

THE ARCHAIC PERIOD IN NEW JERSEY  
(ca. 8000 B.C. - 1000 B.C.)

by

Herbert C. Kraft and R. Alan Mounier

Introduction

This chapter deals with the Archaic Stage or Period (ca. 8000 B.C.-1000 B.C.) in New Jersey. Among the elements reviewed in this section are: 1) the nature and distribution of Archaic sites; 2) the culture, history, and chronology of the Archaic Period as perceived in New Jersey; 3) the kinds and quality of past archeological research concerning the Archaic Period in this region; 4) the biases and limitations of past research; and 5) the kinds of research and information required for the intelligent and responsible management of Archaic and other archeological resources in New Jersey.

The Archaic Period or Stage, as first defined by Ritchie (1932), denoted "an early level of culture based on hunting, fishing and gathering of wild vegetable foods, and lacking pottery, the smoking pipe, and agriculture" (Ritchie 1969:31). Among archeologists, the term "Archaic" is now generally taken to mean a period of time and/or a stage of cultural development characterized by a hunting and gathering economy based upon the seasonal exploitation of natural resources by relatively small, mobile bands.

Chronologically later than the Paleo-Indian Period or Stage, the Archaic represents a continuous cultural adaptation to new environments emerging in post-Pleistocene times. The more efficient Archaic adaptation is thought to have allowed (or to have spurred) population growth without the benefits of horticulture or the need of other wholesale environmental manipulations.

The material remains associated with Archaic sites illustrate this adaptation. Hunting was carried out with a wide variety of chipped stone projectile points, chiefly of stemmed or notched styles (Figure 1 a-k; Figure 2 a-t). Spears or javelins armed with such points were probably propelled by means of an atlatl or spear-throwing device, as indicated by the discovery of stone weights or "bannerstones" (Figure 1 s-u). Fish may also have been speared, but net fishing is certainly implied by the existence of notched (Figure 2 y) and, rarely, perforated stone sinkers (Sargent 1953:5,6; Kraft 1975:13). Advances in woodworking technology are manifested in the appearance of stone axes, adzes, celts, and gouges commonly fashioned by chipping, pecking, and grinding (Figure 1 p-r, w-aa). Stone knives, scrapers, choppers, perforators, drills, hammerstones, and abraders comprise a class of fabricating or general utility

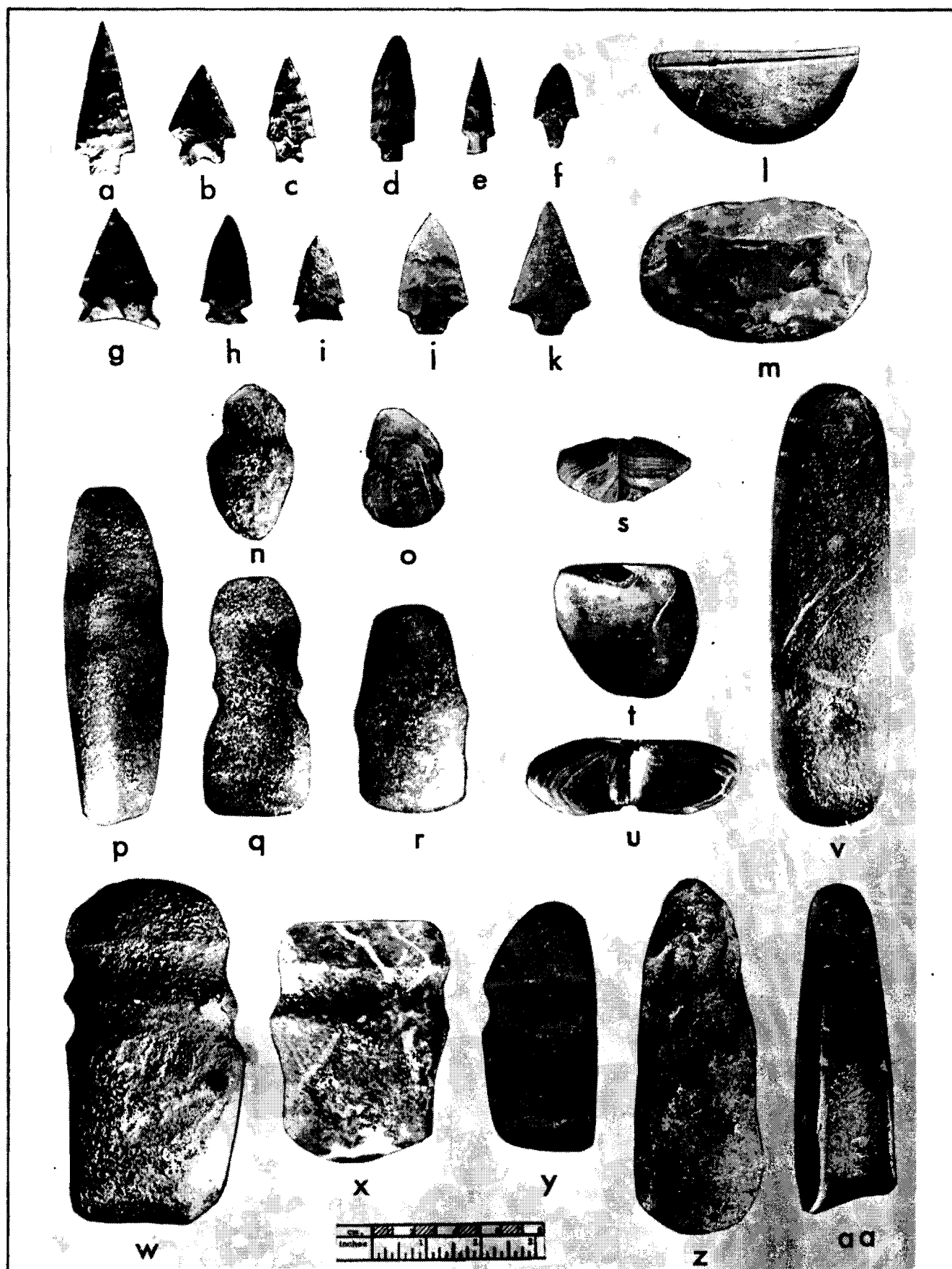


Fig. 1. Artifacts of the Archaic Period. a-c, projectile points with bifurcated bases; d-f, straight- and tapered-stem points; g-i, corner- and side-notched points; j,k, Snook Kill and Koens-Crispin points of Late Archaic. l, semilunar knife of ground slate; m, chipped flint chopper; n, plummet; o, notched flat pebble net-sinker; p-r, grooved and knobbed adzes; s-u atlatl weights or "bannerstones"; v, pitted pestle or mano; w-y, double- single- and 3/4 grooved axes; z, chipped celt; aa, pecked and polished gouge. (Collection of Seton Hall University).

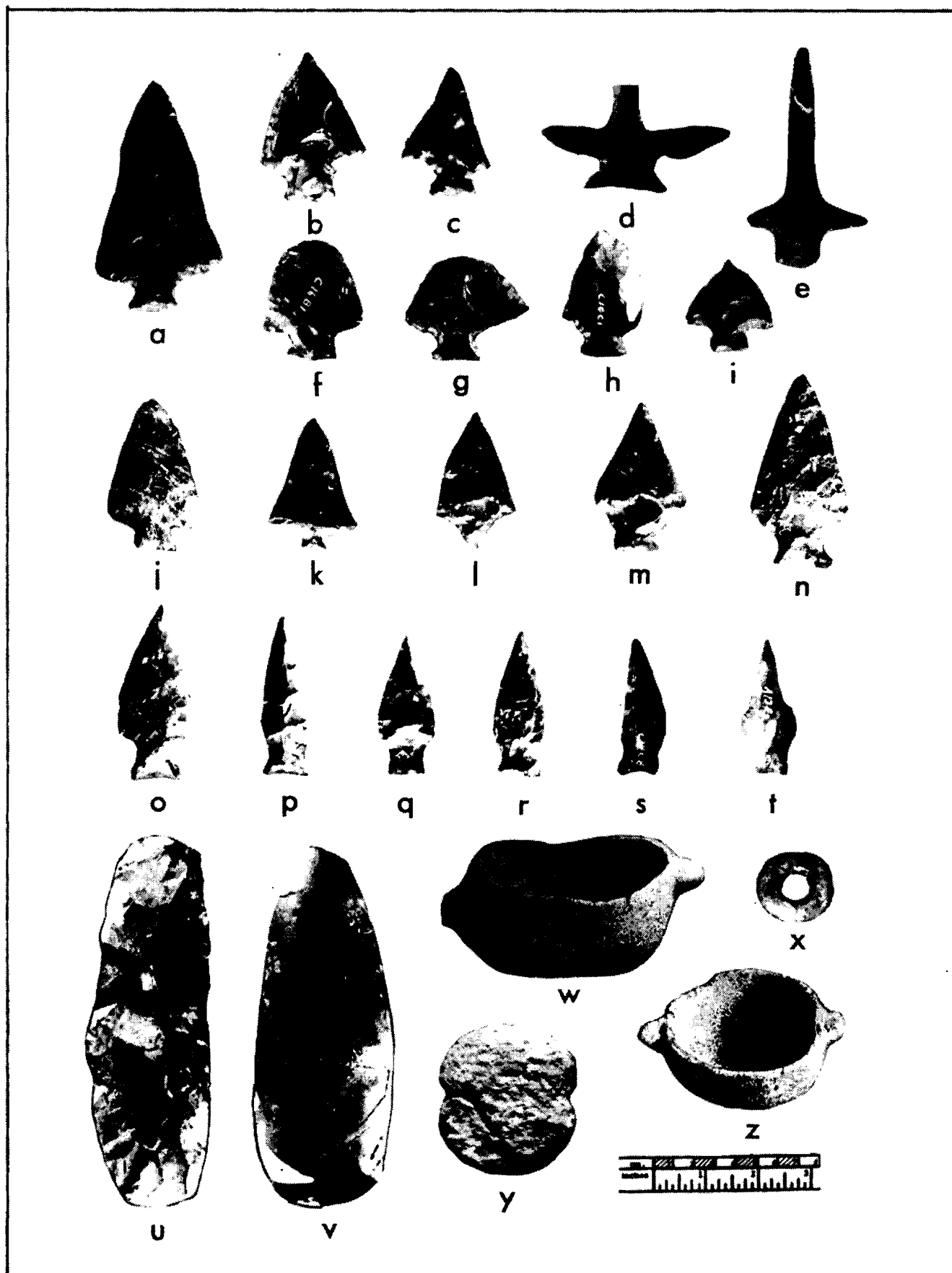


Fig. 2. Late Archaic and Terminal Archaic Period. a-c,j, Perkiomen Broadspears; d,e, winged drills; f,g, end scrapers made from reworked Perkiomen spearpoints; h, knife; i, Perkiomen broadspear converted into graver; k,l, untyped broadspears; m,n, Susquehanna broadspears; o-r,v, Orient Fishtail points; s, fishtail knife; t, fishtail drill; u, chipped celt or adze; v, pecked and polished celt; w,z, steatite or soapstone bowls; x, steatite bead or perforated disk; y, notched flat pebblesinker. Artifacts w,z, are much reduced, all others to scale. (Collection of Seton Hall University).

tools (Figure 1 l-m; Figure 2 d-i). A well developed bone and antler industry is represented in the Archaic tool kit from certain out-of-state sites (Ritchie 1969:47ff), but such items have apparently failed to survive in the archeological context in New Jersey.

In Late Archaic times, bowls were carved from soapstone and talc (Figure 2 w,z) and no doubt from perishable materials as well. These bowls foreshadowed the development of a subsequent ceramic technology.

The broad patterns of Archaic cultural development extended over all of eastern North America and persisted for several millenia beginning at the end of the Paleo-Indian era. Recognizable within the conceptually uniform Archaic pattern are numerous local or regional variations which appear to reflect the cultural-ecological adaptations to specific environmental settings, the interaction of local groups, and the rise of regional traditions.

On the eastern seaboard, the chronology, though still vague, appears to cover the period from 8000 B.C. to 1000 B.C. Some scholars, particularly in the southeast where archeological evidence for Archaic cultures is more abundant and better preserved, have segmented arbitrarily this vast time period into an Early Archaic, dating from ca. 8000-6000 B.C., a Middle Archaic from ca. 6000-4000 B.C., and a Late Archaic from ca. 4000-1000 B.C. (Fowler 1959; Griffin 1978). There is some justification in following this convention in New Jersey as well. In the Mid-Atlantic region, the Late Archaic is sometimes further subdivided by the addition of a "Transitional" or "Terminal Archaic" substage or period (ca. 1500 B.C.-1000 B.C.).

It is important to recognize that these archeological periods represent heuristic constructs that aid in the organization and analysis of data; they do not necessarily have any reality outside the theoretical framework since the changes from one period to the next are not necessarily marked by radical innovations or sharp breaks in lifeways as defined archeologically. In fact, the basic hunting, fishing, and foraging way of life apparently continues throughout this vast period of time. The changes perceived in the archeological record during Archaic times for the most part represent technological modifications which reflect ongoing human adaptations to changing environmental conditions.

In most of New Jersey, the Archaic Period has not been studied in any detail, and many serious problems await resolution. To date, only a few sites have been excavated adequately and most of these are small, multi-component and non-specific, even where the plow has not already disturbed the prehistoric cultural associations. The generally acidic soils in New Jersey have dissolved most of the Archaic human burials as well as faunal and floral remains, and

artifacts manufactured from bone, antler, wood, and other perishable materials. Archaic Period house patterns are unknown, and only the most general and hypothetical judgments can be made concerning settlement patterns, social structures, religious attitudes, and many aspects of the Archaic Period economy and technology.

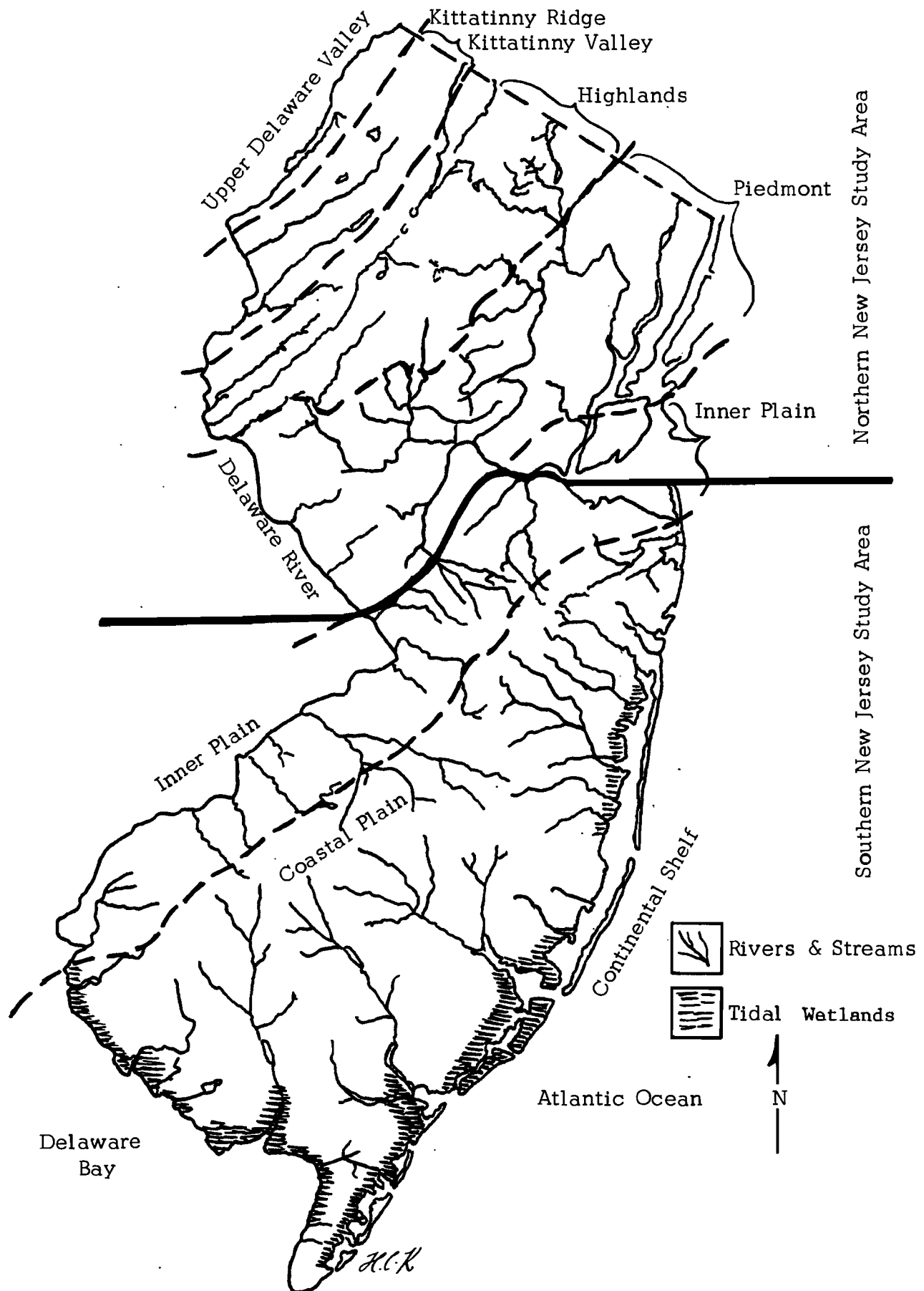
In the face of growing population densities and increasing development pressures, there is an urgent need to develop practicable and prudent management policies to insure the conservation of Archaic sites and other cultural resources in New Jersey. The following presentations have been compiled in order to define the present state of knowledge with respect to the Archaic Period or Stage in New Jersey, to indicate the value of Archaic cultural resources to an understanding of New Jersey prehistory, and to demonstrate the immediacy of the need for a commitment to the conservation of cultural resources.

#### Geography and Prehistoric Environment

In the past, as now, New Jersey was an area of remarkable environmental diversity. These conditions enabled geographers to divide the state into five major geographic or physiographic provinces, each of which comprises a unique combination of geological formations, soils, and landforms. These physiographic provinces are as follows: 1) Ridge and Valley; 2) Highlands; 3) Piedmont; 4) Inner Coastal Plain; and 5) Outer Coastal Plain (Widmer 1964; Wolfe 1977). Each of these regions contains a wide variety of habitats which, in many cases, were valuable to prehistoric populations in terms of subsistence and settlement. Although the focus of the present discussion is on New Jersey, it is important to realize that none of the physiographic provinces is contained entirely within the political boundaries of the state. Research on archeological cultures in adjoining states, therefore, has some relevance to the study of prehistory in New Jersey as well.

For the purposes of this presentation, northern New Jersey is considered to encompass all of the state north and west of a line from Trenton to Raritan Bay (Map 1). It thus includes all of the physiographic zones north of the coastal plains. This region has an extremely varied topography and diverse natural resources, some of which were affected dramatically by glacial and post-glacial conditions.

Today, the northeastern part of the state is characterized by coastal, riverine, and estuarine lowlands along the interface of the Coastal Plain and the Piedmont region of the lower Hudson and Raritan Bay. In Early Archaic times, a broad expanse of continental shelf, now covered by ocean waters, was exposed for a distance of over 80 miles east of the present shore line (Edwards and Emery



Map 1. Physiographic subprovinces and principal riverine systems in N.J. The arbitrary division between the Northern and Southern study areas is indicated.

1977:253; J. Kraft 1977:63). The Hudson Channel bisected this land mass, large bays and deep estuaries indented the coastline, and lakes of considerable size permeated the relatively level surface (Kraft 1977a:4). In Early Archaic times, the Piedmont Plain, extending westward to the Ramapo, Greenpond and Schooley's Mountains, also contained the remains of two large bodies of water -- glacial Lake Passaic impounded by Hook Mountain, and glacial Lake Hackensack beyond the Palisades (Wolfe 1977).

The numerous hills and valleys that comprise the Highlands physiographic province, extending to the Pohatcong, Jenny Jump and Sparta Mountains, trend in a northeast-southwest direction. The intermountain valleys, waterways, and mountain gaps directed both human and animal traffic for millenia, and in time, these "Indian Trails" suggested the most reasonable paths for wagon roads and railroads as well. Glacial ponds and lakes, marshes, rivers, and numerous feeder streams provided ecological resources that invited exploitation and temporary settlement; while, the mountainsides contained overhangs or rock shelters which served the Indians as stop-overs and short-term abodes.

The Kittatinny Valley, between the Highlands and the Kittatinny Ridge, is transected by the Pohatcong, Pequest and Paulins Kill Rivers which drain into the Delaware River below the Water Gap, and the Wallkill River which flows north into the Hudson. The so-called "mucklands" and "black dirt" areas in Warren and Sussex Counties, which constitute such rich farmlands today, were extensive marshlands and remnants of glacial lakes during Early Archaic times. These attracted a succession of Indian hunting-gathering bands until early historic times.

The Kittatinny Mountains and the Delaware River identify the northwesterly portion of the state. This region provided raw materials and natural food resources for both humans and animals from earliest times. The Delaware Valley floodplain has preserved some of New Jersey's best evidence of Archaic cultures in deeply stratified contexts.

Southern New Jersey includes the Inner and Outer Coastal Plains which occupy the southern three-fifths of the state, south and east of a line from Staten Island to Trenton (Map 1). New Jersey's coastal plains form part of a larger geologic province that extends along the Atlantic Coast from Cape Cod to Mexico (Hunt 1976:173-167; Widmer 1964:89-90).

The Inner Coastal Plain in New Jersey occupies a narrow strip (about 15 miles wide) that runs from Raritan Bay southwest to the Delaware River as far south as Salem County. The geological boundary between the Inner and Outer Plains is marked by a band of hills or cuestas which are crowned by relatively hard sandstones and gravels. North and west of this line, the Inner Coastal Plain drains respectively into Raritan Bay and the Delaware River. The Outer Coastal Plain drains southward and eastward into the Delaware Bay and the Atlantic Ocean.

Although resulting from similar geological processes, the Inner and Outer Coastal Plains have somewhat different geological histories and markedly different geographic development. The soils in both instances derive from marine sediments reworked by subaerial erosional processes during periods when the landmass was emerging.

Fine sands and loams, underlain by loams, clays, and marl, predominate on the Inner Coastal Plain, whereas most of the Outer Coastal Plain soils are comprised of coarse quartz sand and gravel to a considerable depth. Accordingly, the soils on the Delaware slope tend to be somewhat more fertile and those on the Atlantic slope somewhat less so.

This contrast is reflected in the natural vegetation and wildlife supported in these regions in modern times and in the historical patterns of settlement. Aboriginal settlement has been recognized upon both the Inner and Outer Coastal Plains, and there is suggestive evidence that differences in the distribution of prehistoric populations, and in population densities, across these physiographic zones may represent adaptations to the disparate environmental qualities presented by each region (Mounier 1978).

In Late Paleo-Indian and Early Archaic times, the climate throughout New Jersey was somewhat cooler and palynological evidence from west central and northern New Jersey indicates the presence of a spruce-pine biome at ca. 8000 B.C. (Sirkin 1977:212). Such conifer-dominated forests with their highly acidic soils had a low carrying capacity; they are, therefore, believed to have been unfavorable food resource areas for hunting-gathering peoples. In time, however, this spruce-pine zone was infiltrated by birch, oak, hickory, beech, and alder. By 5000 B.C., and possibly as early as 7000 B.C., oak and hemlock were dominant in the dry cool climate of the Wallkill Valley, while hickory was well established in some warmer areas of western New Jersey. From the very limited pollen studies conducted in New Jersey, to date, it is tentatively concluded that the oak-hemlock subzone persisted through 3180 B.C. and the oak-hickory subzone through 1150 B.C. (Sirkin et al. 1970; Sirkin 1977:213).

The gradual transition from the more boreal mixed pine-oak forests to the more temperate oak-hickory deciduous forests tends to correlate with a notable increase in population in the Middle to Late Archaic Periods. During this time, there is also an increase in beech trees which provided one of the best mast foods for the white tail deer, black bear, turkey, and passenger pigeon (Ritchie 1979:16), and which figured prominently in the Indian's diet. Another natural condition which may help to account for the increase in the size and number of Archaic sites in New Jersey at this time, is the fact that a continuing rise in ocean level caused much of the continental shelf to be submerged. This flooding, in turn, affected



both the human and animal populations which had occupied the forested environments on the shelf, and forced them inland and northward in quest of suitable new territories. Such northward migrations are more likely to have occurred along the remaining coastland where the Gulf Stream and the ameliorating temperatures of the waters allowed up to 30 more frost free days than in the interior highlands; hence, the transition to temperate, deciduous forests there would have been accelerated.

Paleontological studies indicate that the mammoth, mastodon, giant beaver, and moose-elk had become extinct by the end of the Paleo-Indian era, and the caribou and certain other cold-adapted animals had gone north. Apparently by Archaic times, beginning no later than 7,000 years ago, the climate, physiography, and biota in New Jersey had begun to approximate their present conditions (Salwen 1975; Sirkin 1977; Kraft 1977).

### The Archaic Period in Northern New Jersey

by  
Herbert C. Kraft

The following presentation provides a summary of the Archaic Period as perceived currently in northern New Jersey. Comments concerning the characteristics and distribution of Archaic sites in this region are followed by a discussion of Archaic culture history as extrapolated from available archeological data.

#### Types and Sizes of Archaic Period Sites in Northern New Jersey

Diagnostic artifacts of the Archaic Period are encountered on multicomponent sites in various environmental situations. Components of different sizes suggest family or band groups of a corresponding order. So, for example, riverine or lacustrine sites usually provide space and food resources sufficient to accommodate large encampments; whereas rock shelters, because of their limited size and isolated inland or upland locations away from streams or sources of potable water, are invariably small.

The size of an artifact assemblage from any specific Archaic Period site relates directly to the size of the occupying group and the duration of the stay, both of which are influenced by the amount of available food within the environment. Unfortunately, information concerning most Archaic sites is limited and conditioned by what can be observed from examinations of public and private assemblages, usually surface collected over many years from plow disturbed sites, and all too frequently without adequate provenience.

Excavations and conclusions derived from research in the Upper Delaware Valley and in neighboring northeastern states enable archeologists to postulate that floodplain and low lying encampments near rivers, creeks, lakes and marshes, where aquatic and semi-aquatic fauna and marsh birds make up a substantial part of the diet, were probably occupied during the warm weather part of the seasonal cycle. Netsinkers (Figure 2 y) and fishweirs would be more likely to occur here, as would plummets (Figure 1 n) and bolas stones. Heavy tools such as axes, celts, adzes, and gouges (Figure 1 p-aa) would probably also have been used on such open sites for purposes of constructing houses, dugout canoes, wooden bowls, and other types of woodworking. Such riverine sites, especially where anadromous fish might be apprehended easily, or those sites situated on the flyways of migratory birds, could probably accommodate a number of families or bands at the height of the season, thereby permitting a degree of social interaction not possible during the leaner seasons when the groups had to fragment.

Smaller inland stations, rock shelters, and bluff locations where projectile points make up the bulk of the artifact inventory, were probably fall-winter hunting camps used while certain mammals, turtles, frogs and reptiles were in hibernation, when fish and mussels were frozen in the streams and lakes, and after the migratory birds had flown south. Such transitory winter hunting groups could not afford to be encumbered by heavy woodworking or domestic tools such as axes, pestles, or mortars. The projectile points, knives, scrapers, anvilstones, and hammerstones are the tools needed to kill and butcher game, to break bones for the extraction of brain and marrow, and to shell nuts.

Quarry sites present another set of artifacts and waste materials associated with the extraction and utilization of lithic raw materials for the manufacture of projectile points, knives, and other cutting, scraping, or perforating implements. Such sites exist at the argillite quarries in Flemington and Byram, at the flint outcroppings along the Delaware River at Swartswood Lake, and at other loci.

#### Distribution and Survival of Archaic Period Sites in Northern New Jersey

##### COASTAL, HUDSON VALLEY, AND RARITAN BAY AREAS

Fishing and collecting of marine shellfish and crustaceans as well as hunting and gathering of bird's eggs and other edibles, must have been pursued actively along the streams, lagoons, and estuaries which existed formerly on the exposed continental shelf (Edwards and Merrill 1977). Such sites have been all but destroyed by the subsequent rise in sea level (J. Kraft 1977). Nonetheless,

it is possible that old shell middens such as Brennan (1968, 1977) has discovered on the Lower Hudson River and at Twombly Landing in the New Jersey Palisades, may yet exist, intact, in sediments on the borders of the former river valleys now submerged (Funk 1977:329).

The Palisades area facing the Hudson River below Alpine has been destroyed by quarrying and landfill (Kraft 1979). Most of the marine front area from Jersey City to the mouth of Raritan Bay has been landfilled and constructed over for deep water piers, oil refineries, heavy industrial and chemical plants, the Newark Airport, and an ever expanding urban populace. Nonetheless, some Archaic sites may be at least partially preserved under the fill and muck, especially near the mouths of the rivers that flow into Newark Bay, the Arthur Kill, and Raritan Bay. Some terraces and lowlands along the lower Raritan River and along the Bay, not yet commercially developed, may also be productive archeologically, although earlier surveys (Skinner and Schrabisch 1913; Cross 1941) show no prehistoric sites in the area.

#### PIEDMONT PROVINCE

In postglacial times, this region supported two of the largest glacial lakes in the northeast: glacial Lake Passaic and glacial Lake Hackensack. In time, these lakes subsided leaving extensive marshlands such as the Great Swamp, Black Meadows, Great Piece Meadows, and Hatfield Swamp in the area behind Hook Mountain now drained by the Passaic River and Whippany River, and as the vast Hackensack Meadowlands drained by the Hackensack River, Sawmill Creek, and Berry's Creek.

The Hackensack Meadows have long been a dumping ground for New York City and surrounding counties, and much of the area is being developed for a sports complex and malls. Great Meadows is a nature preserve; it is, therefore, somewhat protected. Unfortunately, much of the high ground near the aforementioned marshlands, especially favored by the Archaic Indians, was farmed in years past and many of these farms have now been sold to developers. Some of the Passaic River sites along Great Piece and Troy Meadows, such as the O'Dowd Farm Site in Pine Brook, yielded thousands of Indian artifacts to surface collectors; yet, no scientific archeological excavations have ever been conducted in this area. Almost any undeveloped terrace, hummock, or island in some proximity to these lowlands and marshes is a potential Indian site (Hall 1977; Thomas 1978). Every effort should be made to protect such sites or excavate them professionally, especially since there are no reliable data from any Piedmont site in northern New Jersey. Even such vast marshland areas, as for example the Newark and Elizabeth Meadowlands which are now buried beneath the Newark International Airport, and the Hackensack Meadows, now the site of the "Meadowlands Sports Complex", are capable of yielding archeological information at some future date since the material remains located there are filled over: hence "sealed in".

## HIGHLANDS SUBPROVINCE

This region, consisting of a hilly, mountain and lakes topography, is drained by the Musconetcong River and many lesser streams which afforded excellent campsites and rock shelters for the transitory Archaic bands. The North and South Branches of the Raritan River with tributaries such as the Lamington or Black River, the Musconetcong River, Spruce Run, Little Brook, Paulins Kill, and the Wallkill River have produced Indian sites that have been known and collected since the turn of the century (Skinner and Schrabisch 1913; Schrabisch 1917). Some of these Indian sites have been destroyed by the creation of the Morris Canal, by farming, and by urbanization; while, others have been inundated when Lake Hopatcong, Lake Mohawk, Spruce Run, and similar bodies of water were created or expanded by damming. Numerous marshlands such as Lafayette Meadows and the lowlands adjacent to the Paulins Kill or Wallkill River, for example, are the sites of Archaic Indian encampments.

Recently, hilltop sites, similar to certain "bear wallow" mountaintop sites in West Virginia (Wilkins 1978), were discovered near Saxton Falls in the vicinity of Lake Musconetcong and at other locations in Warren County. Such sites usually center around mountain springs or ponds many of which are now covered by leaves and forest duff. Rockshelters or caves near springs, lakes, or marshes were also significant small band campsites in Archaic times. Many of these, like the Warbasse Rockshelter, have been excavated (Schrabisch 1915:60, 61), but some may yet remain undetected in the vast expanse of hills.

## KITTATINNY VALLEY SUBPROVINCE

This intermountain area between the Highlands and the Kittatinny Ridge is drained by Pohatcong Creek, Lopatcong Creek, Buckhorn Creek, Pophandusing Brook, Muddy Brook, and the Pequest River, among others. Numerous Archaic sites have been reported from this area (Skinner and Schrabisch 1913; Schrabisch 1917; Cross 1941). Since most of the hills and mountains as well as the major streams in northern New Jersey trend in southwest-northeast directions, they served to direct the inland travel of migrating peoples and hunting bands. Gaps between mountains became important shortcuts to eastern and western regions; hence, Archaic sites are often located close to the entrances of such gaps.

## DELAWARE VALLEY SUBPROVINCE

This broad and fertile valley has seen continuous Indian occupations from Paleo-Indian to well into historic times. The Delaware River provided an abundance of fish and fresh water mussels, especially in the spring when shad were running. The forested

slopes of the adjacent Kittatinny Mountains provided firewood, saplings for house construction, and large trunks for dugout canoes as well as nuts, berries, and animals of the forest and forest edge - elk, deer, bear, turkey, raccoon, and others.

The floodplains and terraces adjacent to the river contain numerous Archaic Indian sites, many of them still deeply buried and well preserved. Some excavations, as for example the Miller Field and Harry's Farm Sites, yielded Early Archaic through Terminal Archaic components in datable contexts (Kraft 1970; 1975).

### Culture History

#### PALEO-INDIAN TO ARCHAIC TRANSFORMATION

One of the more perplexing problems confronting prehistoric archeologists in New Jersey and in other areas of the Northeast is the apparent hiatus between the Late Paleo-Indian and Early Archaic Periods as manifested by a seemingly abrupt technological change from the fluted lanceolate spearpoint, characteristic of the Paleo-Indian tradition, to the unfluted, stemmed, bifurcate-base and/or side notched spearpoint of Early Archaic times. Only a very few Plano-like points have been found in New Jersey to date - no Plainview, Scottsbluff, Angostura, or Eden points which mark the transition from Paleo-Indian to Archaic on western sites, for example.

It is, nonetheless, difficult to believe that the Paleo-Indian people had completely abandoned this area. The human populations in New Jersey were doubtless much smaller during these Late Paleo-Indian/Early Archaic times, and animal and land utilization may have been restricted by the spruce-fir parkland biome which could not support an adequate animal population nor produce the plant foods required by people dependent upon hunting and gathering. Nonetheless, it is possible that enough natural resources were available to sustain small bands of hunter-foragers. The answer to the problem may lie in the non-recognition of certain transitional Paleo-Indian/Early Archaic artifacts. Dalton-like points, for instance, are only now being recognized by scholars and collectors in this area, and some projectile points, such as the unfluted Late Paleo-Indian triangles (Kraft 1973:83-84; 1977:12; Brennan 1977:413-414) are easily mistaken for projectile points from a later time. Such unfluted terminal Paleo-Indian triangular points have been found recently at the Turkey Swamp Site in Monmouth County (John Cavallo, personal communication).

#### EARLY ARCHAIC (ca. 8000 - 6000 B.C.)

It is now fairly well established that the Early Archaic of New Jersey is characterized mainly by diagnostic projectile points first identified on archeological sites in the Carolina Piedmont (Coe

1964) and at the St. Albans Site in West Virginia (Broyles 1971). The bow and arrow was unknown during Archaic times and hunting weapons consisted of spearpoints affixed to thrusting or throwing shafts. Such spearpoints include St. Albans Side Notched, LeCroy Bifurcate Base, Kanawha Stemmed, Kirk Corner Notched, Kirk Stemmed, Stanley Stemmed, Kessell, Mac Corkle, Palmer, Hardaway Side Notched, and Charleston Corner Notched, among others (see Coe 1964; Broyles 1966, 1971). These spear or javelin points are poorly represented on any site but their presence in many parts of the state indicates at least two directions of cultural influence or small band population movements into New Jersey.

One such influence came from the south along the broad coastal plain in the wake of the northwardly expanding Carolinian biotic province (the temperate deciduousconiferous forest environment with its larger and more abundant faunal associations which at that time included elk, deer, bear, beaver, raccoon, turkey, migratory water fowl, fish and shellfish; turtles, and frogs). This mixed forest would probably have taken hold more readily along the New Jersey coastal areas where the freeze-free period consisted of 180-210 days (U.S.D. of C. Climatic Atlas 1968; Ritchie 1979:17). A second movement of Early Archaic peoples may have drifted northward along the eastern slopes of the Appalachian mountain chain directly into the Delaware Valley and the more easterly Highlands and Piedmont regions (Kinsey 1977).

In addition to the aforementioned spearpoints, which are readily identified with the type specimens from North Carolina or West Virginia, there are also variations of the basic type and innovative examples which may have no counterparts in the Southeast. Of course, such spearpoints were used to kill large and small game. Other artifacts made and used by the Early Archaic peoples in this area are drills, perforators, gravers, and a wide variety of scrapers useful in working on hides, bone, antler, wood, or bark. Knives were manufactured for cutting and skinning; grubbing tools, choppers, anvilstones, hammerstones, and teshoas were used in breaking bones for the extraction of marrow or for processing nuts, roots and other foods; and netsinkers were used for taking fish and fowl (Kraft 1975:13). The chipped flint adze (Figure 1 z) may have been the only heavy woodworking tool since axes, celts, and gouges were apparently unknown at this early time. Cooking is evidenced by small, shallow, rock-free firehearths (Kraft 1975:15ff); however, there is no evidence for vessels or containers. Storage bags of skin and nets may be inferred.

Very little is known concerning the nonmaterial aspects of Early Archaic cultures. Some trade and borrowing may have taken place but nothing is known concerning ceremonialism, religious rites, or beliefs in life after death. There is, likewise, no evidence of art or aesthetics except perhaps in the patterned lines of the projectile points.

Archeological evidence suggests that the Early Archaic populations were comprised of numerous small bands of transhumant hunters, fishers, and gatherers. The population density was probably low and varied with the season and ecosystem being exploited. Most of the archeological data, consisting entirely of lithic artifacts, have been gathered from plowed fields and eroded terraces and embankments by "Indian relic collectors" over a period spanning at least a century. Less than a dozen sites in New Jersey and adjacent states have been excavated under controlled conditions. Of these, three are located in the Upper Delaware River Valley: the Harry's Farm Site (Kraft 1975); the Rockelein Site (Dumont 1979); and the Shawnee-Minisink Site (McNett et al. 1977). One site on the eastern perimeter of the state, the Twombly Landing Site in Palisades Park, also yielded Early Archaic artifacts (Brennan 1968). All the other excavated sites were located on Staten Island (Ritchie and Funk 1971) and on the east bank of the Hudson River in the vicinity of Croton, New York (Brennan 1977).

From an examination of numerous public and private collections of Indian artifacts gathered from northern New Jersey sites, it can be stated that Early, Middle, and Late Archaic peoples could have settled, at least temporarily, on any hummock, knoll, terrace or embankment overlooking a river, lake, spring, marshland, or suitable coastal-estuarine environment.

Louis Brennan's excavations at Twombly Landing and along the Croton River and Lower Hudson River have clearly demonstrated that Early and Late Archaic peoples exploited the oyster beds, and that they were responsible, at least in part, for the resultant shell middens (Brennan 1977). Other evidences of riverine exploitation come from the Harry's Farm Site on the Delaware River (Kraft 1975:11-12) and the Rockelein Site (Dumont 1976:46), where net-sinkers were discovered in Kirk-related assemblages radiocarbon dated to 5570-5370 B.C.  $\pm$  120 years. Similar artifacts have also been reported from Early Archaic sites out-of-state (Funk 1977:33). Such net weights from major river sites suggest the possible seasonal exploitation of anadromous fish, such as shad.

#### MIDDLE ARCHAIC PERIOD (ca. 6000 - 4000 B.C.)

Griffin (1978:229-30) suggests that the general vegetational pattern had acquired a completely modern appearance by Middle Archaic times. While human adaptation to, and exploitation of, the environment had not changed very much, a number of new technological developments appeared during this period. These include the grinding and polishing of stone implements and the production of tools from bone. Additionally, Griffin sees some early indications of increasing status differentiation among the band members.

In northern New Jersey, evidence for the Middle Archaic is very tenuous, being based mainly on typological similarities with southeastern spearpoints such as Morrow Mountain, Stanley and certain Big Sandy-like points, or with Neville-like points from New England (Lewis and Lewis 1961; Broyles 1971; Dincauze 1976). Only one deeply stratified New Jersey site - the Rockelean Site in the Upper Delaware Valley - has yielded Middle Archaic points in situ (Dumont 1979:50). Some additional information has been provided by excavations on Staten Island (Ritchie and Funk 1971) and the Lower Hudson Valley where riverbank sites have produced Hunterbrook Triangles and "broad blades with notches, usually small, at or just above the basal corners" (Wingerson 1976; Brennan 1977:419). Radiocarbon dates for these Middle Archaic shellmidden sites fall between 5000 - 3845 B.C. (ibid.).

Although Middle Archaic projectile point types have been observed in surface collected assemblages from riverine, lacustrine, estuarine, and marshland sites widely dispersed across northern New Jersey, they are nowhere abundant. Such sites are invariably multicomponent and because of intensive plowing and surface disturbance, the contextual associations have usually been destroyed. In fact, so little is known about the Middle Archaic Period in northern New Jersey and adjacent areas that it has been customary to combine it either as Early and Middle Archaic (Dincauze and Mulholland 1977; Funk 1979) or with the Late Archaic (Kinsey 1972:332; Kraft 1974).

#### LATE ARCHAIC (ca. 4000 - 1500 B.C.)

Sites of the Late Archaic Period tend to be larger than those of preceding times and give evidence of recurrent habitation, sometimes over long periods of time. Many more areas appear to have been occupied, and closely related complexes in somewhat restricted areas suggest band or group hunting territories. New and better tool types, a more efficient exploitation of natural resources, and increases in the food supply resulting from the now well established deciduous broadleaf forests, provided for a rapid expansion in the population.

The Late Archaic people hunted with spears or lances tipped with a wide array of stemmed, side-notched, or corner-notched points. These tools were made chiefly from locally available materials such as shale, argillite, quartzite, flint or chert, and jasper; but, there is also considerable evidence for the use of raw materials and finished goods transported or traded over long distances. "Bannerstones" or atlatl weights in a variety of forms (Figure 1 s-u), usually well finished and drilled but sometimes grooved and tied on, attest to the use of the atlatl or spear



thrower. Another implement of the chase, bolas stones, were supposed to have been used chiefly in the downing of marsh birds; "fishspears", harpoons, and netsinkers suggest the importance of fishing.

Millingstones, mullers, mortars, and pestles (Figure 1 v) were domestic implements used in the processing of plant foods, all of which were gathered. There is archeological evidence, for example, for the use of acorns, hickory nuts, and chenopodium. The cultivation of crops was as yet unknown in this area; hence, there are no identifiable gardening tools. Chipped and/or pecked and polished adzes, celts, choppers, and notched or grooved axes (Figure 1 p-z) were employed in a wide range of household or woodworking tasks. A great deal of effort and attention to detail was lavished on certain of these tools but others were purely functional, their casual employment being reflected in rather crude chipping or unfinished appearance. Knives too were more or less elaborate depending upon need or function. Some, like the slate ulu or semi-lunar knife (Figure 1 l), were designed specifically as knives. Others consisted of a spearpoint hafted presumably in a short handle; the evidence of use as a knife being sometimes manifested by dulling or wearing along the cutting edge. Still other knives consisted only of large, sharp, unmodified flakes or spalls.

Throughout the entire Archaic Period, there appears to have been a lively exchange of populations, cultures, and technologies among peoples from the Southern Piedmont to New England and to the Appalachians and beyond. There was also a great deal of local innovation and technological adaptation to local resources and the demands of a particular environment.

The Late Archaic Period in New Jersey manifests at least two identifiable cultural influences or incursions which profoundly affected the indigenous populations and the archeological record. One of these had its origins in the south and apparently advanced northward along the coast; the other came from the north.

The southern influence has been identified as the Piedmont Archaic Tradition (Kinsey 1972, 1977) and also as the Appalachian (Ritchie 1969), Taconic (Brennan 1976), Small Stemmed (Ritchie 1965a) and Coastal Tradition (Byers 1959). The way of life represented by this Piedmont Archaic Tradition is essentially the same as that of former times; people were still hunting, fishing and foraging, albeit in the more favorable environment of the now well established Carolinian Biotic Zone capable of sustaining a greater wildlife population.

The projectile point used by the newcomers, and apparently also adopted or modified by the established indigenous populations, are the primary diagnostic feature of this Piedmont Archaic Tradition.

Such projectile points have relatively long and narrow blades with generally weak shoulders, and straight, expanding or converging stems, and some are roughly side or corner notched (Figure 1 d-i). Among the identified projectile points of this tradition which are widely distributed across northern New Jersey are the Bare Island, Poplar Island, Lackawaxen Stemmed, Taconic Stemmed, Wading River, Sylvan Lake Side Notched, and possibly Lamoka and Normanskill points, among others (Ritchie 1971; Brennan 1967). Such projectile points are commonly made of locally available materials including shale, slate, argillite, quartz or quartzite, and rhyolite but less frequently from the fine grained cryptocrystalline flints, cherts, or jaspers. The spear or javelin points mounted on appropriate shafts were discharged presumably by means of spear throwers, as evidenced by the many atlatl or spear-throwers weights of the winged form, either drilled or tied on (Figure 1 s-u).

Domestic implements and processing tools associated with the Piedmont Tradition include knives, scrapers, choppers, drills, and such pecked and/or ground implements as mortars, pestles, milling stones, grooved axes, chipped celts, chisels or wedges, adzes, hammerstones, anvilstones, and pitted or bipped stones and net-sinkers.

The northern influences are manifested in certain projectile points of the Brewerton, Vosburg, and Beekman Triangle types, among others, but Otter Creek and Genesee points (Ritchie 1971:40-41, 24,25) are rarely encountered. Semi-lunar knives or ulus (Figure 1 l) are not common. Plummets and gouges (Figure 1 n, aa) are seldom seen; and, the plano convex adze and polished slate points are extremely rare.

Bone, antler, wooden tools, and basketry datable to the Late Archaic Period have survived in certain out-of-state sites and in rockshelters but, as of this writing, none have been found in New Jersey's highly unfavorable soils. Postmolds and patterns for Late Archaic houses have also eluded archeologists but they have been preserved in Massachusetts (Robbins 1971) and New York (Ritchie 1969:73-74).

Burials, either inhumated or cremated, have not been found on any Archaic site in northern New Jersey. Hence, there is no first hand evidence concerning the dead or belief in a life hereafter.

#### TERMINAL ARCHAIC (ca. 1500 - 1000 B.C.)

The Terminal Archaic, formerly called the "Transitional" stage or period (Witthoft 1953; Ritchie 1969; Funk 1976; Kraft 1974), is an archeological division that recognizes yet another change in projectile point morphology from the aforementioned styles to spearpoints that are broader, proportionately thinner and skillfully

made, sometimes with quite eccentric configurations (Figure 2 a-c, j-n). It is not altogether certain where the broadspear tradition began but once again, the initial impulse appears to have been somewhere in the southern Piedmont area where typologically similar spear points, as for example the Savannah River Stemmed point, have been associated with soapstone bowls and full grooved axes in a context dated ca. 2000 B.C. (Coe 1964:119).

The Koens Crispin, Snook Kill, Perkiomen Broadspears, and Susquehanna Broadspears (Kraft 1970:55-73; Ritchie 1971) of this time were apparently quite large to begin with (Figure 1 j,k; 2 a-n) and were frequently resharpened and reformed. Broken points were seldom discarded as long as their bases were intact. The points or distal edges were simply retouched to form new tools: knives, scrapers, graters, and drills (Figure 2 d-i). The spearthrower, balanced with an atlatl weight or "bannerstone", was still in use. Towards the end of this Terminal Archaic Period, the broadspears gradually gave way to more slender forms such as the Orient Fishtail points (Figure 2 o-t).

There is ample evidence to demonstrate that the people of this time were living much the same as the hunter-fisher-gatherers of former times. They were preparing their food over small, shallow hearths or by means of "hot rock cooking" or "stone boiling". However, some time during the Terminal Archaic, a new method of cooking using steatite or talc pots was introduced (Figure 2 w,z). There is still uncertainty about when such stone cooking vessels were brought into the area but it is known that soapstone utensils were in regular use by Orient times ca. 1220 B.C. (Kraft 1970:105-115). Ritchie (1959, 1969:177) has even shown that such steatite vessels were ritually "killed" and included among the burial offerings associated with cremated human remains attributable to the Orient culture on Long Island. Recently, such a cremation site was discovered along the Pequest River in New Jersey by a local collector and "excavated" with consequent loss of much information.

Excavations in the Delaware Valley (Kraft 1970, 1975; Kinsey et al. 1972; Kinsey 1975), have provided important insights concerning the riverine adaptations by such broadspear and fishtail point using peoples. Many of the spearpoints and steatite bowls or bowl fragments have also been found on interior sites especially in and around marshlands like the Great Meadows and Great Swamp, and as far east as Twombly Landing and Staten Island. Unfortunately, no controlled excavations have been conducted in northern New Jersey beyond those in the Delaware River Valley and at Twombly Landing (Brennan 1968). Hence, information on the Late Archaic Period in other environmental settings is woefully inadequate.

Towards the end of this time period, the first true pottery made its appearance in northern New Jersey. The earliest ceramic vessels have been named Marcey Creek Plain, after the type site on

the Potomac River in Virginia (Manson 1948:223-27). The paste of Marcey Creek Plain ware is tempered with crushed fragments of steatite bowls. Examples of this pottery have been found on the Miller Field Site in northern New Jersey (Kraft 1970:108-111). A similar type of lugged, flat bottomed pottery vessel, tempered with grit instead of steatite and known as Ware Plain (McCann 1957), also has a fairly wide distribution throughout New Jersey, Staten Island, and Long Island.

### Observations

Certain judgements concerning Archaic Period sites in northern New Jersey are appropriate for the conclusion of this section.

1. Early Archaic sites seem to be more abundant in New Jersey than heretofore suspected. Such sites are usually found along river floodplains; hence, they may be deeply buried under alluvium. Such sites are usually well preserved and stratified.
2. Early Archaic floodplain sites may have been affected by fluvial changes of the river. A great deal of valley-wide meandering, cutting and silting-in has occurred, and water levels have risen and fallen; hence, early man sites formerly on or near the rivers may have been destroyed or been abandoned as the rivers cut new channels. In certain instances, it is likely that a relatively intact site may now be some distance from its former source of water.
3. Fresh water springs which may have been prime attractions for settlement in early times may have dried up as a result of falling water tables.
4. Archaic sites were located in and around former marshlands such as the Hackensack, Newark, and Elizabeth meadows. These sites have been filled in and are now built over. Such sites are sealed in but are potentially available for future archeologists.
5. Archaic sites are now being discovered on hilltops and at the headwaters of small streams in areas heretofore unsuspected.
6. A massive quantity of artifacts from Early to Late Archaic times is now in public and private collections. A detailed study of such materials can provide a wealth of data concerning site distribution and intensity of occupation in various micro or macroenvironments.

## The Archaic Period in Southern New Jersey

by  
R. Alan Mounier

### Introduction

In southern New Jersey, a broad range of Archaic artifacts, apparently representing the entire chronological span of the Archaic

as presently recognized in the East, have been gathered from surface-collected sites and from excavations. Explicitly recognized Archaic materials have been reported from sites throughout southern New Jersey (Caesar 1963; Mounier 1972, 1974, 1975; Morris 1974; Blenk 1977). Many characteristic Archaic specimens are described and illustrated by Cross (1941), even though their origin in Archaic cultures was denied or overlooked at the time of publication. Great quantities of Archaic artifacts survive in largely unstudied and unreported private collections throughout southern New Jersey.

Archaic cultural material has not received much scholarly attention; it is only in the past few years that archeologists have shown any interest in the Archaic of this area. For this reason, archeologists in New Jersey have drawn quite heavily upon research in other regions in an attempt to understand the artifact typology, cultural sequence, and chronology of the Archaic. The works of Ritchie (1932, 1961, 1965), Witthoft (1952, 1959), Kinsey (1959, 1972), Coe (1964), Broyles (1966, 1971), and Dincauze (1971, 1976) have proven to be instrumental in the study of Archaic sites and cultures in southern New Jersey.

Although little is known about the ecological adaptations of Archaic cultures in this area, it is clear that there is a close correspondence between the resident Archaic population and their exploitation of the local environment. Most of the known sites with Archaic representations occur along streams or other bodies of water where hunting, fishing or food gathering, and processing could be pursued profitably. The repeatedly observed correlation of site locations and certain environmental settings gives a measure of predictability to the recognized patterns of site distribution. The association of Archaic and other archeological representations with favorable ecological conditions has been recognized ever since archeology in southern New Jersey became a subject of interest and concern (Skinner and Schrabish 1913; Spier 1915; Cross 1941).

Generally, the sites chosen by people of the Archaic also contain evidence of later (and sometimes of earlier) occupation - most often in unstratified and mixed contexts. This evidence indicates that the same sites and resources were exploited repeatedly through time by a variety of aboriginal populations.

While multi-component sites with mixed assemblages appear to predominate, single component sites and stratified multi-component sites with Archaic cultural expressions have been reported from Cumberland County. Skinner (Skinner and Schrabish 1913:55) describes a closed-component Archaic site:

In the southern outskirts of Bridgeton is an old site where no implements except large-stemmed blades of argillite are found. Neither pottery, points, nor hammer-stones have been collected. This seems to have been a spot utilized by the argillite-using predecessors of the Lenape.

In a survey of prehistoric sites in the lower Maurice River, Mounier (1972a:12; 1974:32-3) reported a distinct Archaic component stratigraphically isolated beneath later cultural materials at the Fralinger Site.

The urgent need to locate, excavate, and date sites of this sort has been realized for a long time (Witthoft 1959; Ritchie 1965:35-36; Mounier 1974:29). Not until this important work has been accomplished will there be an adequate framework for the analysis and interpretation of cultural remains from mixed stations.

The majority of Archaic sites appear to represent relatively small, intermittent occupations of short duration. It is now generally recognized that site selection was, to some extent, governed by strategic attributes of the landscape and/or proximity to specific natural resources (Mounier 1978). Following the lead established elsewhere by Winters (1969), Struever (1968), Ritchie and Funk (1973) and others, it is assumed that the activities of the occupying groups were divided among a number of functionally related sites in performance of tasks associated with a seasonal exploitative round. The habitats occupied by Archaic populations in southern New Jersey are illustrated in Map 1.

In this region, the people of the Archaic are known to have favored three kinds of environmental settings: riverine; lacustrine (including lakes, bogs, and ponds); and coastal (Skinner and Schrabisch 1913:10; Spier 1915:79; Cross 1941:4). Because rivers comprised the most numerous hydrological features in southern New Jersey, they provided the greatest opportunities for Archaic settlement. Functionally, riverine sites range from large villages to small hunting or fishing camps or processing stations. Archeological remains have been found along the trunks of most streams, along tributary creeks, at stream confluences, and in the headwaters. To date, riverine sites are the best known, most varied, and most numerous Archaic locations in southern New Jersey.

The size and complexity of Archaic sites in riverine settings appear to correlate in a general way with the ecological characteristics of the site locations. In the drainage of the Maurice River, for example, the largest Archaic sites appear to occupy favorable locations along the mid-reaches of the river where a wider range of natural resources would have been available in abundance. The Indian Head Site, with large Middle and Late Archaic representations, covers an area in excess of 20 acres just above the natural head of tidewater (Mounier 1975, n.d.). It is doubtful, of course, that all of the site area was ever occupied simultaneously. The size of the site more likely reflects the opportunities for habitation afforded by local ecological conditions. A number of other

large sites with Archaic components exist elsewhere in the tidewater region of this drainage. In the headwaters and at the river mouth where the available resources were probably less diversified, the sites appear to be much smaller and to possess a more limited range of artifacts.

In other parts of southern New Jersey, a similar pattern of site distribution appears to hold true as, for instance, in the drainage of the Mullica River. Archaic sites along the tributaries to the Delaware River seem to be less sensitive in their placement with respect to the drainage network. The more general distribution of relatively large Archaic sites well inland, as along stretches of Rancocas Creek, may indicate cultural adaptations to the presence of relatively rich, abundant, and varied natural resources (Mounier 1978).

Natural lakes do not occur in the present landscape of southern New Jersey (Widmer 1969:122). Bogs and ponds associated with relict thermokarst basins developed as elements of periglacial environments which ceased to exist thousands of years ago (Wolfe 1977:165-167; 290-293). Such features supported a wide variety of floral and faunal resources, and for this reason proved attractive to Archaic and Paleo-Indian populations. Apparently, by Woodland times, most of these basins had filled with sediments and thus became less attractive as their exploitation by aboriginal peoples diminished greatly at the end of the Archaic Period (Bonfiglio and Cresson 1978).

Relict thermokarst basins are extremely common in southern New Jersey, and a very high percentage of those few so far investigated have yielded some indication of human exploitation, principally as hunting stations. From a sample of about 100 relict thermokarst basins examined by Bonfiglio and Cresson (ibid.) in Burlington County, about 95% yielded evidence of utilization by prehistoric human groups. Further research would probably demonstrate the presence of a great many more sites in such settings and establish their significance as a previously overlooked class of Archaic settlement.

Sites with Archaic components have also been identified on the shores of Delaware Bay (Cross 1941:41-44; Cook 1960; Mounier 1974), around Raritan Bay (Rau 1864), and on the bays behind the barrier islands on the Atlantic coast (Skinner and Schrabisch 1913:48-54; Cross 1941:36-37, 39-41; Woolley 1948; Mounier n.d.a.). The limited information that is currently available suggests that these locations were utilized for the procurement and processing of locally obtainable floral and faunal resources. The presence of shellfish remains - often mingled with a wide assortment of animal bones - is a common feature of such sites.

Coastal sites are very revealing of ecological adaptation, owing to the preservation of organic matter. Because cultural materials tend to occur as relatively small discrete clusters on these sites, they are very useful for sorting out the cultural sequence of the region (Mounier 1974:39-54). However, as work stations, such sites tend not to yield great quantities of artifacts and have been largely ignored by archeologists in the past. Very few of these resources have been explored systematically or reported. A great many coastal sites have been lost to erosion and submergence as a consequence of post-glacial marine transgression.

In addition to their presence on riverine, lacustrine, and coastal sites, Archaic remains occasionally occur as scattered or isolated finds, often with little or no apparent relationship to present watercourses or other resources. Mounier, in unreported research, has observed a variety of Archaic projectile points and other artifacts from sites on the divide between the Maurice River and the Great Egg Harbor River in Gloucester County. Similar finds have been seen elsewhere on the divides separating Assiscunk, Crafts, and Blacks Creeks in Burlington County (Mounier 1979). Upon analysis, such sites frequently seem to correlate with the locations of now-relict landforms and bodies of water. Resulting for the most part from chance discoveries, such sites are probably among the least well known and most poorly represented of all Archaic settlements.

The culture history and chronology for the Archaic throughout New Jersey remain rather vaguely defined. As noted earlier, much of the interpretation of Archaic culture has been drawn from areas outside of New Jersey where research has been conducted in greater depth. A brief summary of the current synthesis as it applies to southern New Jersey is given below.

In the Northeast, the Archaic has been subdivided into three units defined on the basis of artifact typology, chronological position, and inferred characteristics of social organization and ecological adaptation. Artifacts typical of each of these subdivisions have been collected from southern New Jersey sites, but, until recently, much of this material (and particularly the earlier artifacts) has been either ignored or misassigned to later cultural categories.

#### Early Archaic

The Early Archaic has been defined as a post-Paleo-Indian cultural manifestation which precedes the appearance of distinctive regional variants of Archaic culture in the East (Tuck 1974:73). The chronology for the Early Archaic is generally fixed for the period of ca. 8000 B.C. - 6000 B.C. The material culture comprises a variety of implements which suggest an adaptation to forest dwelling.



Projectile points in a number of stemmed and notched forms are the most readily recognizable artifacts of this time (Coe 1964; Broyles 1966, 1971; Dincauze 1971). Particularly distinctive are bifurcate-base points in forms which are now believed to represent Early Archaic occupations in the Northeast (Broyles 1966, 1971; Ritchie and Funk 1971; Dincauze 1974:44; however, see Kinsey 1971: 1972:331 for a somewhat different point of view). General utility tools, such as knives, scrapers, and choppers of flaked stone, also occur. A limited inventory of wood and bone-working tools such as celts and drills complement the rest of the Early Archaic toolkit.

Most of the Early Archaic sites appear to represent small encampments which were occupied presumably by small, mobile bands. Sites in southern New Jersey are located near rivers or along ponds and bogs (thermokarst basins) and on the coast. Twelve of the 36 riverine sites investigated by Cross (1941) on the coastal plains of southern and central New Jersey produced bifurcate-base projectile points. A number of these points were also unearthed in a series of extensive excavations at the Abbott Farm Site near Trenton (Cross 1956:73-74, Table 10, Plate 206).

In general, these points appear to have occurred deep in the excavations, though almost always in unstratified contexts. Their vertical distribution suggests a relative antiquity consistent with their assignment to an Early Archaic horizon. Cross (1941: Plate 14a, Plate 61a, Figure 6, Plate 63b, Figure 11) illustrates a number of other probable Early Archaic forms (cf. Coe 1964; Broyles 1966, 1971), but their representation in the site reports is obscured by the typology employed at the time (see Cross 1941:23-24).

According to tabulations presented by Cross (1941:158-169, Table 27), only a few points of bifurcate-base form were found at each of the sites. The numbers range from one to nine specimens per site. While this representation might be taken as evidence of a diffuse Early Archaic presence at each of these locations, it is likely that many specimens were lost or overlooked in the excavations. For example, at the Indian Head Site in Salem County, Cross (1941:159) recorded only one bifurcate-base point; yet, in subsequent excavations, Mounier (1974:5, 11, Plate 8) discovered seven points of this form along with a host of other Early Archaic specimens in undisturbed contexts beneath the floor of the earlier excavation. On the strength of this evidence, more intensive Early Archaic occupations may be expected at other sites as well.

Research by Bonfiglio and Cresson (1978) clearly indicates the utilization of thermokarst basins by Early Archaic populations. Scattered points, attributable on the basis of their typology to Early Archaic horizons, have also been reported from coastal sites near Cape May Point (Cook 1960).

As interpreted currently, the Early Archaic subsistence economy in the Northeast comprised hunting, fishing, and gathering by local bands within limited territories (Kinsey 1972:330-332; Ritchie and Funk 1973:337; Kraft 1974:1-21; Dincauze 1974:44-45; Tuck 1974). The survival of a limited range of diagnostic projectile point styles for this period suggests the importance of hunting in the subsistence pursuits of Early Archaic peoples. Other artifacts, comprising a general utility class, coupled with the ecological diversity of site locations, suggest that a broader spectrum of comestible and other resources may have been utilized. To draw upon evidence from sites beyond New Jersey, the exploitation of seeds, nuts, molluscs, and reptiles by Early Archaic populations here may be reasonably inferred (Adovasio et al. 1977:89). Advances in techniques for the recovery of paleobotanical and zoological specimens from archeological deposits may ultimately broaden and clarify the presently nebulous picture of aboriginal subsistence in southern New Jersey.

Evidence of the wide distribution and seemingly light density of Early Archaic artifacts as compared with the much more numerous finds of later Archaic cultures has led to the generalization that Early Archaic populations in the Northeast were small, fissile, and highly mobile (Ritchie and Funk 1973:337; Dincauze 1974:44; Tuck 1974). Since the density of bifurcate-stemmed points and other Early Archaic diagnostics appears to be somewhat greater on the coastal plains of New Jersey than in other portions of the region, speculations about the nature of Early Archaic populations in New England or New York State may not adequately characterize those in evidence in southern New Jersey. Nevertheless, in the absence of definitive data, a band level of social organization (Service 1967), coupled with a highly mobile life-style, may be postulated.

#### Middle Archaic

The Middle Archaic, dating between 6000 B.C. and 4000 B.C., marks a period of adaptation to environmental settings which began to resemble present conditions. Middle Archaic populations seem to have developed an increasing awareness of the natural resources in their environments as well as a heightened efficiency in the extraction and use of those resources. The keenness with which the environment was exploited is manifest not only in the presence of more numerous and larger sites, but also in the occupation of more diverse ecological settings. The relative abundance of Middle Archaic remains suggests a general population increase over former times, or perhaps a more sedentary way of life.

In addition to riverine and lacustrine sites, estuarine settings were occupied and quarry sites were opened. In New Jersey, the extensive use of argillite and shale from Triassic beds of north-central New Jersey (Didier 1975) indicate the development

of regional patterns of transportation, communication, and exchange. Also at this time, the Miocene deposits of Cohansey quartzite from the Greenwich vicinity began to receive wide use and distribution (Skinner and Schrabisch 1913:57; Cross 1941:21-48; Kier 1949).

The material remains comprise mostly projectile points of a slender, stemmed form along with general utility implements. On the basis of ecological settings, the taking of deer, turkey, migratory waterfowl, and anadromous fish seems to have been important. The year round occupation of band-controlled territories in seasonally occupied sites has been postulated (Dincauze 1974:45).

Of special interest is the discovery at sites throughout southern New Jersey of projectile points and other artifacts that indicate affinities to the Middle Archaic cultural sequences established at stratified sites in North Carolina (Coe 1964) and southern New England (Dincauze 1971, 1976). Dincauze (1971:198; 1976:140) dates the Neville Site sequence in New Hampshire to the sixth millenium B.C. on the basis of a series of radiocarbon age determinations. The North Carolina material is thought to be ancestral to the finds reported by Dincauze (1976:120).

As a result of excavations and surface collections on sites in the Maurice River drainage in southern New Jersey, Mounier (1972, 1975) has recovered a number of projectile points which conform to published descriptions of the Stanly Stemmed type in North Carolina (Coe 1964:35) and the related Neville type in New Hampshire (Dincauze 1971, 1976, letter of July 5, 1972). Along with these points were found other artifacts, such as scrapers and hammer-stones, which also comprise elements of the Neville complex in New England (Mounier 1972:42; Dincauze 1971:195).

Projectile points resembling the Stanly and Neville types have been found elsewhere in southern New Jersey, though not in any great numbers so far as is presently known. However, many specimens occur in private collections and a few are illustrated by Cross (1941). Current evidence leads to the speculation that these specimens relate to Middle Archaic assemblages. While these points can be attributed on the basis of their typology to Middle Archaic contexts, confirmation of their age and cultural affiliation is still awaited from stratigraphic evidence or C-14 analysis.

Careful excavation and recording of the artifactual residue at the Indian Head Site led to the recognition of ten Stanly/Neville points deep in the cultural deposits. Even though the site lacked any stratification, the vertical distribution of these specimens clearly supports their intermediate placement in the Archaic sequence at this site (Mounier 1975:10). Given additional critically executed research, it is reasonable to expect a fuller accounting of this cultural expression in southern New Jersey.

By far, the most common representations of Middle Archaic cultural development in southern New Jersey comprise elements of the Poplar Island complex, the most diagnostic of which are long, slender points with tapered stems (Ritchie 1971:44). The Poplar Island point type is morphologically similar to Coe's (1964:37) Morrow Mountain II type and a closely related style which Dincauze (1971: 195-196, 1976:29-37) has named the Stark Point. Coe (1964:120) has estimated the age of Morrow Mountain II points and other associated artifacts at approximately 4500 B.C. in his North Carolina sequence. Dincauze (1971, 1976:37) has placed the occurrence of Stark points and related remains at about 5000 B.C. on the basis of their stratigraphic relationship at the Neville Site in New Hampshire. The stratigraphic position of these artifacts both in New Hampshire and North Carolina argues strongly for their origin in Middle Archaic times (Dincauze 1971, 1976:140, letter of July 5, 1972).

In the Middle Atlantic Region, sites containing Poplar Island points in stratigraphic contexts are few. However, Witthoft (1955, 1971:123-124) found Poplar Island points and related cultural debris stratified below Late Archaic artifacts on Duncan's Island in the lower Susquehanna River. Although slender, stemmed points of a variety of forms comprise a long continuum in unstratified sites in southern New Jersey (Mounier 1974), the earliest specimens appear below characteristic Late Archaic artifacts and above types attributable to earlier Archaic horizons. These specimens, at least, appear to share an early origin which is consistent with their placement in Middle Archaic components.

Where adequate data exists, points of the Poplar Island type occur in association with a variety of scrapers, hammerstones, and other implements which demonstrate a continuity (at least in technology) from the preceding Stanly/Neville complex (Coe 1964; Dincauze 1976; Mounier 1975). The contemporaneity of the Poplar Island complex with the Morrow Mountain II and Stark complexes seems to be reasonably certain, although further corroboration from stratigraphic analysis and C-14 assays would be desirable.

Nevertheless, some archeologists remain unconvinced by the evidence adduced in support of the early origin of the Poplar Island complex (Kinsey 1971:3; 1972:337; Funk, personal correspondence March 7, 1980). The assignment of Poplar Island points to Middle Archaic horizons is met with a measure of skepticism partly because of the absence of good stratigraphic data in the Middle Atlantic region where points of this kind predominate, and partly because of their morphological similarities to later stemmed point styles (e.g. points of the Lackawaxen series; Kinsey 1972:408-411). Unanimity over the temporal placement of Poplar Island points and their cultural implications is not likely to be achieved until additional and more definitive data are brought to bear on this question.

Projectile points conforming to the typological descriptions of the Poplar Island type have a very wide distribution throughout the Middle Atlantic region (Holland 1955; Kinsey 1959:115, 1972:408-411; Stephenson and Ferguson 1963:147; Ritchie 1971:45). They occur frequently on sites throughout the coastal plains of New Jersey. Numerous examples are illustrated and/or described by Hawkes and Linton (1916), Cross (1941), Gruber and Mason (1956), Kier and Claverley (1957), and Mounier (1972, 1972a, 1975), among others. They appear on more sites and in much greater frequency than do the early Stanly/Neville points. Substantial components of the Poplar Island complex appear to be represented at the Red Valley, Koens-Crispin, Salisbury (Cross 1941), and Indian Head Sites (Cross 1941; Mounier 1973, 1975). Additional research with this very common but poorly understood complex will be required before the complexity of its relationships to earlier and later cultural manifestations can be resolved.

### Late Archaic

The shift from Middle to Late Archaic (4000 B.C. - 1000 B.C.) is marked by changes in material culture, subsistence patterns, demography, and land use. Archeological expressions of the Late Archaic indicate a continuing adaptation to the emerging temperate deciduous forest biome which became stabilized with stands of oak, chestnut, and hickory, and associated populations of deer and turkey by ca. 5000 B.C. (Ritchie 1965:32). A salient characteristic of the Late Archaic is relatively high population density which was achieved by (or led to) the exploitation of lower links in the food chain than in earlier times. The utilization of small game, shellfish, seeds, and nuts is indicated (Dincauze 1974:48). The harvesting of wild cereals and nuts is attested to by the appearance, for the first time, of pestles and other milling equipment.

The increasing population density was apparently coupled with decreasing band mobility. By ca. 2500 B.C., a central-based wandering system of subsistence and settlement had been achieved (Beardsley et al. 1956), probably with a riverine focus in most of southern New Jersey. Other functionally related sites were located along the coast, along the edges of estuaries, springs and other bodies of water, and on the divides between drainage basins. Thus, exploitation of the environment extended to a wide range of habitats in pursuit of a diversity of natural resources.

The definition of group territoriality was probably enhanced as a result of decreased mobility. At the same time, there is evidence of an increase in the flow of materials and ideas within the region and beyond, even to and from quite distant locations. The fairly widespread use of non-local or exotic lithic materials (such as talc, rhyolite, and porphyry) during Late Archaic times is indicated by the archeological remains on many southern New Jersey sites

(Cross 1941). The rise of elaborate patterns of mortuary ceremonialism suggests the development of an economically powerful group in control of scarce resources and goods. The apparent similarities in the concepts and conventions associated with the florescence of mortuary cults throughout the Northeast (Ritchie 1961, 1965:138, 162, 173-177; Robbins 1968; Dincauze 1968; Tuck 1976) demonstrate the presence of a regional network of communication, transportation, and exchange.

Within the Late Archaic, a number of cultural traditions have been recognized. The most prominent of these include the Small Stemmed Point Tradition (Ritchie 1965a; Kinsey 1972:337; Dincauze 1974:47) and the Susquehanna Tradition (Witthoft 1953; Ritchie 1965:149-177). The Laurentian Tradition, which is widespread throughout the Northeast (Ritchie 1965:79), is insignificant in southern New Jersey.

Elements of the Small Stemmed Point Tradition include a variety of small, slender, stemmed projectile points, small triangular points, ground stone woodworking tools (such as adzes and gouges), spear-thrower (atlatl) weights, choppers, knives, scrapers, mullers, pestles, and paintstones, generally of hematite or graphite. Although it has not survived archeologically, a rich bone tool industry probably complemented the non-perishable material culture.

The Small Stemmed Point Tradition is represented as discrete elements or in complexes along the East Coast from Virginia to southern New England, with considerable penetration into the upland regions of Pennsylvania and New York especially along major rivers such as the Delaware, Hudson, and Susquehanna (Kinsey 1972:337; Funk 1965:152; Brennan 1967; Ritchie 1971a:5). In Pennsylvania, New York, and southern New England, the Small Stemmed Point Tradition has been dated by means of radiocarbon analysis between 3200 B.C. and 1700 B.C. (Funk 1965:146; Ritchie 1969:218; Kinsey 1972:336-339). In New Jersey (Cross 1941) and the Chesapeake Bay region (Stephenson and Ferguson 1963:140-152), similar manifestations occur in undated contexts and, with the exception of Kinsey's (1959) Bare Island complex, have not been grouped into larger cultural units.

The Susquehanna Tradition is represented archeologically by a number of related cultural complexes which elsewhere have been classified as "Transitional" or "Terminal Archaic" (Witthoft 1953; Ritchie 1965; Funk 1977; Kraft 1970). The artifacts which characterize this tradition include a series of broad stemmed and notched points (Figure 2 a-c) and narrow notched points of so-called "fish-tail" form (Figure 2 o-r). These points comprise a graded series which shows an evolution of form through time.

While the Small Stemmed Point Tradition may reflect an in situ development, it is apparent from the archeological evidence that the Susquehanna Tradition diffused northward into and beyond the

southern New Jersey area along the Atlantic seaboard as an outgrowth of earlier cultural development in the Southeast, beginning about 2500 B.C. (Witthoft 1953; Ritchie 1965:149-177). The tradition persisted in the Northeast until ca. 1000 B.C. (Ritchie 1965:164; Kinsey 1972:357-361; Kraft 1970).

Although a number of complexes relating to the Susquehanna Tradition are manifested in archeological vestiges in southern New Jersey, the most prominent of these is the Koens-Crispin Complex (Hawkes and Linton 1916; Cross 1941:81-90; Regensburg 1971). The material traits of the Koens-Crispin Complex comprise broad stemmed points, scrapers, and other implements fashioned from broken points, spear thrower (atlatl) weights, celts, adzes, and stone vessels. There is suggestive evidence that the earliest ceramics in the region were also introduced as part of this complex (Hawkes and Linton 1916:77; Cross 1941:88; McCann 1957).

The complex is associated with an elaborate pattern of mortuary ceremonialism which emphasized the practice of cremation, the ritual use of red ochre, and the often lavish inclusion of grave goods. At the Savich Farm Site in Burlington County, Regensburg (1971) excavated part of a large Koens-Crispin cemetery which contained 41 cremation burials. Associated with the burials were exceptionally well made atlatl or spearthrower weights (so-called "bannerstones"), projectile points, woodworking tools, and a host of other artifacts. The lithic materials used in many of the specimens indicate importation from the Mid-West or other distant regions (Regensburg, personal communication).

Hawkes and Linton (1916) and Cross (1941:81-90), working at the nearby Koens-Crispin Site, made similar discoveries. Although the unusual characteristics of the site were recognized, its use as a cremation cemetery apparently went unnoticed.

The Red Valley Site in Monmouth County yielded several features which contained cached spearthrower weights and other artifacts. Cross (1941:121, 127) appreciated the fundamental similarities presented by the Red Valley and Koens-Crispin material, but circumstances prevented further analysis.

Further afield, the Koens-Crispin Complex is clearly related in content and/or expression to other socio-religious manifestations in the Northeast (Ritchie 1961, 1965: 138, 162, 173-177; Robbins 1968; Dincauze 1968; Tuck 1976). However, the nature of the perceived relationship is unclear and requires additional scrutiny.

The Koens-Crispin Complex demonstrably reflects a cultural phenomenon of regional proportions. Both the diffusion of concepts concerning funerary practices and the procurement of exotic materials and/or goods for use as mortuary furniture indicate the existence of a well established network of communication, transportation, and exchange.

Although many habitation sites and other related settlements are known for this complex, few locations thus far investigated yield any evidence of the mortuary pattern. The distribution of cemetery sites, focusing upon the headwaters of Rancocas Creek and possibly Crosswicks (Cross 1941:117-127) and other (?) creeks, appears to be quite limited. The concentration of material wealth coupled with a peculiar mortuary complex suggests the rise of an elite class which managed to control the acquisition and distribution of scarce commodities through socio-economic means.

Subsequent complexes related to the Susquehanna Tradition in the Northeast also show an emphasis toward ritual display of wealth in mortuary offerings but no cemeteries of these complexes are known in southern New Jersey. Projectile points which relate to the Perkiomen, Frost Island (or Susquehanna), Dry Brook, and Orient phases of the Susquehanna Tradition have a wide distribution across the coastal plains of New Jersey (see specimens illustrated by Cross 1941: Plates 2b, 39a, 50b; Mounier 1972: Plate 3, 1975: Plate 5, n.d.: Plate 28). The so-called "fishtail" points, which seem to indicate some correspondence with the Orient phase (Ritchie 1961, 1971:39), are the most numerous of these finds. (For a discussion of the regional expressions of the various Susquehanna Tradition phases, see Witthoft 1953; Ritchie 1961, 1965: 149-177; Kraft 1970:19-51; Werner 1972:71-83; Kinsey 1972:357.) The ultimate demise of the Susquehanna Tradition in this area occurred about 1000 B.C. but little is known about the circumstances leading to the collapse of this intriguing set of cultures or the nature of changes giving rise to the subsequent Woodland way of life.

#### Problems and Prospects in the Archaic Period Archeology of New Jersey

by  
Herbert C. Kraft  
and  
R. Alan Mounier

The inadequacy of current knowledge about various aspects of Archaic cultural developments in New Jersey and about prehistory in general, relates to an overall lack of scholarly inquiry on the one hand and to a lack of public awareness, appreciation, and/or concern about its cultural heritage on the other. From a contemporary perspective, both the scope and purpose of past archeological activities appear to have been desultory and limited. These shortcomings can be attributed to the frailty of an evolving conceptual framework and to logistical constraints which have been imposed upon the organization and conduct of archeological research in this area.

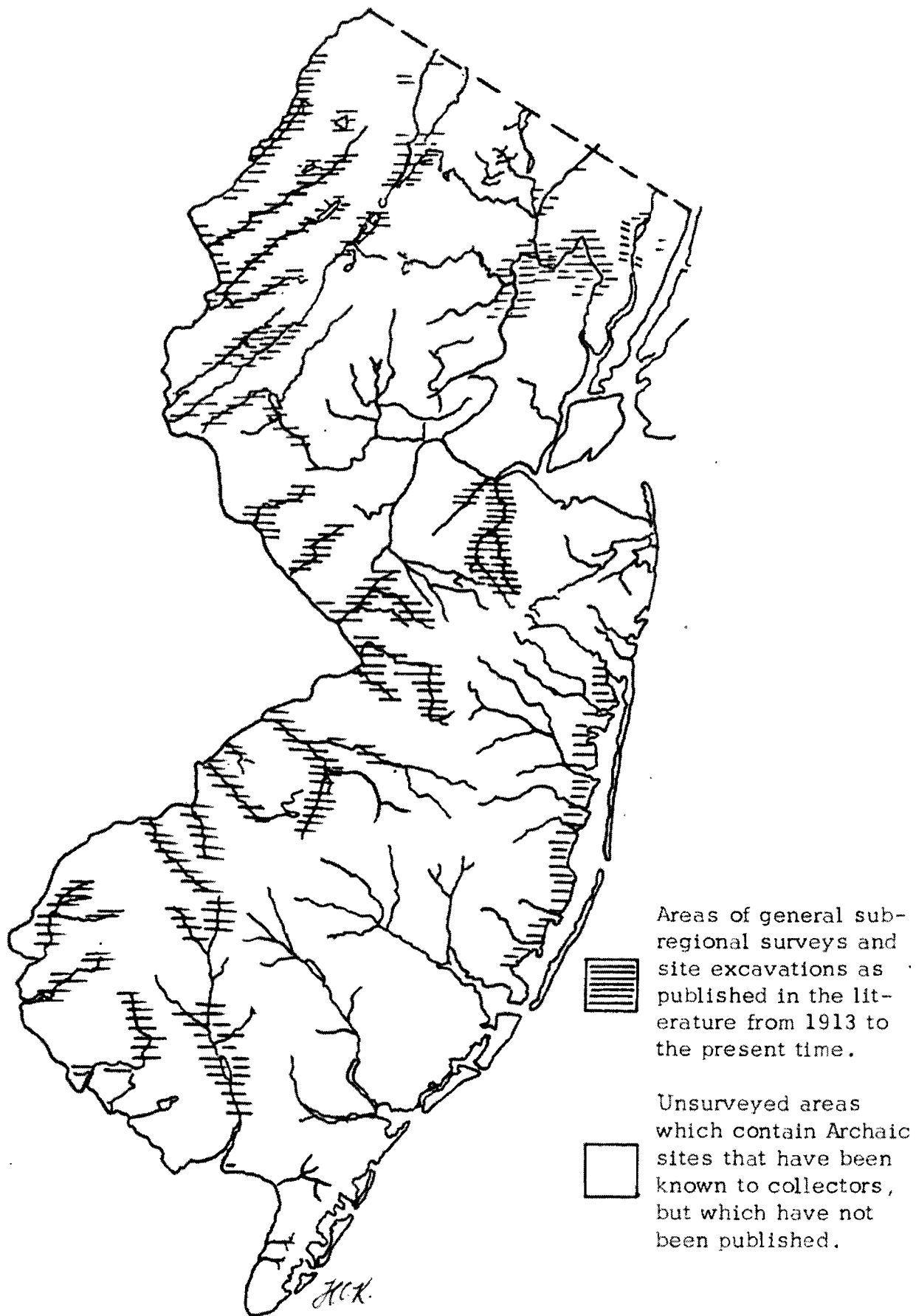


Public support for archeological programs in New Jersey has proven to be both meagre and halting. Statewide surveys were undertaken under government sponsorship in the second and fourth decades of this century (Skinner and Schrabisch 1913; Cross 1941); and, while these surveys were useful in establishing preliminary characterization of prehistoric archeological material in the state, the findings of these early investigations are, in many ways, incomplete and dated.

For example, regional coverage was extremely uneven with an emphasis toward the inspection of sites already known to collectors or the examination of conveniently located and highly accessible sites (Map 2). In southern New Jersey, for instance, the Delaware slope was much more fully examined than other areas, principally because numerous sites were already known or accessible in this intensively farmed region. In contrast, extensive portions of the Outer Coastal Plain - including the Cape May peninsula, the middle reaches of the Atlantic Coast, and the Pine Barrens - remained unsurveyed. In northern New Jersey, the Passaic Valley and Delaware Valley received most of the surveyors' attention, but little meaningful follow-up excavation or research was carried out. In fact, no serious archeological research has been undertaken in the northeastern portion of the state where urban expansion is rapidly destroying the few remaining sites.

Curiously, the distribution of archeological sites revealed by the aforementioned Indian Sites Surveys has been taken as *prima facie* evidence that certain portions of New Jersey were unoccupied or sparsely inhabited during prehistoric times (see "Map of the State of New Jersey Showing Indian Sites" in Cross 1941). While it is likely that differences in environmental quality between physiographic regions or ecological zones would lead to different patterns of subsistence and settlement by Archaic and other aboriginal populations, the extent to which sampling biases have affected the perception of prehistoric human distribution in New Jersey remains to be examined in detail.

Even in areas where survey work has been more intense, the quality of archeological investigation is open to question since only a limited range of ecological situations were explored in search of site locations. Survey crews looked for sites upon stretches of relatively high, well-drained ground along the borders of streams, to the virtual exclusion of other settings (Cross 1941:4). Therefore, it comes as no surprise that riverine areas predominate in the record of reported site locations. More recent research clearly demonstrates that the early surveys seriously underrepresent sites in non-riverine settings (Bonfiglio and Cresson 1978; Cavallo and Mounier 1980).



Map 2. Areas in N.J. reported in past surveys and/or excavations. It is noted that most early surveys only rarely attributed sites to specific time periods, as for example the Archaic period.

Further, sites were considered individually as independent cultural entities without regard to the possible relationships between sites in a systematic regional context. Even though an inchoate settlement typology emerged from earlier research (Skinner and Schrabisch 1913:9-16; Schrabisch 1915, 1917; Spier 1915), insights into the structure and operation of aboriginal subsistence and settlement systems remain vague. Similarly, other questions of anthropological interest never received much notice in the early works. It is perhaps an irony that one of the principal conclusions of the second major statewide survey was that the results did not justify claims for the existence of a pre-pottery horizon (essentially equivalent to the Archaic) distinct from that of the historic Lenape (Cross 1941:207-212).

During the past 50 years or so, a number of colleges and universities have occasionally taken an interest in local archeology (Grüber and Mason 1956; Kraft 1970, 1973, 1975, 1977, 1978; Mounier 1974a). Most of the effort by academic institutions, however, has been directed toward single site investigations, often as field schools for students. Some of these endeavors have not been sustained for more than a few seasons and the quality of excavating and reporting is rather uneven.

In recent years, many archeologists in New Jersey have found employment in cultural resource surveys which are required by law and regulation in conjunction with many federal undertakings. This requirement has been imposed as part of the legislation aimed at protecting various aspects of the environment from undue degradation or destruction as a result of publicly funded projects (Section 106 of the National Historic Preservation Act of 1966, as amended; Section 101 of the National Environmental Policy Act of 1970; Executive Order 11593 of 1971, and others).

The procedures for identifying and evaluating cultural resources and for assessing the probable impacts of project completion depend upon the kinds of resources that are likely to be present and upon the nature of the project at hand. Usually, cultural resource surveys share a set of basic goals which include: 1) the creation of an inventory of cultural resources within the project area; 2) the evaluation of cultural resources found to be present in terms of National Register Criteria (36 CFR 60.6); 3) the evaluation of the foreseeable effects of project completion on cultural resources within the project area; and 4) the promulgation of recommendations concerning possible means of avoiding or mitigating anticipated adverse impacts on cultural resources as a result of project completion.

A fundamental aspect of cultural resource management is the selective conservation of Archaic and other archeological sites. Depending upon the circumstances, a site might be either entirely or

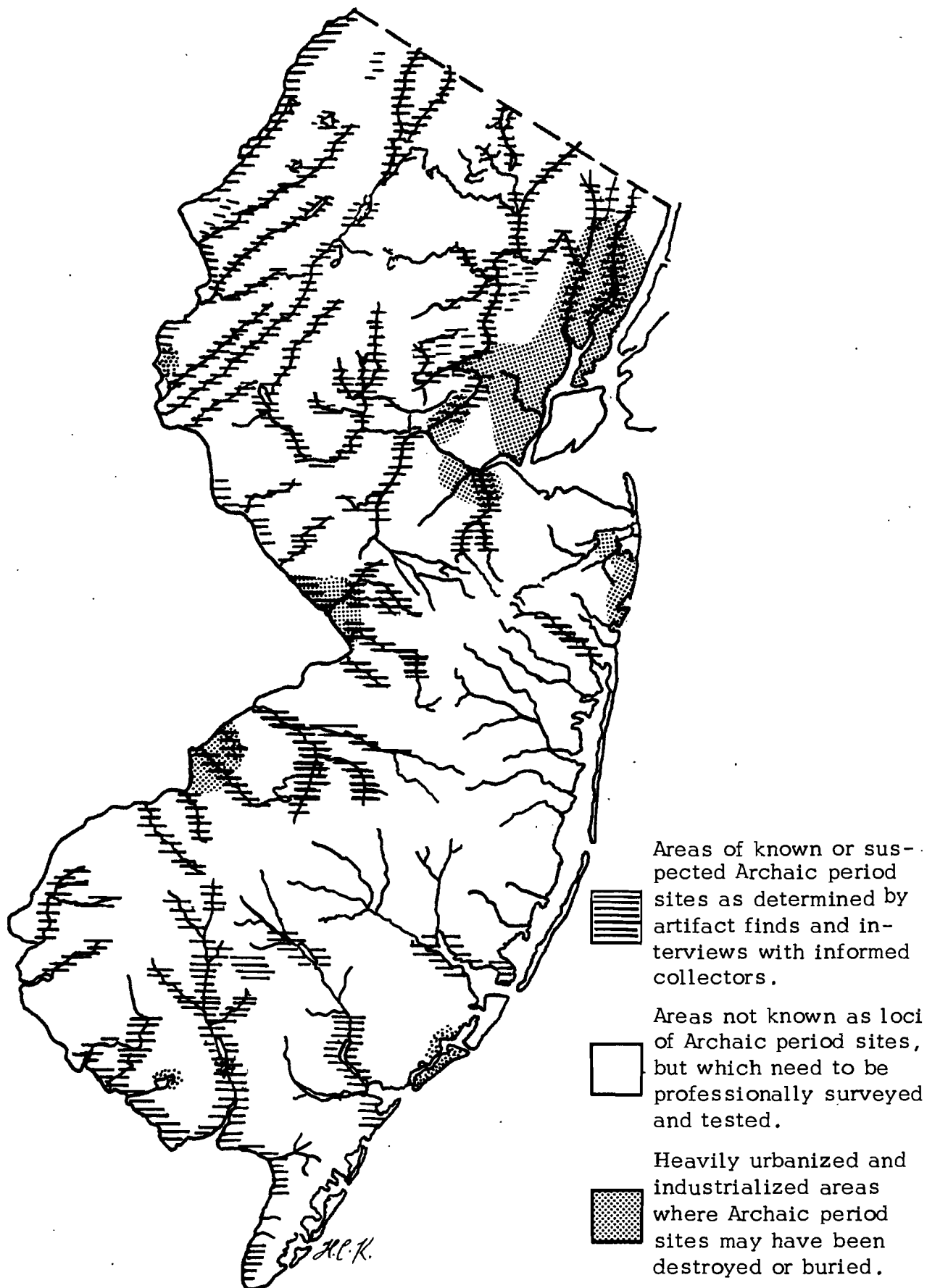
partially preserved, subjected to data recovery (salvage excavation), or permissibly destroyed. In any case, an archeologist with specialized training and experience in cultural resource management would be involved in the decision-making process that governs the disposition of the site in question.

The implementation of cultural resource surveys has proven to have theoretical as well as practical value. The need to investigate areas defined by project boundaries rather than by the research goals or personal inclinations of the consulting archeologist has led to the discovery of remains in a wide variety of ecological contexts. The inadequacies of earlier concepts of aboriginal subsistence and settlement pattern has, thus, been brought into sharper focus.

On the other hand, most public works which require the services of an archeologist tend to be somewhat restricted in geographic scope since the survey limits are generally set by arbitrary boundaries such as sewer or highway alignments. If for no other reason than this, cultural resource surveys alone do not answer the need for regional surveys of cultural resources.

Published reports of all of the formal surveys have resulted in a very sparse listing of Archaic sites and related data; hence, such reported sites grossly underrepresent the total of all sites known to farmers, collectors, and other interested parties. Many farmers have "cigar-box collections" and numerous collectors have extensive knowledge of unreported site locations as well as information on artifact content and other aspects of site composition. Although there are notable exceptions, few collectors have taken the trouble to record their discoveries publicly, nor have professional archeologists made much effort to analyze local collections or to secure information about site locations from collectors. Thus, the single greatest potential source of information about archeological sites and their contents in New Jersey has been denied to all interested parties.

The current state of the art is such that large gaps - physical, conceptual, and cognitive - exist in areas which at one time or another have witnessed some measure of archeological activity. Even though survey efforts and the activities of collectors have been more intensive in some areas than in others, no portion of New Jersey has been studied adequately by current standards. Relative levels of archeological activity are shown in Maps 2 and 3. The quantification, evaluation, and conservation of archeological resources in this region constitute serious problems which require urgent and immediate consideration.



Map 3. Presently known loci of Archaic period sites, or areas seriously suspected to have had occupations or utilization during the Archaic period.

The gravity of these problems is increased by the fact that a great number of sites have been, and continue to be, destroyed or disturbed by natural and human agencies. In fact, the unwitting and deliberate destruction of cultural resources has increased in recent years in the face of population growth as well as rapid and uncontrolled development. The depredations of artifact collectors and curio-seekers, acting through ignorance or greed, have also increased dramatically.

In the absence of information about the number, distribution, and physical extent of archeological sites, the preservation, conservation, and management of such resources will remain difficult tasks. Well planned, regional surveys will be required to identify and evaluate existing archeological resources. It is appropriate to point out that historic preservation and planning grants have been available for years for regional surveys but the archeological community in the state has only begun recently to take advantage of these funds.

Any regional survey should follow a strategy of non-exclusion (King 1978) in order to recognize and interpret as many sites as possible in the study region. Non-exclusive surveys involve sampling in all portions of a region or project area irrespective of any anticipated outcome. Such surveys insure that areas with little or no suspected site density receive adequate investigation. As a result of non-exclusive surveys, sites, which would have been otherwise overlooked, have been discovered in locations where they were least expected.

In light of the rather considerable areas requiring additional investigation, cost-effective means of surveying large tracts must be developed and implemented. The development of models for predicting site locations, densities, and functions should be encouraged. The successful design of such models will require the efforts of an interdisciplinary team of specialists to achieve a regional synthesis of archeological and paleoenvironmental data. The creation of settlement/subsistence models for illuminating the cultural-ecological adaptations of Archaic populations, among others, is also greatly needed.

It is essential that regional surveys, directed toward an interpretation of lifeways and cultural processes during the Archaic, be guided by a careful assessment of environmental changes so as not to overlook past ecological zones and their possible exploitation by human groups. This means that, for example, relict land-form and drainage patterns (thermokarst basins, etc. and hilltop sites) must be examined as well as the better recognized riverine settings. Surveys concerned particularly with the early aspects of Archaic cultural development should include submarine

explorations in estuaries, bays, and offshore regions since many early sites may be expected to occur beneath present sea levels due to post-glacial marine transgression.

All existing collections, including excavated and surface-derived specimens, should be examined and catalogued, particularly if reliable data relative to stratigraphy and provenience can be obtained. A major objective of such an undertaking would be the determination of the relative frequency of diagnostic artifacts from various cultural periods and areas. The data derived from studies of this sort should be recorded by site (or by provenience within a site) and correlated with present ecological settings and past environmental conditions.

In addition to these activities, selected sites should be investigated in an effort to isolate and define culturally and temporally specific artifact assemblages, and to define their functional applications. In-depth site explorations would, it is hoped, provide the basis for the creation of a local and/or regional chronological framework through the analysis of datable organic material (charcoal, refuse bones, etc.) found in association with cultural remains. Such explorations would also provide an academic setting favorable to the analysis, by interdisciplinary teams, of floral and faunal remains, ancient landforms, and other aspects of the paleoenvironment. The results of single-site excavations and analysis should prove useful in testing and refining models pertaining to the prediction of site locations and the operation of subsistence/settlement systems.

Furthermore, the results of both regional surveys and specific site investigations would illuminate many long-standing problems of considerable theoretical interest concerning not only the Archaic, but the aboriginal past in general. Some of the basic research questions (and/or theoretical desiderata) awaiting investigation with regard to the Archaic Period are listed below:

1. The development of an Archaic cultural sequence and chronology based upon locally-derived data;
2. The reconstruction of early postglacial environments throughout New Jersey. These should include sampling of bogs in order to obtain datable pollen sequences, and studies of riverine alluviation, meander patterns, and hydrologic regimes;
3. The distribution of Archaic populations within, and across, major physiographic zones (e.g. the Inner vs. the Outer Coastal Plain; the Delaware Valley vs. Piedmont or Highlands);
4. The development and testing of models pertaining to prediction of site locations, Archaic social organization, and systems of subsistence and settlement;
5. The development and testing of functional site and artifact typologies with respect to Archaic representations;

6. The characteristics and implications of cultural change from Paleo-Indian to Archaic times; the nature of cultural change within the Archaic; and the nature of cultural change from Archaic to Woodland times;
7. The patterns and significance of resource utilization by Archaic groups, particularly the extensive exploitation of non-local lithic materials; and
8. The relationship of Late Archaic mortuary ceremonialism and patterns of economic development, class differentiation, travel, transportation, communication, and exchange.

If such questions, among others, are ever to be answered, a great deal more archeological investigation coupled with selective site preservation must be forthcoming.

Additional research should lead ultimately to an understanding of the structure and operation of extinct cultural systems such as those characterized by the various Archaic representations in New Jersey. Achieving a fairly comprehensive understanding of these cultures is a realistic goal, but it is one that is not instantly attainable. The realization of this objective will involve a sustained and open-ended research effort that will require not only the highest standards of archeological research but also the responsible and intelligent management of cultural resources.

Renewed archeological research holds the promise of great practical and academic value not only to archeologists but also to government agencies, planners, developers, and others, who, by inclination, design, or circumstance, take an interest in the management of non-renewable cultural resources. The most pressing needs are for an adequate definition and evaluation of cultural resources on a regional basis and a sincere, prolonged commitment to the conservation of archeological sites and materials. This need can only be satisfied by the execution of theoretically relevant research, by a persistent conservation effort, and by the development of a judicious set of practicable management priorities and policies.

As previously noted, survey efforts should have a regional focus and should be directed at developing an understanding not only of the distribution and frequency of Archaic sites in their full variety of contexts, but also of the cultural systems which they represent. Presently, information concerning Early and Middle Archaic cultures is the most meagre, though none of the Archaic expressions in New Jersey is adequately known. The study of these early cultures should, therefore, receive some priority. Geographically, large expanses of the Outer Coastal Plain in southern New Jersey and most of northern New Jersey, exclusive of the Delaware Water Gap area, require urgent consideration. Since research priorities are likely to change as new data are brought



to light, planning policies which affect the study of cultural resources throughout the state must be flexible enough to accommodate advances in research as well as changes in theoretical interests and pragmatic concerns.

Management policies, at the very least, should encourage the selective preservation of a representative sample of Archaic sites of all time periods, functional types, and in all recognized environmental settings in which they occur. A certain percentage of all sites of a given class (e.g. Early Archaic sites associated with thermokarst basins) should be protected for future study and/or public interpretation. Management priorities can be established on the basis of the relative frequency of sites, the degree and quality of previous research, and the foreseeable (immediate and long term) threats to site preservation resulting from development or conflicting land use. Management policies and priorities should be reviewed periodically and amended, as necessary, in accordance with the prevailing needs of historic preservation.

As the needs and desires of an expanding population increasingly impinge upon the finite and still poorly understood evidence of New Jersey's past, it is hoped that an interest in the preservation of prehistoric archeological sites will figure prominently in the study and conservation of cultural resources in this state.

# REFERENCES CITED

- Adovasio, J. M., et al.  
1977 Meadowcroft Rockshelter: Retrospect 1976. Pennsylvania Archaeologist 47(2-3):1-93.
- Ashman, Fred R.  
1970 The Madison Site. Bulletin of the Archaeological Society of New Jersey 25:5-9.
- Beardsley, Richard K., et al.  
1956 Functional and Evolutionary Implications of Community Patterning. In Seminars in Archaeology: 1955, edited by Robert Wauchope, Memoirs of the Society for American Archaeology. Number 11.
- Blenk, Michael H.  
1977 The Lerro Farm Site: An Exercise in Cooperative Archaeology. Bulletin of the Archaeological Society of New Jersey 34:14-32.
- Bonfiglio, Anthony, and John H. Cresson  
1978 Aboriginal Cultural Adaptation and Exploitation of Periglacial Features in Southern New Jersey. Paper presented at a meeting of the Archeological Society of New Jersey.
- Brennan, Louis A.  
1967 The Taconic Tradition and the Coe Axiom. New York State Archaeological Association Bulletin 37: 1-14.  
1968 The Twombly Landing Site. The Bulletin of the New York State Archaeological Association 42: 11-28. Rochester.  
1977 The Lower Hudson: The Archaic. In Amerinds and Their Paleo-Environments in Northeastern North America, edited by W. Newman and B. Salwen, Annals of the New York Academy of Sciences 288:411-430. New York.
- Broyles, Bette J.  
1966 Preliminary Report: The St. Albans Site (46 KA 27) Kanawha County, West Virginia. West Virginia Archaeologist 19:1-43.  
1971 Second Preliminary Report: The St. Albans Site, Kanawha County, West Virginia. West Virginia Geological and Economic Survey, Morgantown.

- Byers, Douglas S.  
1959 The Eastern Archaic: Some Problems and Hypotheses. American Antiquity 24(3): 233-256.
- Caesar, Margaret M.  
1963 The Pedricktown Site, Salem County, New Jersey: A Surface Collection. Bulletin of the Archaeological Society of New Jersey 21:1-12.
- Cavallo, John A., and R. Alan Mounier  
1980 A Regional Predictive Survey of the New Jersey Pinelands - Phase I. Report to New Jersey Pinelands Commission, New Lisbon, New Jersey.
- Coe, Joffre L.  
1964 The Formative Cultures of the Carolina Piedmont. Transactions of the American Philosophical Society, New Series 54(5). Philadelphia..
- Cook, Richard C.  
1960 The Cape May Point Site. Bulletin of the Archaeological Society of New Jersey 17:3-5.
- Cross, Dorothy  
1941 Archaeology of New Jersey. Volume One. Archaeological Society of New Jersey and New Jersey State Museum, Trenton.  
  
1956 Archaeology of New Jersey: The Abbott Farm. Volume Two. Archaeological Society of New Jersey and New Jersey State Museum, Trenton.
- Didier, Mary Ellen  
1975 The Argillite Problem Revisited: An Archaeological and Geological Approach to a Classical Archaeological Problem. Archaeology of Eastern North America 3:90-101.
- Dincauze, Dena F.  
1968 Cremation Cemeteries in Eastern Massachusetts. Peabody Museum of American Archaeology and Ethnology, Paper 59, Harvard University.  
  
1971 An Archaic Sequence for Southern New England. American Antiquity 36:194-198.  
  
1974 An Introduction to Archaeology in the Greater Boston Area. Archaeology of Eastern North America 2:39-67.  
  
1976 The Neville Site: 8000 Years at Amoskeag, Manchester, New Hampshire. Peabody Museum Monographs, Number 4, Harvard University.

- Dincauze, Dena F. and Mitchell T. Mulholland  
 1977 Early and Middle Archaic Site Distributions and Habitats in Southern New England. In Amerinds and Their Paleo-environments in Northeastern North America, edited by W. Newman and B. Salwen, Annals of the New York Academy of Sciences 288: 439-456. New York.
- Dumont, Elizabeth M. and Louis A. Dumont  
 1979 Of Paradigms and Projectile Points: Two Perspectives on the Early Archaic in the Northeast. The Bulletin of the New York State Archaeological Association 74: 38-52. Rochester.
- Edwards, Robert L. and K. O. Emery  
 1977 Man on the Continental Shelf. In Amerinds and Their Paleo-Environments in Northeastern North America, edited by W. Newman and B. Salwen, Annals of the New York Academy of Sciences 288: 245-256. New York.
- Edwards, Robert L. and Arthur L. Merrill  
 1977 A Reconstruction of the Continental Shelf Areas of Eastern North America for the Times 9,500 B.P. and 12,500 B.P. In Archaeology of Eastern North America 5:1-43. Eastern States Archaeological Federation. Milford, Delaware.
- Fowler, Melvin L.  
 1959 Summary Report of Modic Rock Shelter, 1952, 1953, 1955, 1956. Report of Investigations, No. 8. Illinois State Museum. Springfield.
- Funk, Robert E.  
 1965 The Archaic of the Hudson Valley: New Evidence and New Interpretations. Pennsylvania Archaeologist 35(3-4):139-160.  
 1976 Recent Contributions to Hudson Valley Prehistory. New York State Museum. Memoir 22. Albany.  
 1977 Early Cultures in the Hudson Drainage Basin. In Amerinds and Their Paleo-environments in Northeastern North America, edited by W. Newman and B. Salwen. Annals of the New York State Academy of Sciences 288: 316-332. New York.  
 1979 The Early and Middle Archaic in New York as seen from the Upper Susquehanna Valley. The Bulletin of the New York Archaeological Association 75: 23-38. Rochester.  
 1980 Comments concerning presentations of Herbert C. Kraft and R. Alan Mounier with regard to the Archaic period in New Jersey. Letter dated March 7, 1980 on file with

the Office of Cultural and Environmental Services, New Jersey Department of Environmental Protection. Trenton.

Griffin, James B.

- 1978     The Midlands and Northeastern United States. In Ancient Native Americans, edited by Jesse D. Jennings, pp. 226-239. W. H. Freeman & Co, San Francisco

Gruber, Jacob W., and Ronald J. Mason

- 1956     Temple University Excavations at Buri, Burlington County, New Jersey. Bulletin of the Archaeological Society of New Jersey 12:9-22.

Hall, Marvin D. Jr.

- 1977     The Miele Site. Bulletin of the Archaeological Society of New Jersey 34:8-14. South Orange.

Hawkes, E. W. and Ralph Linton

- 1916     A Pre-Lenape Site in New Jersey. University Museum Anthropological Publications 6:45-77. University of Pennsylvania.

Holland, C. G.

- 1955     An Analysis of Projectile Points and Large Blades. Bureau of American Ethnology, Smithsonian Institution, Washington, D.C.

Hunt, Charles B.

- 1967     Physiography of the United States. W.H. Freeman & Co.

Kier, Charles F., Jr.

- 1949     Cohansey Quartzite and the Riggins Farm. Archaeological Society of New Jersey Bulletin 2:1-7.

Kier, Charles F. Jr. and Fred Calverley

- 1957     The Raccoon Point Site: An Early Hunting and Fishing Station in the Lower Delaware Valley. Pennsylvania Archaeologist 27:61-100.

King, Thomas

- 1978     The Archaeological Survey: Methods and Uses. Heritage Conservation and Recreation Service, U.S. Department of the Interior. Washington, D.C.

Kinsey, W. Fred, III

- 1959     Recent Excavations on Bare Island In Pennsylvania: The Kent-Halley Site. Pennsylvania Archaeologist 29(3-4): 109-133.

- 1971     The Middle Atlantic Culture Province: A Point of View. Pennsylvania Archaeologist 41(1-2):1-8.

- 1972 Archaeology in the Upper Delaware Valley (with contributions by Herbert C. Kraft, Patricia Marchiando, and David J. Werner). Pennsylvania Historical and Museum Commission Anthropological Series, No. 3. Harrisburg.
- 1975 Faucett and Byrum Sites: Chronology and Settlement in the Delaware Valley. Pennsylvania Archaeologist 45:(1-2):1-103.
- 1977 Patterning in the Piedmont Archaic: A Preliminary View: In Amerinds and Their Paleo-Environments in Northeastern North America, edited by W. Newman and B. Salwen, Annals of the New York Academy of Sciences 288:375-391. New York.

Kraft, Herbert C.

- 1970 The Miller Field Site, Warren County, New Jersey: Part I. The Archaic and Transitional Stages. Seton Hall University Press, South Orange.
- 1973 The Plenge Site: A Paleo-Indian Occupation Site in New Jersey. Archaeology of Eastern United States 1(1):56-117. Attleboro.
- 1974 Indian Prehistory of New Jersey. In A Delaware Indian Symposium, edited by Herbert C. Kraft, Anthropology Series No. 4. Pennsylvania Historical and Museum Commission, Harrisburg.
- 1975 The Archaeology of the Tocks Island Area. Archaeological Research Center, Seton Hall University, South Orange.
- 1977 Paleo-Indians in New Jersey. In Amerinds and Their Paleo-environments in Northeastern North America, edited by W. Newman and B. Salwen, Annals of the New York Academy of Sciences 288:264-281. New York.
- 1977a The Paleo-Indian Sites at Port Mobil, Staten Island. In Current Perspectives in Northeastern Archaeology, Researches and Transactions of New York State Archaeological Association 17(1). Albany.
- 1978 The Minisink Site: A Reevaluation of a Late Prehistoric and Early Historic Contact Site in Sussex County, N.J. Archaeological Research Center, Seton Hall University, South Orange.
- 1979 Cultural Resources Survey of the Hudson County Utilities Authority Facilities Plan - Area III From Hoboken to Guttenberg, Hudson County, N.J. Archaeological Research Center, Seton Hall University, South Orange.

- Kraft, John C.  
 1977 Late Quarternary Paleogeographic Changes in the Coastal Environments of Delaware, Middle Atlantic Bight, Related to Archaeologic Settings. In Amerinds and Their Paleoenvironments in Northeastern North America, edited by W. Newman and B. Salwen, Annals of the New York Academy of Sciences 288: 35-69. New York.
- Lewis, Thomas M. N., and Madeline Kneberg Lewis  
 1961 Eva: An Archaic Site. University of Tennessee Study in Anthropology. Knoxville.
- Manson, Carl  
 1948 Marcey Creek Site: An Early Manifestation in the Potomac Valley. American Antiquity 13(3):223-227. Menasha.
- McCann, Catherine  
 1957 Six Late Sites in Southern and Central New Jersey. Archaeological Society of New Jersey Bulletin 13:1-10. Trenton.
- McNett, Charles W. Jr., Barbara A. McMillan, and Sydne B. Marshall  
 1977 The Shawnee-Minisink Site. In Amerinds and Their Paleoenvironments in Northeastern North America, edited by W. Newman and B. Salwen, Annals of the New York Academy of Sciences 288:282-296. New York.
- Morris, George J.  
 1974 The Boni Site, Gloucester County, N.J.: A Preliminary Report. Bulletin of the Archaeological Society of New Jersey 31:9-14.
- Mounier, R. Alan  
 1972 An Archaeological Survey of the Union Lake Area, Millville, New Jersey. The Vineland Historical Magazine XLIX (1). Vineland Historical and Antiquarian Society, Vineland, N.J.
- 1972a The Blue Hole Site. Bulletin of the Archaeological Society of New Jersey 29:14-27.
- 1974 Archaeological Investigations in the Maurice River Tidewater Area, New Jersey. Man in the Northeast 7:29-56.
- 1974a Rider College Excavations at the Lange Farm, Gloucester County, New Jersey. Unpublished report to Landtect Corporation, Philadelphia, Pa. Copy on file with New Jersey State Museum, Trenton.
- 1975 The Indian Head Site Revisted. Bulletin of the Archaeological Society of New Jersey 32:1-14.

- 1978     The Environmental Basis of Prehistoric Occupation on the New Jersey Coastal Plains.     Man in the Northeast 15-16:42-69.
- 1979     A Stage I Archaeological Survey of Portions of Northern Burlington County, New Jersey.     Unpublished report to Northern Burlington Regional Sewerage Authority, Bordentown, N.J.
- n.d.     1973 Excavations at the Indian Head Site.     Unpublished Report to the Maurice River Company, Millville, N.J. Copy on file with New Jersey State Museum, Trenton.
- n.d.a.   Archaeological Investigations in the Maurice River Tidewater Area, New Jersey.     Unpublished Master's Thesis. Memorial University of Newfoundland, St. John's, Nfld., Canada. Copy on file with New Jersey State Museum, Trenton.
- Rau, Charles
- 1864     Artificial Shell-Deposits in New Jersey. Annual Report for 1864.     Smithsonian Institution. Washington, D.C.
- Regensburg, Richard
- 1971     The Savich Farm Site: A Preliminary Report. Bulletin of the Massachusetts Archaeological Society 32(1-2):20-23.
- Ritchie, William A.
- 1932     The Lamoka Lake Site. Researches and Transactions of the New York State Archaeological Association 7(4). Rochester.
- 1961     The Stony Brook Site and Its Relation to Archaic and Transitional Cultures on Long Island.     New York State Museum and Science Service. Bulletin 372. Albany.
- 1965     The Archaeology of New York State.     Natural History Press. Garden City, New York.
- 1965a    The Small Stemmed Point in New England. Pennsylvania Archaeologist 35(3-4):134-138.
- 1969     The Archaeology of New York State (revised edition). Natural History Press, Garden City.
- 1971     A Typology of Nomenclature for New York Projectile Points (revised edition). New York State Museum and Science Service, Bulletin 384.
- 1971a    The Archaic in New York. New York State Archaeological Association Bulletin 52:2-12.



- 1979     Some Regional Ecological Factors in the Prehistory of Man in the Northeast. The Bulletin of the New York State Archaeological Association 75:14-23. Rochester.
- Ritchie, William A. and Robert E. Funk  
 1971     Evidence of Early Archaic Occupations on Staten Island. Pennsylvania Archaeologist 41(3):45-59. Ann Arbor.
- 1973     Aboriginal Settlement Patterns in the Northeast. New York State Museum and Science Service. Memoir 20.
- Robbins, Maurice  
 1968     An Archaic Ceremonial Complex at Assawompsett, Massachusetts. Massachusetts Archaeological Society.
- 1971     Some Early House Floors. Bulletin of the Massachusetts Archaeological Society 32(1-2):1-12. Attleboro.
- Salwen, Bert  
 1975     Post-Glacial Environments and Cultural Change in the Hudson River Basin. Man in the Northeast 10:43-70.
- Sargent, Paul H.  
 1953     Perforated Net Sinkers of Gloucester County, New Jersey. Bulletin of the Archaeological Society of New Jersey 6:5-6. Trenton.
- Schrabisch, Max  
 1915     Indian Habitations in Sussex County, New Jersey. In Geological Survey of New Jersey, Bulletin 13, Trenton.
- 1917     Archaeology of Warren and Hunterdon Counties. Reports of the New Jersey Department of Conservation and Development, Geological Series, Bulletin No. 18. Trenton.
- Service, Elman  
 1967     Primitive Social Organization. Random House, New York.
- Sirkin, Les A.  
 1977     Late Pleistocene Vegetation and Environments in the Middle Atlantic Region. In Amerinds and Their Paleoenvironments in Northeastern North America, edited by W. Newman and B. Salwen, Annals of the New York Academy of Sciences 288:206-217. New York.
- Sirkin, Les A., J. P. Owens, J. P. Minard, and M. Rubin  
 1970     Palynology of Some Upper Quaternary Peat Samples from the New Jersey Coastal Plain. U.S. Geological Survey Professional Paper 80-D:pp. 51-56.

- Skinner, Alanson B. and Max Schrabisch  
1913 A Preliminary Report of the Archaeological Survey of the State of New Jersey. New Jersey Geological Survey. Bulletin 9. Trenton.
- Spier, Leslie  
1915 Indian Remains near Plainfield, Union County and along the Lower Delaware Valley. Geological Survey of New Jersey, Bulletin 13. Trenton.
- Stephenson, Robert L. and Alice Ferguson  
1963 The Accokeek Creek Site, A Middle Atlantic Seaboard Culture Sequence. Anthropological Papers 20. University of Michigan.
- Struever, Stuart  
1968 Woodland Subsistence-Settlement Systems in the Lower Illinois Valley. In New Perspectives in Archaeology, edited by Sally R. and Louis R. Binford, Aldine Publishing Company, Chicago.
- Thomas, Ronald A.  
1978 A Cultural Resources Survey at the Great Swamp National Wildlife Refuge, New Jersey. Mid-Atlantic Archaeological Research, Inc., Newark, Delaware.
- Tuck, James A.  
1974 Early Archaic Horizons in Eastern North America. Archaeology of Eastern North America 2:72-80.  
  
1976 Ancient People of Port au Choix. Newfoundland Social and Economic Studies, No. 17. Institute of Social and Economic Research. Memorial University of Newfoundland. St. John's.
- U.S. Department of Commerce  
1968 Climatic Atlas of the United States. Washington, D.C.
- Werner, David J.  
1972 The Zimmermann Site. In Archaeology in the Upper Delaware Valley, edited by W. Fred Kinsey, III, pp. 55-130. Anthropological Series, No. 2. Pennsylvania Historical and Museum Commission, Harrisburg.
- Widmer, Kemble  
1964 The Geology and Geography of New Jersey. Van Nostrand Co., Princeton,
- Wilkins, Gary R.  
1978 Prehistoric Mountaintop Occupations of Southern West Virginia. Archaeology of Eastern North America 6:13-40. Ann Arbor.

- Wingerson, Roberta and Richard Wingerson  
1976     The Hunter Brook Rockshelter. The Bulletin of the New York State Archaeological Association 68:19-28.
- Winters, Howard  
1969     The Riverton Culture. Illinois State Museum. Reports of Investigations No. 13 and Illinois Archaeological Survey. Springfield.
- Witthoft, John  
1953     Broad Spearpoints and the Transitional Period Cultures. Pennsylvania Archaeologist 23(1):4-31. Milton.  
  
1955     Early Archaic Complexes of Southeastern Pennsylvania. Eastern States Archaeological Federation Bulletin 14:13.  
  
1959     Notes on the Archaic of the Appalachian Region. American Antiquity 25:79-85.  
  
1971     The Archaic of the Appalachian Region. In Foundations of Pennsylvania Prehistory, edited by B. Kent, I. Smith, and C. McCann, Pennsylvania Historical and Museum Commission, Harrisburg.
- Wolfe, Peter  
1977     The Geology and Landscapes of New Jersey. Crane-Russak Company, New York.
- Woolley, Harold K.  
1948     The Indians and Ocean County. Bulletin of the Archeological Society of New Jersey 1:4-12.

