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EARLY ARCHAIC SETTLEMENT PATTERNS IN THE WALLACE RESERVOIR: AN INNER PIEDMONT PERSPECTIVE

LISA DIANE O'STEEN

Athens

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IN THE WALLACE RESERVOIR:
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by

Lisa Diane O’Steen

WALLACE RESERVOIR PROJECT CONTRIBUTION NUMBER 25

DEPARTMENT OF ANTHROPOLOGY

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FORWARD

This report was originally written as a thesis in anthropology and submitted to the Graduate Faculty of the University of Georgia in partial fulfillment of the requirements for the degree of Masters of Arts. It is herein reproduced as Contribution Number 25 of the University of Georgia Wallace Reservoir Archaeological Project. It is based on data recovered in the Wallace Dam Mitigation Survey and can therefore be considered to represent a partial final report for Appendix 1 of the Archaeological Salvage Agreement between the University of Georgia and the Georgia Power Company.

David J. Hally
Principal Investigator

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CHAPTER I

Introduction

The major goal of this thesis is to describe and explain the distribution and density of sites and components associated with the Early Archaic cultural period in the Wallace Reservoir area of the central Georgia piedmont.

The Early Archaic in the southeastern United States spans a period from approximately 10,500 to 8,000 years B.P. (Goodyear 1982; McMillan 1976; Chapman 1979; Broyles 1971; Coe 1964). Early Archaic people are generally believed to have been hunters and gatherers (Morse 1971, 1973, 1977; Chapman 1975; Tuck 1974; Gardner 1974, 1975; Goodyear 1974, 1982). There was undoubtedly some change in subsistence, however, between late Pleistocene Paleoindian big-game hunting, and the subsequent Early Archaic adaptation to the deciduous forest habitat which was established by 10,000 years B.P. in the Piedmont of Georgia. Tuck (1974:78) speculates that the Early Archaic was a time of "settling in", when an increasing number of food sources began to be utilized, when hunting-gathering people became more familiar with their local environments, perhaps at the expense of interchange with other groups that were also becoming more "committed to their own river valleys, lake systems, or other biological or physiographic areas".

Early Archaic stone tool assemblages are relatively well documented in the southeast (Coe 1964; Broyles 1971; Chapman 1975, 1977, 1978; Morse 1971, 1973; Goodyear 1974, 1982). However, little is known about the types of sites and features characteristic of the period. Bone and shell tools, faunal and floral remains, furthermore, are virtually unknown from most Southeastern Early Archaic sites.

Archaeological surveys in Morgan, Putnam, Greene, and Hancock Counties, Georgia during the past decade have resulted in the identification of approximately 260 surface sites containing Early Archaic artifacts. The location of these sites indicates a settlement system focused on the major shoals and adjacent tributaries of the Oconee River in the southern part of the Wallace Reservoir. The area encompassed by the Wallace Reservoir could have supported a population the size of a small band, but it is likely that most of the resident population was concentrated in the southern part of the reservoir. Significant percentages of non-local lithic raw material suggest either exchange between adjacent bands, or the actual movement of bands from or through the Wallace Reservoir into the Coastal Plain and Ridge and Valley Provinces of Georgia.

The following discussion of Early Archaic site distribution is divided into five main parts. In Chapters II and III the ethnographic and archaeological data pertaining to hunter-gatherer social organization and settlement patterns are reviewed for the purpose of constructing a model of Early Archaic settlement patterns. In Chapters IV and V the research area and the methods used to survey it are described. The paleoenvironment of the Wallace Reservoir area during Early Archaic times is discussed in Chapters VI and VII. Chapter VIII presents the classification of diagnostic Early Archaic projectile point/knives from surface survey sites in the Wallace Reservoir. In Chapter IX the hypotheses concerning Early Archaic settlement pattern in the Wallace

Reservoir are presented and tested. The thesis concludes with a discussion and interpretation of the survey data and hypotheses on Early Archaic settlement patterns in the Wallace Reservoir.

Definitions

The following definitions are of key terms used throughout this thesis.

1. Floodplain: The floodplain along the Oconee River and its tributaries consists of active levee and backswamp areas, as well as higher Pleistocene alluvial terraces.
2. Projectile Point/Knife (pp/k): A bifacial, multipurpose tool associated with Early Archaic tool assemblages. These bifaces could have been used as projectile points, but lateral edge wear and resharpening on some specimens indicates the use of these edges for cutting or scraping.
3. Surface Site: An area with ten or more artifacts in close association.
4. Surface Occurrence: An area with less than ten artifacts in close association.
5. Site Density: The number of sites per unit of surveyed land.
6. Component: The manifestation of a given archaeological phase at a specific site (Willey and Phillips 1958:21).
7. Component Density: The number of components per unit of surveyed land.
8. Multicomponent Early Archaic Site: A site containing more than one Early Archaic component.

9. Multipoint/Single Component Early Archaic Site: A site containing more than 1 pp/k which represents the identified component.

10. Multicomponent/Multipoint Site: A site containing more than one Early Archaic component, with more than one pp/k associated with at least one of these components.

11. Burn Burial: The result of clearcutting, pushing trees and other vegetation into piles, then burning and burying them. Burn burials often exposed buried sites in levees along the Oconee River and its tributaries.

CHAPTER II

Ethnographic Data

Little is known archaeologically about Early Archaic culture. Available archaeological evidence indicates that Early Archaic people were hunting a wide variety of large and small mammals, birds, and fish, and were collecting at least a narrow range of plant foods, primarily hickory nuts, acorns, and black walnuts. There is also evidence that molluscs were exploited.

In order to construct a model of Early Archaic hunter and gatherer culture I turn to ethnographic research conducted among living hunters and gatherers. Many anthropologists have attempted to isolate behavioral patterns common to hunter and gatherers (Lee and DeVore 1968; Keene 1981; Jochim 1976, 1981; Binford 1980).

Because most hunter-gatherers have been pushed into marginal or extreme environments considered unusable by agriculturalists and industrialists, most ethnographic studies have focused on human adaptations to environments that are the least productive in terms of resources necessary to sustain human populations. Knowledge about hunting and gathering groups living in more productive environments is severely limited, and as Binford (1980) has pointed out, it is dangerous to draw analogies for the behavior of forest dwelling hunter-gatherers during Paleo-Indian and Early Archaic times in North America from studies of foragers living in savannah or desert environments. Nevertheless, ethnographic data on hunting-gathering populations living in richer, temperate environments should be useful in understanding the subsistence and spatial organization of Early Archaic hunter-gatherers in the Piedmont of Georgia.

Until recently it was believed that a hunting and gathering life was very difficult, a constant struggle to survive with no leisure time available. Recent studies, such as those of Lee (1976), Tanaka (1976), and Lee and DeVore (1968) among the !Kung Bushmen of the Kalahari Desert in South Africa, have shown that even in extremely harsh environments hunter-gatherers obtain a better than subsistence diet in an average work week of 12 to 19 hours per adult. Many prehistoric hunter-gatherers probably lived in better environments with more secure food resources than those utilized by modern foragers.

Several general characteristics of hunters and gatherers that are applicable to Early Archaic hunting and gathering populations may be drawn from the available ethnographic studies.

Social Organization

Lee and DeVore (1968) discuss three crucial elements of human social organization that they believe developed along with a hunting mode of subsistence. The first of these is a sexual division of labor. Most hunters and gatherers obtain the majority of their diets from plant foods, and perhaps some shellfish and fish, provided by women. While the women provide the bulk of gathered foods, the men are responsible for providing meat protein. The climate and flora affect the availability and type of fauna that can be hunted in an area, and thereby ultimately affects the proportion of meat protein in the hunter-gatherer diet. Especially in warm climates, the energy men expend in pursuit of game is often greater than the energy return from the kill (Lee and DeVore 1968). Though energy within a hunting and gathering population in warm latitudes is derived primarily from plant carbohydrates gathered by the women, a certain amount of meat guarantees the amino acid balance needed for an adequate diet. In northern latitudes, animal protein represents a greater proportion of the diet.

The second crucial element of human social organization discussed by Lee and DeVore (1968) is food sharing. Hunting, whether cooperative of not, seems to be correlated with food sharing among adults. Woodburn (1968) notes that among the Hadza of northern Tanzania, a man will eat his fill at the campsite, then carry what he can back to camp to be shared. If the kill is especially good, the camp may move to the killsite. Among the sedentary Ainu of Japan, cooperative hunting of hibernating bears is conducted in the early spring. When a bear is killed and butchered, each hunter gets a share of the meat. The head, breast, and viscera go to the hunter who has most distinguished himself. When the men return to the village a feast is held, and the food is shared among all persons present (Watanabe 1968).

A third distinctive feature of a hunting and gathering economy is the importance of the camp as the center of daily activity and the place where food sharing actually occurs (Lee and DeVore 1968). Even in very harsh environments, hunters and gatherers live in camps of some permanence; for example, the dry season camps of the !Kung Bushmen that are occupied all winter season, and which are important locations for social interaction and marriage exchange (Yellen 1976). According to Binford (1980) the more stable the food resources available to a "collecting" population, the greater the tendency for the group to store food at least part of the year and become more sedentary. The Yurok and Pomo Indians of northern California (Kroeber 1925), and the Ainu of Japan (Watanabe 1968, 1972) are examples of sedentary hunting-fishing-gathering populations that practice some storage of plant and animal foods.

Settlement Patterns

Because hunter-gatherers do not farm or practice animal husbandry, they must reside in areas with naturally available food resources. This fact necessitates some movement of people to places where the most food resources are available for the least amount of energy expenditure. Energy expenditure plays a vital role in decision making among hunters and gatherers. In areas of abundant food resources, hunter-gatherers can become semi- or completely sedentary, sending out small task groups to collect food from known sources, and storing food for at least part of the year (Binford 1980; Watanabe 1968, 1972; Kroeber 1925). When mobility is necessitated by limited availability of water or other subsistence resources, it is not aimless wandering, but is done within a fixed territory or home range (Yellen 1976; Woodburn 1968).

Mobility, as a strategy for distributing people in the environment, facilitates procurement of resources and communication, reduces stress and helps avoid risks, and allows for flexibility of band size and composition (Jochim 1981).

Many factors influence the procurement efficiency and therefore the pattern of camp movements (Jochim 1976:47-63). These factors include the distribution of habitats and resources, the costs and means of travel, and the intensity of harvesting.

The !Kung Bushmen of the Kalahari Desert in South Africa depend on the drought resistent Mongongo nut, and tend to follow fairly fixed annual routes within a restricted territory. A primary factor in their mobility is the availability of water.

> "The overall residence pattern is one of group concentration near the Dobe waterhole in relatively large, long term camps during the dry months of the year, and an outward movement in smaller units to nut groves and seasonal waterholes during and immediately after the rains (Yellen 1976:56)."

The availability of plant foods is of secondary importance, and the numbers and distribution of game animals are only of minor importance to settlement decisions. Yellen (1976:56) notes the !Kung preference for lowering energy expenditure by locating camps in areas where a mixture of resources--water, and plant and animal foods--is readily available.

Woodburn (1968:50) notes that in Tanzania

> "The Hadza consider that about three or four miles is the maximum distance over which water can reasonably be carried and camps are normally sited within a mile of a water source."

In cool, temperate regions water sources are also significant in settlement locations. Among the Ainu of Japan, sites were usually chosen close to drinking water, and fishing and hunting grounds (Watanabe 1968). The maximum band, or dialectical tribe, of the Ainu resides within the boundaries of a river valley, regarding the river and its resources as its territory (Watanabe 1972). The ethnographic Pomo and Yurok Indians of northern California were hunter-fisher-gatherers who lived in permanent villages along the Pacific Coast and in adjacent river valleys. The rivers satisfied the majority of subsistence, transportation, communication, and social interaction needs for these people. Directions were reckoned by terms for upstream and downstream among the Yurok, whether the river flowed in a north, south, east, or west direction (Kroeber 1925).

The placement of settlements can be viewed as a strategy for attaining economic, social, and political ends. The distribution of settlements represents the arrangement of demand, labor, and technology, in relation to the resources exploited (Jochim 1981). The arrangement and accessibility of resources and other people are critical factors in determining settlement location. Large, permanent settlements represent a considerable investment of materials and energy in one location, and cannot be as responsive to changes in resources distribution, as they are so expensive to move. The greater the mobility and impermanence of settlements, the more likely it is that their location can adjust to the distribution of resources.

The qualities of resources that are significant in an evaluation of settlement location include their nutritional value, reliability, transportability, and the labor demands of their procurement (Jochim 1981). If two resources are almost identical in these characteristics, then settlements may be placed halfway between their areas of occurrence. In most situations, however, resources are sufficiently different that they will exert different pulls on settlements. In evaluating these resource pulls, people tend to establish hierarchies of resources ranked according to various criteria, the most important of which is resource mobility (Jochim 1981).

Fixed resources are more important to settlement decisions than are mobile ones. Fixed resources are predictable in space and hence more reliable to procure. As a result, hunter-gatherers tend to locate their camps where water, firewood, and plant foods are available and to exploit these fixed resources within a small radius of camp (Jochim 1981; Wilmsen 1973). By contrast, mobile game animals rarely determine specific camp locations, although hunting areas are ideally accessible from settlements and hunting activities will be conducted over a wider area from camps. Fish are mobile, but confined to waterways, lakes, and oceans, and are rather predictable spatially and of considerable importance to settlement decisions (Jochim 1981). As a result, hunter-gatherers orient their camps such that the most spatially predictable resources are in closest proximity, with exploitation of more mobile, seasonal, or unreliable resources at greater distances from camps. Spring and fall salmon runs determined the settlement distribution of the Ainu of Japan (Watanabe 1972) and the Pomo and Yurok Indians of northern California (Kroeber 1925). The upland forests were utilized for deer, bear, acorn, and other plant food procurement on a seasonal basis only (Kroeber 1925).

Since, among hunter-gatherers, there seems to be a premium placed upon the ability to react to environmental change, it is likely that the more unstable the environment, the greater the mobility and flexibility of size and membership of hunting and gathering groups. Woodburn (1968:103) noted that among the Hadza, who live in an unstable, savannah environment, "the use of the term territorial ownership, leadership, corporateness, and fixed membership, is inappropriate for Hadza residential entities..." Yengoyan (1968) notes a similar phenomenon in the unstable environment of interior Australia, where marriage subsection systems are very important in linking groups and allowing them to expand their range of exploitation in response to economic stress. In contrast, hunting and gathering groups along the coast of Australia that live in a much more preditable and rich environment, practice local group exogamy, and tend to maintain a more constant group size and membership, and degree of sedentism (Yengoyan 1968). This is also true of the Ainu of Japan (Watanabe 1972) and the ethnographic northern California Indians (Kroeber 1925).

It appears, then, that populations in richer, more stable environments can be more settled, and maintain a more constant group size and membership. There may be less need to maintain the extensive areal relationships observed among the Hadza and the interior Australian groups. The Ainu of Japan live in permanent villages in narrow river valleys, formerly and subsisted primarily on salmon, bear, deer, and a variety of plant foods (Watanabe 1968, 1972). Watanabe (1972) stresses the fact that this residential stability was promoted by a variety of rich habitats located in close juxtaposition, such that many resources were available adjacent to the villages, while others could be reached by short-term hunting trips. Ainu men established hunting huts at higher elevations away from the main river for the exploitation of deer and bear. The village jointly owned and used the salmon spawning grounds, and participated as a group in regular rituals. Up to seven neighboring villages were aggregated into larger groups that considered the river and its resources as a territory and held collective rituals only against natural disasters, such as failure of the salmon run, or flooding. This framework of organization and interaction was extended only within that particular river valley, and there were few social mechanisms that would allow people from one valley to enter neighboring valleys should, for example, the salmon runs fail in their valley.

Watanabe (1972) emphasizes that failure of the salmon runs rarely, if ever, occurred, and that such social segregation between valleys was not economically maladaptive.

This may be in turn related to greater local cultural differentiation among hunter-gatherer populations in stable, homogenous environments. The fact that the Yurok, Hupa, and Karok Indians of northern California shared one river valley but speak three mutually unintelligible languages seems to indicate social segregation within the same river valley (Kroeber 1925). Though these three sedentary groups shared the resources of one river valley, the language boundaries would have restricted, or perhaps resulted from, the amount of social interaction possible between them. Apparently exchange of raw materials and other items, and occasional intermarriage, did occur across ethnolinguistic boundaries among the ethnographic California Indians (Ericson 1977).

Hunter-gatherer Settlement Models

Most hunter-gatherer settlement models use Binford and Binford's (1966) base camp-work camp dichotomy, although Yellen (1976:69-70) found that this strict dichotomy did not hold true for the !Kung Bushmen. Binford and Binford (1966:268) have described base camps as locations "selected primarily in terms of adequate life-space, protection from the elements, and central location with respect to the distribution of resources." Maintenance activities, "related to the preparation and distribution of subsistence goods already on hand and to the processing of on-hand raw materials in the production of tools," take place mainly at base camps. The second type of camp, work camps, are characterized primarily by "extractive tasks", such as killing/butchering, collecting plant foods, and flint quarrying. Yellen (1976:70) states that a more useful categorization would separate activities which occurred within a campsite from those which took place away from it. Depending on how long a camp is occupied, one would find more or less of a variety of activities taking place. If a camp is occupied long enough, the full range of maintenance and extractive (manufacturing) activities would be found taking place, and to Yellen, the most important variable is length of time the camp is occupied. A very temporary camp would exhibit evidence of maintenance activities only, as these are daily activities and necessary on a daily basis. The !Kung do not store any food, so "extractive activities of all types are carried out in the vicinity of all camps regardless of type, and since raw materials are not strictly localized and are easy to carry, maintenance activities...are not confined to a specific type of camp" (Yellen 1976:70).

Binford (1980) chracterizes the Kalahari Bushmen as foragers, and contrasts them with collectors, hunter-gatherers that have logistically organized food procurement groups, and store food for at least part of the year. He emphasizes that collectors generate larger, more visible, specialized types of sites than those usually associated with a foraging economy (Binford 1980).

Demography

Most hunters and gathers live in groups or bands with 25 to 50 members. Ten to 20 bands usually make up a dialectical tribe (Lee and DeVore 1968), or maximum band (Wobst 1976), numbering between 175 and 475 persons. The maximum band acts as a breeding and linguistic community within which the smaller bands interact. Bands, though associated with a geographical range, often move around a good deal and do not constitute a closed social system. Families may move from one band to another where they have kinship ties. This feature is promoted by exogamous marriage rules (Wobst 1976; Lee and DeVore 1968; Yengoyan 1968; Wilmsen 1973).

Hunting and gathering populations seem to stabilize in numbers well below the theoretical carrying capacity of their territory. The home ranges of many hunter-gatherers can support from three to five times as many people as they usually do. This factor may provide a buffer against long term risks such as drought or the failure of vital seasonal resources. Hunter/gatherer population density, even in relatively rich, cool temperate environments, averages between .05 and .13 persons per square kilometer (Jochim 1976:134). Population size may be regulated by infanticide, abortion, herbal drugs, the rhythm method of birth control, sexual abstinence, and prolonged nursing of children with an accompanying taboo on sexual intercourse (Draper 1976:214).

Political Organization

Most hunting and gathering societies have a band level of political organization, as defined by Service (1971). Band level societies are egalitarian, and with the possible exceptions of age and sex status differences, all members of the band have an equal say in the decision making process.

The band must be both stable and flexible to accomodate a wide variety of ecological conditions. Band organization has to be fluid enough to deal with extremes of complete dispersal or complete centralization of the groups. Social solidarity is high due to the binding force of kinship alliances. This enables regular periodic dispersal or regrouping of band segments for both ecological and social reasons (Wilmsen 1973; Lee and DeVore 1968; Yengoyan 1968; Wobst 1976; Jochim 1976, 1981).

Among the ethnographic northern California Indians (Kroeber 1925) and the Ainu of Japan (Watanabe 1972) more complex tribal and chiefdom level political organization existed. Among these sedentary hunting-gathering populations social ranking and political leadership were common (Kroeber 1925). There are also indications of warfare among the Californian Indians (Kroeber 1925).

Economic Exchange

Hunter-gatherer economies are usually characterized by generalized, or reciprocal, exchange. Lee (1976) notes that a !Kung Bushman may spend a large part of his day visiting with or receiving guests; during this time the exchange of gifts often takes place. Among the !Kung it would be considered very rude not to share whatever is available, and this practice assures an even distribution of goods and services throughout the social group. Exchange for the procurement of non-local raw materials, subsistence items, and symbolic objects is a common feature of many hunting and gathering societies (Wobst 1976; Jochim 1981; Keene 1981; Watanabe 1968; Ericson 1977; Lee and DeVore 1968).

Among the ethnographic California Indians, wealth was also redistributed as a means of retaining or increasing prestige among one's kin and followers (Kroeber 1925). Fishing areas and hunting land were privately controlled. Wealthier individuals owned prime hunting and fishing areas, while lower status people were forced to travel farther to areas where they could hunt and fish (Kroeber 1925).

Conclusions

The available ethnographic data on hunters and gatherers indicates an emphasis on the sharing and exchange of food and other material possessions, cooperation of individuals and groups, and the division of labor by sex during subsistence and other activities. It is also apparent that the environment plays a significant role in the distribution and density of people, and in the degree of social, political, economic and religious interaction among different groups. Even those hunting and gathering populations that live in extremely harsh environments appear to have leisure time to devote to social activities and may occupy semi-permanent camps for a few weeks or months. Hunting and gathering groups that live in environments with a greater variety and density of food resources may become sedentary and develop more rigid social, political, economic, and religious boundaries than those living in less productive environments.

There appears to be an association between the degree of sedentism and the diversity and density of spatially predictable resources available to a population. Increasing sedentism is also usually associated with the storage of food during at least part of the year and logistically organized collecting groups (Binford 1980). The greater the reliance on fixed aquatic resources, the more sedentary a hunting-gathering population can become (Nunley 1972; Jochim 1976).

Evidence presented later in this paper suggests that the Early Archaic hunting and gathering population within the Wallace Reservoir lived in a relatively rich deciduous forest environment with an abundant and diverse array of fixed plant and animal resources; therefore they may have been able to become more sedentary than groups such as the Hadza and the !Kung Bushmen, who live in much more unstable environments.

CHAPTER III

Archaeological Evidence for Early Archaic Subsistence

Floral and faunal remains from Early Archaic contexts in the southeastern United States are rare. The data that has been recovered indicates that only modern fauna and flora were present and utilized by Early Archaic hunting and gathering populations. This summary presents the available evidence on Early Archaic subsistence in the southeast. Caldwell's (1958) hypothesis of "primary forest efficiency" is presented and evaluated in terms of its relevance to Early Archaic subsistence.

Floral Remains

Research on living hunters and gatherers has shown that in temperate climates the greater portion of total caloric intake is provided by plant foods (Lee and DeVore 1968; Lee 1976; Woodburn 1968; Service 1971). Though it is difficult to assess the relative importance of plant resources in the diets of prehistoric hunter-gatherers, it is likely that they at least supplemented their diets with plant foods, particularly in areas providing a large variety of potentially useful plant resources. Archaeological evidence indiates that a narrow range of plant foods, primarily hickory nuts, acorns, and black walnuts, were utilized by Early Archaic populations in the deciduous forests of the southeastern United States.

Caldwell (1958) suggested three major trends which he describes as a transformational sequence culminating in the sedentary horticulture of the Mississippian period in the eastern United States. The earliest of these trends, which he associates with the Archaic period, is one of increasing efficiency in exploiting the deciduous forest, manifested in the development of ambush hunting, seasonal cycles, and the discovery of new sources of natural foods (Caldwell 1958:7). This early trend was progressive in the sense of being an increasingly successful adjustment to the eastern forest environment which culminated in Late Archaic times with the establishment of "primary forest efficiency." During the Late Archaic humans in areas with more abundant food resources became sedentary; providing an economic foundation for later cultural developments, and allowing for increases in material possessions and development of religious ritual. Though Caldwell never conclusively states how the earlier Archaic groups were subsisting, the very definition of "primary forest efficiency" suggests that these groups had not learned to exploit plant foods seasonally, and that they were "almost completely wandering" (Caldwell 1958:9). He states that "the discovery of the times and places where wild foods were most effectively secured would be part of the achievement of primary forest efficiency" (Caldwell 1958:12). In light of his statement that a man could starve in the forest if he did not know which plant foods to eat, and how to obtain and use them, it is a wonder that these Early and Middle Archaic people survived for six thousand years before achieving primary forest efficiency. Of course, at the time that Caldwell formulated this concept it was generally accepted that hunters and gatherers were involved in a constant struggle for survival, with no "leisure time" available for social, religious, and political interaction. Caldwell probably viewed hunter-gatherers as being inefficient for this reason.

Recent archaeological evidence seems to indicate that the achievement of "primary forest efficiency" occurred much earlier in the eastern United States than Caldwell suspected. In a recent summary of paleobotanical evidence from the Little Tennessee River Valley, Chapman (1977:123) reports the recovery of hickory nuts and acorns from sites dating as early as 7,000-8,000 years B.C. He concludes that during the Early and Middle Archaic periods the major focus of plant food collection was on hickory nuts and acorns, supplemented to a lesser extent with other plant foods. A few remains of bedstraw (*Galium* sp.), poke (*Phytolacca americana*), grapes (*Vitis* sp.), butternut (*Juglans cinerea*), and black walnut (*Juglans nigra*) were also recovered from Early Archaic contexts in the lower Little Tennessee River valley (Chapman 1981:71).

McMillan (1976:224) reports that hickory nuts and black walnuts were part of the Dalton subsistence base at the Rodgers Shelter in the Ozark highlands of Missouri. Parmalee et al. (1976:142) point out that these findings may be biased by the fact that thick hulled nuts such as hickory and walnut are more conducive to being charred than thin walled seeds or nuts that would more likely be burned to ash, and therefore absent from the archaeological record. Hally (1981) has demonstrated that plant species or plant parts regularly exposed to heating or charring at some time during processing are more likely to be recovered in paleobotanical samples. Plant species that were never exposed to fire (except accidentally) during processing would be underrepresented or absent from such samples. This may explain the predominance of hickory nut fragments in Early Archaic paleobotanical samples.

Asch et al. (1972) report a dominance of hickory nuts in the Middle Archaic levels at the Koster site in Illinois. They emphasize that hickory was a "first line wild plant food" because of seasonal abundance (regionally synchronized, ripening at complementary times in different regions), storability, high caloric value, and complete and high protein content (Asch et al. 1972:27). They suggest that it is unnecessary to assume that Caldwell's hypothesis is totally correct, i.e., that humans required several thousand years to gain intimate knowledge of foods available in a deciduous forest. The dominance of hickory nuts in the Archaic levels at Koster suggests not an inefficient adaptation, but rather a population small enough that there were no serious demands on the carrying capacity of the environment, and early populations would have needed to exploit only hickory (Asch et al. 1972:27).

Keene (1981) questions the importance ascribed to nut utilization in Late Archaic hunting and gathering economies in the eastern United States. His models suggest that nuts should have been of marginal value to Late Archaic inhabitants of the Saginaw Valley in southern Michigan, given the high variability and unpredictable nature of nut production, high processing costs, and low calcium content (Keene 1981:176). The value of nuts, according to his optimization models, seems to hinge on the availability of other sources of protein and energy (Keene 1981:176). One model, in which the availability of most resources has been restricted, suggests that the supply of inexpensive sources of protein would have to be severely restricted before nuts would become an important part of the diet. Without severe restrictions, nuts remain a marginal resource at the stated processing costs. Keene (1981) further states that if other resources were depressed to the point at which nuts became a critical source of energy and protein, this would raise serious questions about the stability of adaptation, given the high variability and unpredictability of nut production.

Paleobotanical remains from Early and Middle Archaic contexts do seem to indicate some utilization of nuts and other plant foods during this period. Though Caldwell's hypothesis is not totally refuted, it does appear that Early Archaic people had discovered that nuts were a good food source, and that they were probably aware of the seasonal cycles of nuts and other plant foods. Keene's conclusions, based on optimization models, indicate that nuts are not as efficient to utilize as other resources, and that nut utilization increases only when other food resources become restricted. This gives a completely reversed view of what Caldwell characterized as a progressive cultural development based on increased utilization of nuts during the later Archaic and Mississippian periods.

It is also highly likely that preservation bias toward thick hulled nuts versus thin hulled nuts and seeds, and recovery techniques, i.e. screen size and types of samples taken, have resulted in assemblages unrepresentative of the full range of plant foods exploited by Early Archaic populations in the eastern United States.

Faunal Remains

Goodyear (1981:391) reports that by Dalton times (10,500-9900 B.P./ 8500-7900 B.C.) all archaeological evidence in the southeastern United States indicates the presence of modern faunal species only. There are no documented associations of Dalton with extinct fauna.

In the Dalton level at the Rodgers Shelter in the Ozark highlands of Missouri, McMillan (1976:214-Fig. 12.2) reports fish, aquatic and terrestrial turtles, rabbits, squirrel, raccoon, beaver/muskrat, other terrestrial rodents, deer, bison/elk, and turkey as primary meat species.

From the Lepold site, also in Missouri, Price and Krakker (1975: 32) report that deer constitute a major portion of the Dalton subsistence base along with small mammals and birds.

Fowler (1959:42-44) reported deer/elk, raccoon, opossum, fish, aquatic birds, turkey, quail and passenger pigeon and aquatic snails and mussels from the levels at Modoc Rock Shelter (Missouri) dating between 6000 and 8000 B.C.

Parmalee (1962:112-114) reports that Dalton-Early Archaic occupants at Stanfield-Worley Bluff Shelter in Alabama subsisted primarily on deer, squirrel, and raccoon. Dejarnette et al. (1962:85) note that there was a low diversity of species present in the sample from the Dalton-Early Archaic level at Stanfield-Worley when compared with faunal material from other similar sites, such as the Modoc Rock Shelter.

Parmalee (1961:43-44) reports deer, raccoon, opossum, and box turtle from the Flint Creek Rock Shelter in Alabama (Archaic Stratum II). The absence of fish remains from the lower levels at Stanfield-Worley and Flint Creek may reflect the muddy condition of the soils in the deeper levels that made screening difficult. The description of excavation techniques for these two sites does not indicate screen mesh size, or what portions of the levels were screened. Both of these sites have a few remains of mussels and freshwater snails in the Dalton-Early Archaic levels (Cambron and Waters 1961:44; Dejarnette et al. 1962:113-114).

Weigel et al. (1974:81-85) report a wide variety (34 species) of large and small mammals and birds, terrestrial turtles, and a few large fish from lower Layer G, at the Russell Cave site in Alabama associated with Early Archaic point types. On the basis of biomass, deer, turkey, raccoon, and squirrel comprised the major portion of the vertebrate diet (Griffen 1974:81). The lack of small fish remains may be related to screening techniques. Excavators were faced with sticky mud which was water screened through 1/4 inch mesh. Many small fish remains may have passed through this size screen.

Clench (1974:86) reports that no riverine mussels or snail remains were recovered from the Early Archaic level at Russell Cave (lower Layer G). The few shell fragments recovered from this layer are of mussels and snails which occur only in small creeks. Clench suggests that either no attempt was made to bring mussels and snails back from the Tennessee River, or that the Early Archaic occupants of Russell Cave did not range as far as the Tennessee River in search of shellfish.

Despite extremely poor bone preservation conditions in Early Archaic contexts at excavated sites in the Wallace Reservoir, one site, 9Ge309, has yielded unidentifiable turtle and large mammal remains in the Early Archaic levels.

The data presented above indicate that a variety of modern faunal and floral species were being exploited by Early Archaic hunters and gatherers in the southeastern United States. In terms of biomass, deer and turkey appear to be predominant in Early Archaic contexts, a trend which continues into late prehistoric and early historic times. Available evidence indicates that nuts, birds, small mammals, molluscs, and fish were also exploited. Due to excavation techniques at some of the sites with the best bone preservation, fish may be severely underrepresented. This point is supported by Shapiro's analysis of fine screened flotation and 1/4 inch screened samples from 9Ge5 in the Wallace Reservoir. He notes that

> "The most dramatic difference between the two samples is the increased number of fish bones identified from the fine-screened sample (approximately five-fold) and the increased MNI (more than two-fold) for fish. On the other hand, the occurrence of turtle and bird bone is hardly affected by the difference in screen size. This is also true of deer bone. Although the occurrence of bone from small mammals increases dramatically, the MNI for small mammals is not altered greatly. It appears then that the major information gained by fine screening is the increased representation of fish in the vertebrate fauna..." (Shapiro 1981:30).

Early Archaic Settlement Models

Four models of Early Archaic settlement patterns have been proposed that are based on archaeological research in the eastern United States (Chapman 1975, 1978; Morse 1971, 1973, 1977; Luchterhand 1970; Gardner 1974, 1975).

Chapman (1975) has proposed an Early Archaic settlement model for the lower Little Tennessee River valley which he describes as a central based transhumance system. He states that "the basic pattern in an area was a centralized base camp that served as a focus and an axis for seasonally controlled hunting and gathering camps elsewhere" (Chapman 1975:272). He notes that Early Archaic sites are distributed all along the first terraces of the lower Little Tennessee River (Chapman 1978). The largest sites are all situated in areas of maximum microenvironmental and resource diversity. Immediately adjacent to these sites are riverine, floodplain, valley slope, and upland habitats. Chapman (1978:143) loosely defines these sites as base camps, "a term needing refinement but implying...probable long-term occupation." Base camp sites are characterized by diversity in the lithic assemblages, suggesting both domestic and hunting activities were occurring in addition to gathering.

In this model, the more numerous occurrences of small numbers of points at other sites are believed to represent seasonally regulated exploitative stations in the area of base camps (Chapman 1975, 1978).

Speculating that the Rose Island site served as a fall season base camp for one or more bands, Chapman (1975:272) suggests that "precipitation and the possibility of flooding may have necessitated splitting into smaller social groups and moving to drier and more available resources during the winter and spring". Chapman (1979) views uplands as marginal and probably secondary to the extensive occupation of the floodplain sites.

Though Chapman was attempting to counteract the idea that floodplain areas were not utilized by Paleoindian and Early Archaic populations in southeastern river valleys, backhoe testing was conducted along only the first terraces of the lower Little Tennessee River in areas defined by Coe (1964) as favorable locations for alluvium-buried Early Archaic sites. Therefore, it is not surprising that he found little evidence of utilization of upland areas.

Morse's (1971, 1973) settlement model basically concurs with that of Chapman (1975). He has summarized his Dalton settlement hypothesis as follows:

> "There should be a base settlement where most or all members of a single band should live over part or most of the year. The base settlement may be a single site or a contiguous series of sites. Through time the base settlement may shift but at least concise areas of base settlements should be recognizable. The base settlement should be placed so as to easily take advantage of the band's territory as well as offer

> maximum comfort from the immediate environment. The base settlement should be characterized by tool manufacture and evidence of whole kin activity. It should be the largest site around as well as the rarest.
>
> Another major settlement should be the hunting or butchering camp. Evidence of the butchering of deer and of almost completely male oriented activity should be present. These sites should be small and numerous. The only evidence of tool manufacture should relate to those tools made specifically for butchering...or tools or blanks for tools made from parts of the butchered animal. There should be no evidence or at least not extensive evidence of skin preparation (end scrapers), wood working (adzes and chisels), or tool manufacture (preforms, newly made tools, and preform debitage)".
>
> "The other expected sites are going to be a problem. Not expected is the use or loss of Dalton points at fishing, courting, visiting, trading, or quarry camps. At the present time we do not know enough to predict what should be the expected artifacts at such sites" (Morse 1971:8).

Morse's model provides for one base settlement area and hundreds of butchering and plant processing camps per major river drainage, an estimated territory of 2200-3200 sq. kilometers. Base settlement areas have the following characteristics; 1) each base settlement area measures around 6-12 kilometers in diameter, 2) each base settlement area is essentially central to the associated linear-hexagonal territory, and 3) the base settlement area is centrally located within 55 kilometers of the other base settlement concentrations (Morse 1977: 153). Between these concentrated base settlement areas artifacts are recovered infrequently. This area between base settlements should contain satellite extraction sites for food collecting and processing, quarrying, hunting and butchering, and burial of the dead.

Morse (1973) points out the contrast between settlement patterns of fluted point groups and those of the Dalton phase in northeast

Arkansas. In contrast to the tight riverine orientation of fluted point sites, Dalton points are found on "all land surfaces known to be inhabitable before and at the end of the Pleistocene" (Morse 1973:30). He further notes that the presence of transitional points such as Coldwater and Quad on Dalton sites indicates that the shift in settlement occurred at the end of the Pleistocene, and that utilization of uplands intensified during the Early Archaic period denoted by Hardin and Cache River corner-notched types (Morse 1973).

Morse'e model may be more applicable than Chapman's to Dalton and other Early Archaic sites in the Wallace Reservoir because it is based on surface reconnaissance of the Cache River drainage. However, Schiffer (1975) has criticized two major aspects of Morse's hypothesis. First, Schiffer (1975) believes that Dalton bands in this part of Arkansas could not have been as sedentary as Morse suggests. Instead he proposes that greater mobility and seasonal differentiation of base camps would have been necessary. Secondly, Schiffer (1975) critizes the linear, watershed bounded territories proposed by Morse. He proposes that Dalton bands occupied territories which crosscut major physiographic and resource zones, regardless of drainage boundaries (Schiffer 1975). He also contends that no specific ethnographically observed behavior patterns are appropriate for deriving models of any archaeologically known hunter-gatherer adaptations (Schiffer 1975). Both Morse (1977) and Schiffer (1975) agree that it is not a matter of who is correct, but of organizing archaeological research to isolate and test several potential systems.

Based on research with the Flint Run complex of sites in the Ridge and Valley province of Virginia, Gardner (1976:37-43) outlines a model of Paleoindian to Early Archaic settlement for the eastern United States. The main variable in this model is the acquisition of raw material and tool kit maintenance. Other important variables are the abundance and type of animals hunted, the local environment, and the distribution of surface water. The model Gardner (1976:38) has developed focuses on

> "a round which takes the group to the quarry related base campe at or near the time when the tool kit is depleted...The raw material is then mined, fashioned into tools, particularly weapons and transportable bifaces, blanks, and preforms, and flakes suitable for ready modification into scrapers...During the stay...periodically revisited hunting sites...were probably exploited. Once the tool kits had been refurbished, the base camp was abandoned and the pursuit of scattered game ensued. Large groups probably communally exploited favorable habitats or other concentrated game locations if they were predictable. Smaller groups were probably the more common rule as evidenced by the small scattered sporadically visited hunting sites..."

> "The amount of time elapsing between return to the quarry and base camp would have depended upon the game being exploited and their behavioral patterns, particularly such factors as herding or mobbing and territorial wanderings. Other important factors would include the size of the cultural group, the amount of raw material and finished artifacts being transported, whether communal or small group hunts were involved and whether or not more than one quarry was used."

Gardner (1974, 1976) also assumes some changes occurred between Paleoindian and Early Archaic settlement systems. These changes are attributed to shifts in adaptive strategies responding to the gradual climatic and environmental changes taking place during the Pleistocene-Holocene transition. Gardner (1976) believes that population size increased during the Early Archaic, and that these groups were less mobile than Paleoindian groups due to the increased resources available in a deciduous forest environment.

Gardner (1976) notes that there was increased movement of Early Archaic groups into areas of the East that had only been minimally exploited by Paleoindian populations. He believes that the expansion into areas of diverse and scattered lithic resources (especially floodplain and floodplain margin areas) by the end of the Early Archaic reflects less emphasis on exploiting highest quality lithic material, and more emphasis on exploiting a diversity of econiches. According to Gardner (1976), the fact that Paleoindian sites cluster near good predictable sources of raw materials explains the low concentrations of fluted points in surveys conducted in the Piedmont and Coastal Plain of the eastern United States. He feels that this reflects the lack of types of preferred crypto-crystalline stone found in Paleoindian tool assemblages.

Gardner (1976:40) attributes the widespread appearance of notched spearpoints by 8,000 B.C. to the adoption of the spearthrower to replace the thrust or hand-thrown spear. He emphasizes that Early Archaic points were used as weapons. He notes that Plano-like points persisted in use north of the Ohio River until around 4,000 B.C., while the typical notched Early Archaic points are rare in that area (Gardner 1976:26).

Aside from this change in projectile points, Gardner (1976) states that the tool kit remains the same during the Early Archaic, and continues to reflect a hunting dominated orientation. Finished points became more common during the Early Archaic, a trend he considers to reflect more favorable hunting conditions in the vicinity of the Flint River complex. However, the focus of the settlement in Early Archaic times remains the quarry (Gardner 1976).

In terms of subsistence, Gardner (1976) describes the Early Archaic populations in the Shenandoah Valley as general foragers with no particular emphasis, except on a seasonal basis. Though he describes them as foragers, Gardner does not seem to think that Early Archaic populations did much besides hunt and quarry stone. Though there is discussion of geological investigations, and of fauna that would have been available to these groups, there is no mention of floral resources. Sites are evaluated in terms of location to favorable hunting areas only. The types of sites described in this model are associated with either quarrying or hunting/butchering activities. The limitations of this settlement model restrict its applicability to Early Archaic site distribution in the Wallace Reservoir.

Luchterhand (1970) has proposed a settlement pattern for Early Archaic groups in southern Illinois based on the seasonal exploitation of white tailed deer. He hypothesizes that the majority of Early Archaic sites will be located in the uplands (defined as all areas outside of the main river valleys which are not part of the secondary stream valleys) because camps in these areas would have been optimally situated for sighting and hunting deer during the winter months when they were aggregated in the secondary stream valleys. For easiest access to the secondary stream valleys where the deer were actually herding, these hunting camps would probably have been located between the Illinois and Mississippi River watersheds (1970:41). He expects few Early Archaic points to be located in the major river valleys, in contrast to Chapman (1975) and Morse (1971, 1973), suggesting that Early Archaic groups seldom went into this region, or if they did go into this region, they were not primarily engaged in hunting.

Like Gardner, Luchterhand considers Early Archaic points to be weapons only and not indicative of any other type of activities. As this model is based on amateur collections, it is possible that the material he studied was from exposed upland sites, and that floodplain sites are unrepresented along the major river valley because they have been buried beneath alluvium. Luchterhand's model may not be applicable to Georgia because deer could have been hunted in Georgia year round. Luchterhand emphasizes that deer are a winter season resource in Illinois because they herd more than elk and have more difficulty moving in deep snow. His model does not attempt to account for fall, spring, and summer subsistence activities.

Chapman (1975, 1979), Gardner (1974, 1975), and Morse (1971, 1973, 1977) agree that by Early Archaic times (10,000 years B.P.) the settlement system was one of restricted, central based movement in seasonal rounds. This view is supported by the available faunal and floral evidence which indicates that the Early Archaic subsistence base was becoming broader. This development implies more complex seasonal movements, less mobility overall, and more special activity sites.

The models developed by Morse (1971, 1973, 1977) and Chapman (1975, 1979) are most applicable to Early Archaic settlement systems because they rely on better data bases than those of Gardner (1974, 1975) and Luchterhand (1970). These models will be used to evaluate the data on Early Archaic settlement from the Wallace Reservoir.

CHAPTER IV

The Study Area

The Wallace Reservoir (Figure 1) is located along the Oconee and Apalachee Rivers in Greene, Morgan, Putnam, and Hancock Counties, Georgia. The dam is located at river mile 172.7 on the Oconee River. The pool of the lake extends approximately 30 miles (48.27 km) along the Oconee River and an additional 10.4 miles (16.73 km) up the Apalachee River (Figure 1). Included is approximately 14 miles (22.53 km) of Richland Creek as well as shorter stretches of smaller tributaries including Sugar, Town, Lick Double, Beaverdam, and Sandy Creeks (DePratter n.d.). The reservoir comprises approximately 19,000 acres (76 square kilometers) (Paulk 1979).

The Wallace Reservoir lies within the Piedmont physiographic province of the Eastern United States (Fenneman 1938). The present land surface throughout the Piedmont province has been altered due to a long period of degradation, resulting in the complete disappearance of the original land surface.

The following description of the reservoir area in Greene County may be generalized, with minor variations, to the portions of the reservoir included in Hancock, Putnam, and Morgan Counties.

> "The topography of the area is the result of a long period of erosion of an old, smooth plain or peneplain, whose former existence is indicated at the present time only by the smooth, even skyline in all parts of the area. The topography is typical of the Piedmont region, the upland being cut by the larger streams into major divides, which are in turn subdivided by the smaller streams, until the whole region is

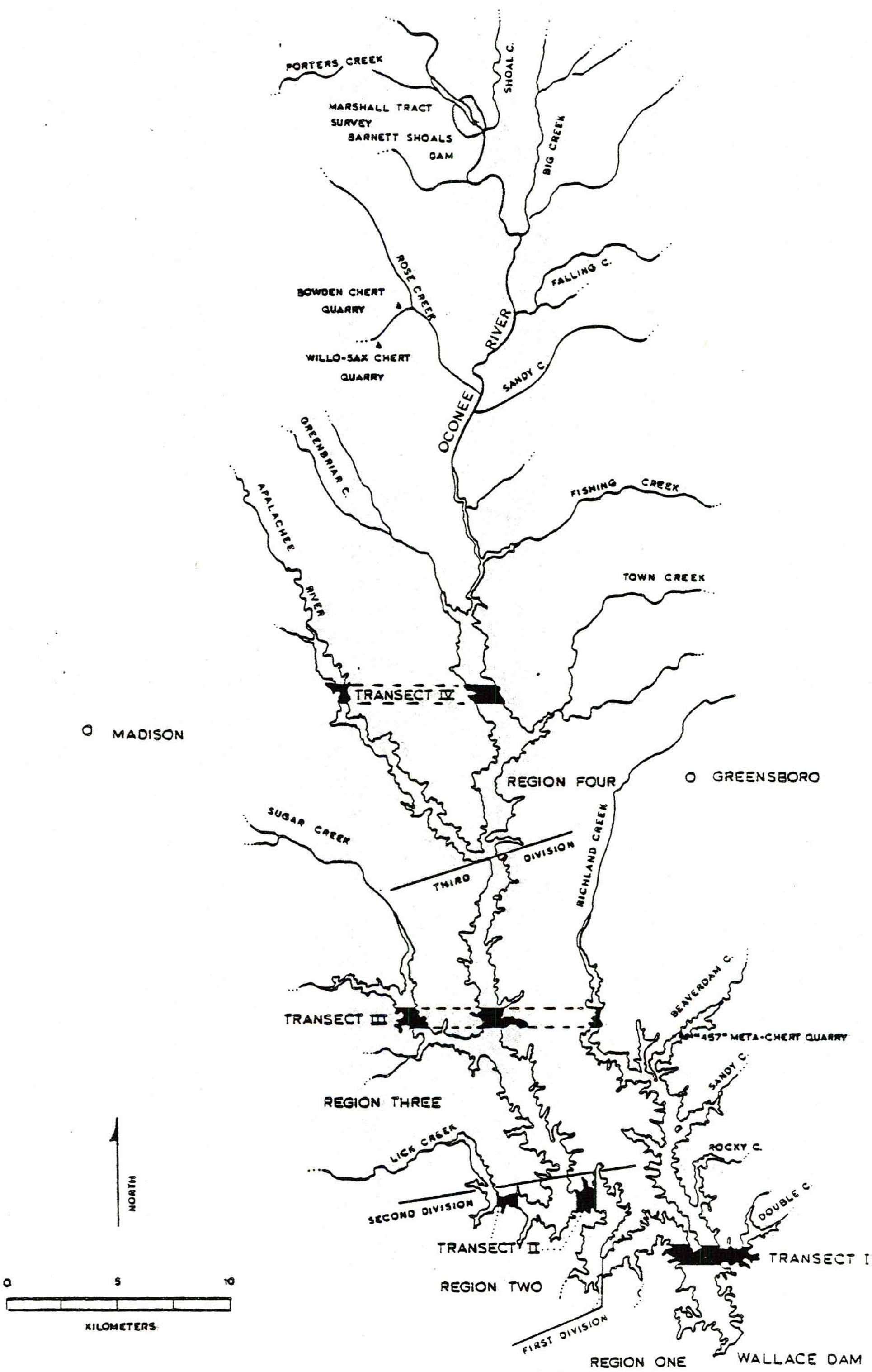

Figure 1. The Wallace Reservoir - Physiographic Divisions and Subsurface Backhoe Survey Transects.

a series of ridges, the surface varying from undulating to gently rolling, rolling, and hilly. As a rule the streams have cut their courses about 100 feet below the crests of the intervening ridges. In parts of the area the slopes are smooth and long, while in other places the descent is rapid, with a correspondingly more broken and rougher topography. As the rivers are approached the topography invariably becomes more irregular and broken" (Long et al. 1922:6).

Geomorphological reserach in the Wallace Reservoir has demonstrated that the uplands surrounding the reservoir are the remnants of an uplifted and dissected lower Cretaceous peneplain that cuts across both igneous and metamorphic rocks. Present elevations range from 550 to 700 feet (168-213 meters) in the reservoir area (Brook 1981:48). Dissection of the peneplain probably began in the late Tertiary and has continued throughout Quaternary times; in the reservoir region incision is approximately 120 feet (37 meters).

The existence of pre-Holocene terraces along the Oconee River Valley has been demonstrated by Brook (1981). Between Barnett Shoals and Long Shoals, the Barnett Shoals terrace lies 9 to 15 meters above the Oconee River (Brook 1981:7). A lower terrace, the Long Shoals terrace, also extends between Barnett and Long Shoals. Near the Wallace Dam this terrace is 8 meters above the Oconee River; downstream nearer the Fall Line it increases to 9.5 meters (Brook 1981:8). Brook (1981: 49) tentatively places the ages of the terraces somewhere between 700,000 and 10,000 years B.P.

On the basis of general valley morphology, the Oconee River channel in the Wallace Reservoir area can be divided into four parts (Siegel 1978). The southernmost area (Region I in Figure 1), beginning at the dam and moving upstream to Long Shoals, is characterized by tall, steep valley walls and a narrow floor. Very little floodplain exists in this area. What there is of it occurs in small pockets between headlands, in the short streatches between Laurens, Riley, and Long Shoals (where it is terraced), and to a large extent, on the islands (Figure 1). In this segment of the valley the Oconee River itself is shallow, broad, rocky, and filled with shoals and islands. The adjacent uplands are characterized by large granite out-crops and standing boulders. The boundary of this region approximates the edges of a granite/granite intrusive entering the river valley from the northeast.

In the second physiographic division (Region II in Figure 1), from Long Shoals north to Georgia Highway 44, the Oconee River has cut a fairly deep, broad river valley. The floodplain area is small, except at the confluence of two large tributaries, Lick Creek and Redfield Branch. The river in this section is sinuous, though not meandering, with long, straight sections interrupted by sharp curves. Occasional shoals are found in this section of the Oconee River. Levees are wide, tall, and rather steep on their landward sides because they are cut by old stream and/or flood channels (Brook 1981). One of the most significant features of this segment of the Oconee River are the broad terraces that range in altitude from the level of the modern levees to approximately 40 feet above river level.

In the third physiographic division of the river (Region III in Figure 1), the Oconee tends to meander more and the floodplain encompasses a greater portion of the valley floor. Levees are very high and wide, and run unbroken for hundreds of meters along the river. Backswamp areas are large and common.

The most northerly segment of the reservoir area (Region IV in Figure 1) consists of the Oconee River from its junction with the

Apalachee River north beyond the boundaries of the reservoir. The river valley here is very similar to the section below the junction of the two rivers, though the levees tend to be smaller and the floodplain even swampier. Trimble (1974) has provided evidence that this swampiness may be due to recent, culturally accelerated erosion in the surrounding Piedmont. The river meanders a great deal here. The terraces are only slightly higher than the current floodplain (Seigal 1978:1-5).

Each of these physiographic divisions of the Oconee River valley in the reservoir area would have provided different types of physical and biological environments. The southern part of the reservoir (Regions I and II) is characterized by large shoals and upland areas in close proximity to the river. The shoals would have attracted fish and other aquatic animals, and upland faunal and floral resources would have been within easy access since the river valley is narrow in these regions. The northern part of the reservoir (Regions III and IV) has a broad, flat valley, large floodplain, and no shoals. There would have been a lower diversity and density of aquatic species and plant foods in the northern area. Therefore, fixed resources available in the Wallace Reservoir such as fish, mammals, and plant foods, would have been more diverse and in closer proximity to one another in the southern part of the reservoir than in the north. Fixed resources, which are spatially predictable, play an important role in settlement decisions made by hunter-gatherers (Jochim 1981).

CHAPTER V

Archaeological Survey

DePratter (1976) describes the various surveys that have been conducted in the Wallace Reservoir area during the decade preceding reservoir flooding. Approximately 3,000 archaeological sites and occurrences have been identified by these surveys, and of this total, approximately 260 (9%) sites contain diagnostic Early Archaic artifacts (Paulk 1979).

The most important survey in terms of area coverage is that conducted in conjunction with the University of Georgia Wallace Reservoir Project in 1977-1979. Beginning in 1977, large portions (ultimately 14,000 acres out of the 19,000 acres in the reservoir flood pool) of the reservoir were cleared of vegetation by Georgia Power clearing contractors. Vegetation was cleared by large bulldozers, pushed into piles, burned and eventually buried. As a result of these activities, ground surface visibility was excellent. By coordinating their activities with the clearing schedule, Wallace Reservoir Mitigation Survey field parties were able to survey most of the cleared acreage before vegetation regrowth began to significantly reduce ground surface visibility. Ultimately 7,900 acres (3,100 hectares) were surveyed within the flood pool of the reservoir and an additional 4,300 acres (1,700 hectares) were surveyed in upland areas lying outside the flood pool (Elliot, personal communication) (Figure 2).

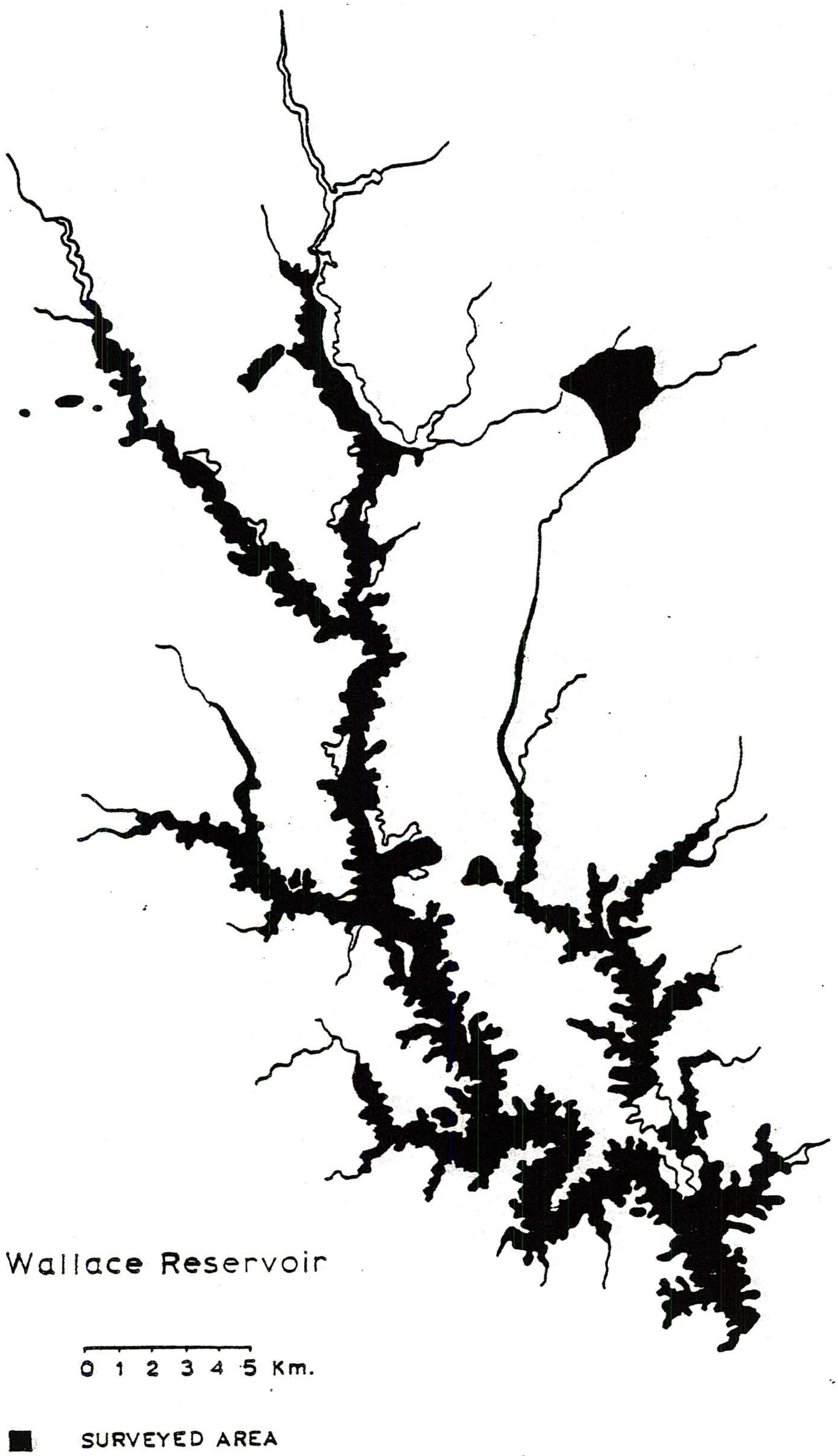

Figure 2. Area Surveyed in the Wallace Reservoir.

In the heavily alluviated portions of the reservoir, the process of burying debris uncovered many subsurface sites which were otherwise invisible on the surface. The "burn burials" were generally rectangular features averaging three by ten meters (Paulk 1979). The actual area of surface disturbance resulting from burn burials was often much greater, 300 to 700 square meters among the sample tested by Ledbetter (1979). If there was no indication of a surface site surrounding a burn burial, it was collected as a subsurface site. When peripheral material occurred a general surface collection was made, excluding the burn burial, which was collected separately (Paulk 1979). It is fortunate that these burn burials were made since they provided evidence for alluvially buried sites. Unfortunately, variability in depth, spacing, and density of the burials precluded systematic discovery of subsurface Early Archaic sites.

In addition to the surface survey, a systematic subsurface backhoe survey was conducted along four selected one-half mile transects located at the approximate center of each of the four physiographic subdivisions of the valley. Ten meter long backhoe trenches were spaced systematically every 80 meters along the active floodplain in each transect. Each trench was excavated to a depth of approximately 3 meters and vertical profiles were mapped. This survey succeeded in locating a number of sites not visible on the surface (Ledbetter 1979).

The systematic procedure of surface survey began with a visual walking inspection of the exposed ground surface, with crew members spaced at 15 meter intervals. When artifactual material was encountered, the site was judged for artifact density. If the site contained more than ten artifacts, the area was designated an archaeological site. If preliminary inspection indicated an isolated artifact or a low density scatter, ten items or less, the site was classified as an artifact occurrence. When ground surface clearance and a lack of extensive surface disturbance permitted, the sites were collected by surveyors walking across the site at three meter intervals. Ideally the surveyors picked up all artifacts encountered within these three meter transects. Ten meter density circles were collected at many of the sites, and within these circles all artifacts were collected, providing a better estimate of artifact density. Collections at some sites were less controlled, especially at sites where weed growth reduced ground visibility.

Survey teams recorded site location, site size, site topography, distance to important resources, degree of slope, site stratigraphy, and distinct component areas within the site. A majority of the surface sites located were multi-component (Paulk 1979).

CHAPTER VI

Reconstruction of Prehistoric Floral and Faunal Communities in the Wallace Reservoir

Sheldon (1980) and Smith (1977) have attempted to reconstruct the pre-European contact environment of the Wallace Reservoir using faunal and palynological data, faunal and botanical descriptions of early European explorers (1529-1800), land use history, and field work. Because the post-glacial Holocene environment has changed very little during the past 10,000 years, the floral and faunal species listed below were probably present in the reservoir during Early Archaic times.

Sheldon (1980:6-7) has reconstructed the following aboriginal floral communities for the Wallace Reservoir area. She projects that along the river's edge, river birch*, sycamore*, sweetgum*, and box elder* were the major components. The hardwood canopy present in the remainder of the floodplain included red maple, sweetgum*, swamp chestnut oak, willow oak, overcup oak, red ash, eastern cottonwood, catalpa, and hickory*, with an understory of dogwoods, deciduous holly, and Lyonia. Vine species probably included Berchemia scandens, Vitis rotundifolia (muscadine*), Mikania scandens, Dioscorea batatas (cinnamon vine*), Anisostichus capreolata, and Smilax spp. (greenbriar*).

The herbaceous groundcover probably included Arisaema draconteum (green dragon), Boehmeria cylindrica, Pilea pumila, Commelina erecta

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*Indicates "potentially useful plants" for humans (Sheldon 1980:6-7; Keene 1981:53-91).

(day flower), Duchesnia indica, Galium aparine (bedstraw), Impatiens capensis (jewelweed), Lycopus spp. (crow potato*), Lysimachis cilitata, Oxalis violacea (wood sorrel*), Ranunculus spp. (buttercup), and Sabatia angularis. Hymenocallis occidentalis and Saururus cernuus would have occurred in alluvial habitats, while Podophyllum peltatum (mayapple*) and Zepharanthes atamasco would have been found only along moist meadow edges (Sheldon 1980:7).

Ridges and uplands supported an oak-hickory* forest. Understory species would have included American hornbeam, flowering dogwood, blackgum, red maple, honeysuckle, and fringetree.

Herbs would have included Chimaphila maculata (spotted wintergreen), Desmodium spp. (trefoil), Hieracium spp. (hawkweed), Panicum spp. (tickle grass*), Carex spp. (sedge*), Calium pilosum, Aristolochia serpentatis, and Aureolaria flava (Sheldon 1980:8).

This description of the Wallace Reservoir area gives some indication of what floral communities may have existed in different portions of the Oconee River valley during prehistoric times. Nut bearing trees are found in both upland and floodplain habitats, but most of the berries, tubers, and other plants with edible fruits and leaves are found in floodplain areas (Keene 1981:56-61; Sheldon 1980).

Based on archaeological remains and on ethnohistorical accounts, Smith (1977) and Ledbetter and Doyon (1980) reconstruct the fauna that would have been available to prehistoric populations in the Wallace Reservoir area. The diverse physiographic makeup and floral

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*Indicates "potentially useful plants" for humans (Sheldon 1980:6-7; Keene 1981:53-91).

communities in the reservoir area could have supported a large variety of aquatic, terrestrial, and avian species.

Aquatic fauna consisted of at least two types of molluscs (Elliptio sp. and Lampsilis sp.), and two types of aquatic snails (Goniobasis sp. and Campeloma sp.) (Smith 1977:7).

Smith (1977:9-16) describes several species of fishes available in the Oconee River, and categorizes them according to habitat preferences. Fast, clear water species include bullhead catfish (Ictalurus sp.), suckers (Hypentelium sp. and Erimyzon sp.), and redeye bass (Micropterus coosae). Fish that tolerate slow, turbid water are the white catfish (Ictalurus catus) and the American eel (Anguilla rostrada). Slow, clear water species include sunfish (Lepomis sp.), redhorse (Moxostoma sp.), bullhead catfish (Ictalurus sp.), largemouth bass (Micropterus salmoides), gar (Lepisosteus sp.), black crappie (Pomoxis nigromaculatus), bowfin (Amia calva), suckers (Erimyzon sp. and Minytrema sp.), and chain pickerel (Esox niger). The Anadromous fishes listed would have been available only during spring and summer seasons, and include striped bass (Morone saxatilis), and shad (Alosa sp.) (Lee et al. 1980). With the exception of the Anadromous species, the fish listed would have been available year-round in the Wallace Reservoir (Lee et al. 1980; Smith 1977).

The shoals of the Oconee River and Richland Creek would have been most attractive to the fast, clear water fish species; however, many of those listed as slow, clear water fishes are also available in shoals areas. The Anadromous fishes prefer to spawn in the silt-free, shallow-water shoals of large streams (Cleland 1982; Lee et al. 1980).

Avian species would have included the wild turkey (Meleagris gallopavo), Eastern bobwhite (Colinus virginianus), Eastern mourning dove (Zenaidura macroura carolinensis), wood duck (Aix sponsa), turkey vulture (Cathartes aura), black vulture (Coragyps atratus), great blue heron (Ardea herodias), and several species of hawks (Accepitridae) and owls (Strigidae). A number of additional seasonal or migratory species could have been utilized, especially those species which occupy a portion of the riverine habitat. Waterfowl would have included loons (Gavia spp.), grebes (Podiceps spp.), whistling swan (Olor columbiana), Canada goose (Branta canadensis), several ducks (Anas spp., Mareca spp., Aythya spp., Bucephala spp.), mergansers (Mergus spp. and Lophodytes spp.), additional raptors, several herons (Order Ciconiformes), gallinules, coots, and rails (Rallidae), plus a variety of shorebirds, gulls, and terns. Many smaller forest species in the Order Passiformes could have been exploited (Ledbetter and Doyon 1980:22-23).

Available mammal species would have included white-tailed deer (Odocoileus virginianus), bobcat (Lynx rufus), river otter (Lutra canadensis), striped skunk (Mephitis mephitis), several weasels (Mustela spp.), raccoon (Procyon lotor), black bear (Ursus americanus), gray fox (Urocyon cinereoargenteus), red fox (Vulpes fulva), dog (Canis familiaris), muskrat (Ondatra zebethica), Eastern wood rat (Neotoma floridana), marsh rice rat (Oryzomys palustris), beaver (Castor canadensis), pocket gopher (Geomys spp.), flying squirrel (Glaucomys volcans), gray squirrel (Sciurus carolinensis), fox squirrel (Sciurus niger), Eastern cottontail rabbit (Sylvilagus floridanus), marsh rabbit (S. palustris), and opossum (Didelphis marsupialis) (Ledbetter and Doyon 1980:22; Smith 1977:22).

Reptiles and amphibians would have included the terrestrial box turtle (*Terrapene carolina*), and several aquatic species such as the soft shell turtle (*Trionyx* sp.), painted turtle (*Chrysemys* sp.), snapping turtle (*Chelydra serpentina*), and mud and musk turtles (Kinosternidae). Several species of Colubrid and Crotalid snakes, toads (*Bufo* sp.), and frogs (*Rana* sp.) would have been present (Ledbetter and Doyon 1980; Smith 1977).

With the exceptions of the seasonal fish and bird species, most of the fauna listed here would have been available to prehistoric occupants of the reservoir year round. Species known to have been exploited by southeastern Early Archaic populations, such as deer, raccoon, turkey, and squirrel, would have been at maximum weight and easier to hunt during the fall and winter seasons, since they aggregate in mast areas (Keene 1981; Smith 1975). These animals are also spatially predictable because they have such small home ranges, approximately .53 to 4.80 square kilometers (.20-2.00 square miles) (Smith 1975:21-111). Aquatic fauna are also fixed, as they are confined to the river system (Jochim 1981).

CHAPTER VII

Paleoenvironment

Paleoenvironmental conditions along the Oconee and Apalachee Rivers in the Wallace Reservoir area are difficult to reconstruct due to poor pollen preservation in the fluvial sediments (Brook 1981). Fortunately there is data available from other sites in Georgia and the southeastern United States that can shed some light on conditions in this area during glacial and post-glacial times.

Brook (1981), Watts (1971, 1980), Delcourt (1979) and DeSelm (n.d.) have used pollen analysis, speleothem and oxygen isotopic measurements to analyze paleobotanical and paleoclimatic data in north-central and east Tennessee, the Coastal Plain of South Carolina, Georgia, and Florida, and in northwest Georgia.

Pollen studies at Anderson Pond, a limestone sinkhole in north-central Tennessee have provided important paleoclimatic data for the last 25,000 years (Delcourt 1979). The pollen assemblage dated at 25,000 +/- 3,000 years B.P. reflects cool but not severely cold climatic conditions. At this time there was sufficient soil moisture available to sustain growth of both temperate deciduous trees and northern pines, spruce, and fir (Delcourt 1979). The plant fossil assemblage from 19,000 to 16,000 years B.P. indicates that during the full Wisconsin glacial both the mean annual temperature and the mean annual precipitation may have been substantially lower than today, allowing boreal conifers to compete with temperate deciduous trees.

Pollen from a period of 16,000 to 13,000 years B.P. indicates a gradual warming trend.

The time of transition from coniferous to deciduous forest probably occurred about 12,500 years B.P. High influxes of inorganic sedimentary components into Anderson Pond between 12,750 and 12,500 years B.P. support the interpretation of an interval of rapid and major ecosystem change and landscape instability at the Pleistocene-Holocene boundary. The period from 12,000 to 10,000 years B.P. was one of cool, mesic climate. From 9,500 years B.P. to the present the arboreal flora surrounding Anderson Pond has changed little (Delcourt 1979). Mid to Late Holocene vegetation is characterized by warm-temperature taxa.

DeSelm's (n.d.:111) analysis of organic remains from a deposit of fossil flora near Chattanooga, Tennessee dated at 10,270, 9,515, and 4,475 years B.P. respectively, indicate a fully modern floral community in that area.

Analysis of pollen from lake sediments in the South Carolina (Watts 1980) and Georgia (Watts 1971) Coastal Plain indicates that the late glacial (15,000-10,000 years B.P.) was a period of transition from boreal forest to vegetation similar to that of the last 10,000 years. Watts (1980) states that the radiocarbon dated interval of 12,800 to 9,500 years B.P. was dominated by beech and hickory. He believes that this was a transitional late Pleistocene-early Holocene period that is distinct from earlier and later forest types in the southeastern United States (Watts 1980).

The post-glacial (10,000-present) represents the establishment of modern flora within the Piedmont, where oak-hickory forests reached their peak and remained relatively stable. However, in the Coastal

Plain, modern flora did not develop until approximately 5,000 years ago. During the first half of the post-glacial, the Coastal Plain was characterized by prairies and scrub oak savanna (Watts 1971). After 5,000 years B.P. the present pine forest became predominant as the climate became wetter (Watts 1971).

Radiometric dating of speleothems and oxygen isotopic measurements from Red Spider Cave in northwest Georgia have been used to construct a relative temperature curve for this region during the past 40,000 years (Brook 1981). Brook (1981) uses data from this cave to construct a model of conditions within the Wallace Reservoir area. Brook (1981) has suggested that low runoff and high sediment yields in full glacial times (15,000-13,000 years B.P.) probably resulted in alluviation along the Oconee and Apalachee Rivers in Piedmont Georgia. He states that the river channels were probably narrow, deep, and of low sinuousity as the channel increased its gradient to carry the high sediment load. He suggests that many of the islands in the southern half of the reservoir were either larger or joined to what is now the riverbank (Brook 1981).

Brook (1981) and Delcourt (1979) both argue that the period from 13,000 to 12,000 years B.P. saw a rapid increase in both temperature and precipitation, and that both runoff and sediment yield in Piedmont Georgia increased significantly before the vegetation had time to adjust to the new warmer and wetter conditions. At Anderson Pond Delcourt (1979) fount the period between 12,750 and 12,500 years B.P. to be one of high runoff and high sediment yields. At Red Spider Cave a period of sedimentation has similarly been dated to the period from 13,000 to 12,000 years B.P. (Brook 1981). By about 12,000 years B.P. the vegetation had adjusted to the increased temperature and precipitation, causing a rapid reduction in stream runoff and sediment yields (Brook 1981).

In late glacial to early Holocene time (11,000-9,000 years B.P.) an increase in stream runoff and low sediment yields combined to cause erosion and trenching of the older alluvial terraces. These terraces now stand 8 to 15 meters above the present floodplain of the Oconee River. Channels became wider and shallower, and more sinuous than in the previous time period (Brook 1981). Brook (1981) notes a period of moister climate from 8,000 to 9,000 years B.P. during which there were higher ground water levels in the Oconee River valley; low lying occupation sites may have been abandoned at this time. This period of time corresponds to the Early Archaic periods demarcated by corner-notched, stemmed and bifurcate base pp/k types.

Between 8,000 and 4,000 years B.P. reduced runoff and higher sediment yields resulted in a period of slow alluvation, a narrower, meandering river channel, and higher floodplain water tables.

From 4,000 years B.P. to about 140 years B.P. there was another period of increased stream runoff and reduced sediment yields, which caused erosion of deposits laid down during the prior 4,000 years. The floodplain water table dropped slightly and there was erosion of river islands. During the cotton plantation era in Georgia (1850-1920) clearing of forests and poor agricultural practices led to increased stream runoff and greatly increased sediment yields. Streams were unable to carry this increased load, resulting in rapid alluviation, a much higher water table, and frequent meandering that destroyed many alluvial features (Trimble 1974). Since 1920 reforestation and improved agricultural methods have led to reduced sediment yields, though the water table remains higher today than before 1850 (Brook 1981; Trimble 1974).

The preceding summary of paleoenvironmental data from the South Carolina, Georgia, and Tennessee area indicates that between 22,000 and 12,000 years B.P. the cool, dry climate favored a mixture of northern conifers and cool-temperate hardwoods. However, gradual warming of the climate and increased precipitation during the late Pleistocene and early Holocene periods favored the deciduous elements, including beech, birch, ironwood, elm, red ash, hemlock, elder, black walnut, sycamore, chestnut, and holly. In contrast, the early Holocene forests of the South Atlantic and Gulf Coastal Plain were xeric, dominated by species of oak, hickory, and southern pine. All evidence indicates the establishment of modern floral communities by 9,000 to 10,000 years B.P. in the Georgia Piedmont.

The late glacial-early Holocene period (11,000-9,000 years B.P.) corresponds to Dalton-Big Sandy-Kirk Corner-notched times; increased runoff and low sediment yields resulted in little alluviation and cutting of older terraces along the river (Table 1). During the period between 8-9,000 years B.P. the climate was probably very moist, ground water levels higher, and according to Brook (1981:50), the floodplain sites were probably either abandoned or seldom occupied. Since the climate was wetter during this period, it is possible that all areas below the terraces formed during the late glacial period were too wet for anything more than seasonal occupation. Therefore, according to Brook's (1981) model of the reservoir paleoenvironment it would be likely that late Early Archaic sites (Kirk Stemmed and Bifurcate) would be located on the higher Pleistocene terraees and in the uplands.

Table 1. The Chronology of Early Archaic Horizons in the Southeastern United States.

Horizon	Approximate Dates (before present)	Reference
Dalton	9,900-10,500	Goodyear 1981:390 McMillen 1976
Big Sandy	9,400-10,000	DeJarnette et al. 1962:85
Kirk Corner-notched	8,900-9,400	Broyles 1971:63-65; Chapman 1979:128
Bifurcate	8,200-8,800	Broyles 1971:71; Chapman 1975:211
Kirk Stemmed	8,000-8,800	Broyles 1971:67; Chapman 1975:211

By Middle Archaic times (8,000-4,000 years B.P.) the climate was drier and continued to get warmer, resulting in relatively slow alluviation along the river.

Increasing wetness and alluviation during later prehistoric and historic times has been documented by excavation of archaeological sites in the area and by Trimble (1974).

Based on Brook's (1981) conclusions, and on the work of Sheldon (1980), Smith (1977), Watts (1980), and DeSelm (n.d.), it is possible to reconstruct some aspects of the natural environment of the Wallace Reservoir area during Early Archaic times. By Early Archaic times the transition from a coniferous-deciduous to a primarily deciduous floral community was almost complete. It can be assumed that a basically modern array of deciduous forest adapted faunal species would have existed by this time. Goodyear (1982) argues that the lanceolate Dalton point type, which dates to approximately 10,000 years B.P. in the southeast, can be associated with the beech-hickory zone defined by Watts (1980) in the upper Coastal Plain of South Carolina, and that the type may represent a pp/k form transitional between Paleoindian fluted points and Early Archaic notched points. Certainly by the time of side and corner-notched pp/k's the floral and faunal communities were basically the same as those encountered by the earliest European explorers. Archaeological evidence from other areas of the southeastern United States, already presented in Chapter 3, partially support these findings.

CHAPTER VIII

Classification of Early Archaic Points in the Collection

Some confusion about Early Archaic projectile point/knives has resulted from a lack of stratigraphic data from the southeastern United States and an overemphasis on physical attributes. Brookes (1979:50) emphasizes that while physical attributes are very important in classification, they should be used cautiously in establishing chronological sequences. He prefers the term "tradition", after Willey and Phillips (1958), defined as a "primarily temporal continuity represented by persistent configuration in single technologies or other systems of related forms" (Brookes 1979:53). Chapman (1975:249), Goodyear (1982) and others have used this concept, designating a broad class of pp/k types, such as Dalton and bifurcate base pp/k's, as horizons. Individual culture-historical types such as LeCroy, St. Albans, Kanawha, Greenbriar, and Hardaway are designated "subhorizon" or phase markers. This approach is followed in this thesis.

Sites from the Eastern Woodlands demonstrate a uniform chronological sequence from Paleoindian through Early Archaic--lanceolate, side/corner-notched, stemmed and bifurcate types. This sequence is best illustrated by several deep, alluvium buried sites in the southeastern United States, particularly the St. Albans site (Broyles 1971) in West Virginia, the Hardaway site (Coe 1964) in North Carolina, and several sites in the lower Little Tennessee River Valley (Chapman 1975, 1977, 1978, 1979, 1980). This sequence is further supported by evidence from several cave/rock shelter sites such as the Stanfield-Worley Bluff Shelter (DeJarnette et al. 1962), Flint Creek Rock Shelter (Cambron and Waters 1961), and Russell Cave (Griffen 1974) in northern Alabama, and by Modoc Rock Shelter (Fowler 1959), Graham Cave (Logan 1962), and the Rodgers Shelter (McMillan 1976) site in Missouri. With the exception of the Rodgers Shelter site, cave/rock shelter sites have caused some confusion in the past due to the mixed stratigraphy which results from lack of alluvial deposition, disturbance of earlier occupation levels by subsequent inhabitants, and depth of excavated levels.

The following descriptions of Early Archaic horizons present in the Wallace Reservoir include pp/k attributes as well as the documented distribution and dates from locations throughout the southeastern United States.

<u>Dalton Horizon</u> (Plate 1) Sample Size: 32

The Dalton type was first described and named by Bell (1960). Tuck (1974) has defined the Dalton horizon in the Eastern Woodlands as the earliest Early Archaic horizon, represented by the Hardaway type along the Atlantic coast, and by the Dalton varieties elsewhere (DeJarnette et al. 1962; Cambron and Hulse 1974; Ensor 1979).

<u>Attributes</u>: Attributes of Dalton pp/k's include a lanceolate blade outline, at least in the earliest stages of tool life (Morse 1971; Goodyear 1974), a concave, auriculate base that is usually well thinned and ground on lateral and basal edges. Blade edges may be incurvate, straight, or excurvate, and are serrated in most examples. Among the sample of Dalton pp/k's from the Wallace Reservoir, 6 were beveled, and

23 were serrated, but not beveled. All 32 has been resharpened at least once, or exhibited extensive wear on the blade edges. Seventeen of the pp/k's were complete, 7 have broken distal tips, 2 are broken at mid-section, 1 is split laterally. Two pp/k's with broken auricles have been reworked, and 1 has been reworked or resharpened into a drill. Cross-sections are flattened and biconvex.

Size: The average length of 16 Dalton pp/k's is 36 mm, with a range of 28 to 49 mm. This variability appears to be related to degree of re-sharpening of blade edges. The average width of hafting areas is 27 mm, with a range of 21 to 30 mm.

Raw Materials:
- 7 orthoquartzite
- 14 quartz
- 2 local chert
- 2 Ridge and Valley chert
- 7 Coastal Plain chert

Distribution: Dalton components are recorded from all over the south-eastern United States, particularly in northeast Arkansas and Missouri (Morse 1971, 1973, 1977; Goodyear 1974; Fowler 1959; McMillan 1976; Logan 1952; Price and Krakker 1975). Dalton components are recorded at the Hester site in northeastern Mississippi (Brookes 1979), the Nuckolls and Sims site in the lower Tennessee River drainage in central Tennessee (Adair 1976), Rose Island and Icehouse bottom in east Tennessee (Chapman 1975, 1977) the Stanfield-Worley Bluff Shelter in northwestern Alabama (DeJarnette et al. 1962, 9Ri89 (Elliott 1981)) and the Theriault site (9Bk2) (Brockington 1971) near Augusta, Georgia, and at a few sites in the Wallace Reservoir, 9Ge153 (Smith et al. 1981), 9Mg28

(Williams 1982), 9Ge309 (Ledbetter, personal communication), and 9Pm205 (Rogers 1982).

Chronological Position: Goodyear (1981:390) places the Dalton horizon between 10,500 and 9,900 years B.P. based on radiocarbon dates from a sealed Dalton level at the Rodger's Shelter site in Missouri (McMillan 1976), and on Chapman's (1980) and Broyles' (1971) dates for later side and corner-notched horizons.

Big Sandy Side-notched Horizon (Plate 2) Sample Size: 115

The Big Sandy type is named for the Big Sandy I phase of the Archaic, described by Lewis and Lewis (1961:34) at the Eva site in northwestern Tennessee. Michie (1966:123-124) has described a regional variant, the Taylor type, in South Carolina. The Kessell side-notched type described by Broyles (1971:60-61) is another regional variant found in West Virginia and Ohio. This type does exhibit some functional differences from the classic Big Sandy type, but is very similar in form and temporal position. The Ecusta type, identified by Harwood (1958) from sites in North Carolina, appears to be another regional variant which exhibits very shallow side-notching and an excurvate base. Another similar type, the Bolen pp/k (Bullen 1968), is found in Florida.

Attributes: The major binding attribute of the Big Sandy Side-notched horizon is side-notching of the haft area. Shoulders are well defined, unless this is obscured by resharpening of the blade edges. Blade edges may be incurvate, straight, or excurvate, depending on the degree of resharpening. Blade edges are usually beveled and/or serrated. The base is usually well ground and incurvate, but may be straight or excurvate. Among the sample of Big Sandy pp/k's from the Wallace Reservoir 56 are beveled, and 32 are serrated, but not beveled. One hundred percent (115) of the pp/k's in the sample have ground hafting areas. Fifty-nine pp/k's are complete, 34 are missing distal tips, 12 are broken at the mid-section of the blade (missing distal end), 4 are broken bases. One pp/k is reworked where the base is broken, 1 pp/k is a hafted unifacial scraper. All show evidence of resharpening and extensive use, often to exhaustion. Cross-sections are planoconvex, biconvex, and rhomboidal.

Size: The average total length for Big Sandy pp/k's is 32 mm, with a range of 21 to 46 mm. The average base width of the pp/k's is 19 mm, with a range of 16 to 25 mm.

Raw Materials:

4	orthoquartzite
67	quartz
10	local chert
2	Ridge and Valley chert
19	Coastal Plain chert

Distribution: Big Sandy components are recorded from the Hester site (Brookes 1979) in northeastern Mississippi, the Quad site (Cambron and Hulse 1960), Russell Cave (Griffen 1974), and the Stanfield-Worley Bluff Shelter (DeJarnette et al. 1962) in northern Alabama, the St. Albans site (Broyles 1971) in West Virginia, and the Cal Smoak (Anderson et al. 1979) and Taylor sites (Michie 1966) in South Carolina. Big Sandy components are also reported from Modoc Rock Shelter (Fowler 1959) in southern Illinois and at Graham Cave (Logan 1952) in Missouri. It is interesting to note that a Big Sandy component is absent from both the Hardaway site (Coe 1964) and 31Ch29 (Claggett and Cable 1981) in piedmont North Carolina. In Georgia, Big Sandy/Taylor components are recorded at the Theriault site (9Bk2) (Brockington 1971) in southeastern Georgia, UGA-OC-2 in central Georgia (Ledbetter and O'Steen 1979), 9Ri89 (Elliott 1981) in Augusta, and a few other sites in the Augusta area (Ledbetter 1980). Within the Wallace Reservoir, Big Sandy components are reported from 9Ge309, 9Ge973, 9Pm588, 9Ge819 (Ledbetter 1979), 9Ge10 (Fish 1978), 9Ge153 (Smith et al. 1981), and 9Mg28 (Williams 1982).

Chronological Position: DeJarnette et al. (1962:85) report a radiocarbon date of 9600 years B.P. for the mixed Dalton-Big Sandy zone at the Stanfield-Worley Bluff Shelter. Broyles (1971:61) reports a date of between 8500 and 8000 years B.P. for the Kessell side-notched type at the St. Albans site in West Virginia. The Hester site (Brookes 1979:32-33) in northeastern Mississippi is one of the only sites where there is a clear separation of Big Sandy and Dalton components, with the Daltons stratigraphically lower than the Big Sandy types. Brookes (1979:129) suggests a date of 10,000 to 9,500 years B.P. for the Big Sandy component at this site. Given a reliable date for a sealed Dalton component in Missouri (McMillan 1976) and several reliable dates (Broyles 1971; Chapman 1979) for the Kirk corner-notched Cluster, it seem logical to place the Big Sandy Horizon somewhere within the time period 10,000 to 9,500 years B.P. bracketed by Dalton and Kirk Corner-notched types. Within the Wallace Reservoir, at 9Ge309, the shallow side-notched Ecusta type pp/k's are found stratigraphically above the deeply side-notched types (Ledbetter, personal communication).

Kirk Corner-notched Horizon (Plate 3) Sample Size: 187

The Kirk Corner-notched type was first named and described by Coe (1964) after examples found at the Hardaway site in the North Carolina piedmont. The Kirk Corner-notched Cluster has been described by Chapman (1977), based on his research at several sites in the Lower Little Tennessee River valley. Chapman assigns to this cluster many contemporaneous corner-notched pp/k's which have been split into numerous types by Cambron and Hulse (1975).

Attributes: The major binding attribute of the Kirk Corner-notched Cluster is corner-notching of the haft area. Shoulders are usually well defined and barbed, unless this is obscured by resharpening of the blade edges. Blade edges may be incurvate, straight, or excurvate, and are serrated in most examples. The shape and length of the blade edges appears to be a function of reworking or resharpening. The base of the stem may be incurvate, straight, or excurvate. Side edges of the expanding stem are straight. The edges of the stem and the notches may or may not be ground. Among the sample of Kirk Corner-notched pp/k's from the Wallace Reservoir, 69 are beveled and 76 are serrated, but not beveled. Ninety nine percent of the complete pp/k's (102 of 104) exhibit grinding in notches and on the stem edges. One hundred four pp/k's are complete, 34 are missing distal tips, 29 are broken at the midsection of the blade (missing distal end), 4 are represented by snapped stems, and 4 are lacking stems. Three of the broken pp/k's are reqorked, and one is burinated along a lateral blade edge and the base of the stem. All show evidence of resharpening and extensive use, often to exhaustion. Cross-sections are biconvex, planoconvex, and rhomboidal. Based on a bimodal distribution of stem widths and on other attributes among this sample of pp/k's, it may be possible to distinguish a smaller variety of corner-notched points which correspond to the Lower Kirk variety described by Chapman (1975, 1977, 1978) and Broyles (1971). Out of a sample of 85 chert and quartz pp/k's from the Wallace Reservoir, 16 clustered within a range of 16-18 mm for stem width, while 50 clustered within the range of 19-22 mm.

Size: The average length of 87 Kirk Corner-notched pp/k's is 36 mm, with a range of 20-96 mm, indicating a great deal of variability in lengths. This variability appears to be a function of both resharpening of blade edges and type of raw material utilized. Quartz Kirk corner-notched pp/k's (n=45) are an average of 9 mm shorter than chert pp/k's in the sample (n=39) while stem width averages vary by only 2 mm. The average stem width of 87 Kirk Corner-notched pp/k's is 20 mm, with a range of 13-30 mm.

Raw Materials:

108 quartz
4 exotic chert
4 local chert
15 Ridge and Valley chert
57 Coastal Plain chert
4 metavolcanic

Distribution: Kirk Corner-notched components are recorded from all over the southeastern United States, including the Flint Creek Rock Shelter (Cambron and Waters 1961) in northern Alabama, the Hester Site (Brookes 1979) in Mississippi, the Eva Site in northwestern Tennessee (Lewis and Lewis 1961), sites in the Lower Little Tennessee River valley in eastern Tennessee (Chapman 1975, 1977, 1978, 1979), Modoc Rock Shelter (Fowler 1959) in Illinois, Graham Cave (Logan 1952) in

Missouri, 31Ch29 (Claggett and Cable 1981) and the Hardaway Site (Coe 1964) in piedmont North Carolina, the St. Albans Site (Broyles 1971) and others in West Virginia and Kentucky, and the Thunderbird Site (Gardner 1974) in Virginia. Kirk Corner-notched components are also recorded from the Rucker's Bottom (Anderson and Shuldenrein 1983) and Cal Smoak (Anderson et al. 1979) sites in South Carolina. In Georgia, Kirk Corner-notched components are recorded at 9Ri89 (Elliott 1981) and at the Theriault Site (9Bk2) in southeastern Georgia (the Augusta, Georgia area) (Brockington 1971). Within the Wallace Reservoir, Kirk components are recorded at 9Ge309, 9Ge819, 9Ge533, 9Pm351, 9Pm588, 9Ge973 (Ledbetter 1979), 9Ge10 (Fish 1978), 9Mg28 (Williams 1982), 9Pm209 (Wood 1979), and 9Ge153 (Smith et al. 1981).

Chronological Position: Broyles (1971:63-65) reports dates for the Kirk Corner-notched types at around 8,900 years B.P. Chapman (1979: 128) reports dates from sites in the Lower Little Tennessee River valley from 9,100 to 9,400 years B.P. Coe (1964:69-70) suggests a date of 8,000 years B.P. for the Palmer Corner-notched type, and a slightly later date for the larger Kirk Corner-notched type at the Hardaway Site in North Carolina. Broyles (1971), Coe (1964), and Chapman (1975, 1977, 1978) were able to distinguish a small variety (Lower) Kirk Corner-notched type which they consider slightly earlier than the large variety (Upper) Kirk Corner-notched. Ensor (1979:171) suggests that the small Autauga-like corner-notched pp/k's found in the Gainesville Reservoir in Mississippi are earlier than the larger Kirks. Ensor (1979) tried to classify the Kirk corner-notched varieties, but found that there were almost as many types represented as there were projectile points.

Kirk Stemmed/Serrated (Plate 4) Sample Size: 22

The Kirk Stemmed/Serrated type was first described by Coe (1964) after examples found at the Hardaway site in the North Carolina piedmont.

Attributes: The Kirk Stemmed pp/k has a long, somewhat narrow, thick blade. Blade edges are incurvate toward the base, but recurvate toward the point, and serrated. Serrations are deep, especially in the incurvate area of the blade edge. Shoulders are well defined, either straight or tapered toward the tip. Stems are straight or expand toward the base, which is either flat, incurvate, or excurvate, and slightly rounded. All of the Kirk Stemmed pp/k's from the Wallace Reservoir are serrated, and none are beveled. Ten pp/k's are complete, 1 has a snapped stem, 3 are missing distal tips, 5 are snapped or hinged at mid-section, 2 are burinated, and 1 is a broken reworked base. All 22 pp/k's show signs of resharpening and use. Cross-sections are flattened, planoconvex, or biconvex.

Size: The average length of 10 Kirk Stemmed pp/k's is 51 mm, with a range of 37 to 68 mm. The average width of stems is 19 mm, with a range of 15 to 28 mm.

Raw Materials:
2 orthoquartzite
4 quartz
1 457 "metachert" (local)
4 local chert
3 Ridge and Valley chert
7 Coastal Plain chert
1 metavolcanic

Distribution: Kirk Stemmed/Serrated components have been recorded at several sites in the southeastern United States. They are recorded at Russell Cave (Griffen 1974), the Little Bear Creek site (Webb and DeJarnette 1948a), Flint River Mound site (Webb and DeJarnette 1948b), the Flint Creek Rock Shelter (Cambron and Waters 1961), and the Stanfield-Worley Bluff Shelter (DeJarnette et al. 1962) in northern Alabama. In Tennessee, Kirk Stemmed/Serrated components are recorded at the Eva site (Lewis and Lewis 1961), at several sites in the Lower Little Tennessee River valley (Chapman 1975, 1977, 1978, 1979) and at the Allen site on the Cumberland River in northern Tennessee (Morse 1962). Kirk Stemmed/Serrated components are also recorded at the Hardaway site (Coe 1964) in North Carolina, the St. Albans site (Broyles 1971) in West Virginia and the Cal Smoak site (Anderson et al. 1979) in South Carolina. In Georgia a Kirk Stemmed component is recorded at the Theriault site (9Bk2) near Augusta (Brockington 1971). Within the Wallace Reservoir, components are recorded at 9Ge309, 9Ge410, 9Ge531, 9Ge534, 9Ge794, and 9Ge948 (Ledbetter 1979).

Chronological Position: Broyles (1971:67) reports that Kirk Stemmed/ Serrated should occur above Kirk Corner-notched and below Bifurcate pp/k's, and gives a probable date of 8800 years B.P. Coe (1964) estimates a date of 7000-8000 years B.P. based on the stratigraphic position of Kirk Stemmed/Serrated at the Hardaway site. Chapman (1975: 211, 1980) got a radiocarbon date of 8000 years B.P. associated with Kirk Stemmed in the Lower Little Tennessee River valley, and reports them in a stratigraphic context later than the Bifurcate types. Chapman's stratigraphic data contradict that of Broyles (1971) and Coe

(1964), and unfortunately there are no other radiocarbon dates for Kirk Stemmed/Serrated with which comparisons can be made.

Bifurcate Horizon (Plate 5) Sample Size: 15

The bifurcate horizon in the southeastern United States was first described by Chapman (1975), and consists of several types which he designates as temporal phase markers within the horizon. Bifurcate pp/k's from the Wallace Reservoir area most similar to the MacCorkle and Kanawha types described by Broyles (1971:71) after examples found at the St. Albans site in West Virginia, and to Category 22 type described by Chapman (1975:40) in Tennessee.

Attributes: Attributes of bifurcate pp/k's include a triangular blade shape, with incurvate, straight, or excurvate blade edges. The stem is expanding, and the base is concave and rounded in most examples. The basal and lateral haft edges are ground. Thirteen of the Wallace REservoir bifurcate pp/k's are serrated, but not beveled, and 2 are beveled. Twelve of the pp/k's are complete, and 3 are missing distal tips. All 15 show extensive resharpening and wear. One pp/k is reworked where an auricle is broken. Cross-sections are planoconvex, flattened, or biconvex.

Size: The average length of 12 unbroken bifurcate pp/k's is 39 mm, with a range of 28 to 59 mm. The average width of the haft area is 22 mm, with a range of 16 to 29 mm.

Raw Materials:

1 exotic chert
2 local chert
3 Ridge and Valley chert
9 Coastal Plain chert

Distribution: The bifurcate horizon in the southeatern United States is thinly scattered, primarily at sites in the Lower Little Tennessee River valley (Chapman 1975, 1977, 1978), in northern Tennessee at the Eva site (Lewis and Lewis 1961), at the St. Albans site (Broyles 1971) in West Virginia, at 31Ch29 (Claggett and Cable 1981) in North Carolina, at Russell Cave (Griffen 1974), the Stanfield-Worley Bluff Shelter (DeJarnette et al. 1962), and at the Flint Creek Rock Shelter (Cambron and Waters 1961) in northern Alabama. Bifurcate components are also recorded at 9Ri89 (Elliott 1981) in Augusta, Georgia and at 9Mg183 (Ledbetter 1979) in the Wallace Reservoir.

Chronological Position: Broyles (1971) and Tuck (1974) suggest that the earlier MacCorkle type pp/k's may overlap temporally with Kirk Stemmed types, becoming the predominant type later. Broyles (1971:71) views the MacCorkle type as transitional between Kirk Corner-notched and later St. Albans side-notched types, based on their stratigraphic position at the St. Albans site, and gives an estimate of 8850 to 8750 years B.P. for the MacCorkle component. Chapman (1975, 1979) found that, at least in eastern Tennessee, Kirk Stemmed may have occurred later (about 8000 years B.P.) than the bifurcate horizon. His radiocarbon dates for the St. Albans phase range from 8600 to 8800 years B.P. (Chapman 1975:211). The later LeCroy and Kanawha phases date to about 8300 and 8200 years B.P. respectively (Broyles 1971:69).

CHAPTER IX

Data Analysis

Hypotheses

Two hypotheses of Early Archaic settlement patterns will be tested in this thesis.

1. Site and component densities should be greater in the southern portion of the reservoir (physiographic regions I and II) due to the diverse faunal and floral communities, and the fixed and compact nature of these available resources. This hypothesis is based on the following premises. While the northern part of the reservoir (physiographic regions III and IV) is characterized by a deep, meandering channel with few upland areas, the southern reservoir has more tributaries, floodplain areas at the confluences of tributaries, many shoals, islands, and upland areas in close proximity to the river and its tributaries. The deep, narrow valley and shoals of the Oconee River and Richland Creek in the south would have provided a greater diversity of fixed plant and animal resources than the broad floodplain in the northern reservoir. Jochim (1981) emphasizes the importance of fixed resources in the settlement decisions made by hunter-gatherers. These upland and floodplain resources would have been more compacted in the southern than in the northern reservoir, resulting in greater food yield for less procurement and processing expenditure. During the winter, the southern part of the reservoir would also have provided more shelter from the elements for both humans and other species, such as deer and turkey.

2. It is expected that base camps (sites that were occupied for longer periods of time during the year and were the scene of a variety of activities) were also located in relation to the highest diversity of resources available in the reservoir. These sites are expected in or near the floodplain of the Oconee River and in its tributaries, at the confluences of tributaries, and at shoals. Because of its habitat and resource diversity, the southern reservoir is expected to have more base camp sites than the northern region.

The intensity or duration of site occupancy cannot be directly measured with the available site data, nor can the variety of activities occurring at the site. Since only projectile point/knives are available to work with, two indirect measures of site intensity are used: 1) the number of pp/k's per Early Archaic component, and 2) the number of Early Archaic components per site. It is argued that the more pp/k's on a site, the more intense its occupation during a particular time period. The more Early Archaic components represented on a site, the more suitable the site location must have been for a variety of activities through time, hence the more intense the use of the site.

Testing the Hypotheses

All artifacts collected during the Wallace Reservoir Project survey were subjected to a preliminary laboratory sort. This procedure identified all diagnostic Early Archaic bifaces in the survey and excavation collections. No attempt was made to identify other types of tools--unifacial scrapers, etc.--and debitage dating to this period.

The present study has had to rely on the preliminary sort to identify Early Archaic sites. As a result, only a portion of the Early Archaic sites, those with diagnostic pp/k's, have been identified in the present study.

Site and Component Density

The Wallace Reservoir was mapped by Georgia Power Company on forty contour maps with a scale of 1:4800 feet. These maps have been utilized as convenient analytical units. Hectares surveyed, and number of sites and components were tabulated for floodplain and upland areas on each Georgia Power map.

Data Analysis Procedure

Several kinds of data were recorded for each Early Archaic site identified in the Wallace Reservoir (Appendix 1). Sites are identified by the Georgia Power map on which they are located, and by assigned state site numbers. Surface sites are also coded by physiographic region, and when applicable, by topographic location and size of the stream on which they are located.

Early Archaic sites along the main channel of the Oconee River are sorted into one of four physiographic regions defined by Seigal (1978) and in Chapter III of this thesis.

The location of Early Archaic sites on specific topographic features is also recorded. Four types of topographic features are defined within the Wallace Reservoir: Oconee River floodplain, Oconee River uplands, secondary stream floodplain, and secondary stream uplands. The area designated river floodplain includes all current levees and higher terraces along the Oconee River. River uplands defines all areas above the Oconee River floodplain and within the reservoir boundaries, not including those uplands along secondary streams. Secondary stream floodplain includes floodplain areas on any of the tributaries that flow into the Oconee River, to the point where the tributary enters the Oconee River floodplain. Similarly, secondary stream uplands are designated as the non-floodplain areas along all tributaries entering the Oconee River.

The size of the streams on which sites are located is recorded. For purposes of this study the Oconee River and its tributaries are divided into five arbitrary categories based on relative size within the reservoir. The first three categories included: 1) the Oconee River, 2) Richland Creek and the Apalachee River, and 3) Lick and Sugar Creeks. The fourth category includes all year-round tributaries to any of the streams listed above (illustrated by solid lines on Georgia Power maps)--Double, Sandy, Rocky, Beaverdam, Town, Cedar, and Little Sugar Creeks. Category five includes all other small tributaries, probably intermittent, illustrated by dashed lines on the Georgia Power maps. These five categories of stream size have been split up and recompiled as individual tributary systems (i.e., the Oconee River, the Apalachee River, Richland Creek, Sugar Creek, and Lick Creek).

Lithic components and number of diagnostic pp/k's are recorded for each Early Archaic site.

Sources of Error

Several factors have had a negative impact on the representativeness of the Early Archaic site sample from the Wallace Reservoir. Visibility in floodplain areas in the northern portion of the reservoir was restricted by deep alluviation. Many small areas in the northern section of the reservoir were swampy, left forested as wildlife habitats, or were unsurveyable due to ground cover.

There are almost no uplands within the survey boundaries in the northern part of the reservoir. As a result, the number of recorded upland sites in that portion of the reservoir is very small. To counter these first two biases site and component densities were calculated.

Site preservation probably differs between the northern and southern portions of the reservoir, as the northern half has been affected to a greater degree by channel aggradation due to agricultural practices during the past 200 years (Trimble 1974). It is expected that a significant number of floodplain sites have been destroyed, especially in the broad floodplain of the northern reservoir. Subsurface exposures (described in the next section) allow for the evaluation of this bias in the northern part of the reservoir.

A greater portion of the northern reservoir area is active floodplain. As a result a larger proportion of Early Archaic sites existing in the north may be buried beneath recent alluvium and hence not detectable on the surface. Burn burials and subsurface backhoe tests were useful in exposing subsurface sites in some floodplain areas.

Another source of error in the discovery of Early Archaic sites in the reservoir was amateur collectors. Early Archaic pp/k's were very attractive to collectors, as evidenced in photographs of local amateur collections on file in the Archeology lab at the University of Georgia. One collector, D. J. Crandall (Personal Communication) of Augusta, Georgia, claims to have collected the entire reservoir immediately after it was clearcut by Georgia Power Company. Undoubtedly collectors reduced the total number of Early Archaic sites recorded by the survey, but they were probably rather unbiased in their collecting.

While these biases--surface visibility, site preservation and burial, unequal distribution of upland and floodplain areas within the reservoir boundaries, and collectors--exist, they are not believed to undermine or seriously affect the types of preliminary conclusions about Early Archaic settlement patterns reached in this study.

Results

The surface survey covered approximately 63% of the total Wallace Reservoir floodpool area. Surface visibility was very good in most of the reservoir due to clearcutting by Georgia Power Company prior to, or during, the course of the surface survey. Exceptions were areas designated as wildlife habitats, pasture land, and areas where regrowth of vegetation inhibited surface visibility. To counter the bias resulting from blocks of unsurveyable land, data on Early Archaic sites and components are expressed as number of sites or components per unit of surveyed land.

The greatest potential bias of surface survey data is the result of extensive alluvial burial of sites in the area designated as floodplain. For purposes of this study the floodplain is defined as the current levee and backswamps (active floodplain) of the Oconee River and its tributaries plus the higher (Pleistocene) alluvial terraces. While the older terraces were eroded and had exposed surface sites, the active floodplain had little or no surface visibility, except where burn burials had exposed subsurface sites. It is impossible to know how many

Early Archaic sites are buried in the active floodplain of different parts of the reservoir.

The extent of post-Pleistocene alluvial deposition was demonstrated by subsurface backhoe testing in four transects along the Oconee River and its tributaries and indicates that post-Pleistocene alluvial deposition in the southern region of the reservoir averages 23% of the total transect area, while in the northern transects alluvial burial ranges between 50% and 100% (Ledbetter, personal communication). Since most of the surveyed area in the northern reservoir is alluviated floodplain, it is likely that a significant number of sites in this region were not recorded by the surface survey. Subsurface site data is used to determine the relative proportion of Early Archaic sites buried in the active floodplain in northern and southern parts of the reservoir.

Two types of subsurface site data were used to estimate the relative density of Early Archaic sites in active floodplain areas along the Oconee River and its tributaries. The first of these is data from Early Archaic sites exposed by burn burials in the floodplain areas. Burn burials exposed 28% of the recorded Early Archaic sites in the reservoir, and the majority of these sites are located in the northern part. The floodplain is much wider in the northern reservoir, and there are more burn burials in this area, so it is not surprising that more burn burial sites were found. The most significant result of this data is that the number of Early Archaic sites per burn burial is only slightly higher in the northern reservoir floodplain. There is no statistically significant difference between the number of Early Archaic sites exposed by burn burials in these two regions (X^2=.300, 1df, .05 confidence level) (Table 2).

Table 2. Number of Burn Burials and Density of Early Archaic Sites found in Burn Burials in the Wallace Reservoir.

	Number of Burn Burials	Number of Burn Burial Early Archaic Sites	Density of Burn Burial Early Archaic Sites
Southern Reservoir	264	3	.0114
Northern Reservoir	1545	23	.0149
Total	1809	26	.0144

The second type of data used to evaluate the density of buried Early Archaic sites is the result of the systematic backhoe testing of 1/2-mile wide transects in the four physiographic regions of the Wallace Reservoir. The data from this testing program indicate that the surface survey identified approximately 63% of the Early Archaic sites in the active floodplain (Ledbetter, personal communication). This figure does include higher terraces with good surface visibility, which were identified as part of the floodplain in this thesis. The percentage of active floodplain sites that would have been exposed only through burn burial disturbance is considerably lower. Only 43% of the Early Archaic sites identified in the active floodplain of the four transects were identified by the surface survey (Ledbetter, personal communication). Since it was possible to distinguish the active floodplain from the higher terraces in the backhoe transects, it is possible to calculate the relative density of northern and southern region transect sites on these two topographic features. The backhoe survey data indicate that in the southern transects (I and II) Early Archaic site density in the active floodplain is higher than it is in the northern transects (III and IV) (Table 3). The results of a chi-square test suggest that the greater area of active floodplain in the northern reservoir is not seriously biasing a comparison of floodplain sites in the two regions (Table 4).

The remainder of this chapter presents the data on Early Archaic site and component distribution within the Wallace Reservoir.

Table 3. Comparison of Early Archaic site density in the Active Floodplain within Backhoe Survey Transects (Ledbetter 1979)

	Active Floodplain Area Tested by Backhoe (hectares)	Number of Sites	Site Density
Transects I and II (Southern Reservoir)	23	8	.348
Transects III and IV (Northern Reservoir)	16	4	.250
Total	39	12	.308

Table 4. Chi-Square Test of Significance. A Comparison of Early Archaic Site density in the Active Floodplain within Backhoe Survey Transects.

	Active Floodplain Area Tested by Backhoe (hectares)	Number of Sites	Total
	Observed (Expected)	Observed (Expected)	
Transects I and II (Southern Reservoir)	23 (24)	8 (7)	31
Transects III and IV (Northern Reservoir)	16 (15)	4 (5)	20
Total	39	12	51

X^2 = .452, 1 df (.05 confidence level)

H_0 accepted

Oconee River

Half of the Early Archaic sites identified in the Wallace Reservoir are located along the Oconee River proper and are discussed in this section. Within the reservoir boundaries, the Oconee River is joined by several large and small tributaries. The data for each of the large tributaries to the Oconee River are discussed separately in the following sections (Figure 3).

Site and component densities in the four physiographic regions vary considerably, especially between those regions (I and II) designated as the southern (shoals) area, and the northern area (regions III and IV) (Table 5). Both site and component densities are higher in the southern than northern region (Table 5).

Almost half of all multicomponent sites in the reservoir are in the southern part of the Oconee River, and the density of multicomponent sites in the southern part of the river is five times that of the northern part of the river (Table 6). Single component site density in the southern region is twice that of the north (Tables 7 and 8).

Half of the sites located along the Oconee River are in the floodplain of the main river channel (Table 9). The majority of floodplain sites are single component (Table 10).

Almost half of the Oconee River sites are located in uplands along the main river channel and in minor tributary uplands (Table 9). The majority of these upland sites are also single component (Table 10). Early Archaic site density in uplands is twice that of floodplain areas, due in part to the alluvial burial of many floodplain sites (Table 5).

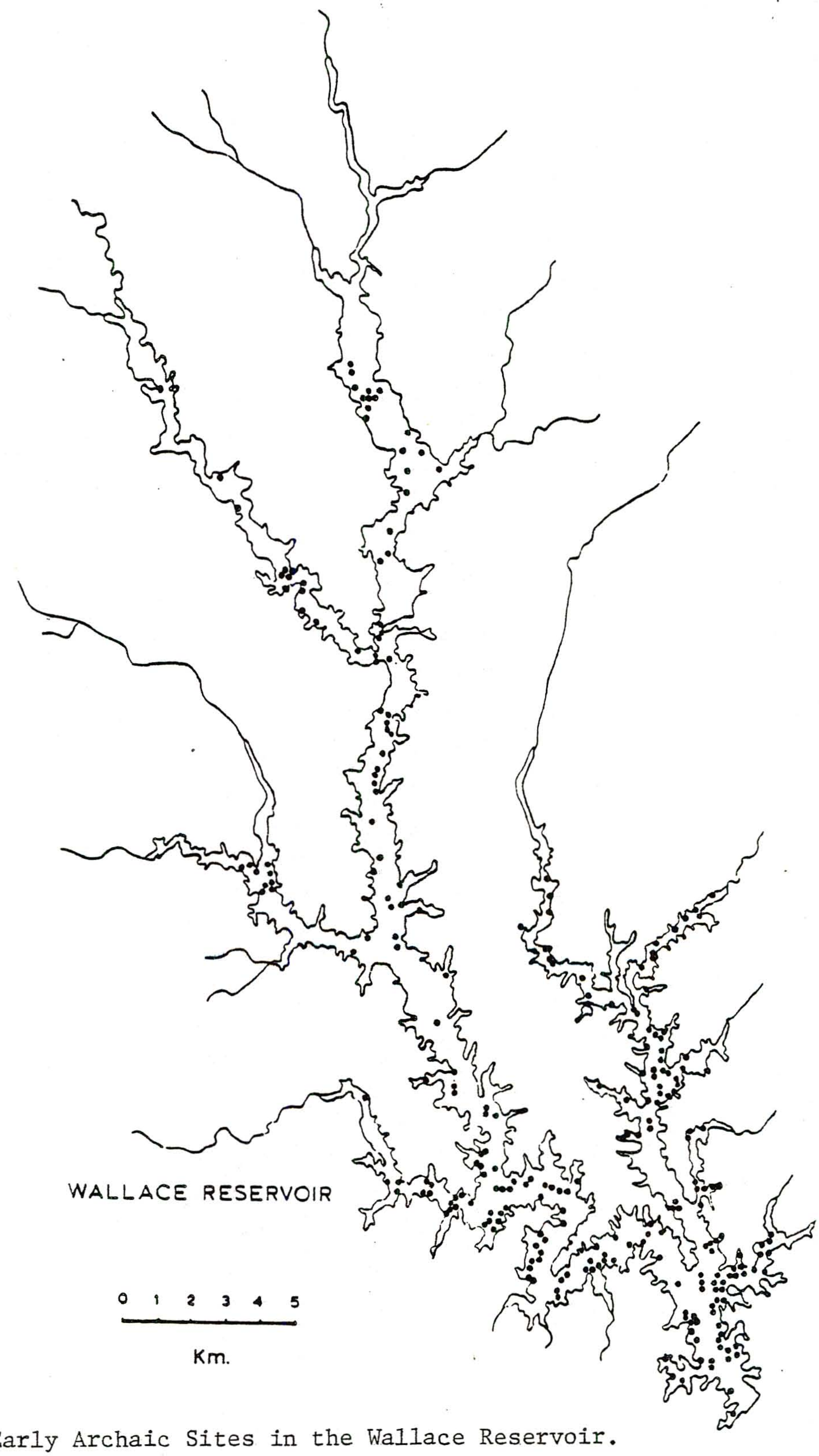

Figure 3. Early Archaic Sites in the Wallace Reservoir.

Table 5. Density of Early Archaic Sites and Components in the Southern and Northern Regions of the Wallace Reservoir.

Stream	Area Surveyed (hectares)	Number of Sites	Site Density	Number of Components	Component Density
Southern Reservoir (Regions I & II)					
Oconee River and small tributaries					
Floodplain	645	29	.045	39	.060
Upland	646	53	.082	62	.096
Total	1291	82	.064	101	.078
Richland Creek					
Floodplain	488	13	.027	17	.035
Upland	752	74	.099	92	.122
Total	1240	87	.070	109	.088
Lick Creek					
Floodplain	214	1	.005	3	.014
Upland	80	14	.175	14	.175
Total	294	15		17	
TOTALS	2825	184	.065	227	.080
Northern Reservoir (Regions III & IV)					
Oconee River and small tributaries					
Floodplain	1326	36	.027	44	.033
Upland	176	6	.034	6	.034
Total	1502	43	.029	50	.033

Table 5 (continued)

Stream	Area Surveyed (hectares)	Number of Sites	Site Density	Number of Components	Component Density
Northern Reservoir (cont'd)					
Apalachee River					
Floodplain	278	10	.036	12	.043
Upland	8	2	.125	2	.125
Total	286	11	.038	14	.045
Sugar Creek					
Floodplain	220	4	.018	7	.032
Upland	72	6	.083	7	.097
Total	292	10	.034	14	.048
TOTALS	2080	64	.031	78	.038

Table 6. Multicomponent Site Density in the Southern and Northern Regions of the Wallace Reservoir.

	Number of Sites	Area Surveyed (hectares)	Density of Multicomponent Sites
Southern Reservoir			
Oconee River and small tributaries	18	1206	.015
Richland Creek	16	1240	.013
Lick Creek	1	293	.003
TOTAL	35	2739	.013
Northern Reservoir			
Oconee River and small tributaries	4	1587	.003
Sugar Creek	1	292	.003
Apalachee River	1	286	.003
TOTAL	6	2165	.003

Table 7. Single Point/Single Component Site Density in the Southern and Northern Regions of the Wallace Reservoir.

	Number of Sites	Area Surveyed (hectares)	Density of Single Point Sites
Southern Reservoir			
Oconee River and small tributaries	44	1206	.036
Richland Creek	61	1240	.049
Lick Creek	3	293	.010
TOTAL	108	2739	.039
Northern Reservoir			
Oconee River and small tributaries	28	1587	.018
Sugar Creek	6	292	.021
Apalachee River	14	286	.049
TOTAL	48	2165	.022

Table 8. Multipoint/Single Component Site Density in the Southern and Northern Regions of the Wallace Reservoir.

	Number of Sites	Area Surveyed (hectares)	Density of Multipoint Sites
Southern Reservoir			
Oconee River and small tributaries	20	1206	.017
Richland Creek	21	1240	.017
Lick Creek	3	293	.010
TOTAL	44	2739	.016
Northern Reservoir			
Oconee River and small tributaries	7	1587	.004
Sugar Creek	2	292	.007
Apalachee River	0	286	.000
TOTAL	9	2165	.004

Table 9. The location of Early Archaic Sites on Topographic Features in the Wallace Reservoir.

	Channel Floodplain	Channel Uplands	Tributary Floodplain	Tributary Uplands	Total Sites
Oconee	62 (49.6%)	41 (32.8%)	4 (3.2%)	18 (14.4%)	125
Richland	7 (8.0%)	23 (26.4%)	6 (6.9%)	6 (6.9%)	87
Lick	1 (6.6%)	8 (53.3%)	--	6 (40.0%)	15
Sugar	4 (40.0%)	6 (60.0%)	0	0	10
Apalachee	9 (81.8%)	0	1 (9.1%)	1 (9.1%)	11
TOTAL	83	78	11	76	249

Table 10. The Location of Single and Multicomponent Sites on Topographic Features in the Wallace Reservoir.

Stream	Channel Floodplain	Channel Uplands	Tributary Floodplain	Tributary Uplands	Total
Oconee					
Total Sites	62	41	4	18	125
Single Component	48	38	3	13	102
Multicomponent	14	3	1	5	23
Richland					
Total Sites	7	23	6	51	87
Single Component	6	14	5	46	71
Multicomponent	1	9	1	5	16
Lick Creek					
Total Sites	1	8	0	6	15
Single Component	0	8	-	6	14
Multicomponent	1	0	-	0	1
Sugar Creek					
Total Sites	4	6	0	0	10
Single Component	4	5	-	-	9
Multicomponent	0	1	-	-	1
Apalachee					
Total Sites	9	1	1	1	12
Single Component	9	0	1	1	11
Multicomponent	0	1	0	0	0
TOTAL	83	79	11	76	249

The density of all Early Archaic components along the Oconee River is greater in upland than in floodplain areas (Table 5). The densest component along the river is Kirk Corner-notched, followed by Big Sandy, Dalton, and Kirk Stemmed and Bifurcate components respectively (Table 11; Figures 4-8).

There are more single and multicomponent Early Archaic sites along the Oconee River than on any of its tributaries (Tables 6, 7, and 8; Figures 9 and 10). There are more multicomponent sites located in the uplands of small Oconee River tributaries than in the main channel uplands (Table 10). Upland and floodplain multicomponent site densities are approximately equal.

In the southern region of the Oconee River valley, sites and components in uplands are more dense than in floodplain areas (Table 5). In the northern part of the Oconee River valley, site and component densities are somewhat higher in upland than in floodplain areas. Both upland and floodplain densities are lower than those in the southern reservoir (Table 5).

Richland Creek

Thirty-five percent of the Early Archaic sites identified in the Wallace Reservoir are located along Richland Creek, a tributary which flows into the Oconee River in the southern (shoals) region of the reservoir (Figure 3).

Upland Early Archaic sites are approximately four times as dense as floodplain sites (Table 5). The majority of upland sites are located in the uplands of Richland Creek tributaries, such as Rocky,

Table 11. Distribution and Density of Early Archaic Components on the Oconee River and its Tributaries

Components	Drainages										Total
	Oconee River		Apalachee River		Richland Creek		Sugar Creek		Lick Creek		
	FPL	UPL	FPL	UPL	FPL	UPL	FPL	UPL	FPL	UPL	
Dalton											
Total	9	11	0	0	1	10	0	1	0	2	34/4905
Density	.005	.013	0	0	.001	.020	0	.014	0	.009	.007
Big Sandy											
Total	24	14	4	0	8	29	1	1	2	3	86/4905
Density	.012	.017	.014	0	.016	.039	.005	.014	.009	.038	.018
Kirk Corner-notched											
Total	34	33	8	1	8	42	6	3	1	8	44/4905
Density	.017	.040	.028	.125	.016	.056	.027	.040	.005	.10	.029
Bifurcate											
Total	5	6	0	0	0	4	0	1	0	1	17/4905
Density	.003	.007	0	0	0	.005	0	.014	0	.013	.004
Kirk Stemmed											
Total	7	4	0	0	0	7	0	1	0	0	19/4905
Density	.004	.005	0	0	0	.009	0	.014	0	0	.004
Total	79	68	12	1	17	92	7	7	3	14	300/4905
Density	.004	.083	.043	.125	.035	.122	.032	.097	.014	.175	.061

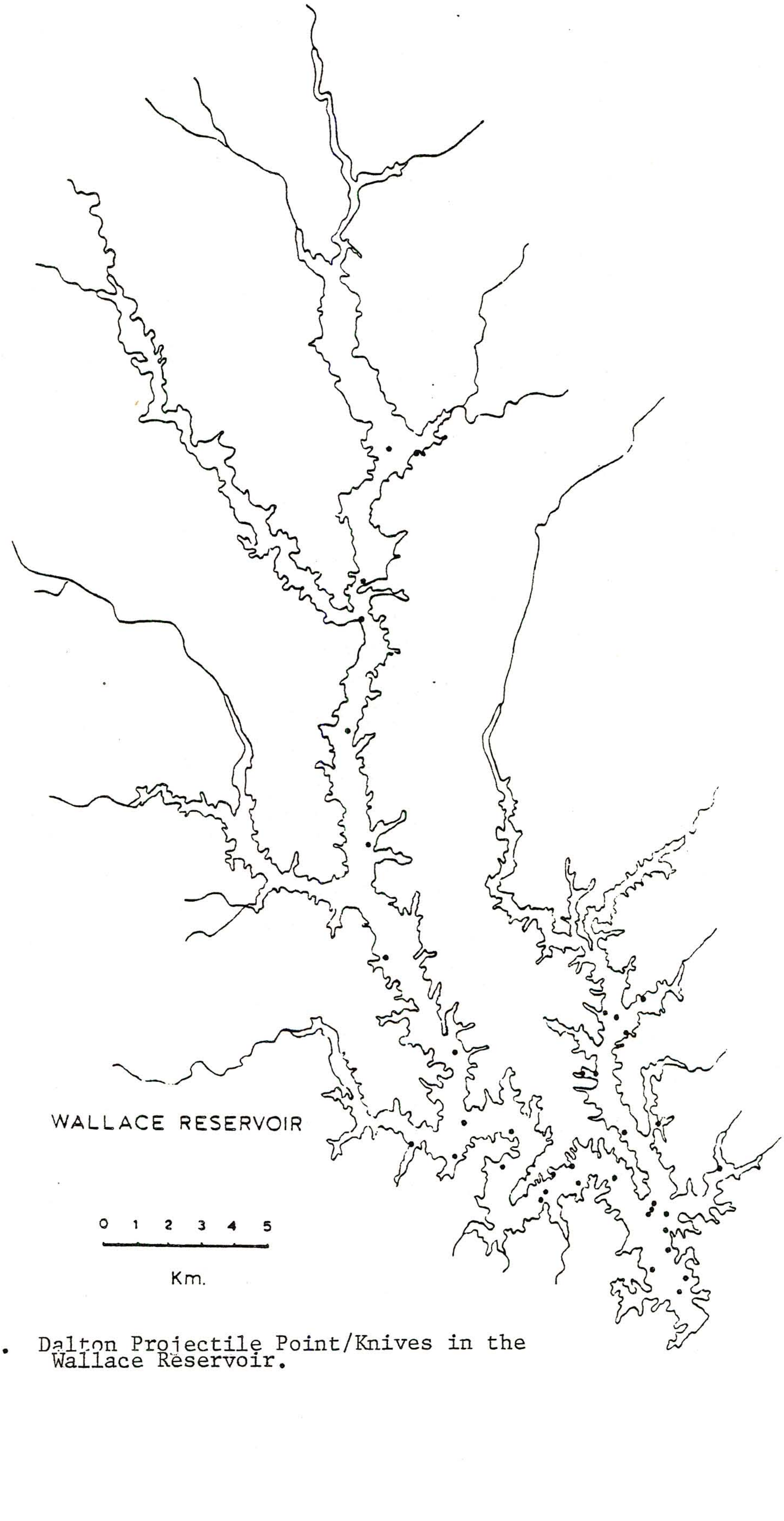

Figure 4. Dalton Projectile Point/Knives in the Wallace Reservoir.

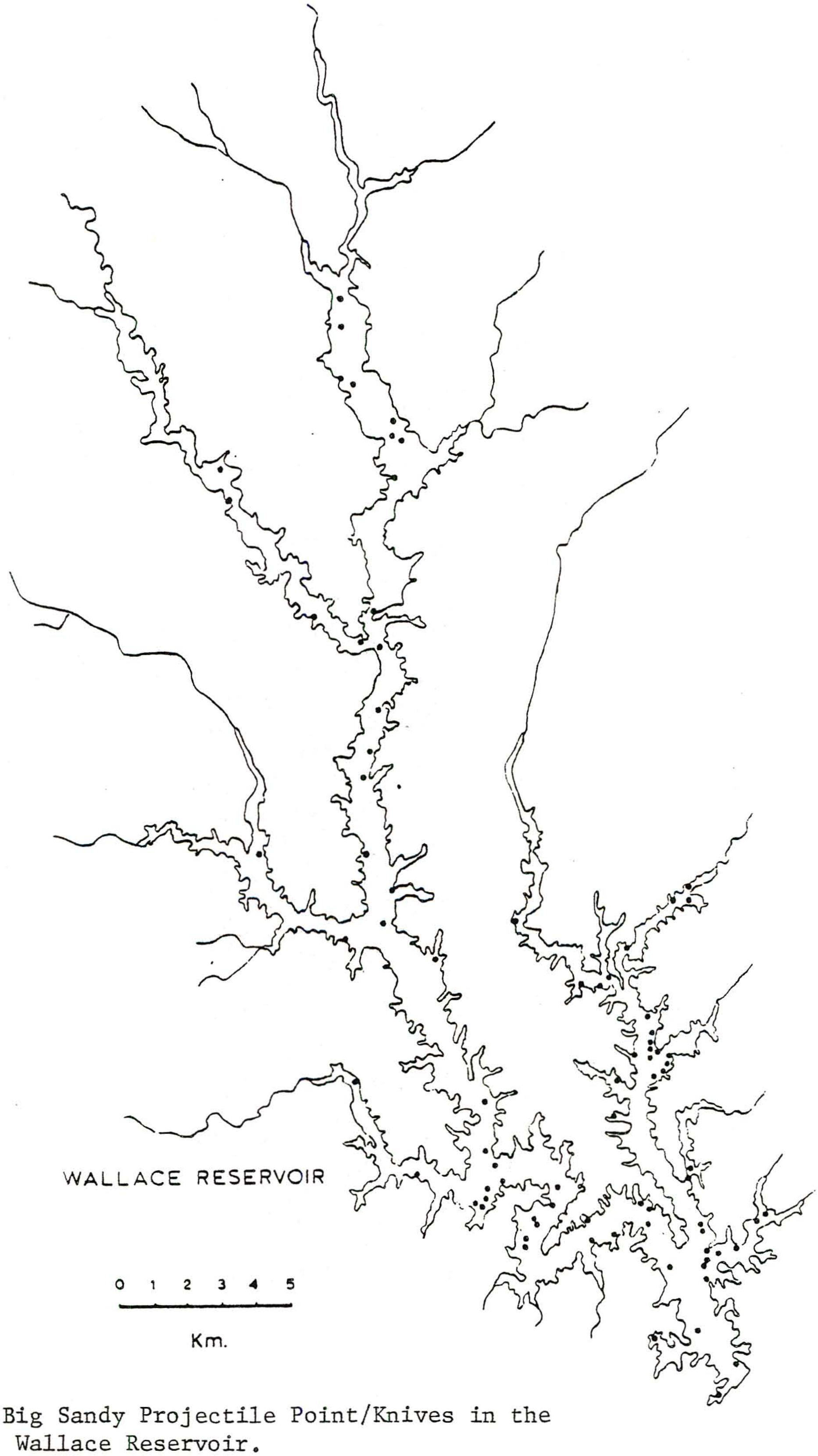

Figure 5. Big Sandy Projectile Point/Knives in the Wallace Reservoir.

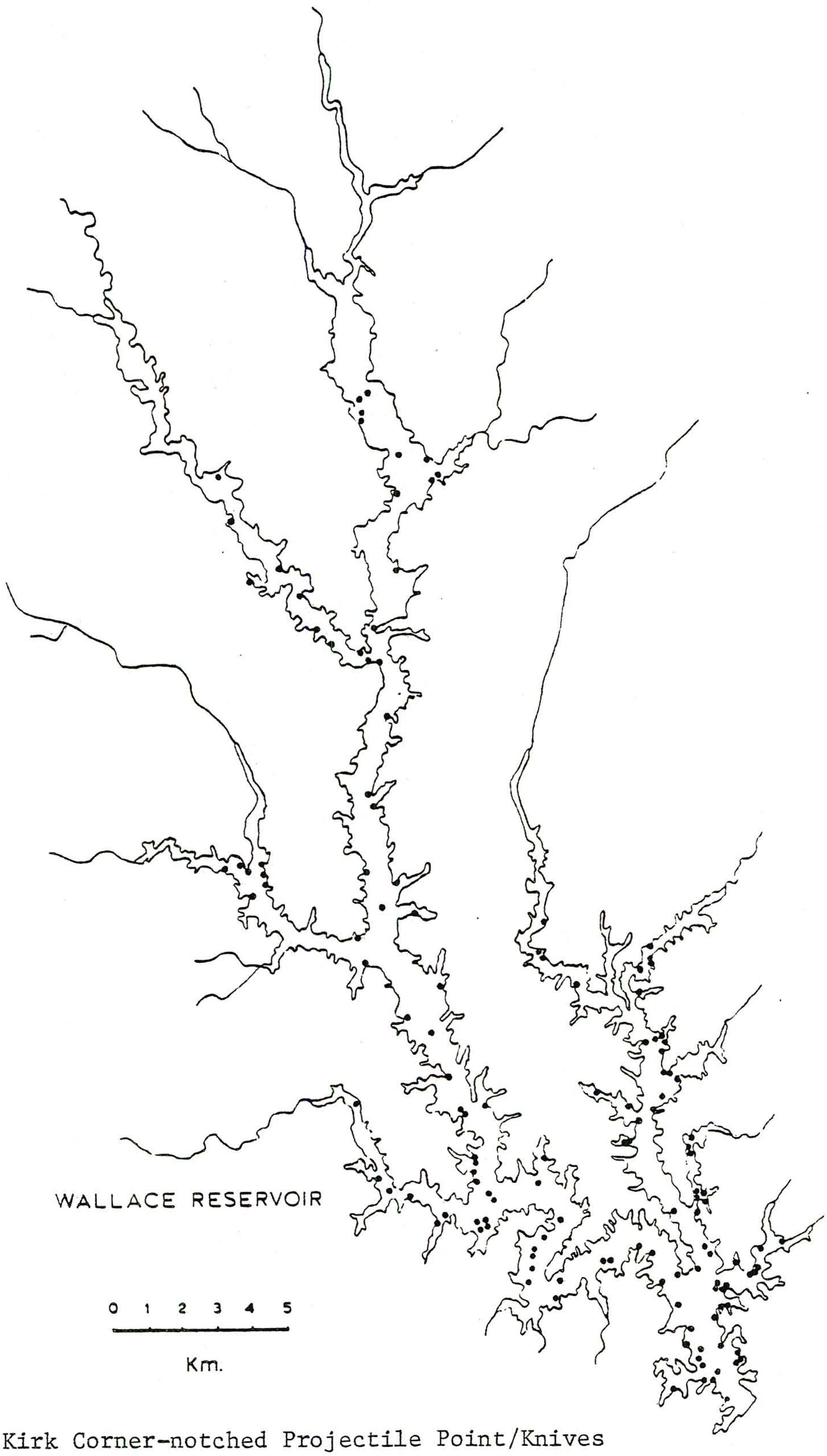

Figure 6. Kirk Corner-notched Projectile Point/Knives in the Wallace Reservoir.

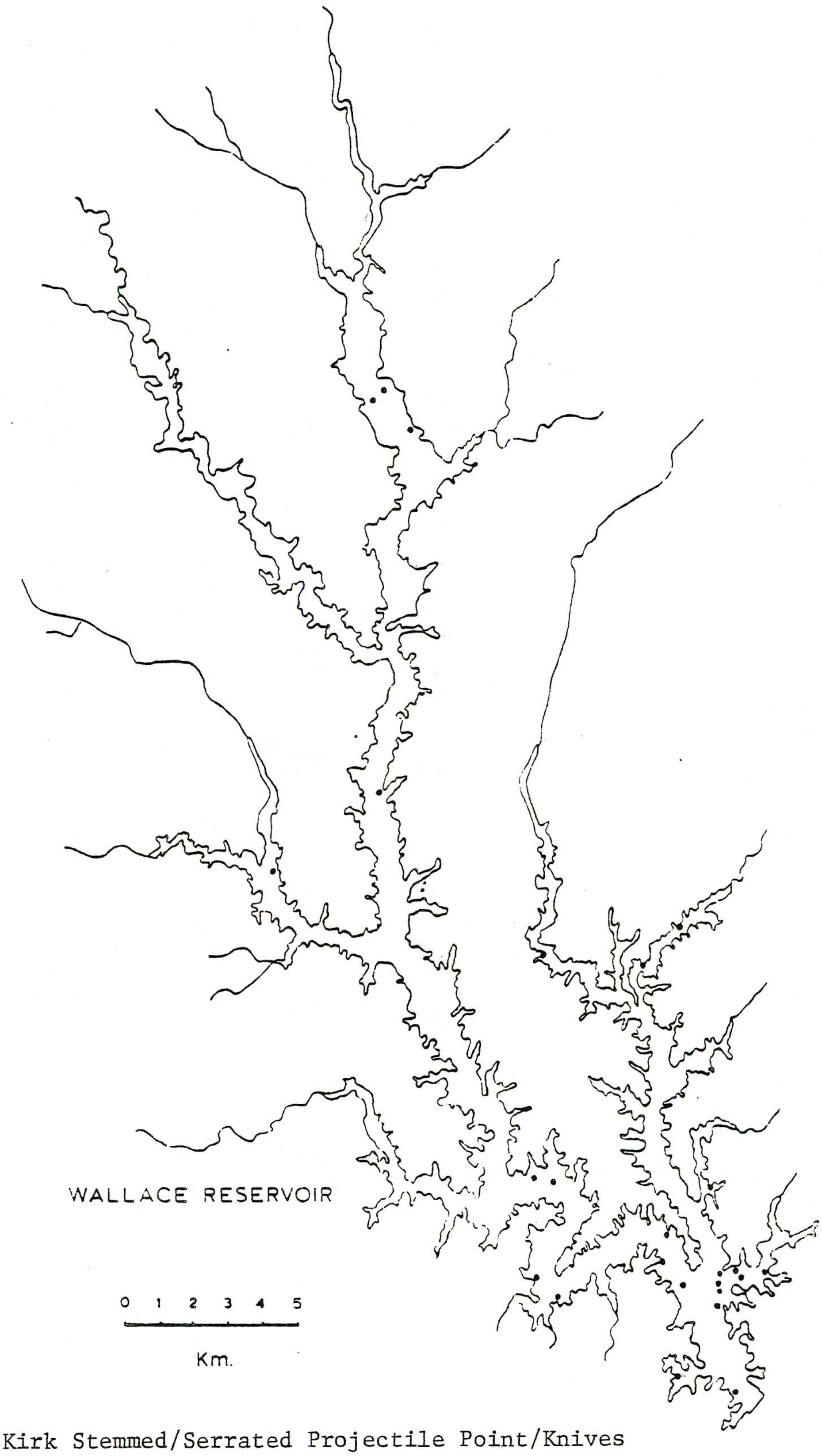

Figure 7. Kirk Stemmed/Serrated Projectile Point/Knives in the Wallace Reservoir.

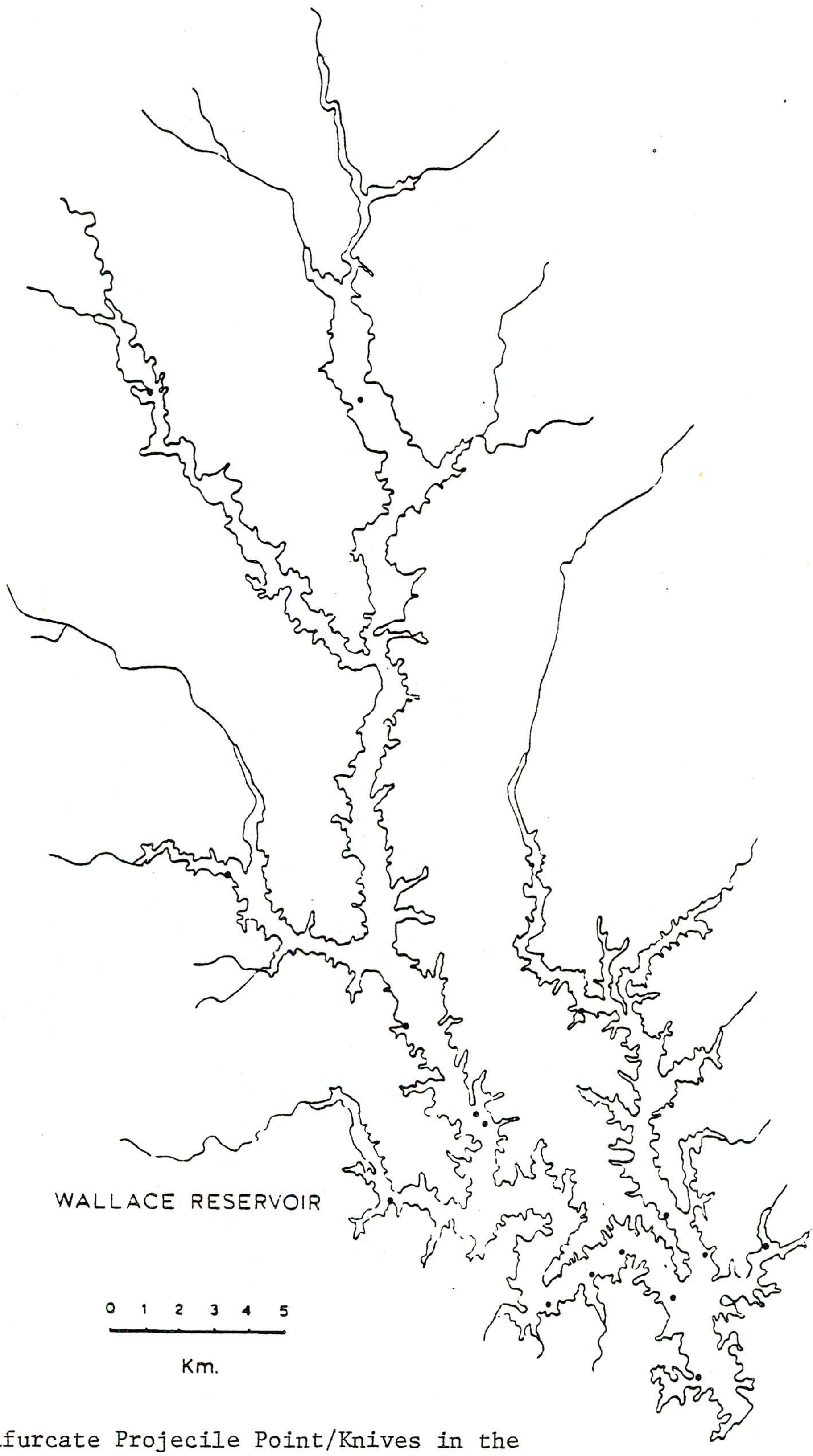

Figure 8. Bifurcate Projecile Point/Knives in the Wallace Reservoir.

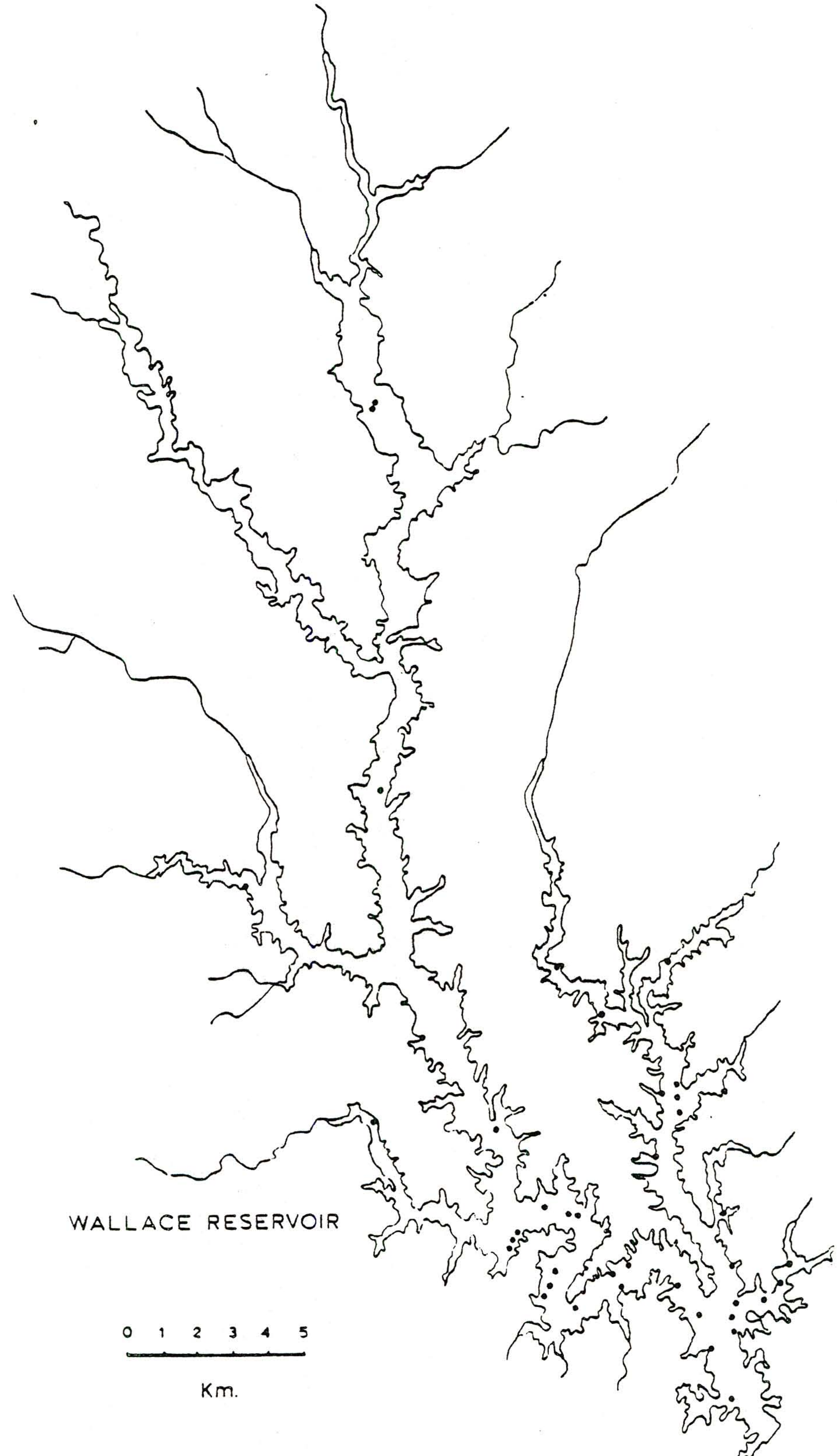

Figure 9. Multicomponent Sites in the Wallace Reservoir.

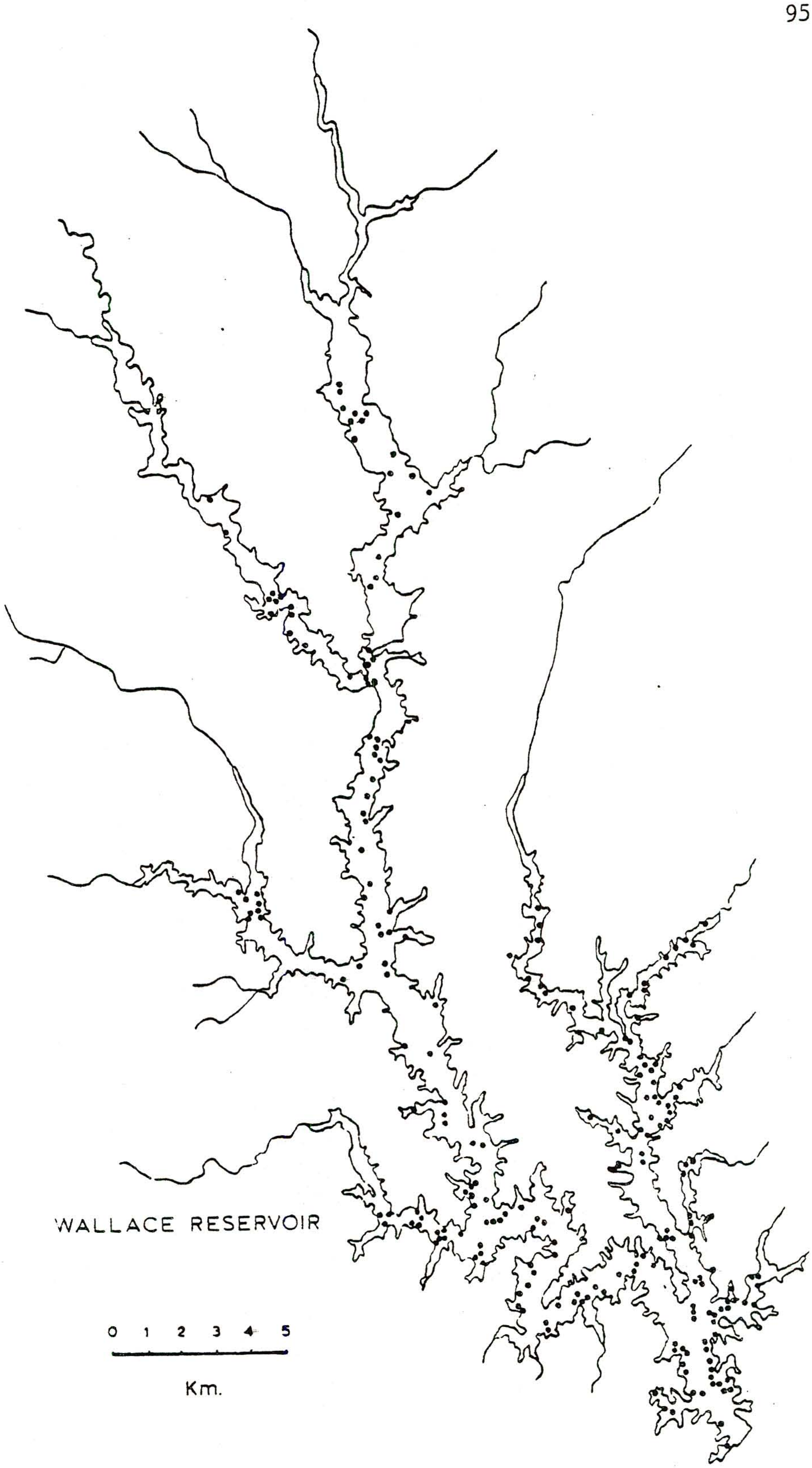

Figure 10. Single Component Sites in the Wallace Reservoir.

Sandy, Double, Beaverdam, and several smaller, unnammed creeks (Table 10).

All components are approximately three times more dense in upland than in floodplain areas (Table 5). Kirk Corner-notched is the densest component in this tributary, followed, in descending order, by Big Sandy, Dalton, Kirk Stemmed, and Bifurcate components (Table 11; Figures 4-8). The Kirk Stemmed and Bifurcate components are found only on upland sites.

Forty percent of the multicomponent sites in the Wallace Reservoir are on Richland Creek and its tributaries, and the majority of these sites are in uplands (Table 10). The density of multicomponent sites on Richland Creek is second only to the Oconee River (Table 6; Figure 9).

Eighty-five percent of the single component sites on Richland Creek are in main channel and tributary uplands (Table 10). Single component site density is the highest in the southern reservoir (Tables 7 and 8; Figure 10).

Lick Creek

Six percent of the Early Archaic sites identified in the Wallace Reservoir area are located on Lick Creek, a tributary with a wide, aggraded channel which joins the Oconee River in the southern part of the reservoir (Figure 3).

Approximately half of the Lick Creek sites are in channel uplands, and 40% are in tributary uplands (Table 9). The low number of flood-plain sites may reflect the destruction of the floodplain due to channel aggradation and meandering. Upland site density is thirty-five times greater than floodplain site density (Table 5).

For all Early Archaic components on Lick Creek the highest densities are in upland areas (Table 5). The Kirk Stemmed component is absent from surface sites on Lick Creek. Kirk Corner-notched is the densest component, followed by Big Sandy, Dalton, and Bifurcate components (Table 11; Figures 4-8). Dalton and Bifurcate components are found only on upland sites.

The channel floodplain site is the only multicomponent site on Lick Creek (Tables 6 and 10; Figure 9).

All of the single component sites on Lick Creek are in upland areas (Table 10). Single component site density is the lowest in the reservoir (Tables 7 and 8; Figure 10).

Apalachee River

Four percent of the Early Archaic sites in the Wallace Reservoir are located along the Apalachee River, the major tributary to the Oconee River in the northern part of the reservoir (Figure 3). This river is characterized by a broad floodplain that has been destroyed to a great extent by channel aggradation.

Upland Early Archaic site density is three times greater than floodplain site density, probably due to the small area of uplands (8 hectares) surveyed and the disturbed nature of the floodplain (Table 5).

Upland component density is six times greater than floodplain component density (Table 5). The surface survey found only Big Sandy and Kirk Corner-notched components on the Apalachee River, although subsurface backhoe testing revealed one Bifurcate pp/k (Ledbetter 1979). Kirk Corner-notched is the densest component on the Apalachee River (Table 11; Figures 4-8).

Multicomponent site density is very low on the Apalachee River, as there is only one multicomponent site, located in the main channel uplands (Tables 6 and 10; Figure 9).

Almost all of the sites on the Apalachee River are single component, and most of these sites are located near the Apalachee-Oconee River confluence (Tables 7 and 8; Figure 10). Eighty-two percent of the single component sites on the Apalachee River are in the main channel floodplain (Table 10). Single component site density is the highest in the northern reservoir (Tables 7 and 8).

Sugar Creek

Four percent of the Early Archaic sites identified in the Wallace Reservoir are located on Sugar Creek, the other large tributary of the Oconee River in the northern part of the reservoir (Figure 3). This creek is almost totally channelized, and has a broad, low floodplain.

Site density is three times greater in upland than in floodplain areas (Table 5). Component density is higher in upland than in floodplain areas (Table 5). With the exception of Dalton one of each recognizable Early Archaic component is present on Sugar Creek, in contrast to the situation on the Apalachee River. Kirk Corner-nothced is the densest component, followed by Big Sandy, Kirk Stemmed, and Bifurcate components (Table 11; Figures 5-8). Kirk Stemmed and Bifurcate components are found only in main channel uplands. Sugar Creek has the highest densities for Kirk Stemmed and Bifurcate components in the Wallace Reservoir (Table 11).

There is one multicomponent site in the Sugar Creek main channel uplands (Table 6 and 10; Figure 9). All other floodplain and upland sites are single component, and are equally distributed on these two topographic features (Table 10). Single component site density is the second highest in the northern reservoir (Tables 7 and 8; Figure 10).

Conclusions

The data on Early Archaic site and component density and distribution support the hypotheses presented in this thesis. According to Hypothesis 1, higher site and component densities are expected in the southern region of the reservoir due to natural factors, such as the diversity of fixed resources that would have been available, and the close spacing of these resources. In the Wallace Reservoir, Early Archaic site and component densities are significantly higher in the southern than in the northern region (Table 12). Both upland and floodplain site and component densities are greater in the southern portion of the reservoir (Table 5).

According to Hypothesis 2, large, more intensively occupied sites should also be more dense in the southern region of the reservoir. The Early Archaic data from the Wallace Reservoir support this hyopthesis. Multicomponent, multipoint/single component, and multicomponent/multipoint site densities in the southern reservoir are at least twice that of the northern region (Tables 6, 8, and 13).

Since site assemblages could not be analyzed, the definition of base camp sites was difficult. Duration and intensity of occupation

Table 12. Chi-Square Test of Significance. A Comparison of Early Archaic Sites and Components in the Northern and Southern Regions of the Wallace Reservoir.

	Northern Reservoir Observed (Expected)	Southern Reservoir Observed (Expected)
Number of Hectares Surveyed	2080 (2041)	2825 (2864)
Number of Early Archaic Sites	65 (104)	184 (145)
X^2 = 25.92 w/ 1 df (.001 confidence level) H_o rejected		
Number of Hectares Surveyed	2080 (2031)	2825 (2874)
Number of Early Archaic Components	77 (126)	227 (178)
X^2 = 34.41 w/ 1 df (.001 confidence level) H_o rejected		

Table 13. Multicomponent/Multipoint Site Density in the Southern and Northern Regions of the Wallace Reservoir.

	Number of Multicomponent/ Multipoint Sites	Area Surveyed (hectares)	Site Density
Southern Reservoir			
Oconee River and small tributaries	10	1206	.008
Richland Creek	10	1240	.008
Lick Creek	0	294	0
TOTAL	20	2740	.007
Northern Reservoir			
Oconee River and small tributaries	0	1587	0
Sugar Creek	0	292	0
Apalachee River	0	286	0
TOTAL	0	2165	0

has been estimated based only on the number of diagnostic pp/k's and Early Archaic components identified for each site. Larger base camp sites probably correspond to the multicomponent/multipoint sites defined in the reservoir. This assumption is supported by the fact that multicomponent/multipoint sites cluster in specific locations in the reservoir (Figure 11). Since these sites were reoccupied during the Early Archaic period, they must have been favorable locations for a variety of activities. In addition, the location of these multicomponent/multipoint site clusters would be in habitats that were exploited for longer periods of time during the year. Early Archaic populations returned to the same locale, if not the same site, due to favorable natural factors at these locations.

A site cluster is arbitrarily defined as three or more sites represented by a single component within a one square mile area. The largest number of clusters are associated with Big Sandy and Kirk Corner-notched horizons (Figures 5, 6). There are few site clusters associated with Dalton and Kirk Stemmed horizons, and none associated with the Bifurcate horizon (Figures 4, 7, 8).

In the northern part of the reservoir, the only site clusters found are associated with Big Sandy, Kirk Corner-notched, and Kirk Stemmed horizons (Figures 5, 6, 7). These clusters are located at the confluences of Sugar Creek, Town Creek, and the Apalachee River, and a small unnamed tributary with the Oconee River (Figure 3). There is one cluster of Kirk Corner-notched sites in the uplands of Sugar Creek, near its confluence with Little Sugar Creek (Figure 6). The northern part of the reservoir was most heavily utilized during the middle of the Early Archaic period.

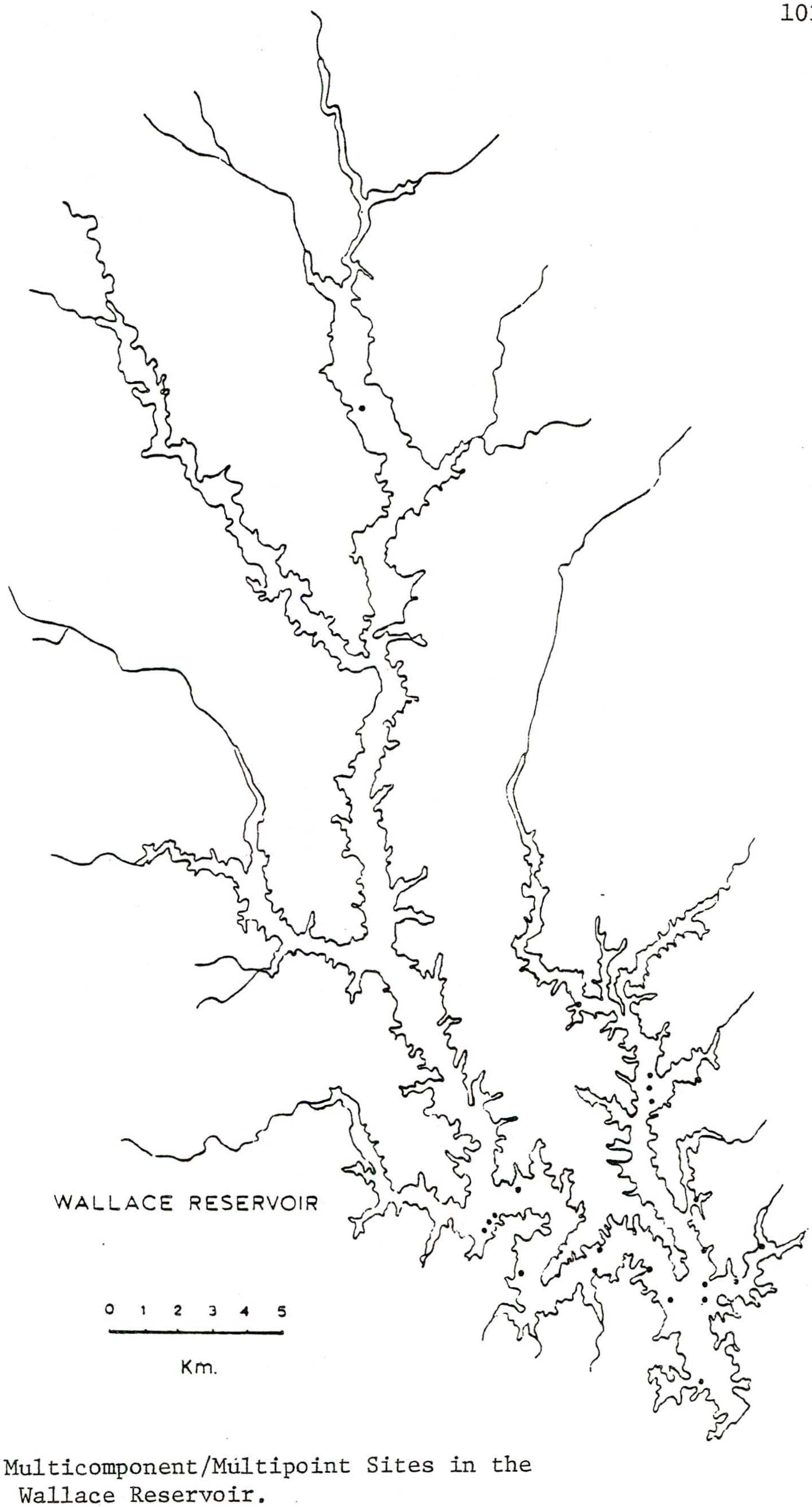

Figure 11. Multicomponent/Multipoint Sites in the Wallace Reservoir.

Important locations for Early Archaic sites in the southern region of the reservoir are the confluences of Richland Creek with the Oconee River, and at the confluences of Double, Rocky, Sandy, and Beaverdam Creeks with Richland Creek. Clusters are also found at Long and Riley Shoals, on high terraces along the western side of Horseshoe Bend, at the mouth of Lick Creek, and in the uplands and at confluences of several smaller tributaries with the Oconee River (Figure 3, 4-7). These site clusters are associated with Dalton, Big Sandy, Kirk Corner-notched, and Kirk Stemmed horizons, indicating that the southern reservoir was more intensively occupied throughout the early and middle Early Archaic period. Occupation decreases during Bifurcate times in both the northern and southern parts of the reservoir.

Interpretations

Occupation of the Wallace Reservoir was sparse during Paleoindian times, and oriented along the Oconee River and Richland Creek at tributary confluences and quarry regions. If the number of pp/k's can indicate relative population size, then there was a definite increase in population and/or utilization of the reservoir area during Early Archaic times (Figure 3). Occupation density peaked during the time of the Kirk Corner-notched horizon (8,900-9,500 years B.P.) and encompassed most of the reservoir area (Figure 6). Population size or utilization of the reservoir them began to decrease during Kirk Stemmed and Bifurcate times (Figure 7 and 8). By the end of the Early Archaic (8,000 years B.P.), settlement distribution became more dispersed, or population size was lower, than at any other time during that period.

From the data available for the Wallace Reservoir, it is virtually impossible to determine with certainty which sites were "base" camps, as defined in archaeological settlement models, because pp/k's are the only diagnostic tools analyzed for each site. An attempt is made to distinguish those sites that were reoccupied through the Early Archaic from those that were occupied only during a particular time period. Sites that were repeatedly utilized throughout the Early Archaic and sites with more than one pp/k per component were probably strategically located in relation to important resources. Figures 9 and 13 illustrate the distribution of multicomponent Early Archaic sites and the distribution of sites with more than one diagnostic pp/k per single component. In many cases the multicomponent and multipoint sites are the same, or cluster in the same locations (Figure 11). These are considered the "major" Early Archaic sites, both in intensity and length of occupation.

The majority of multicomponent/multipoint Early Archaic sites are found in the main channel floodplain and uplands at the confluence of tributaries with the Oconee River and Richland Creek (Figure 12). A few multicomponent sites are located along tributaries some distance from the main channel of the creek or river into which they flow (Figure 9). Upland multicomponent/multipoint sites, particularly those in the southern reservoir, may have been reoccupied during the Early Archaic because they were sheltered from the elements and/or because they were good hunting areas during cold weather. Jochim (1976) points out that fall and winter base camps in Mesolithic Germany should be farthest from the main river channel, and oriented toward hunting and shelter from the elements. Perhaps the upland sites in the Wallace Reservoir were not only good for hunting and protection from the elements, but also favorable locations for seasonal nut gathering, for which there would be no surface archaeological evidence.

The majority of floodplain multicomponent/multipoint sites are located along the main channel of the Oconee River, at the confluences of tributaries, on high terraces, and at shoals (Table 6; Figure 5). These floodplain sites are almost all found in the southern part of the reservoir. Again, the sheltered nature of the southern reservoir, as well as the close proximity of these sites to upland and riverine resources, probably explains why hunting and gathering populations utilized these sites repeatedly during the Early Archaic. This concentration of sites in the shoals region seems to indicate a focus on a diversity of fixed resources, which would have been available and

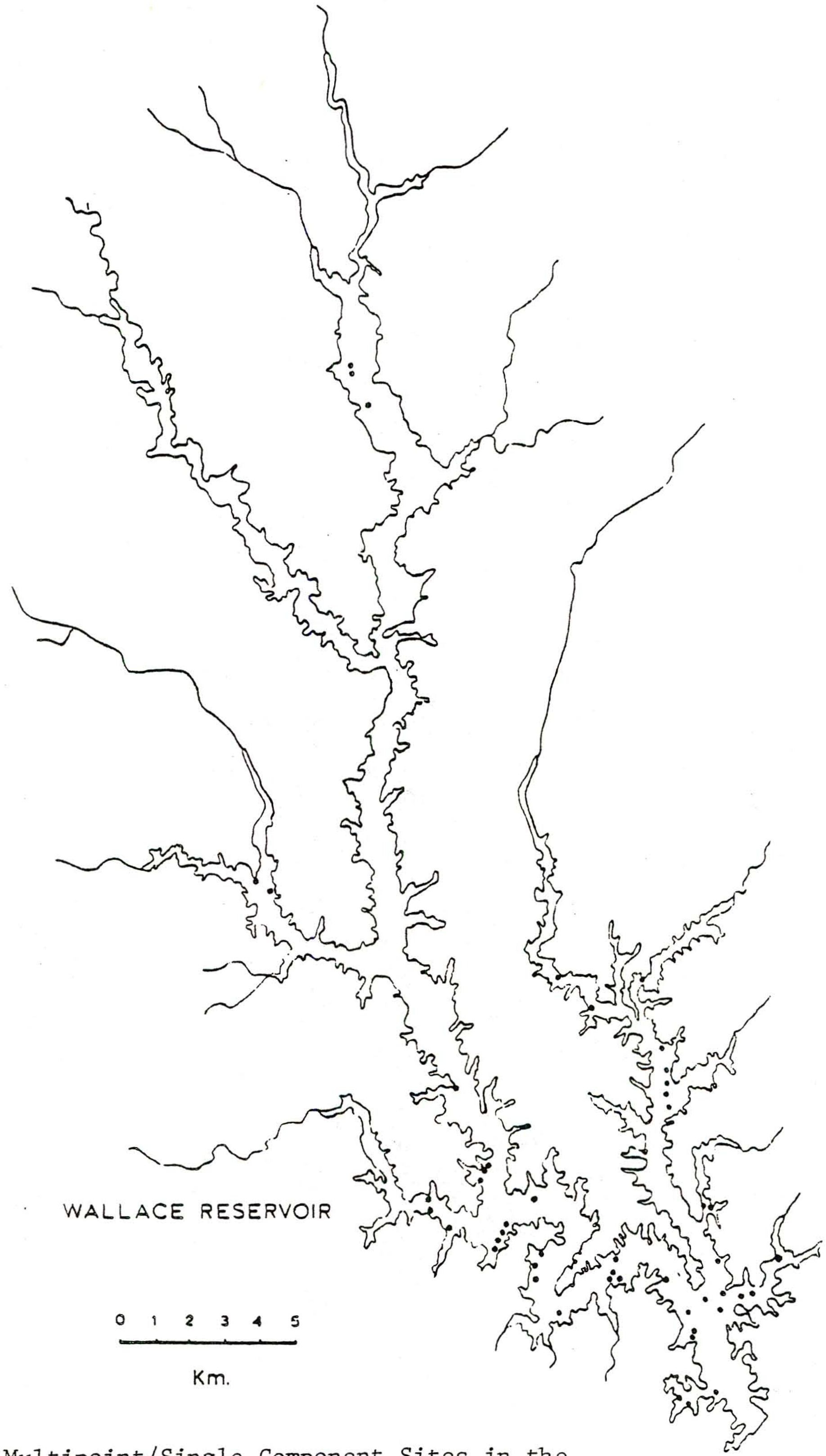

Figure 12. Multipoint/Single Component Sites in the Wallace Reservoir.

easier to exploit in this area. Fish are attracted to shoals because the water is highly oxygenated (Elizabeth Reitz, personal communication). Shoals are good fishing areas, since fish and turtles could be easily trapped, netted or speared in the shallow waters, and weirs could be constructed with ease (Smith 1977). Perhaps Early Archaic populations focused on the shoals during the spring spawning season of shad and striped bass. Since fish and other aquatic species are more active in warm weather, floodplain sites may have been favored during warm seasons. Shellfish are also easier to procure in warm weather, and many plant foods would have been abundant in the floodplain environment between April and October (Keene 1981).

The floodplain multicomponent sites may represent spring, summer, and perhaps fall season base camps, focused on the exploitation of plants and aquatic resources. Upland multicomponent sites may represent fall and winter season base camps, more sheltered sites close to fall and winter season upland resources, such as deer and nuts. If Morse's revised model (1977) of Dalton subsistence is applied in the Wallace Reservoir, it is likely that the shoals region represents the base settlement area, and consists of a group of sites that were utilized year-round, surrounded by transitory hunting/butchering, nut gathering, fishing, etc. sites.

The majority of Early Archaic sites (157) in the reservoir are single component and single point sites (Table 7). It is difficult to determine the function of these sites, though they are assumed to be more transitory than multicomponent/multipoint sites. According to the archaeological settlement models presented in this thesis, upland sites are viewed as transitory hunting/butchering sites (Morse 1971, 1973, 1977; Chapman 1975; Luchterhand 1970; Gardner 1974, 1975). However, it is quite likely that such sites would be represented on the surface by flake tools only, with no diagnostic pp/k's present, Certainly pp/k's were occasionally lost or discarded due to exhaustion on hunting/butchering sites, but this would not be expected in most cases. And, as Morse (1971, 1973) points out, pp/k's (in this case Daltons) would not be expectedat trading, visiting, courting, fishing, or nut collecting sites. Surface sites of this type would not be visible in terms of diagnostic pp/k's.

According to Morse's (1971, 1973, 1977) and Chapman's (1975) settlement models, transitory sites should be more numerous than base camp sites. This aspect of Morse's and Chapman's models is confirmed by the Early Archaic data from the Wallace Reservoir. The ratio of single point/single component to multicomponent/multipoint sites in the reservoir is 5 to 1.

Single component sites are distributed over all land surfaces and in all tributaries of the Wallace Reservoir, though the majority are located in upland areas (Tables 7 and 8). Small upland sites may indicate the exploitation of deer, other mammals, or turkey, although Elizabeth Reitz (personal communication) states that in the modern Georgia piedmont, deer and turkey are evenly distributed throughout the floodplain and uplands, except during the winter, when these species tend to aggregate in sheltered mast areas (Smith 1975). If single component sites usually represent hunting/butchering sites, then hunting and butchering activities were taking place in both upland and floodplain areas in the Wallace Reservoir. This finding does not conform to the settlement models presented in this thesis.

Single component/single point site density is two times greater in the southern than in the northern part of the reservoir (Table 7). The southern part of the reservoir provided sheltered areas in both floodplain and upland habitats, and may have been more favorable for fall and winter hunting than the exposed, broad floodplain of the Oconee and Apalachee Rivers, and Sugar Creek in the northern part of the reservoir.

A chi-square test of multicomponent and single component sites indicates that single component sites are distributed in proportion to the number of multicomponent sites in each region (Table 14). This supports the idea that Early Archaic populations exploited a certain areal range and number of sites in the vicinity of base camp sites. The data from the Wallace Reservoir indicates that both base camps and more temporary types of sites were more frequently located in the southern part of the reservoir.

Based on population density estimates for Mesolithic Britain, and for ethnographic North American Indian groups, Jochim (1976:134) calculated a density for riverine Mesolithic German populations of .05 to .13 people per square kilometer at 20% harvesting efficiency. Applied to the area of the Wallace Reservoir, these population densities indicate that between two and nine people could have subsisted year-round in the reservoir at 20% harvesting efficiency. Of course, population density may have been higher in Georgia than in Mesolithic Germany. The climate in Georgia is warmer and wetter, and more biomass may have been available. If east-west boundaries of the reservoir are expanded to include the entire drainage within the north-south boundaries, between 80 and 200 people could have subsisted in the area.

Table 14. X^2 Test of Significance. A Comparison of Single and Multicomponent Sites in the Northern and Southern Regions of the Wallace Reservoir.

	Northern Reservoir Observed (Expected)	Southern Reservoir Observed (Expected)	Total
Multicomponent Sites	62 (65)	187 (184)	249
Single Component Sites	57 (54)	152 (155)	209
Total	119	339	458

X^2 = .412, 1 df (.05 significance level)

H_o accepted.

This population could be one small band, or a portion of a minimum band, as defined by Wobst (1976). This band would have interacted with other neighboring bands for marriage exchange and other social or economic interaction (Ericson 1975; Wobst 1976). The area required to sustain a maximum of 475 people at the stated population densities would be approximately 4,000-12,000 square kilometers. The area of the Wallace Reservoir plus the uplands outside the reservoir boundary is approximately 1500 square kilometers, only a fraction of the area required for a maximum band. Since hunter-gatherers that locate themselves in relation to linear water sources tend to designate the watershed as their territory (Morse 1977; Jochim 1976; Watanabe 1972) it is likely that a maximum band would be oriented along the entire Oconee River drainage (area = 13,600 square kilometers) (Carver 1959), north into the upper Piedmont and south into the Georgia Coastal Plain. If this were true, Wallace Reservoir would have represented only a small part of the social system, perhaps the territory of one band. It is also possible that the maximum band area could have extended between adjacent river drainage systems and the Oconee River, as well as north and south.

The population in the Wallace Reservoir was most dense in the shoals area, a major constriction in the Oconee River valley. Perhaps bands identified with these major shoals much like the Bushmen identify with waterholes (Yellen 1976), and the Ainu with fishing grounds (Watanabe 1968). The diverse, more concentrated resources and the sheltered nature of the shoals region would have been more attractive to hunting-gathering populations than the broad, exposed floodplain of the northern reservoir.

Raw materials are one clue to the origins or range of a band or bands that utilized the Wallace Reservoir. Quartz and local (Piedmont) chert (Jones n.d.) is available in the reservoir, but several exotic, or non-local cherts (Goad 1979) and ortho-quartzite are also found on Early Archaic sites in the reservoir.

Raw material frequencies vary between Early Archaic horizons. The percentage of local quartz and chert is highest for Big Sandy, and lowest for Bifurcate pp/k's, but comprises approximately half of the raw materials for most horizons (Table 15). The percentage of Coastal Plain chert is high throughout the Early Archaic. Ridge and Valley chert remains a consistently low percentage of the material utilized during the Early Archaic in the Wallace Reservoir. Orthoquartzite is a fall line resource utilized most often by Dalton populations (Table 15).

Since exchange mechanisms that may have functioned during the Early Archaic are unknown, it is impossible to determine how non-local raw materials arrived in the Wallace Reservoir. However, among ethnographic hunter-gatherers raw materials, subsistence items, and women are regularly exchanged between bands (Ericson 1977; Lee and DeVore 1968). Either materials were exchanged by groups living in the Oconee River drainage and/or adjacent river drainages, or they were brought in by groups using the reservoir seasonally, then lost, or discarded when exhausted. The high percentages of local raw material may represent replacement of lost or discarded tools by groups that were in the area long enough to need to replenish their tool kits. Or perhaps this evidence supports the idea that Early Archaic populations utilized the

Table 15. Distribution of Raw Materials by Early Archaic Period-Wallace Reservoir Survey.

Component	Raw Material (Number of pp/k's) Orthoquartzite	Quartz	Unidentified Exotic Chert	Piedmont Chert	Ridge and Valley Chert	Coastal Plain Chert	Meta-volcanic	Total
Dalton	7	14	0	2	2	7	0	32
Big Sandy	4	67	0	10	2	19	0	102
Kirk Corner-notched	0	108	4	4	15	57	4	192
Kirk Stemmed	2	4	0	5	3	7	1	22
Bifurcate	0	0	1	2	3	9	0	15
Total	13	193	5	23	25	99	5	363

reservoir area year-round, or at least for a significant part of the year.

The next highest percentage of raw materials is Coastal Plain in origin (Table 16). Perhaps Early Archaic populations ranged into the Coastal Plain, in search of raw materials. This idea is supported by Anderson et al. (1979) and Anderson and Schuldenrein (1983) based on published data from excavated Early Archaic sites in the Piedmont of sites from North Carolina, South Carolina, and eastern Georgia. Following a settlement model proposed by Claggett and Cable (1982), they suggest that Early Archaic populations were more mobile than Paleo-indian populations. High percentages of non-local raw material on riverine sites lead Anderson et al. (1979) and Anderson and Schuldenrein (1983:19) to conclude that these bands were moving 150 kilometers down river into the Coastal Plain from the Piedmont and vice versa, as part of their seasonal foraging rounds. Anderson (1982:146) suggests that since South Carolina lithic materials are located in areas of ecological diversity, it is plausible that stone was obtained during the execution of routine foraging tasks. He also states that the presence of extralocal lithic material in Early Archaic contexts does not reflect specialized quarrying and/or trading activities, since the populations were so mobile (Anderson et al. 1979; Anderson 1982). Anderson's conclusions contradict Morse's (1977) Dalton settlement model and the data on hunters and gatherers presented in this paper. The data reported by Jochim (1976, 1981), Keene (1981), Watanabe (1968, 1972), Lee and DeVore (1968), Binford (1980), and Kroeber (1925) indicate that hunger-gatherers in temperate, ecologically diverse environments tend to be more sedentary than foragers, have smaller territories and utilize task groups for the procurement or raw materials and other resources within a certain range of the base camps. In addition, reciprocal exchange and trade are vital concepts in most hunting-gathering societies (Lee and DeVore 1968; Ericson 1977).

This leads to an alternative explanation of the high percentage of Coastal Plain chert from Early Archaic sites in the Wallace Reservoir. Perhaps raw materials were obtained through exchange with bands to the south or southeast of the reservoir. Fairly intensive exchange would have been necessary to sustain the high percentage of Coastal Plain chert utilized by Early Archaic populations. The lower percentage of Ridge and Valley chert from northeast Georgia could indicate that there was less interaction and exchange with bands to the north of the reservoir.

The fact that the Ridge and Valley chert outcrops are only 50 kilometers farther than Coastal Plain outcrops is significant. The reservoir is approximately halfway betwen known Coastal Plain and Ridge and Valley outcrops, and an approximately equal distribution of raw materials would be expected, given equal interaction between these regions. That Coastal Plain raw materials are second in importance to local resources may indicate a Piedmont to Coastal Plain orientation among the Early Archaic population in the Wallace Reservoir, for either social or economic reasons.

Raw material frequencies from Early Archaic sites at the next major river constriction north of the reservoir seem to indicate a different orientation for the band or bands in this area. This constriction in the Oconee River, Barnett Shoals, is approximately 64 kilometers north of the shoals area in the Wallace Reservoir. Early

Archaic raw materials from the cluster of sites at these shoals have a greater percentage of Ridge and Valley chert than sites in the Wallace Reservoir (Table 16). The only exception to this is the Big Sandy horizon, which is composed only of local and Coastal Plain resources. Though Barnett Shoals is only 64 kilometers closer to the Ridge and Valley Province than the shoals in the reservoir, the higher percentage of Ridge and Valley chert seem to show a more northerly orientation for a band(s) occupying sites in this area. The band(s) either moved north more often to acquire raw materials, or there was more exchange with groups to the north than with those to the south. Unfortunately, there is no data from the reservoir south of the Wallace Reservoir, with which to compare these percentages.

The data from the Wallace Reservoir do indicate that Early Archaic populations tended to return to areas in the shoals, or southern, region of the reservoir more often than in the north. The shoals, numerous tributaries, and deep, sheltered valleys of the Oconee River and Richland Creek provided an abundance of diverse microhabitats in close proximity. The placement of hunting and gathering camps in this region would have provided shelter from the elements and the maximum access to upland and floodplain resources available within the reservoir boundaries. Although the relative permanence of Early Archaic sites cannot be established without further analysis of surface and excavated material, it is likely that more permanent sites tended to be located in the southern reservoir. Such sites may have been occupied for one or more seasons because of the diversity of resources that could be exploited by small task groups in the vicinity of the base camp.

Table 16. Distribution of Raw Materials by Early Archaic Period-Barnett Shoals Survey (Ledbetter, personal communication)

	Raw Material (Number of pp/k's)							
Component	Orthoquartzite	Quartz	Unidentified Exotic Chert	Piedmont Chert	Ridge and Valley Chert	Coastal Plain Chert	Meta-volcanic	Total
Dalton	0	8	0	6	13	0	0	27
Big Sandy	2	87	4	8	0	32	0	133
Kirk Corner-notched	0	68	3	5	45	26	0	147
Kirk Stemmed	0	10	0	1	8	3	1	23
Bifurcate	0	1	0	1	3	4	0	9
Total	2	108	4	16	69	51	1	339

As defined by Morse (1977), a base settlement can be several sites in an area approximately 6-12 kilometers in diameter. It should be central to the associated linear-hexagonal territory, and centrally located within 55 kilometers of the other base settlement concentrations (Morse 1977:153). The concentration of sites in the shoals region of the Wallace Reservoir conforms to this definition. The Barnett Shoals area is approximately 64 kilometers north of the shoals area of the reservoir, and may be the next major base settlement to the north. 9Ri89, in the Fall Line area near Augusta, Georgia may be part of another base settlement area and may indicate that the Fall Line is another significant area for Early Archaic populations. No data is available for the Oconee River Fall Line area 20 miles (32 km) south of Wallace Dam. Other similar base settlements would be expected east, west, and south of the reservoir, if Morse's (1977) hypothetical linear-hexogonal territories pertain in the Georgia piedmont.

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APPENDIX I

Coding Format

1-2	Georgia Power Map Number	
3	County site located in:	1. Greene County 2. Putnam County 3. Morgan County
4-7	State Site Number	
9	Physiographic Region:	1. Shoals 2. Deep Valley 3. River meanders 4. Wide, low floodplain
10	Topographic Feature:	1. Oconee River floodplain 2. Oconee River uplands 3. Secondary Stream floodplain 4. Secondary Stream uplands
11	Stream Size:	1. Oconee River 2. Richland Creek, Apalachee River 3. Sugar and Lick Creeks 4. Major tributaries to category 1, 2, and 3--Double, Sandy, Rocky, Beaverdam, Town, Cedar, Little Sugar Creeks 5. Minor tributaries to category 1, 2, and 3 streams.
12-17	Lithic components: (number present)	12. Dalton 13. Big Sandy 14. Kirk Corner-notched 15. Bifurcate 16. Kirk Stemmed 17. Unidentifiable Early Archaic
18-21	Occurrences (location and survey number)	1. North Survey 2. Central Survey 3. South Survey
22	Paleoindian component	0. absent 1. present

APPENDIX II

Area Surveyed Within each Stream in the Wallace Reservoir

Georgia	Oconee River		Richland Creek		Lick Creek	
Power Map #	Upland	Floodplain	Upland	Floodplain	Upland	Floodplain
2	20	6	0	0	0	0
3	120	17	0	0	0	0
5	0	0	0	0	1	0
6	83	34	0	0	0	0
7	101	87	0	0	0	0
8	129	132	202	15	0	0
10	0	0	0	0	28	95
11	97	167	0	0	20	79
12	44	169	81	45	0	0
13	0	0	146	45	0	0
14	0	0	2	0	0	0
16	20	5	0	0	31	40
17	98	100	0	0	0	0
18	0	0	162	21	0	0
19	0	0	15	51	0	0
20	0	0	0	0	0	0
21	31	165	0	0	0	0
22	30	29	7	28	0	0
23	0	0	82	197	0	0
24	0	0	5	15	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	18	167	0	0	0	0
28	2	0	18	42	0	0
29	0	0	12	4	0	0
30	0	0	20	24	0	0
32	0	0	0	0	0	0
33	24	126	0	0	0	0
34	0	0	0	1	0	0
36	0	0	0	0	0	0
37	0	239	0	0	0	0
39	0	0	0	0	0	0
40	2	139	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
43	2	116	0	0	0	0
46	0	0	0	0	0	0
47	0	243	0	0	0	0
50	1	30	0	0	0	0
Total	822	1971	752	488	80	214
TOTAL		2793		1240		294

Georgia Power Map #	Sugar Creek Upland	Sugar Creek Floodplain	Apalachee Upland	Apalachee Floodplain
2	0	0	0	0
3	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	15	24	0	0
21	14	72	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	2	0	0	0
26	24	89	0	0
27	15	5	0	0
28	0	0	0	0
29	0	0	0	0
30	0	0	0	0
32	2	30	0	0
33	0	0	0	0
34	0	0	0	0
36	0	0	1	16
37	0	0	0	63
39	0	0	2	98
40	0	0	0	0
41	0	0	4	17
42	0	0	0	54
43	0	0	0	0
46	0	0	1	30
47	0	0	0	0
50	0	0	0	0
total	72	220	8	278
TOTAL		292		286

APPENDIX III. Densities of Upland and Floodplain Early Archaic Sites in the Wallace Reservoir

Ga. Power Map Number	Number of Upland Sites	Surveyed Upland Area (hectares)	Upland Site Density	Number of Floodplain Sites	Surveyed Floodplain Area (hectares)	Floodplain Site Density
2	0	20	0	0	6	0
3	5	120	,042	2	17	.118
5	0	1	0	0	0	0
6	1	83	.012	6	34	.177
7	10	101	.099	5	87	.058
8	32	331	.097	5	147	.034
10	5	28	.179	0	95	0
11	19	117	.162	9	246	.037
12	10	125	.080	2	214	.009
13	17	146	.116	0	45	0
14	0	2	0	0	0	0
16	0	51	0	1	45	.022
17	3	98	.031	5	100	.050
18	18	162	.111	5	21	.238
19	5	15	.333	0	51	0
20	0	15	0	0	24	0
21	2	45	.044	1	237	.004
22	3	37	.081	2	57	.035
23	11	82	.134	3	197	.015
24	0	5	0	0	15	0
25	0	2	0	0	0	0
26	5	24	.208	3	89	.034
27	2	33	.061	4	172	.023
38	3	20	.150	1	42	.024
29	0	12	0	0	4	0
30	2	20	.100	2	24	.083
32	0	2	0	0	30	0
33	1	24	.042	5	126	.040
34	0	0	0	0	1	0

Ga. Power Map Number	Number of Upland Sites	Surveyed Upland Area (hectares)	Upland Site Density	Number of Floodplain Sites	Surveyed Floodplain Area (hectares)	Floodplain Site Density
36	1	1	1.0	0	16	0
37	0	0	0	6	302	.020
39	0	2	0	6	98	.061
40	0	2	0	4	139	.029
41	0	4	0	0	17	0
42	1	0	0	1	54	.019
43	0	2	0	5	116	.043
46	0	1	0	1	39	.033
47	0	0	0	8	243	.033
50	0	1	0	1	30	.033
Total	156	1734	.089	93	3171	.029

APPENDIX IV

Densities of Early Archaic Sites and Components in the Wallace Reservoir

Georgia Power Map #	Area Surveyed (hectares)	Number of Sites	Site Density	Number of Components	Component Density
3	137	7	.051	9	.066
6	117	7	.060	9	.077
7	188	15	.080	18	.096
8	478	37	.077	49	.103
10	123	5	.040	7	.057
11	363	28	.077	35	.096
12	339	12	.035	18	.053
13	191	17	.089	21	.110
16	96	1	.010	2	.021
17	198	8	.040	11	.056
18	183	23	.126	27	.148
19	66	5	.076	5	.076
21	282	3	.011	4	.014
22	94	5	.053	6	.064
23	279	14	.050	16	.057
26	113	8	.071	8	.080
27	205	6	.005	5	.005
28	62	4	.065	4	.065
30	44	4	.091	4	.091
33	150	6	.040	7	.047
36	17	1	.059	2	.118
37	302	6	.020	6	.020
39	100	6	.060	6	.060
40	141	4	.028	4	.028
42	54	2	.037	1	.037
43	118	5	.042	5	.042
46	31	1	.032	1	.032
47	243	8	.033	9	.037
50	31	1	.032	1	.032
Total	4745	249	.052	303	.064

APPENDIX V

Number of Burn Burials and Burn Burial Early Archaic Sites in each Georgia Power Map Unit

Georgia Power Map Number	Number of Burn Burials	Number of Early Archaic Sites found in Burn Burials
3	3	0
4	0	0
5	0	0
6	25	0
7	33	1
8	47	0
10	0	0
11	90	1
12	54	1
13	10	0
14	2	0
16	0	0
17	0	0
18	26	0
19	6	0
20	29	0
21	133	1
22	45	0
23	34	1
24	1	0
25	2	0
26	72	1
27	103	1
28	6	0
29	0	0
30	8	0
32	21	0
33	261	5
34	0	0
36	0	0
37	191	3
39	78	1
40	13	1
41	64	0
42	62	0
43	5	2
46	71	0
47	251	6
51	63	1
Total	1809	26

APPENDIX VI

Early Archaic Sites and Occurrences in the Wallace Reservoir

Sites

Pm284
Pm276
Pm255
Pm253
Pm258
Pm217
Pm256
Pm292
Ge549
Pm377
Pm202
Ge146
Pm205
Pm375
Pm361
Pm362
Pm358
Pm390
Pm391
Pm395
Pm396
Pm406
Pm397
Ge162
Pm291
Pm298
Pm297
Pm126
Pm588
Pm547
Pm524
Pm527
Pm494
Pm493
Pm487
Pm482
Pm484
Pm486
Pm479
Pm480
Pm309
Pm399
Pm457

Pm470
Pm410
Pm409
Pm417
Pm421
Pm418
Pm423
Pm425
Pm427
Pm470
Pm471
Pm420
Pm466
Pm296
Pm270
Pm250
Pm443
Pm444
Pm445
Pm477
Pm200
Pm483
Pm484
Pm489
Pm491
Pm223
Pm407
Pm410
Pm412
Pm428
Pm429
Pm430
Pm435
Pm436
Ge510
Ge513
Ge398
Ge396
Ge973
Ge531
Ge500
Pm490
Pm351

Pm346
Pm213
Ge153
Ge141
Ge723
Ge741
Ge742
Pm418
Pm419
Ge533
Ge559
Ge101
Ge615
Ge616
Ge738
Ge638
Ge622
Ge627
Ge437
Ge438
Ge442
Ge448
Ge694
Ge705
Ge706
Ge708
Ge691
Pm527
Pm513
Pm512
Pm501
Pm502
Ge236
Ge235
Ge241
Ge244
Ge921
Ge923
Ge924
Ge957
Ge956
Ge947
Ge674

Ge676
Ge672
Ge907
Ge915
Ge909
Ge946
Ge669
Ge668
Ge687
Ge942
Ge944
Ge945
Ge899
Ge941
Ge250
Ge897
Pm584
Pm554
Ge878
Ge894
Ge108
Ge269
Ge282
Ge310
Ge321
Ge329
Ge335
Ge343
Ge392
Ge347
Ge386
Ge353
Ge928
Ge929
Ge930
Ge933
Ge683
Ge666
Ge586
Ge593
Ge595
Mg111
Mg113

Mg114
Mg160
Mg161
Mg164
Mg165
Mg116
Mg110
Mg153
Mg152
Ge292
Ge294
Ge307
Ge259
Ge253
Ge256
Ge257
Ge355
Ge359
Ge363
Ge366
Ge835
Ge885
Ge703
Ge31
Ge844
Mg180
Mg28
Ge826
Ge179
Ge791
Mg197
Mg191
Mg198
Mg214
Ge755
Ge757
Ge772
Ge778
Ge796
Ge187
Ge800
Ge990
Ge812

Ge9
Ge852
Ge816
Mg183
Ge821
Ge820
Ge819
Ge830
Ge842
Pm337
Pm131
Ge193
Ge149
Ge794
Ge531
Ge122
Ge127
Ge111
Ge67
Ge59
Ge72
Pm142

Occurrences

South Survey

630
124
135
789
229
194
182
777
961
868
594
599

Central Survey

430
359

North Survey

30
261
298
310

APPENDIX VII

Single Component, Single Point Sites in the Wallace Reservoir.

South Survey	State Site Number	Component
Oconee River and small tributaries	Pm253	BS
	Pm255	KCN
	Pm256	BS
	Pm291	D
	Pm292	BS
	Pm131	KCN
	Pm346	Bif
	Pm372	Unid.
	Pm377	KCN
	Pm390	KCN
	Pm391	Unid.
	Pm395	BS
	Pm406	BS
	Pm418	KCN
	Pm419	BS
	Pm435	KCN
	Pm545	D
	Pm205	D
	Pm489	KCN
	Ge236	BS
	Ge241	KCN
	Ge244	Bif
	Ge392	BS
	Ge396	BS
	Ge482	KCN
	Ge484	KCN
	Ge493	KCN
	Ge494	KCN
	Ge510	KCN
	Ge513	Unid.
	Ge524	D
	Ge527	D
	Ge547	KS
	Ge146	KCN
	Ge559	KCN
	Ge141	BS
	Ge723	BS
	A961	D
	A124	D
	A630	BS
	A789	BS
	A135	Bif
	A194	BS
	A182	D

South Survey	State Site Number	Component
Richland Creek and small tributaries	Ge250	BS
	Ge253	KCN
	Ge256	Unid.
	Ge259	KCN
	Ge269	KCN
	Ge331	Bif
	Ge335	BS
Double Creek (tributary)	Ge418	BS
	Ge421	KCN
	Ge425	KCN
	Ge426	KCN
	Ge427	KCN
	Ge438	Bif
	Ge445	KCN
	Ge448	KS
Rocky Creek (tributary)	Ge586	Unid.
	Ge593	KCN
	Ge595	KCN
	Ge596	KCN
	Ge616	KCN
	Ge622	BS
	Ge626	Unid.
	Ge627	BS
	Ge629	D
	Ge638	KCN
Beaverdam Creek (tributary)	Ge359	BS
	Ge343	BS
	Ge355	BS
	Ge363	Unid.
	Ge366	BS
	Ge386	KCN
	A599	KCN
	A594	KCN
Lick Creek	Pm443	D
	Pm200	BS
	A229	Bif
North Survey		
Oconee River and small tributaries	Ge778	KCN
	Ge791	KCN
	Ge179	KCN
	Ge796	BS
	Ge187	KCN
	Ge800	KCN
	Ge9	BS
	Ge812	BS
	Ge816	Bif
	Ge820	KCN
	Ge821	KCN
	Ge826	BS

North Survey	State Site Number	Component
Oconee River and small tributaries (cont'd)	Ge835	KCN
	Ge31	D
	Ge844	KCN
	Mg121	Unid.
	Mg152	KCN
	Mg153	BS
	Ge852	BS
	Ge878	BS
	Ge883	Unid.
	Ge885	BS
	Ge108	BS
	Ge894	KCN
	Ac359	KS
	An298	KCN
	An310	KCN
	An261	D
Apalachee River	Ge755	KCN
	Ge757	Unid.
	Ge189	KCN
	Mg180	KCN
	Ge990	BS
	Mg191	KCN
	Mg197	BS
	Mg198	KCN
	Mg183	Bif
	Mg213	KCN
	Mg214	BS
	An30	BS
	Ge757	Unid.
	Ge772	KCN
Sugar Creek	Pm547	KS
	Mg160	BS
	Mg161	KCN
	Mg164	KCN
	Pm554	BS
	Ac430	KCN

Component Key:

D Dalton
BS Big Sandy
KCN Kirk Corner-notched
KS Kirk Stemmed
Bif Bifurcate
Unid. - Unidentifiable Early Archaic

APPENDIX VIII

Single Component, Multipoint Sites in the Wallace Reservoir.

Georgia Power Map Number	Site Number	Component	Number of pp/k's	Site Location
3	Pm276	KCN	3	Oconee minor trib. uplands
3	Pm284	KS	3	Oconee minor trib. uplands
7	Pm202	BS	2	Oconee River uplands
7	Pm358	BS	2	Oconee River uplands
7	Pm362	KCN	3	Oconee River uplands
8	Ge149	D	2	Richland Cr. uplands
8	Ge417	BS	2	Richland trib. uplands
8	Ge487	KCN	2	Oconee River uplands
8	Pm297	KCN	2	Oconee River uplands
8	Pm298	KCN	2	Oconee River uplands
11	Pm471	BS	2	Lick Creek uplands
11	Pm250	KCN	2	Lick Creek uplands
11	Pm270	KCN	2	Lick Creek uplands
11	Pm407	BS	2	Oconee R. floodplain
11	Pm412	KCN	3	Oconee River uplands
11	Pm430	KCN	2	Oconee minor trib. uplands
11	Pm483	KCN	5	Oconee River uplands
11	Pm490	KCN	2	Oconee River uplands
11	Pm491	KCN	2	Oconee River uplands
13	Ge615	KCN	3	Richland trib. uplands
17	Pm502	KCN	2	Oconee R. floodplain
17	Pm512	KCN	4	Oconee R. floodplain
18	Ge668	KCN	2	Richland trib. uplands
18	Ge669	BS	2	Richland trib. uplands
18	Ge687	BS	2	Richland Creek floodplain
18	Ge921	D	2	Richland Creek uplands
18	Ge944	BS	2	Richland Creek floodplain
23	Ge321	KCN	2	Richland Creek floodplain
23	Ge928	KCN	3	Richland Creek uplands
26	Mg113	KCN	2	Sugar Creek floodplain
26	Mg165	KCN	2	Sugar Creek floodplain
47	Ge830	BS	2	Oconee River floodplain
47	Ge842	BS	2	Oconee River floodplain

Key to Components:

D - Dalton
BS - Big Sandy
KCN - Kirk Corner-notched
KS - Kirk Stemmed
B - Bifurcate

APPENDIX IX

Multicomponent Sites in the Wallace Reservoir.

G.P. Map	Site No.	Components	Site Location
3	Pm217	KCN-KS	Oconee minor trib. uplands
6	Pm396	BS-KCN	Oconee River floodplain
6	Pm397	BS-KCN-KS	Oconee River floodplain
7	Ge549	KCN-KS	Oconee River floodplain
7	Pm361	KCN-B	Oconee River floodplain
8	Ge309	BS-KCN	Richland Creek floodplain
8	Ge409	BS-KCN-KS	Richland Creek uplands
8	Ge423	BS-KCN-KS	Richland trib. uplands
8	Ge486	D-KCN-KS	Richland Creek uplands
8	Pm122	KCN-B	Oconee minor trib. uplands
8	Pm126	BS-KCN	Oconee River uplands
8	Pm588	BS-KCN-KS-B	Oconee River floodplain
11	Ge398	D-BS	Oconee River floodplain
11	Pm410	D-KCN	Oconee River uplands
11	Pm428	BS-KCN	Oconee minor trib. uplands
11	Pm429	D-KCN	Oconee minor trib. uplands
11	Pm436	BS-KCN	Oconee minor trib. uplands
12	Ge153	D-KCN	Oconee River floodplain
12	Ge531	KCN-KS	Oconee River floodplain
12	Ge533	KCN-KS	Oconee River floodplain
12	Pm213	BS-KCN	Oconee River uplands
13	Ge101	KCN-KS	Richland Creek uplands
13	Ge437	D-BS	Richland trib. uplands
13	Ge442	BS-KCN	Richland trib. uplands
13	Ge708	BS-B	Richland uplands
16	Pm527	BS-KCN	Lick Creek floodplain
17	Ge235	D-BS-KS-B	Oconee River floodplain
18	Ge676	D-BS	Richland trib. floodplain
18	Ge899	D-BS	Richland Creek uplands
18	Ge923	D-KCN	Richland trib. uplands
18	Ge941	BS-KCN	Richland Creek uplands
18	Ge945	D-BS	Richland Creek uplands
21	Pm584	D-KCN	Oconee minor trib. floodplain
22	Ge282	KCN-KS	Richland Creek uplands
23	Ge329	BS-KCN	Richland trib. upland
23	Ge353	KCN-KS	Richland Creek uplands
26	Mg116	KCN-B	Sugar Creek upland
33	Ge703	BS-KCN	Oconee River floodplain
47	Ge794	D-KS	Oconee River floodplain
47	Ge819	BS-KCN	Oconee River floodplain

Component Key:

D - Dalton
BS - Big Sandy
KCN - Kirk Corner-notched
B - Bifurcate
KS - Kirk Stemmed

APPENDIX X

Multicomponent, Multipoint Sites in the Wallace Reservoir

Georgia Power Map Number	Site Number	Components	Number of pp/k's	Site Location
3	Pm217	KCN-KS	2-1	Oconee minor trib. uplands
7	Pm361	KCN-B	2-1	Oconee River floodplain
8	Ge309	KCN-BS	1-2	Richland Creek floodplain
8	Ge409	KCN-BS	2-3	Richland Creek uplands
8	Ge423	KCN-BS-KS	2-1-1	Richland Creek uplands
8	Pm588	KCN-BS-KS-B	3-1-1-1	Oconee River floodplain
11	Pm410	D-KCN	2-1	Oconee River uplands
11	Pm428	KCN-BS	2-1	Oconee minor trib. uplands
11	Pm429	KCN-D	5-1	Oconee minor trib. uplands
11	Pm436	KCN-BS	2-1	Oconee minor trib. uplands
12	Ge153	KCN-D	3-1	Oconee River floodplain
12	Pm213	KCN-BS	2-3	Oconee River uplands
13	Ge101	KCN-KS	2-1	Richland Creek uplands
13	Ge442	BS-KCN	2-1	Richland trib. uplands
13	Ge708	BS-B	3-1	Richland Creek uplands
18	Ge676	BS-D	3-1	Richland trib. floodplain
18	Ge941	KCN-BS	4-2	Richland Creek uplands
18	Ge945	BS-D	2-1	Richland Creek uplands
22	Ge282	KCN-KS	2-2	Richland Creek uplands
47	Ge819	KCN-BS	3-5	Oconee River floodplain

Component Key:

D - Dalton
BS - Big Sandy
KCN - Kirk Corner-notched
KS - Kirk Stemmed
B - Bifurcate

APPENDIX XI. Backhoe Testing Results – Number and Density of Early Archaic Sites in Four Subsurface Transects of the Wallace Reservoir (Ledbetter 1979)

Transect Number	Oconee River			Richland Creek			Major Oconee Tributaries Lick Creek			Sugar Creek			Apalachee River		
	Levee	High Terrace	Upland	Levee	High Terrace	Upland	Levee	High Terrace	Upland	Levee	High Terrace	Upland	Levee	High Terrace	Upland
I # of Sites Density Area (hectares)	3 (.30) 10	1 (1.00) 1	3 (.04) 67	2 (.33) 6	no high terrace	16 (.10) 166									
II Sites Density Area (h)	2 (.29) 7	- - 20	- - 28				no levee preserved	- - 2	2 (.17) 17						
III Sites Density Area (h)	- - 4	6 (.11) 54	- - 9	1 (1.00) 1	- - 2	2 (.50) 4				1 (.33) 3	2 (.17) 12	- - 12			
IV Sites Density Area (h)	2 (.29) 7	1 (.02) 54	no upland in transect										1 (1.00) 1	- - 34	no uplands in transect
Totals	7 0.25 28	8 .06 129	3 .03 104	3 .43 7	- - 2	18 .11 170	0	- - 2	2 .12 17	1 .33 3	2 .17 12	- - 12	1 1.00 1	- - 34	0

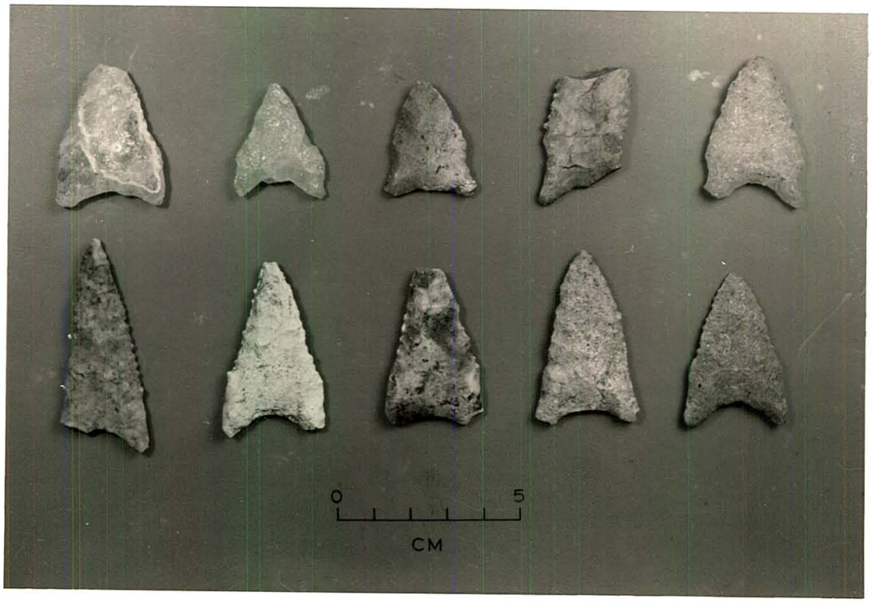

Plate 1. Dalton Projectile Point/Knives from the Wallace Reservoir.

Top Row, left to right:	9Pm429	quartz
	9Ge524	quartz
	9Ge437	Piedmont chert
	A124	Ridge and Valley chert
	A961	quartz
Bottom Row, left to right:	9Ge527	Coastal Plain chert
	9Ge399	Coastal Plain chert
	9Pm410	Coastal Plain chert
	9Ge899	orthoquartzite
	9Ge486	orthoquartzite

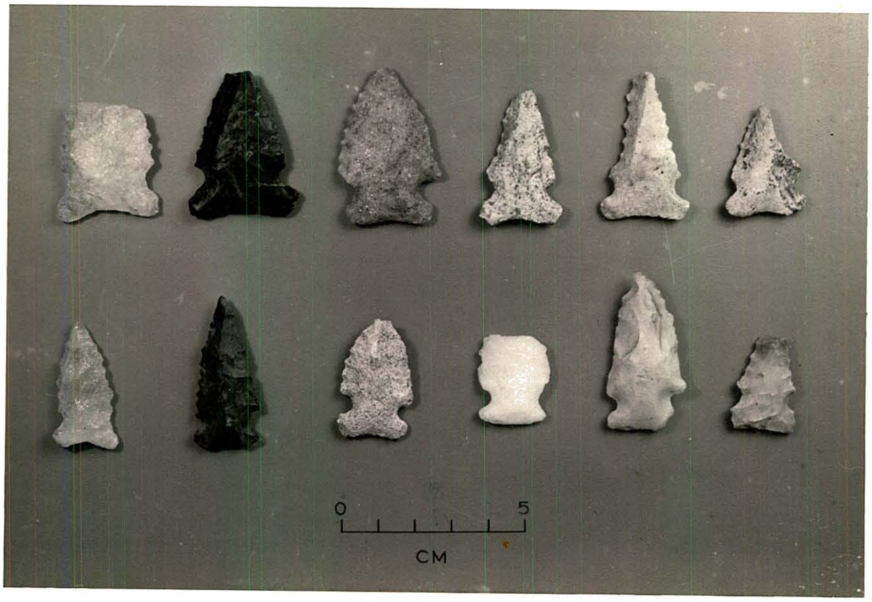

Plate 2: Big Sandy Projectile Point/Knives from the Wallace Reservoir

Top Row, left to right:	A777	quartz
	9Mg28	Ridge and Valley chert
	9Ge723	orthoquartzite
	9Ge437	orthoquartzite
	9Ge343	Coastal Plain chert
	9Ge423	Coastal Plain chert
Bottom Row, left to right:	9Pm213	quartz
	9Ge812	Piedmont chert
	An30	Piedmont chert
	9Ge708	quartz
	9Ge669	Coastal Plain chert
	9Ge409	Coastal Plain chert

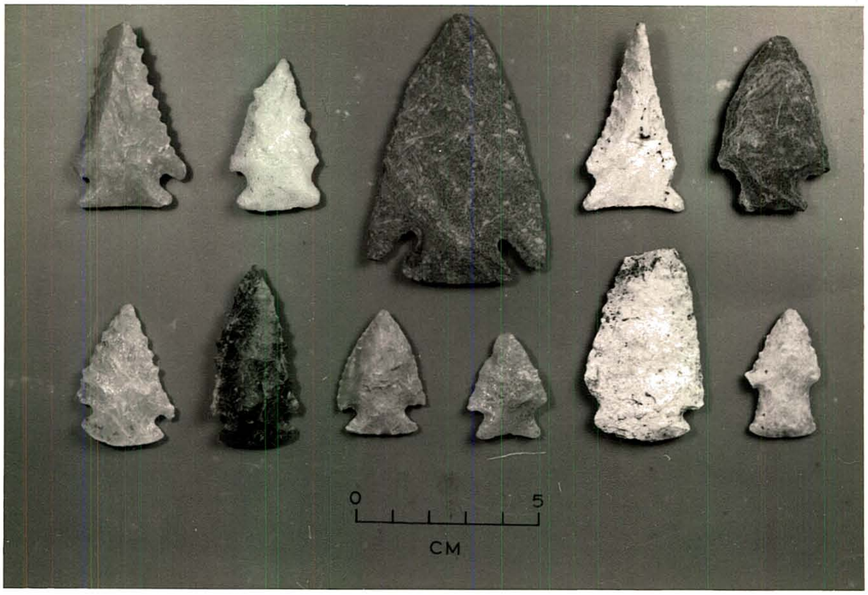

Plate 3: Kirk Corner-notched Projectile Point/knives in the Wallace Reservoir.

Top Row, left to right:	9Ge347	Coastal Plain chert
	9Ge410	quartz
	9Pm588	Unidentified chert
	9Pm362	Coastal Plain chert
	9Ge146	metavolcanic
Bottom Row, left to right:	9Pm491	quartz
	9Mg213	Unidentified chert
	9Pm489	Coastal Plain chert
	9Ge427	quartz
	9Ge482	Coastal Plain chert
	9Ge426	Coastal Plain chert

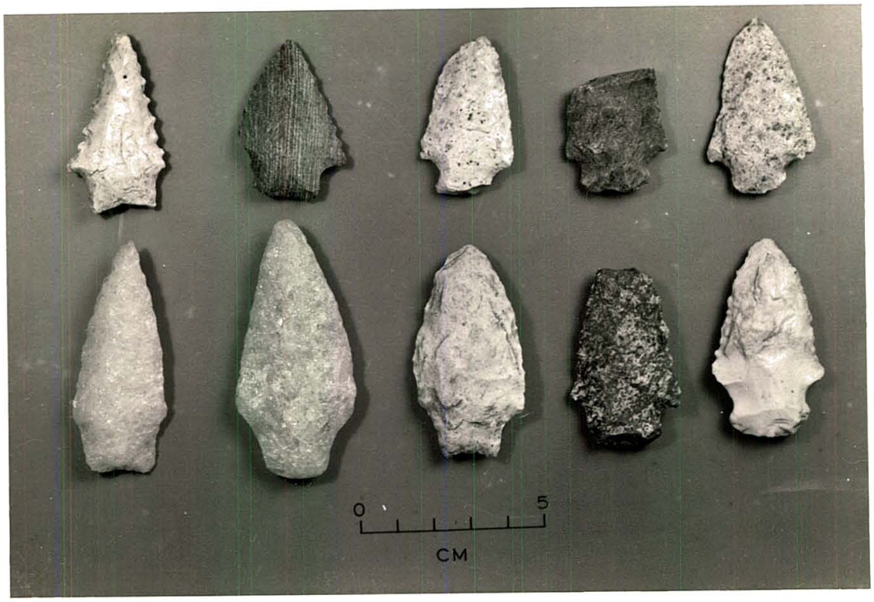

Plate 4: Kirk Stemmed/Serrated Projectile Point/Knives in the Wallace Reservoir.

Top Row, left to right:	Ac359	Coastal Plain chert
	9Ge443	metavolcanic
	9Ge363	Ridge and Valley chert
	9Ge486	orthoquartzite
	9Pm284	orthoquartzite
Bottom Row, left to right:	9Ge948	quartz
	9Ge410	quartz
	9Ge193	Coastal Plain chert
	9Ge353	Piedmont chert
	9Ge409	Coastal Plain chert

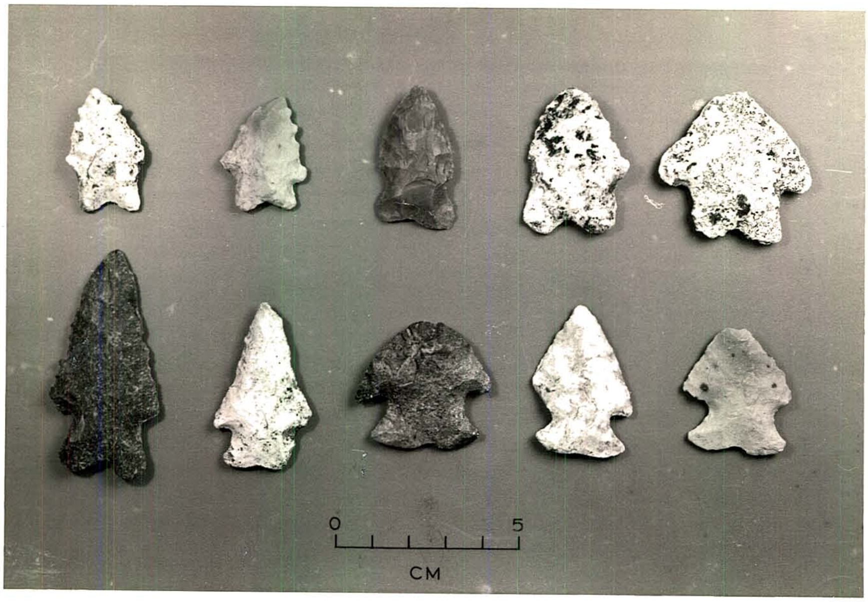

Plate 5: Bifurcate Projectile Point/Knives in the Wallace Reservoir.

Top Row, left to right:	9Ge244	Coastal Plain chert
	9Mg183	Coastal Plain chert
	9Pm361	Ridge and Valley chert
	9Pm346	Coastal Plain chert
	9Ge742	Coastal Plain chert
Bottom Row, left to right:	A299	Ridge and Valley chert
	9Ge235	Coastal Plain chert
	9Ge816	Piedmont chert
	9Pm513	Coastal Plain chert
	9Pm588	Coastal Plain chert