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Open-Land Policy In Connecticut

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YALE UNIVERSITY: SCHOOL OF FORESTRY AND
ENVIRONMENTAL STUDIES

BULLETIN NO. 87

OPEN-LAND POLICY IN CONNECTICUT

BY

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PAUL S. WILSON
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YALE UNIVERSITY

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2012

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In the course of the study, between forty and fifty different people working with local, state and federal governments, regional planning associations, public utility and other corporations, and universities were approached directly for information. Some spent considerable time explaining their areas to us and others answered repeated queries as the study progressed. We wish we could thank each one by name and hope this blanket acknowledgement will express our gratitude. Without their help in interpreting and supplementing the published source materials through which we plowed, our picture of the open-land policy situation in Connecticut would be much less complete than it now is.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

People in the United States have been using land for hundreds of years, but only recently has "land use" become both a coherent phenomenon and a crucial problem in the public eye. Modern population expansion, increasing affluence, and technological growth have put great pressure on the fixed land base. It is not generally recognized that the results of decisions to use particular land parcels in particular ways transcend mere local effects and may have broad consequences for other parcels and other uses. The problem of how best to allocate land for a combination of uses and benefits seems certain to become even more important as the social, political, and economic effects of our historical random approach to land use continue to accumulate.

The state of Connecticut is beset with most of the problems and challenges of present day land use. Many segments of the population have been expressing concern over the current land-use mix. People are beginning to try to plan land use according to new goals and criteria, to affect uses which they see as undesirable, and generally to interact with and change the land-use picture in the state. These people must be aware of and understand the various currently accepted land-use policies before they can hope to effectively deal with change. Our major purpose here is to clearly delineate the present open-land policy situation in Connecticut as a base from which land managers, politicians, planners and other interested parties can work to affect the future.

This bulletin presents a broad overview of the land-use situation in Connecticut; it is not an in depth examination. We feel it is possible to proceed from such an overview to a useful formulation of the major open-land policies now effective in the state. As used here, a *policy* is a course of action actually accepted and followed by a group of people. In this case, the group consists of the citizens of Connecticut plus those outside people whose actions affect open-land use in the state. *Open-land policy* is a set of tacitly or overtly agreed-upon arrangements of a political, legal, economic, or other social nature, by which the people use, conserve, or otherwise interact with open

land. For this study, *open land* is defined broadly as land not developed for urban or suburban use and not totally submerged. It consists primarily of forest, farm land, pasture, and other vegetated open space.

Most policy is evolutionary, in a social sense, and open-land policy is no exception. Historical patterns play a crucial role in determining present policies. In our sense of the term, policies are not simply set by individuals or groups at given times. Instead, they are worked out over time—often slowly—in response to changing social and physical conditions.[1]

This study does not purport to criticize present land use in Connecticut or to suggest specific alternatives to present arrangements. Our intent is simply to look at resource exploitation and land use in the state and try to lay bare the essential agreements by which people collectively use the open land.

General Information on Connecticut

Connecticut comprises an area of about 5,000 square miles; it ranks 48th of the United States in size. The state is divided into 169 towns (the basic political unit), including 23 communities of sufficient size to be considered cities. Nearly all the towns have a planning and zoning or simply a zoning agency.

The population of Connecticut has grown steadily since it was settled in 1633. The 1971 population was approximately three million; a 19 percent increase from 1960. Population density over the state averages 629 persons per square mile; the fourth highest in the nation. The state had about one million dwelling units in 1970; a 26 percent increase from 1960.

Connecticut ranks 21st in retail trade, 13th in value added by manufacture, and first in percentage of skilled workers to total workers in the United States. The gross state product has shown a steady increase of over 7 percent a year from 8.8 billion dollars in 1960 to 17.8 billion in 1970. The Connecticut Development Commission in 1972 put the effective buying income per household at $13,024.

[1]For a further discussion of the sense in which "policy" is used in this study, see Worrell, A. C., *Principles of Forest Policy*, McGraw-Hill Book Company, N.Y., 1970, pp. 2–3.

About 36,000 corporations make their homes in Connecticut, and 4500 farms produced an income of over 167 million dollars in 1970.

To better understand the above statistics, it is necessary to have a general picture of how the state is "arranged," and how the people tend to behave. About 62 percent of the land area is forest, 17 percent is farm and related land, and the remaining 21 percent is in other uses, including urban, suburban, and institutional. To characterize the state as essentially "rural," as some state agencies have done requires much too broad an interpretation of that term, and is actually misleading.

The character of the state is determined to some extent by patterns of development. A corridor of heavy development extends from the southwestern tip (closest to New York City) along the coast to New Haven and then turns inland to Hartford. Pockets of heavy development exist outside of this corridor, primarily in the west central part of the state around Danbury and in the east from New London north along the Thames River. The spheres of influence of these major urban areas spread fairly wide, and combine with a pervasive network of roads to lend an urban flavor to the entire state. This is rapidly changing to a suburban orientation, however, since the movement out from the cities has been going on in Connecticut for some time. Although Connecticut retains certain vestiges of Old New England ruralism and a great deal of forested land, the urban and suburban orientation keeps it from being really "rural".

In one sense, the corridor development reflects the determining influence of geology and ecology on land use. Development has taken place in areas of good soil composition and along natural transportation routes. In another sense, however, the development pattern reflects the social and demographic realities of the megalopolitan east coast. Connecticut is definitely a part of this region and its social characteristics underscore this fact. The population is generally affluent, mobile, relatively well-educated, and relatively high-skilled. A great deal of the income is generated by light industry and other corporate activity. Socially, demographically, and physically Connecticut projects a cosmopolitan, modern, non-rural image. This plays an important role in the formation of open-land policy as we shall show.

Four major political spheres affect the use of open land in Connecticut. The most important is town government, where most direct control over all land uses resides. Secondly, the state is divided into

eight geographic regions, each of which has a minimally staffed and funded regional planning agency. These agencies now act mainly as data collectors and advisors, but stand ready to implement regional planning, should such a concept become accepted.

The third level of political organization affecting open land use is state government. The Department of Environmental Protection administers thousands of acres of open land and monitors or attempts to control pollution, solid waste disposal, and other environmental problems which affect open lands. The state legislature has also been active, passing legislation that affects open-land use directly, as through the wetlands laws, and indirectly, as through the anti-pollution laws.

Finally open-land use is affected by the national—or more precisely, the eastern sub-national—scene of which Connecticut is a part. The possibilities of importing food and other goods and of exporting various products have an important effect on how open-land resources are allocated within the state. Actions of the federal government—particularly through financing—are also important to open-land use.

Study Methodology

We found quite early in this study that it is not possible to isolate any one land policy area from the other social, economic, and political policies and actions which are concurrently in effect. For this reason, we adopted a resource-based analytical method. Open-land policy remained the central thrust of the study, but other policies and actions which affect open-land use directly or indirectly were also considered. The general open-land resource in the state of Connecticut was broken down into the following component parts: Forest, agriculture, minerals, wildlife, recreation, rights-of-way, and special uses (primarily watershed and institutional). This approach emphasizes the fact that open land can yield a variety of benefits and that because of this, people enter into complex arrangements for using and dealing with it.

Our object in this study was to determine what courses of land-use action are currently accepted and followed by people in the state. To achieve this, we first created sets of questions pertinent to policy considerations for each land-use category. These invariably included

the broadly important points of: How much land is devoted to the use? Who owns this land? How is it administered? What revenue is derived from its use? What is the distribution pattern of this use within the state? Data to answer these—and more specific questions for each category—were collected from all available secondary sources. These were supplemented by information obtained directly from a number of knowledgeable people throughout the state.

The information was segregated into four kinds of effects on land use: legal-political, economic, physiographic, and demographic. These effects were in turn analyzed for their relation to (a) land occupancy and (b) production and use for each of the resource categories which together make up the totality of open-land use. The conceptual pattern of the analysis is indicated in Figure 1.

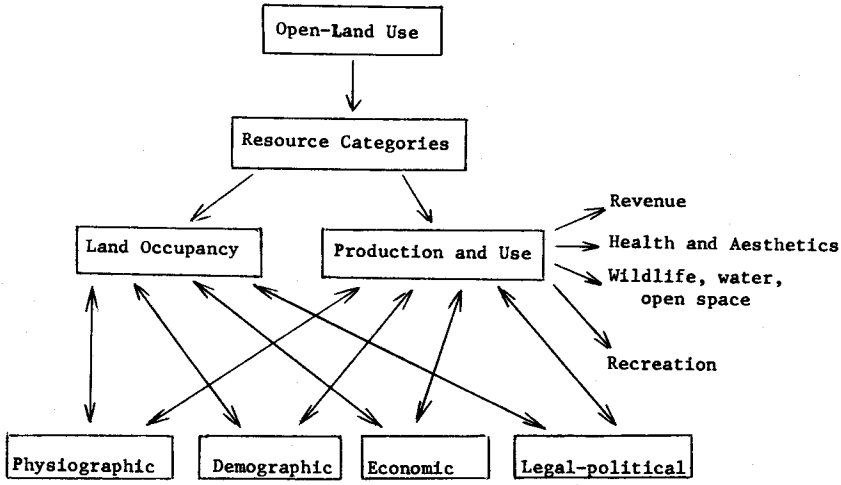

Figure 1. Organization of information about open-land policies in Connecticut

By a combination of data organization and analysis and a feel for the workings of the state we were able to "lift out" a set of on-the-ground policies for each resource category. We feel that these describe accurately the main arrangements by which people in Connecticut are now using the open lands. Some of the policies are just now becoming solidified as a result of recent historical evolution. Others are beginning new, ultimately unpredictable changes. The

picture of the state's open-land use which emerges from these policy abstractions appears to us to be the closest possible description of the conditions now accepted in the state.

One advantage of the scheme of information organization adopted is that it allowed us to "scan" the resource categories and to pick out policies which are common throughout, or which somehow play importantly in each area. These we feel are the general state policies which may have more effect on open-land use than the more specific resource-bound policies.

The body of this bulletin is organized around eight chapters dealing with the different resource benefits derived from open land in Connecticut: Forests and Forest Products, Agriculture, Minerals, Recreation, Wildlife, Rights-of-Way, Special Uses, and Amenity. The final chapter ties together the observations made in the separate chapters.

CHAPTER TWO

FORESTS AND FOREST PRODUCTS

Introduction

There are about 1.9 million acres of forest land in Connecticut today. These forests consist predominantly of hardwood species with a small admixture of various softwoods. They are generally young and growing; annual wood growth is presently about four times the annual drain. However, much of the state's standing timber is of poor quality for commercial use. The youth and poor quality are a result of the fact that Connecticut's early settlers saw the forests as obstacles to be cleared away for agricultural development. Until the late 19th century the great majority of the state's land was in farm, field, and open pasture. The forests also were cut for fuelwood and for charcoal for the iron and brass industries. When the marginal farms gradually went out of business, much of the cleared land was allowed to go back into forest. But no planned management for timber, recreation or other uses was conceived of at that time.

Ninety percent of Connecticut's forests are privately owned. Private individuals own one-third of the forest land and corporations own about half. The water companies are extensive forest owners; the New Haven Water Company alone owns about 26,000 acres. About 80 percent of the total number of forest owners are individuals and the majority of their holdings are between 11 and 25 acres in size.

Early settlement, a relatively high population density, and a long tradition of private land ownership produced a situation in Connecticut that was not amenable to extensive public land ownership. However, almost 10 percent of Connecticut forest land is publicly owned. Most of this is owned by the state and controlled by the Department of Environmental Protection. The rest of the publicly owned forest land is controlled by various municipalities. Authorization for the three major forms of forest ownership (private, state, and municipal) is explicitly stated in the Connecticut General Statutes.

Legal-political and Economic Aspects

Private forest owners could conceivably do whatever they liked with their land. But the ultimate effect of extensive private forest ownership in Connecticut has been to encourage commercial and residential development and to discourage long-range forest management efforts. This extensive private ownership and its on-the-ground consequences comprise the most important aspects of Connecticut forest land policy. Most individual forest landowners own their small parcels for one of three main purposes: residential, personal recreation, or investment.

There are about 60 active sawmills in Connecticut. They process approximately 30 million board feet of lumber, some of which comes from Connecticut private owners. Some of the wood harvested from private land goes to the 200 furniture manufacturers in Connecticut, although most of their wood comes from out of state. Private forests are also utilized on a small scale for recreation (hunting and fishing), growing Christmas trees, and agricultural uses such as grazing. Farm woodlots, although generally of poor quality, accounted for over $200,000 in sales of wood products in 1969. Most of the private forest land in the state is of little commercial value because of the small average size of holding, high land values, poor-quality wood, and the fact that markets are located mainly outside the state. The sale of wood and wood products makes up a very small part of the total economic activity in Connecticut.

The Forestry Unit of DEP (which in 1971 took over the duties of the Park and Forest Commission) is responsible for control and management of the state-owned forest lands. The Forestry Unit receives operating expenses from the state general fund to spend on the various aspects of forest management. State-forest management has been wood-oriented in the past, but this is shifting, as recreation increases in importance as a management criterion. The Forestry Unit oversees active silviculture on about 185,000 acres of state-forest, state-park, and private land. The Unit would like to begin more extensive harvesting of timber on its lands with a goal of 4 million board feet per year. Programs like the hardwood to softwood conversion on Pachaug State Forest are aimed at this goal. However, the Unit is wary of producing large amounts of timber for out-of-state markets and will have to deal with the lack of Connecticut markets before increasing commercial timber production.

Private owners are assisted with forest management through the State's Co-operative Forest Management Program. The Program has been reimbursed (to about 50 percent of cost) by the U.S. Forest Service and the Agricultural Stabilization and Conservation Service. Some 1700 owners and 83,000 acres of private land were affected by this program in fiscal year 1970. The CFM Program operates solely through response to individual requests for assistance and does not get to most private owners, including those who in all likelihood need the help most. It is interesting that more requests are coming from urban and suburban areas, and it is expected that the Forestry Unit will become more concerned with "urban forestry" in the future. The CFM Program operates on about $100,000 annually, which is about 8 percent of the state forest-management budget.

The State runs a financially self-sustaining nursery in the Pachaug State Forest. It provides planting stock for reforestation and conservation practices to private owners at cost. In 1973, 1.5 million tree seedlings and 100 thousand shrubs were shipped. Ninety-five percent of these went to private owners who owned at least one acre of plantable land. An "environmental buffer bunch" is now being offered to more-urban applicants. In essence, the state nursery operation is a small-scale subsidy to private landowners for the maintenance of forest land.

The Forestry Unit of DEP has broad legislative powers for forest fire prevention and control. Due in large part to the Unit's activities, relatively little fire damage occurs to Connecticut forests. Only 1,400 acres were burned by 600 fires in 1971. The state general fund and the federal government provide the funds in about equal parts. The actual amount of money varies considerably from year to year depending on the weather. Since practically all forest fires in Connecticut are caused by people, much of the fire prevention program consists of information and education, including radio fire-danger forecasts. In terms of actual fire fighting, the first contact is invariably made by local fire-fighting units. The Forestry Unit acts mainly as a co-ordinator for these local units which are maintained by the towns and often staffed by volunteers. The DEP provides only minimal assistance in terms of equipment and manpower for actual fire fighting. However, Connecticut does belong to the Northeast Fire Protection Commission, whose primary function is the training of fire-control personnel, although some equipment is exchanged during fire emergencies among the New England states and parts of

eastern Canada. The top priority of Connecticut's fire prevention and control activities is really the protection of property, especially homes, from possible fire damage.

Perhaps the major responsibility of the DEP Forestry Unit is the classification of land for tax purposes. (Only since the summer of 1973 have Unit personnel been freed from having to ground check all applications for forest-land tax classification.)

Public Law 490, passed in 1963, is a mechanism to provide owners a financial incentive to keep their land in forest. This law provides that forest land (as well as agricultural and other open space land) will be taxed at use value rather than the usually higher market value, which is based on its potential for conversion to development uses. This relieves the owner of forest land from the higher taxes which might pressure him into selling out for some more intensive use. The applicant must own at least 25 acres of forest to be eligible. In 1971, forest-land designations were issued under PL 490 to one thousand landowners, covering 76,000 acres. Although the premises of PL 490 are now accepted throughout the state, there was heavy initial opposition from the local tax assessors, who often totally disregarded it.

Public Law 152, a later amendment to PL 490, provides sanctions against changes from forest to more-intensive land uses (and against speculative holding in general) by levying a conveyance tax on the sale of forest land for up to ten years after its classification under PL 490. Exceptionally high land prices somewhat blunt the intended effects of PL 152, and the law has been difficult to enforce because of protests against the severe financial penalties involved and claims that the law is unconstitutional.

Land is still being classed as forest by the state under a 1913 tax law (C.G.S.A. 12-96-101) which was designed specifically to encourage forestation and forest maintenance, and which has none of the other "open space" ramifications of PL 490.

Another law which helps encourage owners to maintain their forest properties as such is the 1969 Landowners Liabiity Law, which relieves landowners of financial responsibility for people who use their land for recreational purposes. Interest in this law has so far been slight, but is expected to rise as the demand for outdoor recreation increases.

Although the laws noted here, when taken together, indicate a significant state attitude toward maintaining forest land, they do not

provide enough economic or other incentives to actually realize this aim on the ground. A great deal of land is converted from forest and other open space categories into more intensive uses each year. Information on the exact amount and rate of this conversion is unavailable, but the trend is clear. Expressions against this trend are being made at the state level in the form of the above laws and through other means such as lobbyists, conservation organizations, and regional planning agencies. But so far these expressions have not been adequate to balance the powerful economic arguments for continued shifts toward more intensive land uses.

The DEP Forestry Unit plays a role in transferring federal funds to state projects such as the Rural Environmental Assistance Program and the Resource Conservation and Development Program for Eastern Connecticut. It also maintains a statewide Natural Area Preserve System, which is slowly growing—mainly by gift—toward its goal of 10,000 acres.

Finally, public ownership is increased each year by DEP's land acquisition program. In 1970, approximately 1500 acres were added to the state forest land. The bulk of this acquisition came from gifts but the program does purchase some lands with partial federal reimbursement. (It is problematic whether the state would carry on an acquisition program if it had to rely entirely on its own money to do so.) In addition to state acquisition, a certain amount of forest land is acquired each year by the municipalities and by local organizations such as the land trusts.

Summary

For all practical purposes, Connecticut's forests have never been treated as long-term renewable resources. Large areas of forest have at some time been cleared for agriculture. Wood product industries have used Connecticut timber in the past but this has declined and most of the wood now used by Connecticut industries comes from out of state. About 70 percent of the state is forested, due primarily to the steady abandonment of agricultural land and its natural reforestation. The relationship between Connecticut people and Connecticut forests underlines a crucial land use conflict. The forests are no longer seen as obstacles and their aesthetic, recreational, watershed, and other values are being recognized. But, at the same time, people

are aware of the value of forest land for development and much of it is being converted to more intensive uses.

Connecticut Forest Land Policies

It apparently is accepted policy in Connecticut to:

1. Maintain a sizeable portion of the land area in forest.
2. Maintain the bulk of the forest land in private ownership.
3. Allow private owners to use their forest land for the most part as they see fit.
4. Generally allow market forces to determine the amount of land which is in forest.
5. Permit the conversion of forest land to more intensive uses at the owner's discretion except where it has been included in an established open-space program.
6. Provide tax relief through use-valuation to owners of forest land as a means of encouraging them to keep the land in forest.
7. Subsidize forest-land maintenance to some extent through the growing and selling of planting stock at cost.
8. Gradually acquire forest land for state ownership through gift and purchase.
9. Manage state-owned forests for production of benefits in the following order of priority: recreation, wood products, water, wildlife, and aesthetics.
10. Assign a low priority to production of wood and similar products from Connecticut forests.
11. Base many forest programs in the state primarily on federal grants.
12. Keep forest fire damage within a small acceptable limit, but to give higher priority to protecting other private property, and especially homes.
13. Depend principally on local fire fighting units but to cooperate with the Northeastern Forest Fire Protection Commission in emergencies.
14. Preserve certain limited areas in a natural forest condition.

CHAPTER THREE

AGRICULTURE

Introduction

There are about 4,000 farms in Connecticut and cropland, pasture and pastured woodlands occupy some 18 percent of the land area. A much larger proportion was cultivated or pastured at one time but when more productive agricultural lands in the West were opened up, many Connecticut farms were abandoned and much land reverted to forest. More recently, urban growth has also encroached on agricultural land. The number of Connecticut farms and the total area in agriculture decline each year. The farms are generally small —the mean size in 1972 being about 130 acres—and more than 60 percent of them are under 100 acres in size. Economic pressures have operated in favor of larger, intensively managed farms and have forced the smaller operations out of business. Table I traces the historical changes in Connecticut agriculture and gives a picture of the relative importance of agriculture in the state over time.

Demand for agricultural land is currently increasing throughout the state, but this is mostly for non-agricultural purposes such as residential, commercial or industrial use. Many of the farms are in the fertile river valleys where the major urban centers are also located. Connecticut has maintained in part a rural atmosphere despite being the fourth most densely populated state in the country. This atmosphere—involving a mix of cultivated land, pasture and woodland—has been an attraction to residents and industry. The value of this aesthetic has increased relative to the value of farm products, as the farm area has declined from urban encroachment and reversion of pasture to woodland. But as the number of farms has decreased, the attractive milieu has also deteriorated. The aesthetic value of operating farmlands has consequently risen in comparison with their value for agricultural products.

Table 1. *Historical Changes in Connecticut Agriculture*

Census Year	State Population (thousands)	Number of Farms (thousands)	Area in farms (thousand acres)	Percentage of state in farmland	Mean Farm size (acres)
1850	371	22	2,384	77	106
1860	460	25	2,504	81	99
1870	537	26	2,364	77	93
1880	623	31	2,454	79	80
1890	746	26	2,253	73	85
1900	908	27	2,312	75	85
1910	1,115	27	2,186	71	81
1920	1,381	23	1,899	61	84
1930	1,607	17	1,502	49	87
1940	1,709	21	1,512	48	71
1950	2,007	16	1,272	41	81
1959	2,535	8	884	28	107
1969	3,032	4	540	17	120

Sources: *Census of Agriculture* for 1910, 1925, 1935, 1945, 1959, and 1969; *Census of Population* for 1910, 1920, 1930, 1940, 1950, 1960 and 1970.

Production

Connecticut farms produce a variety of benefits, including conventional agricultural products, amenities, and revenues for other sectors of the economy. The major agricultural products are vegetables, fruits and nuts; dairy, poultry and other livestock products; shade-grown tobacco; and greenhouse and nursery plants. The total dollar value of agricultural products has been gradually increasing but the total physical production in most categories has declined in the last decade.

Most of Connecticut's agricultural products are marketed within the state. Few require extensive processing except tobacco, which is marketed worldwide. Some nursery products also go out of the state. Connecticut farmers produce 57 percent of the state's milk needs, 93 percent of egg needs, and 33 percent of poultry, meat and fresh vegetable needs. But Connecticut is a net importer of agricultural products because its predominantly urban residents consume substantially more than the state produces.

Connecticut's agricultural land provides aesthetic benefits varying from scenic vistas to a general "rural" atmosphere. Agricultural lands stabilize the water supply through aquifer recharge and watershed protection, and provide some recreational benefits, such as hunting.

These amenities are not generally evaluated in the marketplace but they play important roles in the state's economy. The State Department of Commerce, for example, feels the rural atmosphere has a high value as an attractant to new commerce and industry.

Connecticut farms also produce revenue. Agriculture generates business activity in other sectors of the economy nearly equal to the total cash receipts of the farmers. And farms provide employment for some 18,000 persons, about one and one-half percent of the state labor force.

Economic Aspects

Demand for agricultural lands in Connecticut is steadily increasing, though largely for non-agricultural uses. Agricultural land values rose by an average of fifty percent between 1967 and 1972. This is not peculiarly an agricultural phenomenon, however, since land prices in general have also risen substantially. It is indicative of an increasing pressure for conversion of farm land to other uses. Farm incomes are modest and operating costs have increased. Use valuation has eased the burden of property taxes, but pressures from suburban and exurban expansion continue to push land values upward. This combination of factors has selected in favor of larger and more intensively managed farms and has reduced the land use mix as well as the total acreage in agriculture.

It may be inferred from the decline in the number of farms and the increased intensity of agricultural practices that the purchase of a farm for agricultural purposes is not generally viable. In at least one predominantly agricultural region of the state, land values are now so high that farming cannot amortize any new land-purchase cost. Entry into agriculture, except by inheritance, is exceedingly difficult.

Farmers are not only a declining proportion of the state labor force but also have a high average age. The mean age of Connecticut farmers is about 53 years. Seventy-five percent are over 45 years old and nearly 20 percent are over 65. There is little incentive among many of these older farmers to undertake expensive improvements or to buy new equipment. This is particularly true when their children are not interested in agriculture, which is a common situation. Actual records are available only at the town level, and the situation probably varies from town to town, but it seems reasonable to assume

that the highest ownership turnover and conversion of agricultural land to other uses takes place on the death of an owner-operator. Comments indicate that many farmers remain on the land from habit, held by a small profit and personal commitment.

There are few incentives to remain in agriculture. Personal income of farmers varies. In most cases it is adequate but hardly spectacular. The median annual income of farmers and farm managers in 1970 was between $5,000 and $7,000, which is well below the median income of the state labor force. Farm workers earned, on the average, less than $2.00 per hour or its equivalent in board and room. Many farm operators work substantial amounts of time off the farm; 43 percent worked more than 100 days outside in 1969. It is not clear from the available data, what implications this off-farm work has. It is not a new phenomenon, and it may be that it is an important factor in maintaining agricultural viability. Table 2 shows the pattern, in recent years, of farms with both a low value of farm products and a high proportion of off-farm work.

Table 2. *Historical Changes in Other than Full-time Farms in Connecticut*

Census Year	Part-time farms (percent of total)	Part-time, residential part-retirement and class VI farms (percent of total)*	Mean size of part-time, residential, part-retirement and class VI farms (acres)
1950	12	45	n/a
1954	11	42	n/a
1959	24	38	59
1964	20	38	68
1969	21	35	71

Source: respective *Census of Agriculture*

*Class VI farms had sales of farm products between $50 and $2499 and the operator worked less than 100 days off the farm.

The costs of operating a farm are increasing on a per-acre basis. Production expenses for feed, fertilizer, fuel and labor rose 25 percent between 1964 and 1969. To remain competitive, farms must be managed intensively, using increasingly sophisticated and expensive equipment. The number of farm cooperatives, for both purchasing and marketing, has increased. Purchase of a farm typically requires a loan and these are sometimes difficult to obtain. An increasing proportion of farmland is being leased or tenanted. With larger tracts

and more intensive use, employment of hired hands has increased and labor costs have risen. Some activities on smaller tracts are being eliminated. Mowing pasture, for example, can be an expensive proposition on an economically marginal farm and when pastures are not mowed, the land gradually reverts to forest. The independent family farm still dominates Connecticut agriculture, at least in numbers, but a change in agricultural style appears to be in progress.

The increasing intensity of use on the decreasing agricultural area has had few environmentally adverse effects to date. However, waste disposal—particularly of manure—and the potential contamination of local water supplies from a variety of agricultural wastes are emerging as problems.

Generally, there seems to be relatively little concern among either citizens or planners about the declining production of conventional agricultural products. There is substantial concern, however, over the decline in the "rural aesthetic" and other amenities provided by agricultural land use.

Legal-political Aspects

Governmental policy at all levels is officially supportive of agriculture. Preservation of existing agricultural land figures prominently in many agency reports and plans, notably those for open space. With some isolated exceptions, however, this support has produced no action with sufficient impact to alter the trend of agricultural abandonment, though it may have slowed the process.

The federal government supports Connecticut agriculture primarily through information and technical assistance. It provides monetary subsidies in the form of assistance to conservation and pollution abatement projects, and also guarantees and in some cases provides agricultural loans. Nearly half of the total outstanding farm mortgages in 1971 were federally guaranteed or financed. The federal government also provides indirect assistance to farmers through partial support of various state and regional programs. Federal payments represent less than one half of one percent of total farm income and this proportion is declining. The overall effect of federal subsidies appears to be negligible.

The state also helps farmers—primarily with information and technical assistance—through the Departments of Agriculture and En-

vironmental Protection, the Agricultural Experiment Stations, and the Cooperative Extension Service. The experiment stations and extension service have tended, in recent years, to place increasing emphasis on urban and suburban problems in their programs.

The state has taken an active, if limited, role in supporting agriculture through tax relief. Recommended use valuations for agricultural land under the Open Spaces Law (Public Act 490) ranged from 50 dollars to 500 dollars per acre in 1972. Local tax assessors have broad discretion, and a substantial educational program was necessary to convince them to fully implement use valuation. The State has made no move toward single-use agricultural zoning, although this has often been suggested. State officials are opposed to it and so are the towns, which are where all current zoning power lies. The State's function remains primarily an educational one, with both farmer and urban resident as clientele.

Connecticut's regional planning agencies recognize the role of agricultural land as both producer and amenity. They have given high priority to the preservation of existing agricultural lands in various planning documents and have suggested taxation and zoning as avenues to relief.

The towns exercise a great deal of control over agricultural land. Zoning is a town function and tax assessment is by town assessors. Towns set the milieu for land use patterns and the land use mix. They establish the general pattern of land use and development, which inevitably affects agriculture. Some towns are primarily agrarian and concerned for their farms. Others are concerned only as the last working farm is sold for subdivision. And some towns are without farms. There is a great deal of variation, but generally speaking, the towns are the political units with the most pronounced effects on agriculture.

Demographic Trends Affecting Agricultural Land Use

The dominant demographic trend affecting Connecticut agriculture is the continued increase in total population. Along with immigration there have been trends in rural depopulation, urban concentration and suburban expansion. In some areas departing farmers are being replaced by writers, academics, artists and second homes. The total demand for agricultural products has increased as

the population has changed from rural to primarily urban or urban-oriented people. Although there are exceptions, the rural-to-urban migration consisted mostly of younger people. This has removed the most productive segment of the rural population and increased the proportion of older people. It has also produced urban-oriented heirs who typically do not cultivate the land they inherit.

With more intensive land use, the agricultural job structure has stabilized somewhat. Operators of larger tracts devote full time to farming and farm laborers are less transient and more likely to work year-round.

The pattern of agricultural land tenure in Connecticut is distinctive (Table 3). Most farms are still small, owner-operated tracts. As land values have increased, the proportion of farmers leasing parts of their tracts to others has also increased. In 1969, 66 percent of the farms were operated by full owners, 27 percent by part owners, and 7 percent by tenants. Eighty-five percent of the farms were operated by individuals or families, 11 percent by partnerships, and about 4 percent by corporations.

Table 3. *Changing Land Tenure Pattern in Connecticut*

Census	Number of Farms (thousands)	% Full Owner	% Part Owner	% Manager Operated	% Tenancy
1850	22	—	—	—	—
1860	25	—	—	—	—
1870	26	—	—	—	—
1880	31	—	90	—	10
1890	26	—	88	—	11
1900	27	80	4	3	13
1910	27	83	4	3	10
1920	23	81	6	5	8
1930	17	83	8	3	6
1940	21	84	7	2	7
1950	16	78	15	1	5
1959	8	69	25	—	5
1969	4	66	27	—	7

Source: respective *Censuses of Agriculture*

Different classes of operators have different attitudes toward farming and different capabilities for future investment and expansion. Full owners are in the best financial position to finance investment, but older farmers may have little incentive to do so. Tenants are, by

and large, younger and well motivated, but often are unable to invest in equipment or expansion. Some farmers—typically those operating larger tracts and younger than average—have been willing and able to invest in equipment and improvements. This latter group has the best chances of survival and its tracts face the lowest risk of conversion to non-agricultural uses.

Conclusion

The picture that emerges is one of a general decline in agricultural land use in favor of both suburban expansion and forest, with the economic selection favoring survival of the larger and more intensively managed farms.

Federal and state assistance to agriculture is primarily in the form of educational services and technical assistance, with that mostly on a request basis. The State's agencies recognize the value of agriculture and the legislature has provided tax relief to farm owners. Policy is officially supportive, but little decisive action has been taken to reverse the trend of agricultural decline. Most of the legal authority and much of the informal control over agricultural land use are exercised at the town level. What is actually done depends on the towns' perceptions of their own destinies.

The agricultural decline is the product of general policies of urban growth and residential and industrial development. These are beginning to conflict strongly with the maintenance of the "rural" milieu which ironically is one of the state's attractions for those other land uses. Agricultural decline in Connecticut is the product of unanticipated consequences and a lack of effective remedial action rather than of any formal policy to abandon agriculture in the state.

Connecticut Agricultural Land Policies

It apparently is accepted policy in Connecticut to:

1. Devote a substantial part of the land area to agricultural uses.
2. Have most farms operated by individuals or small family units.
3. Rely heavily on out-of-state produced commodity foodstuffs rather than devoting more land to commercial agriculture and to use domestically most of what is grown within the state.

4. Accept abandonment of farms to other uses even though this reduces the number of farms and total farm area in the state.
5. Manage the remaining farm lands more intensively for both agricultural production and recreational and amenity values.
6. Leave direct political control of agricultural land use primarily to the municipal governments.
7. Assign a relatively low priority to agricultural use of land compared to the expansion of urban and suburban land uses for residential, commercial or industrial purposes.
8. Place an increasingly high value on the aesthetic character of agricultural lands.
9. Provide governmental support to agriculture through technical information and assistance, some tax relief, and variable local sanctions but not to devote much public money to it and to give it a low priority in relation to other government activities.

CHAPTER FOUR

MINERALS

Introduction

Production of minerals in Connecticut affects the use of open lands in a number of ways; directly through such things as quarries but also indirectly through distribution and processing sites and buffer areas. Although various types of minerals are produced in the state, the bulk of the production is concentrated in the construction minerals: sand, gravel, stone, and clay products. In 1971, sand, gravel and stone production was valued at 27 million dollars or 93 percent of the value of all minerals produced. In the same year, there were some 37 major producers, most of whom have offices in the state although several are owned by out of state concerns. The total acreage devoted to mineral production is not readily available since any records are maintained only at the town level but one major operator has holdings in excess of 11,000 acres.

Economic Aspects

Minerals of many kinds are found throughout the state but for various reasons most are not utilized. There is good evidence that commercially operable deposits of nickel exist in central Connecticut and there has been some interest in developing this resource. A combination of high land prices and fractionated ownerships, however, has made it difficult for any company to acquire enough land for exploration. Magnesium has, in the past, been processed from dolomite in the northwest part of the state, but the method of extraction proved to be expensive and the high costs forced abandonment of the operation. Gem stones are present, but in such small quantities that recreational exploring by individuals is the only use made of them. A number of other minerals have, at one time or another, been produced in the state.

While specific land area figures are not available, it is safe to say that since the mid-sixties the amount of land devoted to mineral

production has decreased. The quantities of sand, gravel, and clay produced in the state declined from 1966 through 1971. A concurrent increase in the values of these minerals over the same period reflects the fact it is not demand but availability coupled with high transportation costs that has affected total production.

Stone production does not show a clear trend and may be increasing, largely as a result of increased production of trap rock (basalt). By 1966, trap rock accounted for 87 percent of all in-state stone production.

The decline in production of construction minerals is primarily accounted for by a combination of geologic and socio-economic factors. Sand and gravel naturally occur in stream and river drainage basins and in glacial outwash deposits. Their distribution across the state is broad and although the volume of the resources is not great, it is considered to be adequate for internal needs. However, such things as restrictive zoning, reservation of lands for recreation, and highway alignment along lineal drainages, have greatly reduced the availability of deposits in accessible locations.

Since transportation represents the major cost of providing materials to construction sites, the use of deposits very far from major population centers is economically restricted. At the same time, deposits near the areas of greatest demand are generally unavailable because these lands are high priced and often permanently committed to some other use. Some producers will haul sand as far as 26 miles, although the cost for transporting a load doubles over a distance of 7 to 15 miles. This has encouraged producers to depend on the use of small deposits near construction sites wherever they are available, through lease arrangements or royalty payments for minerals taken from private lands.

In recent years, stone, sand and gravel production has been based increasingly on large deposits of trap rock. These deposits occur in ridges, primarily in the south-central areas of the state, and are removed by open-face quarrying. It is likely that these deposits will provide substantial quantities of construction minerals for some time in the future. The New Haven Trap Rock Company estimates that its reserves will be sufficient until the summer of 2272. It is conceivable that as population densities rise and more land is occupied or reserved for recreational and environmental purposes, further reductions in the accessibility of natural sand and gravel deposits will lead to a total reliance on large trap rock quarries for construction

aggregates. However, some of the trap rock could go unused because of the rising concern among citizens and officials for preservation of the ridgelines for aesthetic reasons and objections to light-spill from nighttime operations and to noise, dust, and truck traffic.

With the exception of trap rock operations, construction mineral production usually takes place on small sites which are not owned by the producer with payment for minerals removed on a royalty basis. There is no commercial production permitted on state or federally owned land. The greatest demand for these materials is in and around the urbanized belt and transportation costs make it desirable to locate production close to demand. The values of lands suitable for mineral exploitation has been estimated to range from $375 to $8775 per acre. The highest land values occur nearest the urbanized belt, making the cost of minerals there relatively high compared to other regions. Producers experience further difficulty because the minerals deposits occur along streams and river basins. These areas also seem to be most attractive for development, which effectively withdraws them from mineral production. Consequently, construction mineral producers are forced to locate resources on a job-to-job basis, relying on offers from private landowners to sell sand and gravel. The result is a patchwork of small quarries as near as possible to regions of highest population density.

Secondary operations in mineral production include: concrete manufacture, asphalt production, sand and gravel washing areas, settling basins, truck, railcar and barge loading areas, and storage yards for processed mineral products. Some of these activities utilize abandoned quarry sites but most such sites lie idle or are used for landfill refuse disposal.

Legal-political Aspects

State government involvement in the minerals industry is limited. There is a State Geologist but his office contains only one other full-time professional employee. His activities are primarily academic rather than applied and data collection is directed toward highway information. There is no general survey of mineral deposits as usable resources. The Department of Transportation has an interest in construction minerals because of its road maintenance and winter sanding operations and has been involved in the mapping of sand, gravel

and clay deposits. The Department does not actively produce aggregates but accounts for a large portion of in-state consumption.

Although there is no production of minerals from state-owned lands, the Department of Environmental Protection affects mineral operations on private lands through its administration of the clean air and water acts and the wetlands protection laws. Requirements for pollution abatement have been a partial cause of the shutdown of some producers, notably in marble production. The impact of these requirements has been softened by reduced property taxes, sales tax refunds for installation of antipollution equipment, and federal tax allowances for rapid depreciation of such equipment.

The Department of Commerce (formerly Connecticut Development Commission) has had a less direct effect on the industry. Encouragement of new suburban industry has reduced the area available for mineral prospecting and production while increasing the demand as a result of new building and road construction. State and regional planning agencies are concerned with the total land resource of the state but do not have access to detailed geological information. This may partially explain why mineral resource development has not been included in most land use plans to date.

Virtually all direct control of land use for mineral production is exercised at the town level through zoning or similar regulation. Nearly every town has a planning and/or zoning commission and all towns in the urbanized area restrict excavation to some degree. This restriction takes no general or uniform shape, varying from town to town even within the same region.

Municipal taxation of mining operations is ordinarily based on some assessed land value rather than on the quantities or types of mineral removed. Assessment rates also vary from town to town, with some sites assessed at a commercial/industrial rate and others at a low sand-and-fill or open-space rate.

More and more localities are zoning against minerals excavation. This apparently results from the fact that many people feel these operations produce little benefit for the towns in which they are located. The presence of mining operations increases use and wear of local roads and constitutes a nuisance to local residents. A more important reason may be that the mined-out quarries have usually been abandoned, with bare soil exposed, and remained unattractive for many years. Some towns have taken advantage of abandoned pits for waste disposal but most nearby residents view them simply as unusable eyesores.

Mineral producers feel that the public has a powerful voice and a large potential effect on their ability to operate. This has had some effect on mineral land use. Some companies maintain "buffer" strips, or areas of idle land, around their operations as shields for their neighbors. Some have also donated non-operating lands to the communities for recreation or other open space uses.

Connecticut Mineral Land Policies

It apparently is accepted policy in Connecticut to:

1. Devote significant amounts of open land to mining—primarily for construction aggregates—to facilitate the general economic growth of the state.
2. Allow sizeable parcels of land to be held exclusively for mineral production.
3. Assign a lower priority to mineral production than to many alternative uses of land such as residential, commercial or recreational.
4. Withhold publicly owned lands from mineral exploitation.
5. Ascribe ownership of minerals to the owners of the lands on which they occur.
6. Depend primarily on the free working of the market system to determine the extent of mineral production in the state.
7. Use domestically the bulk of the minerals produced in the state.
8. Permit mineral exploitation to proceed in a haphazard, unplanned manner.
9. Regulate at the municipal level the location of new mineral operations.
10. Regulate at the state level the amount of air and water pollution produced by mining operations.
11. Refrain from encouraging the development of new lands for mineral production.
12. Assemble and distribute at the state level some information about the location and extent of minerals in the state.
13. Leave many mined-out sites without any attempt at rehabilitation.

CHAPTER FIVE

OUTDOOR RECREATION

Introduction

Demand for outdoor recreation is increasing throughout the United States and Connecticut is no exception to this general trend. Perhaps more than most states, Connecticut embodies those social conditions which encourage recreation demand: High personal and family incomes, high mobility, a growing population with high present density, and increasing amounts of leisure time for the general population. The major types of outdoor recreation pursued by the people of Connecticut include swimming, camping, picnicking, boating, fishing, hunting, and various trail activities.

Outdoor-recreation demand substantially affects a variety of Connecticut land uses. State park and forest multiple-use management is heavily tempered by aesthetic considerations and by recreation development necessities. Location of new residential and industrial development is encouraged and to some extent routed by the availability of outdoor recreation opportunities. Conflicts arise between private owners of shore frontage and potential beach recreationists. The environmental impacts of activities such as boating, skiing, beach swimming, and snowmobiling affect demand for lands devoted to these and related purposes.

Legal-political and Economic Aspects

Ninety state-owned parks, containing about 30,000 acres, are operated by the Parks and Recreation Division of the State Department of Environmental Protection. The parks include different land types and provide various attractions. Hammonasset Beach boasts a two-mile frontage on Long Island Sound, which helps make it the most heavily used park in Connecticut. Devil's Hopyard is a thickly wooded area with developed campsites overlooking a small waterfall. Gillette Castle is a wooded site overlooking the Connecticut River and includes the castle-like home of a former actor.

The state forests administered by DEP are also used extensively for recreation. Developed campsites, boat launching sites, fishing streams, and extensive trail systems are found in these areas. Snowmobiling is a growing winter activity and eleven state forests provide over 70 miles of trails for this purpose.

In all, DEP administers over 1500 campsites on its land holdings. These sites are mainly clustered into fairly high-density situations, well-serviced, well-maintained, and easily accessible to automotive traffic. There is little or no primitive type camping in the state primarily because of the nature of recreation demand and not the state's land quality. An "Emergency Stopover" program for the benefit of travelling campers who cannot find overnight accomodations is maintained on several state-run campgrounds.

Connecticut state parks and forests serve regional and statewide needs for unique and scenic recreation sites. Gillette Castle and Hammonasset Beach draw visitors from all over the state and probably from outside the state. The local recreation situations, however, are perhaps more important to an understanding of Connecticut recreation and to a clear picture of open land policy. A survey of towns of over 10,000 population for the Statewide Comprehensive Outdoor Recreation Plan (SCORP) showed some 30,000 acres in local recreation areas. This acreage consisted of outdoor pools, swimming beaches, skating facilities, golf courses, picnic areas, and other play areas. The survey revealed a lack of funds for developing recreation areas as the most pressing local problem. Playing fields and water activity areas were generally stated as high priority local needs.

Some of the varied local, regional, and statewide recreation attractions have been semi-officially combined, under the auspices of the Connecticut Department of Commerce into the Charter Oak Trail. This auto route connects several cities, towns, and recreation sites throughout the state, is historically oriented, and serves as a convenient mechanism for attracting tourist money into the state.

The most extensive commercial response to outdoor recreation demand in Connecticut has been in campgrounds. Forty-four highly-developed, private campgrounds provide over 5500 sites for family camping. These campgrounds cover the gamut of Connecticut land types and the sites are usually provided with electric hookups, hot showers, playing fields, laundries, and other comforts. As a rule, the sites are densely packed and located along moderate to high-use roadways. Most of the campground owners belong to the Connecti-

cut Campground Owners Association, which provides information to prospective campers, sets certain generally accepted use regulations, and appeals to out of state tourists for business.

Other recreation operations in the private sector include: 303 acres of ski areas (including one state-run operation at Mohawk Mountain State Park), boating facilities, riding stables, golf courses, and a host of lesser land uses.

Private non-profit and quasi-public organizations hold open land which is important to outdoor recreation, especially for the future. A number of summer camps are owned and maintained by groups like the Boy Scouts and church groups. Private conservation-oriented organizations also hold a good deal of property which is available to the public. Land trusts, the Audubon Society, Nature Conservancy, various institutions, nature centers, and other groups collectively own about 31,000 acres. Membership in such groups is increasing. In the broad sense of maintaining public health and "quality of life", as well as more specifically in activities like hiking and nature study, these organizations are serving important recreation and open space needs. The water companies own large amounts of open land on which they permit limited, but increasing, recreational opportunities.

Outdoor recreational land use in Connecticut is highly regulated, both in the public and private sectors. This most likely reflects the generally urbanized life style in the state. In a broad sense, the type of developed and serviced recreation site offered by both private and public agencies legislates the type of activities pursued. On the other hand, this type of site has come into being in response to a demand on the part of the public. The state maintains extensive hunting, fishing, boating, camping, and snowmobiling regulations, which often include seasonal and area restrictions on use. Use fees, such as charges for camping and hunting licenses, and length of stay regulations—especially for camping—are also in effect.

The private sector has generally responded to specific demands resulting from inadequate public recreation supply. When outdoor recreation becomes a marketable commodity, the experiences tend to become highly regulated and standardized. This is happening at an increasing rate in Connecticut, and the private sector will undoubtedly become more important as a future supplier of this type of recreation experience. At present, use fees and certain standard regulations—including limitations on pets, lengths of stay, and reser-

vations—are the most important private means of controlling and distributing recreation opportunities.

In terms of control, a picture emerges of a generally routinized, highly developed recreation system. Such a system does exist, but some less mechanized forms of recreation, such as walking and nature study, also exist. It is likely that this less mechanized type of recreation will grow in future importance especially as some presently restricted lands are gradually opened to the more extensive recreational uses.

Various other factors also affect recreational land use in Connecticut. Important among these is the general scheme of transportation, which is based on an extensive road system and the private automobile. The two million registered automobiles and several thousand miles of highways indicate that the population is very mobile. This has a tremendous effect on outdoor recreation demand, since so many people are able to get out to open-space recreation areas. At the same time, the auto-dominated transportation system helps encourage intensive, non-recreational use of open space, and thus decreases the amount of land available for recreation. The auto also directs the specific forms which recreation development takes, as in the "paved campsite" phenomenon. In this case, a policy aimed at one specific goal (maximum highway development for ease of movement) clearly has a large impact on another land use.

The state land-acquisition program is important to recreational land use. Through the Department of Environmental Protection, lands classed as state park, state forest, wildlife preserve, and inland and coastal wetland are constantly being added to the public holdings, albeit slowly and usually in small parcels. This land becomes available for outdoor recreation as need and opportunity arise. In addition, the state continues to acquire access to recreational sites (especially swimming and fishing areas) through purchase, lease, or easement. Acquisition of land for recreational purposes also goes on at the local level. Only 48 of Connecticut's 169 towns lack either a conservation commission, a park and recreation commission, a superintendent of parks and recreation, or some combination of these to oversee such recreational acquisition and development.

Recreation planning has not so far had a sizeable impact on actual land use. At the state level, comprehensive recreation planning centers around massive data accumulation and suggestions for possible policy. Regional recreation planning has primarily centered around

suggesting open space/population ratios and acquisition schedules. The regional planning agencies are not vested with implementation powers. Only through powerful ideas, such as the Litchfield Hills streambelt corridor approach to open-space planning, do the RPA's have any effect on actual recreational-land use. One pervasive rationale for all levels of recreation planning is the acquisition through the Bureau of Outdoor Recreation of federal development money. A state or region must have a recreation plan before BOR will allocate money to them for the development of recreation areas.

What might be called a state "self-image" plays a role in recreational land use. Official organs such as the Governor's Office and the State Department of Commerce use the state's recreation potential as a selling point for industrial, commercial, and general economic growth. An example of this is seen in what might be termed the state historical resource. A small State Historical Commission oversees a system of historical districts. Although most historically important properties are privately owned, this state effort attempts to highlight the recreational potential of "New England Charm." In addition, the Historical Commission and the Connecticut Historical Society exercise some pressure on the other agencies concerned with land use.

Finally, since the DEP plays so important a role in all kinds of open land use, it is appropriate to note that two of DEP's goal-oriented activities center directly on outdoor recreation. They are: (1) to provide an adequate supply and variety of open space and recreational opportunity for the citizens of Connecticut, and (2) to protect and enhance the scenic and cultural character of the state. Several other DEP goals relate indirectly to outdoor recreation.

Summary

Demand for outdoor recreation is high in Connecticut as a result of high median incomes, high mobility, increasing leisure time, and high population densities. It is ironic that a rising demand for use of open space should coincide with a continuing abandonment of rustic and pastoral occupations such as farming. It appears that the growing demand for outdoor recreation may result in recreational land use of a magnitude to rival the agricultural land use of the past century. The forest which follows farm abandonment will be used to a large extent for recreation, if today's trends continue.

Connecticut Recreational Land Policies

It apparently is accepted policy in Connecticut to:

1. Devote a substantial part of the existing open-land resources to outdoor recreation.
2. Utilize most of the physical land types in the state for some form of recreation.
3. Attempt to provide a broad distribution of recreation opportunities.
4. Devote a significant and increasing proportion of state-controlled open-space lands primarily to outdoor recreation.
5. Devote state-owned recreation lands primarily to a few high-priority extensive recreation activities such as camping, swimming, boating, and picnicking.
6. Gradually transfer additional private land into public ownership for recreational uses, on a case-by-case basis as opportunity arises.
7. Make quasi-public and institutional lands more available for extensive recreation.
8. Utilize profit-stimulated private recreational development to fill gaps in the publicly provided supply as demand increases.
9. Regulate the use of available recreation lands—both public and private.
10. Provide most outdoor recreation opportunities through public programs.
11. Satisfy gross regional demand for recreation through state actions.
12. Satisfy specific local demands for recreation through municipal actions.
13. Consider the public development of outdoor recreation as an aid to achievement of general economic growth.
14. Develop recreation facilities and programs piecemeal as demand for them arises rather than to engage in comprehensive long-range public recreation planning.
15. Rely to some extent on federal funds for implementation of state and local recreation plans and to engage in recreation planning in some instances as a result of the availability of federal funds.
16. Devote little or no government effort to stimulating private recreation development.

CHAPTER SIX

WILDLIFE

Introduction

The use, maintenance and acquisition of open lands is comparatively little affected by activities that relate directly to wildlife. Wild fauna production most often occurs as a secondary benefit accruing from land management for other purposes. While maintenance of animal populations and habitat are only secondary considerations in and of themselves, the desire to continue to have wildlife bears an important relationship to recreation and a perceived need to maintain a "natural" character in at least parts of the state. This apparent desire is manifest in the activities of the Department of Environmental Protection which has full regulatory authority to set seasons, methods of taking, bag limits, and other management practices for all inland fishing, trapping and hunting. Several private and commercial sportsmen's organizations maintain hunting preserves. Many private landowners purposely maintain landscapes or vegetation types for the benefit of small game and birds. And various clubs and organizations provide limited funds for habitat improvement, research and preserve maintenance.

Legal-political Aspects

About 350,000 acres of land in the state receive some form of treatment aimed at the enhancement of the wildlife resource; primarily habitat improvement and game release. Direct management activities do not occur annually on all 350,000 acres. Rather, management activities are aimed at the populations that live on or use the lands. In general, management has two basic objectives: production of game for hunting and preservation of wild species for scientific or aesthetic purposes. A means toward the latter objective is the legal requirement in PL 445 that all endangered species be provided complete protection. The Wildlife Unit of the DEP applies varying degrees of management to approximately 250,000 acres of

state-owned lands, including state forests and wildlife areas. In fiscal year 1972–73 the Unit improved habitat on 387 acres of state-owned land, released nearly 40,000 pheasants and quail, and completed four miles of posting. They also entered into a cooperative habitat management program with a concerned sportsmens' group on a field trial area. In addition to state-owned lands, the Unit exercises some control over some 22,000 acres of private land held by paid lease and some 75,000 acres held by short-term agreement. The short-term agreements are arranged through sportsmen's clubs and give hunting rights on private property to the state in exchange for extra patrol service, crop protection and limitation of the number of hunters using the area. Hunting is the primary management objective on these lands.

Other efforts at the state level are less directly related to open-land management. The DEP provides instructional bulletins to citizens interested in creating habitat for wildlife (primarily songbirds) and offers for sale an "environmental buffer bunch" which consists of seedlings that will produce cover and animal food. The demand for these plants has far outstripped available supply, which indicates that some privately owned open land is kept open to support wildlife for aesthetic reasons. Seedlings are also distributed to conservation groups and sportsmen's clubs.

Federal support for wildlife management programs is almost entirely financial. Funds provided by the Pittman-Robertson Act are derived solely from excise taxes on firearms and ammunition and are apportioned to the states for wildlife restoration. Connecticut's share has been greater than the total budget for the wildlife unit and has, therefore, been directed toward land acquisition. The annual budget for the Wildlife Unit is generally about $250,000, permit and license sales in recent years have brought in about $500,000, and the Pittman-Robertson funds amount to $300,000 (minimum grant). Receipts from permit and license sales go directly into the state's general fund. The federal funds can only be used on approved projects, directly related to wildlife and any lands purchased or leased with such funds must be primarily devoted to wildlife. Receipts from permit and license sales cannot be used directly but presumably are considered in the legislative budgeting process.

Acquisitions for wildlife purposes are handled through the DEP Acquisitions Unit. At present the top priority of this unit is to acquire

tidal wetlands, with purchases for wildlife purposes ranking somewhat lower. For fiscal year 72–73, the only acquisitions for wildlife were reported as renewals of hunting leases on 5600 acres of private land and of fishing leases on 15.5 miles of stream bank.

Wildlife lands at the local level are held and maintained largely by conservation groups as preserves for birdwatching and wildlife-related activities. Fifteen sportsmen's clubs own and lease some land for hunting and six shooting preserves are maintained for commercial use. The commercial shooting preserves are sanctioned by the state. Since they provide pen-raised game, they are permitted an extended season and hunters are not subject to a bag limit on released game. Many farmers permit hunting on their lands during the season, either free or for some fee. State law permits farmers and certain members of their family to shoot deer and raccoon at other times since they are considered to be crop pests. The wildlife unit has assisted in the removal or extermination of raccoons on croplands as a service to farmers.

Economic Aspects

Demand for wildlife lands for purposes other than hunting is difficult to assess because it is generally informal or at most organized on a place-to-place basis. Such demand certainly exists but it is met either on private properties which are basically residential or on public lands managed primarily for other purposes. Hunting on the other hand, is a fairly institutionalized activity and demand can be estimated from sales of permits and licenses. The demand situation is well described in the Digest of Connecticut Administrative Reports to the Governor 1972–1973: "Land suitable for wildlife has been diminishing rapidly in Connecticut, but at the same time a growing concern for wildlife on the part of the general public has become evident."

Hunting in the state generally takes one of three forms: (1) gamebird hunting on farmland, (2) waterfowl hunting on wetlands or (3) forest-game hunting. Gamebird hunting is by far the most popular form. Even with the release programs in existence, there is a definite undersupply of gamebird hunting opportunity. The situation may be

partly attributable to modern agricultural practices and the general decline in farm acreage which have curtailed wild bird food supplies. There is also significant demand for large forest-game hunting—especially deer—and SCORP indicated that a great demand exists for an open season. Little, if any, land is devoted to deer management, although during deer season, it is estimated that some 4,000 Connecticut hunters go out of state. While opportunities to hunt large forest game are apparently inadequate, there is little interest in small forest game and this resource appears to be underutilized.

The chief bottleneck to the supply of hunting opportunities is the decreasing accessibility of hunting lands. While the number of hunters has been steadily increasing over the past several decades, the amount of land in regulated areas held by the state has been disappearing at 5 to 7 percent annually (Table 4).

Table 4. *Hunting License Sales and Regulated Areas*

Hunting License Sales	*All types* (percent increase)	*Population (15-64)* (percent increase)
1950 - 1960	12.6	13.9
1960 - 1970	49.8	21.7
State Hunting Lands	*Paid Leases* (acres)	*Short term agreements* (acres)
1961	51,725	110,050
1965	47,525	103,000
1972	22,383	74,685

The decrease in acreage may be largely ascribed to the greater intensity of land use and, in some degree, to an unfavorable attitude on the part of some landowners toward hunters. This points up an interesting problem: although the state retains ownership of the game itself, control over access to it rests with the landowners. As the situation now stands it is estimated that current state and private holdings approach the minimum area necessary to support the approximately 110,000 hunters in the state. The state owns 38 Fish and Wildlife Areas containing 16,000 acres, which are managed primarily for fish and wildlife habitat and related recreation. There are also 26 state-owned wildlife management and hunting areas totalling 10,000 acres and the state forests provide further hunting and fishing opportunities.

Connecticut Wildlife Land Policies

It apparently is accepted policy in Connecticut to:

1. Devote relatively little of the state's open land specifically to wildlife management.
2. Practice some game management on a relatively small part of the state-owned lands.
3. Meet a large part of the demand for wildlife-related activity through short-term and temporary agreements between the state and private landowners.
4. Depend on out-of-state wildlife resources to meet some of the domestic demand for hunting.
5. Facilitate improvement of wildlife habitat on private lands by providing vegetative materials and technical advice through the state.
6. Provide for non-game wildlife related activities informally in the private sector or as an adjunct to higher priority uses of state lands.
7. Allow wildlife lands to be converted to other uses and to accept the resulting reduction in wildlife production.
8. Retain control over the taking of wild game on both public and private lands at the state government level.
9. Permit landowners to control access to game on their lands and to sell or freely allow such access at their discretion.
10. Fully utilize federal funds available for the enhancement of wildlife by applying those which are not used in management activities to land-acquisition programs.
11. Use funds realized from the sale of hunting and fishing rights for general state purposes.
12. Treat certain wild animals as pests and to allow their removal or extermination without regard to season, method, or ordinary allocation procedures.
13. Sanction and minimally support protection of endangered species.

CHAPTER SEVEN

RIGHTS-OF-WAY

Introduction

A substantial part of the land area of Connecticut is devoted to the transportation of people, goods, and services. On the basis of information from diverse sources, we estimate that between seven and eight percent of the surface area of the state is used for such purposes.

The land used for transportation takes the form of narrow strips extending for long distances over which the user has obtained a right-of-way. The rights-of-way described in this chapter are lands devoted to roads and highways; railroad lines; and electric power, natural gas, and telephone transmission lines. Distribution rights-of-way (such as electric service to individual dwellings within a community) are not included since the lands they occupy are not generally open lands. Local roads and streets through residential areas are also excluded where we could separate them in the statistics.

As Connecticut's population has grown, commercial and industrial activity has increased and required expansion of the rights-of-way. The percentage of land area devoted to such things as roads and railroads is often regarded as a good index of urbanization. Based on assumptions about continued growth and urbanization, the forecasts and long-term plans of the Department of Transportation and the electric-power companies call for more open land to be devoted to right-of-way uses in the future. Present users are reluctant to relinquish ownership or easements, so abandonment of existing rights-of-way is infrequent and does little to offset the annual increases.

Economic Aspects

The primary functions of right-of-way lands are obvious but they also fill some important secondary roles. Some provide wildlife habitat, areas for limited forms of recreation, or agricultural uses of certain kinds. The amenity of aesthetic impacts of rights-of-way may be

either positive or negative, depending on the specific areas and the perspective of the observer.

Pieces of formerly used rights-of-way—especially highways—sometimes become isolated by new construction. Some of these areas are used for rest stops or equipment storage, others devolve into informal recreation sites for off-road-vehicles, and some go unused. The amount of land involved is quite small in relation to the total right-of-way network.

A program which is currently in the planning stages, could result in recreational use of some highway rights-of-way in addition to that normally required for a highway, with the intent of creating a system of linear parks. Initial efforts in this program are being directed toward Route 7.

Rights-of-way in Connecticut are generally concentrated along a corridor from the southwest corner of the state of New Haven and then north through Hartford, with a second concentration from New London north. This pattern results from a combination of demographic, geographic and topographic factors. As population densities around urban centers increase there is a greater demand for goods, services, and transportation. The rights-of-way networks expand to meet these needs. As they are expanded and improved, the area becomes more attractive to new industries and residents, creating a cyclic pattern of expansion. The concentration is also due to the fact that Connecticut lies in the path between metropolitan New York City and Boston, making it the logical route for major arteries connecting these and other population centers.

Although rights-of-way are concentrated near the areas of highest population density, there has been a tendency to locate the major routes over open, and often forested, land. This serves to reduce conflicts with residential-property owners who fear that diminishment of property value or loss of utility might result from the location of a powerline or highway within seeing or hearing distance of their land. Land values are generally higher near urban or residential areas and it is cheaper to locate rights-of-way in the outlying areas. This situation is part of a general conflict between the drive for economic growth and development and a desire to preserve the essential character of the landscape. As urbanization continues, there are fewer areas available for right-of-way expansion and the conflict intensifies.

Interstate, state, and municipal highways occupy the largest right-

of-way area. The Department of Transportation estimates that there are 18,000 miles of such rights-of-way in the state. Assuming an average width of 100 feet, this amounts to nearly 230,000 acres. The figure includes roads in urban areas, which cannot be separated in the available data. Three railroad companies operate over a total of 670 miles of right-of-way in the state. These occupy about 4000 acres, if we assume an average width of 50 feet. This does not include a number of inactive rights-of-way, for which no mileage estimates are available.

It is estimated that electric power transmission lines occupy at least 5500 acres in the state. These lines are operated by five private and five municipal companies which do not maintain separate records of acreages owned or legally held. Two private companies are involved in the bulk transmission of natural gas across the state. Their lines extend underground for 350 miles and take up an estimated 1900 acres in surface right-of-way. Distribution of gas from the mains to consumers is handled by other companies whose lines generally run under urban or suburban land and thus are relatively unimportant to open-land use. Four telephone companies also use transmission rights-of-way, but apparently most of their lines share occupancy with electric-powerlines. No estimate of exclusive use by phone lines is available. The open lands occupied by rights-of-way are shown in Table 5.

Table 5. *Estimated Lengths and Areas of Rights-of-way in Connecticut*

Type of right-of-way	Length (miles)	Area occupied (acres)
Highways	18,000	230,000
Railroads	670	4,000
Electric Power	—	5,500
Gas Pipeline	150	1,900
Telephone	?	?

Legal-political Aspects

Electric-power and gas-pipeline rights-of-way are, for the most part, held in easement, with less than twenty percent of the land owned in fee. Highway lands are owned by the administering government. In the case of Interstate Highways, the funding of construc-

tion is 90 percent federal but the state owns and is responsible for maintenance of the right-of-way. Federal involvement after construction is limited to inspections to assure adequate maintenance. Railroad right-of-way lands are largely owned by the companies with portions of some segments held on an easement basis.

Authority for public regulation of the use and acquisition of utility rights-of-way rests with several agencies of the state and to a lesser degree with municipal authorities. The newly formed Power Facilities Evaluation Council is specifically charged with evaluation of proposals for the siting of new power plants or rights-of-way. It also reviews proposals for any substantial alteration of existing facilities, which may have a significant environmental impact. For new construction or acquisition, the Council conducts in-depth studies of: public need, environmental impact, effect on property values, possibility of underground construction, effects on fish and wildlife, and aesthetics. The Council has authority to publish regulations but is still operating on a case by case basis.

The Public Utilities Commission is chiefly a regulatory agency involved in setting and enforcing performance standards for operation of utilities. It has little power to control the use or acquisition of rights-of-way. Much of the activity of the PUC is directed toward enforcement of an apparent state policy that every citizen has a right to utility service at an "economic" rate based upon the type and cost of service.

The Department of Environmental Protection is less directly involved than either of the other agencies but does consult with them. Where a project may be potentially damaging to the environment, the law seems to allow for intervention on the part of the Commissioner of Environmental Protection, since environmental impact statements are required for most construction. No cases of direct involvement are known to date. DEP has recently become involved in a program to purchase abandoned railroad rights-of-way by demanding the right of first refusal on their purchase. A very rough estimate is that the state now owns 105 miles of such abandoned lands. No specific program for the use of this land has been proposed.

Title 48 of the General Statutes provides for the State to exercise the right of eminent domain in cases where rights-of-way are required over lands whose private owner is unwilling to voluntarily relinquish those rights. Under these laws, the judiciary of the state exercises considerable control over construction and location of

rights-of-way. The courts must decide in cases of a dispute over the amount of land required for a right-of-way, its specific location, and a fair price for the rights involved. When the state itself exercises its rights, the lands are purchased outright. Private utility companies, however, may obtain the necessary rights by easement. Such easements are usually of a long term (99 years) or permanent nature and are paid for in advance.

Municipal governments have little effective control over the siting or construction of rights-of-way. One exception is the ability to zone against certain types of structures in specific areas. For example, a town may prohibit the construction of an electric-power substation in a residential zone and this could have some effect on the location of power lines serving the station. However, even in this case, it seems that the PFEC could override the town if it deemed it necessary.

Where a utility line is to pass through a state forest or park, the lands obtained for right-of-way must be replaced by deeding lands of similar value to the state. Furthermore, any structure or equipment on the right-of-way must be placed under ground. Similarly, any proposal to take land dedicated to conservation or recreation use as part of an established open-space program, must consider all feasible alternative routes. Such taking must be approved by any municipality involved or in the absence of such approval, by the courts after a public hearing. The state or any public service company taking such land is required to either provide comparable land to be included in the open-space program or to pay the municipality sufficient funds for the purchase of replacement land. Where the taking is part of a federally funded highway program, an environmental impact statement must be filed for final approval by the federal Department of Transportation, subject to judicial review. Many utility companies feel that the increasing difficulty of acquiring land in the state and the exchange requirement compel them to hold on to all lands currently in their possession regardless of whether or not they are currently being used.

Citizen groups concerned with environmental conservation have not been particularly active regarding the construction and use of rights-of-way. Their political pressure has tended to concentrate on the aesthetic impact of new facilities. The only issue of apparent statewide concern at present is a proposal to require all telephone and power transmission lines to be placed underground. Other envi-

ronmental issues have been raised—largely on a project by project basis—by private groups in the areas most directly affected. In general, the objections about power lines concern where they should be located and not whether they should be built or not. It is difficult to assess the real impact of such pressure groups due to the fragmentary nature of their activities. Certainly they have influenced local aspects of such things as highway-access projects. Over a decade ago, local citizen groups opposed construction of two proposed connector roads for the Interstate I 91 system near New Haven. The so-called East Rock Connector is still stalled, although it may not be dead. But the Mt. Carmel Connector, delayed since 1958, apparently will be finished in 1975. Regardless of the strong local impacts of such actions, it is not clear that they have had any substantial effect on the overall right-of-way system.

Use of Right-of-way Lands

The intensity with which right-of-way lands are used (i.e., multiple versus single-purpose use) varies and depends somewhat on the primary use for which the land was acquired. In the case of easements for electric and phone lines, the fee owner of the property may use the land in any way that does not directly interfere with transmission or create a potential hazard. Such use has included sheds, parking lots, swimming pools, Christmas tree plantations, and vegetable gardens. A similar situation exists along gas transmission lines, where most residential uses are permitted but annual maintenance requirements generally prevent the building of structures.

The essentially linear configuration of right-of-way lands makes them particularly attractive to recreational uses such as motorcycling, horseback riding, snowmobiling, and hiking. Some interest has been expressed at the local level in organizing such use and the companies' attitudes have been generally favorable. To date, however, there are no active programs of recreational use. The very linearity that makes these lands attractive also is a source of difficulty because people are prone to use the areas without permission. The typically mixed ownership makes it difficult for power companies, for example, to encourage recreational use of the lands they own, since they have no right to introduce third parties onto the lands on which they only hold easements. A further consideration is the difficulty of

keeping users from straying onto adjacent privately owned lands. While general recreational use of rights-of-way is sanctioned, motorized uses are not because of bad past experiences with vegetation damage and subsequent soil erosion and damage to access roads.

Sharing of rights-of-way by the primary users occurs, but does not appear to be common practice. Use of state-highway rights-of-way for power transmission is discouraged because safety problems are encountered when maintenance or repairs are necessary. Railroad rights-of-way are shared by power and phone companies to some degree but there is little evidence of shared use of gas transmission rights-of-way. The most common and widespread sharing occurs with telephone and power lines. Apparently, differences in construction requirements, need for maintenance access, and timing of acquisitions, work against sharing in general.

Valuation

Economic factors are important considerations in the use of open land for rights-of-way. As right-of-way siting is affected by land values, so are land values affected by the presence of a railroad or highway. In general, proximity of a residential property to either of these facilities tends to lower its market value, at least in the eyes of the property owner. While this appears to be true in cases where the right-of-way represents a continuing nuisance (e.g., traffic noise) it has been found not to be true of electric-tower lines. A study of Connecticut properties adjacent to such lines found no significant negative impact on property values. It seems reasonable to extend these findings to gas pipelines and telephone lines which are similar in character of use to powerlines. Finally, it must be recognized that urbanization tends to follow rights-of-way, and urban lands are among the most highly valued in the state.

There is generally no special assessment category for right-of-way lands but certain aspects of their taxation are unique. So far as can be determined, power, gas, and phone right-of-way lands are subject to municipal property taxation, but since these lands are generally used under easement from a private owner, it is the owner-in-fee who is liable for the taxes. In cases where the granting of an easement is felt to materially affect the value of the property, revaluation may result. Cables, pipes, towers, and other equipment are owned by the

companies and therefore are taxed on their property value. These taxes can be significant to a municipality. In the town of Guilford, for example, such property constitutes about 3 percent of the grand list. Railroad properties are a special case, in that the tax relief is granted annually by the state in an amount based on operating losses of the railroad over the year. These have been greater than the potential tax bill for over a decade, resulting in a virtual exemption from property taxation on operating facilities.

Connecticut Right-of-way Land Policies

It apparently is accepted policy in Connecticut to:

1. Devote significant areas of land to the transport and delivery of goods and services within and across the state.
2. Support commerce and trade through investments of land and capital in rights-of-way.
3. Locate rights-of-way in response to demands created by commercial and residential developments.
4. Locate rights-of-way on open land where possible, except where such land is part of an established open-space program.
5. Perpetuate right-of-way as the dominant use of any particular piece of land once that use has been established.
6. Supply utility services—and the right-of-way land necessary therefore—on a demand basis where economically possible.
7. Assign a higher priority to public demand for utility service than to rights of private owners to exclusive use of their properties or to secondary impacts on aesthetics, wildlife, and property values.
8. Permit the state to acquire rights-of-way by purchase in fee, regardless of an owner's willingness to sell.
9. Permit acquisition of rights-of-way from private owners by public utility corporations only by easement when the owner is unwilling to sell.
10. Resolve policy conflicts between economic growth and preservation of the aesthetic and environmental character of the state through the courts.
11. Generally maintain separate rights-of-way for different uses, with the occasional exception of telephone and electric transmission lines.

12. Allow, but not actively encourage, some secondary uses of utility rights-of-way.
13. Tax fee owners of real property rather than owners of partial interests in that property for the real-estate tax and tax owners of equipment located on rights-of-way for the personal property tax.
14. Virtually exempt railroad operating lands from property taxation.
15. Rely heavily on federal funds for highway development.
16. Require exchange of lands in certain cases where rights-of-way are to cross public open space.
17. Require transmission facilities on state forests and parks to be located underground.
18. Enhance in some cases the visual character of rights-of-way land through landscaping and screening.
19. Devote little effort to the enumeration and measurement of lands in rights-of-way.

CHAPTER EIGHT

SPECIAL USES

Introduction

Two broad categories of land use which do not readily fit into other chapters, will be discussed here. They have been classified, for convenience in discussion, into (a) lands used by institutions, such as schools and (b) utility and service installations, such as water supply facilities. In general, these are "open lands" only in that they are not developed for industrial, commercial or residential use. Many fall within areas which would otherwise be considered urban in the context of this study. The rationale for including them in a discussion of open lands is that their uses directly affect the allocation of open lands to other purposes, and they may provide potential substitute locations for some of the activities carried out on lands more clearly open.

Table 6 shows the amounts and kinds of these lands in the state. They occupy a relatively small proportion of the total land area—about four percent—but their functional importance is great. This is the land area devoted to socialization of the young, care of the ill and the deviant, and burial of the dead and to public water supply, waste disposal and energy conversion.

Institutional Land Uses

Institutional lands include those used by church, school, military, health care, and correctional establishments. Nearly all are located in or near urban centers. They are typically small in size, scattered, and with predominantly local use or effect. Although a university may draw its students from other states and nations and its educational benefits may extend to society as a whole, the value of its campus as open land is generally a highly localized one.

Control over the use of institutional areas is exercised largely by local managers in the context of broad legislative constraints and local politics. The institutions represented are firmly entrenched,

and fundamental to the communities they serve. While the services of these institutions are not usually evaluated in economic terms, they are subject to least-cost constraints as a matter of policy. Institutional land has a high economic value because of its location but it is subsidized by tax exemptions. The institutions here discussed have been subject to increasing demands from the growing populations. The economic costs of creating new institutional land have risen and both the market and non-market costs of maintaining institutional land have increased.

By and large, the lands now devoted to institutional uses are not available for conversion to other uses. However, as the size and density of the population have increased so has the pressure for multiple uses of these lands. School areas are used after hours and on weekends. The campuses of colleges, churches and other institutions provide open space and some unstructured recreational opportunities. Even multiple use of cemeteries—for jogging, cycling and picnics—is becoming more common.

Utility and Service Land Uses

Open lands allocated to utility and public service uses include those devoted to public water supply and treatment, solid waste disposal, sewage treatment, and electric power generation. These lands are subject to extensive state and federal regulation. Nearly all federal regulations, including health and safety standards, facility siting standards, and environmental quality and emission standards, are administered by state agencies. The Department of Environmental Protection is primarily concerned, in this context, with enforcement of state and federal air and water quality standards. Lands devoted to water supply and electric power generation fall under the direct jurisdiction of the Public Utilities Commission, which oversees profits, rate bases, and land transfers, and administers the pertinent federal regulations. The siting of power generation and transmission facilities is under the control of an independent state agency, the Power Facilities Evaluation Council.

Water supply lands, whether under municipal or corporate control, are managed almost exclusively for water supply, with some consideration given to timber harvesting. They are not, generally,

Table 6. *Areas of Land Devoted to Special Uses in Connecticut*

Type of Use	Area (acres)
Institutional Uses	
primary and secondary education	10,559
cemeteries	5,386
higher education	1,860
hospitals, nursing homes, etc.	1,323
churches, monasteries, etc.	1,275
military bases	1,096
prisons and prison camps	862
Utility and Service Uses	
water supply lands, including reservoirs	100,000
solid waste disposal areas	2,236
water supply facilities, dams, structures	1,500
sewage treatment plants	840
electric power plants	519
water treatment plants	185
Total	127,641

Sources: Connecticut Department of Transportation Survey of Connecticut Land Uses (SLUCONN) and Public Utilities Commission.

available for recreational or other use, although many towns list them as part of their permanent open space.

A substantial portion of Connecticut's water supply is provided by private, investor-owned corporations. The larger water companies own sizeable areas of land. The New Haven Water Company—the largest—owns some 26,000 acres, including reservoirs and treatment and other facilities. In the face of increasing land values and with improved treatment facilities, many of the companies are selling or have sold portions of their lands. These lands were acquired half a century ago when they were farm or forest but are now located in or near urban areas. A variety of developments have taken place—including industrial, commercial and residential—on the tracts which have been sold to date. The towns by law have the first right of refusal on lands released for sale, and some have availed themselves of the opportunity to acquire recreation and conservation areas. This land is expensive, however, because it is valuable for other uses and because these uses typically add to a town's grand list. There has been considerable debate about the proper beneficiaries of sale in the case of water company lands (stockholders vs. rate-paying users), about what lands can properly be disposed of, about how

rapidly sale should be permitted by the Public Utilities Commission, and whether, in fact, disposal of long-held water supply lands is either desirable or legitimate.

Connecticut currently handles its solid waste through a combination of open dumps, incineration, sanitary land fills, and private sector recycling. Landfill area is increasing at a rate of about 300 acres per year. Most towns have their own facilities, resulting in extensive fragmentation of effort and land use. The state has recently adopted plans for a statewide solid waste management system, which will incorporate a more centralized system of regional recycling centers and landfills. There has been opposition to details of the plan. Towns are reluctant to act as depositories for the garbage of others and scrap dealers fear a decrease in their business.

Even with a coordinated program of handling, the problem of end disposal is not eliminated. Suitable landfill sites are becoming scarce near urbanized areas and may become a serious problem in the future. Current disposal sites range from dug landfills through planned refilling of gravel pits to casual dumping in wetlands. A particularly critical problem is the management of leacheate from landfills and the potential contamination of future groundwater supplies in the aquifers which underlie areas desirable for development. Little has so far been done in planning for satisfactory final uses of the completed landfill sites.

Municipal sewage-treatment facilities exist only in the major urban areas of the state. Rural areas, and many suburban areas, rely on septic systems. Much of Connecticut is underlain by bedrock close to the surface, hardpans, or other geologic features which limit drainage. These conditions restrict residential densities where reliance is on septic systems. This has been the basis for large lot zoning, but this has other effects, as on the social composition of residential areas. In some towns the new sewer lines are being extended beyond the existing residential areas. This offers some economies in the initial construction, but it has been found that residential development follows sewer mains as surely as it does transportation arteries. There is a substantial interplay between the physical constraints, the translation of these into political regulations or actions at the town level, and the type and pattern of development which occurs on previously open lands.

Electric-power generation also presents interesting problems. There is tremendous pressure to increase the generating capacity in

the state. Connecticut power companies are members of the New England Power Pool and all power used in the state does not have to be produced in it. But other elements in the system are operating under similar pressures. Current emphasis is on increasing the network of nuclear powered generation plants. However, nearly all of the desirable river or tidal sites which would be capable of handling the massive thermal discharge are already developed or spoken for, and the location of further facilities is a critical problem.

Provision for water supply, waste disposal and energy conversion is affected by the main demographic trends in the state. As total population has increased, so has the need for these services. As commercial and industrial interests are attracted to the state, they contribute to increased demand both directly through use and indirectly through the needs of their employees. The general strategy is to provide utility services on a demand basis as a right of the consumers.

There has been some planning at state, regional and local levels. People are increasingly aware of the physical constraints and the interplay between decisions predicated on these constraints and the use of other lands. But a serious limiting factor on planning is the jealously guarded power of the individual towns.

Summary

The amount of land devoted to institutional and utility and service uses is not large compared to the total land area of the state but its functional importance is great. These uses are intimately related to the larger processes which shape land use in the state. Comprehensive planning for allocating lands to these functions and for avoiding conflicts between long-term goals is limited by the fragmentation of power in the many town governments. Some state policies appear to be in conflict already. There seem to be few institutional mechanisms for handling the conflict between continued industrial and commercial growth (a high priority of the state government) and the effects this has on population density and the consequent need for institutional and utility services. There are indications that the limits to some special use land allocations are being approached, given current technology and present state priorities and settlement patterns.

Connecticut Special-Use Policies

It apparently is accepted policy in Connecticut to:

1. Devote relatively little of the state's open land to institutional uses but to devote some relatively large blocks of open land to public utility uses.
2. Perpetuate a mixture of private and public ownership of the various institutional and public utility lands.
3. Assign a high priority to existing institutional land uses.
4. Continue urban encroachment on open lands without prior provision for the resulting increases in demand for public services.
5. Respond to increases in demand for public services by allocating new open land to electric power generation, water supply, education, and waste disposal rather than intensifying the use of existing facilities or seeking other alternatives.
6. Use institutional lands more intensively for secondary purposes, such as recreation.
7. Regulate the use of lands primarily involved in utility production at the state level, mainly through the administration of federal regulations.
8. Provide a substantial proportion of public water supply through private investor-owned corporations.
9. Manage water-supply lands primarily for water production, secondarily for forest products, and only seldom for other uses such as recreation.
10. Permit sale of private water company lands on the market, subject to the approval of the Public Utilities Commission and first refusal of the relevant governmental bodies.
11. Reconsider the current practice of managing solid waste on a town-by-town basis through efforts to institute a statewide solid-waste management program.

CHAPTER NINE

AMENITY

This section on land as an amenity is included because the use of the term as a justification for certain land use patterns in Connecticut is increasing. The amenity value of open land figures in each of the other use categories we examined and seems to impinge on a variety of urban and suburban uses. The concept appears to indicate a fundamental—though as yet poorly defined—dissatisfaction with the valuation of land resources in the marketplace and the priorities thus assigned.

In each of our categories, the term assumes a slightly different meaning. In discussing agricultural land, for example, we found a policy of placing an increasingly high value on the aesthetics of cropland and pasture as part of a rural land use mix. Many commentaries—particularly those in favor of retaining agricultural land in the face of urbanization—characterize this pattern of use as an amenity of agricultural land. A striking example is the case of a rapidly urbanizing town in central Connecticut which recently discovered that the last working farm in town was to be sold for subdivision. The farmer was besieged with pleas to continue operation and the town cudgeled its collective brains for ways to subsidize or otherwise preserve the farm.

In examining forest land use, we found a policy of managing many forested areas for extensive recreation, and a body of opinion that the maintenance of forest land is desirable primarily for that reason. Woodlands have an amenity value as pleasant places to walk and many people see woodland primarily as an adjunct to a pleasant residential milieu.

In looking at the pattern of highway rights-of-way, we found that a value is placed on wide median strips, pleasant vistas, and attractive landscaping, that extends well beyond the needs for safety and erosion control. These practices also are aimed at amenity values. The concept thus extends, in an immediate way, into a broad range of open land policies.

The existing pattern of land use in some urban areas—particularly residential developments—also seems to have an amenity value.

Typically, this involves a substantial proportion of open land or large lot size, which implies a particular social mix as well as land use pattern.

Generally, the idea of amenity as applied to Connecticut's open lands includes an aesthetic component, a sense of a non-urban milieu, a sense of the "natural", and a fundamentally conservative notion of maintaining existing land use patterns. The concept is vague, but increasingly important as a rationale for policies which do not meet the criteria of conventional rationality.

Connecticut Amenity Policy

It apparently is accepted policy in Connecticut to increasingly incorporate some consideration of aesthetic quality and other amenities in the valuation of open lands.

CHAPTER TEN

IN CONCLUSION

The preceding chapters have looked in some detail at the various sectors which affect the use of the forest and open land resources of Connecticut. Each chapter ended with a list of current policies—courses of action which appear to be generally accepted and widely followed by people at the present time. Many of these seem to be broader than just forest or mineral or other single-sector policies. Similar policies can be seen operating in more than one of the sectors. In this chapter, therefore, we will look at the whole picture of non-urban land use in Connecticut and see what general policies appear to influence and control the use of open land resources on a statewide basis.

Three-quarters of Connecticut is open land, yet the overwhelming sense of the state is urban. Decisions affecting open land are typically based upon the premise of an urban state. Most of the pressures currently being exerted on open lands are predominantly urban in nature. The growing demand for outdoor recreation is making forested land more important as a recreational or aesthetic resource than as a producer of wood, wildlife, or possibly even water. Pressures for suburban expansion are making agricultural property more important for residential development or showcase aesthetics than for food production. There is a fundamental tension as a result of the interplay between the fact that there still is a great deal of open space in the state and the social perception and treatment of that space by the state's growing population.

Despite the wide range of resource benefits available from Connecticut's open lands, increasing population and population density have had the effect of raising substantially the relative value of recreation and amenity. In fact, a sort of redefinition of resources seems to be taking place in the state. For example, the term "rural", which once signified a particular blend of residential, agricultural, and forested land, has today also come to mean simply a house in the suburbs. Farmland is being seen as aesthetically pleasing landscape (a backdrop to development) and as easily built-upon land. Forest land

is undergoing a perceptual redefinition primarily along the lines of its recreation potential.

Ironic contradictions appear in other resource benefit areas as well. For example, the production of construction aggregate (gravel, crushed stone, or sand) to meet the growing demands of an expanding urbanized population has been curtailed or stopped in some areas because of conflicts with residential aesthetics and new-development location. Another facet of tension with regard to Connecticut open lands, results from the situation wherein the state is at the same time both an attractive place to live and work and an attractive place to pave over (actually, the former seems to necessitate the latter).

Control over the use of open land is exerted at several levels in Connecticut, producing a characteristic political pattern. The institution of private property is still very strong in the state. Ownership of open land is predominantly private, and the owners retain great discretion over the use of their lands. Since so many private owners are involved, the overall management of the open lands is affected by a wide variety of perspectives and by the factors which influence those perspectives, such as age and reward structure.

The state is divided into 169 towns, which are the predominant form of local government. A substantial influence on open land use is exerted at the town government level. The authority of the towns is expressed primarily through zoning, subdivision regulation, building restrictions, regulation of the extension of services, and a sense of individual town goals. Since individual town goals differ radically throughout the state, the application and effect of local control over open land use also varies from town to town. In addition, the character of the towns varies greatly, ranging from primarily industrial to primarily rural or agrarian. The general pattern of local control tends toward the application of overt controls and informal sanctions to reinforce local status quos. Conflicts between local goals and the pressures of "progress" have been frequent and have often ended in favor of "progress." The fractionated pattern of local control has made land use planning for such things as orderly growth, recreation, solid waste management, and water supply management very difficult on a larger scale.

State influence on open-land use takes four major forms: direct management, regulation, information and education, and incentive programs. The state also has an ongoing land acquisition program but this involves fairly small acreages.

Direct management takes place mostly on the lands owned by the state and administered by the Department of Environmental Protection for such things as recreation, wildlife, and wood products. Incentive programs range from laws like PL 490, which encourages the maintenance of forest land, farmland, and other open space to Department of Commerce advertising campaigns encouraging tourism and location of new industry in the state. Information and education programs are widespread, and range from state planning efforts (including the Connecticut Plan for Conservation and Development and the Statewide Comprehensive Outdoor Recreation Plan) to radio broadcasts of fire danger in some districts.

It is in regulation, however, that state influence on open-land use is most important. Activities such as boating and hunting are controlled through licenses and regulations. More importantly, it is state regulatory schemes which are clashing with traditional local land-use control and perhaps instituting new forms of control at a supra-local level. The wetlands legislation, in which new development is severely regulated in areas delineated as "wetlands", is a good example. The Inland Wetlands and Water Courses Act requires the municipalities to designate a local regulatory body and promulgate regulations. If the local government had not acted by July 1, 1974, the state government stepped in and nominally took over the local regulation. The statewide proposed solid waste management program is an example of an attempt by the state to guide the towns toward working together on land use issues. Conflicts are arising both with the wetlands laws and the solid waste program and it is still too early to tell how effective these schemes will be. They could symbolize the beginning of a land use revolution in the state or they might simply represent an ineffectual tap at traditional values.

The regional planning agencies stand structurally between state and local levels of land-use control. Until now, these agencies have been powerless sine qua nons for attracting federal funds into the state. It will be interesting to see if these regional planning agencies evolve into more effective open land planning and control units.

Connecticut's relationship to its national environment with respect to open land use has three important aspects besides the social effects which it inherits from its proximity to New York City. First, the implicit policy of importing a great majority of the necessary foodstuffs has important ramifications on open-land use in the state.

Second, the acceptance of federal funds for open-land-related programs ties the state in with the federal government and forces it to behave in certain ways, especially in regard to planning. Finally, the need for Connecticut to sell products to a larger community of states (tied in with a desire to maintain and even increase its status with regard to this larger community) has important effects upon open-land use, especially as a result of the concomitant industrial and residential growth.

Generally speaking, the market system is the mechanism by which open land is valued and allocated in Connecticut. In spite of state and local control over certain lands and various legislative attempts at regulating open-land valuation, most open land in the state can be bought and sold in the marketplace and further developed or ignored completely according to market pressures. But the market system has its weaknesses, and Connecticut has paid some high costs for depending so much on this system of open land valuation and allocation. For one thing, the market tends to select against long-term investments and as a result the state has had little real chance to experience the possibilities of long term planning. Effects of this have included the steady disappearance of agricultural land and the random encroachment of suburbs upon forest and other open-space. In addition, the market does not consider all possible tradeoffs and alternatives in any particular land transaction. Amenity and other open-space values have often been ignored as have many spillover costs such as water pollution and the noise and waste disposal problems which accompany development.

Connecticut is experiencing a steady increase in demand for the benefits of open land. This results mainly from population growth and the increase in affluence, education level, and suburbanization (both residential and industrial). The trend toward multiple uses of many open lands appears to be one of the series of effects which occur when scarce resources face an ever increasing demand.

Increases in population, demand for goods and services, production of services necessitating the use of open land, and intensity of use of existing open lands are all facets of an undeniable and overwhelming general state policy of continuing steady economic growth. This policy conditions and deeply affects every aspect of open land use in the state and cannot be overemphasized. It has led to the general view that open land is an expendable, short-term, human life-support commodity. It has also led to avoidance of the

question of what role open lands (or the possible lack of open lands) will play in that dim future which must inevitably follow the short term.

This review of statewide legal-political, economic, and other effects upon open-land use enables us to extract some apparent statewide policies regarding the use of open land. This list of policies will be followed by a brief discussion of the interactions of these policies at various levels.

Statewide Policies Affecting Open-land Use

It apparently is accepted policy in Connecticut to:

1. Maintain a steadily increasing economic growth.
   As supplements to this, it is accepted policy to:
   a. Encourage tourism in the state.
   b. Encourage the location of new industry in the state.
   c. Maintain a well-developed and expanding network of roads throughout the state.
   d. Depend on the private automobile as the major form of personal transportation.
   e. Allow services and suburban residential areas to expand generally in an unplanned, "as-needed" manner.
2. In general allow the market system to determine the valuation and allocation of open lands.
3. Allow the availability of federal funds to affect the use of some state lands.
4. Rely heavily on other states for many commodities in order to make various other uses of the available domestic land.
5. Allow most of the open lands to be in exclusive private ownership.
6. Acquire additional open lands for public ownership gradually as the lands or the necessary funds become available.
7. Regulate the use of the publicly owned lands by the general public.
8. Allow the primary public control of open-land use to reside at the lowest governmental level (i.e., in the towns).
9. Begin to challenge at the state government level the primacy of town control over open-land use and the exclusive property rights of private landowners.

10. Rely on the courts when an institutional process is needed to resolve open-land-related policy conflicts.
11. Lend general encouragement to the maintenance of permanent open space on both public and private lands.
12. Manage publicly owned lands for multiple benefits in the following general order of priority: recreation, wood products, water, wildlife, aesthetics.
13. Gradually give more attention to multiple benefits, such as water quality and aesthetics, in private development projects.
14. Accept a gradual reduction in the amount of open land as a result of conversion to more intensive uses.
15. Engage in planning at regional and state levels but to make only modest efforts to implement the resulting plans and no efforts to enforce them.
16. Consider the "aesthetic character" of the state in most decisions concerning open-land use or conversion.

Policy Interactions

This study has dealt with policy at two levels: A specific resource-use level and a more general statewide level. At the resource-use level policies have to do with on-the-ground behavior by the relevant group of affected people. At the statewide level policy relates more directly to the entire body of Connecticut citizens.

Different kinds of policies exist at the same time which suggests that there are complex interaction patterns among them. This is indeed the case in Connecticut. Interactions occur among statewide policies, between statewide and specific resource-use policies, and among the resource-use policies. Examples of some of these interactions will be discussed but the totality of policies and interactions in Connecticut are too numerous and intricate to completely elucidate here.

Conflicts between general statewide policies indicate that even at such broad levels, the courses of action which different groups accept and follow are seldom completely harmonious. For example, a general policy of planning at regional and state levels conflicts with a policy of allowing local governments to exercise the main power over land

use. Conflicting policies of this nature may co-exist essentially unchanged for years. Or they may be nodes of change where two or more policies are merging into one or creating an entirely new policy out of their conflict. The general statewide policy of beginning to challenge local authority over open land use represents a special case because it conflicts with most other open land policies at present. This indicates that policy is evolutionary and foreshadows important future policy changes.

On the other hand, many policies at the statewide level reinforce each other and do not produce conflicts. For example, policies of private ownership coincide nicely with policies of free market valuation and allocation of lands. Policies like the encouragement of tourism and an expanding road system fit well with a general policy of economic growth. Numerous other examples of such policy "fits" exist in Connecticut.

Policies at the general statewide level must necessarily affect and be affected by the more specific resource-oriented policies. Conflicts between statewide policies and specific resource policies suggest that competition for scarce resources will often dictate on-the-ground policies which differ in some ways from or conflict severely with more general statewide resource policies. In addition, the kinds of political and large-scale economic factors which influence the formation of general statewide policies may often differ markedly from the less-encompassing local factors which determine specific resource policies.

The general policy of maintaining exclusive private ownership conflicts directly with a policy of acquiring forest land for state ownership. A statewide policy which places recreation at the top of management priorities will conflict somewhat with the management of forest lands for the second highest priority of wood products.

Despite the conflicts which do exist between some general and resource-specific land use policies, they are in most cases reasonably consistent with each other. A statewide policy of private ownership of open lands fits well with forest policies of non-interference with owner perogatives and primary reliance upon local fire-fighting units. Land management priorities at the state level fit well with forest policies of managing largely for recreation and of basing many management programs on federal money.

Conclusion

There is no single open-land use policy in Connecticut today. In fact, there are not even a number of clearcut policies which can be said to be the open-land use policies in Connecticut.

Instead, there are accepted policies about particular land resources and accepted policies about open-land use. In many cases, similar policies are followed in using different resources. And some general land-use policies are followed regardless of the specific purposes involved. But there also are cases where different policies are followed for different resources and where different policies are accepted when using open land for different purposes.

To some extent, these similarities and differences reflect the goals and aspirations of the local people in the various towns and regions of the state. But they also are influenced by broader statewide policies which reflect the goals and aspirations of the state as a whole. For example, there appears to be a generally accepted and followed statewide policy of maintaining a constantly growing economy. Many policies regarding particular resources and open-land uses clearly follow and contribute to this general policy of economic growth.

In order to understand the open-land policy situation in Connecticut, it is necessary to see the whole pattern of interrelated, reinforcing, and conflicting policies about specific land uses and about other things which affect those specific uses. In order to change some particular land use, it may be necessary to change other policies which the people accept and follow. If forest lands are being converted too rapidly into housing and industrial developments, what might need to be changed is the statewide policy of continued economic growth rather than any specific forest or land-use policy.

The policies presented in this bulletin are those which we feel are currently accepted and being followed by the people who control open-land use in Connecticut. Changes in some of these policies are inevitable and a gradual modification of them can be witnessed today. It is not clear what kinds of future land use policies will eventually evolve. But it is clear that the evolutionary process must start from the policies which are accepted and followed at present. If this rough sketch helps those who are interested in forest and other open-land policies to see where we are now, it will have served its purpose.

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