

Visual Resources of the New Jersey Pine Barrens: Integrating Visual Resources into the Planning Process¹

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with the assistance of
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Abstract: The first purpose of this study was to determine the visual quality of New Jersey Pine Barrens forests according to residents of the area. The goal of the study was to determine how to manage Pine Barrens forests to obtain high visual quality within the framework of residents' preferences, available by the Federal Omnibus Parks Acts of 1978 and proposed New Jersey state legislation establishing a Pinelands Commission and planning region.

A small number of long-time residents of Washington Township, Burlington County, in the heart of the Pine Barrens, were asked to map sites of high and low visual quality. These residents took the investigators on field trips to photograph their sites, and the photographs then were shown to 20 township residents who ranked them from highest to lowest visual quality.

Forest management techniques, such as various types of cutting, burning, and herbicide applications, were researched. Finally we analyzed the feasibility of employing local residents to manage Pine Barrens forests under the guidance of the New Jersey Division of Parks and Forests, and the Pinelands Commission.

Results indicated that lowland forests of Atlantic white cedar, the most difficult forest type to obtain, ranked highest. The most important conclusion, however, is that residents like a diversity of landscapes rather than any one type. Management techniques and costs are much higher and more sophisticated for lowland than upland forests. We determined that it is feasible to employ local residents to manage forests for visual diversity.

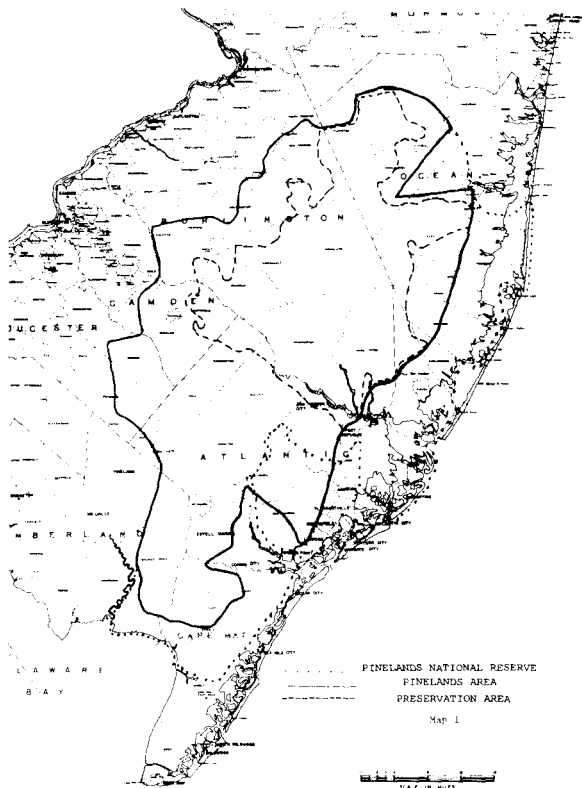
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INTRODUCTION

This study addresses three questions:

1. What are the visual preferences of New Jersey Pine Barrens residents for forest landscapes of their region?
2. What forest management techniques are available to achieve preferred landscapes?
3. What opportunities exist to allow local residents to manage their landscapes for visual quality?



Background

Geography

The study area we have chosen is Washington Township, Burlington County, New Jersey (Map 1). We chose this 100-square-mile area because it is in the central part of the Pine Barrens, it has not been subject to intense agricultural or residential development and the majority of its 650 residents have spent more than half of their lives in or near the township.^{3/} The landscapes of the township represent almost all variations of forest types and age in the Pine Barrens from bogs to mature stands of cedar, pine and hardwoods.

The New Jersey Pine Barrens cover 2,000 square miles and forms part of the Atlantic Coastal Plain which stretches from Cape Cod to Florida. The Pine Barrens outstanding feature is its sandy soil which supports acid-tolerant plant and animal species. Lowland areas support forests of Atlantic white cedar (*Chamaecyparis thyoides*) or swamp hardwoods composed of red maple (*Acer rubrum*), black gum (*Nyssa sylvatica*), and sweetbany (*Magnolia virginiana*); transitional sites in early successional stages grow

thick stands of pitch pine (*Pinus rigida*), while uplands support a mix of pitch and short-leaf pine (*Pinus echinata*) and various species of oak (*Quercus* sp.). Although mature successional stages eventually would produce swamp hardwoods on lowland sites and oak on the uplands, the Pine Barrens has been historically subject to frequent fire and intensive timbering. The result, until the 1940's, has been a diverse series of forest landscapes in various stages of succession. Since the second World War, however, decreased cutting and improved fire control have produced more uniform landscapes in the Pines, which now tend toward climax conditions (Little 1979, Sinton 1978).

Piney Society

Residents of the Central Pine Barrens who proudly call themselves Pineys or Pinehawkers, come from Anglo-Scottish-Irish and Dutch ancestors who settled in the area in the eighteenth and early nineteenth centuries. From 1760 to 1870 rural industries such as iron, glass and paper making provided the economic nexus of the region. In the past century, Pineys developed an economic structure on the periphery of megalopolis which consists of timbering, farming and seasonal jobs. Piney society exists not in isolation, but rather as an adjunct to Philadelphia and regional coastal centers such as Atlantic City and Toms River.

Washington Township residents live in small, family-oriented communities of 20 to 200 people. In the twentieth century their ranks have been joined by people from North Jersey and the Delaware Valley who moved to the area after having been frequent vacation visitors for many years. In Ocean and parts of Burlington Counties, the central core of Piney society has been subject to intense population growth pressures from retirement communities and, in the north and west, commuters from the New York and Delaware Valley metropolitan areas (Ayres 1979, Sinton 1979a).

An Institutional Framework for Planning

Attempts at regional planning for the Pine Barrens began in 1960, but not until the mid-1970's were development pressures sufficient to endanger the water supplies, ecological integrity and recreational potential of the region.^{4/}

^{3/} Approximately 650 people live in the township. Data on their length of residency come from 6 years of field work in the area.

^{4/} A brief history of planning attempts in the Pinelands can be found in the Governor's Pinelands Review Committee Report, 1979.

In 1978 Congress passed the National Parks and Recreation Act, also called the Omnibus Parks Act, of which Section 503 was devoted to the establishment of a Pinelands Reserve. Shortly after passage of the Omnibus Parks Act, Governor Byrne's Pinelands Review Committee published its draft of a conceptual plan for the Pine Barrens, or Pinelands, which designated a Pinelands preservation and protection zone as shown on Map 1, and established a Pinelands Commission of 15 members to plan and manage the region. As of April, 1979, legislation to establish a Pinelands Commission is in the New Jersey Senate Energy and Environment Committee, and action is expected by fall 1979 to establish the Commission as a permanent state body.

Local input into planning over the next decade will be critical to the success of Pinelands management; the region's size, its history and political exigencies require local input. Most of the Pine Barrens' 2,000 square miles will be lived in, not preserved for wilderness in the classic sense, and most of the Pinelands must be managed carefully to create habitats for rare and endangered species, game, timber, watersheds and natural resources. The Pines must be managed for those who live in them, and an important part of that living experience is visual.

We, therefore, went to the residents to ask them to identify the visual resources of the Pine Barrens.

RESIDENTS' ASSESSMENT OF VISUAL RESOURCES

Introduction

Pine Barrens landscapes represent human intervention--"ordering" from a historic viewpoint and often "disordering" from an ecological viewpoint. Since we are concerned with management of the Pine Barrens, we followed the advice of Brian Goodey (1974) that "without a prior understanding of the bases of perception and behavior, environmental planning and improvement are mere academic exercises, doomed to failure because they are unrelated to the terms in which people think and the goals they select" (Goodey 1974, p. 33). This project attempts to join the "complex attitude derived from immersion in the totality of the environment" of local residents in the Pine Barrens to the needs of the land-use planner (Tuan 1974, p. 63).

Methods

General

"Attitudes toward the countryside, insofar as they are verbalized and known are sophisticated responses to environment...they presuppose the existence and recognition of environmental typos and a degree of freedom to choose among them" (Tuan 1974, p. 248). The Pine Barrens residents we interviewed were descendants of families who have lived off their physical resources for five or six generations, and they have a very sophisticated view of their landscape. Although this research is concerned chiefly with visual resources, in fact almost every person interviewed expressed concern and had concrete perceptions about the use of the landscape, whether for cordwood, sawboards, hunting and fishing, berry picking, wildflowers or picnicking.

The complexity of residents' visions of their landscapes in fact presented a problem because they neither could nor would separate what they saw from how they lived in and worked with their environment. Therefore, the author did not attempt to separate their visual sense from the rest of their human experience, but rather turned to the method of mental mapping as described by Gould and White (1974). This, we hoped, would give us an idea of the general shape and size of the area people used and some outstanding visual features. We then took 35mm photographs representing all different stages of succession, and asked 20 residents to rank the photographs from highest to lowest visual quality (Palmer 1978). Our intent was to take those landscapes with the highest ratings and suggest management techniques for them.

Methodological Problems and Solutions

Like most long-time residents of any place, Pineys are suspicious of outsiders or "foreigners." Their suspicion has been heightened recently by three occurrences: 1. Books written in the 1950's and 1960's about the Pine Barrens portrayed Pineys as quaint storytellers and loners from a past era. Pineys resent this and suspect any author of similar intentions.

2. State-owned Wharton State Forest occupies about 70 percent of the township's total land; the State pays taxes of 10¢ an acre on this land, and any suggestion of the township's working with the State or providing input to a state plan raises residents' hackles.

3. Recent Pinelands legislation has not yet been explained to residents, many of whom are convinced the State is ready to take over most of the rest of the township.

To overcome this suspicion requires patience and time more than anything else. The author has been working with people in the Pine Barrens for the past 6 years, and some of his students live in the Pines. Without the friendship which has been built up over several years, this project would not have been possible. Even so, many residents remain suspicious and have refused to talk with the researchers. Under such conditions, no attempt was made to conduct a random sample survey but, instead, the researchers went to community leaders and residents who were willing to be interviewed.

Another difficulty lay in the general social organization of Pineys. They rarely gather in large groups, so it is difficult to conduct group interviews; and the interviews we had were conducted at people's homes. While home interviews produce the most authentic responses from Pineys, they are lengthy. Church meetings on Sundays are one of the few gatherings which occur regularly, and Geraldine Ginder conducted the mental map workshop with women at that time. The workshop was divided into 5 steps: 1. Discussion of the current trend toward public participation in planning, its success and failures and the need for local participation; 2. A description of how residents' input would be involved in planning; 3. Directions for drawing a mental map; 4. Map drawing; 5. Written descriptions of what they had included in their maps.

The last problem was the general responses of many of the residents who, when given the photographs, responded, "Oh, I like it all", or began choosing several photographs and lumped the test in a pile which they liked equally or simply did not care to choose. More than half the residents reacted to the photographs in this manner which suggests, as do their comments, that their visual sense of their environment is tied intimately to their other senses, their nostalgic memories and their use of the landscapes for recreation or economic purposes. At first the authors tried to induce respondents to finish, or at times even start, the ranking process, with notable lack of success. We, therefore, accepted the respondents' statements at face value. Interpretation of the results of these interviews will be found in the following section.

Selection of Paragraphs

After eliciting the first four mental maps, we intended to use them as guides to photograph

areas of high visual quality; but this proved impossible due to variations in the perceptions of the relative locations of areas. Therefore, we had three Pine Barrens residents take us to areas they considered of high visual value, and shot 2 rolls of black and white film and one roll of color film during those field trips. The color slides, while more interesting and (to the authors' way of thinking) more aesthetic, did not represent typical landscapes better than the black and white photos. The response we wished to elicit from residents was a general one to a type of landscape rather than a specific response to the beauty of the photograph or a particular place they knew. The author pre-tested the color and black and white photos on 6 residents, and concluded that black and white photos were more appropriate than color ones for this study.

Photographs were taken of other landscapes and forest types which were not included in the mental maps. The 200 photographs then were divided among five generally-recognized forest types. These were culled to two of each type according to age of the stand, and also included river areas, and cut and burned areas. These 35 photos, when shown to the residents, were found to be confusing, and respondents would not or could not rank them. The number of prints was cut to thirteen, which allowed for at least one of each forest type. Respondents who were unable to deal with 35 photos were willing, at least, to select the 4 or 5 of the remaining 13 as the most attractive landscapes.

Results of Visual Resource Assessment

Mental Maps

We can draw four conclusions from the 15 mental maps which Washington Township residents drew: 1. Men ranged farther than women; 2. Cedar swamps were mentioned on most maps; 3. An exotic white pine forest was on half the maps; 4. 90 percent of the maps described at least 5 different types.

Men's and women's mental maps suggested classic rural American sex differences; that is, men work away from home and women stay at home. Men's maps described areas of 20 square miles or more, while the women's maps concentrated on their houses and the village surroundings; and one woman's map described only her house and garden. Although several women mentioned scenic sites 20 to 30 miles from their village, they did not include these on their maps. Ninety percent of the maps did clearly delineate the edges of the villages by roads and the Mullica River.



Cedar Swamp
20 years old
High Visual Rating



Hardwood Swamp
15 years old
Low Visual Rating



Cultivated Field
Medium Visual Rating



Pine/Oak Woods
25 years old
Prescribed Burn
Medium Visual Rating

Eighty percent of the mental maps described one or more cedar swamps and/or the white pine forest which the CCC planted in Green Bank in the 1930's. It is significant that these two landscapes are not abundant in the Pine Barrens since cedar forest acreage is decreasing and white pines are exotic. Other forest types were mentioned, but respondents did not duplicate any other sites; apart from edges and cedar swamps, specific landscapes on the mental map were peculiar to that particular map; but almost all showed at least 5 different vegetation types, which strongly suggests a preference for diverse landscapes.

Photographs of Forest Landscapes

Only one discernible pattern emerged in residents' ranking of photographs for high visual quality: 80 percent of the residents rated cedar forests in their first five choices of photographs. The reasons for this high rating ranged from purely aesthetic to good timber, good food and cover for deer. No other photos were chosen among the first 5 by even 50 percent of the respondents, and all photos were chosen among the first 5 by at least 20 percent of the respondents.

Again we should stress that the general reaction to the photos was, "Oh, I like them all." The major conclusions which we can draw from the visual study are that Pine Barrens residents appreciate the diversity of landscapes in which they live rather than any single one. What Pineys see in a photograph of a Pine Barrens forest or field is not only beauty, but a sense of the totality of their environment.

This conclusion must be clear to the resource manager and land-use planner. We need to manage Pine Barrens landscapes for diversity.

Additional Results

By using a variety of techniques -- interviews, mental maps and photographs -- two additional conclusions become clear which otherwise might have remained hidden: First, 60 percent of the residents without prompting mentioned wildflowers as an important visual amenity. Most often mentioned were wetland flowers, particularly members of the orchid family; but references to upland flowers, such as gentian and arbutus, were frequent. Second, 50 percent of the residents mentioned the only white pine plantation in the township as an important visual asset. Response to this stand was clearly aesthetic since the area supports little wildlife, few people walk in it, and it is only about 2 acres; however, its denseness and dark green color contrast strikingly with other upland forest types.

Space does not permit substantive discussion of this and the following section on techniques to manage Pine Barrens forests for visual preference and the problem of public involvement in forest management.^{5/} It must suffice to state in this article that we need to manage for four goals: diversity, cedar, wildflowers, and white-pine-type forests.

Forest managers have many techniques to achieve diversity, most of which already are published in the literature. These techniques, including cutting, burning, seeding, drumming, etc., have been researched carefully (Little 1950, 1968, 1973, Little *et al.* 1952, 1958a, 1958b, Pierson 1979, Vivian 1979).

Creating diverse forest types on uplands is not difficult, and foresters do not at this time expect problems achieving high visual quality, either in these areas or along roadsides, which can be cut or seeded to produce a profusion of wildflowers (Little 1968).

White pine stands are neither economically nor silviculturally feasible in the Pine-lands. Silas Little, however, is developing a pitch X loblolly pine hybrid which would form stands visually similar to pitch pine and which may outgrow the best pitch pine or shortleaf pines by 10 to 25 feet at 50 years (Little 1979).

The major problem forest managers face in the Pine Barrens is restoration and creation of cedar stands of which (at most) 50,000 acres remain, or only 5 percent of the total forest area (Pierson 1979). Cedar can reproduce itself by seed, if the seedbed is cleared and deer are kept out of the area. These both are formidable problems, especially since 2,4,5-T was banned, because this herbicide is the only one available which effectively kills swamp maples (Little 1963). As for deer, the only effective method to exclude them from seedling cedar areas (their prime winter food) is to fence them out, an outrageously costly proposition.

Unfortunately, it will be very difficult to reproduce cedar swamps. Until suitable methods are developed to exclude swamp hardwoods and deer, this valuable landscape will continue to disappear.

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This and the following section will be discussed in detail in a forthcoming article.

PUBLIC PARTICIPATION IN FOREST MANAGEMENT

The most difficult challenge in managing Pine Barrens forests will be public participation. The historic independence of Pineys and their small land holdings throughout the region mitigate against large-scale management either by government or large private corporations. Because there is so little topographical variation, furthermore, landscape diversity for visual quality must be managed on a small scale; the viewer, in other words rarely sees more than several hundred yards in any one direction, so variations must occur frequently if landscapes are to hold viewers' interest.

Two variables will account for the success of small-scale management in the future: the residents themselves, and a new regional management plan which will be ready in 1981. Many residents of the Pine Barrens have families whose roots go back one hundred or more years, families whose livelihood consisted of managing forests (Sinton 1979) Many of these same residents have at one time or another cut timber, fought fires, helped prescribe burning efforts, reforested areas and created or drained swamps. Forest Managers, therefore, already have a skilled and willing resident labor force who want to stay in the area and who enjoy the work.

Second is the new regional management plan. The plan and management policies, now in the throes of political processes, are due in 1981. However, visual quality in the Pine Barrens will result more from actual management decisions than policies and guidelines. The closer these decisions are made to the local level, the more viable will be the actual management. At this moment, the State is willing to invest considerable time and money in public participation, and the author is sanguine about the chances for success.

Given a reasonable administrative framework, one must also make small-scale forest management economically feasible. Economic-feasibility studies will be done to determine the costs and benefits of long-term forest productivity versus those of residential development. Included in this analysis will be the visual resources which residents have defined for themselves.

SUMMARY

1. While classic methods to measure visual quality are useful for some studies, they are of limited use when evoking responses from long-time rural residents. To separate these people's visual experience from their other

senses can be dangerously misleading.

2. By using a combination of photographs, mental maps and, particularly interviews and informants, we can, nonetheless, derive an idea of how residents experience their landscapes and the diversity they require for a healthy and balanced environment.

3. These exercises can illuminate critical management problems such as, in this study, the difficulty of regenerating cedar forests. Also, we can learn ways to enhance otherwise-unnoticed landscapes, such as roadsides, for wildflowers.

4. Last, this study suggests that if public participation is incorporated at the beginning of a planning study, rather than tacked on as an afterthought, management by local residents will be feasible.

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