal. Full utilization of the central Georgia Piedmont does not appear to occur until the latter portion of the PaleoIndian period, specifically during the Late PaleoIndian Dalton period. The Piedmont was certainly not a barrier, nor was it totally devoid of settlement earlier during the PaleoIndian period, but it may have been a less preferred area for settlement.

The Oconee River data suggest that settlement patterning during the latter part of the PaleoIndian period corresponded more to a diversified hunting and gathering mode of subsistence than to the big-game oriented hunting strategy traditionally associated with PaleoIndian occupations. Fossil evidence indicates that during the late Pleistocene some big-game animals, such as mastodon, may have been more prevalent in the Coastal Plain and Ridge and Valley Provinces than in the mosaic boreal forests of the Piedmont (Corgan 1976:17). Nevertheless, smaller animal resources were abundant in the Piedmont. The late Pleistocene fossil deposits at Ladd's Quarry in northwest Georgia contained a diverse array of reptiles, birds, and large and small mammals, indicating these species were present approximately 10,000 to 11,000 years ago (Holman 1985a, 1985b).

PaleoIndian Occupations in the Russell Reservoir Area

The Russell Reservoir investigations along the upper Savannah River, with those in the Wallace Reservoir along the upper Oconee, represent the most extensive archaeological investigations undertaken in Georgia in the latter half of the twentieth century. Taken together, the two reservoir assemblages provide a detailed picture of PaleoIndian use of the central Piedmont in this part of the Southeast. Early PaleoIndian Clovis points were found at three sites in the Russell Reservoir, while Late PaleoIndian Dalton and initial Early Archaic Palmer/Kirk diagnostics were found at 11 and 59 sites, respectively (Anderson and Joseph 1988:25). The low number of Early PaleoIndian components in the Russell Reservoir, and the apparent absence of Middle PaleoIndian occupation, when compared with the far greater number of Late PaleoIndian and Early Archaic components, suggests that dramatic population increase began late in the PaleoIndian period, sometime after initial exploration occurred. The Late PaleoIndian and Early Archaic periods thus witnessed the rapid filling of the formerly empty but ecologically rich Piedmont landscape.

PaleoIndian components were identified in excavation context at only three sites in the Russell reservoir. Isolated fluted points of Early PaleoIndian age were found at the Clyde Gulley and Rucker's Bottom sites in Elbert County Georgia, and at the Simpson's Field site in Anderson County, South Carolina, and a Late PaleoIndian Hardaway Dalton point was found at Rucker's Bottom. No other fluted points were found during the Russell Reservoir investigations, although several fluted points have been reported in private collections from the general project area (Charles 1986; Chapter III).

Major PaleoIndian Assemblages in the Russell Reservoir

Rucker's Bottom (9EB91)

A single fluted point of black chert (SGA #3) was found at Rucker's Bottom, in a 160 m^2 excavation block (Anderson and Schuldenrein 1983; 1985:288-308). The point was found in a dense cluster of Palmer points, debitage, and other stone tools. No other artifacts or features were associated unambiguously with it. The presence of three Palmer points and several tools of the same black chert in the block further confuse the issue. The Clovis point may be *in situ*, with the overlap of components reflecting fairly compressed stratigraphy, or alternatively, it may have been brought onto the site by the later, Early Archaic inhabitants. The presence of black chert artifacts in the Early Archaic assemblage may even reflect later scavenging and reworking of black chert brought onto the site during the Early PaleoIndian period.

A small quantity of black chert debitage was found in the block, almost all very small retouch flakes from late stage tool manufacturing or maintenance activity. Short of refitting or source analysis studies, it is not possible to equate this material with a specific component. The material is very high quality, precisely the sort of fine-grained cryptocrystalline selected by PaleoIndian populations in the region (Goodyear 1979). The source of this material is unknown at the present, although similar materials have been found in the Ridge and Valley province of northwest Georgia and from an outcrop on an island in the Savannah River some 50 miles to the south, in the Thurmond Reservoir.

An extensively resharpened Hardaway Side Notched (Coe 1964:67) point of clear crystal quartz was also found in the excavation block at Rucker's Bottom (SGA #46). A moderate amount of crystal quartz debitage was present, most at the north end of the unit in the general vicinity of the point. Like the Clovis point from the same block, the Hardaway was found in levels dominated by Early Archaic Palmer projectile points. No Palmer points made of crystal quartz were found, however, so it is possible that all of the clear quartz in the block derives from a Hardaway component. The only other tools of this material found in the block were a single formal biface and six expedient unifaces. All of these tools except for one expedient uniface were recovered from the north end of the block near the Hardaway point. Much of the crystal quartz debitage was small interior flakes, suggesting late stage tool manufacturing or maintenance activity, although a few cortical pieces with crystal facets were present. Given the moderate quantity of debitage recovered, transport of finished tool forms off the site is indicated.

Simpson's Field (38AN8)

The only other site in the Russell Reservoir where early materials were found in what could be considered primary context was at 38AN8, the Simpson's Field site (Wood et al. 1986:60-61). Four chert tools, including a Clovis point, a corner-notched Palmer point, and two unifaces were found embedded in the sandy clay subsoil which immediately underlay the plowzone. No other associated artifacts or features were found. The artifacts were found during shovel skimming operations associated with the excavation of a large block unit directed to the exposure of Late Woodland and Mississippian period features, which intruded into the subsoil. The early materials were found within an area approximately 20 meters in diameter on a slight rise in the floodplain bounded by two creeks and a small swampy depression. Although only slightly elevated above the surrounding landscape at the present, the location may have been more exposed in the Late Pleistocene, prior to the extensive deposition of the Holocene era. To PaleoIndian populations the location may have been advantageous for hunting and camping. The fluted point was quite large and resembled classic western Clovis forms, suggesting it was manufactured during the Early PaleoIndian era. In size and shape it resembles the fluted points found at Macon Plateau in central Georgia (Kelly 1938:7) and at the Theriault site in the lower Savannah basin (Brockington 1971:129).

Clyde Gulley (9EB357)

A highly waterworn triangular Clovis-like point of black chert was found at the base of the Mississippian midden at the Clyde Gulley site in Elbert County, Georgia (SGA #209; Tippitt and Marquardt 1984). The material was fine grained and slightly translucent, and may be from the same source as the fluted point found at Rucker's Bottom. The point exhibited considerable reworking along its lateral margins, giving the edges an irregular appearance. The flutes or basal thinning flake scars, two on one face and one on the other, were long and somewhat asymmetrically located. No other examples of the raw material were found in the midden and this fact, coupled with the waterworn condition of the specimen, suggests that it was brought onto the site by one of the later Mississippian inhabitants.

Observations About PaleoIndian Settlement from the Russell Sample

In all, three Clovis points were found on three sites and 14 Dalton points were found on 11 sites during the Russell Reservoir investigations. Population growth during the PaleoIndian period is suggested by this increase in the number of diagnostic artifacts, and by the much larger number of subsequent Early Archaic artifacts that were found. Taken together, though, the evidence from the Russell Reservoir investigations indicates that Early and Middle PaleoIndian utilization of the upper Savannah River was fairly minimal, with permanent settlement (or at least extensive use) not beginning until the Late PaleoIndian period or, more likely, until the Early Archaic period.

The Russell Reservoir PaleoIndian points were almost all found in contexts suggesting isolated discard or deposition, probably the result of brief occupations. No evidence for habitation sites was found. All three Early PaleoIndian fluted points were of extralocal materials originating from appreciable distances, from the lower Coastal Plain (i.e., Simpson's Field) and possibly from the Ridge and Valley province (i.e., Clyde Gulley and Rucker's Bottom), or at least from as far away as the Fall Line. Extensive group mobility is suggested by these raw material occurrences. The Dalton points, in contrast, were made primarily from local materials, a pattern comparable to that observed in the Wallace Reservoir (O'Steen et al. 1986). Most of the Dalton points found in the Russell area, in fact, were made of locally available quartz; only one point each were found of metavolcanic material and Ridge and Valley chert (Anderson and Joseph 1988:25). Decreased group mobility and increased use of the upper Savannah River area during the Late PaleoIndian period is suggested by this preference for locally available lithic raw materials.

The Feronia Locality

Another area characterized by dense PaleoIndian and Early Archaic assemblages examined in Georgia in recent years is the Feronia Locality, located near the Big Bend of the Ocmulgee River in northern Coffee County, south-central Georgia (Blanton and Snow 1986, 1989). The Feronia Locality is a concentration of 16 PaleoIndian and Early Archaic sites in an approximately four square kilometer area centered on a prominent ridge overlooking the Ocmulgee River floodplain. The ridge provides a view of the floodplain and a number of springs rise in the area. Both factors undoubtedly attracted early populations. The sites are shallow and all of the materials recovered to date have come from surface contexts.

Two Middle PaleoIndian Suwannee points (SGA # 191, 192), 18 Late PaleoIndian Dalton points, and 83 Early Archaic side and corner notched points are reported from the sites in the locality (Blanton and Snow 1986). A number of the Dalton points exhibit pronounced basal thinning, to the extent that points in initial stages of resharpening resemble fluted points. Three of the Dalton points exhibit basal protuberances and have been described as "nipple points" (Snow 1980), a stylistic variant fairly common in the southern Georgia Coastal Plain. Dennis Blanton (personal communication 1986), noting that the nipples do not appear to be platform remnants, has suggested that they may represent an attempt to increase surface contact in the haft. Large numbers of formal tools also have been recovered from Feronia sites, including endscrapers, discoidal scrapers, thick oblong scrapers, thick unifaces, thin unifaces, gravers, and spokeshaves. Other, less common tool forms that have been found include adzes, limaces, and Edgefield scrapers. A total of 960 formal flaked stone tools are reported from the locality (Blanton and Snow 1986).

Formal hafted endscrapers and intentionally retouched unifacially worked flakes dominate the Feronia assemblage. Eight Edgefield scrapers (Michie 1968, 1972) have also been recovered, a tool form observed at a number of localities in and near Georgia (Goodyear 1983; Hanson 1985; O'Steen et al. 1986). Several egg-shaped stones of ferruginous sandstone with a dimple in one end were found that are tentatively interpretted as bolas weights (Whatley 1986). Comparable artifacts were reported by Blanton (1979:46) from the Jack Wildes site (9Bc16) along the Satilla River. The gravers and formal hafted endscrapers from the locality appear to occur most commonly in association with Suwannee and Dalton points. The Edgefield scrapers and the pitted egg stones, in contrast, were more commonly found with Early Archaic side and corner notched points. Exactly when Edgefield scrapers date is currently uncertain. Dating of Edgefield scrapers to the Early Archaic period is based on the morphological similarity of the tools' haft area, which has side-notches, with the haft area of local Early Archaic side notched points like the Taylor or Bolen (Blanton and Snow 1986; Purdy 1981:29). Edgefield scrapers have been recovered in Early Archaic context at the G. S. Lewis site from the lower Savannah River (Hanson 1985). The discovery of an Edgefield scraper at 9Mg28 in the Wallace Reservoir in association with both a Dalton and an expanded stemmed biface, however, suggests the tool type may have been manufactured during both the terminal PaleoIndian and the Early Archaic periods (O'Steen et al. 1986:23-24).

A noteworthy aspect of the Feronia locality setting is that the early sites are not tethered to a lithic raw material source, as expected in some models of eastern PaleoIndian/Early Archaic settlement (e.g., Gardner 1977, 1983). The nearest known raw material sources of any significance lie ca. 80 km to the north and 95 km to the south. What drew people to this locality is currently unknown. The area is very near the interface between the Atlantic and Gulf watersheds, however, a divide that may have had considerable territorial or social significance in the Late Pleistocene/Early Holocene era. Almost all (99%) of the tools and debitage from the locality are made from Coastal Plain chert, most probably from the Atlantic watershed sources 80 km to the northeast. The remaining material is silicified coral from sources ca. 100 km to the south in Florida, and metamorphic and igneous materials from the Piedmont ca. 125 km to the north (Blanton and Snow 1986). This array of materials suggests a considerable range of group movement or raw material exchange was occurring. If the area functioned as an aggregation locus for early populations, its presence in a non-Fall Line setting is interesting, and suggests that such sites may occur at any significant environmental interface, whether it be between the Coastal Plain and Piedmont, or the Atlantic and Gulf watersheds (Blanton and Snow 1986; Anderson and Hanson 1988:270-271).

ISOLATED PALEOINDIAN ARTIFACTS FOUND DURING ARCHAEOLOGICAL PROJECTS

The recovery of isolated or small numbers of PaleoIndian artifacts is typically noted when such remains are found during professional archaeological investigations, and where the collections have been formally curated the analysis of these artifacts should be fairly straightforward. Marvin Smith (1978:40), for example, reported the discovery of a Dalton point (SGA #175) during survey and testing activity at site 9Ls44A in Laurens County. Two fluted points were reported by Ledbetter (1984:57-58) from sites in Stewart County during a transmission line survey (SGA # 204, 205). One of the points was found on an upland ridge crest while the other was at the edge of the Chattahoochee floodplain. Two Dalton points of Ridge and Valley chert were reported by White (1982) from a site in Banks County. One Edgefield scraper was also found, together with several formal unifacial tools. A single fluted point has been reported from the Lawson Field site on Fort Benning in Chattahoochee County, although no data on it is currently available (SGA #208) (Schnell, cited in Thomas et al. 1983:10). During a survey in Madison County, Price and Wood (1988:68) found Dalton points at four sites located on ridge slopes around two springs. Quartz was available locally, and the presence of a permanent water supply was thought to have prompted the early occupations. Sometimes PaleoIndian artifacts occur in contexts that indicate their relocation by later inhabitants. Patrick Garrow (personal communication 1989), for example, reports that a single Quad-like point was found during the excavations at the Mississippian period King site in northwest Georgia. At the Clyde Gulley site in northeast Georgia, as previously noted, Tippitt and Marquardt (1984) found a weathered Clovis-like point in Mississippian midden deposits (SGA # 209). The two examples indicate that artifact collecting is not solely a modern occurrence, and that care must be taken in interpreting the discovery of PaleoIndian artifacts on multicomponent sites.

CONCLUSIONS

Finds of PaleoIndian artifacts are infrequently reported in the Georgia archaeological literature, supporting the inference that artifacts of this period are comparatively rare. Illustrations and measurements are sometimes published, although this tends to be the exception rather than the rule. All such reported artifacts will need to be located and data (i.e., attribute measurements) from them entered into the ongoing SGA PaleoIndian Artifact Recording Project. Component identifications forthcoming from such analyses should be used to update the relevant state site forms.

As has been demonstrated by this review, evidence for PaleoIndian occupations in the Georgia area has come from both surface and excavation context. While it is evident that work on the PaleoIndian period is just in its infancy, a great deal of data has already been collected, and much has been learned. Unfortunately, while substantial assemblages have been found in surface context, the excavation data recovered to date have, for the most part, consisted of small numbers of artifacts with few associated diagnostic projectile points. Exceptional sites such as Taylor Hill or Muckafoonee Creek remain just that, unique and important cultural resources. The work that has been conducted to date also indicates, however, that important PaleoIndian sites remain to be discovered in Georgia.

III.

THE GEORGIA PALEOINDIAN ARCHAEOLOGICAL RECORD

INTRODUCTION

Early and Middle PaleoIndian fluted points have been found in surface context throughout the Eastern Woodlands. Since the late 1940s surveys of PaleoIndian artifacts, popularly called 'fluted point' surveys, have been initiated in almost every state and province in eastern North America. This effort has been possible thanks to a strong spirit of cooperation between amateur and professional archaeologists. Many of the best examples of PaleoIndian technology in Eastern North America, in fact, occur in private collections. In mid-1986 the authors of this volume began a PaleoIndian artifact survey in Georgia, something that, surprisingly, had not been initiated previously (Anderson et al. 1986a, 1986b). Prior to this effort fewer than a dozen fluted points had been formally recorded in the state site files. In the massive compilation of fluted points from 17 states and two Canadian provinces in Eastern North America conducted by the Eastern States Archaeological Federation (Brennan 1982), for example, only ten of 5820 PaleoIndian projectile points reported came from Georgia (Hally 1982). Only Rhode Island of all the states along the Eastern seaboard reported fewer PaleoIndian points. The low count from Georgia was the most conspicuous gap in the survey, something underscored by the high point totals from adjoining states, such as from Alabama (N=1654), Florida (N=1392), North Carolina (N=329), and South Carolina (N=95). The PaleoIndian Artifact Recording Project was started to correct this situation, with the support and encouragement of avocational and professional members of the Society for Georgia Archaeology. In this chapter the evidence collected to date is presented, and placed in a regional context.

THE IMPORTANCE OF PALEOINDIAN ARTIFACT SURVEYS

Fluted and other lanceolate projectile points are currently the only artifacts known to be unambiguous diagnostic indicators of PaleoIndian occupations in Eastern North America. Information about their occurrence is thus the only way, short of excavation and the use of absolute dating procedures, by which archaeologists can recognize these early occupations. Their locations indicate where these people lived, what spots on the landscape were important to them, and how they made use of these areas. Study of point styles and raw materials, furthermore, can provide clues as to how far these people may have traveled over the course of the year, and whether or not they were linked or related to groups in other areas. Finally, recording these artifacts provides the basic data essential to test archaeological theories about the nature of PaleoIndian occupations in a given area and, perhaps in the process, dispel some misconceptions. When the SGA PaleoIndian Artifact Recording Project was initiated, for example, the authors were repeatedly told that there was little evidence for PaleoIndian occupation in the state. As the results to date indicate, this is not the case at all.

Examples of PaleoIndian projectile point recording projects in nearby Southeastern states that complement the work presented here include studies in North Carolina (Perkinson 1971, 1973; Peck 1988), South Carolina (Michie 1977; Charles 1983), and Virginia (McCary 1984). These projects are ongoing, not static. The oldest continuous survey in the Southeast, serving as the model for the region, is from Virginia, and was initiated by Dr. Ben McCary in the late 1940s (McCary 1984, 1986, 1988). Over 800 fluted points have been recorded by the Virginia survey, and all of the data through 1984 have been presented in a summary volume (McCary 1984). The Virginia data, without question, form the best PaleoIndian statewide fluted point sample from anywhere in the United States. Furthermore, the work by McCary, an avocational archaeologist, highlights the positive and lasting contributions that can come from interaction between avocational and professional archaeologists (Hranicky 1989; Wittkofski and Reinhart 1989).

Work in other nearby states has also been proceeding rapidly. Since 1980, for example, data on over 200 new PaleoIndian points have been reported in South Carolina. The total number of points now known for that state stands at over 300 (Charles 1986:16). In Mississippi, data on almost 600 Early, Middle, and Late PaleoIndian points have been recorded since 1968 (McGahey 1987:1). Before turning to Georgia, where over 100 Early and Middle PaleoIndian points have been recorded since 1986, a review of the regional PaleoIndian archaeological record is in order, to provide a proper interpretive framework. Comprehensive interpretive reviews of the regional literature have been presented by Mason (1962), Meltzer (1988), Goodyear (1989), and Anderson (1990), and much of what follows is drawn from the latter paper.

Implications of PaleoIndian Distributional Data

Traditionally, PaleoIndian artifact distributions from the Eastern Woodlands, particularly the widespread occurrence of isolated projectile points, have been used to suggest that PaleoIndian occupations in most areas were fairly uncomplicated and of short duration. Regional settlement, in this view, was characterized by small groups of highly mobile foragers and part-time big game hunters who, over the course of their wanderings, visited most portions of the region. Movement was so frequent, and over such a great area, that only rarely, and typically at quarries, were large quantities of artifactual debris left behind. A general absence of sites has been inferred, a pattern so different from that observed in the Great Plains and in the Northeast, where dense kill or habitation loci have been reported, that some investigators have suggested that Southeastern PaleoIndian populations were highly mobile, generalized foragers only rarely "participating in the highly structured spatial behavior that produces sites" (Meltzer 1984:354; see also Meltzer 1988:14). The low incidence of PaleoIndian sites across much of the region has been variously attributed to an uneven occurrence of high quality cryptocrystalline resources (Gardner 1983; Goodyear et al. 1985, 1989); survey bias favoring open as opposed to wooded areas (Lepper 1983); settlement systems favoring the resources of since-submerged portions of the Coastal Plain (Goodyear et al. 1983); and the small size of many Southeastern river basins, particularly those removed from the major arteries extending well into the midcontinent, such as the Tennessee, Cumberland, and Ohio River Valleys (Williams and Stoltman 1965).

At present over 9000 fluted and nonfluted Early and Middle PaleoIndian projectile points have been identified from the Eastern Woodlands, including over 5000 from the Southeast, defined here as the region south of the Arkansas-Missouri line and the Ohio River and east of Oklahoma and Texas (Table 1). Using the county-level provenience data available from most of the fluted point surveys referenced in Table 1, it is possible to plot the occurrence of these points across the region (Figure 12) (see Anderson 1990 for a discussion of the sources of bias in this illustration). These data, it should be emphasized, represent artifact totals, that is, points from both recognizable sites as well as isolated finds. It should be noted that in some cases, notably in Florida, most recorded PaleoIndian points are unfluted Suwannees or Simpsons (e.g., Purdy 1983; Dunbar et al. 1988:451). Thus, the distribution of PaleoIndian projectile points presented in Figure 12 summarizes our knowledge perhaps as well as possible at this time, although some refinement is inevitable as more primary data become available.

Province or State	Number of Fluted Points		References
Alabama*	1654	SE	Futato 1982:30
Arkansas	102	SE	Morse 1989: pers. comm.
Connecticut*	17		Moeller 1982:41
Delaware*	55		Griffith 1982:37
Florida**	1296	SE	Dunbar & Waller 1983:19; Dunbar 1989: pers. comm.
Georgia	126	SE	Anderson et al. 1986, 1990a, 1990b
Illinois	150		Koldehoff 1983; 1989: pers. comm., Winters 1962
Indiana	195		Dorwin 1966; Tankersley 1989: pers. comm.
Kentucky	276	SE	Rolingson 1964; Tankersley 1989: pers. comm.
Louisiana*	49	SE	Meltzer 1988:12; Rivet 1989: pers. comm.
Maine*	100		Sanger 1982:43-45
Maryland*	100		Brennan 1982:35; Bastian 1989: pers. comm.
Massachusetts*	420		Grimes & Bradey 1982:41
Michigan	124		Lepper 1986; Shott 1986b; Wright 1989: pers. comm.
Missouri*	280		Chapman 1975:67
Mississippi	68	SE	McGahey 1987:11
New Hampshire*	10		Sargent 1982:43
New Jersey*	280		Kraft et al. 1982:37-38
New York*	300		Wellman 1982:39-40
North Carolina*	409	SE	Peck 1988:5
Nova Scotia*	140		Brennan 1982:45
Ohio	893		Meltzer 1988:12; Seeman & Prufer 1982; Lepper 1985
Ontario*	306		Storck 1983
Pennsylvania*	262		Kent 1982:38-39
Rhode Island*	4		Turnbaugh 1982:41-42
South Carolina*	341	SE	Michie 1977; Charles 1986
Tennessee*	358	SE	Broster 1989: pers. comm.
Vermont*	32		Basa 1982:42-43
Virginia*	824	SE	McCary 1988
Washington, D.C.	3		Meltzer 1988:12
West Virginia*	79		Lepper 1983:282; Gardner 1987
Total	9253		
(Southeast)	5503		59.47% of total

* Totals include at least some post-Early Paleoindian diagnostics.
** Total includes 537 for which type and county data was available.

Table 1. PaleoIndian Projectile Points in Eastern North America.

It is immediately evident from this mapping exercise that low numbers of PaleoIndian points are reported in parts of the region, thus supporting observations that these points frequently occur as isolated finds or in low numbers on individual sites (Meltzer 1988:11-14). More striking, however, is the fact that pronounced concentrations of PaleoIndian points occur in some areas while other areas are characterized by an equally pronounced complete or near-complete absence of these forms. Although fluted points are assumed to occur widely over the region, the distributional data demonstrate that these artifacts actually exhibit a highly varied distribution, quite common in some areas and quite rare in other areas. These concentrations and voids are of such a scale as to preclude suggestions that they are entirely or largely due to cropping or collecting practices (e.g., Lepper 1983, 1985; Seeman and Prufer 1984). While these factors are admittedly operating, the presence of artifact voids in areas that are both heavily farmed and collected suggests prehistoric rather than contemporary phenomena are represented.

Major portions of the Southeastern landscape appear to have been unoccupied, or were only minimally visited by Early PaleoIndian populations. Virtually the entire Gulf Coastal Plain, portions of the Atlantic Coastal Plain in Georgia and North Carolina, and much of peninsular

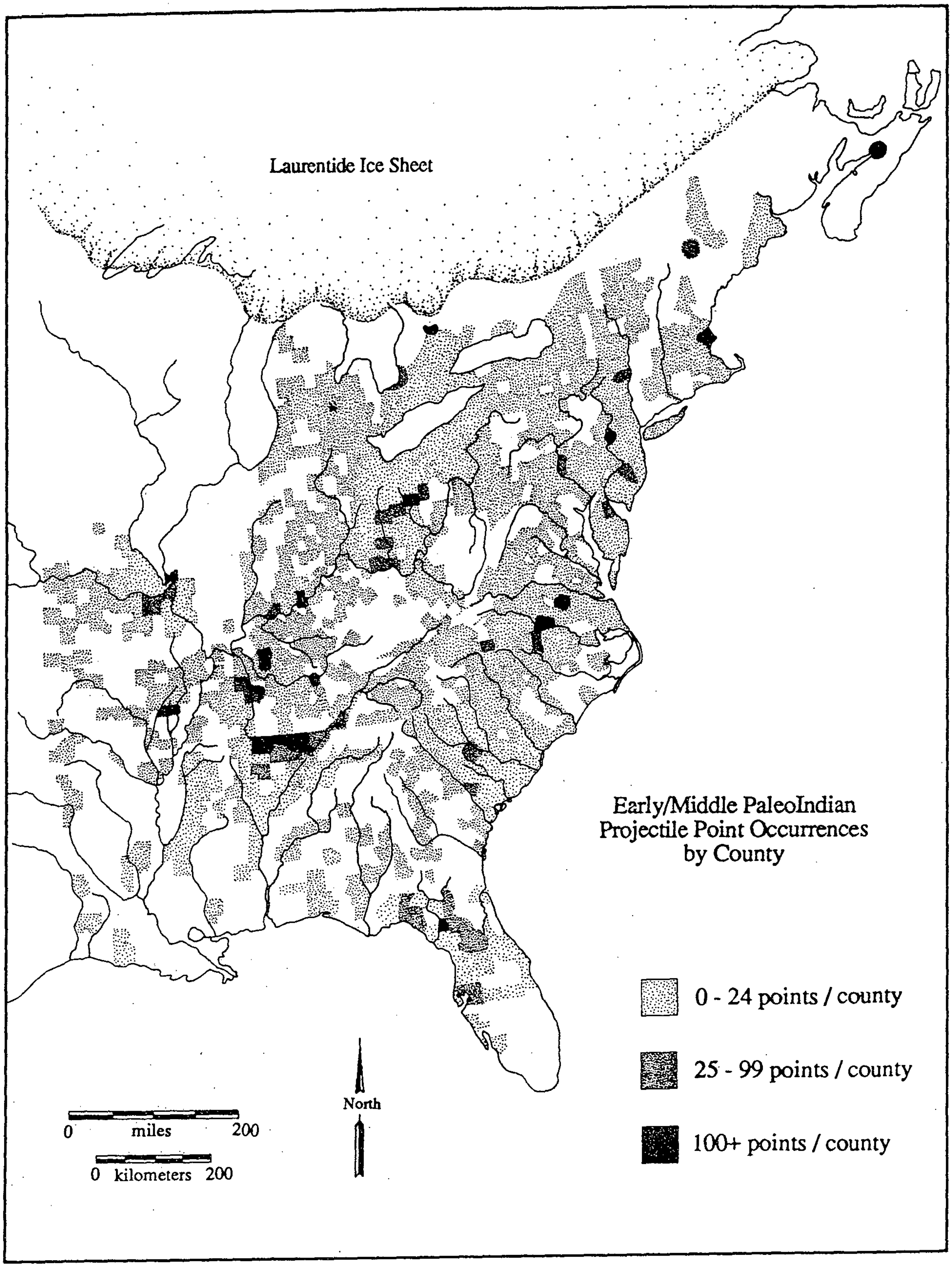


Figure 12. Early and Middle PaleoIndian Projectile Point Distributions in Eastern North America.

Florida, in fact, do not appear to have been settled until much later, in the Late PaleoIndian or Early Archaic periods. In addition to these unoccupied zones, pronounced concentrations of Early PaleoIndian artifacts and sites are also evident in some parts of the Eastern Woodlands that contrast markedly with the general pattern of low site visibility. Major concentrations of Early PaleoIndian diagnostics are reported in the central Tennessee, Cumberland, and Ohio River Valleys and along portions of the Atlantic Seaboard, notably in southern Virginia and north-central North Carolina, northern New Jersey, and eastern Pennsylvania. These areas, it is suggested elsewhere, were loci of initial PaleoIndian colonization, staging areas from which settlement of the larger region proceeded (Anderson 1990).

In addition to fluted point surveys, which focus on points dating to what are here referred to as the Early and Middle PaleoIndian periods, considerable attention has been directed to recording later PaleoIndian diagnostics in the Southeast in recent years, particularly Middle PaleoIndian nonfluted lanceolates such as the Suwannee and Simpson types, and Late PaleoIndian Daltons. These later non-fluted forms exhibit considerable stylistic variability and many have restricted distributions, sometimes to within specific drainages or physiographic provinces (Figure 13). This has been interpreted as evidence for increasing regionalization or isolation of groups, as population levels rose, mobility decreased, and pan-regional interaction declined. Examples of localized, presumed later PaleoIndian variants include the Cumberland tradition centered on Kentucky and Tennessee, the Suwannee tradition of Florida and South Georgia, and the various Dalton variants recognized over the region (Dunbar and Waller 1983; Ensor 1987; Goodyear et al. 1983; Meltzer 1984; 1988:43). The chronological and distributional ranges for all Southeastern PaleoIndian forms, it must be stressed, need to be determined with considerably better precision than exists at present.

One result of the increasing attention to post-fluted PaleoIndian diagnostics that has occurred in recent years is the recognition that particularly large numbers of Dalton points occur across the lower Southeast (Anderson et al. 1986a, 1987; Ensor 1987; Goodyear 1982; Morse and Morse 1983). In some areas, such as in south Georgia and in the Carolina Piedmont, the incidence of both sites and diagnostics is quite high and, when better documented, may warrant comparison with Dalton occupations in the central Mississippi Alluvial Valley, where hundreds of sites have been recorded (Goodyear 1974, 1982; Morse 1971, 1973, 1975a, 1975b, 1977; Morse and Morse 1983; Redfield 1971). As documented in the current study, many of the Georgia Dalton points are fluted or, more properly, basally thinned, arguing for a direct, possibly local transition from earlier fluted point assemblages. Interestingly, although Dalton points are common in south Georgia, they are extremely rare in Florida, and it is possible that in Florida Suwannee points, presumed Middle PaleoIndian forms, actually extend in time to to ca. 10,200 B.P. or later, making them contemporaneous with Dalton occupations elsewhere in the region (Brooks and Brooks n.d.; James S. Dunbar: personal communication 1989). A similar contemporaneity of Southeastern Dalton assemblages with the Northeastern fluted point tradition recognized at sites such as Bull Brook I and II, Debert, and Vail has been inferred elsewhere (Meltzer 1988:20).

Dalton points in the Southeast have traditionally been assigned a transitional placement, between PaleoIndian and Early Archaic, because these populations lived in a time of major environmental change, when the late Pleistocene forests and fauna were being replaced by modern species (e.g., Morse 1975a, Goodyear 1982). The appearance of the Dalton point form is thus thought to signal a major change in adaptive strategy throughout the region, away from the hunting of a range of large and small Pleistocene fauna, and towards the utilization of smaller, Holocene species. The Dalton point and accompanying tool kit retain many characteristics of earlier assemblages, although the presence of serrations and evidence for resharpening to exhaustion suggests use of these bifaces in a greater range of cutting tasks compared with earlier PaleoIndian points (Ahler 1971; Goodyear 1974, 1982). This seemingly increased emphasis on the use of

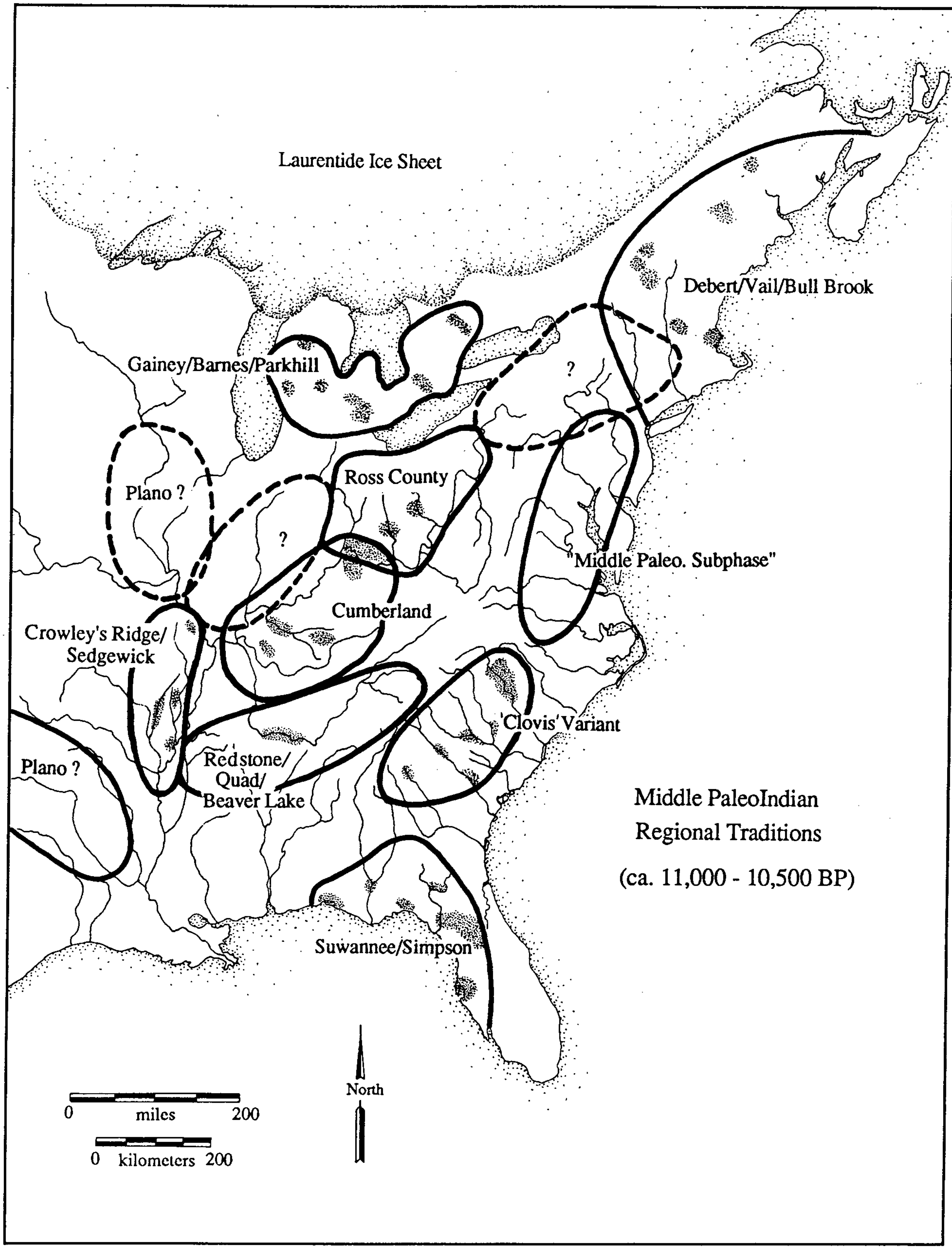


Figure 13. Middle PaleoIndian Regional Traditions in Eastern North America

Dalton points as multipurpose tools in Late PaleoIndian times, if accurate, may be related to the emergence of generalist, foraging adaptations over the region, as some investigators have suggested (Claggett and Cable 1982; Meltzer 1984; Meltzer and Smith 1986).

Implications of Excavation Data

To date, over fifty major Early and Middle PaleoIndian assemblages have been excavated and reported from the Eastern United States and Canada, mostly from the Northeast and upper Midwest (Meltzer 1988:8-10) (Figure 14). Only a few of these sites, however, occur in the Southeastern United States, a pattern that has frustrated and challenged researchers working within the region and intrigued those fortunate enough to work in more productive areas (e.g., Goodyear et al. 1989; MacDonald 1983:106). Early and Middle PaleoIndian sites from the Southeast yielding appreciable numbers of fluted points and other artifacts tend to be associated with lithic raw material sources, and include sites such as Pine Tree, Quad, Thunderbird, Wells Creek Crater, and Williamson (Cambron 1956; Dragoo 1973; Gardner 1974; McCary 1951; Soday 1954). While large numbers of fluted points have been found across the region, sites producing dense artifact assemblages, or more than ca. 10-20 PaleoIndian points, are extremely rare (Anderson 1990). Furthermore, with a few exceptions, such as at Thunderbird, the vast majority of the materials from even large Southeastern sites comes from surface context. Assemblages recovered in excavation context predating 10,500 B.P. are thus uncommon in the Southeast. Locations where early materials occur in great quantity and undisturbed context, such as at the Taylor Hill site (9Ri89) near Augusta, Georgia, are thus both unusual and of paramount scientific importance.

Meltzer has suggested that many Eastern PaleoIndian sites are overlooked because they lack the well preserved, massive quantities of bone typical of PaleoIndian kill sites on the Plains (Meltzer 1988:38). The PaleoIndian archaeological record in the Southeast, in this view, may be more extensive than has sometimes been implied. It is possible that sites in the region are indeed masked by factors of preservation and PaleoIndian land use. First, the vast majority of Southeastern PaleoIndian kill sites in all probability occurred in depositional environments poorly suited to the preservation of faunal remains. The high precipitation, extensive and stable vegetation cover, and low overall relief characteristic of much of the region, particularly in the Atlantic and Gulf Coastal Plains, precluded opportunities for rapid deposition and hence preservation. Second, many of the locations in the Southeast that have yielded PaleoIndian points have also produced appreciable and in some cases tremendous quantities of post-PaleoIndian diagnostics and other debris. Sorting PaleoIndian from post-PaleoIndian materials at such sites is difficult or impossible, given the similarities in tool kit and raw material use evident within PaleoIndian and subsequent Early Archaic occupations.

The Southeastern Early and Middle PaleoIndian archaeological record that has been most typically found across much of the region — isolated or small numbers of fluted points in contexts difficult or impossible to separate from subsequent Late PaleoIndian or Early Archaic occupations — may thus represent assemblages not all that dissimilar from those found elsewhere on the continent. It is likely that if only one in 50 of the Southeastern sites yielding fluted points possessed the extinct faunal remains characteristic of many Western sites, or more unambiguously identifiable tools characteristic of Northeastern sites, that a much more extensive occupation would be inferred.

PALEOINDIAN RESEARCH IN GEORGIA: THE CURRENT SITUATION

As documented in Chapter II, much of the PaleoIndian archaeological record accumulated to date in Georgia comes from isolated surface finds, or from small assemblages in contexts ranging

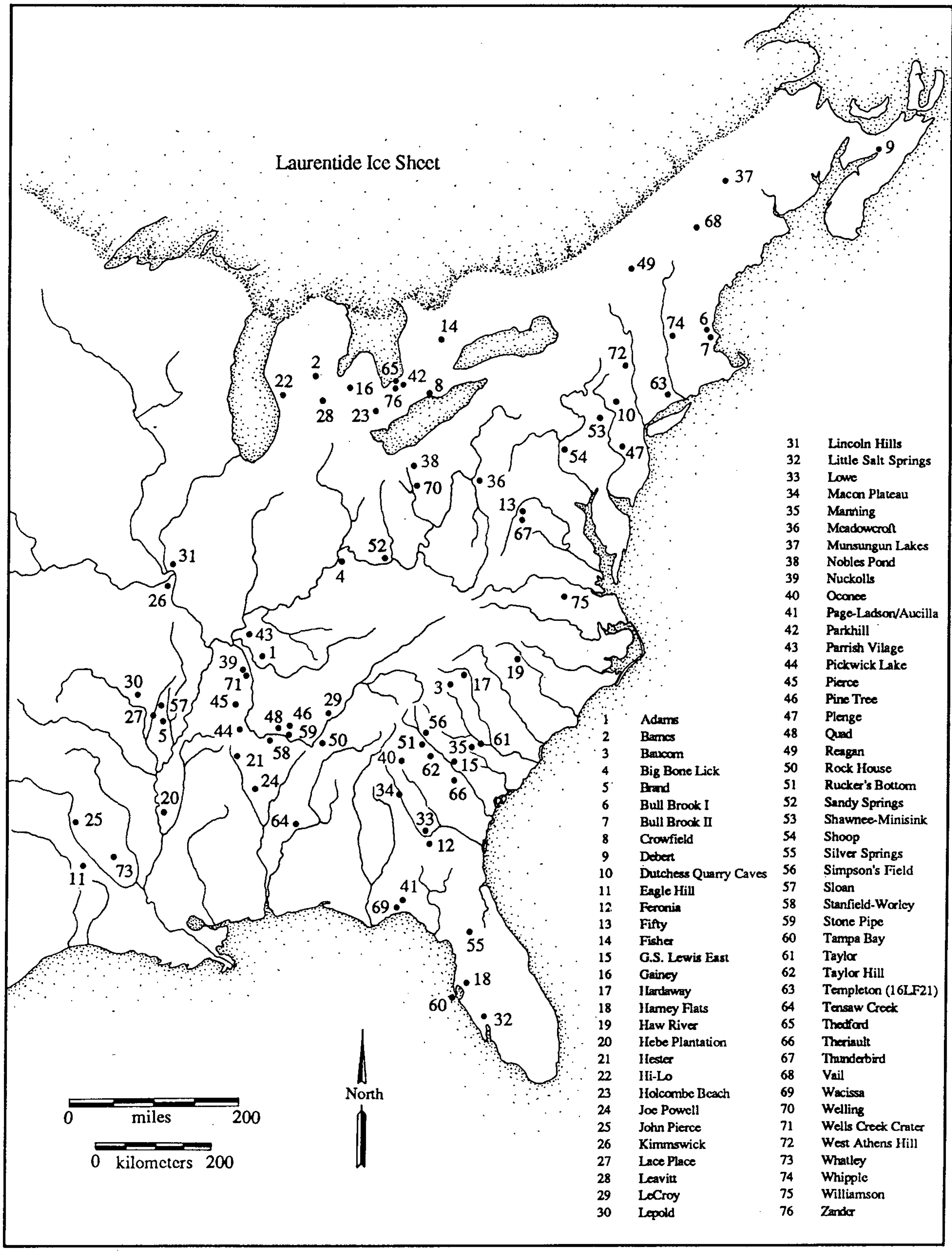


Figure 14. Major PaleoIndian Assemblages from Eastern North America.

from good to poor. Only one fluted point was found at Macon, for example, in spite of a massive excavation effort directed to the recovery of these early forms (Kelly 1938; Waring 1968a:237). The Macon Plateau investigations were thus the first of many documenting the scarcity of fluted points on sites of this time level in many areas of the lower Southeast. Early PaleoIndian assemblages yielding more than one diagnostic, as noted previously, have only rarely been found in secure context anywhere in the region.

In the Savannah River Basin of Georgia and South Carolina, for example, where some 50 fluted points are currently known from surface contexts (Anderson 1988, 1990; Brooks and Brooks n.d.; Charles 1986; herein), only four have been found in secure excavation context, one each at Rucker's Bottom and Simpson's Field in the central Piedmont, one at Taylor Hill on the Fall Line, and one at the Theriault chert quarry along Brier Creek in the central Coastal Plain (Anderson and Schuldenrein 1985; Brockington 1971; Elliott and Doyon 1981; Wood et al. 1986). The single fluted point found at the Theriault chert quarry came from an excavation block encompassing 142 square meters, while the fluted points at Taylor Hill, Simpson's Field, and Rucker's Bottom came from excavations encompassing 48, 300, and 160 square meters, respectively. Only at the Taylor Hill site, which produced hundreds of associated tools, did there appear to be a major PaleoIndian assemblage. To overcome the problems created by shallow deposits and multicomponency, recent research along the Savannah River has been directed toward geoarchaeologically defining areas capable of yielding either deeply stratified deposits, isolated deposits (i.e., removed from potential reoccupation by channel migration), or both (Goodyear and Charles 1984; Goodyear et al. 1985; Brooks and Brooks n.d.).

The Savannah River case does not appear to be unique. In spite of the recent cultural resource management (CRM)-mandated research explosion, areally extensive investigations at PaleoIndian sites have been extremely rare in the Southeast. This appears to be primarily because the kind of assemblages necessary to justify the great expense of such fieldwork (i.e., extensive or well stratified) have only rarely been found during CRM-funded survey and testing efforts. It is questionable, in fact, whether most CRM efforts undertaken in the Eastern Woodlands, including those in the Georgia area, are adequate to even locate the deposits dating to this period, particularly if they are low density or deeply buried (Haynes 1983:26). Comparatively minimal PaleoIndian material has been found in excavation context, even in major reservoir and construction projects in the region (i.e., Anderson and Joseph 1988; Chapman 1978; 1985; Claggett and Cable 1982; Porter and Bareis 1984). The excavations at the Late PaleoIndian Suwannee and Early Archaic Bolen components at the Harney Flats site in west-central Florida, encompassing ca. 900 square meters, remains the single largest PaleoIndian excavation conducted to date under the auspices of CRM legislation (Daniel and Wisenbaker 1987). Much of our knowledge about these early periods thus continues to derive from surface finds, largely by amateur collectors.

This is not to say that no significant Early or Middle PaleoIndian sites have been excavated in the Southeast, only that none have been excavated in Georgia. Excavation projects documenting PaleoIndian assemblages thought to predate 10,500 B.P include work at the Kimmswick mastodon kill in Missouri (Graham et al. 1981), the Thunderbird locality in Virginia (Gardner 1974), Big Bone Lick and Parrish Village in Kentucky (Webb 1951; Tankersley 1985, 1987), and at a series of underwater sites in Florida such as at Little Salt Springs, Page/Ladson, Silver Springs, Wacissa River, and in the Tampa Bay area (Clausen et al. 1979; Dunbar et al. 1988; Goodyear et al. 1983; Hoffman 1983; Rayl 1974; Webb et al. 1984) (Figure 14). The extensive and important underwater investigations at the Little Salt Springs, Page/Ladson, and Wacissa River sites, in particular, have demonstrated an association of early human populations with extinct Pleistocene fauna, and have led to the recovery of perishable materials that would have been lost on terrestrial sites. The Taylor Hill site near Augusta appears to have assemblages present that, if examined in detail, would make it comparable in importance to these early sites.

Excavations documenting extensive assemblages assumed to post-date 10,500 B.P., to the Late PaleoIndian era, are more common in the lower Southeast. The Suwannee/Bolen assemblages at the Harney Flats site in Florida may fall into this time range, as apparently do the Bolen materials from Page-Ladson, suggesting an early, pre-10,000 B.P. transition to side notching in the Florida area (Dunbar et al. 1988:450). Major Dalton or Dalton-variant assemblages have been investigated in a number of states (Goodyear 1974; Ensor 1987; Morse 1975a, 1975b), including at the Hardaway and Baucom sites in North Carolina (Coe 1964; Peck and Paynter 1984) and at the Taylor site in South Carolina (Michie 1971). As documented in Chapter II, no major Dalton assemblages have been excavated in Georgia, although minor assemblages have been reported from the Lowe site in the south-central part of the state (Crook 1987:54), at Rucker's Bottom in the northeast Georgia Piedmont (Anderson and Schuldenrein 1985:298), and at several locations along the Oconee River of Piedmont Georgia (O'Steen et al. 1986). In addition to these finds, more limited testing and surface collection has occurred at hundreds of locations across the state during CRM-funded survey work, resulting in the discovery of many Late PaleoIndian artifacts, and expanding the data base available for analysis.

Virtually the only attempt to examine PaleoIndian settlement data in Georgia and the Carolinas has been by O'Steen and her colleagues using materials from the upper Oconee River valley in Georgia (O'Steen et al. 1986; see Chapter II). Ninety-one PaleoIndian sites yielding 95 components were identified in the Oconee River survey sample, most predominantly short-term or limited activity sites, with a few quarry locations and larger possible residential sites also located. Sites were grouped by four types of landform, specifically levee, terrace, uplands edge, and uplands. A gradual expansion of occupation through time and into new areas was indicated. Early PaleoIndian sites were located primarily in the floodplain, with the remainder of the sites at the uplands edge. Middle PaleoIndian sites occurred frequently in the floodplain, but there was also evidence for exploitation of the upland or interriverine areas. Dalton sites occurred in all zones, with a majority at the uplands edge or in the uplands. The data suggested that by Late PaleoIndian times populations were utilizing upland areas more frequently. A concentration of large sites at shoals, possible game crossing or fording areas, was evident. The use of local as opposed to extralocal raw material increased dramatically over time. Early PaleoIndian diagnostics were predominantly of extralocal materials while most Middle and Late PaleoIndian points were made of locally available materials (O'Steen et al. 1986). Similar patterns were observed in the Russell Reservoir collections from the upper Savannah River (Anderson and Joseph 1988:25).

The available projectile point distributional data from the general region, in conjunction with the analyses from the Wallace Reservoir, suggest that the Coastal Plain and Ridge and Valley provinces were more heavily utilized than the Piedmont during the Early and Middle PaleoIndian period, at least in the Georgia area. Piedmont Georgia PaleoIndian points tend to be small and extensively resharpened; broken points have often been modified and used as scrapers, wedges, and gravers; and broken blades have often been fashioned into new, but smaller, bifaces (O'Steen et al. 1986). The extensive reworking of these local assemblages suggests, possibly, that the area was on the fringes of settlement networks centered elsewhere, and that these tools were discarded by groups operating at a considerable distance from their favored stone sources. Intensive utilization of the Georgia Piedmont does not appear to occur until the latter portion of the PaleoIndian period or the succeeding Early Archaic.

RESULTS OF THE SGA PALEOINDIAN ARTIFACT RECORDING PROJECT

Introduction

The initial request for information about PaleoIndian artifacts in Georgia was published in the June 1986 issue of *The Profile*, the newsletter of the Society for Georgia Archaeology, Inc.

(Anderson et al. 1986b). The goals of the project were, quite simply, to begin accumulating information about PaleoIndian projectile points in the state. While initially directed to fluted and non-fluted lanceolate forms, the survey expanded almost immediately to include PaleoIndian points of all types, including Clovis, Suwannee, Simpson, Cumberland, Quad, Dalton, and other forms. Complete, broken, and reworked points were also included in the study.

A Data Sheet was published to record information about individual artifacts, with places for provenience data, metric and non-metric attributes, remarks, and a drawing of the artifact (Figure 15). A key detailing how the metric and non-metric attributes were to be recorded was included, and is reproduced here as Figure 16. The general format of the Data Sheet and the particular attributes chosen were based on a review of the regional PaleoIndian literature. Attributes were selected to complement recording projects underway in other parts of Eastern North America, in the hope that the Georgia data would be useful to researchers over a broad area. The recording form adopted in Georgia is similar to one that has been used successfully in South Carolina for over a decade (Michie 1977; Charles 1983, 1986), and encompasses data categories present in most other published surveys (e.g., McCary 1984; Perkinson 1971, 1973).

Avocational and professional archaeologists were urged to submit completed forms to one of the three archaeologists initiating the survey, or to bring artifacts to the semi-annual SGA meetings where they could be recorded by members. The response to the project was positive and overwhelming. Within three months of initiating the project the authors received information on 46 fluted Clovis or Clovis Variants, 7 unfluted PaleoIndian Lanceolates, and 30 Dalton points from 16 counties (Anderson et al. 1986c). By the end of the first year of the project, data on close to 90 fluted and lanceolate points had been recorded, information that was summarized at the 50th anniversary celebration at Ocmulgee National Monument, and in the journal *Current Research in the Pleistocene* (Anderson et al. 1986a, 1987). This has led to an interest in the Georgia data by PaleoIndian researchers working around the country.

Primary Attribute Data

As of mid-1989 data on 216 PaleoIndian projectile points has been recorded from Georgia. These include 73 Clovis, 13 possible Clovis, 14 Clovis Variants, 1 Fluted Lanceolate (a preform of indeterminate type), 14 Simpsons, 10 Suwannees, 1 Cumberland, 12 Unfluted lanceolates of indeterminate type, 1 Llano-like, 1 Beaver Lake, 2 Quads, 49 'Fluted' Daltons, and 25 Unfluted Daltons. Sorting criteria used to identify these forms was presented in Chapter I. Primary attribute data on each of these specimens is listed in Table 2. Illustrations of some of the points recorded during the survey, by type, are given in Figures 17 - 24.

Table 2 provides complete measurement data for 162 points, and partial data for another 54 points. Data about artifacts for which only partial information exists come, for the most part, from references to PaleoIndian artifacts in published or unpublished reports, or work in progress. Some of these artifacts are in institutions in other states and a few are in public or private collections in Georgia. While these artifacts have been entered into the Georgia survey, the authors have not been able to fully document them to date. Their inclusion here, albeit with incomplete data, is a matter of practicality. Due to the paucity of published information on PaleoIndian archaeological remains from Georgia, and the likelihood that it will be a number of years before additional information is published in monograph format, the authors have chosen this opportunity to organize and present as much of the primary data as they could find from the state. One of the goals of the ongoing project, it should be emphasized, is the eventual complete documentation of these specimens.

FLUTED AND LANCEOLATE POINT DATA SHEET

Owner Name____________________Type Name________________Specimen No._______
Location of Site of Find____________________________________Negative No._______

METRIC ATTRIBUTES (mm)		NON-METRIC ATTRIBUTES	
Maximum Length	________	Raw Material	____________
Estimated Complete Length	________	Color	____________
Maximum Width	________	Patination	____________
Basal Width	________	Edge Shape	____________
Maximum Thickness	________	Edge Retouch	____________
Depth of Basal Concavity	________	Facial Retouch	____________
Length of Fluting: Obverse	________	Basal Grinding	____________
or Basal Thinning Reverse	________	Fluting Technique	____________
Length of Edge Grinding: (L)	________		
(by side) (R)	________	Manufacturing Technique	____________
Other__________	________	Reworking	____________

Remarks:____

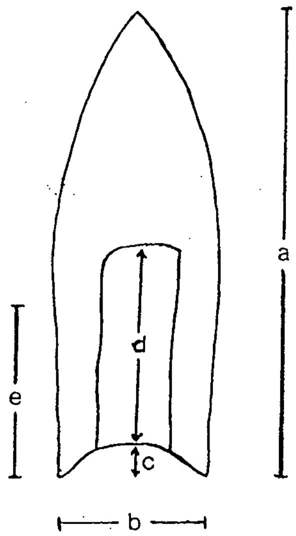
Sketch or tracing (include scale, and draw both sides):

Recorder________________________ Date____________

(Attach additional information, sketches, site maps, etc. as appropriate.)

Figure 15. Georgia PaleoIndian Recording Project: Fluted and Lanceolate Point Data Sheet.

GEORGIA PALEOINDIAN RECORDATION PROJECT
ATTRIBUTE KEY



METRIC ATTRIBUTES

a. Maximum Length (mm)

b. Basal Width (mm)

c. Depth of Basal Concavity (mm)

d. Length of Fluting or Basal Thinning (mm)

e. Length of Edge Grinding (mm)

Record Maximum Width and Maximum Thickness at greatest point (mm).

If broken, estimate probable intact length, if possible (mm).

NON-METRIC ATTRIBUTES

Raw Material: Describe as best as possible, naming the probable source area or quarry if this is known.

Color: General color; give Munsell Color Chart values if at all possible.

Patination: Note presence or absence of patination/weathering layer.

Edge Shape: Describe shape of lateral margins (i.e., straight, excurvate, etc).

Edge Retouch: Describe treatment of margins of the biface (i.e., fine pressure retouch, crude, etc).

Facial Retouch: Describe flaking of interior facial area of biface (i.e., broad percussion scars, fine pressure retouch, etc).

Basal Grinding: Note presence or absence of basal grinding.

Fluting Technique: Note special manufacturing characteristics if evident.

Reworking: Note pressence of evidence for reworking or reuse (i.e., burinated, re-sharpened, reworked into a scraper, etc).

Remarks: Note any other pertinant information about the artifact or its discovery.

Figure 16. Attribute Key to Accompany the Georgia Fluted and Lanceolate Point Data Sheet.

	METRIC ATTRIBUTES (mm)										NON-METRIC ATTRIBUTES	
Point Number	Maximum Length	Estimated Complete Length	Maximum Width	Basal Width	Maximum Thickness	Depth of Basal Concavity	Length of Fluting Obverse	Length of Fluting Reverse	Length of Edge Grinding Left	Length of Edge Grinding Right	Raw Material	Color
1	91*	115	30	25	n/a	5	40	37	n/a	n/a	Coastal Plain chert	white
2	118.1	118.1	30.4	29.3*	7.8	11.2	47.2	30.4	39.2*	52.4	Coastal Plain chert	yellow-tan
3	49	49	19	18	6	5	24	19	20	21	Black chert	black
4	51	51	24	22	7	6	23	19	14	11	Coastal Plain chert	yellow-tan
5	69	69	29	29	10	3.5	26	0	30	24	Coastal Plain chert	very pale brown
6	109*	115	37	24	9	2	62	53	45	50	Coastal Plain chert	yellow/pale brown
7	54	54	25	24*	9	2	12	16	23	27	Brown (CP?) chert	brown
8	52	52	24	24	8	3	21	28	23	20	Coastal Plain chert	very pale brown
9	72	72	28	24	9	1	16	16	23	28	Coastal Plain chert	yellow/pale brown
10	63	63	28	28	10	2	16	19	15	21*	Quartz	translucent
11	63	63	31	27	8	3	10	12	20	18	Coastal Plain chert	mottled brown/yellow
12	42	42	25	22	6	2	33	21	22	23	Coastal Plain chert	very pale brown
13	50	50	31	31	8	5	18	30	15	16	Coastal Plain chert	very pale brown
14	80*	85	37	24*	8	5*	-	-	15*	21*	Coastal Plain chert	yellow/pale brown
15	51	51	29	25	7	2	29	40	22	23	Coastal Plain chert	yellow/pale brown
16	53	53	26	26	7	6	-	-	17	14	Coastal Plain chert	yellow/pale brown
17	50	50	25	25	8	3	14	12	25	22	Coastal Plain chert	yellow/pale brown
18	56	56	30	26	6	3	19	7	20	20	Red Jasper or ITA CPC	dark red/pale brown
19	44	44	22	21	5	3	-	-	15	14	Coastal Plain chert	yellow/white
20	27*	36	23	23	4	2	16	15	14	14	R&V (Knox) chert	blue/white mottles
21	18*	-	24	24	5	3	17	-	18	18	R&V (Ft. Payne) chert	black
22	28*	-	22*	25*	5	4	7	7	16	-	R&V (Ft. Payne) chert	dark blue
23	20	-	25	25	5	6	12	12	16	-	R&V (Ft. Payne/Knox)	blue
24	36	36*	29	29	8	3	-	-	12	13	Quartz	white
25	41	-	27	27	6	3	15	8	15	15	Quartz	translucent
26	59	59	21	16	7	1	14	11	16	16	Chalcedony	light blue
27	30	-	24	24	6	4	13	-	15	16	R&V (Bangor?) chert	black
28	40	40	22	22	6	3	11	34	23	26	R&V (Ft. Payne) chert	dark greenish gray
29	94	94	36	31	11	6	28	17	33	32	Coastal Plain chert	white/pale brown
30	58*	60	29*	29*	-	5	-	-	12*	6*	Coastal Plain chert	very pale brown
31	40.5	40.5	25	23.5	6.25	4	18	24	20	22	Coastal Plain chert	yellowish-white
32	82	82	29	22	n/a	3	20	n/a	21	21	Coastal Plain chert	very pale brown
33	32*	60	34	34	6	5.5	12	10	12	13	Coastal Plain chert	pale brown/gray
34	40*	75	30	30	6	5	4	7	-	-	Coastal Plain chert	pale brown/lt. orange
35	80	80	27	22	6	2	12	10	-	-	Coastal Plain chert?	black/brown
36	145	145	26	20	6	-	8	10	38	35	Coastal Plain chert?	black
37	79	79	33	33	12.5	4	-	-	23	19.6	Coastal Plain chert	white
38	53	53	24	18.5	7	3	22	3*	14	17	Coastal Plain chert	white/pale brown
39	67	67	30	27	7	3	18	26	31	32	Coastal Plain chert	white/pale brown
40	48	48	23	20.5	6.5	4.5	6	13	14	16	Coastal Plain chert	gray/yellow mottled
41	24*		30*	31	5	3	n/a	n/a	n/a	n/a	Crystal quartz	translucent
42	58	58	28	27	7	2	15	18	18	23	Silicified coral	yellow
43	58*	90	28	24	7	3	24	37	35	34	Coastal Plain chert	brown-purple-yellow
44	79	79	32	26	8	4	19	13	31	26	Coastal Plain chert	very pale brown
45	49	49	25.7	25	7.8	-	-	-	15.4	17.5	Vein quartz	white
46	24	24	27	27	7	3	-	-	10	10	Crystal quartz	translucent
47	42	42	21	21	5.5	5.6	12.8	-	12	13	Coastal Plain chert	very pale brown
48	45	45	25	25	5.5	4.2	6.9	5.7	13.9	12.6	Coastal Plain chert	very pale brown
49	47	47.5	22	22	6.6	6	10.4	13.4	10.4	11.5	Coastal Plain chert	very pale brown
50	48	48	23	23	6	2	9	9	9	9	Piedmont chert	yellow
51	28*	60	26	25	7	3	17	15	18*	18	Quartz	white
52	37*	90	37	36	5	4	-	-	36	36	Coastal Plain chert	yellow
53	27*	60	31	29	6	4	13	22	26	26	Metavolcanic	gray
54	26*	70	35	28	8	2	24	15	-	25	R&V chert	blue/gray mottled
55	48	48	28	28	5	5	18	17	16	14	Piedmont chert	yellow
56	31*	60	26	25	8	2	11	-	22	21	Quartz	white
57	24*	50	28	27	7	5	13	11	15	-	Crystal quartz	translucent
58	23*	-	-	-	6	1	23	15	23	-	Unid. chert (exotic)	light blue
59	30	30	25	25	7	5	-	-	9	9	Quartz	white
60	36*	80	28	23	8	1	27	24	30	30	Unid. chert (exotic)	tan
61	16*	-	25	25	8	3	9	9	16	16	Quartz	white
62	40	40	21	21	7	3	9	9	8	8	Orthoquartzite	tan
63	45	45	25	23	7	3	23	19	19	19	Crystal quartz	translucent
64	17*	-	23*	22	8	2	14	-	15	14	Quartz	white
65	47	47	29	29	5	5	16	12	16	16	Orthoquartzite	tan
66	47*	50	27*	23*	8	2	14	12	18	-	Orthoquartzite	tan
67	30	30	29	29	6	2	13	13	13	13	Piedmont chert	yellow
68	27*	50	-	-	8	4	9	-	21	-	Crystal quartz	translucent
69	30*	50	22	21	7	2	7	6	15	-	Crystal quartz	translucent
70	80	80	32	32	6	7	52	48	22	22	Coastal Plain chert	yellow
71	28	29	20	20	6	2	7	5	12	12	Quartz	white
72	32	32	20	20	n/a	2	14	n/a	14	14	Piedmont chert	light gray
73	66	68	28	22.6	7.1	1.6	22.2	-	-	-	Coastal Plain chert	yellow/tan
74	40*	60	25	20	4	3	12	15	17	15	Unid. chert	yellow/brown
75	44*	55	27.5	27.3	5.3	6.6	9.4	7.1	14.2	15.5	Coastal Plain chert	dark brown
76	39*	60	26	26	6	5	18	6	17	12	Coastal Plain chert	grayish white
77	44*	47	21	20	6	3	15	-	21	22	Silicified coral	white/pale brown
78	62	62	23	22	6	6	35	38	16	16	Coastal Plain chert	very pale brown

Table 2. Georgia PaleoIndian Projectile Points: Primary Data.

NON-METRIC ATTRIBUTES

Point Number	Patination	Basal Grinding	Point Type	Period	Recorder	County	Figure	Remarks and Observations
1			Clovis	EPI	ARK	Bibb	17:a	Macon Plateau (Kelly 1938)
2	moderate	yes	Clovis	EPI	PB	Burke	17:b	Theriault (Brockington 1971)
3	none noted	yes	Clovis	EPI	DGA	Elbert	17:c	Rucker's Bottom (Anderson and Schuldenrein 1985)
4			Fluted Dalton	M/LPI	DTE	Richmond		Taylor Hill (Elliott and Doyon 1981)
5	yes/light	yes	Simpson	MPI	DGA	-	21:a	Smithsonian Institution #18204-132179 ("McGlashen" on point)
6	yes/light	yes	Clovis	EPI	DGA	Columbia	18:a	Smithsonian Institution #37115-174064
7	yes/light	yes	Clovis	EPI	DGA	Columbia	18:f	Smithsonian Institution #37115-174064
8	moderate	yes/light	Clovis	EPI	DGA	Columbia	19:h	Smithsonian Institution #37115-174064
9	yes/heavy	light	Clovis	EPI	DGA	Columbia	18:h	Smithsonian Institution #37115-174064
10	none noted	heavy	Clovis	EPI	DGA	Columbia	18:i	Smithsonian Institution #37115-171684
11	yes/light	yes	Clovis	EPI	DGA	Columbia	20:o	Smithsonian Institution #38007-210120 (Big Kiokee Creek area)
12	yes/light	heavy	Clovis	EPI	DGA	Columbia	19:c	Smithsonian Institution #38007-210120 (Big Kiokee Creek area)
13	yes/heavy	yes	Fluted Dalton	M/LPI	DGA	Columbia		Smithsonian Institution #38007-210120 (Big Kiokee Creek area)
14	yes/light	yes	Simpson	MPI	DGA	Columbia	21:j	Smithsonian Institution #38007-210120 (Big Kiokee Creek area)
15	yes/light	yes	Clovis	EPI	DGA	Columbia	18:e	Smithsonian Institution #38007-210120 (Big Kiokee Creek area)
16	yes/heavy	yes	Dalton	LPI	DGA	Columbia		Smithsonian Institution #38007-210120 (Big Kiokee Creek area)
17	yes/light	yes	Clovis	EPI	DGA	Columbia	19:b	Smithsonian Institution #38007-210120 (Big Kiokee Creek area)
18	yes/light	yes	Simpson	MPI	JMH	Baker	21:d	Jack Hall collection.
19	yes/heavy	yes/light	Beaver Lake	M/LPI	JSW	Bibb	22:e	Keith Gillis collection. Unifacial workmanship (chipping on one side)
20	none noted	yes/heavy	Dalton	LPI	RJL	Cherokee		Ann Mooney collection.
21	none noted	yes/heavy	Quad?	M/LPI	RJL	Cherokee	7:t	Ann Mooney collection.
22	none noted	yes/heavy	Dalton	LPI	RJL	Cherokee		Ann Mooney collection.
23	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Cherokee		Ann Mooney collection.
24	none noted	yes/heavy	Dalton	LPI	RJL	Cherokee	7:y	Ann Mooney collection.
25	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Cherokee	7:x	Ann Mooney collection.
26	none noted	yes	Clovis	EPI	RJL	Cherokee	7:o	Ann Mooney collection.
27	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Cherokee	7:r	Ann Mooney collection.
28	none noted	yes	Clovis?	EPI	DGA	Cherokee	7:a	Tony Weaver collection.
29	yes	yes	Clovis	EPI	JMH	Baker	17:d	Jack M. Hall collection.
30	n/a	n/a	Clovis?	EPI	MTS	Clayton	20:f	Arch. Survey of Cobb & Fulton Counties collections.
31	yes	yes	Clovis	EPI	FS	Coffee	19:e	Jim Deen collection.
32	yes/heavy	yes/light	Simpson	MPI	JMC	Colquitt	21:i	C. H. Cannon, III collection.
33	yes	yes/light	Fluted Dalton	M/LPI	JMH	Colquitt		Jack M. Hall collection. ("Fluting" probably basal thinning)
34	yes	yes/light	Unfluted Lanceolate	MPI	JMH	Colquitt		Jack M. Hall collection. (Weak basal thinning)
35	yes	n/a	Fluted Dalton?	M/LPI	JMH	Dougherty		Jack M. Hall collection. ("Fluting" probably basal thinning; waterworn)
36	yes	yes	Llano?	MPI	JMH	Dougherty		Jack M. Hall collection. (Llano form or unusual knife)
37	yes/heavy	yes/light	Suwanee	MPI	RJL	Dougherty	22:i	Johny Mack Nickles collection.
38	yes/heavy	no	Simpson	MPI	FS	Dodge	21:c	Frankie Snow collection.
39	yes/light	yes/heavy	Clovis	EPI	FS	Dodge	18:j	Frankie Snow collection.
40	yes/light	yes/light	Clovis variant?	E/MPI	FS	Dodge	20:e	Frankie Snow collection.
41	none noted	n/a	Clovis?	EPI	JSW	Dooly	20:h	Mrs. M. Travis Grubbs collection. (Snapped near base)
42	yes/heavy	yes	Clovis	EPI	FS	Dooly	20:p	Jerry Hendrix collection.
43	yes/moderate	yes/heavy	Clovis	EPI	FS	Dooly	19:g	Jerry Hendrix collection.
44	yes/heavy	yes	Clovis	EPI	FS	Dry	17:f	Jeff Alexander collection.
45	none noted	yes/light	Unfluted lanceolate	MPI	TC	Elbert		Jack Black collection.
46	none noted	yes/heavy	Dalton	LPI	DGA	Elbert		Rucker's Bottom (Anderson and Schuldenrein 1985)
47	yes/heavy	yes/light	Fluted Dalton	M/LPI	GSL	Effingham	24:f	Johnny Mack Nickles collection. ("Fluting" probably basal thinning)
48	yes/heavy	yes	Fluted Dalton	M/LPI	GSL/DR	Effingham	24:a	Johnny Mack Nickles collection. ("Fluting" probably basal thinning)
49	yes	yes	Fluted Dalton	M/LPI	RJL/GSL	Effingham	24:g	Johnny Mack Nickles collection.
50	yes/light	yes/heavy	Fluted Dalton	M/LPI	RJL	Greene	24:l	Site 9Ge31; UGa Lab. of Archaeology collections.
51	none noted	yes/heavy	Clovis variant	E/MPI	RJL	Greene	20:i	Site 9Ge136; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
52	yes/light	yes/heavy	Unfluted lanceolate	MPI	RJL	Greene	22:g	Site 9Ge283; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
53	yes/heavy	yes/light	Clovis	EPI	RJL	Greene	20:l	Site 9Ge309; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
54	none noted	yes/light	Clovis	EPI	RJL	Greene	20:r	Site 9Ge309; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
55	yes/light	yes/heavy	Fluted Dalton	M/LPI	RJL	Greene	24:e	Site 9Ge399; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
56	none noted	yes/light	Clovis?	EPI	RJL	Greene	20:g	Site 9Ge331; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
57	none noted	yes/light	Clovis	EPI	RJL	Greene	20:n	Site 9Ge329; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
58	none noted	yes/moderate	Clovis	EPI	RJL	Greene	20:m	Site 9Ge500; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
59	none noted	yes/moderate	Dalton	LPI	RJL	Greene		Site 9Ge524; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
60	none noted	yes/light	Clovis	EPI	RJL	Greene	20:k	Site 9Ge534; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
61	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Greene		Site 9Ge(AS)593; (O'Steen et al. 1986) UGa Lab. of Arch. collections.
62	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Greene	23:i	Site 9Ge666; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
63	none noted	yes/heavy	Clovis	EPI	RJL	Greene	19:a	Site 9Ge879; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
64	none noted	yes/heavy	Clovis variant	E/MPI	RJL	Greene		Site 9Ge899; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
65	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Greene	23:e	Site 9Ge899; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
66	none noted	yes/moderate	Fluted Dalton	M/LPI	RJL	Greene	22:b	Site 9Ge899; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
67	yes/heavy	yes/heavy	Fluted Dalton?	M/LPI	RJL	Greene	24:d	Site 9Ge923; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
68	none noted	yes/heavy	Quad?	M/LPI	RJL	Greene	22:c	Site 9Ge928; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
69	none noted	yes/moderate	Clovis?	EPI	RJL	Greene		Site 9Ge984; UGa Lab. of Arch. collections. (Appears basally thinned)
70	yes/heavy	yes	Clovis	EPI	RJL	Greene	19:j	Richland Creek area; (O'Steen et al. 1986) Shelly Farrenholz collection.
71	none noted	yes/light	Clovis variant	E/MPI	RJL	Greene	20:a	Site 9Ge(AN)2; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
72	none noted	n/a	Clovis variant	E/MPI	RJL	Greene	20:b	Site 9Ge(FS)1; (Wynn and Barrett n.d.) UGa Lab. of Arch. collections.
73	yes/heavy	n/a	Clovis	EPI	SJL	Greene	19:l	Mary L. Rowley collection.
74	yes/heavy	yes	Simpson	MPI	JSW	Houston	21:e	John S. Whatley collection.
75	yes/light	yes/light	Fluted Dalton	M/LPI	GSL	Jefferson		G.S. Lewis collection. ("Fluting" is basal thinning)
76	yes/light	yes/light	Clovis variant	E/MPI	NW/DGA	Lanier		9NL(ARAM)3 Site. (Wright n.d.)
77	yes	yes	Clovis	EPI	FS	Laurens	19:d	Mike Skipper collection.
78	yes	yes	Clovis	EPI	TG	Lee	17:e	Mark Tanner collection.

Table 2 (continued). Georgia PaleoIndian Projectile Points: Primary Data.

METRIC ATTRIBUTES (mm) | NON-METRIC ATTRIBUTES

Point Number	Maximum Length	Estimated Complete Length	Maximum Width	Basal Width	Maximum Thickness	Depth of Basal Concavity	Length of Fluting Obverse	Length of Fluting Reverse	Length of Edge Grinding Left	Length of Edge Grinding Right	Raw Material	Color
79	82	82	35	26	13	1	20	-	30	30	Quartz	white
80	110	110	38	24	8	5	18	8	34	30	Unknown chert	brown
81	21*	-	32*	32	3	5	-	15	-	-	Coastal Plain chert	white
82	30*	-	26	27	7	6	16	14	-	18	Coastal Plain chert	yellow/pale brown
83	44	44	24	24	6.5	8.5	6	9	15	13	Piedmont chert?	white
84	44*	50	21	24	5	8	9	6	15	-	Piedmont chert?	yellow/brown
85	24*	-	30	28*	5.5	8	15	7	23*	-	Coastal Plain chert?	white
86	21*	45	25	25	6	5	10	13	18	17	Piedmont chert?	light brownish-yellow
87	34*	48	24	23	8	4	4.5	9	5	12.5	Piedmont chert?	white/pale brown
88	38	38	21	21	7	2	-	-	5	-	ITA Piedmont chert?	pinkish-white
89	42	42	31	-	7	3	5	11	11	9	Piedmont chert	gray
90	28*	-	26	26	7	8	17	14	17	-	Piedmont chert?	white/pale brown
91	45*	50	22	22	7	4	-	-	15	16	Piedmont chert	yellow-orange
92	23*	-	30	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Coastal Plain chert	pinkish white
93	77	77	28	27	8	6	25	-	33	30	Coastal Plain chert	light yellow white
94	65	65	25	25	n/a	3	-	-	n/a	n/a	Coastal Plain chert	very pale brown
95	42	42	28	28	n/a	6	n/a	n/a	n/a	n/a	Coastal Plain chert	very pale brown
96	50	50	25	22	n/a	4	n/a	n/a	n/a	n/a	Coastal Plain chert	very pale brown
97	56*	74	29	27	9	4	19	22	32	21	Coastal Plain chert	white/light orange
98	43*	60	27	24	7	4	15	-	23	26	Coastal Plain chert	brown/orange
99	39	39	19	19	9	2	5	7	n/a	n/a	Quartz	white
100	40*	50	26	26	8	3.5	14	14	n/a	n/a	Coastal Plain chert	pale brown
101	43*	-	32	n/a	10	n/a	20.5*	-	n/a	n/a	Coastal Plain chert	very pale brown
102	36*	39	25	25	7	5	13	15	-	14	R&V (Ft. Payne) chert	gray
103	25*	-	31	31	6	9	22	22	16	16	R&V (Ft. Payne) chert	gray
104	29*	-	29	29	6	12	-	-	19	19	R&V (Ft. Payne) chert	dark blue gray
105	37	37	22	22	5	3	13	13	14	-	Piedmont chert	yellow
106	23*	40	25	25	6	-	16	-	16	17	Quartz	white
107	25*	40	27	27	10	2	8	8	15	16	Quartz	white
108	30*	60	30	30	11	-	12	-	13	-	Piedmont chert	white/blue specks
109	58	58	29	29	5	6	20	-	19	19	R&V (Ft. Payne) chert	black
110	27*	45	28	28	6	2	15	14	15	15	Quartz	white
111	37	37	30	30	7	4	-	-	13	13	R&V (Ft. Payne) chert	black
112	35	35	20	20	5	2	15	-	15	15	Coastal Plain chert	yellow
113	15*	-	22	22	9	2	-	-	15	15	Quartz	white
114	33	33	25	25	8	3	13	13	13	13	Quartz	white
115	28	28	21	21	6	4	7	-	12	11	Vein quartz	translucent
116	21*	-	27	27	6	4	15	15	18	-	Piedmont chert	yellow
117	37*	40	28	28	7	3	11	11	13	13	Orthoquartzite	light brown
118	30*	60	34	26*	6	2	16	-	22	22	Piedmont chert	mottled reddish gray
119	24*	60	32	25*	6	2	-	-	18	18	Piedmont chert	Tan
120	30*	70	38*	33	7	3	-	-	24	24	Quartz	white
121	44	44	30	30	7	4	17	18	17	17	Orthoquartzite	light brown
122	40	40	22	22	7	3	10	7	14	14	Quartz	white
123	18*	-	25	22	7	1	13	10	18	18	Metavolcanic	black and white
124	42*	45	27	27	6	2	12	13	14	14	Piedmont chert	yellow
125	48	48	21	21	5	2	21	20	18	18	Coastal Plain chert	yellow
126	45*	55	25	25	6	6	-	-	14	15	Coastal Plain chert	light pinkish brown
127	68*	81	19.2	23.3	6.6	3.4	13	17	6.5	8.7	Orthoquartzite	gray
128	35	35	22	22	7	2.7	5.7	4.5	4.4	6.5	Coastal Plain chert	very pale brown
129	49	49	28	28	7	4	-	-	20	17	Orthoquartzite	gray
130	53*	60	40*	40*	7	4	-	-	20	-	Coastal Plain chert	yellow-white
131	61	61	25	22	6	4	-	-	12	12	Coastal Plain chert	yellow
132	76	76	36	28*	7.9	7	10.5	8	31	n/a	ITA Coastal Plain chert	reddish brown
133	47*	50	29	29	6	7	8.8	15.2	18	13.8	Coastal Plain chert	very pale brown
134	49*	50	27	27	6.6	4	-	-	14.8	12	Coastal Plain chert	very pale brown
135	50	50	28	28	7.2	5.1	7.7	14.5	n/a	12.8	Coastal Plain chert	white/pale brown
136	32	32	27	27	5	7	10	-	15.6	17.6	R&V (Knox) chert	very dark gray
137	44	44	22	22	6	4.6	3.5	10.3	5	7	Coastal Plain chert	pinkish white
138	27*	50	27	27	5.2	6.8	-	-	14.5	12.9	Coastal Plain chert	very pale brown
139	39	39	28	28	7	4	7	3.5	n/a	8	Coastal Plain chert	white/pale brown
140	43	43	29	29	7.5	8.4	10.5	12.7	15.4	15	Coastal Plain chert	very pale brown
141	47	48	27	27	6	7.3	5	7.2	13.8	15	Coastal Plain chert	very pale brown
142	39	39	21	21	6.8	4	12	12.7	-	8.5	Coastal Plain chert	very pale brown
143	56	56	28	25	7	4	25	14	25	21	Coastal Plain chert	yellowish brown
144	100*	110	35	30	6	n/a	1.5*	1.0*	2*	2*	Coastal Plain chert	light yellow
145	31	31	28	28	6	4	-	-	8	8	Coastal Plain chert	very pale yellow
146	43	43	24	24	7	6	8	21	13	14	Coastal Plain chert	white
147	39	39	32	31	6	4	11	12	-	-	Coastal Plain chert	light gray/white
148	46	46	29	29	7	5	10	-	13	14	ITA Coastal Plain chert	deep pink
149	56	56	28	27	7	8	12	-	17	19	Coastal Plain chert	whitish/yellow
150	70*	90	30	28	9	3	-	22	37	42	ITA Silicified Coral	reddish brown
151	23*	60	25	25	5	3	-	-	25	20	ITA Coastal Plain chert	pink
152	80	85	32	29	8	7	-	-	21	22	Coastal Plain chert	White
153	65	65	24	23	5	2	15	-	15	15	Coastal Plain chert	yellow
154	41*	90	32	28	8	6	13	11	27	25	Coastal Plain chert	white
155	56*	100	34	34	9	5	7	5	23	25	Coastal Plain chert	white
156	23*	110	35*	33	7*	4	10	9	19*	22*	Coastal Plain chert	white

Table 2 (continued). Georgia PaleoIndian Projectile Points: Primary Data.

NON-METRIC ATTRIBUTES

Point Number	Patination	Basal Grinding	Point Type	Period	Recorder	County	Figure	Remarks and Observations
79	none noted	yes/light	Simpson	MPI	TG	Lincoln		Charles H. Gresham collection.
80	none noted	yes	Simpson	MPI	FS	Macon	21:h	Wayne Arrington collection.
81	yes/light	yes	Clovis	EPI	JSW	Macon		Langdon York collection.
82	yes	yes	Fluted Dalton	M/LPI	AC/LDO	Macon	23:b	Andy Casom collection.
83	yes	yes	Dalton	LPI	AC/LDO	Macon	23:p	Andy Casom collection. (Basally thinned, mutiple small flakes)
84	none noted	yes/light	Fluted Dalton	M/LPI	AC/LDO	Macon	24:h	Andy Casom collection.
85	none noted	yes/light	Suwannee	MPI	AC/LDO	Macon	22:k	Langdon York collection.
86	yes/light	yes/light	Fluted Dalton	M/LPI	AC/LDO	Macon		Langdon York collection. ("Fluting" is basal thinning)
87	yes/light	yes/light	Dalton	LPI	AC/LDO	Macon	23:l	Langdon York collection. ("Fluting" is basal thinning)
88	yes/light	yes/heavy	Dalton	LPI	AC/LDO	Macon	23:m	Andy Casom collection. (Extensively resharpened)
89	yes/light	yes/moderate	Dalton	LPI	AC/LDO	Macon	23:q	Desmond Harp collection. ("Fluting" is basal thinning)
90	none noted	no	Fluted Dalton	M/LPI	AC/LDO	Macon	22:a	Andy Casom collection.
91	yes/heavy	yes/light	Dalton	LPI	AC/DGA	Macon	23:o	Keith Culpepper collection.
92	yes/heavy	n/a	Clovis	EPI	GSL	Macon		Flint River Archaeological Survey (Worth 1988). (Midsection).
93	yes	yes	Clovis	EPI	BC	Miller		Bud Carter collection. collection.
94	yes	yes	Clovis	EPI	BC	Miller		Bud Carter collection.
95	yes	yes	Clovis	EPI	BC	Miller		Bud Carter collection.
96	yes	yes	Clovis	EPI	BC	Miller		Bud Carter collection.
97	yes/heavy	yes	Clovis	EPI	FS	Miller	19:m	Brett Tabb collection.
98	yes/heavy	yes	Suwanee	MPI	FS	Miller	22:l	Brett Tabb collection.
99	none noted	yes	Dalton	LPI	GSL	Muscogee		Dan McDuffie collection.
100	yes/light	no	Fluted Dalton	M/LPI	GSL	Muscogee		Dan McDuffie collection. ("Fluting" is basal thinning)
101	yes/heavy	n/a	Fluted Dalton	M/LPI	GSL	Muscogee		Dan McDuffie collection. (Tip portion of point; "fluting" may be thinning)
102	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Oconee	23:j	Site 9Oc18; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
103	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Oconee	23:c	Site 9Oc25; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
104	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Oconee	23:d	Site 9Oc25; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
105	none noted	yes/heavy	Clovis?	EPI	RJL	Oconee		Site 9Oc25; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
106	none noted	yes/heavy	Clovis?	EPI	RJL	Oconee		Site 9Oc25; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
107	none noted	yes/light	Clovis?	EPI	RJL	Oconee		Site 9Oc25; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
108	none noted	yes/moderate	Clovis?	EPI	RJL	Oconee		Site 9Oc25; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
109	none noted	yes/moderate	Fluted Dalton	M/LPI	RJL	Oconee	24:i	Site 9Oc25; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
110	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Oconee		Site 9Oc26; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
111	none noted	yes/heavy	Dalton	LPI	RJL	Oconee	23:r	Site 9Oc27; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
112	yes/light	yes/light	Clovis variant	E/MPI	RJL	Oconee	20:c	Site 9Oc30; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
113	none noted	yes/heavy	Fluted Dalton?	M/LPI	RJL	Oconee		Site 9Oc30; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
114	none noted	yes/moderate	Fluted Dalton	M/LPI	RJL	Oconee		Site 9Oc37; (O'Steen et al. 1986) UGa ("Fluting" is basal thinning)
115	none noted	yes/light	Clovis variant	E/MPI	RJL	Oconee		Site 9Oc40; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
116	yes/light	yes/heavy	Fluted Dalton	M/LPI	RJL	Oconee		Site 9Oc74; (O'Steen et al. 1986) UGa Lab. of Archaeology collections.
117	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Clarke	24:c	Shoal Creek Site; (O'Steen et al. 1986) UGa ("Fluting" is basal thinning)
118	yes	yes/light	Simpson	MPI	RJL	Oglethorpe	21:f	Site 9Og(FS)48; (Freer n.d.) UGa Lab. of Archaeology collections.
119	yes/light	yes	Unfluted Lanceolate	MPI	RJL	Oglethorpe		Site 9Og74 UGa Lab. of Archaeology collections.
120	none noted	yes	Unfluted Lanceolate	MPI	RJL	Oglethorpe		UGa Lab. of Archaeology collections.
121	none noted	yes/heavy	Fluted Dalton	M/LPI	RJL	Oglethorpe	23:g	Site 9Og(FS)1 UGa Lab. of Archaeology collections.
122	none noted	yes/light	Clovis variant	E/MPI	RJL	Putnam	20:d	Site 9PM205 UGa Lab. of Archaeology collections.
123	none noted	yes/heavy	Clovis?	EPI	RJL	Putnam		Site 9PM228 UGa Lab. of Archaeology collections.
124	yes/moderate	yes/heavy	Fluted Dalton	M/LPI	RJL	Putnam	23:h	Site 9Pm410 UGa Lab. of Archaeology collections.
125	yes/heavy	yes	Clovis	EPI	RJL	Richmond	18:d	Site 9Ri45; D. J. Crandall collection.
126	yes	yes	Dalton	LPI	GSL	Richmond	23:n	Fort Gordon area; G.S. Lewis collection.
127	none noted	yes/light	Fluted Dalton	M/LPI	GSL	Richmond		Fort Gordon area; G.S. Lewis collection. (Serrated earred lanceolate)
128	yes	yes	Dalton	LPI	GSL	Richmond		Fort Gordon area; G.S. Lewis collection.
129	none noted	yes/heavy	Unfluted Lanceolate	MPI	RJL/TG	Stewart		Alf Bell collection.
130	yes/heavy	yes/heavy	Dalton	LPI	RJL	Stewart		Jim Littlefield collection.
131	yes	yes	Simpson	MPI	TG	Sumter		Jimmy Greene collection.
132	yes	yes/light	Suwanee	MPI	RJL/GSL	Sumter	22:j	Johnny Mack Nickles collection.
133	yes	yes	Fluted Dalton	M/LPI	RJL/GSL	Sumter	24:j	Johnny Mack Nickles collection.
134	yes	yes/light	Fluted Dalton	M/LPI	RJL/GSL	Taylor	23:f	Johnny Mack Nickles collection.
135	yes	yes	Fluted Dalton	M/LPI	RJL/GSL	Taylor	24:k	Johnny Mack Nickles collection.
136	yes	yes	Fluted Dalton	M/LPI	RJL/GSL	Taylor	23:a	Johnny Mack Nickles collection. ("Fluting" is basal thinning)
137	yes	yes/light	Fluted Dalton	M/LPI	RJL/GSL	Taylor		Johnny Mack Nickles collection. ("Fluting" is basal thinning)
138	yes	yes	Dalton	LPI	RJL/GSL	Taylor	23:k	Johnny Mack Nickles collection. ("Fluting" is basal thinning)
139	yes	yes	Fluted Dalton	M/LPI	RJL/GSL	Taylor		Johnny Mack Nickles collection. ("Fluting" is basal thinning)
140	yes	yes	Fluted Dalton	M/LPI	RJL/GSL	Taylor	24:b	Johnny Mack Nickles collection. ("Fluting" is basal thinning)
141	yes	yes	Fluted Dalton	M/LPI	GSL/DR	Taylor		Johnny Mack Nickles collection. ("Fluting" is basal thinning)
142	yes/light	no	Fluted Dalton	M/LPI	RJL/GSL	Taylor		Johnny Mack Nickles collection. ("Fluting" is basal thinning)
143	none noted	yes/light	Simpson	MPI	DGA	Telfair	21:b	David Smith collection.
144	yes/heavy	n/a	Clovis	EPI	JW/FS	Terrell	18:b	Walter Crouch collection. (Base snapped off)
145	yes/moderate	yes/moderate	Dalton	LPI	DGA	Twiggs		Bob Cramer collection.
146	yes/heavy	yes/heavy	Fluted Dalton	M/LPI	DGA	Twiggs		Bob Cramer collection. ("Fluting" is basal thinning)
147	yes/moderate	yes/heavy	Fluted Dalton	M/LPI	DGA	Twiggs		Bob Cramer collection. ("Fluting" is basal thinning)
148	yes/light	no	Fluted Dalton	M/LPI	DGA	Twiggs		Bob Cramer collection. ("Fluting" is basal thinning)
149	yes/moderate	yes/heavy	Fluted Dalton	M/LPI	DGA	Twiggs		Bob Cramer collection. ("Fluting" is basal thinning)
150	none noted	yes/light	Clovis	EPI	FS	Washington	19:k	Bobby Strange collection.
151	yes/light	yes/light	Unfluted Lanceolate	MPI	DM	Webster	22:f	Dan McDuffie collection.
152	yes/heavy	yes	Suwannee	MPI	JMH	Wilcox	22:h	Jack M. Hall collection.
153	yes/heavy	n/a	Simpson	MPI	JSW	Wilkenson		David Lucas collection. (Base damaged)
154	yes/heavy	yes/heavy	Simpson	MPI	RJL	Wilks	21:g	Mell collection, UGa Lab. of Archaeology collections.
155	yes	yes/light	Unfluted Lanceolate	MPI	JMH	Worth		Jack M. Hall collection.
156	yes	yes	Clovis?	EPI	JMH	Worth		Jack M. Hall collection.

Table 2 (continued). Georgia PaleoIndian Projectile Points: Primary Data.

METRIC ATTRIBUTES (mm) — NON-METRIC ATTRIBUTES

Point Number	Maximum Length	Estimated Complete Length	Maximum Width	Basal Width	Maximum Thickness	Depth of Basal Concavity	Length of Fluting Obverse	Length of Fluting Reverse	Length of Edge Grinding Left	Length of Edge Grinding Right	Raw Material	Color
157	75	75	27	25	7	4	14	-	30	35	Coastal Plain chert	white/pale brown
158	61	61	28	29	7.5	4	32	18	24.5	26.5	Coastal Plain chert	brown
159	56.8	56.8	24.7	23	8.3	3.9	41	15.8	21.9	25	Coastal Plain chert.	brown
160	102	102	40	29	5	1	27	29	-	-	Unid. black chert	black
161	63	63	29	29	6	5	14	n/a	22	22	Coastal Plain chert	white
162	48	48	28	19	5	2	20	21	21	21	Coastal Plain chert	white
163											n/a	
164											n/a	
165											Coastal Plain chert?	
166											Piedmont chert	yellowish-brown
167											Quartz	white
168											Quartz	white
169											Coastal Plain chert	
170												
171												
172												
173												
174												
175	34	34	23	23	6							
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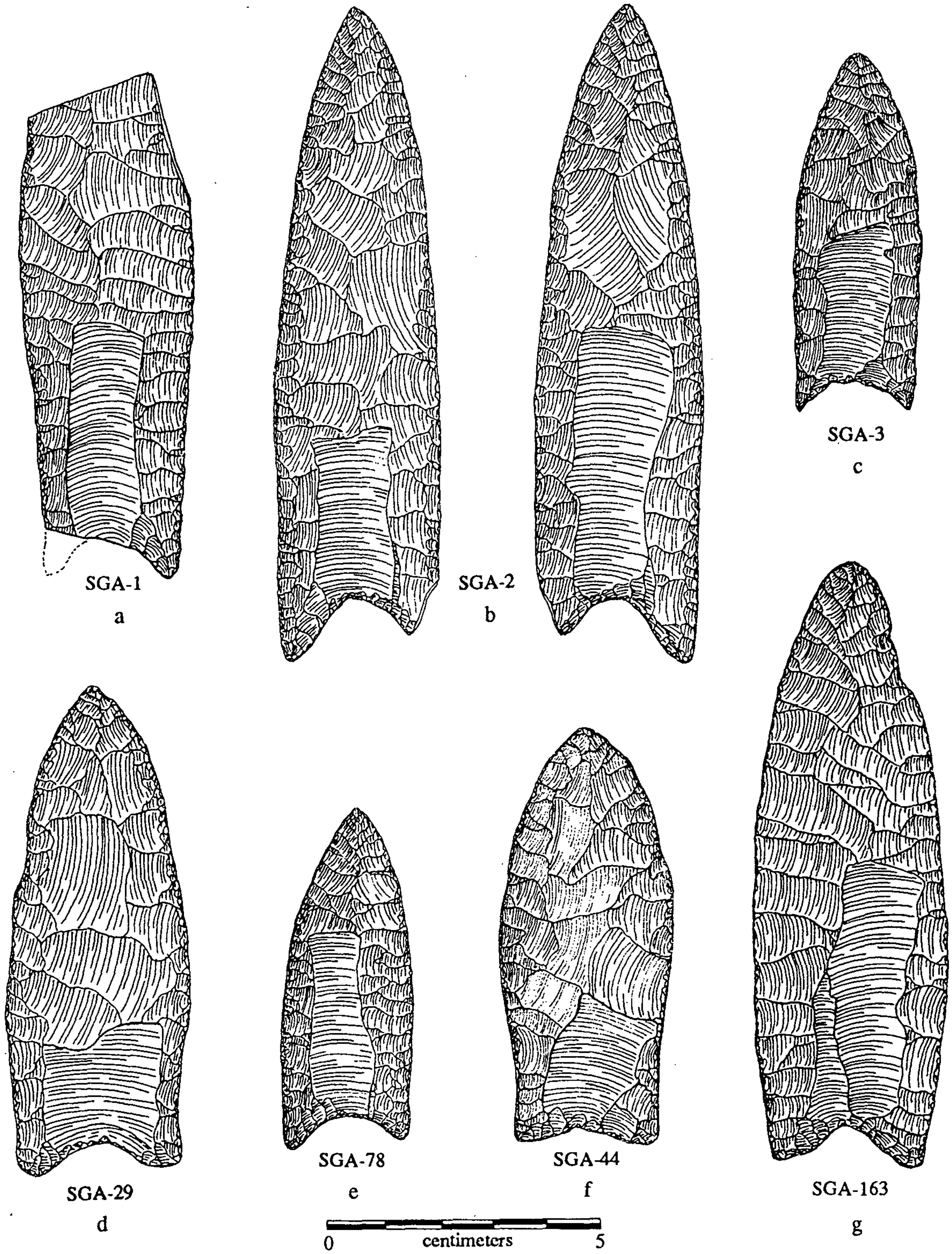
Table 2 (continued). Georgia PaleoIndian Projectile Points: Primary Data.

NON-METRIC ATTRIBUTES

Point Number	Patination	Basal Grinding	Point Type	Period	Recorder	County	Figure	Remarks and Observations
157	yes	yes	Unfluted Lanceolate	MPI	BC	Worth		Bud Carter collection.
158	none noted	yes	Clovis	EPI	FS	Coffee?	19:f	Danny Arnett collection.
159	none noted	yes	Clovis	EPI	FC	Bryan		7-Mile Bend Site. Fred Cook col. The Chesopiean 25(1):14-16 (1987)
160	n/a	no	Clovis	EPI	CR	Chatham		Ossabaw Sound (Ray 1986:12-13) The Chesopiean 24(1):12-13)
161	yes/heavy	yes/light	Simpson	MPI	FS	Crawford	21:k	M. B. Pyles collection.
162	yes/heavy	yes	Clovis	EPI	FS	Crawford	19:i	M. B. Pyles collection.
163			Clovis	EPI	JRC	Baldwin	17:g	Smithsonian collections (Caldwell 1952:Figure 167:d)
164			Cumberland	MPI	JRC	Forsythe	22:d	Smithsonian collections (Caldwell 1952:Figure 167:e)
165			Clovis	EPI	FS	Bibb		Gledhill No. 2 Site, ca. 1 mile SE of Macon Plateau
166			Clovis variant	E/MPI	RJL	Jackson		Jack Bailey collection.
167	none noted		Clovis?	EPI	TC	Wilkes		Rev. McPherson collection.
168	none noted		Clovis?	EPI	TC	Wilkes		Rev. McPherson collection.
169			Clovis	EPI	FS	Irwin		Art Davis collection.
170			Clovis	EPI	FS	Evans		Bobby Morris collection.
171			Clovis	EPI	FS	Telfair		Jimmy Boone collection/informant.
172			Clovis	EPI	FS	Coffee		Jim Deen collection.
173			Clovis	EPI	FS	Telfair		Gregg Walker collection.
174			Clovis	EPI	NH	Burke		Brown's Cabin Site, Plant Vogtle (Honnercamp)
175			Dalton	LPI	MTS	Laurens		9Ls44 (Marvin T. Smith) UGa Lab. of Archaeology collections.
176			Clovis	EPI	WER	Houston		Walter E. Rudolph collection. Illus. in CSAS 27(4):185-186 (1980)
177			Dalton	LPI	DTE	Richmond		Taylor Hill (Elliott and Doyon 1981)
178			Dalton	LPI	DTE	Richmond		Taylor Hill (Elliott and Doyon 1981)
179			Fluted preform	EPI	DTE	Richmond		Taylor Hill (Elliott and Doyon 1981)
180			Clovis	EPI	JRC	Burke	18:c	Smithsonian collections (Caldwell 1952:Figure 167:f) Buckhead Creek
181			Clovis	EPI	JRC	Burke		Smithsonian collections (Caldwell 1952:Figure 167:g) Buckhead Creek
182			Clovis	EPI	JRC	Burke		Smithsonian collections (Caldwell 1952:Figure 167:h) Buckhead Creek
183			Clovis	EPI	RW	Walton	20:j	9Wn12 Wauchope 1966:99, 100, Figure 45 a
184			Clovis	EPI	RW	Bartow		9Br12 Wauchope 1966:99, 100, Figure 45 b
185			Clovis	EPI	RJL	Bartow	7:b	Lake Allatoona area (Ledbetter et al. 1987)
186			Clovis	EPI	RJL	Bartow	7:e	Lake Allatoona area (Ledbetter et al. 1987)
187			Clovis	EPI	RJL	Bartow	7:f	Lake Allatoona area (Ledbetter et al. 1987)
188			Clovis	EPI	RJL	Cherokee	7:k	Lake Allatoona area (Ledbetter et al. 1987)
189			Clovis	EPI	RW	Georgia	18:g	Wauchope 1966:Figure 235:l
190			Clovis	EPI	RW	Georgia	20:q	Wauchope 1966:Figure 235:m
191			Suwannee	MPI	FS	Coffee		(Blanton and Snow 1986)
192			Suwannee	MPI	FS	Coffee		(Blanton and Snow 1986)
193			Clovis	EPI	FS	Irwin		Art Davis collection. (slide)
194			Clovis	EPI	DTE	Dougherty		(Elliott 1982)
195			Clovis Variant?	E/MPI	HM	Floyd		(Manley 1968:59-60)
196			Unfluted Lanceolate	MPI	ARK	Decatur		(Kelly 1950)
197			Clovis	EPI	SIG	Miller		9Mi14 (Goad 1977:36) Private collection.
198			Clovis	EPI	SIG	Miller		9Mi14 (Goad 1977:36) Private collection.
199			Suwannee	MPI	RPB	Early		(Bullen 1975:52) Marvin Singletary collection.
200			Suwannee	MPI	RPB	Early		(Bullen 1975:52) Marvin Singletary collection.
201			Suwannee	MPI	RPB	Early		(Bullen 1975:52) Marvin Singletary collection.
202			Clovis	EPI	PRF	Effingham		9Ef26 (Fish1976:18, 77) A. G. Barnhill collection.
203			Dalton	LPI	PRF	Effingham		9Ef26 (Fish1976:77) Private collection.
204			Clovis Variant	E/MPI	RJL	Stewart		9SW(SAS)15. (Ledbetter 1984)
205			Clovis Variant	E/MPI	RJL	Stewart		9SW(SAS)15. (Ledbetter 1984)
206			Clovis Variant	E/MPI	COB	McIntosh		9McI41 (Braley et al. 1985:9, 84).
207			Clovis	EPI	DLD	Early		(Patterson 1950; DeJarnette 1975:Figure 14:1A)
208			Clovis	EPI	FS	Chattahoochee		(Schnell, cited in Thomas et al. 1983:10)
209			Clovis	EPI	VAT	Elbert		Clyde Gulley site (9EB387). (Tippitt and Marquardt 1984)
210			Unfluted Lanceolate	MPI	MRC	Telfair		Lowe Site (9Tf139) (Crook 1987:54, Figure 13:j)
211			Unfluted Lanceolate	MPI	MRC	Telfair		Lowe Site (9Tf139) (Crook 1987:54)
212			Dalton	LPI	MRC	Telfair		Lowe Site (9Tf139) (Crook 1987:54-55)
213			Clovis	EPI	RJL	Richmond		Pig Pen Site (Ledbetter 1988)
214			Clovis	EPI	RJL	Richmond		Pig Pen Site (Ledbetter 1988)
215			Dalton	LPI	RJL	Richmond		Pig Pen Site (Ledbetter 1988)
216			Dalton	LPI	RJL	Richmond		Pig Pen Site (Ledbetter 1988)

Table 2 (continued). Georgia PaleoIndian Projectile Points: Primary Data.



a. Macon Plateau; b. Theriault Chert Quarry (abverse/reverse); c. Rucker's Bottom.

Figure 17. Clovis Projectile Points from Georgia.

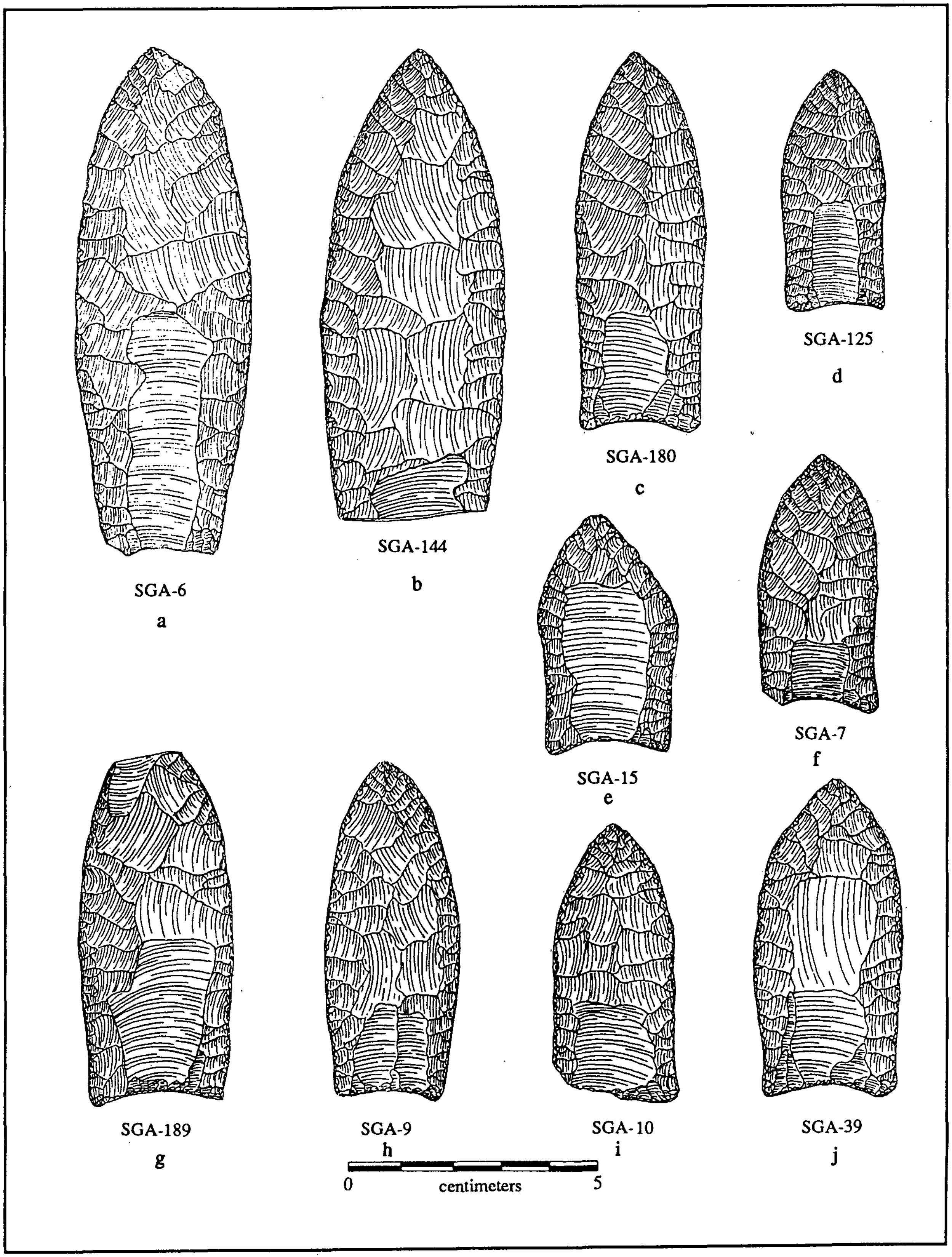


Figure 18. Clovis Projectile Points from Georgia.

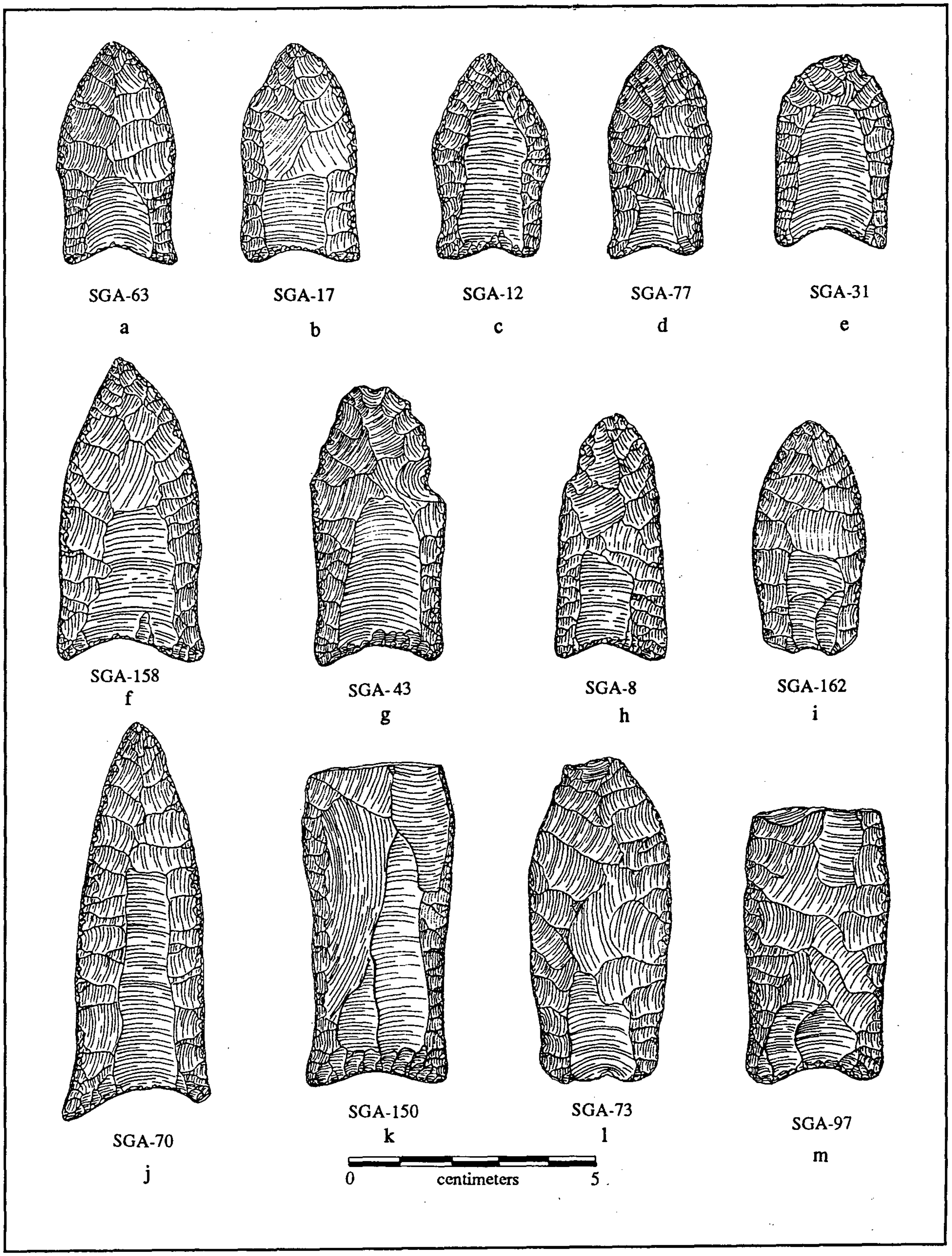
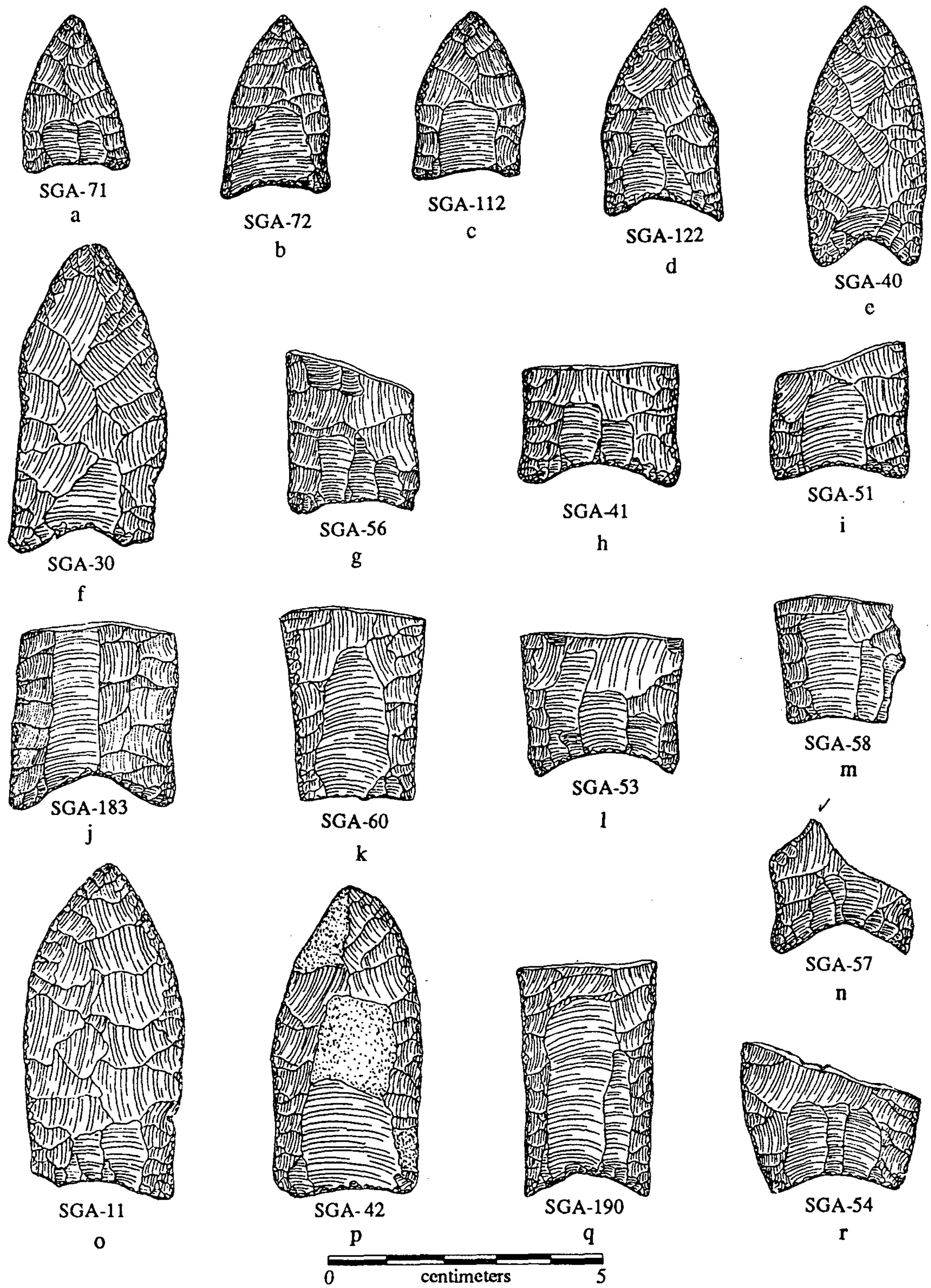


Figure 19. Clovis Projectile Points from Georgia.



a.- e., i. Clovis variants; f.- h. Possible Clovis points; j.- r. Clovis points, n is burinated.

Figure 20. Clovis, Clovis Variant, and Possible Clovis Projectile Points from Georgia.

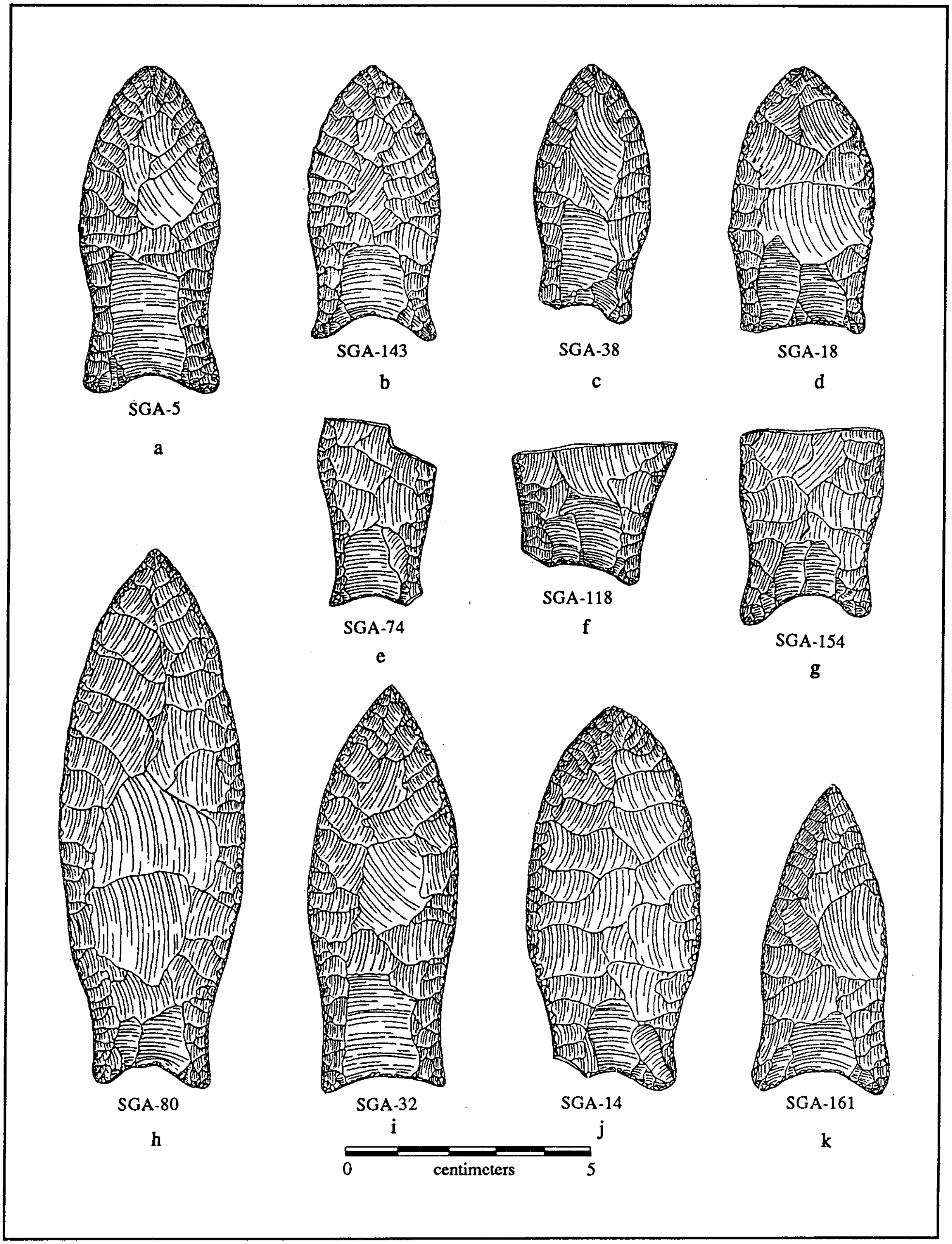


Figure 21. Fluted/Basally-Thinned Simpson-like Projectile Points from Georgia. Overlap with the Suwannee Type, Here Restricted to Unfluted Forms, is Evident.

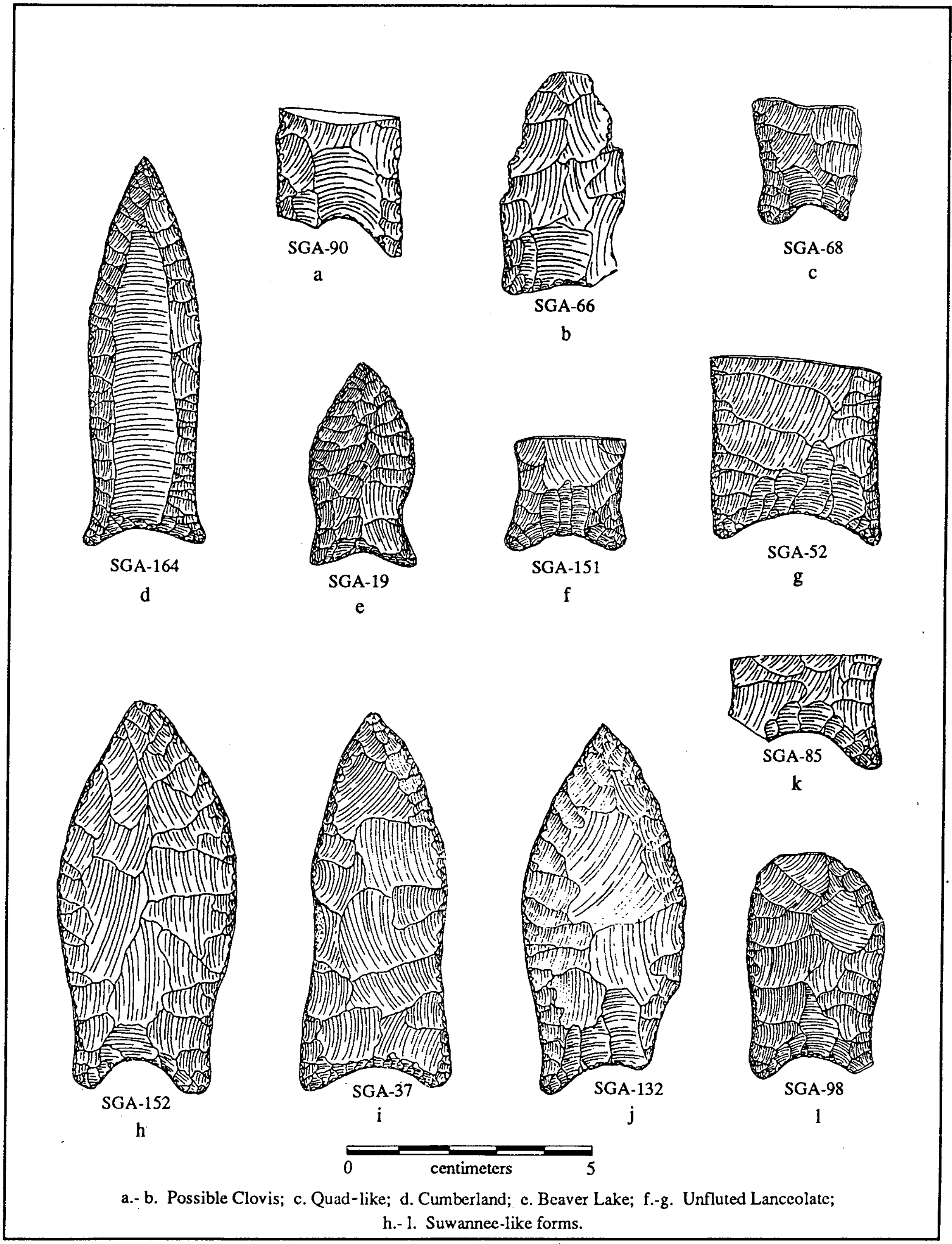


Figure 22. Possible Clovis, Quad, Cumberland, Unfluted Lanceolate, and Unfluted Suwannee-like Projectile Points from Georgia.

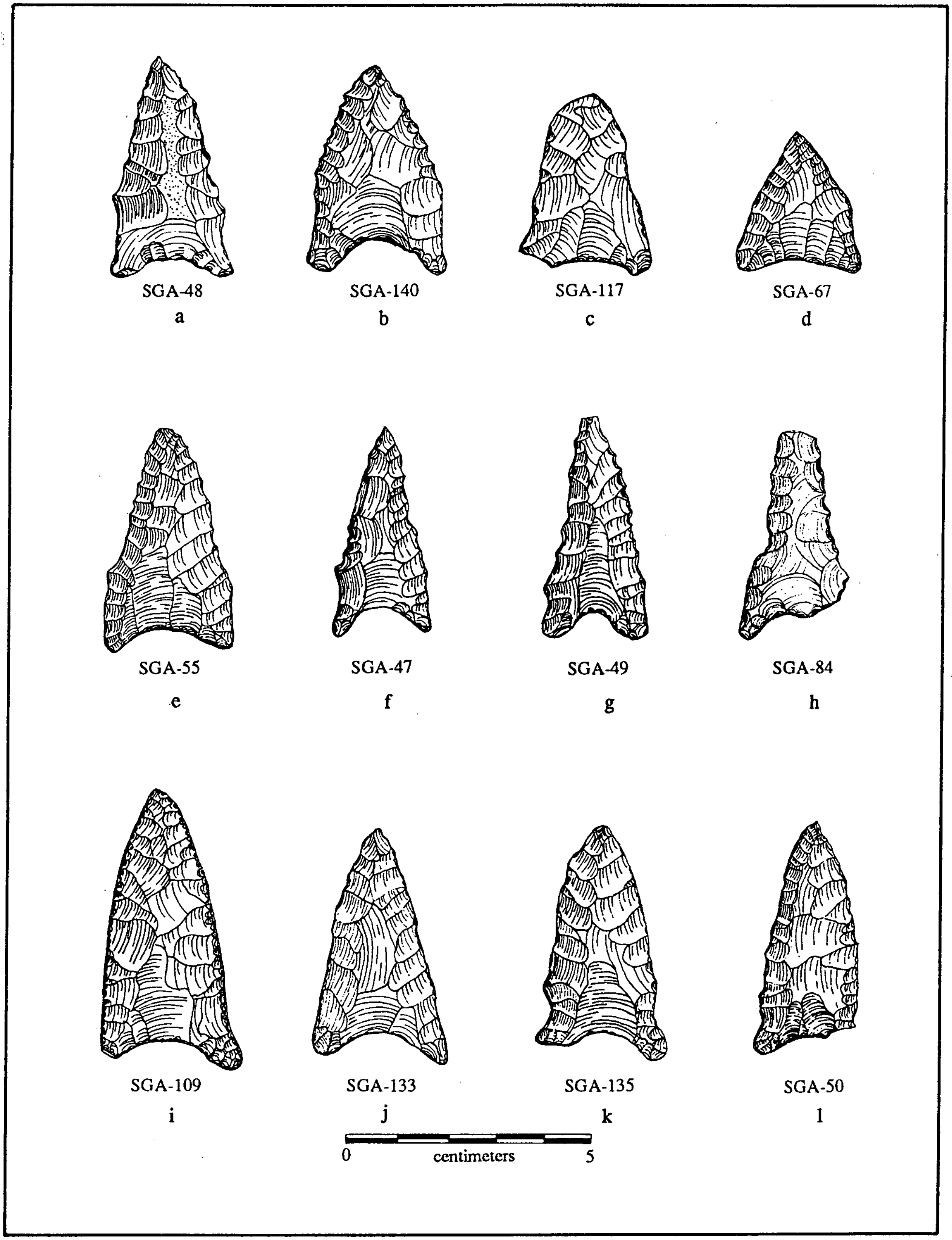
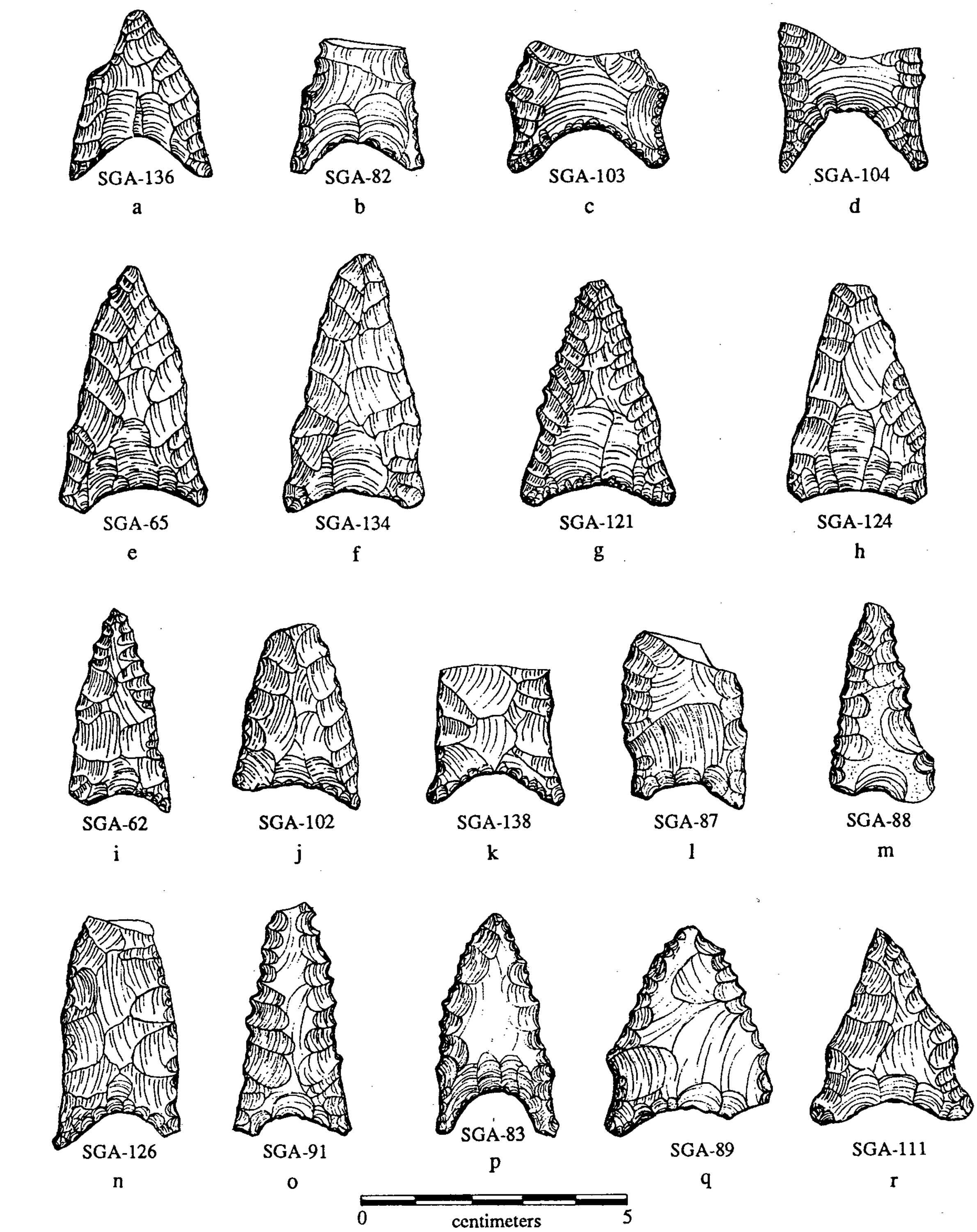


Figure 23. Fluted or Basally-Thinned Dalton Projectile Points from Georgia.



a.- j. 'Fluted' or Basally thinned Daltons; k.- r. Unfluted Daltons.

Figure 24. Fluted or Basally-Thinned and Unfluted Dalton Projectile Points from Georgia.

The Distributions: Sources of Bias

The distribution of Early, Middle, and Late PaleoIndian projectile points in Georgia is presented by county in Figures 25 to 27. Artifacts have been recorded from over 40 counties to date, mostly from the north-central and and southwestern parts of the state. These distributions, while evident over all three periods, are particularly pronounced in the data from the Early and Middle PaleoIndian periods (Figures 25, 26). There is no doubt that these patterns are at least partially due to collecting and reporting intensity in the state. Concentrations of PaleoIndian artifacts in northwest and north central part of the state, for example, around the Allatoona and Wallace Reservoirs, are a direct result of extensive professional research programs conducted in these areas. Concentrations observed in the vicinity of the Wallace Reservoir additionally reflect the nearby presence of the University of Georgia in Athens, where many professional archaeologists working in the state live.

The concentration of PaleoIndian points recorded in Burke, Columbia and Richmond Counties near Augusta is due, in part, to the early actions of avocational archaeologists such as Antonio J. Waring, Jr., and more recent activity by members of the Augusta Archaeological Society, who have taken an active interest in the survey project. A number of points recorded from this area are from the Smithsonian collections, donations stemming from River Basin Survey work along the upper Savannah River in the late 1940s and early 1950s, when a number of professional archaeologists were present in the area and interacted with local collectors. The large numbers of artifacts from southwest Georgia, particularly those dating to the Early and Middle PaleoIndian periods, reflects strong support for the SGA PaleoIndian Artifact Recording Project among local avocational and professional archaeologists living in this part of the state. Many of the points from south Georgia were recorded by one individual, Frankie Snow, who teaches at South Georgia College in Douglas. Most of the remaining points recorded from this area are due to the work of dedicated avocational archaeologists Andy Cason, Jack Hall, Sam Lawson, and John Whatley.

Other sources of bias are also present in the PaleoIndian artifact data. The Early and Middle PaleoIndian data is essentially complete, and includes every artifact from these periods brought to the attention of the authors, although measurements need to be obtained for some specimens. Data on Late PaleoIndian Dalton points is incomplete, however. Literally hundreds of Dalton points have been observed in collections from the state, or are described in professional reports. When examining collections with PaleoIndian materials, the authors concentrated on Early or Middle PaleoIndian projectile points before recording information on Dalton points. Many respondents to the survey adopted a similar strategy, noting that the Daltons in their collections were too numerous to easily report.

The large number of 'fluted' Daltons (many of which are actually basally thinned rather than truly fluted) included in Table 2 is due, in part, to the project's emphasis on PaleoIndian artifacts. For many avocational and professional archaeologists, 'fluted' is synonymous with PaleoIndian, and as a result any and all points exhibiting pronounced basal thinning were reported. While many Georgia Dalton points do exhibit pronounced basal thinning, the ratio of 'fluted' to nonfluted Daltons presented here cannot be considered an accurate representation. Where the data has value, however, is in its documentation of the existence, general distribution, and morphological variability in Dalton points in this part of the Southeast. As the SGA PaleoIndian Artifact Recording Project continues, and recording and data collection procedures become better organized, however, data on Late PaleoIndian assemblages are likely to become more representative.

A number of later prehistoric Woodland forms exhibiting an approximate lanceolate shape and basal thinning scars were brought to the attention of the survey but were excluded from

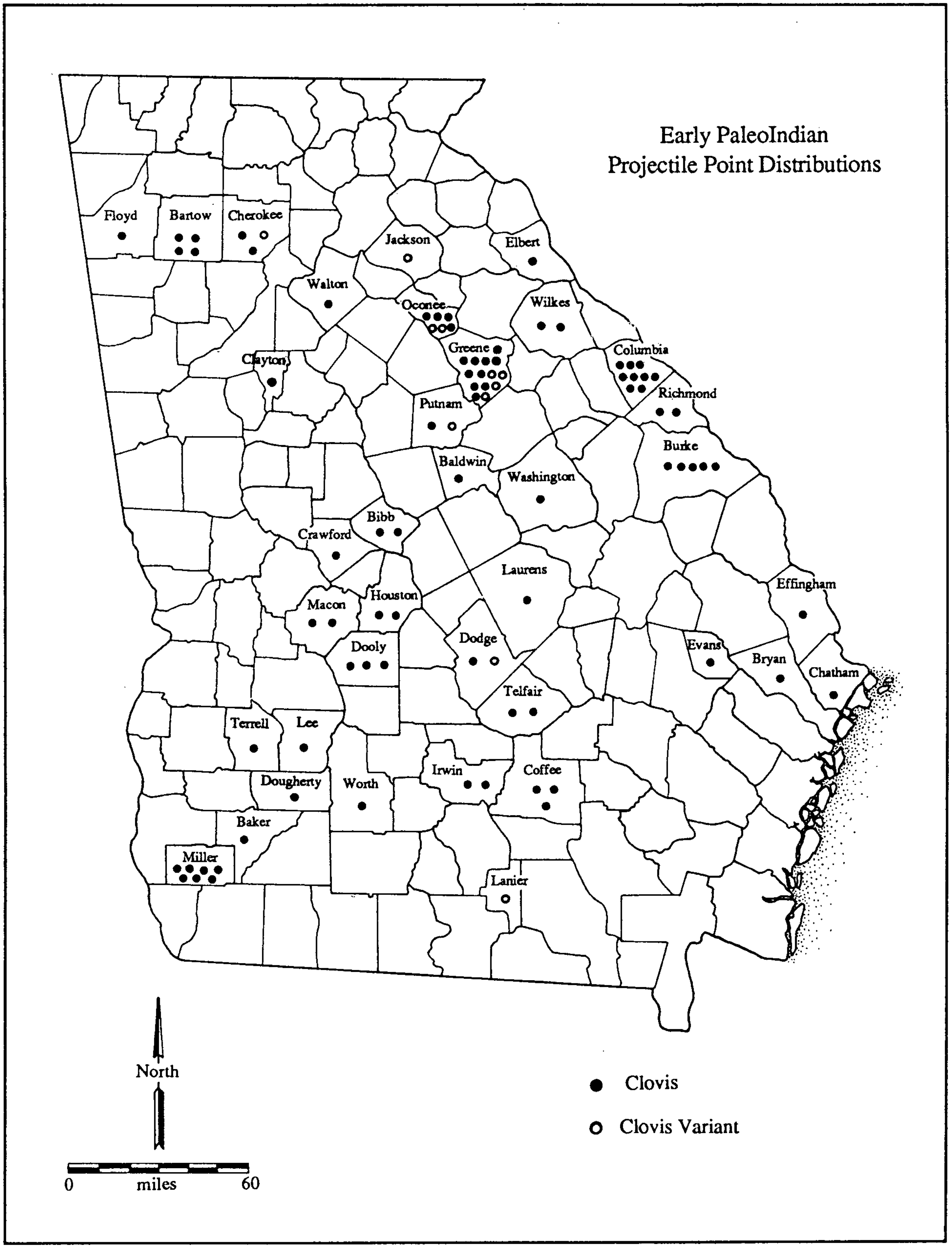


Figure 25. Early PaleoIndian Clovis and Clovis Variant Distributions in Georgia.

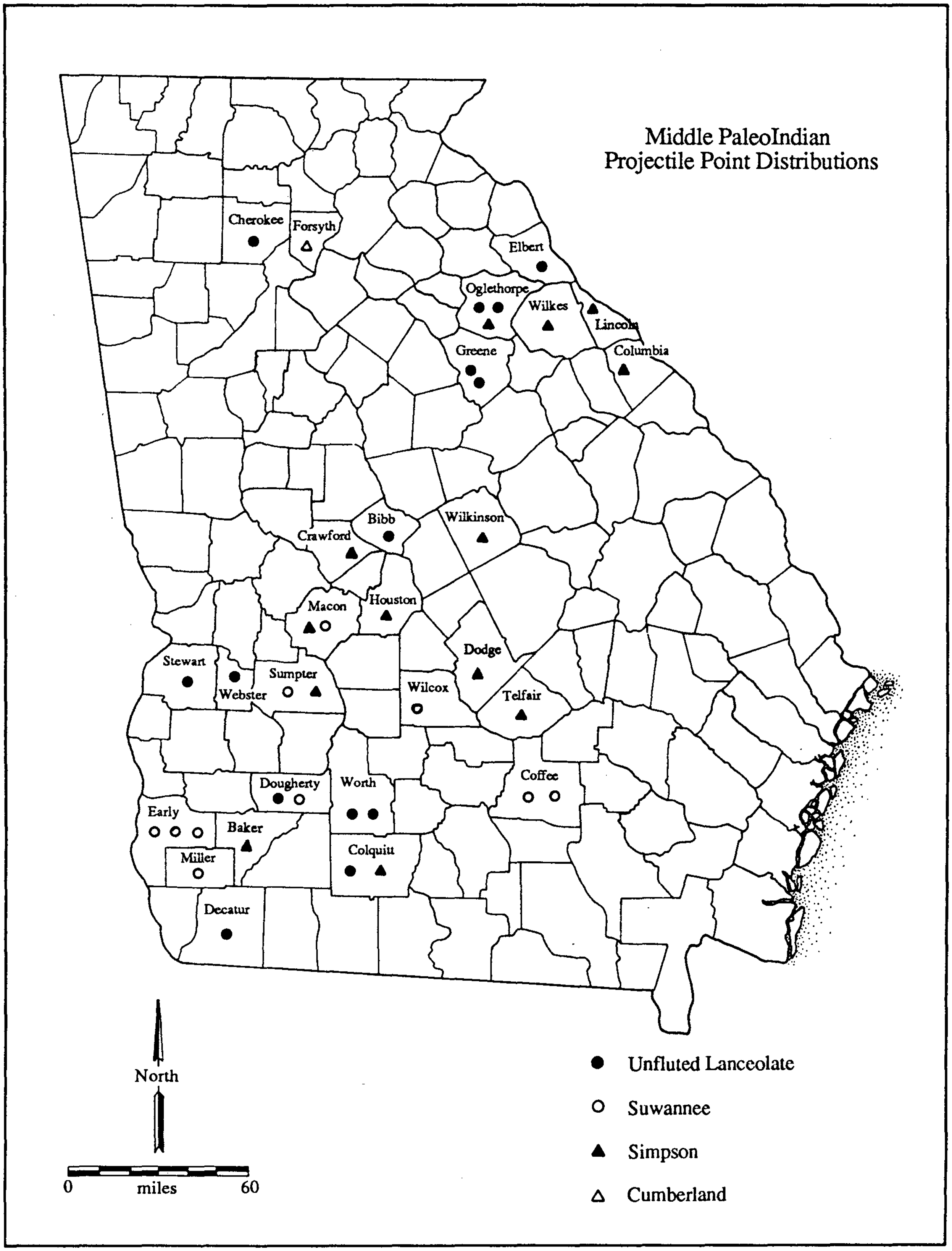


Figure 26. Middle PaleoIndian Unfluted Lanceolate/Suwannee/ Simpson/Cumberland Distributions in Georgia.

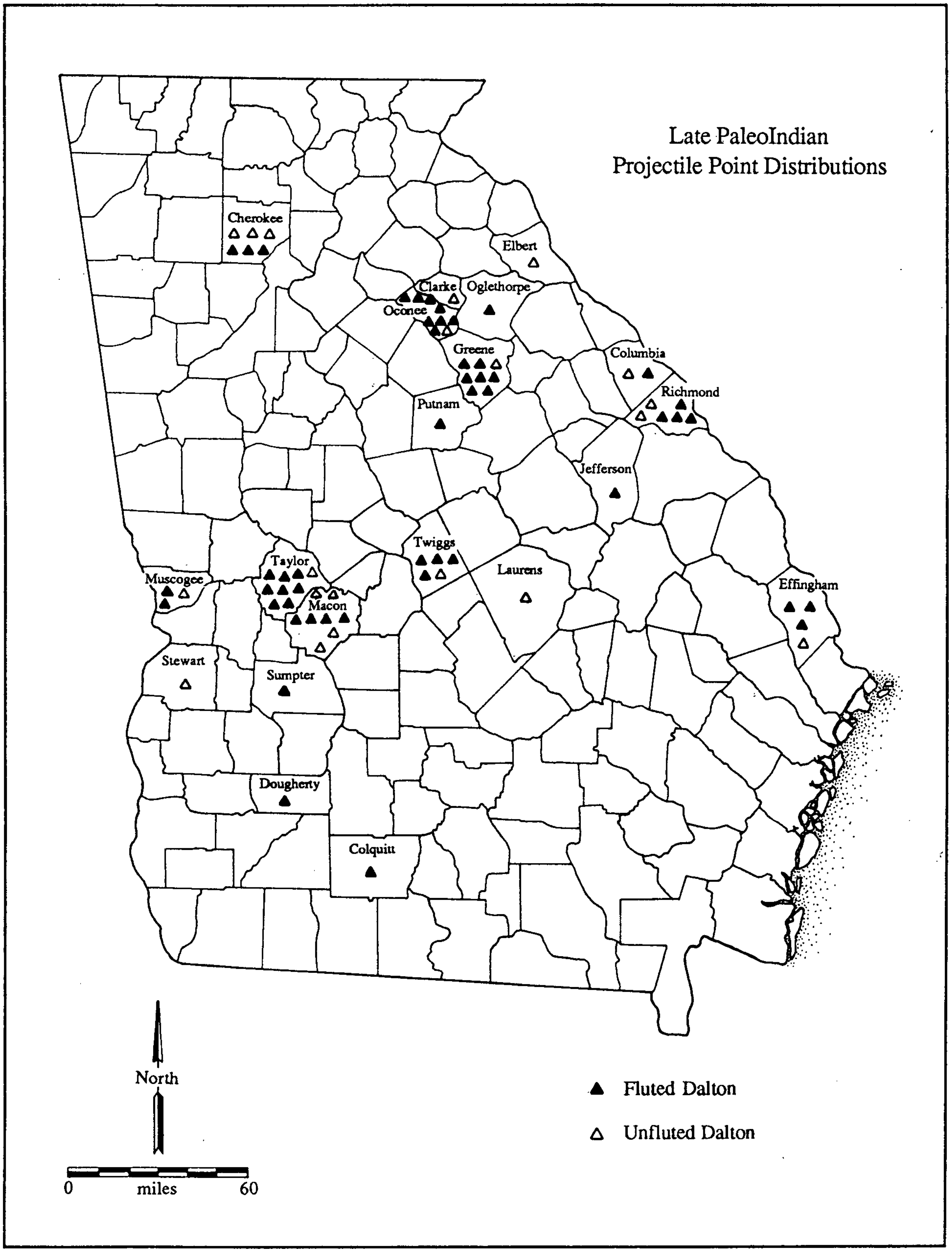


Figure 27. Late PaleoIndian Dalton Distributions in Georgia.

analysis. These forms most typically resembled Greenville, Yadkin, and Tallahassee types. These are identifiable as later artifacts from their triangular morphology, crude flaking pattern, and lack of evidence for basal or lateral grinding. While the Tallahassee type, or a related form, may eventually be shown to be of PaleoIndian age, current evidence suggests a Woodland placement (pp. 30-31). While some PaleoIndian artifacts may have been unintentionally excluded by this practice, the authors decided to err on the side of caution.

A final source of bias, the possibility that unscrupulous individuals have submitted reports of faked artifacts, possibly to enhance their market value, does not appear to have played much if any role in this survey. All of the measured artifacts were examined by the authors, or were recorded by individuals whose integrity is unquestioned. As the survey continues and expands, however, caution will have to continue to be exercised.

Point Distributions: Implications of the Data

Once potential and actual sources of bias in the survey data are accounted for, a number of observations can be made about PaleoIndian settlement and land use in Georgia. First, there appear to be very real differences in the incidence of PaleoIndian artifacts in the state. Very few Early or Middle PaleoIndian artifacts are reported from the southeastern part of the state, in the Sea Island area, and from the Coastal Plain in the lower reaches of the Savannah, Ogeechee, Ocmulgee, and Altamaha Rivers (Figures 25, 26). Given the moderate to extensive archaeological research conducted in some of these areas, this pattern may have some cultural basis. The low incidence of PaleoIndian diagnostics, if confirmed through continued research, may reflect avoidance or minimal use of these areas during the earlier parts of the PaleoIndian era. This may be due to an absence or low incidence of high quality lithic raw material, or it may reflect local ecological conditions during the Late Pleistocene. Neither the paleoenvironmental characteristics of the area nor the prevalence of lithic raw materials are currently well documented. While major chert outcrops occur along both Brier Creek and the Savannah River in the central portion of the Coastal Plain, whether many sources were present to the south and east of these areas remains unknown.

A second distributional void characterizes the northern, mountainous region of the state. Given the large numbers of fluted points recorded to date in the central portion of the Tennessee River Valley, the almost complete absence of these forms in northwest Georgia is surprising, and may well reflect an absence of data. This suspicion is reinforced by the fact that large numbers of PaleoIndian points have been found in counties across the state line in both in Alabama and Tennessee (Figure 12). Away from the Tennessee River Valley, however, the general absence of early diagnostics may accurately represent PaleoIndian land use. Throughout the Eastern Woodlands few Early and Middle PaleoIndian artifacts have been found in mountainous terrain, except along major drainages bisecting these landscapes; a similar pattern may hold true in Georgia.

The pronounced concentration of Early and Middle PaleoIndian artifacts in southwest Georgia suggests these areas were favored by early occupants. Major chert quarries occur along the lower Flint River and may have been regularly used by these peoples. Dunbar and Waller (1983; Dunbar et al. 1988) have documented major concentrations of both Early and Middle PaleoIndian artifacts in the portions of Florida which lie just to the south of this area, particularly along the Aucilla, Wacissa, and Suwannee Rivers, and in the upper western part of penninsular Florida. Southwest Georgia may well have been traversed by these peoples. The restriction of Suwannee and Simpson-like points, presumed Middle PaleoIndian point types that are extremely common in Florida, primarily to areas south of the Fall Line in Georgia, supports such an inference (Figure 26). Ten of the 14 Simpson points and all ten of the Suwannee points documented during the survey came from counties below the Fall Line.

The large numbers of Early and Middle PaleoIndian artifacts found in the central Piedmont along the Oconee River, while a measure of collection intensity, also suggest PaleoIndian use of this region was fairly appreciable. Survey data indicates that terrain along both major and minor drainages was visited, as well as in the uplands, with some evidence for increasing use of the uplands over time (O'Steen et al. 1986:45-51). A range of PaleoIndian site types have been documented in this area, including short-term camps, residential camps, and quarry areas. At least one possible aggregation locus, where large numbers of early people regularly convened, may have been present in the Barnett Shoals area. Feronia and Taylor Hill may represent other, comparable localities in the state. The particular attraction of the central Piedmont along the Oconee River to these early populations is obscure. River overlooks, particularly near shoals, appear to have been favored, and may have offered prime hunting during the Late Pleistocene.

Raw Material Distributions: Implications of the Data

The distribution of Early, Middle, and Late PaleoIndian projectile points in Georgia by raw material is presented in Figures 28 to 30. The data can be used to examine observations about the nature of PaleoIndian settlement and mobility. Throughout the Eastern Woodlands, the use of high quality lithic raw materials is a hallmark of Early PaleoIndian occupations (Gardner 1974, 1983; Kelly and Todd 1988; Meltzer 1988). This selection preference has been linked to the pattern of extensive group mobility thought to characterize these occupations (Goodyear 1979). Groups widely ranging over the landscape, and only intermittently returning to or encountering quarry sites, would need to exercise great care in their use of lithic raw materials. Tools would need to be of materials that can be reworked with a minimum of waste, since the group would need to carry its materials. A second major trend, the increasing use of local raw materials over the course of the PaleoIndian period, is also well documented from a number of localities in the Eastern United States, a trend that is widely interpreted as reflecting decreased group mobility (Anderson 1988; Goodyear et al. 1985, 1989; McGahey 1987:11-12; Meltzer 1988).

Both of these trends are supported by the Georgia data. Raw material incidence by specific projectile point type over the entire survey assemblage is documented in Table 3. This table effectively summarizes raw material use by major artifact category across Georgia. A decline over the course of the PaleoIndian era in the use of Coastal Plain chert, a high quality raw material, and a general pattern of increase in the use of lower quality materials such as quartz, metavolcanics, and orthoquartzites is evident. Declining use of Coastal Plain chert following the Middle PaleoIndian era is pronounced both north and south of the Fall Line (Table 4).

The types of lithic raw materials found on PaleoIndian sites to the north and south of the Fall Line helps to document the extent to which local vs. extralocal sources were used at various times (Table 4). The incidence of materials like Coastal Plain chert and silicified coral north of the Fall Line and, conversely, of quartz, Piedmont chert, Ridge and Valley chert, metavolcanics, and orthoquartzites south of the Fall Line is a particularly effective measure of this behavior. Use of extralocal material was most pronounced during the Early and particularly during the Middle PaleoIndian periods north of the Fall Line. Artifacts of Coastal Plain chert account for from 33 to 38 percent of all diagnostics, an incidence which drops appreciably in the ensuing late PaleoIndian periods. Procurement from sources at a considerable distance thus characterizes most raw material use in north Georgia during the Early and Middle PaleoIndian periods. The only exception to this pattern, raw material use during the Early/Middle PaleoIndian period, reflects the use of local stone sources in the manufacture of Clovis Variants, a form whose small size and shape appears dictated, at least in part, by the nature of the raw materials used primarily for its manufacture (i.e., Piedmont chert, vein quartz).

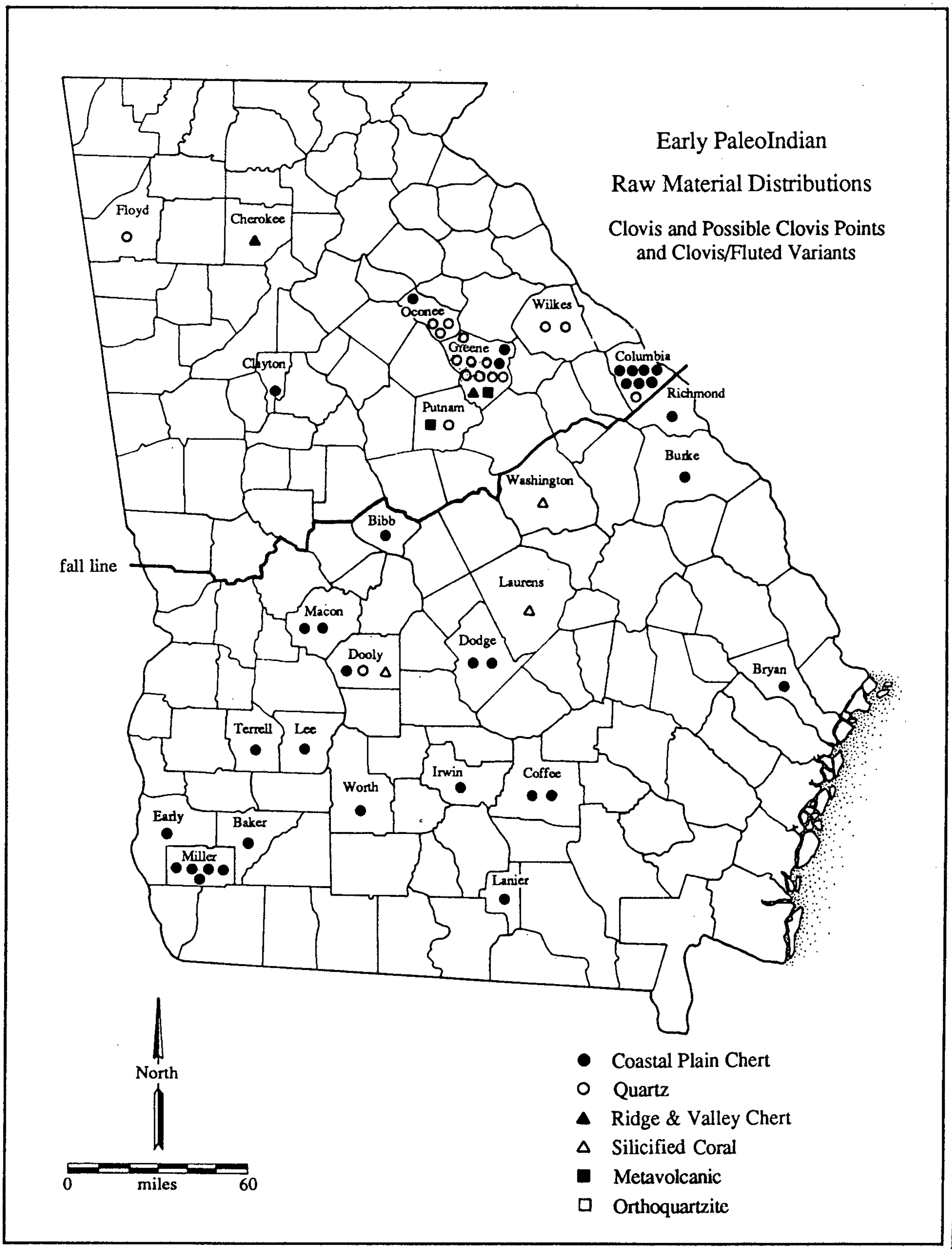


Figure 28. Early PaleoIndian Raw Material Distributions in Georgia.

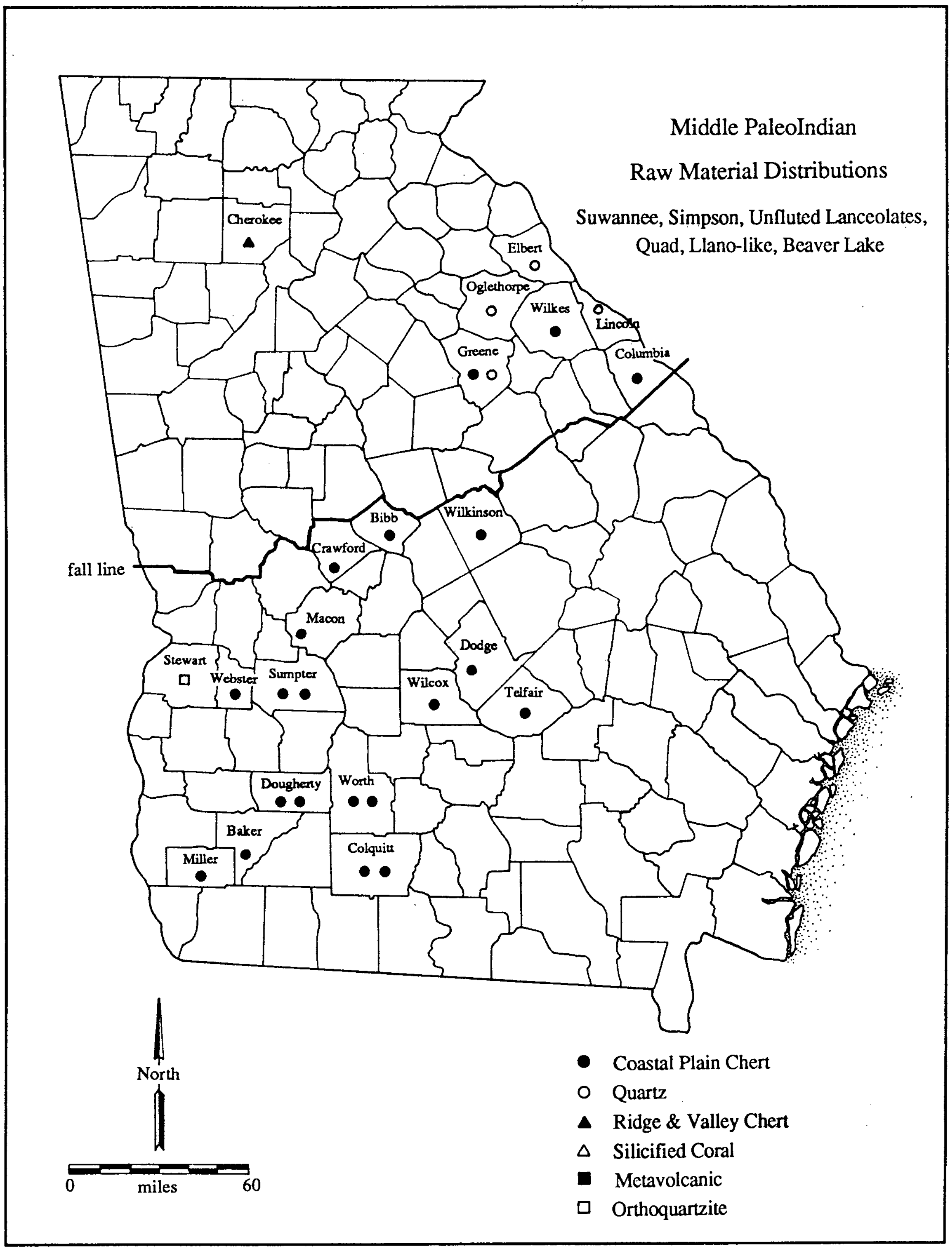


Figure 29. Middle PaleoIndian Raw Material Distributions in Georgia.

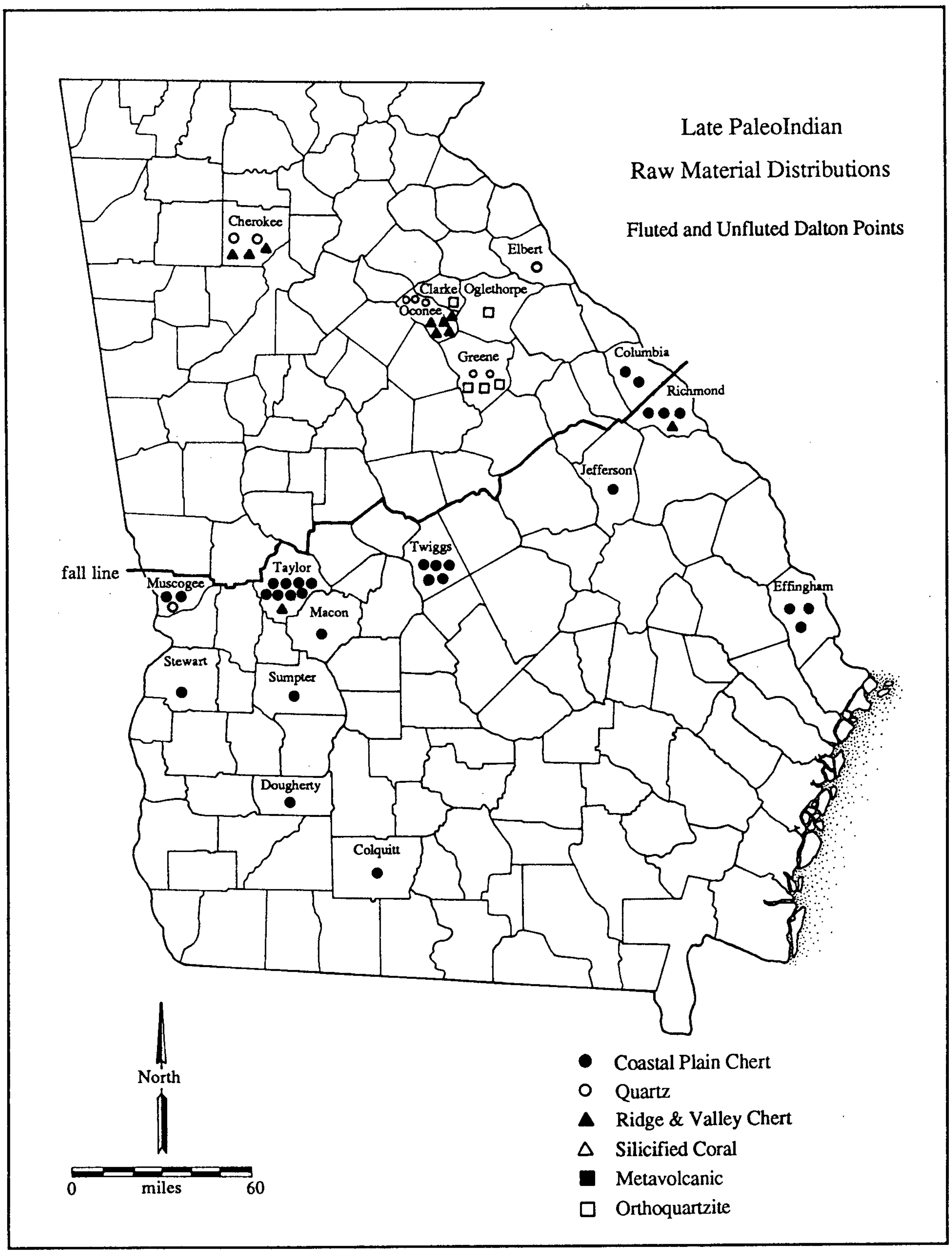


Figure 30. Late PaleoIndian Raw Material Distributions in Georgia.

GEORGIA PALEOINDIAN FLUTED AND NONFLUTED LANCEOLATE POINT ATTRIBUTE DATA

RAW MATERIAL

POINT TYPE	PERIOD OF USE	Coastal Plain Chert	Piedmont Chert	Ridge & Valley Chert	Silicified Coral	Other Chert	Quartz	Meta-Volcanic	Ortho-Quartzite	n/a	Total
Clovis	EPI	31		1	3	6	3	1		28	73
Possible Clovis	EPI	2	2	1			7	1			13
Clovis Variant	E/MPI	3	2				5			4	14
Fluted Lanceolate	E/MPI									1	1
Simpson	MPI	10	1			2	1				14
Suwannee	MPI	5								5	10
Cumberland	MPI									1	1
Unfluted Lanceolates	MPI	5	1				2		1	3	12
Llano-like	MPI	1									1
Beaver Lake	M/LPI	1									1
Quad	M/LPI			1			1				2
Fluted Dalton	M/LPI	23	8	7			5		6		49
Dalton (Unfluted)	LPI	6	5	3			4			7	25
TOTALS		87	19	13	3	8	28	2	7	49	216

PERIOD	Coastal Plain Chert	Piedmont Chert	Ridge & Valley Chert	Silicified Coral	Other Chert	Quartz	Meta-Volcanic	Ortho-Quartzite	Total
Early PaleoIndian	33	2	2	3	6	10	2		58
	56.90%	3.45%	3.45%	5.17%	10.34%	17.24%	3.45%	0.00%	100.00%
Early/Middle PaleoIndian	3	2				5			10
	30.00%	20.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	100.00%
Middle PaleoIndian	21	2			2	3		1	29
	72.41%	6.90%	0.00%	0.00%	6.90%	10.34%	0.00%	3.45%	100.00%
Middle/Late PaleoIndian	24	8	8			6		6	52
	46.15%	15.38%	15.38%	0.00%	0.00%	11.54%	0.00%	11.54%	100.00%
Late PaleoIndian	6	5	3			4			18
	33.33%	27.78%	16.67%	0.00%	0.00%	22.22%	0.00%	0.00%	100.00%
TOTALS	87	19	13	3	8	28	2	7	167
	52.10%	11.38%	7.78%	1.80%	4.79%	16.77%	1.20%	4.19%	100.00%

Table 3. Georgia PaleoIndian Points: Summary Data by Type and Raw Material.

Data from south of the Fall Line are more ambiguous. Extralocal raw materials are infrequent during most periods, although an increase in their use is indicated during the Middle/Late and Late PaleoIndian periods, when a number of Dalton points made of extralocal raw materials are documented. Coastal Plain chert use is common during almost every period; its ready availability in outcrops may have obviated the need or desire for extralocal materials. Due to the small sample sizes, however, verification of these patterns must await additional data.

Geographically wide-ranging adaptations are indicated by raw material source analyses of PaleoIndian hafted bifaces from collections throughout the Eastern Woodlands (Charles 1986; Goodyear et al. 1989; Meltzer 1988; Shott 1986b; Tankersley 1989). The Georgia data are in general agreement with this finding, and suggest that local PaleoIndian groups carried or exchanged points 150 or more kilometers from raw material sources. A gradual, rather than a dramatic or step-like fall-off in the occurrence of lithic raw materials appears to be indicated during the Early and Middle PaleoIndian periods, suggesting an absence of social territories or at least of

GEORGIA PALEOINDIAN FLUTED AND NONFLUTED LANCEOLATE POINT ATTRIBUTE DATA

SITES NORTH OF THE FALL LINE

POINT TYPE	PERIOD OF USE	Coastal Plain Chert	Piedmont Chert	Ridge & Valley Chert	Silicified Coral	Other Chert	Quartz	Meta-Volcanic	Ortho-Quartzite	n/a	Total
Clovis	EPI	9		1		5	3	1		8	27
Possible Clovis	EPI	1	2	1			6	1			11
Clovis Variant	E/MPI	1	2				5			1	9
Fluted Lanceolates	E/MPI										0
Simpson	MPI	2	1				1				4
Suwannee	MPI										0
Cumberland	MPI									1	1
Unfluted Lanceolates	MPI	1	1				2				4
Llano-like	MPI										0
Beaver Lake	M/LPI										0
Quad	M/LPI			1			1				2
Fluted Dalton	M/LPI	1	4	6			4		5		20
Dalton (Unfluted)	LPI	1		3			3				7
TOTALS		16	10	12	0	5	25	2	5	10	85

PERIOD	Coastal Plain Chert	Piedmont Chert	Ridge & Valley Chert	Silicified Coral	Other Chert	Quartz	Meta-Volcanic	Ortho-Quartzite	Total
Early Paleoindian	10	2	2	0	5	9	2	0	30
	33.33%	6.67%	6.67%	0.00%	16.67%	30.00%	6.67%	0.00%	100.00%
Early/Middle Paleoindian	1	2	0	0	0	5	0	0	8
	12.50%	25.00%	0.00%	0.00%	0.00%	62.50%	0.00%	0.00%	100.00%
Middle Paleoindian	3	2	0	0	0	3	0	0	8
	37.50%	25.00%	0.00%	0.00%	0.00%	37.50%	0.00%	0.00%	100.00%
Middle/Late Paleoindian	1	4	7	0	0	5	0	5	22
	4.55%	18.18%	31.82%	0.00%	0.00%	22.73%	0.00%	22.73%	100.00%
Late Paleoindian	1	0	3	0	0	3	0	0	7
	14.29%	0.00%	42.86%	0.00%	0.00%	42.86%	0.00%	0.00%	100.00%
TOTALS	16	10	12	0	5	25	2	5	75
	21.33%	13.33%	16.00%	0.00%	6.67%	33.33%	2.67%	6.67%	100.00%

SITES SOUTH OF THE FALL LINE

POINT TYPE	PERIOD OF USE	Coastal Plain Chert	Piedmont Chert	Ridge & Valley Chert	Silicified Coral	Other Chert	Quartz	Meta-Volcanic	Ortho-Quartzite	n/a	Total
Clovis	EPI	22			3	1				20	46
Possible Clovis	EPI	1					1				2
Clovis Variant	E/MPI	2								3	5
Fluted Lanceolates	E/MPI									1	1
Simpson	MPI	8				2					10
Suwannee	MPI	5								5	10
Cumberland	MPI										0
Unfluted Lanceolates	MPI	4							1	3	8
Llano-like	MPI	1									1
Beaver Lake	M/LPI	1									1
Quad	M/LPI										0
Fluted Dalton	M/LPI	22	4	1			1		1		29
Dalton (Unfluted)	LPI	5	5				1			7	18
TOTALS		71	9	1	3	3	3	0	2	39	131

PERIOD	Coastal Plain Chert	Piedmont Chert	Ridge & Valley Chert	Silicified Coral	Other Chert	Quartz	Meta-Volcanic	Ortho-Quartzite	Total
Early Paleoindian	23	0	0	3	1	1	0	0	28
	82.14%	0.00%	0.00%	10.71%	3.57%	3.57%	0.00%	0.00%	100.00%
Early/Middle Paleoindian	2	0	0	0	0	0	0	0	2
	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Middle Paleoindian	18	0	0	0	2	0	0	1	21
	85.71%	0.00%	0.00%	0.00%	9.52%	0.00%	0.00%	4.76%	100.00%
Middle/Late Paleoindian	23	4	1	0	0	1	0	1	30
	76.67%	13.33%	3.33%	0.00%	0.00%	3.33%	0.00%	3.33%	100.00%
Late Paleoindian	5	5	0	0	0	1	0	0	11
	45.45%	45.45%	0.00%	0.00%	0.00%	9.09%	0.00%	0.00%	100.00%
TOTALS	71	9	1	3	3	3	0	2	92
	77.17%	9.78%	1.09%	3.26%	3.26%	3.26%	0.00%	2.17%	100.00%

Table 4. Georgia PaleoIndian Points: Raw Material Use North and South of the Fall Line.

rigid group boundaries (Figures 28, 29). Raw material use during the Late PaleoIndian period, in contrast, was more localized, at least in the northern part of the state, with a far lower incidence of materials moving north of the Fall Line (Figure 30). The Dalton point data indicate some movement of north Georgia lithic raw materials south of the Fall Line during the Late PaleoIndian period. Most of these artifacts are found in counties just south of the Fall Line, however, suggesting this movement was not very far. Group territories restricted to the Coastal Plain or Piedmont may be indicated during this period, although circumscription of this kind is usually assumed to occur much later (Anderson and Hanson 1988; Sassaman et al. 1988). Over all PaleoIndian periods, evidence for raw material or finished artifact exchange is completely lacking. The assemblages recovered to date, even at quarry sites, suggest routine tool kit maintenance, discard, and replenishment ("gearing-up") activity, rather than production for exchange.

Point Measurements: Implications of the Data

Summary metric data on PaleoIndian artifacts found in Georgia, by major type, are presented in Table 5. The measurements include the average value, range, and number of artifacts measured. Measurements were taken only from complete points or from specimens where the measurement data would be unaffected by breakage. Points with no tip, for example, were usually sufficiently intact to provide reliable data on haft dimensions. These points are listed, by type, in Appendix 1. Clear differences in size, particularly maximum length, are evident within the various types. For instance, Clovis points, although exhibiting a fairly wide range, tend to be fairly small, averaging just over 60 mm in length. Only a few of the Georgia fluted points resemble the classic Southwestern spearpoints from sites like Blackwater Draw, Lehner, or Naco (Wormington 1957:54, 57, 82), although even at these sites it is sometimes forgotten that smaller forms were common.

Possible Clovis and Clovis Variants were even smaller still, averaging under 40 mm in length, hence causing some doubt as to whether they were true Clovis points. An appreciable majority (N=20, 74.1%) of these point forms were found north of the Fall Line. It is possible they represented exhausted and discarded tools brought into the area by groups living in other areas. This possibility, which is implied by the argument that exhausted or extensively reworked points are expected in areas with few raw materials (i.e., 'dead zones'), is contradicted by the fact that most of these artifacts are of locally available materials. Their small size may instead be due, in part, to manufacturing constraints of the raw materials they are made from, which include quartz and Piedmont chert. They may also be smaller by cultural preference, that is, they may represent a local manufacturing tradition.

Middle PaleoIndian Simpson and Suwannee points, in contrast, were appreciably larger, averaging ca. 70 and 80 mm in length, respectively. This may be due to the occurrence of these types primarily from south of the Fall Line, in close proximity to high quality chert sources in southern and central Georgia. Late PaleoIndian Dalton points were fairly small, with bifaces exhibiting pronounced 'fluting' or more properly basal thinning typically larger than points without this thinning. The 'flutes' on Georgia Dalton points were, on the average, about half the length of true flutes observed on the Clovis points in the sample. Interestingly, while appreciable differences in overall length, size of flutes, or length of edge grinding were evident between the various PaleoIndian point types present in the sample, unusual uniformity in basal width was evident, suggesting fairly consistent hafting practices.

Manufacturing constraints, notably the flaking properties of different lithic raw materials, affect the size of prehistoric artifacts. For example, pronounced differences are evident in the size of Late Archaic Savannah River points of differing raw materials in the northeast Georgia area (Anderson and Joseph 1988:196-198). To examine whether and how PaleoIndian projectile point

GEORGIA PALEOINDIAN FLUTED AND NONFLUTED LANCEOLATE POINT ATTRIBUTE DATA

AVERAGE MEASUREMENTS

POINT TYPE	PERIOD OF USE	Maximum Length	Maximum Width	Basal Width	Maximum Thickness	Depth of Basal Concavity	Length of Fluting Obverse	Length of Fluting Reverse	Length of Edge Grinding Left	Length of Edge Grinding Right	Total
Clovis	EPI	62.57	28.15	25.21	7.21	3.46	24.79	22.98	24.42	26.22	-
		40.5 - 118.1	19-40	16 - 32	3 - 11	1 - 11.2	10 - 62	11 - 53	15 - 45	16 - 52.4	-
		29	41	39	38	41	36	35	32	31	43
Possible Clovis	EPI	38.5	24.88	25.8	7.22	2.78	11.22	13.33	17	19.6	-
		37 - 40	22 - 30	21 - 33	5 - 11	1 - 5	7 - 16	6 - 34	13 - 23	16-26	-
		2	8	10	9	9	9	6	8	5	11
Clovis Variant	E/MPI	35.16	22.25	21.83	6.43	3.44	13.5	9.2	14.13	15.75	-
		28 - 48	21 - 26	20 - 26	5 - 8	2 - 5	6 - 18	6 - 15	12 - 17	11 - 18	-
		6	8	9	8	9	9	5	8	9	9
Simpson	MPI	69.7	29.92	24.59	7.23	3.19	15.5	11	22.23	21.08	-
		53 - 110	24 - 38	18.5 - 29	4 - 13	1 - 6	12 - 26	7 - 15	12 - 34	12 - 30	-
		10	14	11	13	13	13	5	13	13	14
Suwannee	MPI	78.33	31.6	28.67	8.18	6	13.5	7.5	24.5	22.53	-
		76 - 80	27 - 36	24 - 33	5.5 - 12.5	4 - 8	10.5 - 15	7 - 8	21 - 31	19.6 - 26	-
		3	5	3	5	5	3	2	4	3	5
Unfluted Lanceolates	MPI	57.67	29.84	29.5	6.64	3.75	n/a	n/a	23.93	24.06	-
		49-75	25-37	25-36	5 - 9	2 - 5	n/a	n/a	15.4-36	17-36	-
		3	8	8	9	9	n/a	n/a	8	8	9
Llano-like	MPI	145	26	20	6	-	8	10	38	35	1
Beaver Lake	M/LPI	44	22	21	5	3	-	-	15	14	1
Quad	M/LPI	-	24	24	6.5	3.5	13	-	19.5	18	-
		-	24	24	5 - 8	3 - 4	9 - 17	-	18 - 21	18	-
		-	1	1	2	2	2	-	2	1	2
Fluted Dalton	M/LPI	44	26.45	26.31	6.52	4.92	12.33	12.93	14.37	13.88	-
		20 - 80	19.2 - 34	21 - 34	5 - 10	2 - 12	3.5 - 23	3.5 - 30	5 - 19	7 - 19	-
		28	48	47	49	48	45	39	40	40	49
Dalton (Unfluted)	LPI	36.92	25.06	24.63	6.67	4.11	7.03	8.93	11.94	11.85	-
		24 - 53	19 - 31	19 - 30	4 - 9	2 - 8.5	4.5 - 16	4.5 - 15	4.4 - 20	6.5 - 16	-
		12	17	16	19	18	7	7	17	14	19

(mean)
(range)
(# measured)

Table 5. Georgia PaleoIndian Points: Summary Measurements by Type.

dimensions may have been influenced by raw material selection practices, average measurements were calculated over the Clovis and Fluted Dalton points in the sample by specific raw material types (Table 6). The greatest differences were observed in length. Both Clovis and Fluted Daltons of Coastal Plain chert were longer, on the average, than points of the same type made on other materials. This may be due to the relative ease with which this material can be worked, and the fact that it occurs in massive outcrops, permitting the manufacture of large artifacts. The use of other raw materials, particularly quartz, may be constrained by the size of the cobbles or crystals exploited. Similar trends were evident within the Clovis Variant assemblage, although unfortunately the sample size was extremely small (Appendix I).

GEORGIA PALEOINDIAN FLUTED AND NONFLUTED LANCEOLATE POINT ATTRIBUTE DATA

AVERAGE MEASUREMENTS

POINT TYPE	PERIOD OF USE	Maximum Length	Maximum Width	Basal Width	Maximum Thickness	Depth of Basal Concavity	Length of Fluting Obverse	Length of Fluting Reverse	Length of Edge Grinding Left	Length of Edge Grinding Right	Total
Clovis	EPI	60.19	28.33	25.75	7.2	3.91	26.8	24.37	25.91	25.95	-
(Coastal Plain chert)		40.5 - 118.1	21 - 37	19 - 33	3 - 11	1 - 11.2	10 - 62	11 - 53	16 - 45	16 - 52.4	-
		23	27	27	24	27	23	22	20	21	29
Clovis	EPI	54	27	26	8	3.33	17.33	16.33	16.33	19	-
(Quartz)		45 - 63	25-28	23-28	7 - 10	2 - 5	13 - 23	11 - 19	15 - 19	19	-
		2	3	3	3	3	3	3	3	1	3
Fluted Dalton	E/MPI	47.56	26.93	26.33	6.74	5.35	10.95	12.91	13.43	13.14	-
(Coastal Plain chert)		39 - 80	21 - 34	21 - 34	5.3 - 10	2 - 8.4	3.5 - 23	3.5 - 30	5 - 18	7 - 19	-
		16	23	22	23	22	21	18	15	19	23
Fluted Dalton	E/MPI	43.67	25.44	26.26	6.77	3.4	13.33	13.17	13.08	12.54	-
(Orthoquartzite)		40 - 47	19.2 - 29	21 - 30	5 - 8	2 - 5	9 - 17	9 - 18	8 - 18	8 - 17	-
		3	5	5	6	6	6	6	6	5	6
Fluted Dalton	E/MPI	42	25.75	26.13	5.88	4.5	12.88	12.5	15	13.4	-
(Piedmont chert)		30 - 48	21 - 29	23 - 29	5 - 7	2 - 8	9 - 18	6 - 17	9 - 18	9 - 17	-
		3	8	8	8	8	8	8	8	5	8
Fluted Dalton	E/MPI	37	25.4	25.4	7.4	2.6	13	11	14.8	14.8	-
(Quartz)		33 - 41	22 - 28	22 - 28	6 - 9	2 - 3	9 - 15	8 - 14	13 - 16	13 - 16	-
		2	5	5	5	5	4	4	5	5	5
Fluted Dalton	MPI	35	24.14	27.14	5.71	7	15	16.33	16.77	16.93	-
(Ridge & Valley chert)		20 - 58	24 - 31	24 - 31	5 - 7	4 - 12	10 - 22	12 - 22	15 - 19	14 -19	-
		4	7	7	7	7	6	3	6	6	7

(mean)
(range)
(# measured)

Table 6. Clovis and Dalton Points from Georgia: Summary Measurements by Raw Material Type.

More extensive lateral grinding was evident on Coastal Plain chert as opposed to quartz Clovis points, something that may be related to the durability of the two materials. Greater grinding may have been necessary for chert points to prevent use-related shattering or breakage while in the haft. This observation is not supported by the Dalton data, however, where more extensive grinding characterized the quartz as opposed to the Coastal Plain chert forms.

To test whether and how much artifact reduction or exhaustion might occur as distance from the raw material source increased, the size of Clovis points from north and south of the Fall Line made of Coastal Plain chert was examined (Table 7). As expected, Clovis points from north of the Fall Line were smaller in overall length, on the average, than those found south of this boundary. Some toolkit exhaustion is suggested, although the difference was comparatively minor, on the order of 5mm. In other respects the artifacts from the two regions were essentially identical, suggesting blade length was the primary attribute affected by distance from raw material source. This size difference may be due to a greater amount of lateral resharpening or possibly greater tip

GEORGIA PALEOINDIAN FLUTED AND NONFLUTED LANCEOLATE POINT ATTRIBUTE DATA

CLOVIS POINT SIZE NORTH AND SOUTH OF THE FALL LINE

POINT TYPE	PERIOD OF USE	Maximum Length	Maximum Width	Basal Width	Maximum Thickness	Depth of Basal Concavity	Length of Fluting: Obverse	Length of Fluting: Reverse	Length of Edge Grinding: Left	Length of Edge Grinding: Right	Total
Clovis	EPI	60.19	28.33	25.75	7.2	3.91	26.8	24.37	25.91	25.95	-
(Coastal Plain chert)		40.5 - 118.1	21 - 37	19 - 33	3 - 11	1 - 11.2	10 - 62	11 - 53	16 - 45	16 - 52.4	-
All Specimens		23	27	27	24	27	23	22	20	21	29
Clovis	EPI	59.44	28.78	25.07	7.56	2.73	28.8	28.74	25.25	25.75	-
(Coastal Plain chert)		42 - 80	25 - 37	22 - 32	6 - 9	1 - 7	10 - 62	12 - 53	20 - 45	18 - 50	-
North of Fall Line		9	9	9	9	9	9	8	8	8	9
Clovis	EPI	64.89	28.12	26.08	6.99	4.51	25.51	21.87	26.37	27.38	-
(Coastal Plain chert)		40.5 - 118.1	21 - 36	19 - 33	3 - 11	2 - 11.2	10 - 47.2	9 - 38	16 - 35	16 - 52.4	-
South of Fall Line		14	18	18	15	18	14	14	12	13	20

(mean)
(range)
(# measured)

Table 7. Georgia Clovis Points of Coastal Plain Chert: Summary Measurements of Artifacts Found North and South of the Fall Line.

replacement. Clovis points found north of the Fall Line were slightly thicker, on the average, than those found to the south, however, suggesting, possibly, some concern about loss due to breakage, assuming, as is plausible, that thinner points were known to break more readily than thicker points. Likewise, chert Clovis points from north of the Fall Line had smaller basal concavities, again suggesting (if not a stylistic difference) concern for durability, assuming that points with a solid base were sturdier in the haft, or less likely to break, than those with a concave base. Finally, the greater flute length noted on the north Georgia specimens may indicate greater care in manufacture. All of these attributes might be expected on points that were to be carried and used at an appreciable distance from a raw material source, since they would probably improve point durability and efficiency.

The fact that the measurements are not markedly different, however, suggests that the use of Coastal Plain chert Clovis points may have been relatively consistent over their area of occurrence in Georgia. This runs counter to arguments postulating raw material 'dead zones' or greater toolkit exhaustion with increasing distance from source areas. Artifacts that appear exhausted from the area north of the Fall Line, interestingly, are those made of presumably local materials, as attested to by the small size of Clovis Variants and possible Clovis points in the sample, most of which came from from this area. Special patterns of use may have attended points made of high quality material. Minimally, the data suggest that the condition of Coastal Plain chert artifacts in the archaeological record from both north and south of the Fall Line in Georgia appears to be due, in part, to factors other than simple toolkit exhaustion.

Evidence for Population Increase

Examining the occurrence of PaleoIndian and Early Archaic diagnostic projectile points at a number of locations in Georgia provides an indication of the extent to which population growth was occurring during these periods. A major increase in population, or at least in the use of projectile points, is indicated by an analysis of materials from four localities, including: (1) the Feronia locality in south-central Georgia (Blanton and Snow 1986, 1989); (2) the Richard B. Russell Reservoir along the upper Savannah River in the central Georgia and South Carolina

Piedmont (Anderson and Joseph 1988), (3) the Wallace Reservoir in the central Georgia Piedmont (O'Steen 1983); and (4) the Barnett Shoals area (O'Steen et al. 1986) (Table 8). Collections from intensively surveyed localities are used in this analysis rather than the data in the SGA PaleoIndian Artifact Recording Project, since the latter sample is heavily biased toward earlier fluted and lanceolate forms.

EVIDENCE FOR POPULATION INCREASE IN THE SOUTHEASTERN UNITED STATES:
COUNTS OF DIAGNOSTIC ARTIFACTS BY PERIOD

Locality	Early PaleoIndian	Middle PaleoIndian	Late PaleoIndian	Early Archaic	Reference
Feronia Locality, Ga.	4	n/a	18	102	Blanton and Snow 1986, 1989
Russell Reservoir, Ga/SC	3	-	14	129	Anderson and Joseph 1988:25
Wallace Reservoir, Ga	9	9	32	294	O'Steen 1983:114
Barnett Shoals, Georgia	0	10	42	318	O'Steen et al. 1986

Table 8. Evidence for Population Increase During the PaleoIndian and Early Archaic Periods in the Georgia Area: Counts of Diagnostic Artifacts by Period.

At each of the four localities major increases in the numbers of observed diagnostics are evident between the Early and Late PaleoIndian periods, and again from Late PaleoIndian Dalton to the Early Archaic periods. This may reflect changing technologies as well as population growth, since Dalton and Early Archaic hafted bifaces were used as multipurpose tools, apparently more so than earlier fluted and unfluted lanceolate forms. If these data do reflect, in some way, regional population levels, they suggest that major population growth was occurring, and that considerable filling of the landscape had occurred by the start of the Early Archaic period. The low numbers of Early PaleoIndian components, when compared with the far greater number of Late PaleoIndian and particularly Early Archaic components, suggest that a dramatic population increase was occurring, corresponding to the initial settlement, and subsequent filling, of the formerly empty but ecologically rich southern landscape. The increase from the Early to the Late PaleoIndian periods may reflect low numbers of people in the initial exploring and colonizing groups, as opposed to the larger numbers that emerged once these groups settled into the region.

CONCLUSIONS

Prior to this study almost all of our interpretations about PaleoIndian lifeways in Georgia were influenced, if not dictated, by findings from other parts of North America. The hunting of Late Pleistocene fauna is assumed to have been commonplace, although direct evidence for the PaleoIndian exploitation of animals of any kind has been only rarely found anywhere in the region (Meltzer 1988:23-24). Unfortunately, even after the collection of an appreciable database, our knowledge of PaleoIndian subsistence locally remains largely conjectural. Greater success is evident when mobility patterns are examined. Williams and Stoltman (1965:676), for example, suggested that the larger Southeastern river valleys, which would have had rich biotic resources, served as main settlement and communications arteries during the PaleoIndian period. In Georgia the data to date indicate that PaleoIndian artifacts of all periods, and particularly those from the Late PaleoIndian era, are found along both major and minor drainages. Settlement appears to have been widespread, taking advantage of a range of microenvironments, with increasing use of the interriverine areas over time.

The propensity for PaleoIndian points and sites to occur near high quality raw material sources in the Southeastern United States has been widely noted, and the occupations are sometimes described as 'tethered' (Dunbar and Waller 1983; Gardner 1974, 1983; Goodyear 1979; Meltzer 1988:28, 41). A similar pattern has been noted in Georgia, although the extent to which quarry-related tethering or raw material/tool kit entropy constrained initial PaleoIndian colonization and, once populations were present, subsequent mobility patterns is unclear. Early/Middle PaleoIndian projectile point distributional data both from Georgia and across the Eastern Woodlands reveals appreciable numbers of artifacts in areas of high quality raw material, such as in the central Ohio and Tennessee River Valleys, but also document concentrations in areas along the Atlantic Seaboard where it is difficult to attribute unusual properties to local or nearby stone sources (Figure 12).

In Florida and South Carolina, large numbers of PaleoIndian points have been found in or near areas yielding high quality chert, while comparatively far fewer remains have been found away from these areas (Dunbar and Waller 1983; Goodyear et al. 1985, 1989). This pattern has also been noted in Georgia, where PaleoIndian artifacts are comparatively common near major chert sources along the middle Savannah and lower Flint Rivers. In the Georgia Piedmont — an area lying intermediate to major lithic raw material sources in eastern Georgia and western South Carolina, south Georgia, and the Tennessee River Valley — high quality chert artifacts, in contrast, are uncommon (O'Steen et al. 1986; Anderson et al. 1986a, 1987). Areas lacking appreciable numbers of fluted points are sometimes assumed to have been raw material "dead zones" lacking high quality stone sources, and hence regions that were avoided by early populations. PaleoIndian hafted bifaces found in these areas are frequently small and extensively reworked, while associated toolkits and debitage exhibit evidence for the use of raw material conservation strategies (Goodyear 1979, Goodyear et al. 1989:36; MacDonald 1968; Meltzer 1988; O'Steen et al. 1986).

Our knowledge of how Georgia's PaleoIndian populations made use of the landscape remains uncertain. Nevertheless, a number of models warrant consideration as additional data are collected from the state. The PaleoIndian archaeological record from the Southeast has suggested to some archaeologists that the emergence of a generalist, foraging adaptation in this part of the Eastern Woodlands took place early, during the initial period of settlement, or perhaps even characterized the adaptation of the founding populations (Meltzer 1984, 1988). The question of whether and when early human populations adopted foraging strategies in the Southeast has seen considerable investigation in the general Georgia area in recent years. Claggett and Cable (1982:13) have argued that changes from the Late PaleoIndian into the Early Archaic period in the South Atlantic Slope were from systems emphasizing logistical mobility and curated technologies to those emphasizing residential mobility and expedient technologies. These changes, they further postulate, were the direct result of post-glacial warming and the emergence of homogeneous hardwood canopies over much of the region. Recent tests of this model, focusing on Early Archaic materials, have been conducted with data from the Savannah and Oconee drainages (Anderson and Schuldenrein 1983; Anderson and Hanson 1988; O'Steen 1983).

One thing that has emerged in recent years is a sense of respect for the early populations in the region. While it is sometimes suggested that PaleoIndian socio-political organization was simple and uncomplicated, in actuality, fairly sophisticated information exchange and mating networks would have had to have been present for these populations to remain reproductively viable (e.g., Anderson and Hanson 1988; Hantman 1989; Johnson 1989; Turner 1989; Wobst 1974, 1976; Wright 1981). In all probability the need to find and exchange mates in a cultural environment characterized by an extremely low population density shaped PaleoIndian settlement systems in the region. As the landscape filled over the course of the PaleoIndian and subsequent Archaic periods, this driving force would have lessened.

Local (band-level) and regional (macroband-level) settlement systems such as those postulated during post-PaleoIndian, Early Archaic times in the Southeast may have had analogs operating at much larger geographic scales during these earlier periods (Anderson and Hanson 1988; Hantman 1989; Turner 1989). Band level co-residential population aggregates of roughly 50 to 150 people may have been present in a number of areas, wandering over appreciable areas while loosely tethered to a primary quarry source. Movement along or between several river drainages by members of these bands may have been commonplace. Larger, regional macroband-level social entities also could have been present. These may have been temporary entities in most areas, however, formed by the occasional (and possibly scheduled) meetings of two or more bands. As population grew, group ranges probably decreased, first to within progressively fewer drainages, then to along a single drainage, and finally to within portions of that drainage. This circumscription is thought to have been gradual, with the emergence of discrete cultural entities within segments of the region's smaller drainages unlikely until well into the Archaic (Anderson and Hanson 1988; Sassaman et al. 1988).

Finally, as noted previously, the authors of the current study have made an effort to present as much as possible of the primary data that have been collected to date in Georgia. There is a very important reason for this. In the Southeast, statewide PaleoIndian projectile point surveys with published primary data for individual artifacts currently exist only for Kentucky (Rolingson 1964; Tankersley 1989), North Carolina (Peck 1988; Perkinson 1971, 1973), and Virginia (McCary 1984, 1986, 1988). Comparable projects recording primary but as of yet unpublished artifactual data are ongoing in Florida (Dunbar and Waller 1983), Louisiana (Gagliano and Gregory 1965, Spiller 1987), Mississippi (McGahey 1987), South Carolina (Michie 1977; Charles 1983, 1986), and Tennessee (Guthe 1983; Broster 1989). States where general PaleoIndian point survey data exist, that is, where point totals have been presented but where individual artifactual data have not been systematically recorded or published include Alabama (Futato 1982), Arkansas (Morse and Morse 1983:60-61), Maryland (Tyler Bastian: personal communication 1989), and West Virginia (Gardner 1987).

This situation is also duplicated in the northern part of the Eastern Woodlands. Thus, while many states or provinces in Eastern North America have high reported PaleoIndian point totals, information concerning measurements and proveniences of individual artifacts in many cases is either nonexistent or accessible only with great difficulty. While notable exceptions to this general pattern exist, there is a very real need for investigators to publish primary data, specifically artifact proveniences, measurements, drawings and, where possible, photographs. Studies with published compilations of data are critically important to Eastern PaleoIndian research because the information can be used to examine a wide range of questions.

IV.

RESOURCE MANAGEMENT CONSIDERATIONS

INTRODUCTION

In this chapter we present a cultural resource management strategy designed to greatly increase our understanding of PaleoIndian occupations in Georgia. While the responsibility for initiating this strategy will fall upon the state's professional archaeological community, the involvement of concerned private citizens, particularly avocational archaeologists, educators, and public officials will be essential to its success. The cultural resources of Georgia represent the common heritage of the people of the state. Accordingly, cultural resource management programs should, as much as possible, attempt to incorporate the broadest number of people. Thus, while archaeological considerations that are likely to be of interest primarily to professional or serious avocational archaeologists comprise much of this chapter, there are also sections directed to subjects like public education and site preservation, where the general public has an important role to play.

DIRECTIONS FOR FUTURE RESEARCH

Archaeologists involved in PaleoIndian research in Georgia should address themselves to matters of effective site discovery, assemblage analysis, and anthropological interpretation. Efforts should first be directed to maximizing the probability of finding PaleoIndian sites in the state. Second, when early sites are found in Georgia, care must be taken to ensure that their archaeological assemblages are properly and adequately examined, both in the field and in the laboratory. Finally, researchers must never lose sight of the fact that the primary objective of this research is to shed light on the human groups that left these remains behind. The purpose of archaeology, after all, is to increase our understanding of humanity's past. The PaleoIndian inhabitants of the New World, and of Georgia, are among the least understood of its occupants. Their proper investigation, therefore, is one of our greatest challenges.

Researchers (professional or avocational) examining the PaleoIndian occupation of Georgia should consider the questions outlined below as they pursue their investigations. Many of these questions deal with procedures by which PaleoIndian sites are found and examined, and hence have considerable relevance to ongoing cultural resource management (CRM) compliance surveys. The relevance of many of these questions, of course, will depend upon the nature of the investigation being undertaken and the kind of data available for consideration. Most of the questions and research themes raised here, it should be noted, draw upon and are comparable to those in preservation plans prepared by archaeologists in other Southeastern states, specifically the plans from Arkansas, Florida, Kentucky, Louisiana, Mississippi, Tennessee, and West Virginia (Broster 1987; Davis 1982; Dunbar n.d.; Gardner 1987; McGahey n.d.; Smith et al. 1983; Tankersley 1987). This should help to ensure that both a local and regional perspective is brought to bear upon Georgia's PaleoIndian cultural resources.

Specific Research Questions

(1) *What constitutes a PaleoIndian site in Georgia?*

Discussion: Given the scarcity of PaleoIndian remains in Georgia, and the fact that even isolated diagnostic artifacts can provide important information about early settlement systems, technological organization, and mobility strategies, all finds of PaleoIndian diagnostics should be treated as sites, and formally recorded in the state site files. An SGA PaleoIndian Artifact Recording Project projectile point form should be filled out for all such artifacts, and submitted with the site form. Site forms should be filled out even if no other artifacts are found in association with the diagnostic, as long as there is evidence that it is in or close to primary context. That is, site forms should be completed unless there is clear evidence that the artifact is in secondary or highly disturbed context (i.e., in stream gravels, amid historic debris suggesting it was collected, or in road fill). Sites reported on the basis of isolated artifacts should not require additional investigation, provided unequivocal evidence exists that no other (i.e., deeply buried) materials are present.

(2) *What specific landforms, soil types, and microenvironmental settings were used by PaleoIndian populations in Georgia? Are such settings sufficiently distinct or unusual that they can be used to predict the probability of finding early materials? What field methods are appropriate for these settings, to maximize the possibility of discovering and evaluating early components?*

Discussion: Analyses of PaleoIndian land use are currently in their infancy in Georgia and throughout much of the Southeast. As data continues to accumulate from the state, particularly as more sites and artifacts are recorded, questions of this kind will be progressively easier to address. The work by O'Steen and her colleagues (1986) in the upper Oconee River Valley, briefly summarized in Chapter II, for example, demonstrated a pronounced affinity of these early populations for stream margin settings near prominent shoals. Fall Line locations and areas around chert outcrops also appear to have been favored. If these early populations were "tethered" to quarry areas, that is, if their movements were indeed centered about high quality stone sources, as some archaeologists have suggested (Goodyear 1979; Gardner 1983), then archaeological projects in areas where lithic raw material outcrops occur should be particularly attentive to the possibility that PaleoIndian components may be present. As PaleoIndian components continue to be identified in Georgia, their environmental associations should be noted and compared, with the goal of developing predictive site location models.

Before the environmental associations of PaleoIndian sites can be examined, of course, the sites themselves must be discovered. Whenever archaeological survey work is undertaken in Georgia, therefore, care must be taken to ensure that PaleoIndian remains are not accidentally overlooked. Subsurface testing accompanying survey projects must be sufficient to encounter any archaeological deposits that may be present. Geoarchaeological analyses undertaken along the Ocmulgee and Savannah Rivers have shown that deeply buried PaleoIndian remains may be present in floodplain areas, particularly in older terrace locations near the relict confluences of major tributaries (Brooks and Brooks n.d.; Cosner 1973; Goodyear and Colquhoun 1987). In some areas, including floodplain/terrace settings, swampy depressions, and areas where colluviation has occurred, PaleoIndian remains may occur at considerable depths. In other areas, notably on eroded upland surfaces, these remains may occur on or near the surface.

The absence of deeply buried deposits should be demonstrated rather than assumed wherever possible. Field procedures employed during CRM compliance projects, accordingly, should be designed to accommodate the range of differing depositional environments that occur. Where the potential for deeply buried deposits exists, the use of shallow shovel tests or test pits should be considered inappropriate. Instead, deep stratigraphic column samples, excavated by hand or using heavy machinery (i.e., screened backhoe cut fill), should be adopted. One or more units excavated during site discovery and evaluation operations should always be taken to well below the lowest artifact-bearing levels, to help ensure that deeply buried remains are not missed. Finally, when PaleoIndian assemblages are found, informed geoarchaeological investigations should accompany subsequent evaluation or excavation programs.

(3) *What are the effects of contemporary land-use practices on PaleoIndian cultural resources in Georgia?*

Discussion: Portions of the archaeological record in Georgia are lost each year due to erosion, development, and professional and avocational collection. Damage to the PaleoIndian archaeological record is difficult to assess, but is unquestionably occurring. Development has led to the destruction of many sites, such as those lost under the waters of the Russell and Wallace Reservoirs. Other sites were no doubt present in the other reservoir basins impounded in the state (see Question 18). Urban development and associated construction is also taking its toll, particularly around larger cities such as Atlanta, Augusta, and Savannah. The continued expansion of the cities of Albany and Augusta, in fact, directly threaten two important PaleoIndian sites, the Taylor Hill and Muckafoonee Creek sites.

Avocational collecting is also reducing the state's PaleoIndian archaeological record, although through programs like the SGA PaleoIndian Artifact Recording Project the damaging effects of this activity are minimized. The proportion of collectors and collections in the state that have been examined during the SGA survey project is currently unknown but is undoubtedly only a small fraction of the total. As older collectors pass away or disperse their collections, provenience information on these artifacts is usually lost forever. Some form of outreach program directed to educating collectors, and recording their collections, needs to be developed. A number of avocational as well as professional archaeologists in the state currently undertake activity of this kind, although with the exception of the SGA PaleoIndian Artifact Recording Project this work is unsystematic.

Site destruction at the hands of looters is also occurring, with much of this activity directed to highly visible quarry sites. The area around the excavation blocks at the Theriault chert quarry, for example, was destroyed by looters in the late 1960s, and sites of this type continue to attract attention. Large, dense PaleoIndian sites in the state are increasingly likely to suffer depredations of this kind, particularly if the value of early artifacts rises. Counteracting this trend, fortunately, is the expansion in the production of 'fake' PaleoIndian artifacts for sales purposes. Whether this will depress the market sufficiently to discourage looting remains unknown. Parenthetically, given the increasing incidence of fakes, researchers recording PaleoIndian points in the state will have to be on their guard to avoid 'legitimizing' artifacts of this kind by including them in their sample data.

(4) *When did human populations first arrive in Georgia? Do Clovis assemblages, which date from ca. 11,500 to 11,000 B.P., represent the first human settlement, or are earlier remains present in the state?*

Discussion: The date of initial human entry into the New World is currently the subject of considerable debate and controversy (Dincauze 1984; Owen 1984; Meltzer 1989). Some investigators believe there is no conclusive evidence for human presence prior to ca. 11,500 B.P., while others believe human entry may date up to 10,000 or more years earlier. Given this uncertainty, great care must be taken to ensure that the possibility of early components on a site has been thoroughly evaluated. Are site testing and examination strategies sufficient to determine whether early components are present? Excavation units must be deep enough the ensure that buried deposits are not missed, and some should be carried below artifact-bearing levels to ascertain that cultural deposits have been fully documented. When PaleoIndian assemblages are found, every effort should be made to recover datable materials that may help refine the regions PaleoIndian chronology.

(5) *What is the nature of the transition from the Early to the Middle PaleoIndian period in the Georgia area, and from the Middle to the Late PaleoIndian period? What diagnostic artifacts can be used to delimit occupations dating to these subperiods? What are the temporal and spatial ranges of these artifacts, and can they be used to infer the existence of distinct human groups (i.e., early band or macroband ranges)?*

Discussion: At the present the identification of Early, Middle, and Late PaleoIndian components in Georgia and across the Southeast suffers from considerable ambiguity, particularly in cases where "classic" Clovis points (Early PaleoIndian) or "classic" Dalton forms (Late PaleoIndian) are lacking (see Chapter I, pp. 7-11). While the precise temporal ranges of even these forms are not securely pinned down, they are far better dated over the region than presumed or potential Middle PaleoIndian forms such as the 'fluted' Dalton, Clovis Variant, Unfluted Lanceolate, Suwannees, Simpson, Quad, Beaver Lake, and Cumberland types. The typological variability and chronological occurrence of these and other PaleoIndian forms need to be better determined. Forms that resemble PaleoIndian diagnostics, but actually date much later, also need to be identified, and their temporal and morphological ranges delimited. Examples of this in the Georgia area include the Greenville and Tallahassee point types, presumed Woodland forms.

(6) *What is the nature of the fluted point to non-fluted point transition in the Georgia area? Why do so many Georgia Dalton points exhibit pronounced basal thinning approximating fluting?*

Discussion: The transition from PaleoIndian to Early Archaic adaptations in the Southeast, characterized by dramatic changes in artifact assemblages, site incidence, and site density, is thought to directly reflect human adaptation to post-Pleistocene climatic conditions. The global warming trend at this time brought about major changes in floral and faunal communities over the region, presumably necessitating pronounced changes in the way resident human populations made use of the landscape. Coupled with these changes in the environment, human population growth was undoubtedly occurring, leading to increasing pressure on resources, and the need for new methods by which groups could interact with one another. Dalton points, with their notched morphology, are frequently viewed as a transitional assemblage between the earlier fluted and unfluted lanceolates and the later side and corner notched forms (Morse 1973, 1975a; Goodyear 1982). The presence of a large number of 'fluted' or basally thinned Dalton points in collections in Georgia, if not an artifact of the PaleoIndian survey procedures (which focused on fluted points), may indicate an early or direct transition between these adaptations may have occurred in the area. Technological analyses directed to documenting how these various artifact forms were made might be one way of documenting the degree of continuity in manufacturing procedures. Examining the associations of 'fluted' Dalton forms may also prove informative, particularly if these artifact types are found to regularly occur on sites that also yield Clovis and other true fluted forms.

(7) *How do Early, Middle, and Late PaleoIndian remains from Georgia compare with remains from comparable periods in adjoining states, and across the larger region? Can this kind of information tell us about the geographic extent of the people that left these materials behind?*

Discussion: In recent years considerable effort has been expended toward delimiting the extent of prehistoric settlement systems through analyses of artifact stylistic variability and raw material sources, both locally (Anderson and Hanson 1988; Goodyear and Charles 1984; O'Steen et al. 1986; Sassaman et al. 1988) and elsewhere in Eastern North America (Goodyear 1979; Gramly 1982; Tankersley 1989). Resolution of PaleoIndian cultural entities as well as information about the scale or geographic extent of their movement (i.e, group range) may be possible employing analyses of this kind. The distribution of Middle PaleoIndian Suwannee projectile points, for example, appears to be restricted almost exclusively to Florida and the Coastal Plains of Georgia and western South Carolina. This distribution may indicate the area over which makers of these projectile points regularly or at least occasionally moved. Given the fact that many of the "Suwannee" and "Simpson" points found in Georgia and South Carolina bear only superficial resemblance to Florida forms (necessitating the separation of fluted from unfluted waisted forms, as described in Chapter I), the distribution of these Suwannee and Simpson-like points may alternatively indicate areas where local populations intermittently interacting with Florida-based groups were imperfectly copying their technology, or adapting it to a (fluting) technology with which they were more comfortable.

(8) *How was PaleoIndian settlement structured? What was the annual range of these people (how far might they have moved over the course of a year)? Were these populations linked in some way to groups located at greater or lesser distances? Are seasonal patterns of population movement evident?*

Discussion: Analyses directed to pinpointing the sources of raw materials used by PaleoIndian populations in Georgia can be used to indicate the geographic area over which these items were carried or exchanged (Sassaman et al. 1988). Stylistic analyses of specific artifact types, such as projectile points or scraping tools, might help delimit whether social boundaries were present at this time. If distinct artifact styles or markedly different patterns of raw material use were evident within a region, with little intergradation, it might indicate the presence of groups living in relative isolation from one another. Where groups interacted with one another appreciably, in contrast, raw material use or artifact styles would be expected to exhibit only gradual shifts (clinal gradation) across the landscape. At present, the PaleoIndian archaeological record from the Georgia area suggests that the existence of group boundaries was minimal. If evidence for the presence or emergence of discrete territories could be recognized in the archaeological record, however, consideration should be given to explaining how and why such territories came about.

(9) *What is the relationship between PaleoIndian site occurrence and lithic raw material availability? Do PaleoIndian sites tend to occur near quarry areas? How do PaleoIndian artifacts from quarry sites compare with those found in areas of limited raw material? Does evidence for tool attrition increase with distance from raw material sources?*

Discussion: A linkage or tethering of PaleoIndian populations to high quality lithic raw material sources has been inferred by a number of investigators examining the Eastern North American PaleoIndian record (Gardner 1977, 1983; Goodyear 1979; Meltzer 1988). Whether this pattern is real or a result of investigative activity directed to highly visible quarry areas is currently unknown. If the inference about tethering if correct, it should facilitate the resolution of areas within Georgia where PaleoIndian artifacts and sites might be expected to occur in greater than expected numbers. Major chert sources are evident around Albany in southwest Georgia, for example, and along Brier

Creek in the eastern part of the state. If these areas served as foci for PaleoIndian settlement systems, this should be evident in the archaeological record of these areas. Large numbers of artifact finds and, possibly, the presence of settlements indicative of extended or repeated occupation should be expected in these areas. Because knowledge of PaleoIndian site distribution is in its infancy in Georgia, whether tethering arguments are appropriate in this area is unknown,. Researchers should, however, be alert to the possibility that a higher-than-average incidence of PaleoIndian sites may be present around quarry areas.

(10) *What is the nature of PaleoIndian subsistence? Were extinct Pleistocene fauna such as mammoth or mastodon a regular part of the PaleoIndian diet? How late did these fauna persist in Georgia? What was the role of the PaleoIndian peoples in their extinction? Are there changes in subsistence strategies between the three PaleoIndian subperiods, and between the Late PaleoIndian and the ensuing Early Archaic?*

Discussion: Questions of PaleoIndian subsistence in Georgia are difficult to address directly at present. No direct subsistence information of any kind (i.e., floral or faunal remains) has yet been collected from PaleoIndian components examined in the state. Given the importance of this kind of information, all fill from features found in deposits dating to the PaleoIndian period should be saved and subjected to flotation analysis. Such procedures should also apply to fill around rock clusters, because traces of charcoal potentially indicative of firewood and food preferences may survive in such contexts. Late Pleistocene fossil remains from the state should be examined for evidence of human modification (i.e., burning, tool cut marks, marrow extraction). Paleontological researchers working in the state should be sensitive to the potential archaeological importance of such remains and deposits. The possibility that well preserved subsistence and other material might be present in submerged deposits, such as in springs, sinkholes, bogs, or Carolina bays, also should be considered. Deposits of this kind should not be damaged or lost without some level of inspection, ideally by deep backhoe trenching, during CRM compliance surveys. Archaeological investigations undertaken in rockshelter and cave deposits in the state, which may offer favorable preservational conditions due to constant humidity and temperature levels, should also be examined for paleosubsistence data.

(11) *Were some portions of Georgia more heavily occupied during the PaleoIndian period than others, and if so, why? How do biases and limitations in existing data effect field methods and subsequent analyses and inferences?*

Discussion: The evidence collected to date suggests PaleoIndian occupation in Georgia was most intense in the southwestern, north-central, and east-central parts of the state. Likewise, the same evidence suggests PaleoIndian occupations were comparatively minimal in the Southeastern Atlantic Coastal Plain, in the Sea Islands area, and in the northwestern part of the state. For the most part these patterns reflect the level of archaeological activity (i.e., where professional work has been conducted), and the research or collecting areas of participants in the SGA PaleoIndian survey project. In some areas of the state where few PaleoIndian remains were found, but where there is a long history of research, such as in the Sea Island area, the current evidence may indeed document a low incidence of PaleoIndian remains. Until a much larger sample of materials in private collections from all areas of the state can be examined, the PaleoIndian distributional patterns reported here should be considered of limited utility for predicting the location of PaleoIndian remains in the state.

Care must be taken to avoid uncritically accepting assumptions about where PaleoIndian remains are or are not likely to be found in the state, at least until these assumptions can be tested.

Much of the archaeological research undertaken to date in the Sea Island area of Georgia, for example, has been research directed to highly visible Late Archaic through Mississippian shell midden and mound sites. The low incidence of PaleoIndian materials from this region may, therefore, simply be because most amateur and professional attention has focused on the late prehistoric record. Field programs explicitly directed to the discovery of early occupations have been rarely undertaken in the Sea Island region, or for that matter, anywhere in the state. The only significant exception to this pattern is the systematic deep backhoe trenching program undertaken during the cultural resource investigations in the Wallace Reservoir (Ledbetter 1978). Documenting PaleoIndian site occurrence in the Georgia is possible, but a great deal of field and collections analysis will be necessary to ensure representative survey coverage.

(12) *What is the nature of PaleoIndian mortuary behavior? Are special cemetery areas present in Georgia, like those in the Dalton occupations in northeast Arkansas (Morse 1975a, 1975b)? Do elaborate, unusual, or extensive assemblages of PaleoIndian artifacts demarcate burial areas?*

Discussion: At the present no human skeletal remains have been found in Georgia that can unequivocally be attributed to the PaleoIndian period. Recent excavations at the Windover site in Florida (Doran et al. 1988) have demonstrated that well preserved human remains exist in the region in submerged contexts, specifically in peat bog settings. These settings, if threatened, should be examined during CRM compliance surveys, and not ignored. In addition to direct evidence for mortuary behavior, such as skeletal remains, researchers should be alert to indirect evidence. Unusual concentrations of artifacts in archaeological deposits dating to the PaleoIndian, particularly clusters of large, well made, or unused tools, may represent grave lot assemblages. Since many of the state's soils are poorly suited to the preservation of human remains, it is possible if not probable that most remains will have long since deteriorated. Artifact distributional analyses may be the only means available in many settings to infer the existence of cemetery behavior. Artifact clusterings were initially used to infer the existence of a Dalton cemetery at the Sloan site in northeast Arkansas (Morse 1975a), a finding that was later supported by the identification of small human bone fragments hand-picked and in soil samples from the site deposits. Where the possibility exists that a grave assemblage is under examination, but no obvious bone is evident, close interval soil samples should be taken, and subjected to careful examination (i.e., soil chemistry, flotation) for traces of organic remains.

(13) *What information about group size or duration of occupation can be determined from PaleoIndian site assemblages? Can special activity areas be identified within larger assemblages (i.e., hunting, butchering, cooking, sleeping areas)? Are site remains that are found the result of one or a few visits, or numerous visits?*

Discussion: The resolution of activity areas within individual sites requires intensive excavation of large areas. Excavations at Woodland or Mississippian communities in the Southeast frequently encompass thousands of square meters, and exposures of this kind are thought essential to understanding how these sites were used. Excavations at Archaic or PaleoIndian sites in this same region, in contrast, rarely exceed more than a few hundred square meters, and in most cases are much less. Use of minimal excavation blocks is due, in part, to the general absence of well defined structural remains on sites dating to this period. It is also due, at least in part, to a tradition of research biased toward acquiring artifacts for purposes of typology and chronology, rather than spatially extensive assemblages useful for interpreting site function. It is highly unrealistic to assume the potential range of activities that might have been carried out by PaleoIndian groups would have taken place in such small areas. Large-scale excavation can and should become a part of investigations directed to early prehistoric components in Georgia.

The absence of well-defined structural features need not be a limiting factor. Large area excavations at northeastern PaleoIndian sites such as Debert, Bull Brook I, and Vail, coupled with refitting analyses, have demonstrated the contemporaneity (or lack thereof) of widely separated artifact clusters (MacDonald 1968; Gramly 1982; Grimes 1979). At Vail, for example, Gramly (1982) was able to fit projectile point tips found in a 'killing ground' with bases in a presumed domestic camp several hundred meters away. Outlines of structures have been inferred amid debris patterns at French upper Paleolithic sites such as at Pincevint (Leroi-Gourhan and Brezillon 1966), and similar strategies have been used to infer the presence of structures at Early and Late Archaic sites in the Savannah River Valley (Anderson and Hanson 1988:275-276; Wood et al. 1986:140-144).

Crucial to such investigations, however, is the intensive examination of area sufficient to resolve such features. When well-defined hearth or other features, or scatters of debitage and other debris are encountered in PaleoIndian deposits, and further work is contemplated, large block units should be excavated when this is feasible. Minimally, the area around such features for several meters should be examined for evidence indicating special activities (i.e., stone tool manufacture or repair, butchering, hideworking, toss zones, etc) as well as artifact voids that may point to sleeping or other low artifact activity areas.

(14) *Where are the source areas for raw materials used by PaleoIndians? Can they be identified through petrographic, microfossil, or other analyses to particular quarries?*

Discussion: The accurate identification of lithic raw material source areas is critical to resolving prehistoric mobility patterns. The distance an artifact occurs from its source area indicates how far the material was carried by prehistoric populations, either directly as part of a regular settlement round, or indirectly through patterns of exchange. Although studies have been undertaken in recent years that have attempted to pinpoint lithic raw material sources in Georgia and western South Carolina using trace element or fossil microfauna data (Goad 1979; Anderson et al. 1982; Goodyear and Charles 1984), work of this kind is in its infancy. The recent recognition of Piedmont chert sources macroscopically similar to cherts from the Coastal Plain (Ledbetter et al. 1981) emphasizes the need for great caution when inferring chert source areas.

(15) *Do any Late Pleistocene fossil remains found in Georgia exhibit cut marks or other signs of human modification?*

Discussion: The recent discovery of a fossilized elephant rib with probable stone tool cut marks on Edisto Beach, South Carolina (Goodyear et al. 1989), and the recovery of modified animal bone and ivory of probable Late Pleistocene age at several Florida sites (Clausen et al. 1979; Dunbar et al. 1988; Hoffman 1983) indicates evidence of this kind might be present in Georgia. Materials from Late Pleistocene fossil localities or springs or river bottoms, particularly those with materials dating to the PaleoIndian period, should be examined for evidence of human modification. Ladd's Quarry near Cartersville, which has been dated to between ca. 10,000 and 11,000 B.P., is one example of such a site (Holman 1985a, 1985b).

(16) *Are perishable PaleoIndian artifacts present in submerged contexts anywhere in the state (i.e, in springs, peat bogs, sinkholes), or in dry or sheltered contexts such as caves or rockshelters? Are PaleoIndian remains present in submerged Late Pleistocene deposits of the continental shelf? If so, are submerged PaleoIndian remains in Georgia amenable to location and examination using underwater archaeological techniques?*

Discussion: Perishable remains, as noted in the discussion under Question (10), may be present in dry cave or rockshelter sites, or in submerged bog, sinkhole, or bay deposits. In addition to terrestrial deposits, there is evidence for PaleoIndian remains on submerged portions of the continental shelf off the Atlantic coastline. The strongest evidence for this is the recovery of a fluted point from bottom deposits in waters some 6-8 meters deep between Ossabaw and Wassaw Islands (Ray 1986). The condition of sites in offshore contexts is currently unknown. It is possible early sites may be present adjacent to drainage channels that passed through these areas when they were exposed. The detection of such channels (presumably since silted-in) through remote-sensing procedures may be one means such sites could be located.

(17) *How adequate are existing models of PaleoIndian settlement developed in other states or areas to conditions in Georgia?*

Discussion: As discussed in Chapter III, PaleoIndian settlement patterning, technological organization, and mobility strategies are poorly understood at present in the Southeast. Models favoring the existence of small, highly mobile foraging groups that left few distinct site assemblages behind (Meltzer 1988; Todd and Kelly 1988) would appear confounded by the dense assemblages documented at sites like Barnett Shoals, Taylor Hill, or the Feronia locality (Blanton and Snow 1986; Elliott and Doyon 1981; O'Steen et al. 1986:31-43). O'Steen et al. (1986), in fact, postulate the existence of four site types in the Georgia Piedmont during PaleoIndian times — short term camps, quarry camps, residential camps, and kill sites. With few exceptions, though, most of the PaleoIndian remains in Georgia are isolated finds, or have only small numbers of associated artifacts, suggesting there is some truth to the view that these groups were small and highly mobile. As the site and artifactual sample from this period improves within the state, and when the Georgia data is combined with comparable data from adjoining states, our picture of PaleoIndian settlement systems should improve somewhat.

(18) *What have been the effects of reservoir construction and subsequent inundation on PaleoIndian sites in Georgia?*

Discussion: Reservoir construction in Georgia has led to considerable erosion of floodpool shoreline deposits which, given the past decade of drought, have encompassed appreciable fractions of total floodpool areas. In many cases formerly buried sites have been exposed and the artifacts subject to weathering and collection. While precise effects are uncertain, permanently submerged PaleoIndian assemblages (that were deeply buried prior to inundation to begin with) are probably far less likely to suffer erosional damage than those in areas of fluctuating water levels. A number of PaleoIndian artifacts have been found in Georgia in recent years in shoreline context (e.g., Ledbetter et al. 1987), indicating valuable information is being lost that could be documented. Agencies responsible for managing reservoirs within the state should conduct periodic surveys of cultural resources exposed along shorelines, to assess erosional effects on archaeological deposits, and to obtain samples of materials that would otherwise be lost. Coupled with this, collections in the hands of private individuals obtained from these reservoirs should be examined for artifacts that can be entered into the SGA PaleoIndian Artifact Recording Project.

MANAGING GEORGIA'S PALEOINDIAN ARCHAEOLOGICAL HERITAGE: GENERAL CONSIDERATIONS

Due to the extreme scarcity of PaleoIndian materials in Georgia, and the comparatively little that is known about these occupations, every effort should be made to increase our knowledge of this period, and to preserve the information that remains. In this section a series of general strategies by which this can be accomplished are presented. These include (1) continuing the SGA PaleoIndian Artifact Recording Project, (2) increasing the effort directed to the maintenance of the site files and records, (3) initiating efforts to systematically record materials in private collections, (4) initiating projects designed to locate PaleoIndian sites, and (5) preserving significant sites through acquisition. Specific management recommendations, presented in order of priority and cost, and with supporting discussion as to their necessity and implementation, are advanced in the final section of this chapter.

Improving the PaleoIndian Projectile Point Survey Project

The current voluntary effort documenting the state's PaleoIndian archaeological resource base, the Society for Georgia Archaeology's PaleoIndian Artifact Recording Project, would be greatly augmented if professional archaeologists working in the state systematically documented PaleoIndian artifacts as they encountered them. Completion and submission of recording forms for identifiable PaleoIndian projectile points would require minimal additional effort on the part of these individuals. While ideally this effort will be accomplished voluntarily, review agencies and curatorial repositories may wish to consider mandating the completion of these kind of forms prior to passing on projects, or accepting collections for final curation.

Another area for future research that would greatly improve our knowledge of PaleoIndian in the state would be the re-analysis of collections from earlier professional archaeological projects for evidence of PaleoIndian components. As the review of previous research in Chapter II demonstrated, so little is known about what was collected in some of these projects that significant PaleoIndian assemblages may be present but undocumented. A particular focus for research would be the materials gathered by projects such as the Smithsonian Institution's River Basin Surveys in the Allatoona, Clarks Hill, Hartwell, and Walter F. George Reservoirs, and from the WPA north Georgia survey. No measurements are available for PaleoIndian artifacts found during many of these projects, particularly those conducted prior to 20 or 30 years ago, when archaeological knowledge of the PaleoIndian period and its diagnostic artifacts was severely limited. Re-analysis of the Macon (Kelly 1938:208) and Taylor Hill (Elliott and Doyon 1981) assemblages should also be conducted, to better document these important sites. SGA PaleoIndian Artifact Survey forms should be filled out for all diagnostics found during these re-analyses.

Avocational participation in the SGA PaleoIndian Artifact Recording Project should also be strongly encouraged. One means of accomplishing this used in the present study is to identify the owner of each artifact, and to thank them in the acknowledgements. When completed projectile point forms were submitted, in fact, in almost every instance the authors of this study made a point to either call or write that person to thank them. This lets contributors know that their efforts are appreciated and important. Much more could be done to encourage the recording project. The Arkansas Archeological Survey, for example, presents an annual award to the society member reporting the most sites, and a similar strategy could be adopted in Georgia, for the member submitting the greatest number of reported sites or completed artifact forms. Ideally, large enough press runs of reports like the present study should be prepared to provide a copy *gratis* to each contributor. As a means of fostering PaleoIndian research, visibly rewarding participants in the survey with a copy of the report they helped generate would be both an inexpensive strategy, and one likely to generate considerable data. A final value to identifying artifact owners is that it gives future researchers at least a chance to relocating these artifacts.

The Status of PaleoIndian Data in the State Site Files

The Georgia archaeological site files contain data on over 15,000 archaeological sites. The site files are maintained at the University of Georgia under a limited funding arrangement between the Department of Natural Resources and the University's Department of Anthropology. As of mid-1989, data from just under 10,000 of these sites had been coded and entered into a computer data base, with most of the entered data from sites recorded prior to ca. 1980. Information from many of the larger survey projects conducted in the state in recent years, such as in the Allatoona, Russell, and Wallace Reservoirs has yet to be entered, even though some of these projects were completed more than a decade ago.

The site files contain 101 sites listed as having PaleoIndian components. Point types listed in the site data as PaleoIndian include Clovis, Folsom, Tallahassee, and Dalton. After reviewing the original site forms, 53 of the sites were found to contain insufficient data to be conclusively attributed to the PaleoIndian period, or had been incorrectly attributed to the PaleoIndian period due to coding mistakes. Forty-eight PaleoIndian sites, with a total of 49 components, remained after inspection of the site forms. Included in this count were eleven Early or Middle PaleoIndian fluted point sites, six sites with Middle PaleoIndian unfluted lanceolates, and 32 Late PaleoIndian Dalton sites. Tallahassee, Santa Fe, and Beaver Lake points are included with Dalton in this count. As noted in Chapter II, it is likely that Tallahassee points actually date Woodland period components. Most of the 101 sites came from above the Fall Line in the Piedmont, Ridge and Valley, or Blue Ridge physiographic provinces, or in the Ocmulgee Big Bend region, a distribution reflecting survey bias, that is, where most previous amateur or professional work has occurred.

Review of the state site files indicates that the data within these files is of limited value for research and cultural resource management applications for the PaleoIndian period. Fully one third of the reported sites in the state remain to be entered into the computerized files, and the data from many of the sites that has been entered needs updating. Approximately half of the 101 PaleoIndian sites identified in the files, furthermore, were either poorly documented, misidentified, or coded incorrectly. Distributional analyses attempted using the state site file data differed markedly from those obtained in the present study, which incorporated an extensive collections analysis and literature review. Until the state site files can be updated, they should be used for research or management with great caution.

The results from this and future PaleoIndian overview projects will need to be incorporated into the state site files. Site forms will need to be completed from each location where PaleoIndian points have been found and recorded. These sites should be visited by a trained archaeologist to determine their condition, specifically whether or not intact PaleoIndian deposits are likely to be present. Artifact collections from these sites in public or private ownership should be examined to see if additional PaleoIndian materials are present, and to determine the extent to which later occupants made use of the site. Given the low number of known PaleoIndian sites in the state, this is not an insurmountable task, one that could probably be accomplished in about a year by a full time researcher.

PaleoIndian Artifacts in Amateur Collections

Hundreds of thousands of Indian artifacts are in the hands of private collectors in the state. These collections need to be examined for the presence of PaleoIndian period artifacts. When such artifacts are found they should be documented through measurement, drawing, and photography, with the resulting data curated at a responsible institution, and with the ongoing PaleoIndian survey project. SGA PaleoIndian Artifact Recording Project forms should be filled out for each PaleoIndian diagnostic. Site forms should be completed for locations producing these diagnostics, and these locations should be visited and their conditions verified by someone with archaeological training.

The importance of analyses of this type was demonstrated during the Allatoona Reservoir survey, when a number of PaleoIndian diagnostics were documented in private collections

(Ledbetter et al. 1987). If these collections had not been available for analysis we would know far less about the PaleoIndian occupation of northwest Georgia (see pp. 17-21). Care must attend the recording of private collection data, however, given the increasing number of fake artifacts that are being manufactured and sold to satisfy the antiquities market.

A limited amount of collections analysis is undertaken in Georgia by members of the professional archaeological community. The amount of material in private hands is so great, however, that only a tiny fraction is ever examined. Most of the remaining artifacts are either lost, destroyed, or sold, and in almost every case once they have passed out of the discoverers' hands their context, and hence scientific usefulness, is lost. Collectors within the state must be taught, through programs of public outreach, the importance of the materials they own. Booklets identifying key projectile point types in the state (particularly PaleoIndian forms), together with instructions on how to document or donate such materials to state or university collections could be produced to encourage this effort.

Employing at least one individual whose sole duty would be to examine and record materials in private collections would be one method of dealing with this problem. In South Carolina, for example, SHPO matching funds were used for a number of years to fund a survey of private collections, in a project undertaken by the South Carolina Institute of Archaeology and Anthropology at the University of South Carolina (Charles 1986). Almost 900 previously unrecorded sites were identified, and information on tens of thousands of artifacts was recorded, including data on some 200 Early and Middle PaleoIndian points. An additional benefit was the donation of large quantities of artifacts to the state's scientific collections. Rediscovery of the major PaleoIndian site found in the 1930s and located somewhere near Wrens (Waring 1968a:237) would be only one important objective of such a program.

PaleoIndian Artifacts Reported in the Professional Literature

A comprehensive search of the archaeological literature from Georgia for mention of PaleoIndian artifacts should be conducted, and the location of these artifacts should be determined. The present volume has attempted to organize the published literature and summarize major unpublished findings. Given the vast number of unpublished reports, manuscripts, and notes in state, university, and private repositories, many of which are all but inaccessible, this will be an extended task. This activity will eventually need to be undertaken, however, for evidence about PaleoIndian as well as subsequent occupations. PaleoIndian artifacts identified as the result of such a survey should be located and their curatorial disposition noted, and then measured and photographed, with the resulting data entered into the SGA PaleoIndian Artifact Recording Project files. Updated information should also be appended to the relevant state site forms, to ensure component identifications are accurate.

At present a tremendous body of archaeological literature exists in Georgia. A small fraction of this is found in published and widely accessible sources, in professional journals such as *Early Georgia* or *Southeastern Archaeology*, or in established series such as the University of Georgia's Laboratory of Archaeology's Report Series, the Georgia Department of Transportation's Occasional Papers in Cultural Resource Management, and the National Park Service's Russell Papers. A much larger mass of material is unpublished, however, appearing in limited circulation manuscripts maintained by public or private organizations within the state. No one repository duplicates more than a fraction of the holdings of any of the others, and even taken together it is possible that the available literature is incompletely represented. Because many PaleoIndian components are documented by isolated diagnostic artifacts, organization of this literature will be an essential first step toward performing a comprehensive literature search.

Initiation of Survey and Testing Procedures Designed to Locate PaleoIndian Sites

A systematic program of investigation directed to identifying locations of PaleoIndian sites would have important consequences for the management of Georgia's PaleoIndian cultural resources. A multidisciplinary effort incorporating geomorphological as well as archaeological expertise could identify areas in the state where preserved Late Pleistocene land surfaces might be most likely. Palaeontological data, specifically information on the occurrence and favored habitats of Late Pleistocene fauna, could also prove useful in identifying where PaleoIndian sites might be located. If PaleoIndian populations really hunted the large, extinct fauna characteristic of the Late Glacial period, knowing where these animals ranged on the landscape would determine where they were hunted. Data from amateur collections could help guide such an effort by pinpointing sites or areas where large numbers of early points or other artifacts were located.

Preservation of Significant Sites

Protection

National Register of Historic Places (NRHP) nominations should be prepared for significant PaleoIndian sites found or known to exist in the state of Georgia. In particular, a nomination form should be completed for the Taylor Hill site (9Ri89), which, although reported as eligible for inclusion on the National Register almost a decade ago, has never been formally placed on the NRHP (Elliott and Doyon 1981). A nomination should also be prepared for the Feronia locality (Blanton and Snow 1986, 1989). Sponsors for these nominations are needed.

Legal Sanctions

The professional and avocational archaeological community in Georgia should encourage and support the criminal prosecution of individuals who loot archaeological sites or knowingly excavate human remains on public or private lands. If existing statutes fail to address these activities, corrective legislation should be prepared and presented before the state legislature. There is a very real need for such protection, particularly of the state's PaleoIndian archaeological record. Looters completely destroyed the stratified Theriault chert quarry in the late 1960s (Brockington 1971:38), and other significant sites are likely to suffer depredations as word of their importance spreads. Owners of archaeological sites should be encouraged to prosecute looters, and members of the avocational and professional archaeological community should be willing, if called upon, to provide testimony about the destructive consequences of this kind of activity.

Education

Educational programs should be initiated that are directed toward instilling a pride in Georgia's prehistoric heritage, and at the same time a conservation/preservation ethic among her citizens. A segment on Georgia prehistory should be taught at the grade school and again at the high school level as a part of social studies and history classes. Funding should be sought from public or private sources for the development of appropriate classroom texts and other displays. In addition to stressing historical aspects, the responsibilities of private citizens to assist the state in preserving and protecting cultural resources should be emphasized.

State Landmarks Program

The professional archaeological and historic preservation community in Georgia should consider initiating a state landmarks program like that currently in operation in Kentucky. Under such a program private landowners agree to preserve significant sites on their property. The

Kentucky Archaeological Registry has been operating since March 1987, funded by a Federal survey and planning grant from the Kentucky Heritage Council (KHC):

> The Registry program recognizes the important role private property owners play as stewards of our cultural heritage. Landowners of significant archeological sites are asked to make a commitment, either verbally or by signing a non-binding Registry Agreement, to preserve and protect their site to the best of their ability, notify KHC of any threats to the site, and notify KHC of any intent to transfer ownership. The KHC, for its part, agrees to provide management assistance and information about stronger protection options to the landowner upon request.
>
> Participating landowners receive a certificate signed by the Governor of Kentucky and/or a brass and walnut plaque in acknowledgement of their preservation commitment, and their site is designated a Kentucky Archaeological Landmark. Annual visits with each landowner underscore the importance of their long-term preservation commitment. These visits also provide KHC with the opportunity to educate each landowner about the importance of their site and to monitor the condition of some of Kentucky's most significant and threatened sites. A Registry newsletter sent to each participating landowner seeks to inform them of statewide preservation developments and educate them about Kentucky's rich cultural heritage (Federal Archaeology Report 1989:2(2):13).

In December 1988 the administration of the Kentucky Archaeological Registry was assumed by the Kentucky Heritage Council, which has made it a permanent part of the state's site protection program. Through mid-1989, 19 sites had been registered under the program. The cultural heritage of Georgia could only profit by the implementation of such a program. PaleoIndian sites in Georgia that warrant immediate consideration under such a program include the Taylor Hill and Muckafoonee Creek sites.

Acquisition

So few PaleoIndian sites with significant archaeological remains exist in Georgia or, for that matter, anywhere in the United States, that acquisition and permanent protection should be considered whenever such sites are found. Such sites could be purchased by the State of Georgia for use as parks or wildlife management areas. Alternatively, they could be purchased by private organizations such as the Archaeological Conservancy or the Nature Conservancy, and maintained by these groups.

The Taylor Hill site (9Ri89) just south of Augusta is a major PaleoIndian site that is threatened with destruction. Examined in 1980, the site produced dense, stratified deposits spanning the Middle PaleoIndian through Early Archaic periods from ca. 11,000 - 8000 B.P. The early horizons in this site have yielded a truly remarkable assemblage, both in terms of the numbers of artifacts, their formal appearance and quality, and their stratigraphic position. The authors of the testing report observed: "Site 9Ri89 has the best preserved assemblage of this time period from any site thus far recovered in Georgia... It contained a well preserved lithic assemblage from a time period that is poorly understood in Georgia" (Elliott and Doyon 1981:152, 173). As a result of this work, it was recommended that the Taylor Hill site be placed on the National Register of Historic Places.

The authors of this PaleoIndian Operating Plan are in complete agreement with this opinion. In our judgement, the Taylor Hill site (9Ri89) is the finest PaleoIndian site currently known in Georgia, and it may be one of the most significant early human occupation sites in the Eastern

United States. The density of early artifacts is the highest found in excavation context in the state, and among the highest found anywhere in North America from this period. Currently on private land, it is threatened by destruction attending the growth of Augusta and, as knowledge of its importance spreads, by looting. Every effort should be made to acquire and preserve this site.

Standards for Projects Yielding PaleoIndian Materials

Reporting Standards

In this section specific standards for PaleoIndian researchers working in Georgia are advanced. These are meant to complement and clarify existing federal and state guidelines, and not to replace them. They are further intended to assist researchers working with materials from this period, by ensuring that certain minimal kinds of information are recorded from sites and assemblages.

Final reports should include, at a minimum, a thorough presentation of the project research design, field and analytical methods, research results, and an interpretation of the results in light of the research design, and a discussion of the significance of the results. A discussion of research themes that warrant consideration is included in a subsequent section. Appropriate and comprehensive appendices and references must be included. In CRM compliance reports, management recommendations must be clearly presented and soundly justified.

The effective documentation of field and analytical procedures, specifically documenting site locational data, field collection units, and recovered artifactual material must be included in all future reports. State of Georgia site forms must be filled out for survey level investigations including locational data plotted on U.S.G.S. 7.5 minute quadrangle sheets. Artifact inventories (catalog and or analysis sheets) must accompany completed site forms, and these data must also be included in the final report, or referenced in an accessible Appendix volume. These assemblage inventories should be completed for collections obtained from new sites, and for materials collected during revisits to older, previously recorded sites. Assemblage data must be reported by provenience, and not solely in summary format.

Survey level investigations at sites involving the placement of subsurface test units (i.e., shovel tests, test pits, backhoe trenches) must document the approximate locations of these tests on a site map, which should be included with the state site form. The number and depth of these unit, whether or not screening was employed, and screen mesh size must be clearly indicated. The level of documentation must be such as to tie all recovered artifacts to specific provenience units (i.e., shovel tests, test pits, general surface, etc).

A comprehensive descriptive inventory of all artifacts found in each provenience, as noted previously, must accompany the site descriptions, maps, and other illustrations, both in the final report and with the site data. Sufficient data should be provided to ensure that subsequent investigators can evaluate conclusions and interpretations that are advanced.

Consistent artifact descriptions should be employed throughout reports and inventories, and these descriptions must accompany all assemblages. Lithic artifacts should be sorted into major categories (i.e., debitage, unifaces, ground stone, fire-cracked rock, projectile points, etc.), and equated with existing types whenever possible. A listing of primary references justifying the typological and artifactual analyses should be included in the report, to facilitate location and inspection of the original type descriptions or accounts of analysis procedures. An SGA PaleoIndian Artifact Recording Project survey sheet should be completed for every PaleoIndian hafted biface that is found, and these sheets submitted with the site forms for forwarding to the survey coordinators.

Standards for Curation

Assemblage information — artifacts, field notes, project related slides and photographs, and analysis notes — must be curated in a secure repository upon the completion of investigations and acceptance of the final report. These collections and records, furthermore, must be curated in an organized fashion so future researchers can quickly find and use project notes and materials, and not have to rummage aimlessly through disorganized or poorly labeled boxes of material. Responsible curation goes beyond artifactual data to include the field and laboratory records, analysis notes, and photographs and negatives collected during the investigations.

The Use of Appropriate Research Designs

Investigations must be conducted within the context of an explicit research design and framework to be incorporated in the final report, with modifications noted as necessary. This research design must adhere to standards advanced in existing state and federal guidelines and this operating plan. The research questions raised earlier in this chapter, and in other sections of the document, should receive consideration if the topics are appropriate to the site or materials under investigation. Research questions raised by previous investigators working with materials from the same site or area should also be considered when subsequent work relevant to those topics is done. For CRM-based research, this will ensure that resource significance is evaluated within a consistent framework, and that the final cultural resource reports represent useful contributions to the regional literature.

Evaluating the Significance of Georgia's PaleoIndian Resources

Cultural resource significance and National Register (NRHP) eligibility are determined by the potential of a site to yield information important to prehistory and history. This can be accomplished only through explicit arguments linking these sites to specific archeological or historic research questions (Butler 1987). The potential of PaleoIndian archaeological remains found in Georgia to yield important contributions to research must, therefore, be explicitly stated and justified in cultural resource management documents. This must be done using arguments developed from the contemporary theoretical and substantive knowledge base, as exemplified by the information summarized in this Operating Plan, and present in other documents dealing with PaleoIndian occupations.

Evaluation Standards:
National Register of Historic Places Criteria

The National Historic Preservation Act of 1966, as amended, outlined four criteria under which a historic or prehistoric site could be qualified for listing on the National Register of Historic Places. These are listed in 36 CFR 60:

> The quality of <u>significance</u> in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, <u>and:</u>
>
> (a) that are associated with events that have made a significant contribution to the broad pattern of our history; or

(b) are associated with the lives of persons significant in our past; or

(c) that embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) that have yielded, or may be likely to yield, information important in prehistory or history.

Archeological site eligibility is normally considered under criterion (d): the potential to yield information important to prehistory and history. Determining what information is important in prehistory or history can be accomplished only through explicit arguments linking the site(s) and cultural resources in question to theoretical and substantive questions and issues of archeological or historic knowledge. This process has been described in detail by Butler (1987:821):

> The intent of the cultural resource laws dating from the 1890s (an act to preserve Casa Grande in Arizona under the War Department) is to preserve and protect elements of our national patrimony. Protection includes physical protection as well as the act of preserving the information contained in such resources. Preservation of information can be accomplished only by individuals properly trained to gather and interpret those data to generate knowledge. Thus, the preservation of knowledge from archaeological resources requires that information be gained and interpreted based on the current theoretical and substantive concerns of the discipline. ...Hence compliance with the cultural resources laws demands that National Register of Historic Places (NRHP) significance for archaeological properties be well understood... Importance is based on the theoretical and substantive knowledge (T&SK) of the discipline — nothing more, nothing less; i.e., what we know and what we do not know (Butler 1987:821-823).

These linking arguments, or significance justifications, must be present in technical cultural resource management (CRM) reports. The potential of identified PaleoIndian cultural resources to yield important contributions to research much be explicitly stated and justified.

For land managers to make responsible land-use management decisions regarding archeological resources, CRM reports submitted to relevant state and federal review agencies, <u>must</u> include explicit discussions of the scientific findings and the importance of identified cultural resources (in terms of criterion (d)). That is, these reports must provide "clearly supportable statements and recommendations about National Register of Historic Places significance" (Butler 1987:827). To do this, it is necessary to understand the status of current archeological research in general, and in Georgia in particular.

In order for any archeological site yielding PaleoIndian remains in Georgia to be eligible for the National Register, it <u>must</u> meet criterion (d) of 36 CFR 60. That is, it must be able to yield information important to our understanding of prehistory. Exactly how a given site has the potential to yield this information must be detailed. Explicit linking arguments must be presented, specifically referencing this operating plan, as well as any and all other archaeological or historical sources, as appropriate and relevant to significance justification (Butler 1987:822-823). Adhering to these guidelines will ensure that cultural resource reports produced in Georgia, and dealing with PaleoIndian archaeological remains, will contain sufficient information to justify recommendations about significance, project impacts, and recommended future actions.

The presence of any of the following characteristics on sites yielding PaleoIndian artifacts in Georgia would tend to automatically make them **eligible** for inclusion on the NRHP:

(1) Intact buried deposits, particularly assemblages yielding features or preserved floral and faunal remains. These types of sites are extremely rare at this time level in Georgia, as well as anywhere in Eastern North America.

(2) Stratified deposits, with components that can be isolated horizontally or vertically. This would facilitate detailed examination of single periods of occupation.

(3) Major quarry sites with extensive reduction or manufacturing debris, and evidence for utilization during the PaleoIndian period.

(4) Areally extensive surface scatters from plowzone or eroded upland context, particularly if evidence for artifact relocation beyond more than a few meters is minimal. Controlled surface collection (i.e., artifact piece plotting) could recover discrete occupational episodes or activity areas on sites of this kind. Wells Creek Crater and Williamson are only two examples of major Southeastern PaleoIndian sites found to be entirely or primarily in plowzone context (Dragoo 1973; McCary 1986).

To these three points should be added consideration of Glassow's (1977) criteria. By themselves these are not eligibility criteria, but only guidelines to consider when determining site significance.

(1) <u>Degree of Integrity</u>. What condition are the cultural resources in? Does the site contain intact remains which allow each component to be segregated and studied individually, or are the remains so badly disturbed as to preclude the recovery of information important to prehistory?

(2) <u>Degree of Preservation</u>. Does the site possess cultural features, or faunal/floral remains, or skeletal remains, or materials suited to absolute dating techniques, which would allow this site to make contributions to the study of prehistory?

(3) <u>Uniqueness</u>. Can preservation or data recovery at a particular site yield information of a critical nature, or does this site possess information also possessed by numerous other archeological sites? Do better examples of this particular site type exist, or have better examples been excavated? Can this site present new and contributing information through uniqueness, preservation, integrity, or the application of new analytical techniques, or is the information available redundant?

The presence of any of the following characteristics would tend to automatically make a site in Georgia yielding PaleoIndian materials **ineligible** for inclusion on the NRHP:

(1) Sites consisting only of a single isolated artifact. Little information beyond that obtained at the time of collection can be derived from such assemblages. Care must be taken, however, to ensure that the presence of other deposits has been ruled out. Isolates may be the only detected evidence of a complex site.

(2) Heavily disturbed surface scatters. This does **not** include plowzone scatters, from which significant assemblage and intra-site distributional information can be

recovered given careful data collection. Care must be taken when examining presumedly disturbed deposits that the presence of undisturbed deposits has been completely ruled out.

(3) Sites damaged by cultural or natural factors to the extent that deposit integrity is destroyed.

Following the arguments developed by Butler (1987) and discussed above, full justifications must be provided detailing how sites can (or cannot) yield information important to history or prehistory.

MANAGING GEORGIA'S PALEOINDIAN ARCHAEOLOGICAL HERITAGE: SPECIFIC CULTURAL RESOURCE MANAGEMENT RECOMMENDATIONS

Given existing realities of political, economic, demographic, and other cultural factors, what should be done to better manage the PaleoIndian archaeological resources of Georgia? A number of suggestions have been advanced in this document and warrant consideration. In particular, the research questions raised at the beginning of this chapter and the implications of the record of PaleoIndian research in the state reviewed in earlier chapters should be considered by anyone working with materials dating to this period. The primary intent of this document, however, is the development of procedures and strategies by which the state can best manage its PaleoIndian archaeological resources. Toward this end, a series of specific management objectives are advanced. They are listed in descending order of priority and urgency.

(1) *Every effort should be made to ensure the preservation in place of the Taylor Hill archaeological site near Augusta, Georgia.*

<u>Discussion</u>: The Taylor Hill site (9Ri89), as documented in this Operating Plan, is one of the richest PaleoIndian archaeological localities discovered to date in Eastern North America. It is unquestionably the richest site from this period discovered in Georgia. The site is threatened by the expansion of Augusta, and will suffer secondary impact as the result of the planned construction of a highway corridor that will pass near the site, facilitating development of the area. The Department of Natural Resources, possibly in conjunction with the Georgia Department of Transportation, should make every effort to facilitate the acquisition of the Taylor Hill site, either by the state, or by a responsible private land management organization such as the Nature Conservancy or the Archaeological Conservancy. An appropriate sponsor should also be found to initiate National Register nomination proceedings, and see to it that the site is entered into the National Register.

If acquisition of Taylor Hill is achieved, management of the property must be such as to preclude the possibility of looting. Provisions for regular monitoring should be set in place, and criminal proceedings should be brought against individuals found trespassing or excavating on the property. Programs for professional archaeological investigations at the site, furthermore, should be conducted only by individuals and organizations meeting the highest professional standards.

The preservation of the Taylor Hill site is given the highest priority in this Operating Plan. Implementation of the other management recommendations listed below will mean little if a site of this magnitude is lost. While the destruction of such a site would be a tragedy to Georgians and to the people of the United States, its preservation would be a triumph of the spirit and intent of the historic preservation process.

(2) *The standards for field work, reporting, and the evaluation of PaleoIndian sites for National Register eligibility described earlier in this chapter should be adopted on all projects yielding PaleoIndian remains in the state of Georgia.*

Discussion: The adoption of minimal uniform field data collection, reporting, curation, and evaluation standards on sites in Georgia yielding PaleoIndian remains would ensure that important information was not lost. For the most part, the fieldwork and reporting standards follow state and federal guidelines. Exceptions include the requirement that all fill from PaleoIndian features be retained for fine screening and flotation analyses. Other recommendations, such as the curation of notes and records with artifact assemblages, the documentation of field and analysis procedures, and the thorough justification of cultural resource management recommendations, are all routine aspects of professional archaeological research in Georgia. They are reiterated and stressed here because the review of existing PaleoIndian site records and collections documented an embarrassing number of projects that failed to meet these standards. Field records and artifacts are missing or deficient for many projects, particularly those conducted prior to the 1970s. Additionally, many recent reports fail to document the kinds of artifacts and other materials that were found in other than the most general terms, or state where the collections, field notes, and other primary records are curated. Routine insistence on these standards during Historic Preservation Section report review would eliminate this problem.

(3) *The archaeological literature in the state should be consolidated in a single repository.*

Discussion: The preparation of this PaleoIndian Operating Plan, and of cultural resource-related research and management in general, is hindered by the absence of a centralized repository for all archaeological reports produced to date in Georgia. As a result, it is not possible to effectively review the basic archaeological literature of the state for information about PaleoIndian (or other) occupations. Funding should be sought from public or private sources to permit the consolidation of the existing archaeological literature base at one or more repositories. This funding should be sufficient to provide for the copying or purchase of obscure reports, and the project should be of sufficient scope as to ensure the location of all available materials. If such a repository is developed, the collections should be secured to prevent theft or accidental loss, with the removal of primary materials (save for photocopying) prohibited. Provisions for continued updating of the report collections should also be made.

(4) *The Georgia state archaeological site files, particularly the computer records, should be brought up to date.*

Discussion: As documented previously, the information about PaleoIndian components in Georgia currently in the computerized state site files is incomplete or inaccurate. Large numbers of sites remain to be entered into the files, and information about many sites already entered is in need of verification and updating. As such, the value of these files as research and cultural resource management planning tools is limited, to the detriment of Georgia's heritage. This is not a reflection on the individuals and organizations maintaining these files, specifically the personnel at the Laboratory of Archaeology at the University of Georgia. They appear to be doing an outstanding job with very limited resources.

It is evident that current funding levels are not sufficient to maintain the state site files, much less bring them up to date. The funding levels currently allocated for this task, in fact, are approximately 10 to 20 percent of what is expended on this task by other states in the region, where site file management is typically the responsibility of one or more full-time employees.

Because Georgia is the largest state east of the Mississippi and has a rich archaeological record, this situation is particularly unfortunate. The status of the state site files should be reviewed, and sufficient resources sought on a continuing basis to bring them up to date and maintain them.

(5) *A formal collector survey should be initiated.*

Discussion: Private collectors in Georgia possess a tremendous quantity of information about the state's prehistoric inhabitants. This information, in the form of artifact collections and knowledge of site locations, can be documented through an informed program of interviewing and recording. Charles (1986) has documented the results of five years of such a program in the state of South Carolina, at the Institute of Archaeology and Anthropology (SCIAA). In that effort, which was funded by Federal survey and planning matching grants, 323 collectors were visited, resulting in the location and entry into the state site files of almost 900 new archaeological sites. Information on tens of thousands of artifacts was recorded, including data on 204 Early and Middle PaleoIndian fluted projectile points. As a direct result of the project 20 collections had been donated to the SCIAA, greatly improving the research collections at that institution. Funding should be sought from public or private sources to initiate a similar program in Georgia.

(6) *The SGA PaleoIndian Survey project should be continued and encouraged.*

Discussion: Since 1986 information about the PaleoIndian occupation of Georgia has been voluntarily maintained by avocational and professional members of the Society of Georgia Archaeology, who have taken it upon themselves to record information about PaleoIndian sites and artifacts in the state. As a part of this effort, projectile point data sheets have been filled out for PaleoIndian artifacts identified in private collections or found during professional archaeological investigations. To facilitate the collection of this data, review agencies or curatorial repositories may wish to make the completion of these forms mandatory whenever Early, Middle, or Late PaleoIndian artifacts are involved.

(7) *This plan should be periodically revised and updated.*

Discussion: A significant quantity of information about the PaleoIndian occupation of Georgia has been collected in recent years, most a result of extensive cultural resource management-related fieldwork. This quantity of information will continue to increase as long as an aggressive attitude toward the preservation of archaeological resources is maintained in the state. In addition, the data collected by voluntary efforts, such as by the Society for Georgia Archaeology's PaleoIndian Artifact Recording Project, will also continue to increase. Less than a decade ago a major survey of PaleoIndian artifacts documented only ten fluted points from the state (Hally 1982). In this document information on over 200 PaleoIndian projectile points from Georgia has been presented, all of it information collected since 1986. Given the rate of increase in our knowledge, it is probable that many of the research observations and management recommendations advanced in this document will be out of date within five or at the most ten years. Plans for issuing a revised version of this operating plan should be prepared, and the production of such a document should be completed by no later than 1995.

(8) *The professional archaeological and historic preservation community in the state, in conjunction with interested private citizens, should consider implementing a Georgia Archaeological Landmarks Program like that currently in operation in Kentucky (Federal Archaeology Register 1989).*

Discussion: The preservation of archaeological resources in Georgia cannot be accomplished by state officials acting on their own. The active and enthusiastic cooperation of private citizens will be essential if important archaeological sites are to survive. Owners of significant archaeological sites in Georgia should be encouraged to preserve and protect these sites. A relatively cost-effective method of doing this would be the implementation of a state landmarks program like that described previously for Kentucky. The implementation of such a program would not only generate good will and a sense of pride in participating landowners, but would also generate favorable publicity that would help educate the public about the importance of cultural resources in Georgia, and the role of agencies like the Department of Natural Resources in protecting them.

CONCLUSIONS

While all of the management recommendations advanced in this plan are important, some require greater effort and expenditure than others. The most important and immediate objective, (1) the preservation in place of the Taylor Hill site (9Ri89), may ultimately prove the most costly if acquisition becomes necessary. Recommendations (3), (4), (5), (7) and (8) can be implemented through survey and planning grant monies, or by contracts issued by public or private organizations. These recommendations, again, are:

> *(3) The archaeological literature in the state should be consolidated in a single repository.*
>
> *(4) The Georgia state archaeological site files, particularly the computer records, should be brought up to date.*
>
> (5) *A formal collector survey should be initiated.*
>
> *(7) This plan should be periodically revised and updated.*
>
> *(8) The professional archaeological and historic preservation community in the state, in conjunction with interested private citizens, should consider implementing a Georgia Archaeological Landmarks Program like that currently in operation in Kentucky (Federal Archaeology Register 1989).*

The creation of full-time positions for one or more individuals to accomplish these goals should also be considered. The other two recommendations would require only minimal additional effort on the part of archaeologists working in the state. These recommendations, again, are:

> *(2) The standards for field work, reporting, and the evaluation of PaleoIndian sites for National Register eligibility described earlier in this chapter should be adopted on all projects yielding PaleoIndian remains in the state of Georgia.*
>
> *(6) The SGA PaleoIndian Survey project should be continued and encouraged.*

These recommendations should be implemented immediately by the professional archaeological community in Georgia.

V.

REVIEW COMMENTS AND REPLY

COMMENTS

by Albert C. Goodyear, III
South Carolina Institute of Archaeology and Anthropology, University of South Carolina, 1321 Pendleton Street, Columbia, South Carolina 29208

I must begin by saying that this is a very comprehensive and thorough report, a document that provides much more thought and data than what could be reasonably expected given the modest funding support available for this endeavor. This is a credit to Anderson and his colleagues and the State of Georgia and of value to all parties who are interested in the archaeology of the earliest Americans. It should be pointed out that this synthesis and its users are the beneficiaries of the considerable fieldwork done by the authors in their previous studies in the Oconee and Savannah River valleys, as well as their theoretically-oriented writings. The choosing of Anderson, Ledbetter and O'Steen for this project was most appropriate. A good effort has been made by these authors to place the study of PaleoIndian archaeology as it is found in Georgia within its wider regional and national context which will help us expand what we think is possible to know anthropologically about these temporally distant societies.

This effort to create a general, synthetic framework is nicely counter balanced by the publishing of original data concerning individual PaleoIndian lanceolate bifaces. With the publication of this data set and accompanying interpretations, the State of Georgia suddenly moves up in the study of PaleoIndian in the East via the "fluted point survey". As Anderson et al. accurately point out, heretofore Georgia has been a virtual *terra incognita* for PaleoIndian archaeology in the East. The origin of the SGA PaleoIndian Artifact Recording Project was in fact with the authors based on an obvious need they perceived for reporting lanceolate point data and distributions. Hopefully, based on such an excellent start, both professional and amateur archaeologists alike will continue to take up this cause. Given the frustrating geoarchaeological conditions that often prevail in the study of PaleoIndian in the Southeast, much of what we will know concerning typology, raw material and settlement systems will be based on the lanceolate points and their distributions. Distributional studies and the contacts that result in the amateur-collector community are also the primary means by which professional archaeologists in North America have learned of important sites which can provide critical data gathered through excavations. As a means of improving the quality of this lanceolate data base, most of which is in private ownership, I would suggest that a publishable black-and-white photograph be obtained for as many specimens as possible.

The authors correctly note based on the palynological work of Paul and Hazel Delcourt and William Watts, that south of 33 degree north latitude the vegetation was not too different from that of today. This general stability in climate and biota from the late Pleistocene through the Holocene is probably the major cause behind the pronounced re-occupation phenomenon that is present on so many archaeological sites in the Southeast. The general technological similarity between PaleoIndian flake tools and those of the following Early Archaic notched point assemblages complicates considerably the study of PaleoIndian sites not possessing contextual integrity. This is all the more so when artifacts related to both time periods are found on the same places on the landscape and where little sediment deposition has occurred to stratigraphically separate succeeding phases. This puts the discovery of sites and depositional environments which might contain clear stratigraphy as a priority in site survey.

The areas of south-central and southwest Georgia may have sites in depositional environments that could lend themselves to controlled stratigraphic studies. The work of Jim Dunbar and David Webb in the rivers and sinks of north Florida may provide locational analogues for south Georgia given similarities for both areas in karst topography. It is evident that Florida was much drier than today in the late Pleistocene and early Holocene due to reduced rainfall and depressed sea levels. This resulted in restricted surface water and biotic resources for both animals and man and a concomitant concentrating of early artifacts near these water sources. Excavations in the Aucilla River by Dunbar and Webb have demonstrated that geological deposition was taking place between 15,000 and 9,000 years ago in floodplain sinkholes based on 14C dated organics. Suwannee and Bolen points are also found in these deposits (Dunbar et al. 1988). South Georgia could have similar types of sites in Carolina bays, swamps and sinkholes.

The floodplains, particularly those of the Piedmont, are obvious candidate environments for PaleoIndian site burial. Because of special hydrogeomorphic factors, it is clear that the Piedmont will have the deepest sediment accumulations for purposes of stratigraphic studies. Archaeological fieldwork in the Southeast to date has not produced many positive results in terms of discovering pre-10,000 B.P. artifacts or even 14C datable sediments in fluvial deposits. This may be due to an inherently low density in PaleoIndian sites and assemblages and/or a preservation problem (minimal aggradation) during the 12,000 to 10,000 B.P. time period. A higher priority must be given deep-site testing of floodplains using a backhoe. Only a backhoe would be capable of retrieving sediment at depths greater than 3 m with a sufficient volume to discover archaeological remains which probably occur at a low density. Historic preservation funds need to be spent on surveys designed to discover deeply buried sites long before a project is planned and studied for cultural resource impact. Using this rationale, Don Colquhoun, a geologist with the University of South Carolina, and I received Survey and Planning funds from the State Historic Preservation Office for such a survey of the Broad River in the lower Piedmont of South Carolina (Goodyear and Colquhoun 1987).

Another research priority for survey is the location, testing and petrologic analysis of lithic resources, particularly the Coastal Plain cherts. Tertiary age chert deposits occur in a belt from Tampa, Florida northward through the upper coastal plain of Georgia (Goad 1979), essentially terminating in western Allendale County, South Carolina (Goodyear and Charles 1984; Goodyear et al. 1985). Upchurch et al. (1981) have identified and mapped several definable quarry clusters for Florida based on shared physical attributes, and Upchurch (1984) has petrologically described a number of chert samples from prehistoric quarries in Burke and Screven Counties, Georgia and Allendale County, South Carolina. A systematic chert quarry survey in the Coastal Plain of Georgia would allow these lithic resources to be examined within their complete geographic manifestation. As made evident in the present study, prehistoric Georgia populations relied upon these chert sources, especially PaleoIndian groups. Once petrologic studies have been completed it will be possible to examine projectile points and other diagnostic tools as to their quarry sources and gain some idea of tool kit transport distances, stylistic correlations with specific raw material types and their sources, and reconstruct settlement ranges and social boundaries.

Some interesting variation in tool form distribution and possibly stylistic patterning can already be suggested for the Coastal Plains spanned by South Carolina, Georgia and Florida. In 1980 I did a private collections survey through the above regions examining Edgefield scrapers. The Edgefields in South Carolina and Georgia were hafted using round notches but square notches were only found in Florida. Typical Dalton points were found from South Carolina down into the south Georgia counties of Mitchell, Worth and Cook. Florida, however, does not appear to yield these typical forms of Dalton. There may also be a geographic pattern in the distribution of what I have called "laterally thinning" (Goodyear et al 1983) on Suwannee points spanning the area of Florida and Georgia. Suwannee points, while not fluted, are often basally thinned or flattened in the haft area by carefully removed flakes parallel to the long axis of the point. The authors in the present report illustrate a laterally thinned Suwannee in Figure 22:i This form of basal treatment is rare on what are called Suwannee points in South Carolina (Goodyear et al. 1989). It would be interesting to determine how common lateral thinning is in Georgia. Georgia, based on the present study, appears to have more fluted points than Florida. Like Georgia (p. 77), in South Carolina most Suwannee and Simpson points occur below the Fall Line, especially in the southern part of the state (Goodyear et al. 1989).

The above comments hopefully illustrate the need to monitor study areas that encompass more than one state. Among low population density hunter-gatherers such as must have existed in this area of the Southeast from 11,000 to 10,000 B.P., large-scale regional mobility was likely the norm. The systematic study of chert quarries and the petrologic characteristics of their cherts, coupled with a raw material and source area identification for PaleoIndian bifaces and their geographic distances from their quarry sources, offers an empirical strategy for examining these past adaptive systems. With the creation of this operating plan, PaleoIndian archaeology as found in what is now called Georgia has been placed in an advantageous position to pursue these and other important questions.

COMMENTS

by Dennis B. Blanton
Archaeological Project Center, The College of William and Mary.

This plan is well-done and commendable as the first and only document concerned with this period in Georgia that is relatively comprehensive. Heretofore and as the authors have indicated, the area within the boundaries of Georgia was by all appearances a gaping void in the region's Paleoindian record. This of course was not an accurate portrayal but only the product of decades of unrelated and largely unstudied findings, and the present plan is a major step toward rectifying that problem. On the whole the document is technically sound, and will serve well as a general reference and guide for cultural resource managers. I feel that the plan lacks some depth in places, however, and these are discussed below. Admittedly and to their credit, the thorough work of the authors leaves room for criticism that is largely particularistic and in some cases debatable due to shortcomings of the extant data. I know, too, that time and cost constraints can limit the breadth of such efforts.

The discussion of environmental conditions is rather brief but effective. To characterize all of southern Georgia as a homogeneous hardwood forest at this time may be inaccurate, however. Watts' (1971) results from Lake Louise in southern Georgia were, indeed, interpreted to document an oak-dominated forest during the early Holocene, but interspersed were believed to be patches of prairie-like vegetation. Such "patchy" conditions are more akin to those documented in peninsular Florida and apparently evince similar conditions in at least portions of the Georgia Coastal Plain, unless Watts' results have been recently reinterpreted.

The section reviewing previous research is most thorough and will prove very useful as a handy reference for specific project results. I would add to the list of sources for artifacts in private collections (albeit highly non-technical) the volumes of *Who's Who in Indian Artifacts* (?). Amateurs have pointed out to me numerous collections and finds of early material from Georgia in this publication series. I believe addresses are published with the photographs in these volumes which makes it a simple matter to send various forms and requests for information. Also in this section I found the description of buried Paleoindian horizons at site 9GE309 in the Wallace Reservoir rather remarkable. I must admit my reaction to this report was somewhat incredulous, probably because it was not afforded more attention in the Wallace excavation program and similar horizons of such density and integrity were not discovered through the Russell Reservoir projects. Suffice it to say, additional finds of this nature in the Piedmont warrant a great deal more attention and deep testing should become standard practice at comparable locations. Furthermore, the highest standards of control should be exercised to permit detailed assessment of the depositional environment. Finally, Figure 10 would be enhanced by a scale and key for the dot symbols in the plan view. [This has been added, as per Blanton's suggestion. ...the authors]

In the previous research section and elsewhere, the authors make explicit some reservations about the diagnostic utility of certain projectile point forms, namely serrated and/or unfluted lanceolate types. Examples include a number of points (Tallahassee types) from the Carmouche Site, and lanceolate forms common in northwest Georgia described by Wauchope among others. Many of these are properly regarded in the discussion as probable Woodland Period types but they can, indeed, be difficult to identify properly, especially when they are out of context. I do not want to belabor the point but caution is urged and context should be a central consideration in making identifications. In short, generalized lanceolate forms out of primary context should rarely be a basis for identifying a Paleoindian component and this may be particularly true of quartz artifacts.

My first reaction to the section entitled "The Georgia PaleoIndian Archaeological Record" is that it would probably be better entitled "... Projectile Point Record" as the data and resulting inferences it contains are based almost entirely on projectile point data. Of course projectile points are the most diagnostic artifacts of this period and inventorying them is not an unmanageable task compared to what it might be for some of the associated unifacial tool forms, so it is understandable that they are the mainstay of most PaleoIndian site inventories and distributional studies. At the same time the PaleoIndian archaeological record consists of a great deal more that is rarely discussed in the plan, including bifacial and unifacial tool forms that are more common than projectile points at early sites and often temporally diagnostic as well. While I concede that distillation of the scattered inventories of these other tool types represents a mammoth task, it would have been useful to include at least simple inventories and a single summary discussion of the range of tool forms represented at some better documented sites such as Taylor Hill, 9GE309, Rucker's Bottom, the Feronia Locality, and at Barnett Shoals. The purpose of such a discussion, insofar as the data permit, should be to characterize possible geographical and temporal variation in PaleoIndian technology as it is represented in the Georgia data. Perhaps this is beyond the scope of the present document and if so it should be considered in possible updates of the plan. Without question, however, the projectile point information is important as it is presented and is a useful data set which can readily be compared with similar inventories for North Carolina, Virginia, and other states.

Some of the discussion in this section surrounding PaleoIndian settlement in southwest Georgia is confusing. It is stated that "Virtually the entire Gulf Coastal Plain" [p. 47] was not settled until much later in the PaleoIndian period, yet later [pp. 72, 76] southwestern Georgia in the Gulf Coastal Plain is noted as an area of Early and Late PaleoIndian artifact concentration. My own experience with collectors in southwestern Georgia leads me to concur with the latter findings and I would dispute suggestions that the concentration is the product of collector/sample bias. This pattern will require that the models be reconsidered.

Similarly, the discussion of the Wallace Reservoir data describes it as an area that was "relatively unoccupied" [p. 39] while subsequently it is described as having "fairly appreciable" [p.

79] site density. These conflicting evaluations should be reconciled. Indeed, the numbers of points and sites reported from the Wallace Reservoir area are remarkable. While survey intensity is a factor, these data indicate that this portion of the Piedmont seems to have been settled with at least equal or greater density as other regions in Georgia such as the Ridge and Valley.

On the subject of settlement in the Ridge and Valley, statements in the text vary from characterizing it as having high [pp. 39, 54] and low [p. 76] site density. It seems that characterization of this region as having high site potential for early sites is based primarily on findings in neighboring states, and this should be made clearer in this report. But while data deficiencies may be reflected in the Georgia records, this physiographic province in Georgia may simply not have comparable densities as are recorded in Tennessee and Alabama. Enough work has been conducted in this area of the state over the years that even in spite of the focus on later components one would expect that high densities of early material there would by now be apparent.

The final section is by and large very well done, particularly the final parts concerned with "Managing Georgia's PaleoIndian Archaeological Heritage." Without exception I endorse these recommendations and urge that they be implemented as swiftly as possible.

At the same time, portions of the initial part of this section concerned with "Directions for Future Research" might be improved. One aspect is that the research questions are not always formulated or addressed to the degree of detail that current data summarized in the management would permit. For instance, in response to Question 4 [*When did human populations first arrive in Georgia? Do Clovis assemblages, which date from ca. 11,500 to 11,000 B.P., represent the first human settlement, or are earlier remains present in the state?*], the debate surrounding the dates of peopling the New World is mentioned but the specific implications of it and the evidence for Georgia are not outlined. The response to Question 5 [*What is the nature of the transition from the Early to the Middle PaleoIndian period in the Georgia area, and from the Middle to the Late PaleoIndian period? What diagnostic artifacts can be used to delimit occupations dating to these subperiods? What are the temporal and spatial ranges of these artifacts, and can they be used to infer the existence of distinct human groups (i.e., early band or macroband ranges)?*] primarily treats the second part of the three part question, thus avoiding discussion of the subperiod transitions other than from a taxonomic standpoint, as well as the utility of artifacts for defining the ranges of specific groups. The response to Question 7 [*How do Early, Middle, and Late PaleoIndian remains from Georgia compare with remains from comparable periods in adjoining states, and across the larger region? Can this kind of information tell us about the geographic extent of the people that left these materials behind?*] includes one good example but does not consider the evidence from Alabama or Tennessee. It is understood, of course, that satisfactory answers to these questions will only come after a great deal more research, but I would argue that the data on hand are sufficient to either refine the questions somewhat or direct future work with more complete responses.

Other points might be considered as well. In response to Question 2 [*What specific landforms, soil types, and microenvironmental settings were used by PaleoIndian populations in Georgia? Are such settings sufficiently distinct or unusual that they can be used to predict the probability of finding early materials? What field methods are appropriate for these settings, to maximize the possibility of discovering and evaluating early components?*], I would not underrate the margins of large springs in the Coastal Plain as high potential locations, especially in light of the Feronia associations and the well known pattern in Florida. Regarding the response to Question 3 [*What are the effects of contemporary land-use practices on PaleoIndian cultural resources in Georgia?*], it should be noted that educational programs have been in place on an annual basis for some time at Kolomoki and Ocmulgee and they should, of course, continue. One wonders, too, what negative effects trawling and dredging have on submerged sites on the Continental Shelf. Finally, suggestions as to the kinds of analyses (i.e., spectrographic, thin sections, trace element, etc.) that might be employed to answer Question 14 [*Where are the source areas for raw materials used by PaleoIndians? Can they be identified through petrographic, microfossil, or* *other analyses to particular quarries?*] could be offered.

Regrettably, space does not permit a more thorough appraisal, particularly of the many very positive features of the manuscript. Given various constraints, perhaps some of the points raised here can be addressed in updates of the plan. In sum, we will all benefit from this compilation of critical information and should be encouraged by the strides that will be made once the management plan becomes policy.

COMMENTS

Glen H. Doran, Department of Anthropology, Florida State University, Tallahassee Florida.

The volume entitled **PaleoIndian Period Archaeology of Georgia**, by Anderson, Ledbetter, and O'Steen is the sixth installment in the "Strategy for Cultural Resource Planning in Georgia." Each volume serves as a:

> ...comprehensive research document that assesses the existing data base, synthesizes cultural resource information in a coherent fashion, and approaches resolution of the research problems of determining the systemic cultural adaptations within each study unit... (Crook 1986:21).

Such documents are an increasingly logical, and needed, outgrowth of the burgeoning volume of archaeological information since the expansion of federal and state cultural resource management requirements in the late 1960s. Georgia chose to approach the task from a chronological perspective. Each year, if all goes according to schedule, different chronological periods will be the focus of similar studies. Some sections of each of the syntheses may be intrinsically repetitive, particularly the sections on geography, environment, resources, etc. and I would also be surprised if some of the archaeological recommendations, regardless of time period, were not also redundant, particularly those dealing with improvements in the methodological standards (flotation, subsistence studies, etc.), record keeping, site reporting, renewed recognition of the importance of private/avocational collections, the importance of public education, and lastly, but certainly not least, funding considerations.

Without mincing words, this is an excellent synthesis and a clear step toward understanding the PaleoIndian period. It is an effort which should, and will be, viewed as a model for other regions to try to live up to. As with any such work, there are however, certain features that deserve comment.

While I am not ignorant of the geography of Georgia, I am, and no doubt many of the non-Georgia readers, may be, less familiar with the state than the authors. Given this, some cartographic and geographic modifications are advisable. A map showing the geographic regions (Piedmont, Coastal Zone, etc.) should be Figure 1. Such a map is on the cover of the Strategy document, and may well be the cover of this document in final printing, but it should be included in the text. Similarly, some of the figures could be improved by including more information on relative physiographic features in the survey tracts as well as in the surrounding region. For example, how does the Allatoona Lake Survey terrain compare to the surrounding region (Figure 6, page 18)? Some of the figure legends could be expanded to, for example, remind the reader that 9Ge309 (Figure 10, page 36) is part of the Wallace Reservoir project which is located in Figure 4. I've almost worn Figure 4 out by continuously flipping back and forth to it from site descriptions and survey results. A simple inset map in the appropriate figures showing site/survey locations within Georgia would be helpful. It might also be useful to include minimal physiographic features (major streams, mountains, etc.) on the maps illustrating point and source locations (Figures 28-30, pages 78-80).

Ideally all Georgia sites and surveys mentioned should be unambiguously located on a map or a series of maps. I know, or think I know, where Snow's work on the Ocmulgee Big Bend region took place (page 21) and was intrigued that dredging operations on the Oconee River produced PaleoIndian materials. However, I could not find the region (or site) on any of the maps. Similarly, I had to use an outside geographic reference, to identify the locale of the Carmouche site (9Me21; page 30) even though it was described as being 22 km east of Columbus and 10 km south of the Fall Line. If this document receives the wide reading it deserves it should be remembered that the extent of some reader's familiarity with Georgia may be the Atlanta airport.

A frequent comment in this and other PaleoIndian treatments is the lack of chronological detail. Due to the inability to unambiguously assign artifacts, generally bifaces, to specific intervals the actual analytical time units become Early, Early/Middle, Middle, Middle/Late, and Late (Tables 3 and 4, pages 81 and 82). This reflects facts of preservation, the regrettable reality that many PaleoIndian sites are not investigated in a thorough fashion, and general data limitations, particularly with isolated artifact finds. Additionally, it may be that the divisions do not accurately reflect chronologically consistent features within the PaleoIndian period. Resolution of this problem is justifiably addressed is Specific Research Question (SRQ) 5 (page 93).

Part of the dating problem may be an inherent limitation in the way we recognized PaleoIndian sites. Most of these sites are "identified" by the presence of a narrow range of biface forms. I think we have spent too little time on detailed analyses of other associated materials. If we could identify other tool kit components or nonbiface diagnostic artifacts it is likely that many more PaleoIndian sites would be identified. This should expand our ability to answer many questions that are now unanswerable. Recognition of the need for analytical expansion is addressed in SRQ 8 (page 94) which proposes improvements in "stylistic analyses of specific artifact types, such as projectile points or scraping tools" to address questions of regional variation.

This call for analytical expansions, regardless of the specific goals, is warranted and so potentially productive (chronological, technological and regional) that it should be a distinct, separate SRQ with multiple goals. While it may not be a simple task, I think it is one that deserves more attention and may be just as important as trying to collect more data on fluted points. I am not convinced that we have done enough in the area of lithic analysis to be resigned to the idea that points are our only diagnostic materials. This analytical bias in favor of bifaces, at the expense of other categories is evident in several ways. For example, I don't really know as much as I would like to about the Barnett Shoals tool kit which prompted the comment on the "...diversity of the tool forms present.." (page 37). It is also telling that on the SGA Paleopoint form (pages 56-57) there is no specific request for information about other lithic materials associated with the fluted points.

When we focus only on points, we will learn, not surprisingly, only about points, yet they are only one part of any traditional material culture. The summary and analysis of the known PaleoIndian points is valuable and informative and I was particularly impressed with the metric data and chert resource data. I just wish we were similarly informed and knowledgeable about other aspects of the PaleoIndian tool kit. This will clearly require some adjustments in orientation in many PaleoIndian studies.

The synthesis of both published and unpublished reports is thorough, detailed, and filled with information that many readers outside, and even many within Georgia, do not have ready access to. I thoroughly agree centralization, and better maintenance, of these records and the site file data in general, are of paramount importance (CRM recommendations 2, 3, and 4, page 109).

They are essential and transcend specific chronological orientations and should be part of the archaeological obligation. The authors are correct in calling for more intensive investigations and publication when such materials are found (a recommendation under the Reporting Standards section, page 104). I am mystified why Georgia Power has not been, or could not be, compelled to cooperate and publish the information on the Brier Creek investigations (page 33). Perhaps the subtitle "Standards for Projects Yielding PaleoIndian Materials" would be more appropriately titled "Standards for Archaeological Projects" (page 104). Many of these points have been incorporated into the Society of Professional Archaeologist's Code of Ethics. Perhaps Georgia, like many states, should require contractors to be SOPA members or minimally SOPA "certifiable", and be prepared to require higher standards.

The management of the archaeological record, given the nature of the data and the kinds of questions we as anthropologists and resource managers ask, can seemingly be dealt with more productively from the perspective of geographic information systems (GIS). The GIS approach to management, analysis, and interpretation has such an incredible potential that all states, and perhaps even all archaeological research entities, should, if possible, use this approach to its fullest. The contributions of the GIS approach will, I think, ultimately border on the revolutionary and should be part of a serious effort at improved computerization and centralization of archaeological record keeping the authors call for.

A strength of a good synthesis is that the data stands in clear contrast to other data sets. It may be argued that it is not the "goal" of this project to deal with broader perspectives, but I think it would be helpful to see the PaleoIndian record in clearer contrast to the subsequent archaeological traditions. This has been done to a limited extent in some places, in others I am left with the suspicion that the authors had the information at hand but simply did not include it. For example, on page 17 the observation that the Southeastern Archeological Services, Inc. survey of Lake Allatoona recorded 1063 sites and nine produced PaleoIndian points. It would be helpful to know the chronological distribution of the rest of the 1054 sites. This could be done with a simple bar chart.

Similarly, we are told the Laffingal tract (page 17) has a higher PaleoIndian site density than other areas but we know less than we could about how these and other patterns change through time. My bet is the authors actually have this data at hand and could provide it, even if in simple form, with a minimum of effort. In the same vein, the sites and surveys yielding PaleoIndian remains are illustrated in Figure 4 (more or less). What about a general figure also illustrating the locations of surveys that failed to produce PaleoIndian remains? Again, the contrast might be informative in itself. Overall site distributions for later time periods would also be informative, though this, especially in detailed form, might have to wait for each of the following syntheses. The GIS approach is particularly suited to these kinds of questions.

If each time period is dealt with in such strict fashion, overall trends through time may be unnecessarily obscure. The wealth of information the authors have put together is truly impressive, and with just a slight expansion, and a similar effort by the future topical synthesizers, a more integrated archaeological picture might develop. We don't have to wait for a "Great Synthesizer"; it can, in a sense, be provided while specifically addressing the issues in each period. In fact, the diverse perspectives each group of authors would bring to brief overall chronological synthesis would be valuable and help more clearly identify specific broad questions about human adaptation. Brief sections along the lines of "The PaleoIndian period viewed from the Archaic" or "The Archaic viewed from the PaleoIndian perspective" would, I think, be helpful.

Given my own research interest in wet/saturated sites, I am heartened the authors document the presence of southeastern wet sites and recognize the potential for such materials in Georgia.

The amazing preservation in such contexts is mentioned in SRQ 10 (page 95) dealing with the expansion of an almost nonexistent data base on subsistence and in SRQ 16 (pages 97-98), which seeks to answer the simple question of whether there are any PaleoIndian materials in submerged contexts. With time, and increased attention to likely wet site locations (marshes, swamp and stream margins, peat deposits, etc.), particularly those adjacent to traditional terrestrial sites, I think we will find that PaleoIndian wet sites do exist and they will dramatically expand our understanding of human prehistory.

What happens when such sites are found, is not clear. Most of our funding procedures, while not entirely adequate to deal with the traditional archaeological record (see page 109), are, I fear, even less capable of dealing with the costs associated with wet site investigations. The increased expense of dewatering, excavation in saturated settings, or sometimes working underwater, is compounded by an increase in the volume and diversity of recovered organic material which greatly expands the analytical potential. Consequent increases in conservation and analysis costs are sufficient to swamp, pardon the phrase, normal funding procedures. If such sites are identified during CRM work, most developers could not fund investigation and analysis appropriate to the circumstance. We cannot abrogate responsibility by looking to the National Science Foundation either. The NSF is not sufficiently funded to deal with the elevated excavation and analytical costs of wet site archaeology. For example, at Windover, the combined three year costs just for dewatering the site, salaries and materials required for conservation (skeletal material, fabrics, faunal, floral, etc.), but not for analysis, exceeded any single 1988 NSF funded project in physical anthropology, archaeology, or cultural anthropology. Wet sites can be astonishingly more productive than terrestrial projects but new funding methods will have to be found. These problems have been recognized among wet site archaeologists on an international basis but this recognition has not generally resulted in new funding strategies.

The problem of funding in general, lack of, or the levels of, is ubiquitous in archaeology and surfaces in too many places to enumerate in this, and any, archaeological critique. One solution might be to levy a universally applied small fee on all development which would flow into an archaeological master fund. In one year a 1 mil development tax in Leon County, Florida would generate over a million dollars for archaeological investigations. A state wide program of this nature would be an astonishingly productive resolution to funding problems.

The summary of fluted point distribution (Table 1, page 47) is useful to anyone looking at geographic patterning. I only wish similar tabulations of other archaeological data were also routinely included (this also reflects a clear predominance of points at the expense of other kinds of archaeological information). Summary tables of dated materials, other site information (site size, depth, elevation, terrain, other site categories, etc.) would also be useful. It would also provide interested readers with a framework against which they could compare similar information from their own areas. Are Florida's short term camps smaller than Georgia's? How narrow a range of tool types is "narrow"? Data needs to be more objectively presented if possible.

As noted, the fluted point distribution data and site distribution data presented are sufficient contributions. However, relying on simple counts per state is only part of the picture (Table 1, page 47). Given the diverse sizes of the comparative units, Missouri with 180,486 square kilometers and the District of Columbia with 179 square kilometers, density per square kilometer is a more logical comparative measure than simple raw counts. My tabulation of density, i.e., points per square kilometer (based on Table 1) indicates a range of between a low of 0.00039 points per square kilometer (Louisiana) to a high of 0.01964 in Massachusetts. The seemingly remarkable counts in Alabama (1654) and Florida (1296) are more informative when viewed in this manner. Specifically, the densities of Alabama and Florida are 0.01237 and 0.0085 while the mean density for all states in Table 1 is 0.0049.

Figure 12 (page 48) could also be made more informative by distinguishing between counties with "no data" (presumably those are illustrated with a "blank") and those with data but no known PaleoIndian material. The categories of no data, 0, 1-24, 25-99, etc., or even finer interval division, 0, 1-5, 6-10, etc., would be more informative.

The SGA fluted point survey is laudable. Other studies trying to inventory and incorporate avocational collections, some formed over decades, are clearly productive and Recommendations 5 and 6 are important (page 110). All states should begin such efforts if they have not done so. Charles' work in South Carolina is an excellent example of this approach. However, to focus only on the PaleoIndian materials would be unnecessarily limiting given the information potential of private collections.

Based on my experience in archaeology from the Atlantic to the Pacific in sites spanning the last 8,000 years I emphatically agree with the lines on page 102 reading:

> Education programs should be initiated that are directed toward instilling a pride in Georgia's prehistoric heritage, and at the same time a conservation/preservation ethic among her citizens. A segment on Georgia prehistory should be taught at the grade school and again at the high school level as a part of social studies and history classes.

Archaeology in the United States is at a cross-roads. One road leads to continued, and all too frequent, site destruction, and an irrevocably diminished prehistoric and historic archaeological record. As a community of archaeologists, scholars, and scientists we have all too frequently ignored or given lip or minimal service to public education. We must dramatically expand and improve our efforts in this area because the nation's rich prehistoric and historic archaeological heritage is at risk. The other road, marked by a long term educational commitment with a clear goal of ensuring every citizen understanding the significance and nonrenewable nature of these resources, will ensure that there can be productive archaeology in the 21st century. I would like to see this goal as a separate and distinct recommendation. It should also appear in each subsequent chronological synthesis and be bold faced, double struck, or suitably emphasized else we forget! The choice is ours. The decisions we make today will have long range consequences that later generations of archaeologists will judge us by. Public education is critical and our concerns are just as easy to convey, and substantially more important than the third grade lesson that dyed water changes the color of celery through capillary action.

To anyone interested in the Georgia PaleoIndian record, or eastern archaeology in general, this effort has much to recommend it. It is a thorough synthesis that brings to light new information, resurrects some old, and clearly points the way to a productive future of the past. It is a valuable contribution and one that I hope receives the wide distribution and thorough, thoughtful attention it deserves. The specific recommendations are well thought out and are based on an insightful appraisal of the weaknesses and nature of the record, our knowledge, and our methods.

I can't wait to see the subsequent syntheses and hope they will continue to expand our understanding of the archaeology not only of the state, but the region and the thousands of years of cultural, technological, and biological adaptation we are stewards of.

REPLY TO REVIEWERS' COMMENTS

by David G. Anderson, R. Jerald Ledbetter, and Lisa D. O'Steen

We thank Dennis B. Blanton, Glen H. Doran, and Albert C. Goodyear for their kind words and generally favorable evaluation of our report. Their specific comments are addressed below, where this has been a feasible option. To reassure both them and the readers of this publication at the onset, we wish to stress that our research on the PaleoIndian occupation of the Georgia area is an ongoing commitment, and that we plan to publish periodic updates over the coming years. In this way perceived deficiencies in this first attempt at synthesis should eventually be overcome.

We agree with Goodyear that the ideal method of documenting PaleoIndian artifacts, and particularly projectile points, is by means of black and white photographs of each side of the artifact. This provides a permanent record of the artifact and, given the way these artifacts are bought, sold, and traded among collectors, serves as a fingerprint later investigators can use to identify specimens recorded previously. While we have taken photographs of many of the specimens described in this volume, our records are incomplete, since information on many points was mailed to us. An ongoing goal of our project is to visit the owners of Georgia's PaleoIndian artifacts and obtain photographs of them. As the PaleoIndian Artifact Recording Project has been a voluntary effort accomplished exclusively with personal funds, however, this part of the project has proceeded slowly, as the authors' resources have permitted. The absence of photographs in this document reflects similar economic considerations. While we had hoped to publish actual artifact photographs of many of the PaleoIndian points we had recorded, following Perkinson's (1971, 1973) excellent examples from North Carolina, we were informed early on that the cost of reproducing photographic plates would be prohibitive. For this reason we prepared detailed line drawings of as many of the artifacts as possible.

We whole-heartedly agree with Goodyear that the discovery of PaleoIndian sites in secure or stratified context is critical to resolving questions of sequence development and chronology, and of changing technology during the PaleoIndian period. Toward this end we have argued that the use of a backhoe to investigate deeply buried deposits is absolutely critical when floodplain areas are to be impacted by construction projects. It is our opinion that CRM compliance survey projects that do not use such methods fail to meet both the letter and the spirit of the law. We also agree with Goodyear's suggestion that survey and planning grant funds should be allocated for projects directed to the discovery of deeply buried sites. His own Broad River floodplain deep testing survey, funded by a South Carolina SHPO survey and planning grant, stands as an excellent example of such a project (Goodyear and Colquhoun 1987).

All three reviewers reinforce our belief that important PaleoIndian sites are in all probability present in Georgia's fresh and salt waters, and that we need to develop better techniques for finding and excavating these kind of sites. As Doran indicates, however, while submerged sites can yield a wealth of information not typically found in other settings, dealing with them is expensive. The professional community must be prepared to justify such costs, as well as be ready and willing to develop new funding options when and if traditional sources prove insufficient. Blanton's comment that these kinds of sites may be impacted by trawling or dredging projects is likewise an important observation. We would urge that the effects of construction projects on possible submerged archaeological sites, as well as on shipwrecks, be considered by review agencies.

We agree with Goodyear that a systematic survey of chert sources in Georgia would be invaluable. While some research in this direction has been attempted (Goad 1979; Ledbetter et al. 1981), much remains to be done. Minimally, a well-stocked type collection of the varying lithic raw materials used by Georgia's prehistoric peoples should be maintained somewhere in the state.

Blanton and Doran have both noted that our analyses are only partial, since they focus on projectile points largely to the exclusion of other data categories. In this they are absolutely correct. Too much of our analytical effort is devoted to projectile points, and not enough to other artifact types (i.e., scrapers, debitage) or site characteristics (i.e., topographic or other environmental associations). By restricting our efforts to unequivocal PaleoIndian diagnostics we were perhaps overly conservative. There is a need for such caution, however. Few artifacts of any kind have been recovered from secure PaleoIndian context in Georgia, rendering the resolution of assemblages from this period difficult. Endscrapers, gravers, and other tool forms, while admittedly occurring in PaleoIndian assemblages, also occur in subsequent Early Archaic assemblages. Reliably sorting such artifacts cannot be done if they are not found in secure excavation context. Given this, Blanton's statement that there are temporally diagnostic PaleoIndian bifacial and unifacial tool forms in the Georgia area, while perhaps correct, remains to be documented. Of the sites Blanton lists as having PaleoIndian assemblages, for example, only at 9GE309 is there much possibility of distinguishing PaleoIndian from Early Archaic assemblages. At the other sites the early deposits are either at least somewhat mixed (i.e., Rucker's Bottom, Taylor Hill) or largely or entirely from surface context (i.e., Feronia, Barnett Shoals). With the exception of Rucker's Bottom, furthermore, detailed descriptions of these assemblages, beyond tabulations of artifact types and illustrations of unusual specimens, remain to be produced.

We also agree with Doran that more effort will have to be directed to examining PaleoIndian site data in the future, building on analyses like those conducted in the Wallace Reservoir/upper Oconee River drainage, where settlement in riverine and upland settings was compared (see page 39). Locational and settlement analyses will proceed slowly, however, due to the scarcity and quality of the existing site database. The upper Oconee is currently the only area in Georgia, for example, where large numbers of PaleoIndian sites have been found, and where detailed environmental data have been collected and examined. Precise site locational data, in fact, is lacking for many of the PaleoIndian diagnostics found elsewhere in the state. Collecting and examining these kind of data are a priority for future research. Finally, at <u>no</u> site has there been sufficient investigation to document the size, character, and condition of the PaleoIndian components present.

Thus, while we agree we could have indeed done far more analysis and writing, we would like to note that this report was intended to be a literature overview and planning document. It was simply not possible, given the time and funding available, to analyze the large number of survey collections available from the state for PaleoIndian artifacts. Our inclusion of the projectile point data itself, and its detailed analysis and interpretation, in fact, far exceeded the expected level of effort. Our presentation and analysis of this primary data was encouraged, however, by the archaeologists in the agencies sponsoring and administering this work, Ray Crook and Chip Morgan, who recognized its importance. That we were even able to focus on projectile points -- which fortunately are unambiguous PaleoIndian diagnostics, and are almost invariably reported when found -- was because we had been collecting data about them for several years. The Operating Plan was seen as an excellent forum to present this data, and we took advantage of the circumstances surrounding its production. None of this, however, negates the very real concerns about our analytical effort that Blanton and Doran raise. We will, of course, work to remedy these problems in our future publications on PaleoIndian occupations in Georgia.

Blanton has argued that our discussion of evidence for PaleoIndian settlement is confusing and in some places apparently contradictory. He states, for example, that we variously indicate both high and low concentrations of PaleoIndian artifacts from the Gulf Coastal Plain. We would suggest that these seeming contradictions are more apparent that real. While we indeed note that there are appreciable numbers of PaleoIndian artifacts in southwestern Georgia, for example, we also indicate that this concentration is atypical within the Gulf Coastal Plain as a whole. When the distribution of PaleoIndian projectile points is examined over the entire region, as shown in Figure 12, comparatively few artifacts are found in the Gulf Coastal Plain. The concentration of material in southwest Georgia, we suggested, is probably because of the presence of high quality chert resources in this area, which may have attracted early populations. Similar arguments can be applied to Blanton's critique of our discussions about PaleoIndian artifact incidence in the Piedmont and the Ridge and Valley provinces. Where we perhaps run into trouble in these examples, as he himself suggests, was in failing to more clearly link our observations about the Georgia data with the record available from the surrounding region.

Doran has suggested that Figure 12, which illustrates the distribution of Early and Middle PaleoIndian diagnostics in Eastern North America by county, could be made more informative by changing the data intervals. In the preparation of this figure a number of intervals were examined, and the ones illustrated were chosen because they appeared the most informative. Fortunately, interested researchers have the option of exploring these distributions on their own. Like the projectile point data from this survey (as noted in the Acknowledgements), the computer files used to generate Figure 12 -- giving numbers of PaleoIndian points by county from across the Eastern Woodlands -- are available to interested researchers. A separate paper, synthesizing PaleoIndian research in the Southeast, and presenting a colonization model suggesting how the region may have been settled has, in fact, been produced using this data (Anderson 1990).

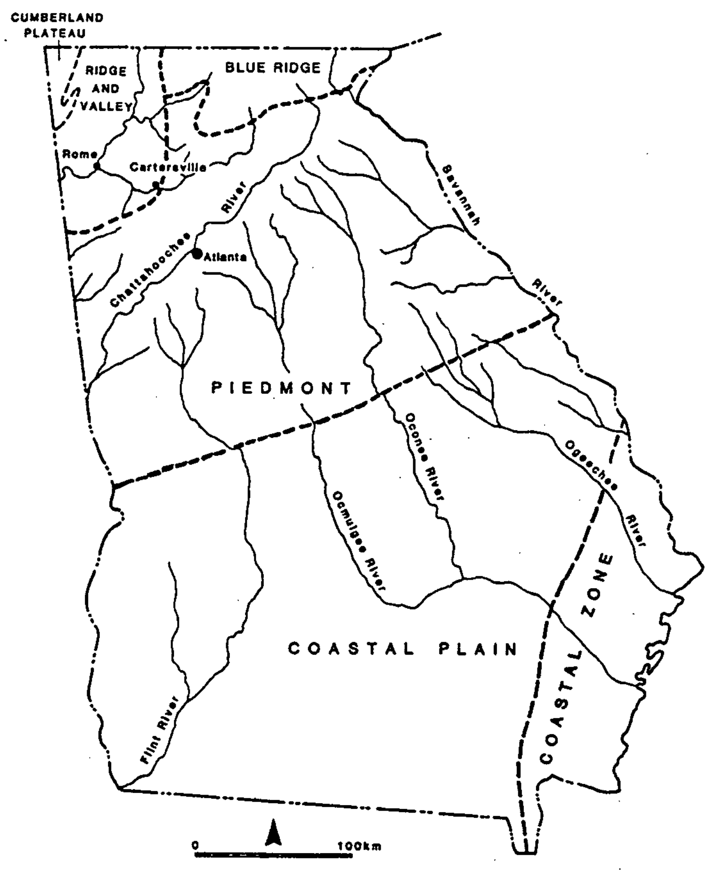


Figure 31. Physiographic Provinces in Georgia.

Doran uses the summary data in Table 1 to make the important observation that while the numbers of points in a given state or area may appear high, we should also pay attention to the density of these artifacts (i.e., number of points per square kilometer). This example indicates why the prompt publishing of PaleoIndian (or any archaeological) data is important. Quite simply, making data available allows other scholars to use it to come up with insights about the past. Doran also notes that distributional information about other tool classes would be valuable to examine. Although we do not present other classes of archaeological data in Table 1, David Meltzer (1984, 1988) has admirably synthesized this kind of information from the major Eastern PaleoIndian sites, and interested readers should consult his data tables.

We agree with Doran that volumes like this should provide a basic map providing physiographic features, and according have provided one (Figure 31).

While we would like to have been able to follow the remainder of his suggestions for improving the artwork in this report, notably adding a location map to each figure, or physiographic details to the state maps illustrating artifact distributions, this was simply not feasible. These Operating Plans are low budget, essentially voluntary productions; all of our funding (and then some) went to prepare the existing graphics, and to print extra copies of the report to provide to our informants. We will keep these suggestions in mind as we produce updates of this plan in the future.

We also agree with Doran that Geographic Information System (GIS) databases can, when competently analyzed, produce revolutionary new discoveries and perspectives. Unfortunately, establishing such a system is extremely expensive at the present, both in terms of personnel and equipment. Given the critical need to improve basic site records management and assemblage curation for Georgia's archaeological resources, GIS implementation should be a secondary, and not a primary goal. As a practical matter, we didn't produce a map showing all the surveys that have been accomplished to date in Georgia (although we did think about the possibility, as part of our effort to determine how representative the PaleoIndian distributions were) because literally thousands of such projects have taken place in Georgia to date. If a GIS-like system is established in Georgia, areas that have received archaeological survey should be noted, as well as site locations. In this way we should eventually come to a better understanding of where sites are, and aren't, on the landscape.

Doran makes a final, excellent point that we need to provide more information about Georgia's PaleoIndian archaeological record in relation to the record from later periods. In the absence of such comparative data, readers may not fully appreciate how rare evidence for PaleoIndian settlement actually is in the state. One measure of this is, of course, the fact that only a little more than 200 PaleoIndian projectile points have been recorded to date in Georgia. Of the hundreds of thousands of projectile points known to exist in public museums, university laboratories and curation facilities, and in private collections, only 100 Clovis, possible Clovis, and Clovis Variant points have been recorded to date by the SGA survey.

More precise measurement of the scarcity of PaleoIndian artifacts in various parts of Georgia, as Doran notes, are available to us. In the recent Allatoona Reservoir survey, for example, 5 Paleoindian and 55 Early Archaic components were identified, based on the presence of seven PaleoIndian and 63 Early Archaic projectile points, respectively (Ledbetter et al. 1987:251, 272). In the nearby Laffingal survey area, three PaleoIndian and 18 Early Archaic components were identified (Ledbetter et al. 1987:272). In the Richard B. Russell Reservoir only 17 of 2676 documented projectile points dated to the PaleoIndian period; only 14 PaleoIndian components were identified in the reservoir area, as opposed to 71 Early Archaic components (Anderson and Joseph 1988:25). These relationships are illustrated in Figures 32 and 33.

Since we wrote the initial draft of this report in mid-1989, which is when it went to the reviewers, Georgia Power Company has begun making available the reports produced summarizing cultural resource investigations on their property. This most positive step has ensured that the results of the many important investigations sponsored by this company, including the fieldwork conducted along Brier Creek (see page 33), are now available for examination and use by the state's professional archaeological community.

Blanton is correct in noting that Georgia's pre-Holocene environmental record is in need of greater documentation. Watts' (1971) study, which he cites, however, has since been supplemented by many other studies, and our overview was drawn from more recent, areally-extensive reconstructions (i.e., Delcourt and Delcourt 1983, 1987). The picture we present of Georgia at the end of the Ice Age is, admittedly, drawn with a broad brush. At a finer scale, local vegetational communities probably were, as Blanton has suggested, more patchy or variable.

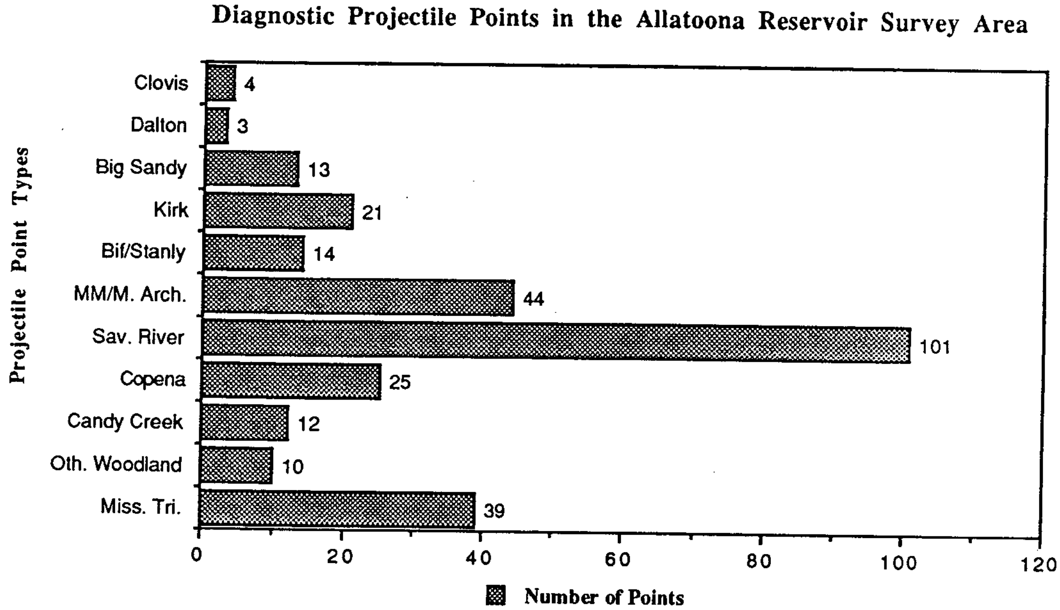


Figure 32. Incidence of Diagnostic Projectile Points, By Period, in the Allatoona Reservoir Survey Data (from Ledbetter et al. 1987:251).

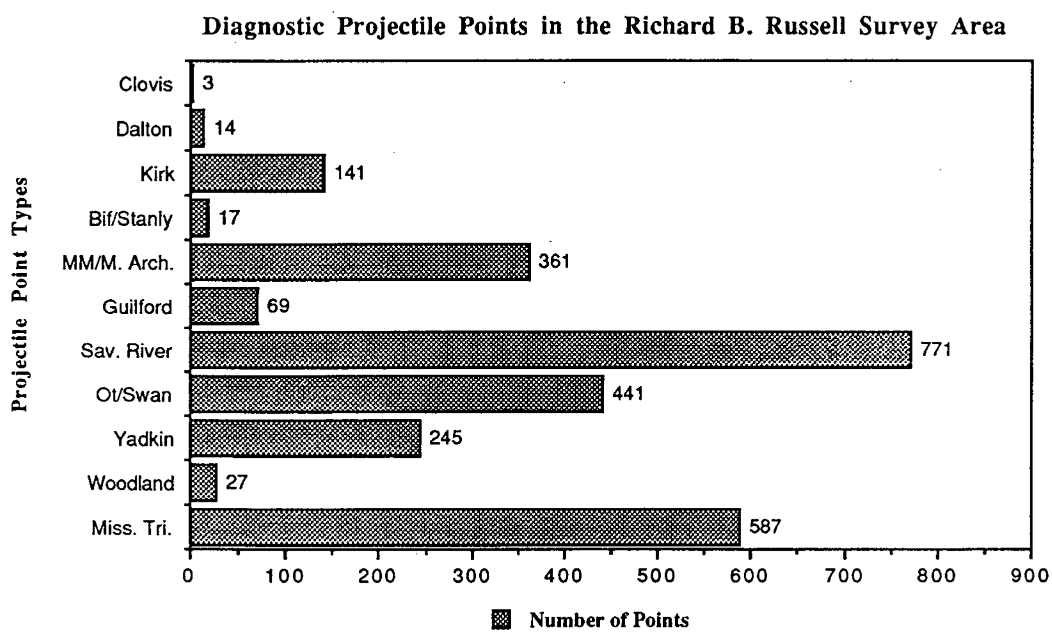


Figure 33. Incidence of Diagnostic Projectile Points, By Period, in the Richard B. Russell Reservoir Survey Data (from Anderson and Joseph 1988:25).

Finally, we wish to thank Blanton for bringing the data in *Who's Who in Indian Artifacts* to our attention. As with any project of this nature, we are learning more as time goes on.

In conclusion, as the tenor of the three reviews indicates, this volume may be a good beginning, but it is hardly a conclusive report. A tremendous amount of exciting research remains to be accomplished. With the continuing help of the professional and avocational community in Georgia, and if the management recommendations presented in this report are adopted, however, much can and will be learned about Georgia's first residents in the years ahead. As we close this first volume on PaleoIndian research in Georgia, we would like to thank the far-sighted personnel in the Georgia Department of Natural Resources' Historic Preservation Section, and within the Office of the State Archaeologist, for making this kind of document possible.

APPENDIX 1

PaleoIndian Projectile Points: Measurements by Type North and South of the Fall Line

GEORGIA PALEOINDIAN FLUTED AND NONFLUTED LANCEOLATE POINT ATTRIBUTE DATA
ARTIFACTS FROM NORTH OF THE FALL LINE

	METRIC ATTRIBUTES (mm)										NON-METRIC ATTRIBUTES				
							Length of Fluting		Length of Edge Grinding						
Point Number	Maximum Length	Estimated Complete Length	Maximum Width	Basal Width	Maximum Thickness	Depth of Basal Concavity	Obverse	Reverse	Left	Right	Raw Material	Point Type	Period	County	Figure
26	59	59	21	16	7	1	14	11	16	16	Chalcedony	Clovis	EPI	Cherokee	7:o
7	54	54	25	24*	9	2	12	16	23	27	Brown (CP?) chert	Clovis	EPI	Columbia	18:f
6	109*	115	37	24	9	2	62	53	45	50	Coastal Plain chert	Clovis	EPI	Columbia	18:a
8	52	52	24	24	8	3	21	28	23	20	Coastal Plain chert	Clovis	EPI	Columbia	19:h
9	72	72	28	24	9	1	16	16	23	28	Coastal Plain chert	Clovis	EPI	Columbia	18:h
11	63	63	31	27	8	3	10	12	20	18	Coastal Plain chert	Clovis	EPI	Columbia	20:o
12	42	42	25	22	6	2	33	21	22	23	Coastal Plain chert	Clovis	EPI	Columbia	19:c
15	51	51	29	25	7	2	29	40	22	23	Coastal Plain chert	Clovis	EPI	Columbia	18:e
17	50	50	25	25	8	3	14	12	25	22	Coastal Plain chert	Clovis	EPI	Columbia	19:b
10	63	63	28	28	10	2	16	19	15	21*	Quartz	Clovis	EPI	Columbia	18:i
3	49	49	19	18	6	5	24	19	20	21	Black chert	Clovis	EPI	Elbert	17:c
70	80	80	32	32	6	7	52	48	22	22	Coastal Plain chert	Clovis	EPI	Greene	19:j
73	66	68	28	22.6	7.1	1.6	22.2	-	-	-	Coastal Plain chert	Clovis	EPI	Greene	19:l
57	24*	50	28	27	7	5	13	11	15	-	Crystal quartz	Clovis	EPI	Greene	20:n
63	45	45	25	23	7	3	23	19	19	19	Crystal quartz	Clovis	EPI	Greene	19:a
53	27*	60	31	29	6	4	13	22	26	26	Metavolcanic	Clovis	EPI	Greene	20:l
54	26*	70	35	28	8	2	24	15	-	25	R&V chert	Clovis	EPI	Greene	20:r
58	23*	-	-	-	6	1	23	15	23	-	Unid. chert (exotic)	Clovis	EPI	Greene	20:m
60	36*	80	28	23	8	1	27	24	30	30	Unid. chert (exotic)	Clovis	EPI	Greene	20:k
72	32	32	20	20	n/a	2	14	n/a	14	14	Piedmont chert	Clovis variant	E/MPI	Greene	20:b
51	28*	60	26	25	7	3	17	15	18*	18	Quartz	Clovis variant	E/MPI	Greene	20:i
64	17*	-	23*	22	8	2	14	-	15	14	Quartz	Clovis variant	E/MPI	Greene	
71	28	29	20	20	6	2	7	5	12	12	Quartz	Clovis variant	E/MPI	Greene	20:a
112	35	35	20	20	5	2	15	-	15	15	Coastal Plain chert	Clovis variant	E/MPI	Oconee	20:c
115	28	28	21	21	6	4	7	-	12	11	Vein quartz	Clovis variant	E/MPI	Oconee	
122	40	40	22	22	7	3	10	7	14	14	Quartz	Clovis variant	E/MPI	Putnam	20:d
28	40	40	22	22	6	3	11	34	23	26	R&V (Ft. Payne) chert	Clovis?	EPI	Cherokee	7:a
30	58*	60	29*	29*	-	5	-	-	12*	6*	Coastal Plain chert	Clovis?	EPI	Clayton	20:f
69	30*	50	22	21	7	2	7	6	15	-	Crystal quartz	Clovis?	EPI	Greene	
56	31*	60	26	25	8	2	11	-	22	21	Quartz	Clovis?	EPI	Greene	20:g
105	37	37	22	22	5	3	13	13	14	-	Piedmont chert	Clovis?	EPI	Oconee	
108	30*	60	30	30	11	-	12	-	13	-	Piedmont chert	Clovis?	EPI	Oconee	
106	23*	40	25	25	6	-	16	-	16	17	Quartz	Clovis?	EPI	Oconee	
107	25*	40	27	27	10	2	8	8	15	16	Quartz	Clovis?	EPI	Oconee	
123	18*	-	25	22	7	1	13	10	18	18	Metavolcanic	Clovis?	EPI	Putnam	
14	80*	85	37	24*	8	5*	-	-	15*	21*	Coastal Plain chert	Simpson	MPI	Columbia	21:j
79	82	82	35	26	19	1	20	-	30	30	Quartz	Simpson	MPI	Lincoln	
118	30*	60	34	26*	6	2	16	-	22	22	Piedmont chert	Simpson	MPI	Oglethorpe	21:f
154	41*	90	32	28	8	6	13	11	27	25	Coastal Plain chert	Simpson	MPI	Wilks	21:g
45	49	49	25.7	25	7.8	-	-	-	15.4	17.5	Vein quartz	Unfluted lanceolate	MPI	Elbert	
52	37*	90	37	36	5	4	-	-	36	36	Coastal Plain chert	Unfluted lanceolate	MPI	Greene	22:g
119	24*	60	32	25*	6	2	-	-	18	18	Piedmont chert	Unfluted Lanceolate	MPI	Oglethorpe	
120	30*	70	38*	33	7	3	-	-	24	24	Quartz	Unfluted Lanceolate	MPI	Oglethorpe	
21	18*	-	24	24	5	3	17	-	18	18	R&V (Ft. Payne) chert	Quad?	M/LPI	Cherokee	7:t
68	27*	50	-	-	8	4	9	-	21	-	Crystal quartz	Quad?	M/LPI	Greene	22:c
25	41	-	27	27	6	3	15	8	15	15	Quartz	Fluted Dalton	M/LPI	Cherokee	7:x
27	30	-	24	24	6	4	13	-	15	16	R&V (Bangor?) chert	Fluted Dalton	M/LPI	Cherokee	7:r
23	20	-	25	25	5	6	12	12	16	-	R&V (Ft. Payne/Knox)	Fluted Dalton	M/LPI	Cherokee	
117	37*	40	28	28	7	3	11	11	13	13	Orthoquartzite	Fluted Dalton	M/LPI	Clarke	24:c
13	50	50	31	31	8	5	18	30	15	16	Coastal Plain chert	Fluted Dalton	M/LPI	Columbia	
62	40	40	21	21	7	3	9	9	8	8	Orthoquartzite	Fluted Dalton	M/LPI	Greene	23:i
65	47	47	29	29	5	5	16	12	16	16	Orthoquartzite	Fluted Dalton	M/LPI	Greene	23:e
66	47*	50	27*	23*	8	2	14	12	18	-	Orthoquartzite	Fluted Dalton	M/LPI	Greene	22:b
50	48	48	23	23	6	2	9	9	9	9	Piedmont chert	Fluted Dalton	M/LPI	Greene	24:l
55	48	48	28	28	5	5	18	17	16	14	Piedmont chert	Fluted Dalton	M/LPI	Greene	24:e
61	16*	-	25	25	8	3	9	9	16	16	Quartz	Fluted Dalton	M/LPI	Greene	
116	21*	-	27	27	6	4	15	15	18	-	Piedmont chert	Fluted Dalton	M/LPI	Oconee	
110	27*	45	28	28	6	2	15	14	15	15	Quartz	Fluted Dalton	M/LPI	Oconee	
114	33	33	25	25	8	3	13	13	13	13	Quartz	Fluted Dalton	M/LPI	Oconee	
102	36*	39	25	25	7	5	13	15	-	14	R&V (Ft. Payne) chert	Fluted Dalton	M/LPI	Oconee	23:j
103	25*	-	31	31	6	9	22	22	16	16	R&V (Ft. Payne) chert	Fluted Dalton	M/LPI	Oconee	23:c
104	29*	-	29	29	6	12	-	-	19	19	R&V (Ft. Payne) chert	Fluted Dalton	M/LPI	Oconee	23:d
109	58	58	29	29	5	6	20	-	19	19	R&V (Ft. Payne) chert	Fluted Dalton	M/LPI	Oconee	24:i
121	44	44	30	30	7	4	17	18	17	17	Orthoquartzite	Fluted Dalton	M/LPI	Oglethorpe	23:g
124	42*	45	27	27	6	2	12	13	14	14	Piedmont chert	Fluted Dalton	M/LPI	Putnam	23:h
67	30	30	29	29	6	2	13	13	13	13	Piedmont chert	Fluted Dalton?	M/LPI	Greene	24:d
113	15*	-	22	22	9	2	-	-	15	15	Quartz	Fluted Dalton?	M/LPI	Oconee	
24	36	36*	29	29	8	3	-	-	12	13	Quartz	Dalton	LPI	Cherokee	7:y
22	28*	-	22*	25*	5	4	7	7	16	-	R&V (Ft. Payne) chert	Dalton	LPI	Cherokee	
20	27*	36	23	23	4	2	16	15	14	14	R&V (Knox) chert	Dalton	LPI	Cherokee	
16	53	53	26	26	7	6	-	-	17	14	Coastal Plain chert	Dalton	LPI	Columbia	
46	24	24	27	27	7	3	-	-	10	10	Crystal quartz	Dalton	LPI	Elbert	
59	30	30	25	25	7	5	-	-	9	9	Quartz	Dalton	LPI	Greene	
111	37	37	30	30	7	4	-	-	13	13	R&V (Ft. Payne) chert	Dalton	LPI	Oconee	23:r

GEORGIA PALEOINDIAN FLUTED AND NONFLUTED LANCEOLATE POINT ATTRIBUTE DATA
ARTIFACTS FROM SOUTH OF THE FALL LINE

METRIC ATTRIBUTES (mm) | NON-METRIC ATTRIBUTES

Point Number	Maximum Length	Estimated Complete Length	Maximum Width	Basal Width	Maximum Thickness	Depth of Basal Concavity	Length of Fluting Obverse	Length of Fluting Reverse	Length of Edge Grinding Left	Length of Edge Grinding Right	Raw Material	Point Type	Period	County	Figure
29	94	94	36	31	11	6	28	17	33	32	Coastal Plain chert	Clovis	EPI	Baker	17:d
1	91*	115	30	25	n/a	5	40	37	n/a	n/a	Coastal Plain chert	Clovis	EPI	Bibb	17:a
159	56.8	56.8	24.7	23	8.3	3.9	41	15.8	21.9	25	Coastal Plain chert.	Clovis	EPI	Bryan	
2	118.1	118.1	30.4	29.3*	7.8	11.2	47.2	30.4	39.2*	52.4	Coastal Plain chert	Clovis	EPI	Burke	17:b
160	102	102	40	29	5	1	27	29	-	-	Unid. black chert	Clovis	EPI	Chatham	
31	40.5	40.5	25	23.5	6.25	4	18	24	20	22	Coastal Plain chert	Clovis	EPI	Coffee	19:e
158	61	61	28	29	7.5	4	32	18	24.5	26.5	Coastal Plain chert	Clovis	EPI	Coffee?	19:f
162	48	48	28	19	5	2	20	21	21	21	Coastal Plain chert	Clovis	EPI	Crawford	19:i
39	67	67	30	27	7	3	18	26	31	32	Coastal Plain chert	Clovis	EPI	Dodge	18:j
43	58*	90	28	24	7	3	24	37	35	34	Coastal Plain chert	Clovis	EPI	Dooly	19:g
42	58	58	28	27	7	2	15	18	18	23	Silicified coral	Clovis	EPI	Dooly	20:p
44	79	79	32	26	8	4	19	13	31	26	Coastal Plain chert	Clovis	EPI	Dry	17:f
77	44*	47	21	20	6	3	15	-	21	22	Silicified coral	Clovis	EPI	Laurens	19:d
78	62	62	23	22	6	6	35	38	16	16	Coastal Plain chert	Clovis	EPI	Lee	17:e
81	21*	-	32*	32	3	5	-	15	-	-	Coastal Plain chert	Clovis	EPI	Macon	
92	23*	-	30	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Coastal Plain chert	Clovis	EPI	Macon	
93	77	77	28	27	8	6	25	-	33	30	Coastal Plain chert	Clovis	EPI	Miller	
94	65	65	25	25	n/a	3	-	-	n/a	n/a	Coastal Plain chert	Clovis	EPI	Miller	
95	42	42	28	28	n/a	6	n/a	n/a	n/a	n/a	Coastal Plain chert	Clovis	EPI	Miller	
96	50	50	25	22	n/a	4	n/a	n/a	n/a	n/a	Coastal Plain chert	Clovis	EPI	Miller	
97	56*	74	29	27	9	4	19	22	32	21	Coastal Plain chert	Clovis	EPI	Miller	19:m
125	48	48	21	21	5	2	21	20	18	18	Coastal Plain chert	Clovis	EPI	Richmond	18:d
144	100*	110	35	30	6	n/a	1.5*	1.0*	2*	2*	Coastal Plain chert	Clovis	EPI	Terrell	18:b
150	70*	90	30	28	9	3	-	22	37	42	ITA Silicified Coral	Clovis	EPI	Washington	19:k
40	48	48	23	20.5	6.5	4.5	6	13	14	16	Coastal Plain chert	Clovis variant	E/MPI	Dodge	20:e
76	39*	60	26	26	6	5	18	6	17	12	Coastal Plain chert	Clovis variant	E/MPI	Lanier	
41	24*		30*	31	5	3	n/a	n/a	n/a	n/a	Crystal quartz	Clovis?	EPI	Dooly	20:h
156	23*	110	35*	33	7*	4	10	9	19*	22*	Coastal Plain chert	Clovis?	EPI	Worth	
36	145	145	26	20	6	-	8	10	38	35	Coastal Plain chert?	Llano?	MPI	Dougherty	
18	56	56	30	26	6	3	19	7	20	20	Red Jasper or ITA CPC	Simpson	MPI	Baker	21:d
32	82	82	29	22	n/a	3	20	n/a	21	21	Coastal Plain chert	Simpson	MPI	Colquitt	21:i
161	63	63	29	29	6	5	14	n/a	22	22	Coastal Plain chert	Simpson	MPI	Crawford	21:k
38	53	53	24	18.5	7	3	22	3*	14	17	Coastal Plain chert	Simpson	MPI	Dodge	21:c
74	40*	60	25	20	4	3	12	15	17	15	Unid. chert	Simpson	MPI	Houston	21:e
80	110	110	38	24	8	5	18	8	34	30	Unknown chert	Simpson	MPI	Macon	21:h
131	61	61	25	22	6	4	-	-	12	12	Coastal Plain chert	Simpson	MPI	Sumter	
143	56	56	28	25	7	4	25	14	25	21	Coastal Plain chert	Simpson	MPI	Telfair	21:b
153	65	65	24	23	5	2	15	-	15	15	Coastal Plain chert	Simpson	MPI	Wilkenson	
5	69	69	29	29	10	35	26	0	30	24	Coastal Plain chert	Simpson	MPI	-	21:a
37	79	79	33	33	12.5	4	-	-	23	19.6	Coastal Plain chert	Suwannee	MPI	Dougherty	22:i
85	24*	-	30	28*	5.5	8	15	7	23*	-	Coastal Plain chert?	Suwannee	MPI	Macon	22:k
98	43*	60	27	24	7	4	15	-	23	26	Coastal Plain chert	Suwannee	MPI	Miller	22:l
132	76	76	36	28*	7.9	7	10.5	8	31	n/a	ITA Coastal Plain chert	Suwannee	MPI	Sumter	22:j
152	80	85	32	29	8	7	-	-	21	22	Coastal Plain chert	Suwannee	MPI	Wilcox	22:h
34	40*	75	30	30	6	5	4	7	-	-	Coastal Plain chert	Unfluted Lanceolate	MPI	Colquitt	
129	49	49	28	28	7	4	-	-	20	17	Orthoquartzite	Unfluted Lanceolate	MPI	Stewart	
151	23*	60	25	25	5	3	-	-	2.5	2	ITA Coastal Plain chert	Unfluted Lanceolate	MPI	Webster	22:f
155	56*	100	34	34	9	5	7	5	23	25	Coastal Plain chert	Unfluted Lanceolate	MPI	Worth	
157	75	75	27	25	7	4	14	-	30	35	Coastal Plain chert	Unfluted Lanceolate	MPI	Worth	
19	44	44	22	21	5	3	-	-	15	14	Coastal Plain chert	Beaver Lake	M/LPI	Bibb	22:e
33	32*	60	34	34	6	5.5	12	10	12	13	Coastal Plain chert	Fluted Dalton	M/LPI	Colquitt	
47	42	42	21	21	5.5	5.6	12.8	-	12	13	Coastal Plain chert	Fluted Dalton	M/LPI	Effingham	24:f
48	45	45	25	25	5.5	4.2	6.9	5.7	13.9	12.6	Coastal Plain chert	Fluted Dalton	M/LPI	Effingham	24:a
49	47	47.5	22	22	6.6	6	10.4	13.4	10.4	11.5	Coastal Plain chert	Fluted Dalton	M/LPI	Effingham	24:g
75	44*	55	27.5	27.3	5.3	6.6	9.4	7.1	14.2	15.5	Coastal Plain chert	Fluted Dalton	M/LPI	Jefferson	
84	44*	50	21	24	5	8	9	6	15	-	Piedmont chert?	Fluted Dalton	M/LPI	Macon	24:h
86	21*	45	25	25	6	5	10	13	18	17	Piedmont chert?	Fluted Dalton	M/LPI	Macon	
90	28*	-	26	26	7	8	17	14	17	-	Piedmont chert?	Fluted Dalton	M/LPI	Macon	22:a
100	40*	50	26	26	8	3.5	14	14	n/a	n/a	Coastal Plain chert	Fluted Dalton	M/LPI	Muscogee	
101	43*	-	32	n/a	10	n/a	20.5*	-	n/a	n/a	Coastal Plain chert	Fluted Dalton	M/LPI	Muscogee	
4	51	51	24	22	7	6	23	19	14	11	Coastal Plain chert	Fluted Dalton	M/LPI	Richmond	
127	68*	81	19.2	23.3	6.6	3.4	13	17	6.5	8.7	Orthoquartzite	Fluted Dalton	M/LPI	Richmond	
133	47*	50	29	29	6	7	8.8	15.2	18	13.8	Coastal Plain chert	Fluted Dalton	M/LPI	Sumter	24:j
134	49*	50	27	27	6.6	4	-	-	14.8	12	Coastal Plain chert	Fluted Dalton	M/LPI	Taylor	23:f
135	50	50	28	28	7.2	5.1	7.7	14.5	n/a	12.8	Coastal Plain chert	Fluted Dalton	M/LPI	Taylor	24:k
137	44	44	22	22	6	4.6	3.5	10.3	5	7	Coastal Plain chert	Fluted Dalton	M/LPI	Taylor	
139	39	39	28	28	7	4	7	3.5	n/a	8	Coastal Plain chert	Fluted Dalton	M/LPI	Taylor	
140	43	43	29	29	7.5	8.4	10.5	12.7	15.4	15	Coastal Plain chert	Fluted Dalton	M/LPI	Taylor	24:b
141	47	48	27	27	6	7.3	5	7.2	13.8	15	Coastal Plain chert	Fluted Dalton	M/LPI	Taylor	
142	39	39	21	21	6.8	4	12	12.7	-	8.5	Coastal Plain chert	Fluted Dalton	M/LPI	Taylor	
136	32	32	27	27	5	7	10	-	15.6	17.6	R&V (Knox) chert	Fluted Dalton	M/LPI	Taylor	23:a
146	43	43	24	24	7	6	8	21	13	14	Coastal Plain chert	Fluted Dalton	M/LPI	Twiggs	
147	39	39	32	31	6	4	11	12	-	-	Coastal Plain chert	Fluted Dalton	M/LPI	Twiggs	
149	56	56	28	27	7	8	12	-	17	19	Coastal Plain chert	Fluted Dalton	M/LPI	Twiggs	
148	46	46	29	29	7	5	10	-	13	14	ITA Coastal Plain chert	Fluted Dalton	M/LPI	Twiggs	
82	30*	-	26	27	7	6	16	14	-	18	Coastal Plain chert	Fluted Dalton	M/LPI	Macon	23:b
35	80	80	27	22	6	2	12	10	-	-	Coastal Plain chert?	Fluted Dalton?	M/LPI	Dougherty	
88	38	38	21	21	7	2	-	-	5	-	ITA Piedmont chert?	Dalton	LPI	Macon	23:m
89	42	42	31	-	7	3	5	11	11	9	Piedmont chert	Dalton	LPI	Macon	23:q
91	45*	50	22	22	7	4	-	-	15	16	Piedmont chert	Dalton	LPI	Macon	23:o
83	44	44	24	24	6.5	8.5	6	9	15	13	Piedmont chert?	Dalton	LPI	Macon	23:p
87	34*	48	24	23	8	4	4.5	9	5	12.5	Piedmont chert?	Dalton	LPI	Macon	23:l
99	39	39	19	19	9	2	5	7	n/a	n/a	Quartz	Dalton	LPI	Muscogee	
126	45*	55	25	25	6	6	-	-	14	15	Coastal Plain chert	Dalton	LPI	Richmond	23:n
128	35	35	22	22	7	2.7	5.7	4.5	4.4	6.5	Coastal Plain chert	Dalton	LPI	Richmond	
130	53*	60	40*	40*	7	4	-	-	20	-	Coastal Plain chert	Dalton	LPI	Stewart	
138	27*	50	27	27	5.2	6.8	-	-	14.5	12.9	Coastal Plain chert	Dalton	LPI	Taylor	23:k
145	31	31	28	28	6	4	-	-	8	8	Coastal Plain chert	Dalton	LPI	Twiggs	

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