NEW JERSEY PALEO-INDIAN HISTORIC CONTEXT

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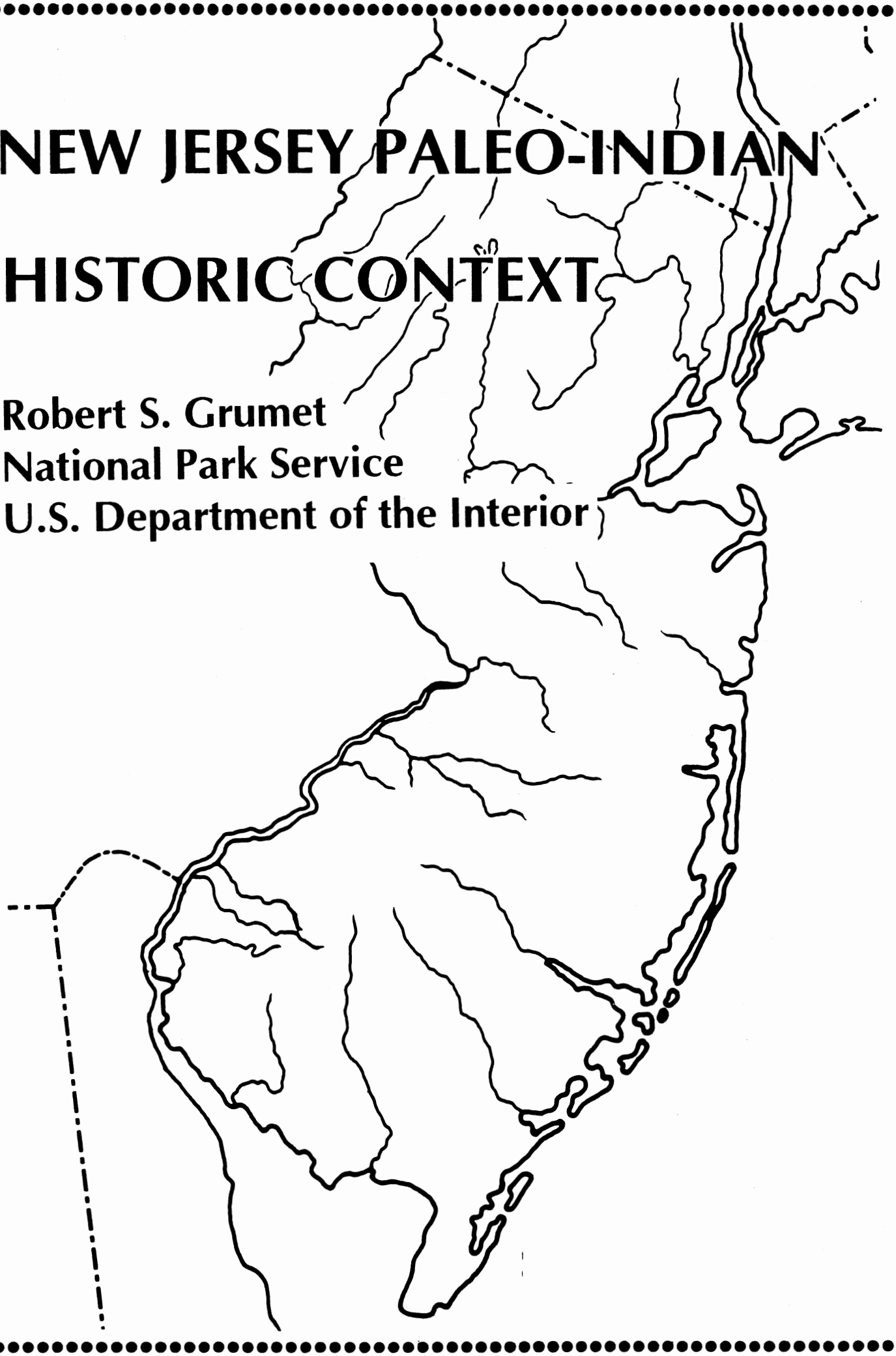

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Cultural Resource Management
Mid-Atlantic Region, National Park Service

in cooperation with

Office of New Jersey Heritage
Division of Parks and Forestry
Department of Environmental Protection

and

Preservation Planning Branch
Interagency Resources Division
National Park Service, Washington, D.C.

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The National Park Service is pleased to sponsor publication of the *New Jersey Paleo-Indian Historic Context*. This document is a significant contribution to comprehensive historic preservation planning for several reasons. It is, for example, one of the first planning documents to successfully incorporate key elements of the historic context framework recommended by the Secretary of the Interior's "Standards and Guidelines" into a single manageable document. It can also serve as a model for the organization and presentation of management goals and priorities. The document further makes a substantive scholarly contribution by providing an up-to-date regional synthesis of Paleo-Indian studies useful to scholars and other preservation professionals beyond the borders of New Jersey. And, most important, it is a highly readable document that clearly and concisely makes the technical subject of Paleo-Indian archeology comprehensible to planners and other members of the preservation public. By so doing, it demonstrates that historic contexts need not be dry academic reading but can be organized and phrased so that readers from non-cultural resource management disciplines can understand the values that are presented.

For these reasons, we believe that it is important that this document be read not only by archeologists but also by all individuals involved in resource management and land-use planning. Used as a model for format and level of presentation, the *New Jersey Paleo-Indian Historic Context* can assist Federal, State, and local agencies and others involved in comprehensive cultural resource preservation planning to develop more practical and effective historic context documents.

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OFFICE OF NEW JERSEY HERITAGE LETTER

ACKNOWLEDGEMENTS

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CREDITS

The maps and the integrity figures were drawn by Robert S. Grumet, Archeologist, Preservation Planning Branch, MARO - NPS. The line drawings of the Paleo-Indian attributes and projectile points were executed by Julie Pearson, Architectural Historian, Preservation Services Division, MARO - NPS. The cover and the manuscript were designed and formatted onto NBI 5000S desktop publishing system by Juliette G. Tahar, Publication Specialist, WASO - NPS. Publication of the document was coordinated by De Teel Patterson Tiller, Chief, Preservation Planning Branch, WASO-NPS.

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FOREWORD

This is the first in a series of Historic Context Historic Resource Management Planning Documents to be published by the Office of New Jersey Heritage (ONJH) during the next few years. Historic Contexts are valuable planning tools for State, county, and municipal governments, professional, and avocational archeologists, and others involved in historic preservation. They provide a systematic framework for identifying, evaluating, registering, and treating historic resources. Historic Context studies use historical, architectural, archeological, engineering, and cultural information. This information is then organized into cultural themes, regions, and time periods. These studies reveal significant broad patterns of development that permit identification and evaluation of relationships between individual properties and similar resources. Analysis of such relationships enables managers to establish goals and priorities for the identification, evaluation, registration, and treatment of New Jersey's historic properties.

Historic Contexts serve many purposes. Cultural resource managers, for example, can use property-specific Historic Context information to develop consistent, coherent approaches to manage individual properties or groups of resources. Historic Context theme chapters can be used in survey and planning reports and in State and National Registers of Historic Places significance statements. Both management agencies and funding applicants can utilize Historic Context goals and priorities in project selection and funding.

The *New Jersey Paleo-Indian Historic Context* is the first part of a Statewide framework. This framework will organize information on New Jersey's historic properties and establish planning goals and priorities for their preservation. The full listing of currently identified Statewide Historic Contexts includes:

Paleo-Indian Period	**11,500 - 8,000 Years Ago**
Early Archaic Period	**10,000 - 6,000 Years Ago**
Late Archaic Period	**6,000 - 3,000 Years Ago**
Early/Middle Woodland Period	**3,000 - 1,200 Years Ago**
Late Woodland Period	**1,200 - 200 Years Ago**
European Intrusion	**A.D. 1500 - A.D. 1700**
Initial Colonial Settlement	**A.D. 1630 - A.D. 1775**
Early Industrialization, Urbanization, and Cultural Development	**A.D. 1670 - A.D. 1840**
Industrialization, Urban Growth, and the First Suburbs	**A.D. 1790 - A.D. 1880**
Immigration and Agricultural, Industrial Commercial, and Urban Expansion	**A.D. 1850 - A.D. 1920**
Metropolitan New Jersey	**A.D. 1910 - A.D. 1945**
Modern New Jersey	**A.D. 1945 - Present**

Preservation Planning is a dynamic process. Surveys, inventories, nominations to the State and National Registers of Historic Places, and other preservation activities provide materials for Historic Context development. New information collected by these activities will lead to the development of other Historic Contexts on Statewide, regional, and local levels. The existing Statewide framework itself ultimately will almost certainly change in response to modifications in Federal and State preservation law and policy, changing development and preservation priorities, advances in scholarly technique and theory, and new information developed by Historic Context studies.

Information presented in this and other Historic Context documents represents a synthesis of the most current available materials. Files containing detailed site reports and other basic information relating to each Historic Context are maintained at the ONJH, and they may be viewed by appointment.

Each Historic Context document developed by the ONJH will be updated every five years. Those wishing to contribute new information or comment upon current Historic Context documents should contact: **Supervisor of Preservation Planning, Office of New Jersey Heritage, Department of Environmental Protection, Division of Parks and Forestry, CN-404, Trenton, New Jersey 08625.**

PUBLIC PARTICIPATION

The ONJH mailed copies of the first draft of the *New Jersey Paleo-Indian Historic Context* to the members of New Jersey's Preservation Planning Advisory Committee, the State Review Board, and to more than 100 archeologists, preservationists, and others on March 20, 1989. Comments on this mailing were received from John A. Cavallo, Olga Chesler, Stuart Fiedel, Richard Michael Gramly, Howard Green, Constance M. Greiff, John A. Hotopp, Richard Hunter, Kurt Kalb, Herbert C. Kraft, Sydne B. Marshall, Pauline S. Miller, Steven R. Mongno, R. Michael Stewart, and Schuyler Warmflash. Comments also were received from Robert E. Funk.

Revisions suggested by these commentators were incorporated into the interim draft produced during June, 1989. The ONJH mailed copies of the interim draft to all respondants to the first draft. Mail and telephone comments were received and incorporated in the final review draft. The final review draft was submitted to the ONJH on July 20, 1989. The ONJH mailed copies of the final review draft to all of the above-mentioned individuals and to all New Jersey Certified Local Governments. The New Jersey Department of Environmental Protection issued a public notice announcing public availability of the final draft for comment. The ONJH also placed notices of the availability of this draft for public review in major State newspapers. The ONJH completed final review of the Paleo-Indian Historic Context on November 11, 1989. The NPS completed preparation of this document in May 1990.

EXECUTIVE SUMMARY

THEME

Paleo-Indian

SUB-THEME

Paleo-Indian Life in New Jersey:
Early Paleo-Indian Period, 11,500 to 10,000 Years Ago
Late Paleo-Indian Period, 10,000 to 8,000 Years Ago

GEOGRAPHIC AREA

Statewide

TIME PERIOD

11,500 to 8,000 Years Ago

KNOWN AND EXPECTED PROPERTY TYPES

Large and Small Camps
Processing Sites
Quarries
Surface Point Finds

DISTRIBUTION

Known Regional Distribution:

Most Paleo-Indian remains have been found along the Delaware Drainage. Others have been found alongside small ponds in the Pinelands and near rivers draining into New York Harbor.

Site Preferences:

1) Nearby water sources such as:
   A) Riverbanks dating to Paleo-Indian times such as the Hudson and Delaware Rivers.
   B) The shores of since-drained Ice Age lakes such as Glacial Lake Passaic (today's Troy Meadows) or Glacial Lake Hackensack (today's Meadowlands).
   C) Nearby ancient Coastal Plain ponds formed during the Ice Age identified as "Pingos."

2) Low lying, level, and well drained terraces such as those at the Plenge site along the Musconetcong River and the Turkey Swamp site near the Manasquan River.

3) Level upland bluff terraces such as those located atop the Palisades and along the upper Delaware River valley.

4) Ridgetops and the crests of "cuestas," low highlands dividing the Outer and Inner Coastal Plains of southern New Jersey.

EVALUATION CRITERIA

Property Category:

Site
District

Significance:

National Register of Historic Places Significance Criteria:

Criterion A: Properties associated with events that have made a significant contribution to broad patterns of our history.

Criterion C: Properties representing a significant and distinguishable entity whose components may lack individual distinction.

Criterion D: Properties that have yielded, or may be likely to yield, information important to prehistory or history.

The national significance of potential National Historic Landmarks may be ascribed to Paleo-Indian historic resources satisfying one or more of the following applicable criteria:

Criterion 1: Properties that are associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent, the broad national patterns of United States history and from which an understanding and appreciation of those patterns may be gained; or

Criterion 4: Properties that embody the distinguishing characteristics of an architectural type specimen exceptionally valuable for the study of a period, style, or method of construction, or that represent a significant, distinctive, and exceptional entity whose components may lack individual distinction; or

Criterion 5: Properties that are composed of integral parts of the environment not sufficiently significant by reason of historical association or artistic merit to warrant individual recognition but collectively compose an entity of exceptional historical or artistic significance, or outstandingly commemorate or illustrate a way of life or culture; or

Criterion 6: Properties that have yielded or may be likely to yield information of major scientific importance by revealing new cultures, or by shedding light upon periods of occupation over large areas of the United States. Such sites are those that have yielded, or which may reasonably be expected to yield data affecting theories, concepts, and ideas to a major degree.

Note: All archeological properties recommended for NHL designation must satisfy Criterion 6.

Determination of Integrity:

Class I: High Integrity
Demonstrably intact and securely dated deposits containing artifacts, features, human remains, or other deposits clearly associated with Paleo-Indian occupation.

Class II: Moderate Integrity
Intact or slightly disturbed deposits containing absolutely or relatively dated Paleo-Indian artifacts indirectly associated with cultural or organic remains. Secondarily redeposited Paleo-Indian materials or intrusive artifacts, features, or other remains associated with other periods may occur.

Class III: Low Integrity
Disturbed, mixed, and undated deposits containing artifacts associated with the Paleo-Indian period and other periods.

Level of Significance:

Local--All identifiably Paleo-Indian historic resources.
State--All Class I sites and a wide range of Class II and III sites.
National--All Class I sites, and some Class II and Class III sites containing unprecedentedly significant deposits.

CURRENT DESIGNATION STATUS

No Paleo-Indian historic resources in New Jersey currently are designated in the State Register of Historic Places, the National Register of Historic Places, or as National Historic Landmarks (NHLs).

GOALS AND PRIORITIES

GOAL 1: IDENTIFICATION

Priority 1: Data Collection and Site Location
Priority 2: Collector Survey
Priority 3: Testing
Priority 4: Publication of Findings

GOAL 2: EVALUATION

Priority 1: Property Integrity Assessment and Classification.
Priority 2: Utilization of Historic Context Research Questions as a basis for identifying and prioritizing information needs.
Priority 3: National Register designation and recommendation of National Historic Landmark designation for nationally significant properties.
Priority 4: Designation of locally, State, or nationally significant properties to the State and National Registers of Historic Places.

GOAL 3: PROTECTION

Priority 1: Enhance Federal and State enforcement of Federal archeological resource protection laws for designated Paleo-Indian resources.
Priority 2: More effective implementation of State laws and regulations protecting designated Paleo-Indian resources.
Priority 3: Development of local historic preservation ordinances protecting designated Paleo-Indian resources.
Priority 4: Negotiation of historic preservation easements and other preservation options to protect designated Paleo-Indian resources.
Priority 5: Improve public awareness of all designated Paleo-Indian properties.
Priority 6: Acquisition of Paleo-Indian historic resources designated as NHLs that are not on Federal land.

REVIEW PROCESS

Recent advances in archeological technique and increases in archeological activity are generating new information at a rapid rate. Laws regulating management of archeological resources also are changing. Information contained within this historic context should accordingly be reviewed every five years to bring it up-to-date with the latest professional and legal developments.

OVERVIEW

New Jersey's first inhabitants are known as Paleo-Indians. Most archeologists currently recognize two phases of Paleo-Indian occupation. Early Paleo-Indians originally came to New Jersey following the last retreat of the most recent glacial advance at the end of the last Ice Age at least 11,500 years ago. The most distinctive evidence of their presence is a uniquely crafted "fluted" projectile point associated with the widespread Clovis culture known throughout North America.

The following Late Paleo-Indian phase developed as warming trends slowly transformed New Jersey's climate to one more closely resembling the modern environment. Lasting from 10,000 to 8,000 years ago, Late Paleo-Indian occupation is associated with a combination of large and small fluted points, unfluted lance-shaped projectile points and roughly chipped triangular stone projectiles most commonly found in the far west and farther north, and a small number of Dalton-Hardaway points associated with Late Paleo-Indian occupations located to the south and west of New Jersey. Relationships between Paleo-Indians and the makers of a variety of smaller notched stone projectile points associated with the following Early Archaic Period that began to appear during Late Paleo-Indian times currently are unclear.

Paleo-Indians left little evidence of their existence behind. Only the most durable remains associated with their life, such as stone tools, charcoal from their campfires, and bones of hunted or trapped animals, have survived to the present day.

Little material of this type has been found in New Jersey. Individual projectile points found on the surface of the ground, most likely lost or abandoned while their original makers or owners hunted or traveled, are the most commonly found evidence of Paleo-Indian occupation in the State. Buried Paleo-Indian resources also occur as single sites or within sites containing several layers of deposits from different time periods. Buried deposits may be located in rockshelters, farm fields, back yards, or any area containing relatively deep or undisturbed soils. Such resources frequently are exposed by plowing, erosion, development, or looting.

Buried sites containing Paleo-Indian projectile points associated with other artifacts or organic remains are very rare. Erosion has washed many sites away while highly acidic soils and other natural forces have destroyed almost all perishable objects. Most recently, farming, development, or looting have disturbed most known surviving Paleo-Indian sites in New Jersey.

Despite their rarity, most archeologists believe many Paleo-Indian historic resources await discovery in New Jersey. Many of these sites probably are deeply buried. Others are likely to be located underneath the offshore ocean floor. Traditional techniques such as surface survey and systematic excavation can reveal many of these sites. Geoarcheological methods such as soil analysis and landform interpretation and non-invasive techniques such as aerial, LANDSAT, and infra-red photography, ground penetrating radar, and magnetometer survey also can help archeologists discover presently unknown Paleo-Indian historic resources in New Jersey.

Evidence gathered from archeological sites in New Jersey, neighboring States, and other areas of North America indicates that Paleo-Indians were a nomadic hunting and gathering people. They probably lived in small, highly mobile family groups. Such groups probably traveled or traded across New Jersey and the surrounding region in search of food, raw materials, and the less tangible satisfactions of companionship and spiritual fulfillment.

Archeological sites associated with all phases of Paleo-Indian occupation are New Jersey's rarest historic resources. The scattered and fragmentary nature of most known Paleo-Indian deposits in the state compels archeologists to base their interpretations of New Jersey's earliest historic resources upon evidence drawn from other times and places. The more systematic of these interpretations, known as models, use information gathered from Paleo-Indian sites located beyond State boundaries and from historically documented hunting and gathering peoples living in what scholars consider similar environ-

ments, such as Eskimos and Athapaskan Indians from Alaska and northern Canada. These models constantly change as new information adds to or changes established ideas about Paleo-Indian life.

National Register Criteria for Evaluation must be used to evaluate significant Paleo-Indian districts and sites. Resources proposed for designation must exhibit high degrees of integrity. Intact Paleo-Indian cultural resources possessing the highest degrees of integrity, Class I and some Class II, have potential national significance. As such, they are prospective nominees as either National Historic Landmarks (NHLs) or as nationally significant designees in the National Register of Historic Places. Many Class II and III sites potentially can be nominated as local, Statewide, or nationally significant properties in either the New Jersey State or National Registers of Historic Places.

Deposits at all levels of integrity may provide information suitable for nomination under Criterion A, deposits clearly revealing broad patterns of Paleo-Indian life or revealing how Paleo-Indians contributed to broad patterns in history.

Many Class II and III integrity Paleo-Indian resources can be nominated under Criterion C, "Properties representing a significant and distinguishable entity whose components may lack individual distinction." An example of such a site is one in which fluted points are found nearby, but not with, caribou bones in the same layer in deposits containing other significant archeological resources.

Most Paleo-Indian districts and sites, however, will be nominated to the New Jersey State or National Register under Criterion D, "Properties that have yielded, or may be likely to yield, information in prehistory or history." Those proposed for designation as National Historic Landmarks must satisfy more stringent significance criteria. Paleo-Indian historic resources nominated for NHL status must meet National Historic Landmark Criteria 6 by showing that they, "have yielded or may be likely to yield information of major scientific importance by revealing new cultures or by shedding light upon periods of occupation over large areas of the United States. Such sites are those which have yielded, or which may reasonably be expected to yield data affecting theories, concepts, and ideas to a major degree."

The present rarity of undisturbed Paleo-Indian deposits in New Jersey, their general scarcity nationwide, the need for detailed knowledge about Paleo-Indian cultures, and the wide dispersal of Paleo-Indian settlements across large regions indicates that all Class I and many Class II Paleo-Indian historic resources discovered in New Jersey will possess potential national significance. Less intact Class II and III Paleo-Indian sites located in heavily plowed fields or other disturbed areas may nevertheless possess potential local, State, or national significance. The identification, designation, and protection of all such deposits in New Jersey represent vital preservation planning goals. Priorities established for each goal should identify the range of surviving Paleo-Indian historic resources in the State, designate the most significant of these resources, and, in so doing, provide the greatest possible protection for this little known and irreplaceable part of New Jersey's heritage.

TIME, PLACE, AND THEME

THEME

Paleo-Indian

SUB-THEME

Early Paleo-Indian Period, 11,500 to 10,000 Years Ago
Late Paleo-Indian Period, 10,000 to 8,000 Years Ago

GEOGRAPHIC AREA

Statewide

TIME PERIOD

11,500 to 8,000 Years Ago

INTRODUCTION

New Jersey's first inhabitants are known as Paleo-Indians. Most archeologists at present recognize two phases of Paleo-Indian occupation, Early (11,500 to 10,000 years ago) and Late (10,000 to 8,000 years ago). Some archeologists believe that Paleo-Indians were living in the Americas before 11,500 years ago. Others suggest that Paleo-Indian culture persisted into the Early Archaic period.

Several sites in the western half of the continent contain spectacular remains of ancient mammoth, mastodon, and buffalo hunts. Paleo-Indians in Eastern North America, however, generally left less dramatic evidence of their presence. Thus far, only stone tools, charcoal from their campfires, and, more rarely, post molds, charred nuts, seeds, and other plant remains, traces of dried blood on stone tools, bones of caribou, fish, and other animals, and human remains have survived to the present day.

Little material of this type has been found in New Jersey (see Module A). Individual projectile points found on the surface of the ground, most likely lost or abandoned while their original makers or owners hunted or traveled, are the most commonly found evidence of Paleo-Indian occupation in the State. Buried Paleo-Indian resources also occur as single sites or within sites containing several layers of deposits from different time periods. Buried deposits may be located in rockshelters, farm fields, back yards, or any area containing relatively undisturbed soils. Such resources frequently are exposed by plowing, erosion, development, or looting.

MODULE A
WHY ARE INTACT PALEO-INDIAN SITES SO HARD TO FIND?

Thousands of fluted and unfluted Paleo-Indian projectile points have been found throughout northeastern North America. The vast majority have been discovered as single stray finds at isolated find spots on or near the surface of the ground. Others have been carelessly dug up by collectors attracted more by their aesthetic or monetary value than their scientific significance. Somewhat more than 100 buried Paleo-Indian deposits have been extensively excavated by archeologists in northeastern North America. Only three of these are located in New Jersey.

Why are Paleo-Indian archaeological sites so hard to find? First, Paleo-Indians probably left few sites behind. By all indications, Paleo-Indians probably were not a populous people. If the thin population densities documented among historic hunters and gatherers are reflected in the scarcity of known Paleo-Indian sites, then the entire Paleo-Indian population of the Americas probably never numbered more than a few tens of thousands of individuals at any one time. Paleo-Indian people living in New Jersey, moreover, followed a nomadic way of life. Constantly on the move, Paleo-Indians probably rarely stayed in one place for more than a single season. Traveling lightly, they used a tool-kit emphasizing portable flexibility.

Large Paleo-Indian sites such as the Plenge Site in New Jersey, the Shoop Site in Pennsylvania, and the Thunderbird and Williamson Sites in Virginia have been found. Most of their campsites, like those left by members of subsequent Indian cultures, are small. The absence of diagnostic artifacts or datable deposits associated with scatters of rocks or other cultural remains, moreover, continues to ensure the unrecognizability of most Paleo-Indian sites.

Geological and environmental changes also obliterated or buried most Paleo-Indian sites. Erosion has almost certainly destroyed many Paleo-Indian deposits. Other sites probably lie under deeply buried Ice Age beaches, riverbanks, or lakeshores. Many of these sites may be beneath the ocean floor under the Continental Shelf. Others lie buried along-side ancient rivers or glacial ponds commonly known as "pingos."

Surface survey and relatively shallow excavation techniques also have failed to reveal many Paleo-Indian deposits. Systematic survey of Paleo-Indian resources has not yet been undertaken. Few investigators, moreover, have used deep augering or geoarcheological methods to discover or analyze potential Paleo-Indian deposits.

These factors explain why few Paleo-Indian historic resources have been discovered in the past. Deeply buried and difficult to detect, most finds have been accidental discoveries revealed by natural or cultural ground disturbance. There is, however, a strong probability that many Paleo-Indian sites await discovery. It is therefore vital that planning, rather than emergency crisis intervention, be the primary management tool for preservation of this important and still little understood aspect of our heritage.

Sites containing Paleo-Indian points clearly associated with other artifacts or organic remains are very rare (see Map 1). Erosion has washed many sites away while highly acidic soils and other natural forces have destroyed almost all perishable objects. Most recently, farming, development, or looting have disturbed virtually all known surviving Paleo-Indian sites in New Jersey.

Despite their rarity, most archeologists believe many Paleo-Indian historic resources await discovery in New Jersey. Many of these sites probably are deeply buried. Others are likely to be located underneath the offshore ocean floor. Traditional techniques such as surface survey and systematic excavation can reveal many of these sites. Geoarcheological methods such as soil analysis and landform interpretation and non-invasive techniques such as aerial, satellite, and infra-red photography, ground penetrating radar, and magnetometer survey also can help archeologists discover presently unknown Paleo-Indian resources in New Jersey.

MAP 1. SOME EXCAVATED PALEO-INDIAN SITES IN NORTHEASTERN NORTH AMERICA, CA. 11,500 - 8,000 YEARS AGO. Fewer than 50 Paleo-Indian sites have been systematically excavated in the Northeast. This map shows most of the major sites and site complexes for which reports have been written.

Evidence gathered from archeological sites in New Jersey, neighboring states, and other areas of North America suggests that Paleo-Indians were almost certainly nomadic hunting and gathering people. They probably lived in small, highly mobile family groups. Such groups probably traveled or traded across New Jersey and the surrounding region in search of food, raw materials, and the less tangible satisfactions of companionship and spiritual fulfillment.

Archeological sites associated with all phases of Paleo-Indian occupation are the rarest of New Jersey's historic resources. The scattered and fragmentary nature of most deposits located within State boundaries obliges archeologists to base their interpretations of New Jersey's earliest historic resources upon evidence drawn from other times and places. The more systematic of these interpretations, known as models, use information drawn from Paleo-Indian sites located beyond State boundaries and from historic hunting and gathering peoples living in environments similar to Paleo-Indian New Jersey, such as Athapaskan Indians, Alaskan Eskimos, and Canadian Innuit people. These models constantly change as new information adds to or changes established ideas about Paleo-Indian life (see Module B).[1]

MODULE B
HOW DO WE KNOW WHAT PALEO-INDIAN LIFE WAS LIKE?

The Paleo-Indian way of life disappeared more than 8,000 years ago. Finds of individual Paleo-Indian projectile points within more recent prehistoric deposits suggest that Indians living in more recent times occasionally reused Paleo-Indian tools. It is, however, almost certain that the users of such tools did not have direct knowledge of either their original purpose or the way of life of their makers.

Paleo-Indian projectile points have been collected for more than 200 years. The 1927 discovery of fluted points (Figures 1, 2, and 3) within the ribs of extinct bison at a site near Folsom, NM, however, provided the first solid evidence of their great age.[1] Subsequent discoveries at other archeological sites have since firmly established the presence of Paleo-Indians throughout the Americas just after the end of the most recent Ice Age.[2]

Although each Paleo-Indian site is unique, the contents and distribution of Paleo-Indian sites are broadly similar to those associated with prehistoric hunting and gathering peoples from other parts of the world. Most contain generally light scatterings of stone artifacts, organic remains, and other features strongly reminiscent of nomadic campsites. This pattern has been reinforced by more recent ethnoarcheological studies of modern Eskimo and Athapaskan Indian hunting and gathering cultures living under conditions thought to be similar to those of Ice Age America.[3] Studies of Eskimos, Athapaskans, and other historically documented hunting and gathering people provide models for the interpretation of Paleo-Indian sites. Such models periodically change as scholarly interests shift. One hundred years ago, for example, most archeologists believed that hunters and gatherers lived nasty, brutish, and short lives. Anthropologists working among modern hunting and gathering peoples throughout the world during the 1960's, however, introduced a different view. Impressed by the efficiency of hunter-gatherer adaptations to often challenging environments, these anthropologists dubbed such people members of "The Original Affluent Society."[4]

Most recently, a more complex picture of hunters and gatherers has emerged. Increasing numbers of anthropologists have begun to examine the effects of history, culture contact, and other factors upon hunter-gatherers.[5] Future research will doubtless produce new interpretations. One thing can be certain, however. No matter what the current scholarly interpretation, future Paleo-Indian research in New Jersey will both reflect and stimulate scholarly study of hunting and gathering adaptations in both North America and the rest of the world.

NOTES

1. J.D. Figgins. "The Antiquity of Man in America," *Natural History*, 27 (1927):229-239.

2. C. Vance Haynes. "Carbon-14 Dates and Early Man in the New World," in Paul S. Martin and H.E. Wright, editors, *Pleistocene Extinctions: The Search for a Cause* (New Haven, Connecticut and London, England: Volume 6 of the Proceedings of the VII Congress of the International Association for Quaternary Research, Yale University Press, 1967).

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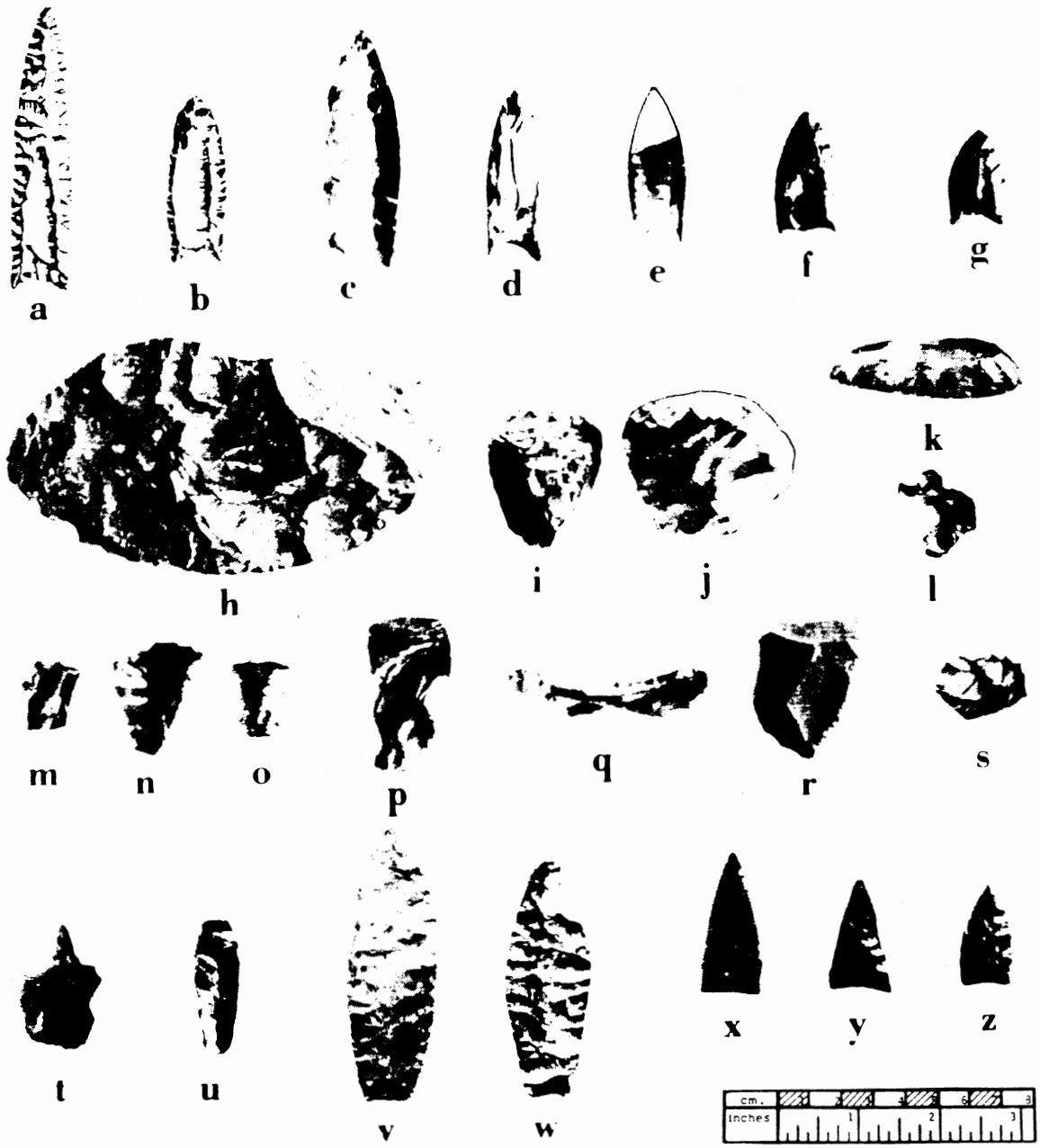


FIGURE 1. Paleo-Indian Artifacts: (a) typical western Clovis point; (b) typical western Folsom point; (c-e) eastern Clovis points or fluted points; (f-g) miniature fluted points; (h) "sway-backed" knife; (i-j) large end scrapers; (k) specialized end scraper; (l) eccentric combination tool; (m-o) end scrapers with spurs; (p) concave scraper on a blade; (q) elongated concave scraper or "strangulated blade"; (r) combination side scraper with two graver tips; (s) multiple graver; (t) drill or reamer; and (u) twist drill. Terminal Paleo-Indian artifacts: (v-w) Plano-like points; and (x-z) Paleo-triangles. [Found: (e-u, x) the Plenge site; (y-z) the Port Mobil site; and (c-d, v-w) Sussex county and Great Meadows, New Jersey. Courtesy of: (f-q, s-u, x) collection of Leonard Ziegler; (e) collection of William Stanley; (r,w) collection of F. Dayton Staats; (y-z) heirs of Joseph Bodnar; and (c-d, v) Seton Hall University Museum. Drawings: (a-b) John T. Kraft. Photographs: (c-z) Herbert C. Kraft.] (Reproduced from The Lenape: Archaeology, History and Ethnography, *by Herbert C. Kraft. Published by the New Jersey Historical Society, 1986.)*

Figure 2

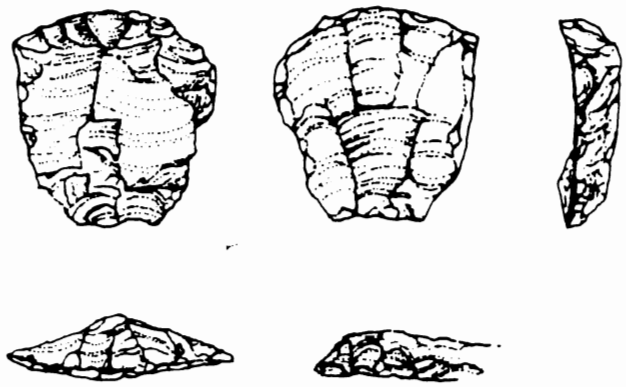


Figure 3

FIGURE 2. FLUTED POINT ATTRIBUTES. All artifacts possess a certain number of distinct diagnostic characteristics, known as attributes. Recognition of these characteristics helps archeologists identify and date tools, weapons, and deposits. Unlike many bifacially flaked stone tools, Paleo-Indian fluted points contain several highly recognizable attributes such as fluting and basal grinding.

FIGURE 3. SCRAPER ATTRIBUTES. Scrapers constitute the largest number of artifacts associated with Paleo-Indians and other early Native American cultures. Many scraper types have been identified on the basis of their attributes. Archeologists, however, have thus far been unable to definitively identify scrapers diagnostic of the Paleo-Indian Period.

CHAPTER NOTES

1. The recent article by Robert L. Kelly and Lawrence C. Todd, "Coming into the Country: Early Paleoindian Hunting and Mobility," *American Antiquity*, 53 (1988):231-244 dramatically illustrates the limits of analogy. Kelly and Todd note that Paleo-Indians lived in a rich and diverse environment completely unlike its modern counterpart. Pointing out that Paleo-Indian environments more closely resembled modern sub-arctic forests than arctic tundra, R. Michael Stewart has suggested that Athapaskan Indians rather than Alaskan Eskimos or Canadian Innuit may provide more appropriate models of Paleo-Indian cultures (personal communication, 1989).

RESEARCH QUESTIONS: NORTH AMERICAN PALEO-INDIAN LIFE

The scattered and fragmentary nature of Paleo-Indian remains found throughout North America have raised more questions than they have answered. Analysis of existing and new information from New Jersey bearing upon nationally significant issues concerning Paleo-Indian life and culture should address the following questions:

1) When Did People First Come to the Western Hemisphere?

All securely dated intact archeological deposits from New Jersey (see Evaluation Criteria) can potentially provide data supporting or challenging accepted chronologies. Artifact assemblages and other remains from such sites potentially can support or challenge existing typologies and identifications of artifacts or features considered diagnostic of America's first inhabitants.

2) Where Did they Come from and by what Route Did they Travel?

Correlations of relative locations of securely dated Paleo-Indian deposits of high integrity or clearly located materials from sites possessing lesser degrees of integrity can potentially provide important data addressing this question.

3) What Were their Physical Characteristics and Biological Relationships?

Very few clearly identified human remains of Paleo-Indian people have been found anywhere in North America. Respectfully conducted scientific analysis of all Paleo-Indian human remains found within a clearly dated context can reveal potentially significant patterns of health, disease, and demography.

4) When Did Paleo-Indians fully Occupy North America?

All securely dated intact sites can potentially provide data supporting or challenging established chronologies and typologies currently used to determine when and where Paleo-Indians completed human occupation of the continent.

5) What Was their Culture Like?

Stone tools represent the largest body of artifacts currently associated with Paleo-Indians. Deposits containing remains of less well understood aspects of their culture are potentially of national significance. Examples include remains revealing property types, settlement patterns, shelter types, dietary preferences, or spiritual beliefs. Such information will most likely be recovered from intact features unequivocally associated with securely dated deposits or typologically diagnostic artifacts. Such new information can confirm or alter existing reconstructions.

6) What Were their Relationships with People in Other Regions?

Intact deposits and plow zone or surface collected artifacts can reveal the presence of demonstrably exotic raw materials or artifact styles and types currently associated with other regions. Analysis of these materials can reveal significant patterns of interaction and suggest sources for continuity and change.

7) How Did Paleo-Indian Culture Change?

Analysis of data from individual sites in New Jersey and study of patterns revealed from deposits in sites located both within and beyond State boundaries can potentially refine existing regional chronologies and test current settlement-subsistence models and other national or regional interpretive frameworks.

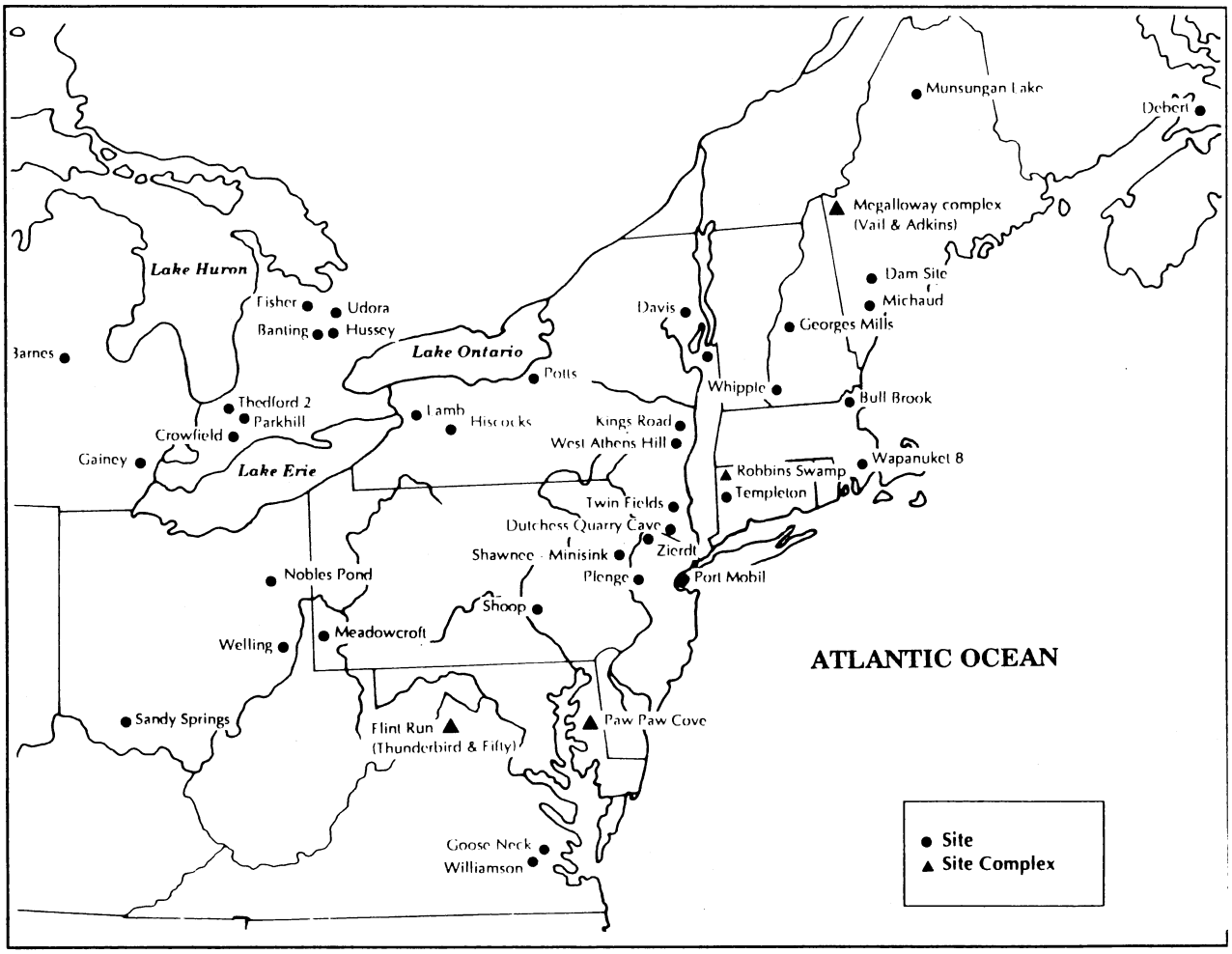
8) What Does the Disappearance of Diagnostic Paleo-Indian Tools and Other Remains Indicate?

Artifacts, features, and other remains from the most recent securely dated Paleo-Indian deposits can reveal when, why, and what changed about Paleo-Indian culture that ultimately led to the development of Early Archaic lifeways.

PALEO-INDIAN LIFE IN NEW JERSEY

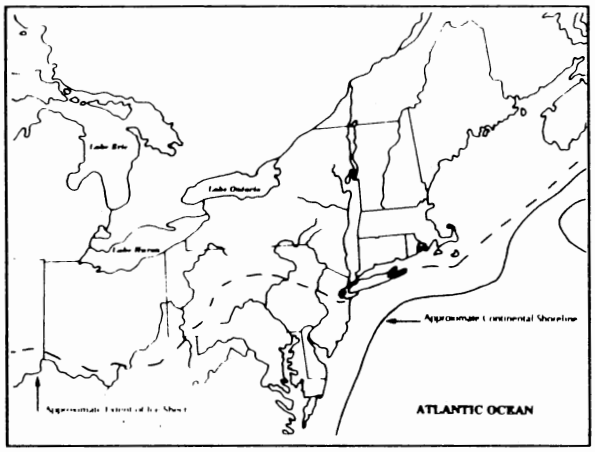
THE EARLY PHASE: 11,500 - 10,000 YEARS AGO

Much controversy surrounds the subject of the earliest settlement in the New World. Many archeologists, however, generally agree that Paleo-Indians were living in New Jersey by 11,500 years ago, several thousand years after the glacial ice-sheets retreated north from New Jersey. The size, structure, content, and distribution of the earliest known archeological sites in the northeast strongly suggests that Paleo-Indians lived in small, mobile, far-ranging nomadic hunting and gathering family groups (see Map 2).[1]

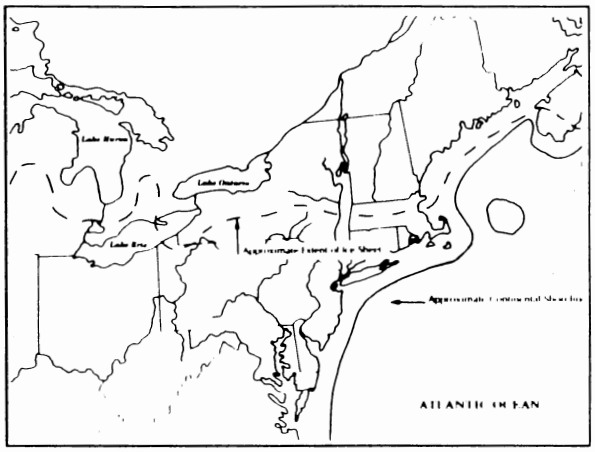


MAP 2: SOME EARLY PHASE PALEO-INDIAN SITES IN NORTHEASTERN NORTH AMERICA, CA. 11,500 TO 10,000 YEARS AGO. Most known documented Northeastern Paleo-Indian sites either date to the Early Paleo-Indian Phase or contain Early Paleo-Indian Phase components.

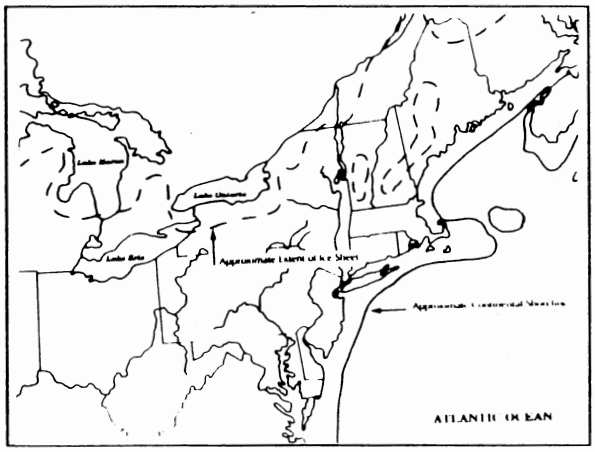
New Jersey's earliest Paleo-Indian people inhabited a landscape much different from that found today. Theirs was a complex and diverse environment of windswept tundra, dense spruce forests, oak, maple, and hemlock woodlands, and expanses of prairie grasses. Seasonal changes probably were not as significant as they now are. Wind and water eroded old landscapes and created new ones. The still retreating glaciers had scoured deep valleys and piled huge masses of boulders, gravel, and sand into ridges and hills across the state's northern counties. Rivers fed by rain and glacial ice melt filled landlocked ponds and large lakes such as ancient Lakes Passaic and Hackensack and deposited vast amounts of sand and gravel onto New Jersey's lowlands. Mammoths, mastodons, giant beavers, short-faced bears, caribou, elk, horse, and other animals now extinct or no longer found in New Jersey lived together upon the state's plains and highlands. Walruses, seals, and other animals swam in the waters off the now-submerged coastline.



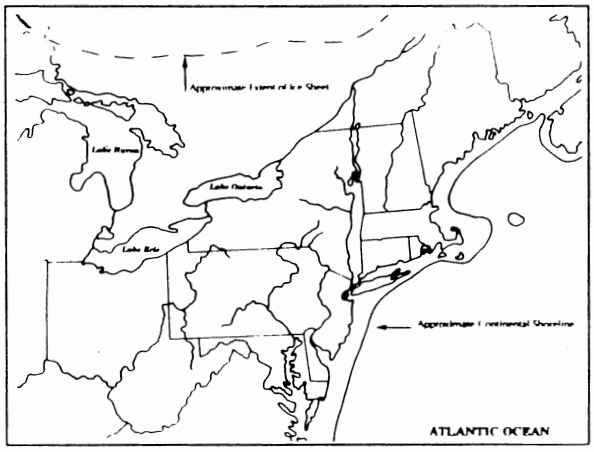
Map 3: Ice-front positions ca. 18,000 years ago



Map 4: Ice-front positions ca. 14,000 years ago



Map 5: Ice-front positions ca. 12,000 years ago



Map 6: Ice-front positions ca. 10,000 years ago

MAPS 3 - 6. ICE-FRONT POSITIONS CA. 18,000 YEARS - 10,000 AGO. These maps chart the retreat of the most recent glacial advance and the associated rise in sea level in Northeastern North America between 18,000 and 10,000 years ago. Most archeologists believe that people first came to the region sometime during these years (adapted from J. Gordon Ogden, "The Late Quaternary Paleoenvironmental Record of Northeastern North America," in Newman and Salwen, editors, Amerinds and their Paleoenvironments ***[1977]:16-34).***

Rain and water released from melting glaciers was gradually raising the world sea level by the time the first Paleo-Indian people came to New Jersey 11,500 years ago. Water locked in Canadian glaciers, however, was more than enough to affect world climate and keep the ocean from flooding the now-submerged coastal flatlands of the continental shelf for a distance of more than 80 miles to the east of New Jersey's present shoreline. Although direct evidence is lacking, the earliest Paleo-Indian inhabitants of New Jersey may have spent much of their time on the now submerged continental shelf (see Maps 3 - 6).[2]

Archeologists generally recognize carefully crafted slender lance-shaped chipped stone projectile points as the most distinctive evidence of the earliest Paleo-Indian occupations in New Jersey. These tools are commonly associated with the Clovis culture that spread throughout the Americas between 11,500 and 10,000 years ago. Archeologists generally call such implements "Fluted Points," in reference to narrow vertical channel-like scars known as flutes, formed by removal of one or two flakes from one or both sides of the point during its manufacture (see Module C).

Fluted points presently are the only diagnostic artifacts known to have been manufactured exclusively by early Paleo-Indians. Chipped stone scrapers and flakes and, more rarely, charcoal, fire cracked rock, and charred seeds, nuts, or fish-bones are sometimes found with fluted points at various sites in or near New Jersey.[3]

The remains of caribou, elk, moose, walrus, mammoths, mastodons, bison, and other animals now extinct or no longer living in this area also are found throughout the region. Most sites containing unequivocal evidence that early Paleo-Indians hunted these animals are located in the western half of North America. Sites containing incontestable associations between Paleo-Indians and the animals they hunted are less frequently found east of the Mississippi River (see Map 7).[4]

Discovery of Paleo-Indian tools with beaver bones and what are thought to be the charred bones of caribou at the Bull Brook site in Massachusetts and other finds from the Whipple site and other New England locales provide evidence associating game animals and Early Paleo-Indians in northeastern North America. Nearer to New Jersey, caribou bones have been found in the same level with a fluted point in deeply buried deposits at the Dutchess Quarry Cave site in Orange County, NY.[5]

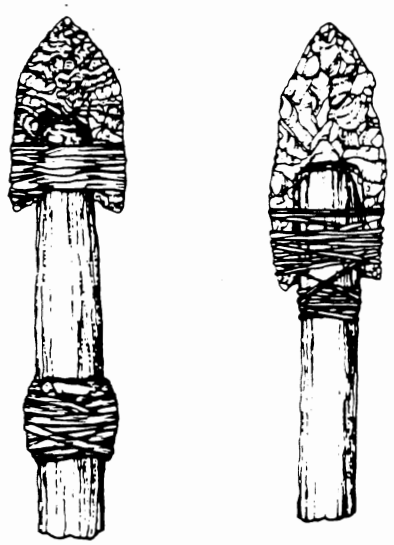


FIGURE 4: HAFTED FLUTED POINT RECONSTRUCTIONS. Well preserved shafts found attached to fluted points, wear patterns, and hafting residues such as tar or animal glue indicate that Paleo-Indians bound fluted points to spears, lances, or darts. (Left: Adapted from Kenneth B. Tankersley. The Paleo-Indian Period in Kentucky *[1988: Report on file, Kentucky Heritage Council]. Right: Adapted from* William A. Haviland and Marjory Power. The Original Vermonters *[1981: Trustees of the University of Vermont. Reprinted by permission of University Press of New England].)*

MODULE C
WHAT IS A FLUTED PROJECTILE POINT?

Finely crafted lance-shaped chipped stone projectile points are the most distinctive artifacts associated with Paleo-Indians. The earliest of these, 11,500 to 10,000 years old, are associated with the widespread Clovis culture. Named after the New Mexico site where they were first identified, Clovis points are typically long narrow symmetrically chipped projectile points. Most are thinned at their base by the removal of flakes from one or both sides. This technique, known as fluting, is not found on any other tool manufactured after the Paleo-Indian era. As such, it has become the hallmark of Paleo-Indian occupation throughout the Americas.

Paleo-Indian points have been found throughout North and South America. Fluted points are most commonly found, however, in North America from central Canada south to Panama. Several 35,000-to 10,000-year-old sites associated with people following a way of life somewhat similar to Paleo-Indians have been found in Siberia. Lacking fluted points and containing carved figurines, the unique central Siberian site of Mal'ta nevertheless bears some resemblance to the Anzick Site, a Clovis culture deposit in Montana.[1] Sites like Mal'ta suggest that the Paleo-Indian way of life originated in the Old World. The absence of fluted points in these sites, however, also indicates the technique of fluting stone points was most probably a North American invention.

Paleo-Indian point makers generally used the finest available stones to make fluted points. Some scholars believe that fluting facilitated insertion of spearpoints into the split ends of spear or lance shafts. Experiments upon the carcasses of recently deceased elephants and other animals suggest that the fluting technique created a weapon capable of piercing the thick hides of mamoths, mastodons, and other Ice Age animals.[2] Other experiments, however, indicate that fluting weakened the structural integrity of projectiles and wasted valuable materials while adding little functional utility. Noting this situation, several scholars have suggested that fluting may have been an artform rather than a utilitarian attribute.[3]

Paleo-Indians gradually shifted production from large Clovis-like points to generally smaller fluted points and unfluted lanceheads, triangular points, and other projectile points during Late Paleo-Indian times. The reasons for this change and the situation it represents are unclear. What is clear, however, is that fluted points were not made by Early Archaic people and others who succeeded the Paleo-Indians. Forgotten for nearly 10,000 years, the fluting technique itself has only recently been reinvented by modern archeologists.[4]

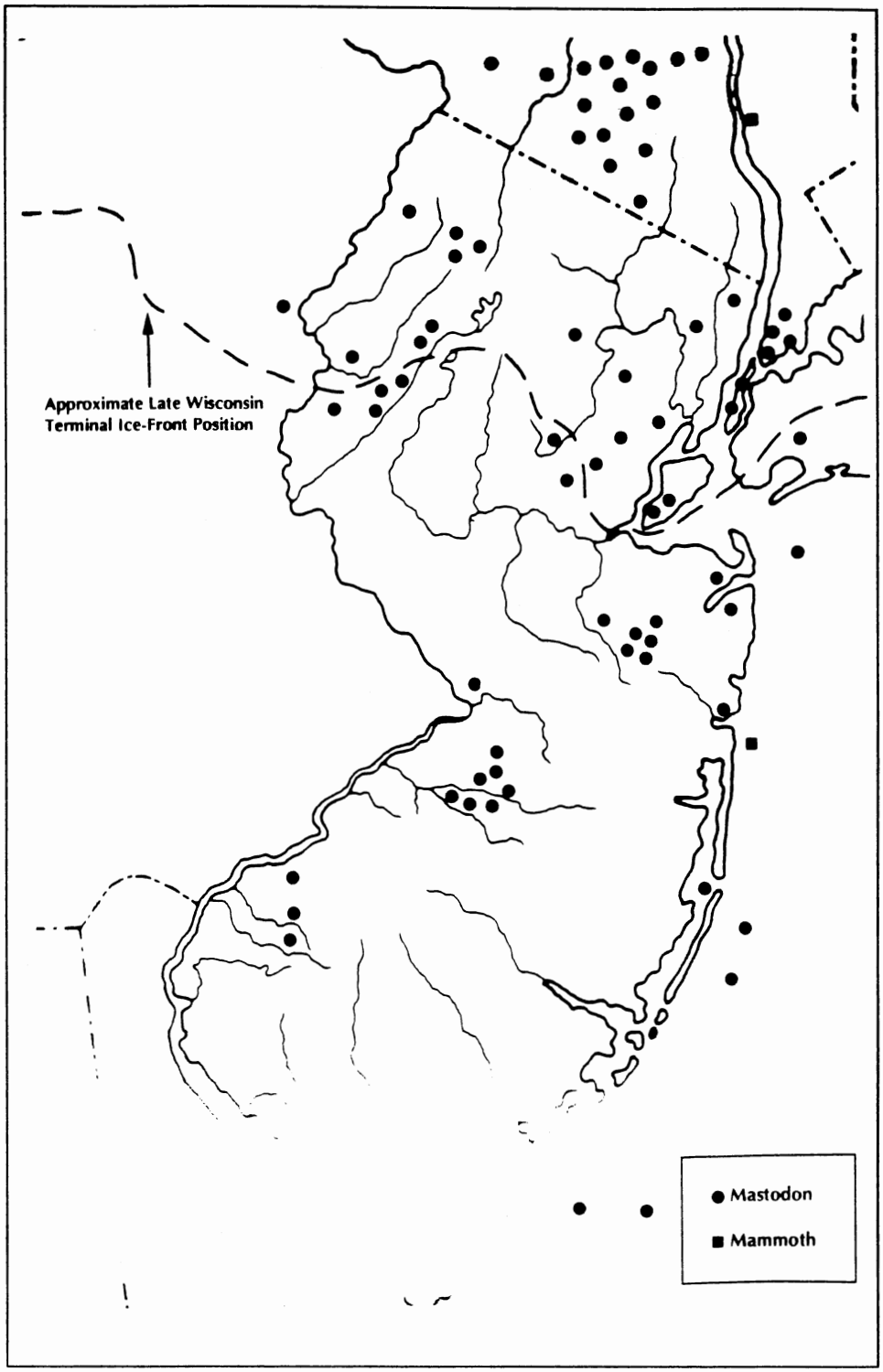
NOTES

1. See Nikolai N. Dikov, "On the Road to America: Ice Age Sites in Siberia Provide Glimpses of the Asians Who May Have Crossed the Bering Land Bridge," *Natural History*, January (1988):10-14 for a discussion of Siberian sites formed during or before Early Paleo-Indian times.

2. Dennis Stanford. "The Ginsberg Experiment: Archeology Can Be Bone Breaking Work," *Natural History*, September (1987):10-14.

3. George C. Frison. "Paleoindian Subsistence and Settlement during Post-Clovis Times on the Northwestern Plains, the Adjacent Mountain Ranges, and Intermontane Basins," in Ronald C. Carlisle, editor, *Americans Before Columbus: Ice-Age Origins*, 83-106.

4. Don E. Crabtree. "An Introduction to Flint Working," *Occasional papers of the Idaho State University Museum*, 28 (1972).



MAP 7: MAMMOTH AND MASTODON REMAINS IN THE NEW JERSEY AREA. Many bones and teeth of extinct mammoths and mastodons have been found in and around New Jersey. Several have been dredged from the floor of the continental shelf. Sites in western North America show that Paleo-Indians in those regions hunted or scavenged mammoths and mastodons. Radio-carbon dates suggest that these animals lived in New Jersey when people first arrived in the State. No evidence linking people with either mammoths or mastodons, however, has yet been found in or near New Jersey (adapted from Kraft, 1973:60 via Sydne Marshall," Aboriginal Settlement in New Jersey" [1982] 20).

Few examples of the remains of Early Paleo-Indian people have thus far been found in North America. A human finger bone and a fragment from the back of a human skull have been excavated at Meadowcroft Rockshelter in western Pennsylvania from deposits whose age may range from 10,600 to 16,000 years old.[6] Human bones found at the Warm Mineral Springs site in Florida date to the latter years of the Early Paleo-Indian phase between 9,000 and 10,300 years ago. These remains, and others found in sites west of the Mississippi River, show that Paleo-Indian people were very closely related to modern Native American populations and strongly suggest common origins in Asia.[7]

Nearly 300 fluted points are known to have been found in New Jersey or nearby. Most are isolated finds of individual points discovered on the surface of the ground. Other individual fluted points have been found in deeply buried deposits within the Abbott Farm Historic District National Historic Landmark and at the Carpentersville, Kandy Bar, and Timber Swamp Brook sites. Heavily plowed fields at the Zierdt and Plenge Sites, located respectively in the northern New Jersey counties of Sussex and Warren, contain concentrations of fluted points associated with other stone tools. Few sites in New Jersey, however, are currently known to contain undisturbed Early Paleo-Indian deposits.[8]

Virtually nothing is known about such perishable aspects of Early Paleo-Indian technology as clothing, housing, or watercraft. "Hot spots" containing concentrations of artifacts occasionally associated with debris and, more rarely, hearths, and post molds containing the remains of wooden poles or posts found at several sites throughout the northeast suggest the past presence of shelters and camps. A possible Early Paleo-Indian stone meat storage structure associated with such a "hot spot" has been reported at the Adkins site, one of the Megalloway Valley Paleo-Indian Complex sites in western Maine.[9] Little more than stone tools have survived in New Jersey sites. Analysis of fluted points suggests that they were used as spearpoints, lanceheads, or knives. Paleo-Indian toolkits also included uniface and biface knives, scrapers, gravers, borers, drills, and wedges, as well as sharpened flakes and pecked stone hammers and anvils. These and other more perishable tools probably were used to prepare meat and hides, cut and chop wood, process plants, and craft wood, bone, and horn tools.[10]

A significant percentage of fluted points and other tools found in New Jersey, however, were manufactured from stones originating in Maryland, Delaware, Pennsylvania, or New York. Many of these came from sources located to the north and west of New Jersey. This pattern indicates that Paleo-Indians either had close connections with the Hudson and Delaware River Valleys or that they used cobbles and pebbles pushed or washed from glaciers.[11]

Paleo-Indians usually chose fine-grained cherts especially suited for making sharp, light, and durable stone tools and weapons. Locally available rocks quarried from stone outcrops or gathered from cobbles in streambeds frequently were used. Most stone outcrops were located in the northern and western part of the State. Cobbles and pebbles were found on the ground and in riverbeds throughout New Jersey.

CHAPTER NOTES

1. Many archeologists believe that discovery of securely dated "Pre-Clovis" cultural traditions may ultimately disclose the existence of human occupations predating the currently accepted 11,500 year baseline. Roger Lewin's reports, "The First Americans Are Getting Younger," *Science*, 238 (1987):1230-1232 and "Scepticism Fades Over Pre-Clovis Man," *Science*, 244 (1989):1140, cover the current status of this effort. Also see Ronald C. Carlisle, editor, *Americans Before Columbus: Ice-Age Origins* (Pittsburgh, PA: Department of Anthropology, University of Pittsburgh Ethnology Monographs 12, 1988) and John Tomenchuk and Robson Bonnichsen, editors, *Abstracts: Papers, Posters, and Collections, The First World Summit.*

2. Up-to-date overviews of Paleo-Indian human ecology appear in Ronald C. Carlisle, editor, *Americans Before Columbus: Ice-Age Origins* and George P. Nicholas, editor, *Holocene Human Ecology in Northeastern North America* (New York, NY: Plenum Press, 1988). Several influential articles detailing the state of knowledge about northeastern North America as of 1977 appear in Walter S. Newman and Bert Salwen, editors, "Amerinds and Their Paleoenvironments in Northeastern North America," *Annals of the New York Academy of Sciences*, 228 (1977): passim. See especially John Kraft, "Late Quaternary Paleogeographic Changes in the Coastal Environments of Delaware, Middle Atlantic Bight, Related to Archaeologic Settings," 35-69, and Les Sirkin, "Late Pleistocene Vegetation and Environments in the Middle Atlantic Region," 206-217. An excellent compilation of environmental information relating to the Paleo-Indian occupation of New Jersey may be found in Sydne Marshall, "Aboriginal Settlement in New Jersey During the Paleo-Indian Cultural Period," in Olga Chesler, editor, *A Review of Research Problems and Survey Priorities: The Paleo-Indian Period to the Present* (Trenton, NJ: Office of New Jersey Heritage, 1982):15-21.

3. A review of site reports documenting the presence of organic deposits at Paleo-Indian sites appears in Charles W. McNett, Jr., editor, *Shawnee-Minisink: A Stratified Paleoindian-Archaic Site in the Upper Delaware Valley of Pennsylvania* (New York, NY: Academic Press, 1985).

4. George S. Frison. "Hunting in Clovis Time," *AnthroQuest*, 34 (Spring, 1986):13-15.

5. Robert E. Funk, et alia, "The Archeology of Dutchess Quarry Cave, Orange County, NY," *Pennsylvania Archaeologist*, 39 (1969):7-22; Robert E. Funk, et alia, "Caribou and Paleo-Indian in New York State: A Presumed Association," *American Journal of Science*, 268 (1970):181-186; Douglas S. Byers, "Bull Brook - A Fluted Point Site in Ipswich, MA," *American Antiquity*, 19 (1954):343-351; Arthur E. Spiess, Mary Lou Curran, and John R. Grimes, "Caribou (*Rangifer tarandus L.*) Bones from New England Paleo-Indian Sites," *North American Archaeologist*, 6 (1984):145-160; David J. Meltzer, "Late Pleistocene Human Adaptations in Eastern North America," *Journal of World Prehistory*, 2 (1988):1-52.

6. P.W. Sciulli. "Human Remains from Meadowcroft Rockshelter, Washington County, Southwestern Pennsylvania," in Ronald C. Carlisle and James M. Adovasio, editors, *Meadowcroft: Collected Papers on the Archaeology of Meadowcroft Rockshelter and the Cross Creek Drainage* (Pittsburgh, PA: Department of Anthropology, University of Pittsburgh, 1982):175-185.

7. Information on the Warm Mineral Springs finds can be located in W.A. Cockrell and Larry Murphy, "Pleistocene Man in Florida," *Archaeology of Eastern North America*, 6 (1978):1-13. Analysis of a Paleo-Indian burial at the Anzick Site in Montana can be found in Larry Lahren and Robson Bonnichsen, "Bone Foreshafts from a Clovis Burial in Southwestern Montana," *Science*, 186 (1974):147-150.

8. For discussions of fluted point surveys in New Jersey, see Ronald Mason, "Indications of Paleo-Indian Occupation in the Delaware Valley," *Pennsylvania Archaeologist*, 29 (1959):1-17 and Herbert C. Kraft, "Paleo-Indians in New Jersey," in Newman and Salwen, editors, *Amerinds and their Paleoenvironments in Northeastern North America*, 264-281. Findings from Early Paleo-Indian sites in New Jersey are reported in Herbert C. Kraft, "The Plenge Site: A Paleo-Indian Occupation Site in New Jersey," *Archaeology of Eastern North America*, 1 (1973):56-117 and David Werner, "Vestiges of Paleo-Indian Occupation Near Port Jervis, New York," *New World Antiquity*, 11 (1964):30-52. Information on buried Paleo-Indian fluted points found within the Abbott Farm Historic District National Historic Landmark and other New Jersey sites may be found in R. Michael Stewart and John A. Cavallo, "Paleo-Indian," in R. Michael Stewart and John A. Cavallo editors, *Abbott Farm National Landmark Phase II Cultural Resource Survey and Mitigation Plans*, 1 (East Orange, NJ: Louis Berger and Associates, Inc., 1983):3-3 to 3-19. The Kandy Bar site is reported in Joel W. Grossman, et alia, *Archaeological Data Recovery: Interstate 195, Sections 6C, 7A and 7B, Preventorium Road to the Route 34, 38 Interchange, Howell and Wall Townships, Monmouth County, New Jersey* (New Brunswick, NJ: Rutgers Archaeological Survey Office, 1982). Information on the Carpentersville and Timber Swamp Brook sites comes from personal communications with John A. Cavallo, Jonathan Gell, Joel W. Grossman, Kurt Kalb, and Herbert C. Kraft. Further information may be found in Sydne Marshall, "Aboriginal Settlement in New Jersey During the Paleo-Indian Cultural Period: ca. 10,000 B.C. - 6,000 B.C."

9. R. Michael Gramly. *The Adkins Site: A Palaeo-Indian Habitation and Associated Stone Structure*, (Buffalo, NY: Persimmon Press, 1988).

10. William A. Ritchie. "The Mystery of Things Paleo-Indian," *Archaeology of Eastern North America*, 11 (1983):30-33.

11. William M. Gardner. "The Flint Run Complex: Pattern and Process During the Paleo-Indian to Early Archaic," in William M. Gardner, editor, *The Flint Run Paleo-Indian Complex: A Preliminary Report, 1971-1973 Seasons*, (Washington, DC: Catholic University of America Occasional Publications, 1, 1974):5-47; Sydne Marshall, "Aboriginal Settlement in New Jersey During the Paleo-Indian Cultural Period: ca. 10,000 B.C. - 6,000 B.C."

RESEARCH QUESTIONS: THE EARLY PALEO-INDIAN PHASE

Analysis of existing and new information bearing upon the Early Paleo-Indian occupation of New Jersey should address the following questions:

1) When Did Human Beings First Arrive in New Jersey and from what Direction Did they Come?

Deposits recovered from sites containing datable radio-carbon samples or securely dated diagnostic artifacts can suggest when and from which direction people first came to New Jersey.

2) What Was the Environment of New Jersey Like at this Time?

A limited amount of information on New Jersey environmental conditions during Early Paleo-Indian times has been found. New data from pollen cores, midden layers, and other plant and animal remains dating to Early Paleo-Indian times found alone or in association with cultural deposits can potentially expand our understanding of New Jersey's climate during this period.

3) What Were Early Paleo-Indians Lifeways in New Jersey?

Discovery of more perishable artifacts made from wood, bone, horn, or teeth and recovery of deposits containing perishable materials can potentially reveal such poorly known aspects of Early Paleo-Indian subsistence practices as their settlement-subsistence round, dietary preferences, and food preparation techniques. These data may also reveal the role, if any, of Paleo-Indians in the extinction or extirpation in New Jersey of such Ice Age mammals as mammoths, mastodons, and caribou. Several thousand stone tools associated with Early Paleo-Indians have been found in and near New Jersey. Although analysis has addressed several issues concerning stone tool types and functions, intact deposits and surface finds can potentially contribute significant information concerning Early Paleo-Indian stone tool and weapon use and manufacture, explain why they preferred certain types of stone for their tools and weapons, and describe the social and cultural consequences of this preference.

4) What Was the Nature of their Social, Political, Economic, or Spiritual life?

Identification of artifact patterns, features, or organic materials such as bones from individual animals, game drives, or processing stations can potentially reveal property types, intra-site activity areas, and other indicators of Early Paleo-Indian social, political, and economic life. Discovery of stone pictographs and petroglyphs or stone, bone, or other carvings, sculptures, or other symbolic artifacts also can reveal evidence of spiritual beliefs and other hithertofore unknown aspects of Early Paleo-Indian life.

5) How Did Early Paleo-Indian People Living in New Jersey Relate to those Living in Other Regions?

Intact deposits and plow zone or surface collected artifacts can reveal the presence of exotic raw materials or artifact styles and types currently associated with other regions. Analysis of these materials can reveal significant patterns of interaction and examine aspects of continuity and change.

6) If Regional Cultural Variations Existed, how and why Did they Develop?

Analysis of securely dated artifacts and deposits from different times ranging throughout the Early Paleo-Indian phase can potentially confirm existing chronologies and typologies or reveal the existence of now unrecognized sub-phases and sequences.

7) What Is the Cultural and Chronological Identity of the Early Paleo-Indian Phase?

Several cultural and chronological models of Early Paleo-Indian life have been developed. Analysis of all artifacts and deposits 6,000 years old and older potentially can confirm existing frameworks, alter others, and provide the foundation for new syntheses.

PALEO-INDIAN LIFE IN NEW JERSEY

THE LATE PHASE: 10,000 - 8,000 YEARS AGO

Worldwide warming trends gradually transformed New Jersey's Early Paleo-Indian environment into one more closely resembling that of the modern day. Today's Hackensack Meadowlands, Troy Meadows, and Great Swamp grew around the shores of shrinking glacial lakes. Sea level rose worldwide as the glaciers melted. Most of New Jersey's Ice Age lowlands were submerged as ocean waters flooded the continental shelf and formed the modern Jersey shore. New forests dominated by oak, hemlock, and pine covered the state. Caribou and other Ice Age mammals finally died off or moved northward. In their place, deer, bear, elk, small game, and fish probably became the most important animals sought by hunters and gatherers during the end of the Late Paleo-Indian phase and the beginning of the Early Archaic period. Nuts, seeds, and other plant foods probably continued to be important parts of the Late Paleo-Indian diet.

As with the preceding Early Phase, little evidence of the more perishable aspects of Late Paleo-Indian life has survived. Caribou bones found with fluted points at the Holcombe Beach site in Michigan indicate that Late Paleo-Indian phase hunters continued to hunt this animal. The possible cremated remains of a person found at the Crowfield site in Ontario provides further indications of Late Paleo-Indian funerary customs (see Map 8).[1]

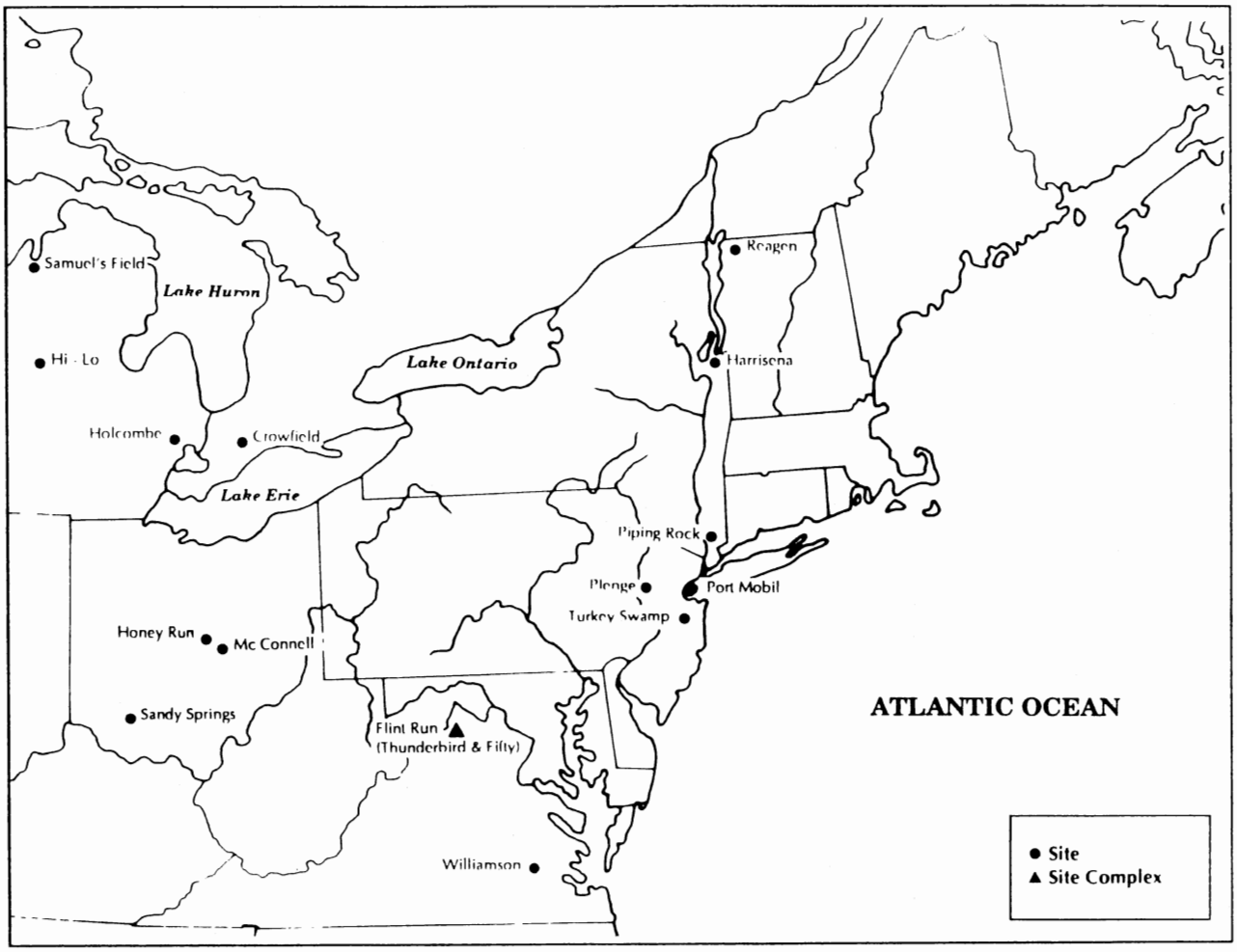
"Hot spots" at the Williamson site and the Flint Run Complex Thunderbird site, both in Virginia, support the idea that Paleo-Indian people occupied small temporary shelters. A 24 feet by 10 feet rectangular outline of post molds excavated at the Thunderbird site possibly associated with small fluted points may be the remains of a Late Paleo-Indian structure. Confirmation of this and other interpretations of more ephemeral aspects of Late Paleo-Indian life await the findings of future study.[2]

Relatively minor shifts in stone tool style and manufacture currently are the only recognizable innovations distinguishing Late Paleo-Indian technology from that of the preceding phase. Unlike the generally uniform Clovis projectile point technology of Early Paleo-Indian times, Late Paleo-Indians apparently produced a variety of projectile point types. These include large and small fluted points, unfluted lance-like projectiles similar to Late Paleo-Indian points found throughout the far west and areas to the north, and roughly made triangular-shaped chipped stone projectile points resembling others found farther north. A small number of Dalton-Hardaway points associated with Late Paleo-Indian occupations to the south and west of the State also have been found on the surface of the ground in New Jersey as far north as the Hackensack Meadowlands.

In New Jersey, fluted points and unfluted triangular points have been found together in disturbed contexts at the Plenge site. Unfluted triangular points have been found in buried deposits at the Turkey Swamp site.[3] Similar artifacts also have been recovered from the Port Mobil site on Staten Island across the Arthur Kill, which separates New Jersey from New York. Small fluted points often were larger projectiles reduced in size by breakage or resharpening. Many of the smaller points found at Turkey Swamp, Plenge, and Port Mobil, however, clearly were intentionally fashioned as small spear or dart points.

Turkey Swamp contains the only known intact Late Paleo-Indian deposits in New Jersey. Charcoal excavated at Turkey Swamp has produced the only radio-carbon dates associated with a New Jersey Paleo-Indian site. These charcoal samples indicate that the site was occupied sometime between 7,300 and 8,900 years ago. This technique, also known as Carbon-14 dating, is widely used to determine the approximate age of organic remains up to 70,000 years of age. Discovery of small fluted points and triangular points in the same deeply buried soil layer containing datable charcoal indicates that these tools were used by the residents of Turkey Swamp during the final years of the Late Paleo-Indian occupation of New Jersey.

Deposits recovered from Turkey Swamp suggest that Paleo-Indians generally made increasingly smaller projectile points as their environment changed. This shift from large to small fluted and unfluted points, and then to generally smaller triangular points, was not accompanied by easily recognized technological or environmental changes.



MAP 8: SOME EXCAVATED LATE PALEO-INDIAN PHASE SITES IN NORTHEASTERN NORTH AMERICA, CA. 10,000 - 8,000 YEARS AGO. Relatively few Late Paleo-Indian Phase sites have been identified in the Northeast. Even fewer have been systematically excavated or reported upon. Increasing information on Late Paleo-Indian deposits and artifact types and styles indicates that archeologists will identify greater numbers of such resources in the future.

Sydne Marshall's comparative study of fluted points from New Jersey's Inner and Outer Coastal Plains has revealed several significant patterns. Her analysis of raw materials used in fluted point production, for example, indicates that Paleo-Indians in the Inner Coastal Plain often used quarries and rock outcrops for their rock sources. Those living in the Outer Coastal Plain, in contrast, generally used cobbles and pebbles as their stone sources.

Marshall's comparison of evidence of wear, utilization, and resharpening, moreover, indicates that materials recovered from Inner Coastal Plain sites were often simply resharpened while those recovered in the Outer Coastal Plain were found in all stages of production and use. Marshall suggests that these patterns indicate that more types of activity occurred in the Outer Coastal Plain than the Inner Coastal area. Evidence of use and repair on projectile points from the Turkey Swamp Site, located at the divide between rivers flowing into the Delaware River and to the Jersey Shore, generally supports Marshall's findings for the Outer Coastal Plain. The causes and consequences of these similarities, differences, and shifts represent major study questions and await further testing.[4]

Relationships also remain unclear between Paleo-Indians and the makers of an increasingly wider variety of generally smaller notched chipped stone projectile points often associated with the following Early Archaic cultural tradition. This tradition arose throughout the region during Late Paleo-Indian times. Archeological opinion remains divided over the interpretation of these materials. Were the makers of these small notched points newcomers to the region or Paleo-Indians making new types of tools? Do small notched points represent a new technology or were they simply a modification of an older one? Do they represent geographically or chronologically distinct styles or cultures? New information will be needed before these and other questions concerning the Late Paleo-Indian occupation of New Jersey can be resolved.[5]

CHAPTER NOTES

1. D. Brian Deller and C.J. Ellis, "Crowfield: A Preliminary Report on a Probable Paleo-Indian Cremation in Southwestern Ontario," *Archaeology of Eastern North America*, 12 (1984):41-71; James E. Fitting, Jerry DeVisscher, and Edward J. Wahla, "The Paleo-Indian Occupation of the Holcombe Beach," *Anthropological Papers, Museum of Anthropology, University of Michigan*, 27 (1966).

2. William M. Gardner, editor. *The Flint Run Paleo-Indian Complex: A Preliminary Report, 1971-1973 Seasons.*

3. John A. Cavallo. "Turkey Swamp: A Late Paleo-Indian Site in New Jersey's Coastal Plain," *Archaeology of Eastern North America*, 9 (1981):1-18.

4. Sydne Marshall. "Aboriginal Settlement in New Jersey During the Paleo-Indian Cultural Period, ca. 10,000 B.C. - 6,000 B.C." Also see Herbert C. Kraft, *The Lenape: Archaeology, History, and Ethnography*, (Newark, NJ: New Jersey Historical Society, 1986):48-49 for a discussion on the theoretical implications of projectile point reduction in and over time.

5. William M. Gardner, editor. *The Flint Run Paleo-Indian Complex*; Jay F. Custer, *Delaware Prehistoric Archaeology: An Ecological Approach*, (Newark, DE: University of Delaware Press, 1984):39-60.

RESEARCH QUESTIONS: THE LATE PALEO-INDIAN PHASE

Analysis of existing and new information bearing upon the Late Paleo-Indian occupation of New Jersey should address the following questions:

1) When Did the Late Paleo-Indian Phase First Appear?

Radiometrically dated sites found in New Jersey or recovery within the State of artifacts securely dated in other States can refine existing chronologies and typologies subdividing the Paleo-Indian period in New Jersey and the Mid-Atlantic region.

2) What Was New Jersey's Environment during Late Paleo-Indian Times?

A limited amount of information on New Jersey environmental conditions during Late Paleo-Indian times has been found. New data from pollen cores, midden layers, and other plant and animal remains dating to Late Paleo-Indian times found alone or in association with cultural deposits can potentially expand our understanding of New Jersey's climate during this period.

3) How Did Late Paleo-Indians Make their Living?

Discovery of more perishable artifacts made from wood, bone, horn, or teeth, and recovery of deposits containing perishable materials can potentially reveal currently little known aspects of Late Paleo-Indian subsistence practices. Several hundred stone tools associated with Late Paleo-Indians have been found in and near New Jersey. Although analysis has addressed several issues concerning stone tool types and functions, intact deposits and surface finds can potentially contribute significant information explaining changes in the Late Paleo-Indian toolkit and shed further light on their continuing preference for certain types of stone in tool and weapon manufacture.

4) What Was the Nature of their Social, Political, Economic, or Spiritual Life?

Identification of artifact patterns, features, or organic materials such as bones from individual animals, game drives, or processing stations can potentially reveal property types, intra-site activity areas, and other indicators of Late Paleo-Indian social, political, and economic life. Discovery of stone pictographs and petroglyphs or stone, bone, or other carvings, sculptures, or other symbolic artifacts also can reveal evidence of spiritual beliefs and other currently unknown aspects of Late Paleo-Indian life.

5) ~~H~~How Did Late Paleo-Indian People Living in New Jersey Relate to those Living in Other Regions?

Intact deposits and plow zone or surface collected artifacts can reveal the presence of exotic raw materials or artifact styles and types currently associated with other regions. Analysis of these materials can reveal significant patterns of interaction and suggest sources for continuity and change.

6) If Regional Cultural Variations Existed, how and why Did they Develop?

Analysis of securely dated artifacts and deposits from different times ranging throughout the Late Paleo-Indian phase can potentially confirm existing chronologies and typologies or reveal the existence of now unknown sub-phases and sequences. Analysis of single sites or numbers of deposits containing the full range of Late Paleo-Indian and Early Archaic tool types can potentially address questions regarding the disappearance or transformation of Paleo-Indian culture. These questions would assess the reasons why Late Paleo-Indian tool production evidently generally shifted from manufacture of larger to smaller projectile points, analyze why fluting gradually was abandoned as a manufacturing technique, determine why a greater number of tool types and styles appeared during Late Paleo-Indian times, and delineate the relationship between Paleo-Indian and Early Archaic cultural traditions.

KNOWN AND EXPECTED PROPERTY TYPES

MAJOR PROPERTY TYPES

Large and Small Camps
Quarries
Processing Sites
Surface Point Finds

Much has been written about the types of sites occupied and used by Paleo-Indians. Various types of base camps, temporary camps, quarries, and processing stations have been identified by specialists. Other archeologists have developed elaborate settlement pattern models designed to interpret how these people lived and worked. Archeologists currently debate the relative merits of existing settlement pattern models and look for ways to organize known Paleo-Indian deposits into property types. Three of the more widely accepted of these frameworks are William M. Gardner's "litho-centric" (stone-centered) settlement pattern model, Robert E. Funk's Eskimo hunting settlement-subsistence system, and Leonard Eisenberg's generalized ecological adaptation model.[1]

Gardner notes that the apparent Paleo-Indian preference for stones such as chert, particularly suited for the manufacture of projectile points and other tools, reflects the importance of reliable and easily transportable raw materials to nomadic hunting people. He accordingly suggests that Paleo-Indians centered their lives around strategically located rock outcrops, riverbeds, and other places containing such raw materials. Gardner's settlement pattern model focuses upon movements between these quarries and hunting and other types of temporary camps.

These site types, which Gardner states should always include diagnostic Paleo-Indian artifacts or organic deposits dating to the Paleo-Indian period, include:

1) **Quarry Extraction Areas**, containing hammerstones and large crude, broken and chipped stone bifaces, flakes, and cores.

2) **Quarry Related Base Camps**, containing finished and unfinished tools, stone debris associated with tool manufacture known as debitage or waste flakes, or organic deposits, charcoal, stone hearths, or stained soils and artifact concentrations indicating habitation sites or activity areas. Such sites generally are located alongside spring-fed creeks near major rivers.

3) **Revisited Hunting Camps**, containing projectile points and meat processing tools such as scrapers and flakes. They are located near resources attractive to game, on game migration routes, or at the sites of hunting drives.

4) **Processing Stations**, containing heavily worn scrapers and flakes with high percentages of utilized flakes relative to waste flakes. Such sites often are associated with hunting camps.

5) **Sporadically Visited Hunting Camps**, containing small scatterings of projectile points and other finished tools. These sites generally are found in upland locales providing overviews of large areas.

6) **Reduction Stations**, containing large amounts of stone debris associated with stone tool production or repair. These generally are formed when people must modify or repair tools and weapons while far from quarries or base camps.

Funk bases his model upon observations made of modern Alaskan Eskimo hunting band settlement patterns. In Alaska, these site types include:

1) **Central Habitation Sites**, located near major caribou migration routes and important fishing places. Used in spring and summer and intermittently throughout the rest of the year by the whole band, these sites would probably accommodate 10 to 12 surface dwellings.

2) **Smaller Habitation Sites**, used in the fall or winter. Located in sheltered areas near sources of fuel and game, such sites generally are occupied by one or two families.

3) **Hunting and Fishing Camps**, briefly occupied by small work groups of men and boys at different times of the year. Usually consisting of a single shelter, such sites generally are located at the heads of creeks or high within the mountains.

4) **Single Shelters**, accommodating one to eight people engaged in collecting or processing wood, stone, or other non-subsistence activities. Such sites could be occupied for a few days anytime during the year.

5) **Brief Visitation Camps**, located beyond band territory borders.

6) **Overnight Camps**, used enroute to other places.

In his analysis of Paleo-Indian site locations in and around lower New York, Leonard Eisenberg has proposed a three-part model associating Paleo-Indian site types and locations with geographic and environmental factors. His framework consists of:

1) **Lowland Waterside Camps**, located near Ice Age water sources. Many probably would have been fishing camps located alongside major rivers.

2) **Upland Bluff Camps**, located in what were flat terraces located at high elevations during Paleo-Indian times.

3) **Ridge-Top Camps**, located atop high outlooks commanding wide views of broad plains or long river valleys.

Although archeologists differ on the subject of site types or relationships, most agree that Paleo-Indian deposits in New Jersey currently may be found in two forms, rock shelters and open-air sites. Rock

shelters are widely known to contain substantial amounts of archeological material. Looters aware of this fact have ransacked and destroyed most rock shelter sites.

Archeologists excavating two rockshelters located in neighboring states that have not been looted, the Dutchess Quarry Cave in Orange County, NY, and the Meadowcroft Rockshelter in southwestern Pennsylvania, have found deposits older than 9,000 years. Caribou bones possibly associated with a fluted point have been found at the Dutchess Quarry Cave site. Deeply buried artifacts associated with charcoal in sealed deposits at the Meadowcroft Rockshelter may be as young as 10,600 years old and as old as 16,000 years old. This latter date, more than 4,500 years older than any other collected from a securely dated Paleo-Indian site in North America, remains controversial. Although growing evidence supports the possibility of human occupation of North America prior to 11,500 years ago, many archeologists continue to agree that conclusive confirmation of the early Meadowcroft finds and other "Pre-Clovis" Paleo-Indian deposits awaits findings from future research.[2]

Most Paleo-Indian historic resources are found in open-air sites. Open-air sites usually are located on relatively level ground in areas exposed to erosion and other natural forces. Such areas also are usually prime areas for development and other disturbance. Bulldozers, graders, or plows generally expose deposits on or near the surface of such sites. Excavations at the Turkey Swamp and Zierdt sites in New Jersey and nearby locales like the Shawnee-Minisink site just above the Delaware Water Gap in Pennsylvania, however, bear witness to the possibility that deeply buried intact Paleo-Indian deposits can be found in New Jersey.[3]

Findings of individual stone points on the surface of the ground, often called "stray finds" or "find spots," are the most common form of open-air site. Most of the nearly 300 fluted points known to have been found in and around New Jersey have been collected from the surface of the ground. Bradley T. Lepper has recently developed a model organizing surface finds that may have utility in New Jersey. Working with a sample of 410 surface collected fluted points found in Cochocton County, OH, Lepper suggests that find spots may be classified into the following "functional settlement type loci" (locus: a locality or place):[4]

1) **Chert Processing Loci**, containing fluted points broken-in-manufacture.

2) **Food Procurement/Processing Loci**, containing points broken-in-use or exhibiting use-wear. These are presumed to represent "work camps" or "extraction stations."

3) **Workshop-Occupations**, containing manufacturing rejects and used fluted points. These are arbitrarily subdivided into **Large Workshop-Occupations** containing more than 10 fluted points and **Small Workshop-Occupations** containing less than 10 fluted points.

4) **Undetermined Activity Loci**, containing unused whole or fragmented fluted points.

Property type models developed by Lepper, Eisenberg, Funk, Gardner, and other archeologists provide the basis for future research. Much more, however, needs to be learned about Paleo-Indian sites and settlements before deposits associated with their life and times can be confidently classified as specific property types.

CHAPTER NOTES

1. William M. Gardner, editor. *The Flint Run Paleo-Indian Complex: A Preliminary Report, 1971-1973 Seasons*; Robert E. Funk, "Recent Contributions to Hudson Valley Prehistory," *New York State Museum Memior*, 22 (1976):205-229; Leonard Eisenberg, "Paleo-Indian Settlement Pattern in the Hudson and Delaware River Drainages," *Occasional Publications in Northeastern Anthropology*, 4 (Rindge, NH: Man in the Northeast, Inc., 1978). Also see Sydne Marshall, "Aboriginal Settlement in New Jersey During the Paleo-Indian Cultural Period, 10,000 B.C. - 6,000 B.C."; R. Michael Stewart and John A. Cavallo, "Paleo-Indian"; and Jay F. Custer, John A. Cavallo, and R. Michael Stewart, "Lithic Procurement and Paleo-Indian Settlement Patterns on the Middle Atlantic Coastal Plain," *North American Archaeologist*, 4 (1983):263-276.

2. For information on the Dutchess Quarry Cave, see Robert E. Funk, et alia, "The Archeology of Dutchess Quarry Cave, Orange County, New York." The most recent report on Meadowcroft Rockshelter dates appears in James M. Adovasio, A.T. Boldurian, and Ronald C. Carlisle, "Who Are Those Guys?: Some Biased Thoughts on the Initial Peopling of the New World," in Ronald C. Carlisle, editor, *Americans Before Columbus: Ice-Age Origins*, 45-62. Discussion of the validity of the Meadowcroft dates may be found in Herbert C. Kraft, *The Lenape: Archaeology, History, and Ethnography*, 33-35.

3. John A. Cavallo. "Turkey Swamp: A Late Paleo-Indian Site in New Jersey's Coastal Plain," 1-18; Charles W. McNett, Jr., editor, *Shawnee-Minisink: A Stratified Paleoindian-Archaic Site in the Upper Delaware Valley of Pennsylvania.*

4. Bradley T. Lepper. "Early Paleo-Indian Foragers of Midcontinental North America," *North American Archaeologist*, 9 (1988):31-51. For fluted point surveys in New Jersey, see Ronald Mason, "Indications of Paleo-Indian Occupation in the Delaware Valley," *Pennsylvania Archaeologist*, 29 (1959):1-17 and Herbert C. Kraft, "Paleo-Indians in New Jersey."

HISTORIC RESOURCE PROPERTY DISTRIBUTION

KNOWN REGIONAL DISTRIBUTION

Most Paleo-Indian remains have been found along the Delaware Drainage. Others have been found alongside Pineland ponds or near rivers draining into New York Harbor.

SITE PREFERENCES

1) **Nearby ancient water sources** such as:

A) **Riverbanks** dating to Paleo-Indian times such as the Hudson and Delaware Rivers.
B) **The shores of since-drained Ice Age lakes** such as Glacial Lake Passaic (today's Troy) or Glacial Lake Hackensack (today's Meadowlands).
C) Nearby ancient **Coastal Plain ponds** formed during the Ice Age identified as "Pingos."

2) **Low-lying, level, and well-drained terraces** such as those at the Plenge site along the Musconetcong River and the Turkey Swamp site near the Manasquan River.

3) **Level upland bluff terraces** such as those located atop the Palisades and along the upper Delaware River valley.

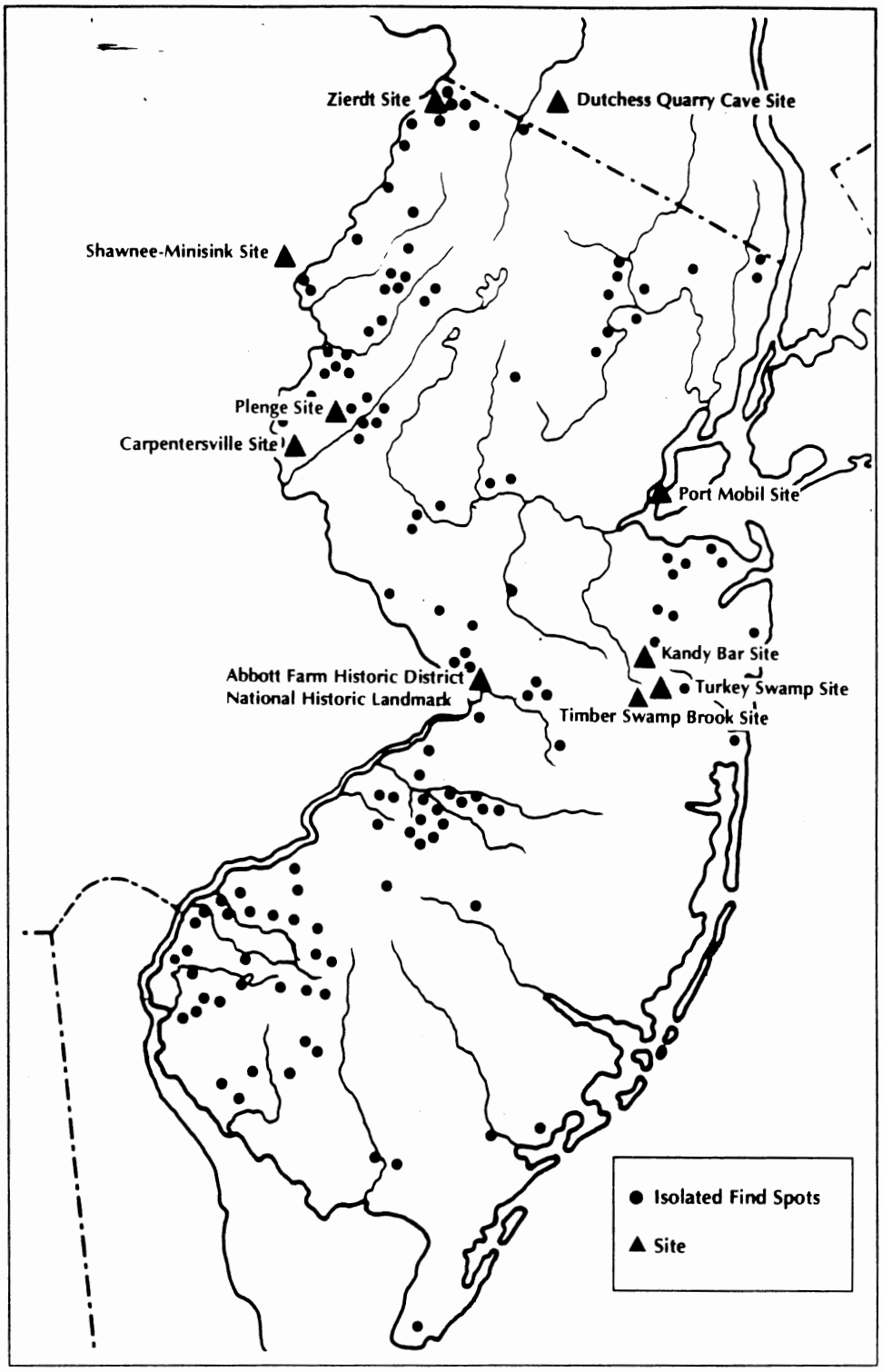
4) **Ridgetops and the crests of "cuestas,"** low highlands dividing the Outer and Inner Coastal Plains of southern New Jersey.

KNOWN SITES

More than 300 fluted projectile points have been found in and near New Jersey (see Map 9).[1] Two sites, the Port Mobil site on Staten Island and the Shawnee-Minisink site above the Delaware Water Gap, are located in neighboring states on the opposite banks of rivers separating New Jersey from New York and Pennsylvania.[2] Only three buried deposits containing Paleo-Indian points thus far have been extensively excavated in New Jersey. These include:

Plenge Site: A large multiacre open site near the Musconetcong River in Warren County. Almost 1,500 stone artifacts found at Plenge have been identified as Paleo-Indian materials. Located in shallow soils, site testing indicates that the entire deposit has been disturbed by plowing. Much information concerning tool types, raw materials, and general artifact distribution, however, can still be derived from the site.[3]

Turkey Swamp Site: A multicomponent open site containing evidence of site occupation from Late Paleo-Indian to Late Woodland times located near the Manasquan River in Monmouth County. Dates associated with deeply buried deposits containing unfluted triangular points and other stone tools range from around 7,300 to around 8,900 years old.[4]



MAP 9: PALEO-INDIAN RESOURCES IN NEW JERSEY. Three sites, Plenge, Turkey Swamp, and Zierdt, have been extensively excavated in New Jersey. Buried fluted points have been found in Abbott Farm, Carpentersville, Kandy Bar, and Timber Swamp Brook sites. Most Paleo-Indian resources in New Jersey, however, have been found in the form of isolated fluted points on the surface of the ground (adapted from Sydne Marshall, "Aboriginal Settlement in New Jersey" [1982]:32).

> **~~Zierdt~~ Site:** A small open site located on a high sandy terrace near a small stream within one half mile of the Delaware River in Sussex County. The lowest of the three strata excavated at this site revealed the presence of one fluted point, 17 other Paleo-Indian artifacts, more than 100 stone flakes, a stone hearth, and two 14-inch-wide circular charcoal stains. [5]

The known distribution of New Jersey's scattered and fragmentary Paleo-Indian deposits represents little more than a pattern of chance finds, accidental discoveries, and the site or survey preferences of amateur collectors or professional archeologists.

Herbert C. Kraft has shown that the majority of fluted points found in New Jersey have been found along the most intensively surveyed sections of the Delaware River. Most of these are stray random find spots comprising single fluted points unassociated with other identifiably Paleo-Indian remains. Anthony Bonfiglio and Jack Cresson have discovered Paleo-Indian artifacts near ponds formed by glacial action during the last Ice Age along New Jersey's coastal plain. The locations of these find spots, and the three sites in New Jersey containing extensive Paleo-Indian deposits, reveal little about the overall distribution of Paleo-Indian sites in the State.[6]

The distribution pattern of known Paleo-Indian sites throughout the northeast indicates a preference for level lowland locales situated near water sources or major transportation routes. Such sites generally occur near or alongside rivers, streams, lakes, ponds, swamps, bays, or other bodies of water active during Paleo-Indian times. Others may be found at the entrances of passes between hills or mountain ranges. A smaller percentage of sites are situated on high ground affording commanding views atop ridges or Coastal Plain cuestas.

Numerous reports of mammoth, mastodon, and walrus remains dredged up from various locales beneath the continental shelf suggest the possibility that other archeological sites buried during Paleo-Indian times may yet be discovered under the ocean floor near the modern New Jersey coast.

CHAPTER NOTES

1. Ronald Mason. "Indications of Paleo-Indian Occupation in the Delaware Valley"; and Herbert C. Kraft, "Paleo-Indians in New Jersey."

2. Herbert C. Kraft. "The Paleo-Indian Sites at Port Mobil, Staten Island," in "Current Perspectives in Northeastern Archaeology: Essays in Honor of William A. Ritchie," *Research and Transactions of the New York Archeological Association*, 17 (1977):1-19.

3. Herbert C. Kraft. "The Plenge Site: A Paleo-Indian Occupation in New Jersey."

4. John A. Cavallo. "Turkey Swamp: A Late Paleo-Indian Site in New Jersey's Coastal Plain."

5. David Werner. "Vestiges of Paleo-Indian Occupation near Port Jervis, New York."

6. Herbert C. Kraft. "Paleo-Indians in New Jersey." Anthony Bonfiglio and Jack Cresson, "Geomorphology and Pinelands Prehistory: A Model Into Early Aboriginal Land Use," in John W. Sinton, editor, *History, Culture, and Archeology of the New Jersey Pine Barrens* (Pomona, NJ: Stockton State College Center for Environmental Research, no date):15-67.

EVALUATION CRITERIA

Evaluation is a vital step in the preservation of cultural resources. Evaluation is also a dynamic process that changes as new knowledge is developed or new legislation is drafted. New Jersey currently participates in three designation programs built around systematic evaluation of historic properties. The New Jersey State Register of Historic Places designates districts, sites, buildings, structures, and objects significant to local, State, or national prehistory or history. Most properties listed in the State Register are subsequently proposed for inclusion in the National Register of Historic Places. Exceptionally important nationally significant cultural resources are designated National Historic Landmarks (NHLs). Those few NHLs of transcendent national importance are listed as World Heritage Sites.

Each of these programs employs the Secretary of the Interior's "Standards for Evaluation" to determine eligibility of nominated properties. These criteria define categories of historic properties, establish contexts for property evaluation, identify the type of significance of a property, determine if a property has integrity, and provide guidance for their application.

PROPERTY CATEGORIES

New Jersey's Paleo-Indian resources almost always occur as:

A) **Individual sites** containing discrete Paleo-Indian deposits occurring alone or with other archeological remains.

B) Properties in **districts** either entirely devoted to Paleo-Indian resources or containing other historic resources.

CRITERIA OF SIGNIFICANCE

Paleo-Indian resources in New Jersey may be nominated to the National Register of Historic Places under one or more of the following applicable criteria:

Criterion A: Properties "that are associated with events that have made a significant contribution to the broad patterns of our history."

Criterion C: Properties "that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction."

Criterion D: Properties "that have yielded, or may be likely to yield, information important to prehistory or history."

The national significance of potential National Historic Landmarks may be ascribed to Paleo-Indian historic resources satisfying one or more of the following criteria:

> **Criterion 1**: Properties that are associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent, the broad national patterns of United States history and from which an understanding and appreciation of those patterns may be gained; or
>
> **Criterion 4**: Properties that embody the distinguishing characteristics of an architectural type specimen exceptionally valuable for the study of a period, style, or method of construction, or that represent a significant, distinctive, and exceptional entity whose components may lack individual distinction; or
>
> **Criterion 5**: Properties that are composed of integral parts of the environment not sufficiently significant by reason of historical association or artistic merit to warrant individual recognition but that collectively compose an entity of exceptional historical or artistic significance, or outstandingly commemorate or illustrate a way of life or culture; or
>
> **Criterion 6**: Properties that have yielded or may be likely to yield information of major scientific importance by revealing new cultures, or by shedding light upon periods of occupation over large areas of the United States. Such sites are those which have yielded, or which may reasonably be expected to yield, data affecting theories, concepts, and ideas to a major degree.

Note: All archeological properties recommended for NHL designation must satisfy Criterion 6.

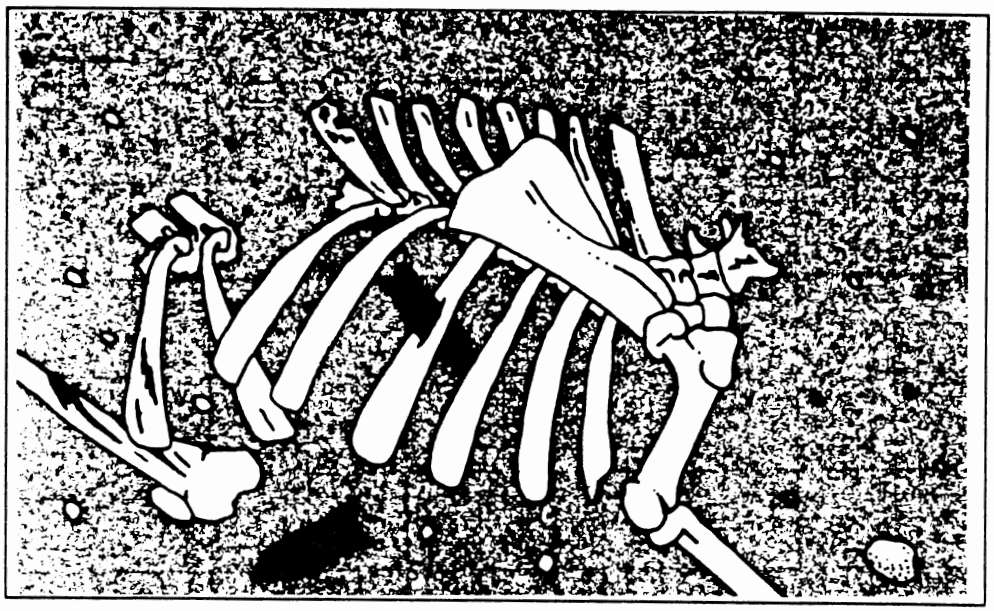
DETERMINATION OF INTEGRITY

Resource integrity directly affects a property's ability to provide information. Three classes of Paleo-Indian deposit integrity have been identified. These include:

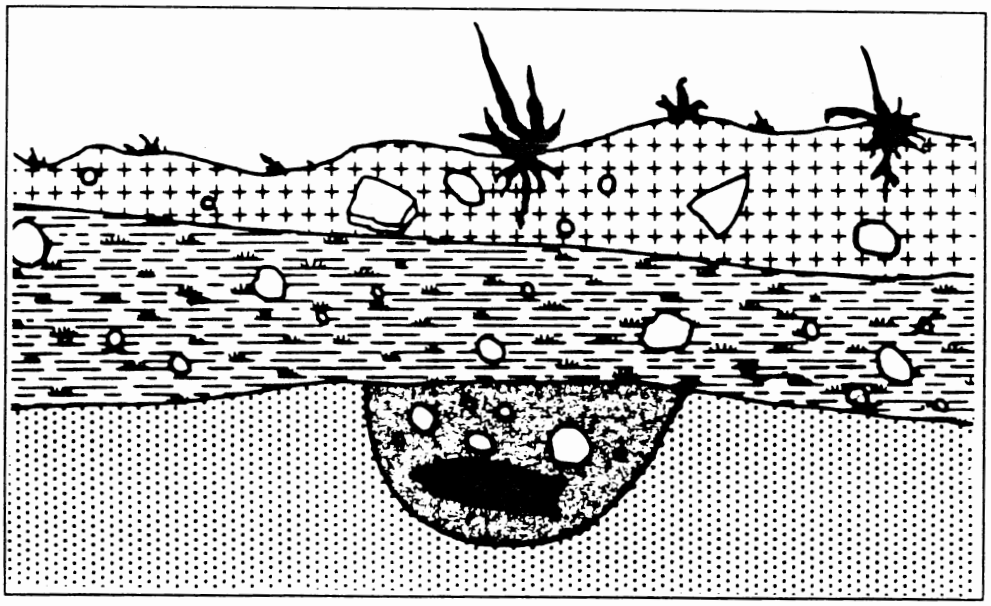
Class I: High Integrity

Sites judged to contain Paleo-Indian deposits of high integrity must possess four basic characteristics:

> 1) The site must be a single deposit or sealed component containing artifacts, and features, human remains, or other materials clearly associated with particular phases of the Paleo-Indian period.
>
> 2) These materials must be found in demonstrably undisturbed deposits.
>
> 3) Materials found in deposits must be securely dated.
>
> 4) The deposit must be tested in such a way that archeologists can validate the presence of the first three characteristics. Such testing must not totally destroy the site.



Deposits consisting of Paleo-Indian spearpoints embedded within animal bones or clearly associated with butchered carcasses almost always can be shown to possess Class I Integrity.



Paleo-Indian projectile points located within undisturbed primary contexts such as living floors, hearths, or pits containing charcoal or other datable organic materials also usually possess Class I Integrity.

FIGURE 5. CLASS I INTEGRITY: UNDISTURBED DEPOSITS CONTAINING CLEAR ASSOCIATION BETWEEN PALEO-INDIAN ARTIFACTS AND OTHER REMAINS.

Class II: Moderate Integrity

Sites judged to contain Paleo-Indian deposits of moderate integrity must possess four basic characteristics:

1) The site must be a single deposit or sealed component containing artifacts and other archeological materials clearly associated with the Paleo-Indian period. Small numbers of artifacts or deposits associated with other periods may be found mixed with Paleo-Indian materials.

2) Buried artifacts and other materials must be found in relatively undisturbed contexts within the same stratum near one another or in deposits containing undated or unassociated artifacts or other materials. Surface collected artifacts should be systematically collected from plow zones in such a way that exact find spots and general depositional patterns are recorded.

3) Absolute dating techniques or diagnostic artifacts may be used to date the site or component.

4) The deposit must be tested in such a way that archeologists can validate the presence of the first three characteristics. Such testing must not totally destroy the site.

Class III: Low Integrity

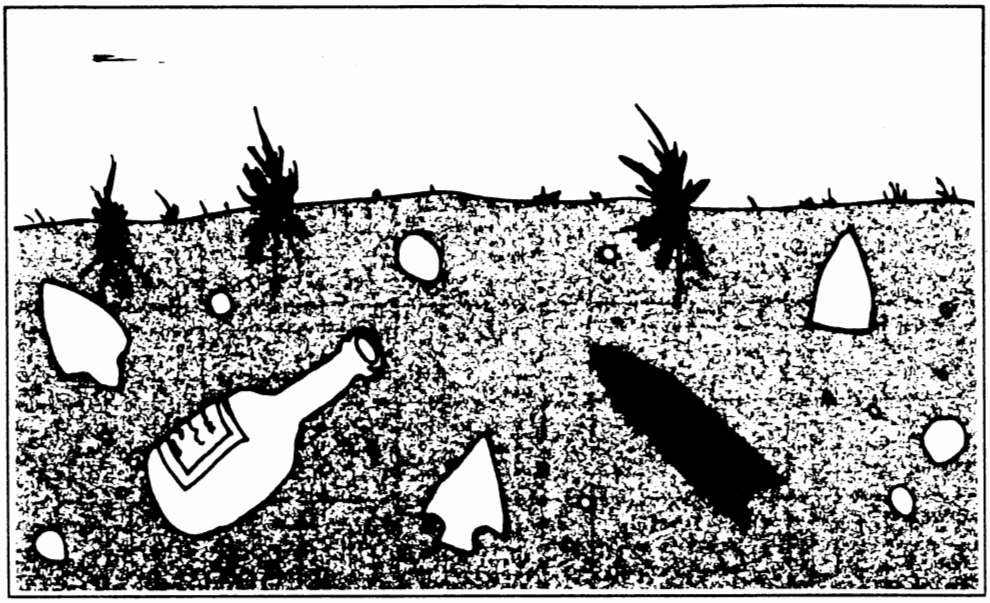
Sites judged to contain Paleo-Indian deposits of low integrity must possess four basic characteristics:

1) The site must consist of a single deposit or components containing artifacts and other archeological materials clearly associated with the Paleo-Indian period and other periods.

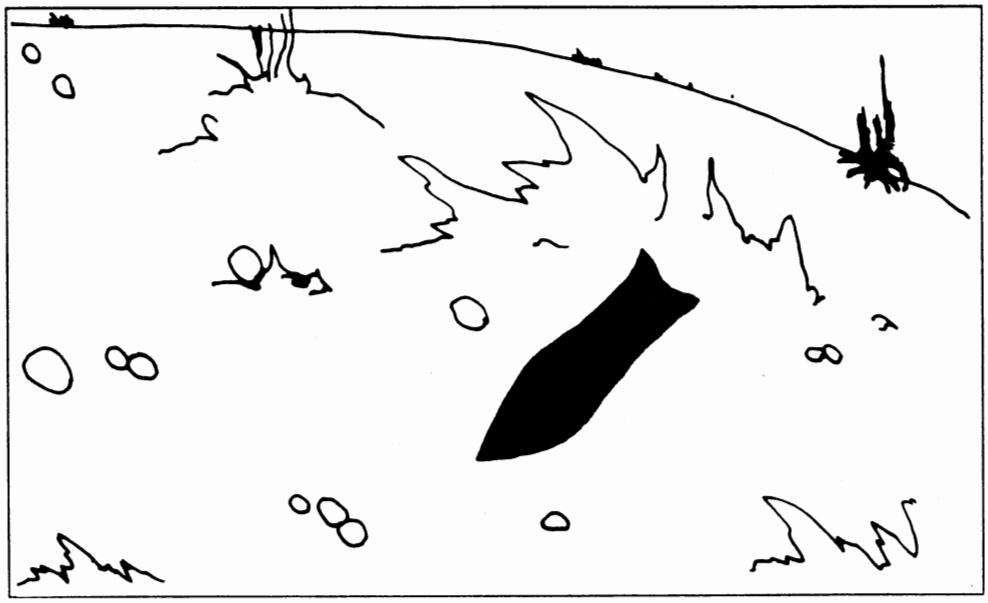
2) Deposits and artifacts may be found in disturbed contexts. Such locales should confirm Paleo-Indian presence in a given locale or reveal types of raw material, artifact styles, and modes of manufacture and use.

3) Diagnostic artifacts or paleoenvironmental contexts may be used to date the site or component.

4) The deposit must be tested in such a way that archeologists can validate the presence of the first three characteristics. Such testing must not totally destroy the site.



Paleo-Indian artifacts located in highly disturbed strata containing mixed deposits from different time periods usually possess Class III Integrity.



Most isolated Paleo-Indian projectile point find spots located on the surface of plowed fields or other disturbed ground surfaces possess Class III Integrity. Individual Paleo-Indian projectile points discovered upon the surface of blown-out sand dunes or other erosionally exposed orignal ground surfaces may possess higher integrity levels.

FIGURE 7. CLASS III INTEGRITY: PALEO-INDIAN ARTIFACTS LOCATED WITHIN HIGHLY DISTURBED CONTEXTS.

CURRENT DESIGNATION STATUS

No Paleo-Indian historic resources in New Jersey are currently in the New Jersey State Register of Historic Places, the National Register of Historic Places, or rated as NHLs.

All historic resources determined to be between 11,500 and 8,000 years old or older found in New Jersey are components of the Paleo-Indian Historic Context. Paleo-Indian properties may be classified as individual sites or as components of districts. Such properties may be nominated as individual sites, as components of districts, or as multiple property listings containing one or more related Paleo-Indian property types. Depending upon their ability to provide significant information, they may be nominated on local, State, or national levels of significance.

The rarity of undisturbed Paleo-Indian deposits in New Jersey, their general scarcity nationwide, the need for detailed knowledge about Paleo-Indian cultures, and the wide dispersal of their settlements across large regions indicates that all Class I Paleo-Indian historic resources discovered in New Jersey will possess potential national significance. As such, they can be listed in the National Register of Historic Places as nationally significant properties and recommended for designation as NHLs. Class II Paleo-Indian deposits capable of filling data gaps revealed by survey and other studies may be nominated for their local, State, or national significance in the New Jersey State or National Registers of Historic Places. Many Class III Paleo-Indian properties possessing tool types, styles, or materials unreported in New Jersey may be nominated for the State or local significance in the New Jersey State or National Registers of Historic Places.

Property types should be a major determining factor in identifying significance. The present state of knowledge about Paleo-Indian culture makes it impossible to organize pertinent data into property types. It is thus necessary to organize Paleo-Indian resources into site and deposit types until such time as property types can be identified.

Criterion A:

Criterion A can be used to determine the significance of deposits clearly revealing broad patterns of Paleo-Indian life or revealing how Paleo-Indians contributed to broad patterns in history. These are best illustrated by multi-component sites and include:

- Vertically stratified Paleo-Indian resources.
- Horizontally stratified Paleo-Indian resources.
- Mixed deposits containing several Paleo-Indian components.
- Mixed deposits containing Paleo-Indian and Early Archaic materials.

Criterion C:

Certain Class I and many Class II and III Paleo-Indian resources can be nominated under Criterion C, "Properties representing a significant and distinguishable entity whose components may lack individual distinction." These may include:

- Buried Paleo-Indian artifacts found within deposits containing archeological materials dating to several time periods.
- "Find spots" or "stray finds" of projectile points found on the surface of the ground nearby animal remains, ancient lakes, ponds, watercourses, and other features or deposits dating to or associated with the Paleo-Indian period.

Criterion D

National Register Criterion D is the most frequently used measure of archeological significance. Paleo-Indian districts and sites possessing Class I, II, and III levels of integrity can be nominated to the New Jersey State or National Register under Criterion D, "Properties that have yielded, or may be likely to yield, information in prehistory or history." These may include all of the above-mentioned resources and:

- Single component Paleo-Indian sites.
- Isolated buried Paleo-Indian projectile points possessing potentially significant information on tool types, styles, or materials.
- Isolated surface find spots possessing potentially significant information on tool types, styles, or materials.
- Plant or animal remains dating to Paleo-Indian times associated with non-diagnostic artifacts.

Those recommended for designation as NHLs must satisfy more stringent significance criteria. Most potential NHLs must possess Class I integrity. Paleo-Indian historic resources nominated for NHL status also must meet National Historic Landmark Criterion 6 by showing that they:

> "Have yielded or may be likely to yield information of major scientific importance by revealing new cultures or by shedding light upon periods of occupation over large areas of the United States. Such sites are those which have yielded, or which may reasonably be expected to yield data affecting theories, concepts, and ideas to a major degree."

GOALS AND PRIORITIES

Identification, evaluation, designation, and treatment of Paleo-Indian sites in New Jersey represent vital preservation planning goals. Priorities established for each goal should identify the range of surviving Paleo-Indian historic resources in the State, designate the most significant of these resources, and provide the greatest possible protection for this little known and irreplaceable part of our heritage.

Historic context-based goals and priorities represent desired preservation efforts. They are not mandates requiring action. Paleo-Indian Historic context-derived goals and priorities, moreover, are not ends in themselves. Each must be coordinated with goals and priorities established in other historic contexts. Systematic coordination of all historic context-derived goals and priorities provides the basis for comprehensive historic preservation planning.

The Secretary of the Interior's "Standards for Preservation Planning" guidelines for identification, evaluation, and protection of cultural resources provides a framework for organizing New Jersey's preservation activities. Three basic goals -- identification, evaluation, and treatment -- have been established for the management of the State's Paleo-Indian historic resources. Priorities established for each of these goals are presented below.

GOAL 1: IDENTIFICATION

PRIORITIES

Priority 1: Data Collection and Site Location.
Priority 2: Collector Survey.
Priority 3: Testing.
Priority 4: Publication of Findings.

Priority 1: Data Collection and Site Location

Information bearing upon New Jersey's Paleo-Indian occupation must be collected in order to:

1) Determine if the currently known distribution of resources within the state reflects the actual pattern of Paleo-Indian life; or

2) Determine if the pattern reflects accidents of history caused by selective deposition or preservation, resource destruction, alteration, or earlier survey preferences.

Priority 1 Data Collection and Site Location Surveys should:

- Use field, interview, and archival research methods to identify districts and sites containing potentially significant intact Paleo-Indian historic resources.

- Examine Paleo-Indian materials from New Jersey and the surrounding region located in public and corporate repositories and private collections.

- Examine known published materials and unpublished field-notes, maps, inventories, and other data bearing upon Paleo-Indian occupation in New Jersey.

Priority 2: Collector Survey

Priority 2 Collector Surveys should supplement Priority 1 Data Collection and Site Location activities by:

1) Interviewing all professional and avocational archeologists, as well as soil scientists, sport divers, and others known to have been active at some time in New Jersey.

2) Encouraging avocational archeologists, soil scientists, sport divers, and others to report presently unlisted Paleo-Indian historic resources to the ONJH and the New Jersey State Archeologist.

Priority 3: Testing

Locales containing possible Paleo-Indian historic resources identified during survey should be tested to determine the presence, content, integrity, and boundaries of their deposits.

Priority 4: Publication of Findings

Results of surveys and testing programs must be analyzed and published in such a way that other archeologists can assess the quality of research and utilize program findings.

IDENTIFICATION ACTIONS

Comprehensive Planning:

1) The ONJH will identify other planning efforts in the state most directly affecting Paleo-Indian resources.

2) The ONJH will seek to incorporate Paleo-Indian historic context identification information in the State Plan and other planning efforts in New Jersey.

3) The ONJH will seek to update Paleo-Indian resource historic context identification information during FY 1994.

Survey and Inventory:

1) The ONJH will explore development of a research design for a Statewide location system for Paleo-Indian resources.

2) The ONJH will give additional consideration to surveys including Paleo-Indian resources.

3) The ONJH will encourage survey proposals including identification of environmental conditions conducive to Paleo-Indian occupation.

4) The ONJH will require survey reports considering Paleo-Indian resources to utilize language consistent with that used in this document.

State and National Register:

1) The ONJH will encourage projects identifying Paleo-Indian resources potentially eligible for inclusion in the National Register of Historic Places.

2) The ONJH will provide workshops and technical assistance identifying problems associated with surveying, evaluating, and writing descriptions of Paleo-Indian and other archeological resources for National Register nomination forms.

Review and Compliance:

1) The ONJH will require reports considering Paleo-Indian resources to utilize language consistent with that used in this document.

Certified Local Governments:

1) The ONJH will provide Certified Local Governments (CLGs) with technical assistance to increase awareness of potential Paleo-Indian resources.

Other:

1) The ONJH will distribute Paleo-Indian research materials to those involved in professional survey and planning activities.

GOAL 2: EVALUATION

PRIORITIES

Priority 1: Property Integrity Assessment and Classification.
Priority 2: Utilization of Historic Context Research Questions as a basis for identifying and prioritizing information needs.
Priority 3: National Register designation and recommendation of National Historic Landmark designation of nationally significant properties.
Priority 4: Designation of locally, State, or nationally significant properties to the State and National Registers of Historic Places.

Priority 1: Property Integrity Assessment and Classification

The integrity of all identified Paleo-Indian sites in New Jersey should be assessed and classified.

Priority 2: Utilization of Historic Context Research Questions as a Basis for Identifying and Prioritizing Information Needs

Paleo-Indian Historic Context Research Questions should be used as a basis for identifying and prioritizing national, State, and local level information needs.

Priority 3: National Register Designation and Recommendation of National Historic Landmark Designation for Nationally Significant Properties

Class I resources capable of filling high priority information needs should be nominated to the State and National Registers of Historic Places as nationally significant properties with the recommendation that they be designated as National Historic Landmarks.

Priority 4: Designation of Significant Properties to State and National Registers of Historic Places

Class II and Class III resources should be listed on the State and National Registers of Historic Places at national, State, or local levels of significance under Criteria A, C, or D.

EVALUATION ACTIONS

Comprehensive Planning:

1) The ONJH will seek to incorporate Paleo-Indian historic context evaluation information in the State Plan and other planning efforts in New Jersey.

2) The ONJH will seek to update Paleo-Indian historic context evaluation information by FY 1994.

Survey and Inventory:

1) The ONJH will make Paleo-Indian historic context evaluation information available to ONJH-funded and other surveys and inventories.

2) The ONJH will give additional consideration to sub-grant proposals including nominations of Paleo-Indian resources to the New Jersey and National Registers of Historic Places.

State and National Register:

1) The ONJH will provide guidance on Paleo-Indian resource evaluation in National Register workshops and other technical assistance.

2) The ONJH will encourage archeologists to evaluate and, if appropriate, designate the Carpentersville, Kandy Bar, Plenge, Timber Swamp Brook, Turkey Swamp, and Zierdt and other sites containing buried or intact Paleo-Indian deposits.

Review and Compliance:

1) The ONJH will identify parties involved in review and compliance activities impacting or potentially impacting Paleo-Indian resources and distribute Paleo-Indian historic context evaluation criteria to them.

2) The ONJH will require all review and compliance reports including Paleo-Indian resources to be consistent with the evaluation criteria in this report.

Certified Local Governments:

1) The ONJH will distribute Paleo-Indian historic context evaluation criteria to CLGs via workshops and other technical assistance.

2) The ONJH will require utilization of Paleo-Indian historic context evaluation criteria in evaluation of all Paleo-Indian resources identified in CLGs.

GOAL 3: PROTECTION

PRIORITIES

Priority 1: Enhance Federal and State enforcement of Federal archeological resource protection laws for designated Paleo-Indian resources.
Priority 2: More effective implementation of State laws and regulations protecting designated Paleo-Indian resources.
Priority 3: Development of local historic preservation ordinances protecting designated Paleo-Indian resources.
Priority 4: Negotiation of historic preservation easements and other preservation options to protect designated Paleo-Indian resources.
Priority 5: Improve public awareness of all designated Paleo-Indian properties.
Priority 6: Acquisition of Paleo-Indian historic resources designated as NHLs that are not on Federal land.

Priority 1: Enhance Federal and State Enforcement

Federal and State agencies should devise ways to more effectively apply Section 106 and 110 protections and other Federal archeological resource protection laws for designated Paleo-Indian historic resources threatened by federally-funded undertakings.

Priority 2: More Effective Implementation of Effective State Laws and Regulations

State, county, and local governments should seek to devise more effective implementation of current state laws and regulations protecting Paleo-Indian and other designated historic resources.

Priority 3: Development of Local Historic Preservation Ordinances

New Jersey should work closely with CLGs and other municipalities to bring identified Paleo-Indian and other significant historic resources under the protection of local historic preservation ordinances.

Priority 4: Negotiation of Historic Preservation Easements and Other Preservation Options

New Jersey should encourage historic preservation easements and other preservation options for designated Paleo-Indian resources.

Priority 5: Improve Public Awareness

New Jersey should provide information necessary to improve public awareness of the significance of designated Paleo-Indian historic resources.

Priority 6: Acquisition of Paleo-Indian Historic Resources Designated as NHLs that Are Not on Federal Land

New Jersey should seek to acquire title to any Paleo-Indian historic resources designated as National Historic Landmarks that are not on Federal land.

PROTECTION ACTIONS

Comprehensive Planning:

1) The ONJH will provide technical assistance to state and local government agency land acquisition or easement programs involving properties containing identified Paleo-Indian resources.

2) The ONJH will endeavor to include Paleo-Indian historic context protection information in the State Plan and other State and local government planning documents.

3) The ONJH staff will seek to revise Paleo-Indian historic context resource protection standards by FY 1994.

Survey and Inventory:

1) The ONJH will require review of Paleo-Indian survey and inventory data in all treatments affecting Paleo-Indian resources involving Federal or State funds .

2) The ONJH will encourage review of Paleo-Indian survey and inventory data in all treatments affecting Paleo-Indian resources involving non-government funds.

State and National Register:

1) The ONJH will endeavor to develop public awareness programs emphasizing preservation benefits of resource designation.

Review and Compliance:

1) The ONJH will make Paleo-Indian historic context protection priorities available to all parties involved in State or federally funded undertakings impacting or potentially impacting Paleo-Indian resources in New Jersey.

2) ~~The~~ ONJH will actively seek ways to assure compliance with existing regulations protecting Paleo-Indian and other historic resources.

3) The ONJH will encourage preparation of Paleo-Indian New Jersey and National Register nominations as mitigation measures whenever appropriate.

Certified Local Governments:

1) The ONJH will provide technical assistance to CLGs containing threatened Paleo-Indian resources.

2) The ONJH will provide training and other technical assistance familiarizing CLGs with the particular characteristics of Paleo-Indian and other archeological resources that affect their protection.

Other:

1) The ONJH will seek to develop an educational brochure focusing on New Jersey's Paleo-Indian heritage for distribution to schools, libraries, and other public and private agencies and organizations in the state.

REVIEW PROCESS

Recent advances in archeological technique and increases in archeological activity are generating new information at a rapid rate. Laws regulating management of archeological resources also are changing. Information contained within this historic context should accordingly be reviewed every five years to bring it up-to-date with the latest professional and legal developments.

BIBLIOGRAPHY

Archeologists, like other professionals, use a technical vocabulary when communicating with one another. This vocabulary combines archeological terms and concepts with others drawn from geology, biology, ecology, soil science, and other disciplines. General readers unfamiliar with this vocabulary are advised to refer to a modern archeology textbook glossary or an encyclopedia or dictionary of scientific terms. Four of these are:

Newman, James R., editor
1967 *Harper Encyclopedia of Science.* Revised Edition. New York: Harper and Row.

Oxford University
1984 *Concise Science Dictionary.* London and New York: Oxford University Press.

Thomas, David Hurst
1989 *Archaeology.* Second Edition. New York: Holt, Rhinehart and Winston.

Yule, John-David, editor
1978 *Concise Encyclopedia of the Sciences.* New York: Facts on File.

A vast literature has been devoted to the study of Paleo-Indian life and culture in New Jersey and the surrounding region. These publications can be grouped into three general classes; popular studies, scholarly studies, and government planning documents. A selection of the more accessible major studies in each of these classes appears below. Each of these volumes contains excellent bibliographies for further research.

POPULAR STUDIES

Claiborne, Robert
1973 *The First Americans.* New York, NY: Time-Life Books.

Perhaps the finest of the many popular accounts of Native American life written during the 1960's and 1970's. Reconstructive illustrations in the first two chapters, "Settlers of the New World," and "Hunters of Big Game," provide an unusual glimpse of Paleo-Indian life as it might have been lived.

Maxwell, James A.
1978 *America's Fascinating Indian Heritage.* Pleasantville, NY: The Reader's Digest Association, Inc.

A colorful and well illustrated general survey written in consultation with many top experts in the field. The opening chapter, "The First Indians: Finding a New World," is a highly useful introduction.

Various Authors

1986-1988 "The First Americans." *Natural History*, November 1986 to February 1988.

A series of 14 articles describing the most recent developments in Paleo-Indian research. Written by top specialists in their fields, these articles present several lines of research bearing upon current controversies surrounding the date of the earliest peopling of the New World.

Zubrow, Ezra, et alia, editors

1974 *New World Archaeology: Readings From Scientific American.* San Francisco, CA: W.H. Freeman and Company.

This widely used sourcebook contains many excellent articles on the peopling of the New World. Included within these covers are classic site reports on bison and mammoth hunting sites and overview articles on the earliest sites throughout the Americas.

SCHOLARLY STUDIES

Kraft, Herbert C.

1986 *The Lenape: Archaeology, History, and Ethnography.* Newark, NJ: New Jersey Historical Society.

This volume is the most current general treatment of New Jersey Indian life. The first chapters of this book provide an excellent introduction to archeological work in the State. The second chapter, "Paleo-Indian Pathfinders," is a particularly thorough and readable survey of the subject.

Carlisle, Ronald C., editor

1988 *Americans Before Columbus: Ice-Age Origins.* Pittsburgh, PA: Department of Anthropology, University of Pittsburgh Ethnology Monograph 12.

The articles in this volume, a selection of papers from the Smithsonian Institution's first Columbian Quincentenary Symposium, present excellent overviews of recent findings on Paleo-Indian culture, technology, and environment.

Custer, Jay F.

1984 *Delaware Prehistoric Archaeology: An Ecological Approach.* Newark, DE: University of Delaware Press.

An up-to-date survey of archeology in a neighboring state. The second chapter, "Paleo-Indian Period: The Earliest Inhabitants of Delaware,"

emphasizes the importance of stone tool sources in Paleo-Indian life and supports studies that extend the time range of Paleo-Indian occupation several thousand years before and beyond more widely accepted dates.

Jennings, Jesse D., editor
1983 *Ancient North Americans*. New York: W.H. Freeman.

A somewhat technical, but highly informative survey of North American archeology. Robert E. Funk's chapter, "The Northeastern United States," covers the subject well.

Newman, Walter S. and Bert Salwen, editors
1977 *Amerinds and their Paleoenvironments in Northeastern North America*. Annals of the New York Academy of Sciences, 288. New York: New York Academy of Sciences.

This volume contains a selection of nearly 50 papers presented at an important conference on Paleo-Indian life held in New York in 1976. Several papers analyze information on Ice Age climate while others present overviews of the then-current state of knowledge in particular States or regions in the northeast. A substantial number of articles provide detailed site reports on important Paleo-Indian sites in New Jersey and neighboring states.

Ritchie, William A.
1980 *The Archaeology of New York State*. Revised Edition. Harrison, New York: Harbor Hill Books.

First published in 1961, this book is the classic statement that set the tone for subsequent archeological studies in the Northeast. The first chapter, "The Earliest Occupants: Paleo-Indian Hunters (c. 8000 B.C.)" remains indispensable reading to anyone interested in the subject.

STATE HISTORIC PRESERVATION OFFICE COMPREHENSIVE PRESERVATION PLANNING DOCUMENTS

Chesler, Olga, editor
1982 *A Review of Research Problems and Survey Priorities: The Paleo-Indian Period to the Present*. Trenton, NJ: Office of New Jersey Heritage.

Sydne Marshall's contribution, "Aboriginal Settlement in New Jersey During the Paleo-Indian Cultural Period ca: 10,000 B.C. - 6,000 B.C." is a definitive overview of the major research issues involving New Jersey's first inhabitants.

Custer, Jay F.

1987 *A Management Plan for the Prehistoric Resources of Delaware's Atlantic Coastal Region.* University of Delaware Center for Archaeological Research, Monograph Number 4. Newark, DE: University of Delaware.

The most current planning document for prehistoric resources in this neighboring state.

Raber, Paul A., et alia

1985 *A Comprehensive State Plan for the Conservation of Archaeological Resources.* 2 Volumes. Historic Preservation Planning Series, Number 1. Harrisburg, PA: Pennsylvania Historical and Museum Commission.

Contributions by several authors provide excellent models for the management of Paleo-Indian cultural resources in Pennsylvania.

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.