

MAINE STATE LEGISLATURE

The following document is provided by the
LAW AND LEGISLATIVE DIGITAL LIBRARY
at the Maine State Law and Legislative Reference Library
<http://legislature.maine.gov/lawlib>



Reproduced from scanned originals with text recognition applied
(searchable text may contain some errors and/or omissions)

**A Summary of the Commission's
Current Land Use Policies and their Net Effects
After 20 Years of Development in
Maine's Unorganized Areas**

**Prepared for the
MAINE LAND USE REGULATION COMMISSION**

**by Land & Water Associates
Hallowell, Maine**

and

**Market Decisions
South Portland, Maine**

August 1994

HD
211
.M2
S86
1994

TABLE OF CONTENTS

PREFACE	i
I. SUMMARY AND CONCLUSIONS.	1
FINDINGS	1
PROBLEMS AND OPPORTUNITIES.	4
II. THE SETTING - MAINE'S WILDLANDS	5
SPECIAL AND UNIQUE FEATURES	5
RECREATIONAL DIVERSITY	8
ECONOMICALLY SIGNIFICANT FOREST PRODUCTS INDUSTRY	12
PREDOMINANCE OF PRIVATE OWNERSHIP	12
LOW DENSITY RESIDENT POPULATION	12
SIGNIFICANCE	14
III. OVERVIEW OF CHANGES THAT HAVE OCCURRED SINCE LURC WAS ESTABLISHED.	16
POPULATION	16
AMOUNT OF NEW DEVELOPMENT	16
WHERE DEVELOPMENT HAS OCCURRED	17
WHO IS DEVELOPING THE WILDLANDS	21
IV. DEVELOPMENT POLICIES.	23
V. REGULATORY TOOLS	25
VI. THE NET EFFECTS OF COMMISSION AND LEGISLATIVE POLICIES	27
VII. POTENTIAL FOR GROWTH AND DEVELOPMENT	34
FACTORS INFLUENCING THE AMOUNT OF DEVELOPMENT FROM 1971-1991	34
PROJECTED HOUSING DEMAND.	35
SUPPORTING INFORMATION AND ANALYSES	37
GROWTH ACCORDING TO THE CENSUS	38
GROWTH ACCORDING TO LURC DATA	39
PROJECTED FUTURE HOUSING DEMAND	47
PROJECTIONS FOR OTHER DEVELOPMENT ACTIVITIES	52
REFERENCES.	53

PREFACE

Over the past several years, there has been growing public discussion and concern about the future of Maine's northern forest, prompted by the heightened development pressures of the 1980's and an unprecedented open market sale of about one million forested acres by the former Diamond International Paper Company. In preparation for its scheduled review of its 1983 Comprehensive Plan, the Land Use Regulation Commission held a series of public meetings throughout the State in 1991 to solicit comments from the public on these concerns and other issues related to development in the wildlands. The public meetings revealed that, although there was concern over the changes occurring in the wildlands, there were mixed perceptions on the significance of those changes and, as a result, mixed views on the possible actions which might be warranted to respond to those changes. Subsequently, the Commission decided to undertake an extensive, in-depth review of the level and patterns of development within its jurisdiction so that the revised Comprehensive Plan would be better able to ensure that future development within the jurisdiction will not adversely affect the public values the Commission is charged with protecting.

Since then, the Commission has established a "Subcommittee on Review of the Comprehensive Land Use Plan" and conducted a series of studies of the amount, type, location, and impact of development that has occurred in the wildlands over the 20 years since the Commission was established. These have included several studies based on analysis of a comprehensive database of permits issued by the Commission since 1971 ("Historical Demand for Development in the Wildlands," October 1993; "New Development in the Wildlands: Distribution of Residential, Commercial, and Industrial Development by Geographic and Natural Features," October 1993; and "Trends in New Residential Development in Maine's Unorganized Areas," December 1993) prepared by Land & Water Associates. In addition, a study of the current and projected population and demand for permanent and seasonal homes was conducted by Market Decisions, Inc. ("Profile and Projections," November 1993). Related studies, including reports from the Northern Forest Lands Study, have also been reviewed. And finally, the extent to which the Commission's own policies and regulations have guided development and protected wildland resources have been evaluated.

This report, from the Subcommittee, summarizes the findings of those studies. It provides the factual basis for a common understanding of the problems associated with development of the wildlands and, as such, provides a framework for discussing the strengths and weaknesses of the Commission's existing policies and regulations, and for considering options for updating the Commission's Comprehensive Land Use Plan.

I. SUMMARY AND CONCLUSIONS

The Northern Forest Lands Council (NFLC) has stated that *"the Northern Forests are of national significance and are facing a number of ever-increasing pressures from development, division of land into unmanageable parcels, recreation use, land uses and other factors. These have a significant adverse impact on commercial forestry, wildlife habitat and other important biological features; recreational, wildlife and scenic values; and the quality of life of local residents."*

The 10.5 million acres of unorganized territories in Maine under the jurisdiction of the Maine Land Use Regulation Commission comprise over a third of the Northern Forest Lands. The Land Use Regulation Commission's "Subcommittee on Review of the Comprehensive Land Use Plan" concurs with the NFLC's assessment of the significance of our northern forests and the pressures on them.

This report is the work of LURC's Subcommittee and summarizes the results of several studies examining the nature of the development that has occurred in Maine's wildlands over the last twenty years, and its cumulative impacts on the jurisdiction's primary values. It analyzes the extent to which LURC land use policies and standards have controlled and guided new development, and specifically addresses the following issues:

1. Have the three primary values LURC was established to protect - recreational, wildlife, and forest resource values - been adversely affected by new development?
2. Can different policies and standards avoid those adverse impacts while accommodating the new development?

FINDINGS

The net effects of LURC's policies and standards over the past twenty years have included the following: **Selected natural resources have been substantially protected from incompatible development.** These include deer wintering areas, high mountain areas, Class A rivers, wetlands, remote ponds, some high value lakes and selected recreational trails. **New development has been accommodated,** as evidenced by 4,982 building permits for new single family dwellings and 1,325 permits for other types of development. **Proposed development that gets to the point of decision is almost always approved,** due, in part, to guidance by staff to applicants, and in part, to withdrawal of potential applications once applicants realize they are unlikely to be approved. Furthermore, the **Commission's land use standards and design criteria generally ensure that development will fit, or ameliorate, site limitations.** Various performance standards effectively address most site-specific concerns.

However, the current policies and regulations under which LURC reviews development are allowing the Maine Woods to become more "suburbanized" much like the many other

partially developed forest areas found commonly in the eastern United States, and, hence, Maine's forests are losing their essential uniqueness and what many people view as their semi-wilderness values. This is due, in part, to statutory limits placed upon LURC which allow significant changes to occur in its jurisdiction without LURC review and approval. It is also due, in part, to the enormity of the task LURC faces; lack of information on what was, in fact, occurring in the wildlands; and the fact that regulations designed in the 1970s to meet the most pressing immediate needs of that era do not necessarily meet today's needs or address all issues. Related concerns and issues which have been highlighted in this report include:

1. **The amount of development in the unorgainized territories has increased substantially since LURC was formed.** For example new residences (not including condominiums) have increased by 4,982 units (a 44% to 62% increase in the number of units, depending on which data source is accepted as the baseline of what existed in 1971); 1,820 new lots have been created in subdivisions approved by the Commission; 872 new commercial and industrial developments have been approved. In addition an estimated 11,000 miles of new logging roads have been built. While this last activity indirectly has led to improved water quality in Maine's rivers (timber being transported by road rather than waterway), it has also provided access to once remote areas for recreation and development as well as timber harvesting.
2. **The amount of development which has taken place varies by region,** with the Western Mountain/Moosehead Lakes region (including Franklin and Oxford Counties, and the lower portions of Somerset and Piscataquis Counties) absorbing 45% of the new residences and two-thirds of the lots in LURC-approved subdivisions. This region also had the fastest growth in permanent population in the jurisdiction. Projections for future growth indicate this area will continue to draw a high proportion of the new development.
3. **There has been a substantial amount of development in the "fringe" area of the jurisdiction which is "suburban" in character,** with the residents working outside the jurisdiction in jobs which are not natural resource-based (note the "fringe" is defined in this report as those townships or plantations adjacent to organized towns). This development, located primarily along roads, is changing the nature of the jurisdiction's fringe communities to be more like the rest of the state.
4. **The impacts of development on the LURC jurisdiction values are cumulative and disproportionately concentrated in areas which have the highest public values** (high value recreational waterbodies and riparian areas important to wildlife). In addition, the location of scattered development along highly visible "edges" (lake and river shorelands, and roadsides) disproportionately diminishes what the public sees as the "semi-wilderness" character of the jurisdiction.
5. **The development which has taken place has affected fish and wildlife resources in the wildlands as a result of conversion of at least 60,000 acres of forested and riparian**

habitat to other uses, fragmentation of habitat by roads and development, and disturbance from human activity resulting from increased settlement and growing recreational use in once remote areas.

6. **The development which has taken place has adversely affected timber production potential in the wildlands** as a result of fragmentation of ownership and the management objectives of the new owners, many of whom own the land for non-timber values, such as for a second home or other development potential. This fragmentation is largely the result of statutory exemptions for large lot divisions which have affected approximately 193,000 acres in the jurisdiction since 1971. This compares to only 6,375 acres in LURC regulated approved subdivisions.
7. **The amount of development which has occurred has been influenced by landowner policies.** Indications are that corporate landholders will be increasingly subject to pressures to sell or otherwise realize the potential market value of their high market value holdings (e.g., shorelines). An expanding economy and a population dominated by the baby boom generation which is just reaching its highest earning potential will, at the same time, create a high demand for this land. As a result, it is projected that there will be a continuation, and possibly an acceleration, of the development pressures witnessed in the 1980s.
8. **In the face of continuing pressures to divide and develop desirable lands throughout the jurisdiction, some valuable wildland resources may be lost or compromised, many before their significant public values have been properly evaluated.** This study represents the first comprehensive assessment of the amount, type, and location of development occurring in the jurisdiction since LURC was established in 1971. It has shown that **development locates where resource values are highest.** While LURC has responded to protect high value lakes, deer wintering areas and selected other resources from this inevitable pressure, there are other resources which have not been similarly inventoried and analyzed to ensure a proper balance between use and protection of those with highest public values. These include clusters of small remote ponds in some parts of the jurisdiction, most trails, and other areas which have high values for their backcountry characteristics.

These are significant trends, raising concerns over the impacts already witnessed, and the probable effects of continued development pressure. Based on analysis of New England economic and demographic trends, it is projected that another 3,000 to 3,500 residential units (mostly seasonal) will be built in the jurisdiction by the end of the current decade, maintaining the rate of growth evidenced in the 1980s.

PROBLEMS AND OPPORTUNITIES

The principal development related problem confronting the Commission appears not to be the amount of development taking place in the wildlands but rather where it is located. Large lot development (primarily in management districts and mostly exempt from LURC's review) and scattered development located primarily in areas where it has a disproportionate effect on public interests (e.g., lakeshores and other riparian areas) is eroding the special value of the wildlands as a productive forest, as wildlife habitat and as an area unique on the Eastern seaboard for its semi-wilderness character. With proper siting the same amount of development could be located in the wildlands largely without the adverse impacts documented in this report. Thus, through refinements to its approach, the Commission has the opportunity to both accommodate development and enhance protection of the resource values it is charged by the Legislature to safeguard.

Particularly sensitive portions of the wildlands are being converted from a remote, undeveloped and productive landscape to a suburban pattern of land use. As Robert Fishman states in his book entitled Bourgeois Utopia - the Rise and Fall of Suburbia, a rural landscape is organized for production while a suburban landscape is organized for consumption. The wildlands are drifting slowly from a predominantly productive landscape to a more suburban one and in the process losing their distinctive character and becoming more like many other partially developed forest areas in the eastern United States.

The Commission has already identified this as a problem and has begun to move, through actions like its zoning decisions in Greenfield, to establish a more appropriate pattern of land use for the future by identifying, beforehand, the areas which are best suited for additional development and, in the case of Greenfield, designating them for growth as a village center. The subcommittee notes that this approach is entirely consistent with the state's Growth Management Act which requires communities in the settled part of Maine, an attractive but generally more common type of landscape, to designate areas for future growth. **The subcommittee believes the approach taken in Greenfield points the way to a future which optimizes the benefits Maine people derive from the wildlands as a source of wood; wildlife; clean water; employment in the agricultural and forestry industries, recreation and tourism; and a high quality environment in which to live and recreate.**

II. THE SETTING - MAINE'S WILDLANDS

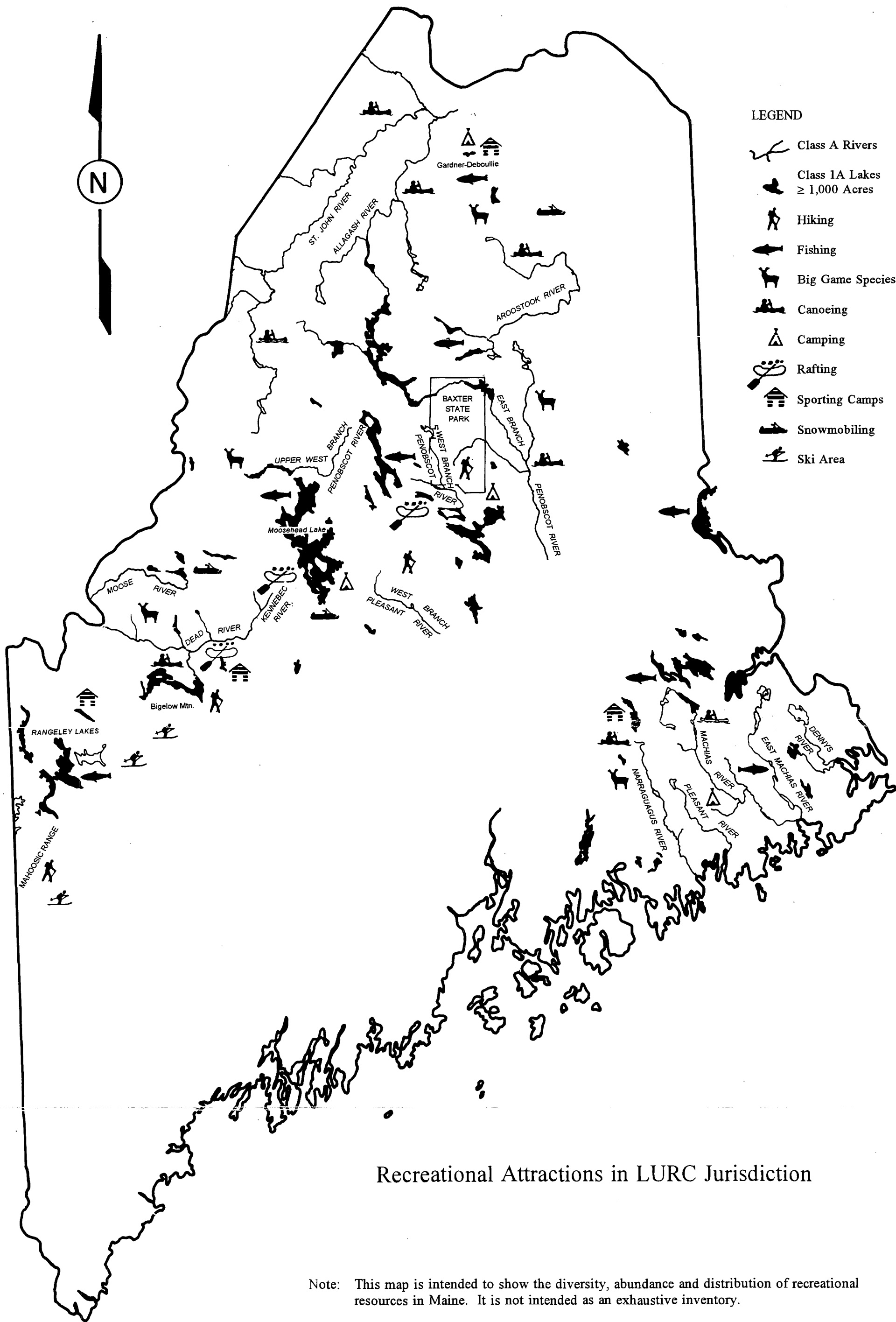
SPECIAL AND UNIQUE FEATURES

In 1848, Henry David Thoreau, writing in The Maine Woods, described the wildlands:

"The mountainous regions of the State of Maine stretches from near the White Mountains, northeasterly one hundred and sixty miles, to the head of the Aroostook River . . . a primitive forest, more interesting, perhaps, on all accounts, than [a traveller] would reach by going a thousand miles westward."

While conditions have certainly changed, LURC's jurisdiction encompasses much of what is still the largest contiguous, and one of the most interesting and diverse, tracts of forest land in the eastern United States. The jurisdiction contains within its 10.5 million acres:

- a productive forest which currently yields 2,000,000 cords of wood per year and provides the backbone of Maine's economy by supporting wood using industries and recreation;
- over 3,000 lakes and ponds, ranging in size from tiny, limped glacial kettleholes to 74,890 acre Moosehead Lake;
- 16,000 miles of rivers and streams from mountain rivulets to the mighty St. John. These constitute the highest concentration of undeveloped rivers in the east;
- five significant whitewater river sections with dependable summer flows. These include the two most heavily used whitewater rafting areas in the northeast - the West Branch of the Penobscot and the Kennebec Gorge;
- renowned canoe trips, including the Allagash, the nation's first state-administered Wild and Scenic River, as well as the St. John, the West and East Branches of the Penobscot, the Machias, Aroostook and St. Croix Rivers;
- approximately 100 peaks over 3,000 feet high including Katahdin, the climax and crown jewel of the Appalachian Trail, which includes 260 miles in Maine;
- a wide variety of special or unique natural areas ranging from arctic alpine tundra to domed peatlands and ribbed fens;
- fishing for landlock salmon and trout unsurpassed in the eastern United States;
- the nation's only self-sustaining populations of Atlantic salmon;

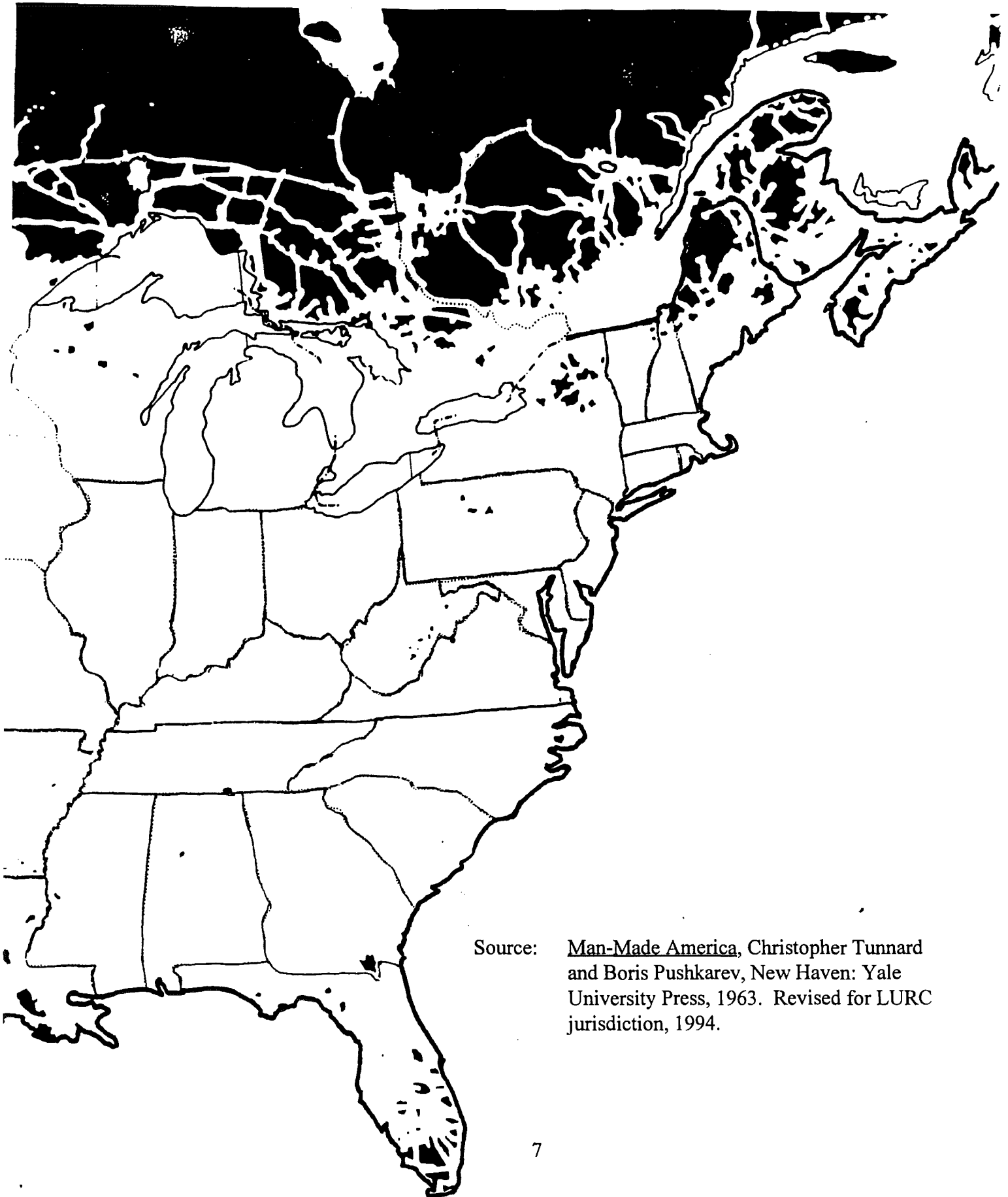


Note: This map is intended to show the diversity, abundance and distribution of recreational resources in Maine. It is not intended as an exhaustive inventory.

Prepared by Land & Water Associates, 1994.

Sources: Maine Rivers Study: Final Report; Maine Department of Conservation, U.S. Department of the Interior, National Park Service Mid-Atlantic Regional Office; May 1982 and Land Use Plan and Rule Amendments Regarding the Development and Conservation of Lakes in Maine's Unorganized Areas; Land Use Regulation Commission, Maine Department of Conservation; June, 1990

**Area More than 5 Miles from the Nearest Railroad, Highway, or Navigable Waterway
in the Eastern U.S.**



Source: Man-Made America, Christopher Tunnard and Boris Pushkarev, New Haven: Yale University Press, 1963. Revised for LURC jurisdiction, 1994.

- abundant wildlife including 25,000 moose, 15,000 black bear, and populations of species rare in the eastern U.S. These include the Canada lynx and the only golden eagles east of the Mississippi;
- the spectacular scenic beauty of its diverse landscape, including the blazing autumn colors of sugar maple, birch and aspen contrasted against the dark green spruce, fir and pine; and
- opportunities for recreation and solitude on millions of acres of mixed forest, lake, pond, river, stream and wetland.

As Clinton B. Townsend, who has served Maine in many capacities¹, put it:

"The term 'North Woods' evokes a picture of vast forests, lakes and rivers, epitomized by remoteness and solitude. Even after two centuries of exploitation, the phrase symbolizes a wild and empty land.

Along with its hauntingly beautiful coast, the North Woods is one of two great features for which Maine is renowned across North America.

The North Woods have inspired many minds over many generations, including Henry David Thoreau and Percival P. Baxter."

The LURC jurisdiction includes 10.5 million acres of land which is 95% forested, the largest predominantly undeveloped block of forest in the Eastern United States. The area is unique in that no other area in the eastern U.S. offers the combination of extensive productive forest land; abundant wildlife of so many northern species; and a high diversity of recreational resources including 4,000 ft. peaks, thousands of lakes and long canoeable rivers in an extensive undeveloped area (see attached figure).

RECREATIONAL DIVERSITY

The Smokies and southern Appalachians have mountains but not many natural lakes. While the southern Appalachians also have rivers and exceptional whitewater boating for rafts and kayaks, these water courses are generally too steep and rough for long open canoe trips. Further, development is scattered throughout most of the southern Appalachians. The Boundary Waters canoe area in the upper midwest has extensive canoeable rivers and lakes in a largely

¹Mr. Townsend has served as: Chairman of Land Use Regulation Commission, member of the Atlantic Searun Salmon Commission, member of the Department of Inland Fisheries and Wildlife's Waterfowl Advisory Committee, U.S. Commissioner to North Atlantic Salmon Conservation Organization, member Board of Directors of Atlantic Salmon Federation, Chair of Maine Chapter of Nature Conservancy and President of the Natural Resources Council of Maine.

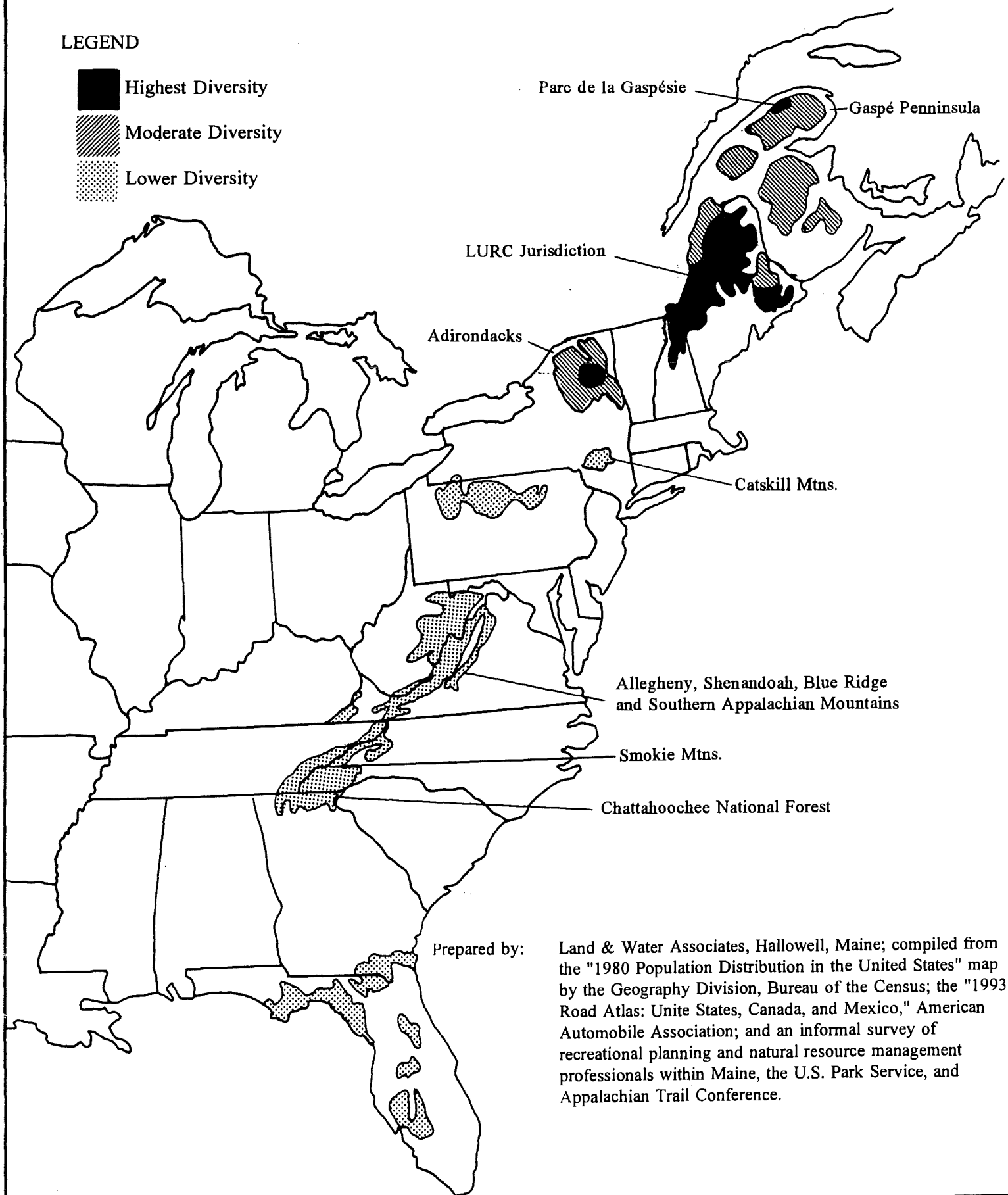
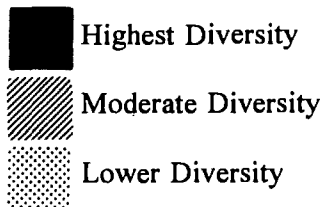
undeveloped setting but lacks substantial mountains. The Adirondacks come close to matching the values of the wildlands, but even this area lacks long Class II and III backcountry river canoe trips like the St. John and Allagash. Even when compared with most of eastern Canada, Maine's wildlands stand out for their diversity. Much of eastern Canada lacks Maine's extensive and diverse lake resource, substantial mountains and, in northern areas, forest growth is stunted or nonexistent.

The importance of this extensive and undeveloped backcountry area is highlighted by the relative scarcity of similar areas in the populated Northeast. Though not a wilderness, because they are indeed a working forest, Maine's wildlands are referred to by many recreationists as a semi-wilderness and fulfill many wilderness functions in an area where true wilderness is scarce. **In this regard, less than 1 percent of the designated federal wilderness areas are located in the Northeast where 21 percent of the nation's population resides.** Compared to the 90.8 million acres of federally designated wilderness areas nationwide, there are less than 2 million acres of state-designated wilderness; and of this, over half is in the Adirondacks. The only other similar area in the East is Baxter State Park, which is 200,000 acres (Hendee, 1990).

Not only are areas regarded as wilderness and semi-wilderness scarce in the northeast, they are also subject to a growing demand. The wildlands are within one day's drive of Boston, Hartford, New York, Albany, as well as Quebec City and Montreal, which are both closer to the wildlands than Boston. **Further, the demand for traditional backcountry recreational uses in the northeast is growing at a rate that is more than double the rate of increase in the population, a pace that exceeds the national average.** (Land & Water Associates, 1994)

Diversity of Recreational Resources in Large, Lightly Populated Forest Areas of the Eastern United States and Canada

LEGEND



Prepared by:

Land & Water Associates, Hallowell, Maine; compiled from the "1980 Population Distribution in the United States" map by the Geography Division, Bureau of the Census; the "1993 Road Atlas: United States, Canada, and Mexico," American Automobile Association; and an informal survey of recreational planning and natural resource management professionals within Maine, the U.S. Park Service, and Appalachian Trail Conference.

COMPARISON OF RECREATIONAL ATTRACTIONS								
blank = no significant value ○ - low value ⊖ - moderate value ● - high value								
Feature/Area	Maine's Wildlands	Adirondacks NY	White Mountains NH	Gaspe Peninsula P.Q.	Southern Appalachians	Boundary Waters MN	Cape Breton Island, Nova Scotia	Central New Brunswick
long backcountry river canoe trips	●	○	○			●	○	⊖
extensive natural backcountry lakes	●	●	○	○		●	⊖	⊖
numerous high peaks (at least 2000 ft. base to summit)	●	●	●	⊖	●			○
coldwater fisheries	●	⊖	○	●	○	●	●	●
unusual wildlife populations e.g. moose, caribou, wolves	⊖	○	⊖	●	○	⊖	⊖	⊖
difficult whitewater available in the summer	●	○	○	○	●	○	○	○
scenic diversity	●	●	●	●	⊖	⊖	●	⊖
hiking trails	⊖	●	●	⊖	●	○	⊖	○

Source: Land & Water Associates, compiled from an informal survey of recreational planning and natural resource management professionals within Maine, the U.S. Park Service, and Appalachian Trail Conference.

ECONOMICALLY SIGNIFICANT FOREST PRODUCTS INDUSTRY

The forests of Maine are especially significant because of their timber resources. **No other state in the eastern U.S. has Maine's extensive spruce fir resource**, a source of fiber highly prized for fine paper. Further, by comparison with many other areas in Canada which also have extensive spruce fir (e.g. central Quebec, Newfoundland, and Labrador), growth rates in Maine are considerably faster and are among the best in the entire region. The productive spruce fir forest is a large part of Maine's competitive advantage in the woods industry and provides both a place to recreate and the raw material for our forest products industry. As the Northern Forest Lands Council stated in their report covering the northern tier of Maine, New Hampshire, Vermont and New York: *"The forest-based industries of this region have profound impacts on the economies of the four states. Within the four states, forest-related jobs, including manufacturing and tourism, account for a total annual payroll of over \$3 billion. In forest products manufacturing, the total annual economic contribution ... in Maine [is] \$4.6 billion."*

PREDOMINANCE OF PRIVATE OWNERSHIP

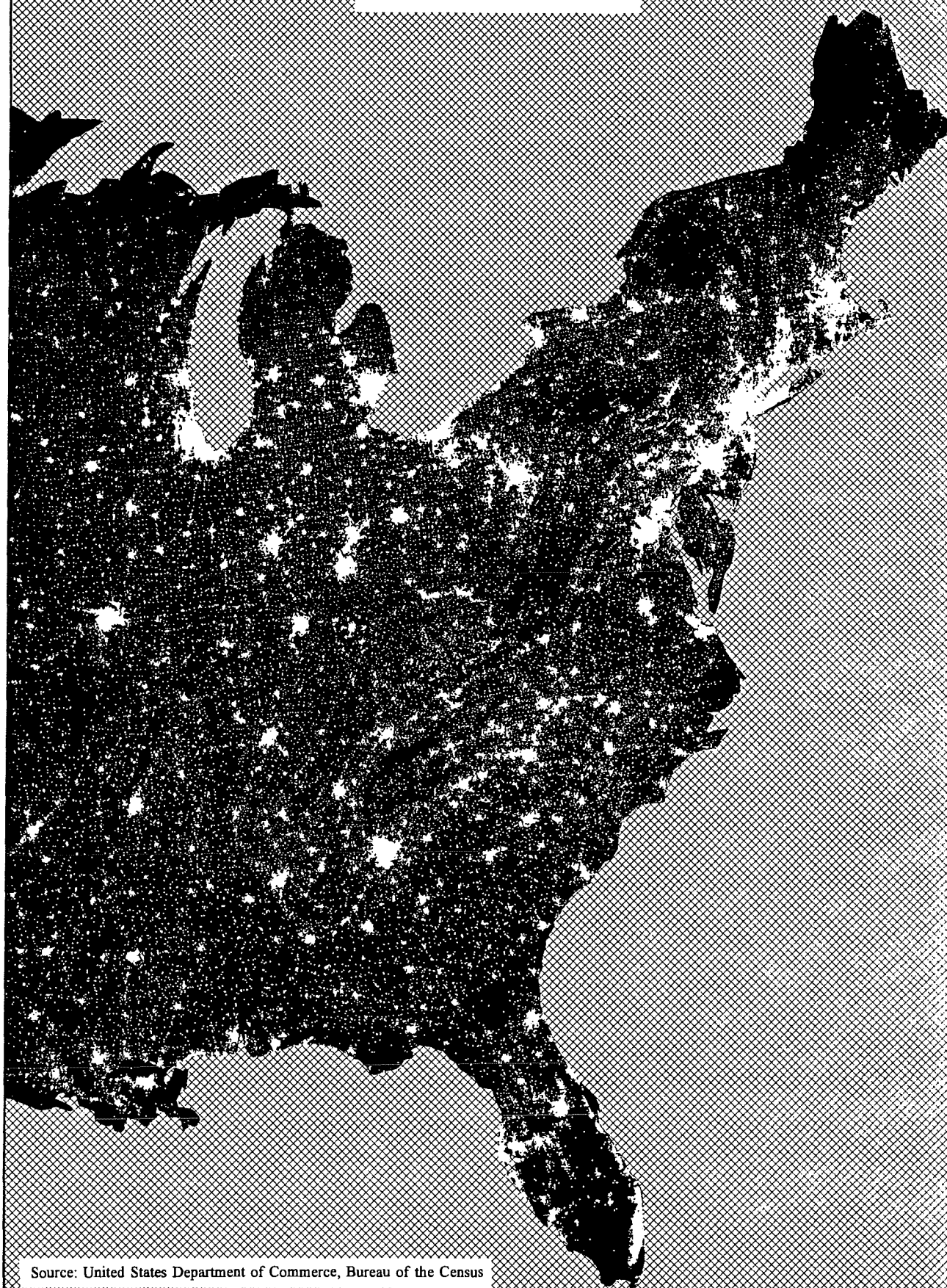
The ownership of this area sets it apart from other similar areas. Maine has the largest proportion of industrial forest land ownership of any state in the nation. Statewide, nearly 95 percent of the forest land is privately owned, with land management and pulp and paper companies owning and controlling a large portion of it. Most of the industrial forest land ownership is within the Commission's jurisdiction. Elsewhere in the country, areas which possess the values of Maine's wildlands (wood supply in combination with wildlife and high value recreation opportunities) are publicly owned. For example, in states like Idaho, the mountains and forest land are largely owned by the public and managed by the U.S. Forest Service and the Bureau of Land Management (62% of Idaho is federally owned, and an additional 5% is State owned). Nationwide, about 1/3 of the land (largely forest and rangeland) is publicly owned, while only an estimated 7.6% of Maine's forests are owned by the public (including Baxter State Park which accounts for one fourth of this public ownership). Most of the jurisdiction has been working forest since the early to mid 1800's. This private use has coexisted with a long tradition of public access that has enabled this area to also serve as a major recreational resource for the public. **This combination of public and private interests in Maine's wildlands makes their management especially challenging**, particularly when disputes arise involving competing public and private interests.

LOW DENSITY RESIDENT POPULATION

Maine's wildlands are one of the most lightly settled regions in the East. The present year-round population, according to the 1990 Census, is 11,449 in the 10.5 million acres

1980 POPULATION DISTRIBUTION IN THE EASTERN UNITED STATES

(One dot represents 1,000 people)



Source: United States Department of Commerce, Bureau of the Census

of LURC's jurisdiction. This means only 1% of Maine's population resides in one-half of the state's land area. This results in an average density of less than one person per square mile (see attached figure).

The distribution of this year-round population by area within the jurisdiction is as follows:

Aroostook Region	3,812
Central Region	3,902
Western Region	1,647
Eastern Region	1,544
Coastal Region	544

This population occupied 4,412 year round households in the unorganized territory in 1990.

According to the 1990 Census, the year-round population in the jurisdiction has considerably less income, is less formally educated, and is more middle-aged than Maine's population as a whole. For example, the median income of persons living in the unorganized territory was \$21,246 in 1990 versus \$27,896 for the state as a whole. Regarding education only 27% of the adults residing in the jurisdiction had at least some college education, while statewide the figure was 42% in 1990. Further, only 9% of the territory's adult residents were college graduates in 1990 compared to 19% statewide. Finally, the median age of wildland residents was 37 years compared with 34 for the state as a whole.

Residents of the jurisdiction work primarily outside of the jurisdiction. 83% of employed residents of the unorganized territory commute to work outside of the unorganized territory. One third of employed residents commute more than 30 minutes to work. In this respect, the settled portions of the unorganized territory, primarily the "fringe" area (adjacent to organized towns), functions as a very low density suburb, in which place of work is separated from place of living.

Further, only about 7% of the unorganized territory's residents are employed in the direct production of agricultural products and services; the operation, management and harvesting of timber; or in commercial fishing. However, another 22% are employed in manufacturing enterprises, many of which process raw materials from the jurisdiction (for further demographic and housing information see "Profile and Projections", Market Decisions, Inc., 1993).

SIGNIFICANCE

The Northern Forest Lands Study sums up the unique nature of the North Woods (which includes the entire LURC jurisdiction) with the following passage:

"The transitional spruce-fir and hardwood forest is a unique ecosystem not found elsewhere. It is a land covered by spruce-fir thickets and hardwood stands, interspersed with wetlands, bogs, rocky ridges and windblown mountaintops. It is littered with glacial erratics, carved up by lakes and rivers, and overshadowed by a few spectacular mountain ranges. It boasts a unique complement of wildlife species that have adapted to these forest conditions over millennia."

This unique combination of characteristics - close to urban populations - makes the wildlands a highly significant region for the people of Maine and the nation.

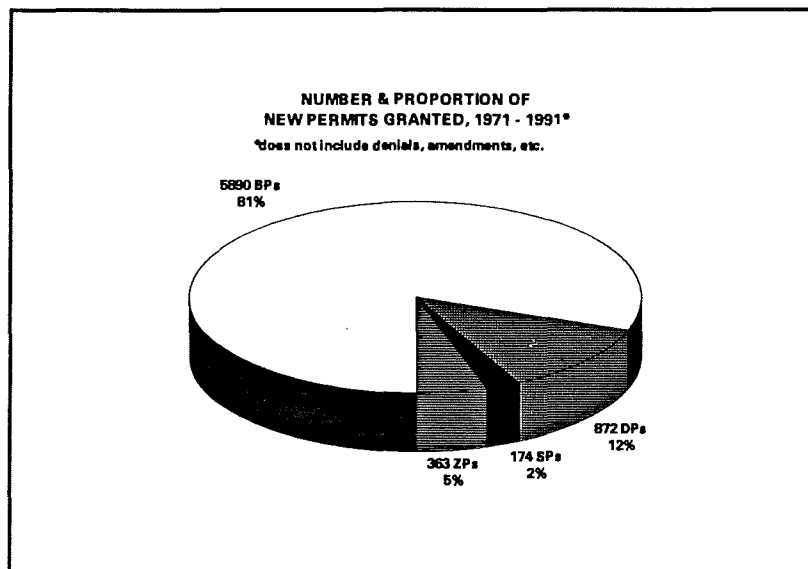
III. OVERVIEW OF CHANGES THAT HAVE OCCURRED SINCE LURC WAS ESTABLISHED

POPULATION

According to census information, the year-round population of the Commission's jurisdiction was 11,449 in 1990 up from 10,416 in 1970: a 10% increase. Some areas lost population (Aroostook) while others grew (central and western mountains). There is no current information on the seasonal population of the jurisdiction. However, in 1990 the number of seasonal homes outnumbered year-round dwellings by a factor of 2.2 to 1.

AMOUNT OF NEW DEVELOPMENT

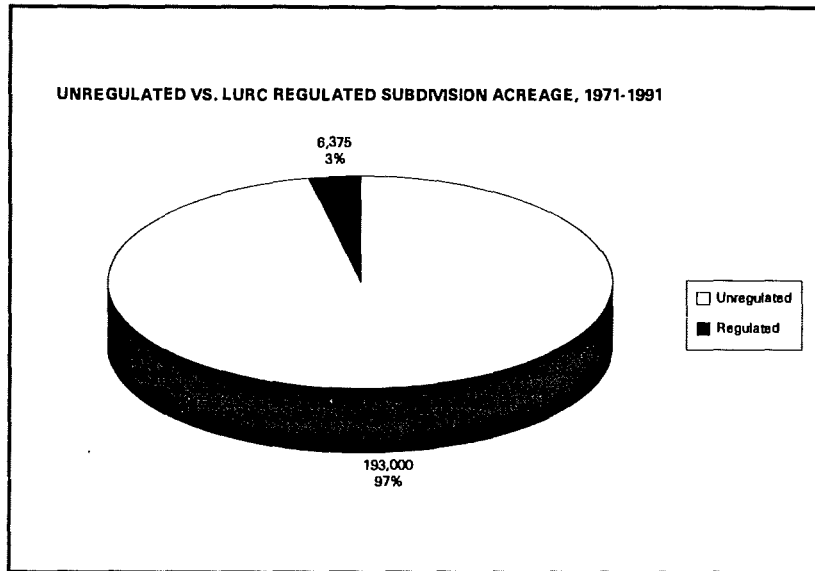
Between 1971 and 1991, LURC approved 6,936 permits for development and 363 zoning petitions for changes to development zones. Most of the permits approved were for residential buildings.



Residential Development:

Between 1971 and 1991, 4,982 new seasonal and permanent residences were approved. In 1970, there were between 8,000 and 11,350 single family dwellings in the jurisdiction, according to analysis of MDOT highway atlas maps and census information. Depending on whether the Census or MDOT count of residences is used as the 1970 baseline, these new units represent an increase of 44% to 62% for the period 1971 to 1991.

Subdivisions and Lot Creation: The 174 subdivision permits granted since LURC's inception resulted in the creation of about 1,800 new residential lots. These lots occupy an area of 6,375 acres. In addition, lots were created through large lot exemptions in the LURC law. These lots are estimated to occupy 193,000 acres.²



WHERE DEVELOPMENT HAS OCCURRED

Distribution Among Minor Civil Divisions

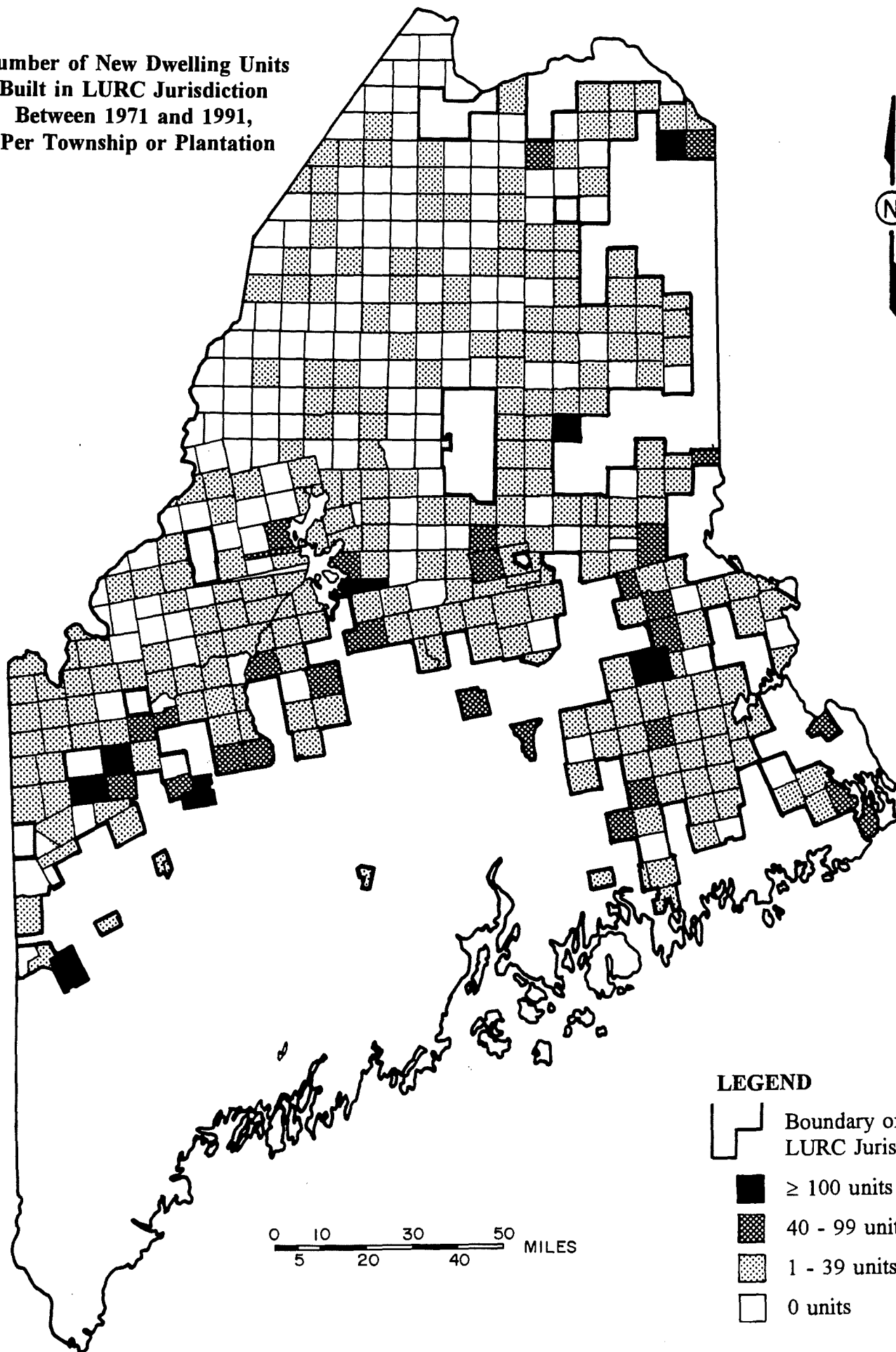
New residential development was unevenly distributed over the jurisdiction. More than 75% of the new dwelling units permitted between 1971 and 1991 were located in just 15% of the jurisdiction townships (see attached map).

The number of new dwelling units added since 1971 has varied widely among townships and plantations, from 0 to 297 units (Rangeley Plt. having the highest number of new residences). Eight Minor Civil Divisions (MCDs) had 100 or more units added, while 29 MCDs had 40 to 99 new units added between 1971 and 1991.

Although a majority of new residential development was located in the "fringe" of the jurisdiction (adjacent to an organized town), a significant amount of new development occurred in the interior areas, including over 1,200 residences and 500 approved subdivision lots.

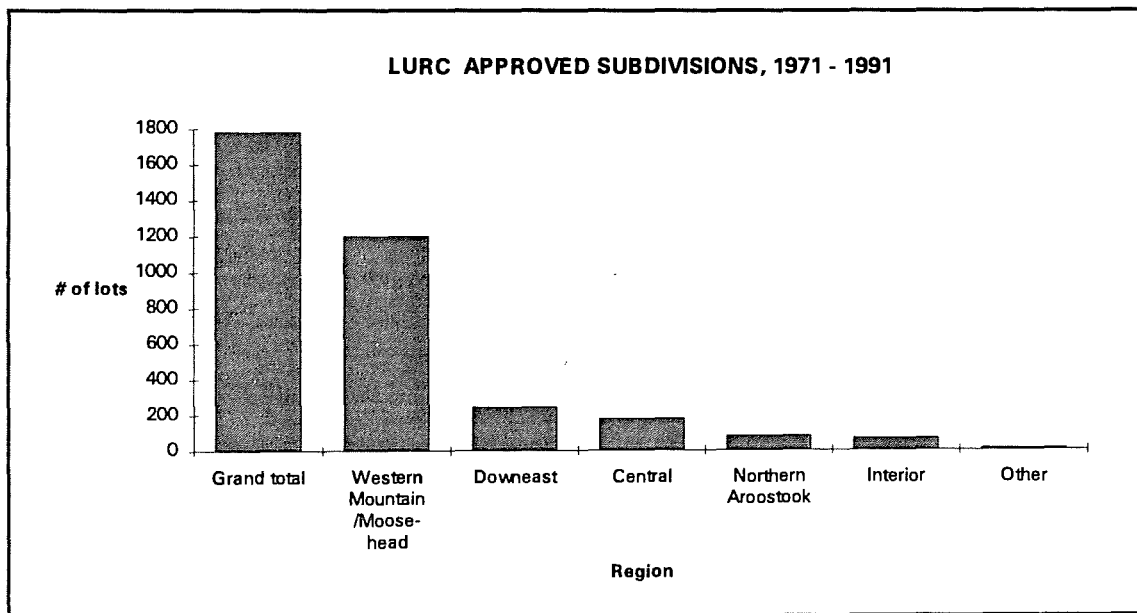
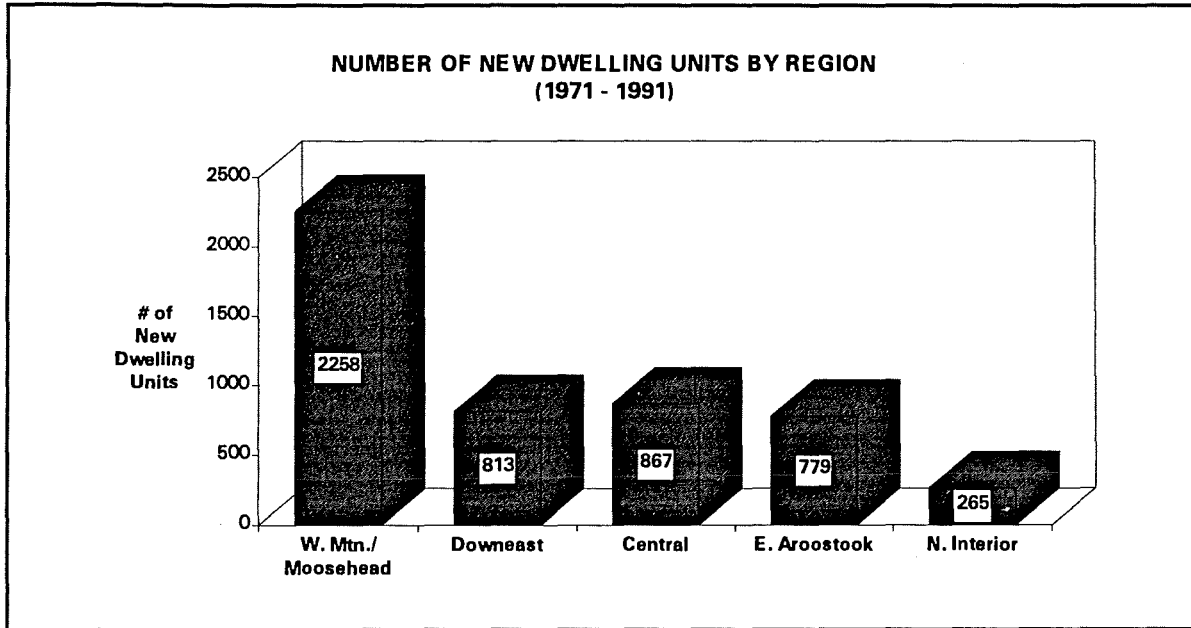
² Additional lots were created under the provision of the LURC law which allows two lots every five years from each parcel without LURC approval. No one knows the number or acreage of these lots.

**Number of New Dwelling Units
Built in LURC Jurisdiction
Between 1971 and 1991,
Per Township or Plantation**



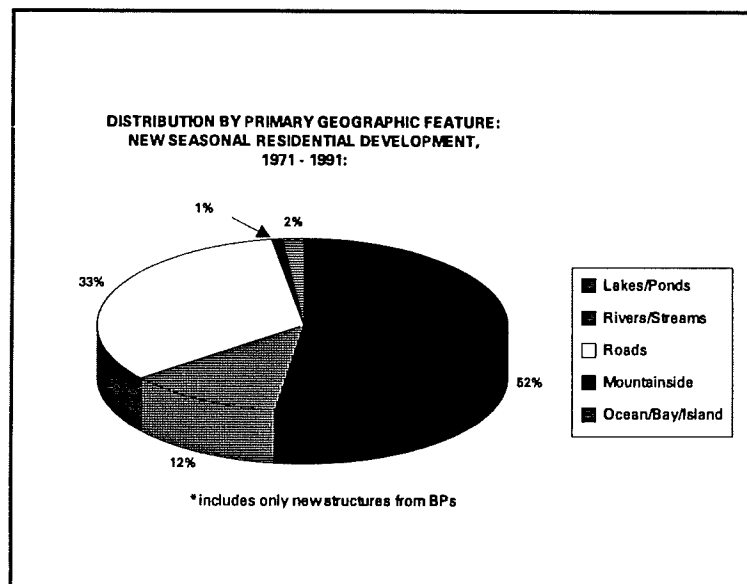
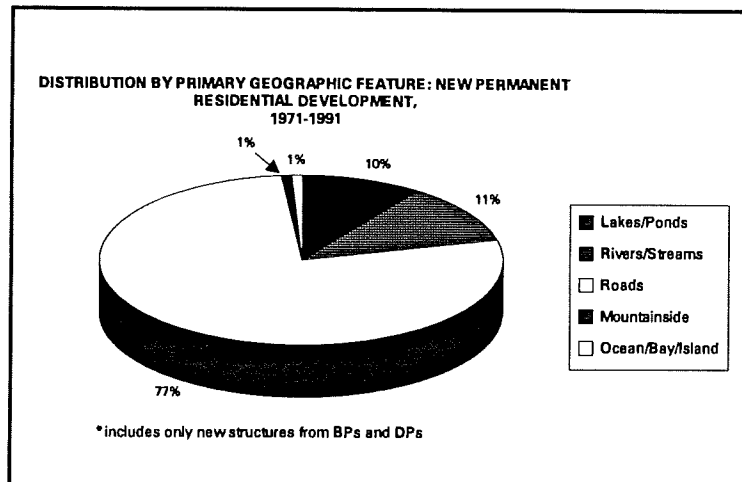
Distribution Among Regions

The Western Mountain/Moosehead Lake region of the jurisdiction experienced the most new development, accounting for 45% of the building permits granted. Fringe townships and plantations within this region absorbed 50% more new residential development than fringe townships and plantations in the rest of the jurisdiction (see also "Trends in New Residential Development in Maine's Unorganized Areas," Land & Water Associates, 1993). The number of approved subdivisions also varies by region.



Distribution of New Development by Geographic Feature

Most new permanent dwellings (77%) are located along roads, while most new seasonal dwellings (66%) are located near water features.



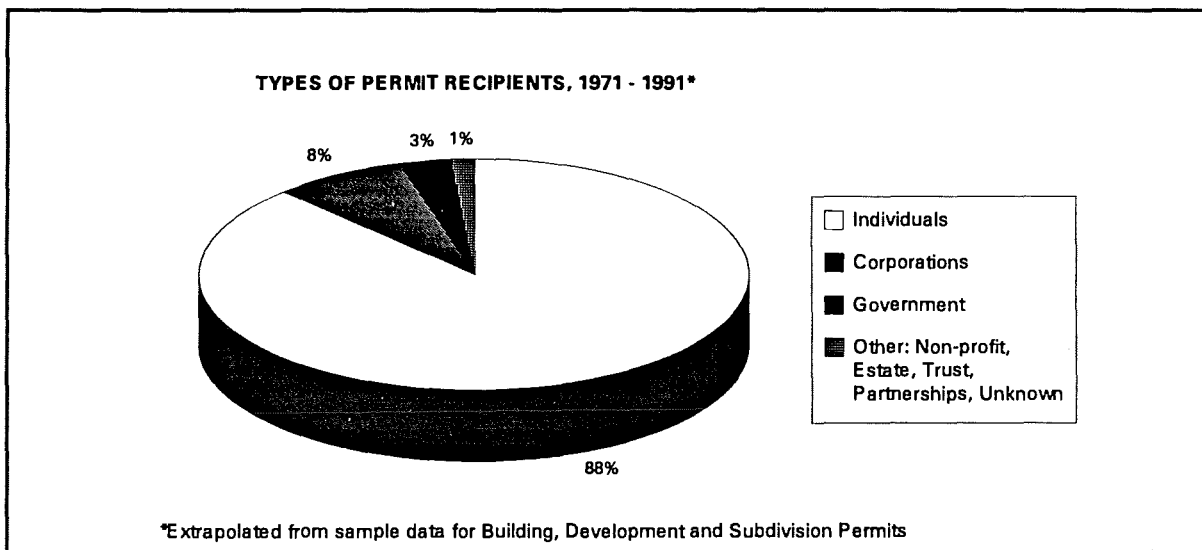
New lakefront residential development has concentrated on those lakes with the highest resource values. Since 1971, 53% of all new lakefront dwellings have been located on a Class 1A lake or pond (of statewide significance having two or more outstanding resource values). As a group, Class 1A lakes and ponds represent only 8% of all lakes.

Commercial and industrial development is also focussed near the water, with 46% of all the Development Permits (DPs) issued in riparian areas. For further discussion see "New Development in the Wildlands," Land & Water Associates, 1993.

WHO IS DEVELOPING THE WILDLANDS

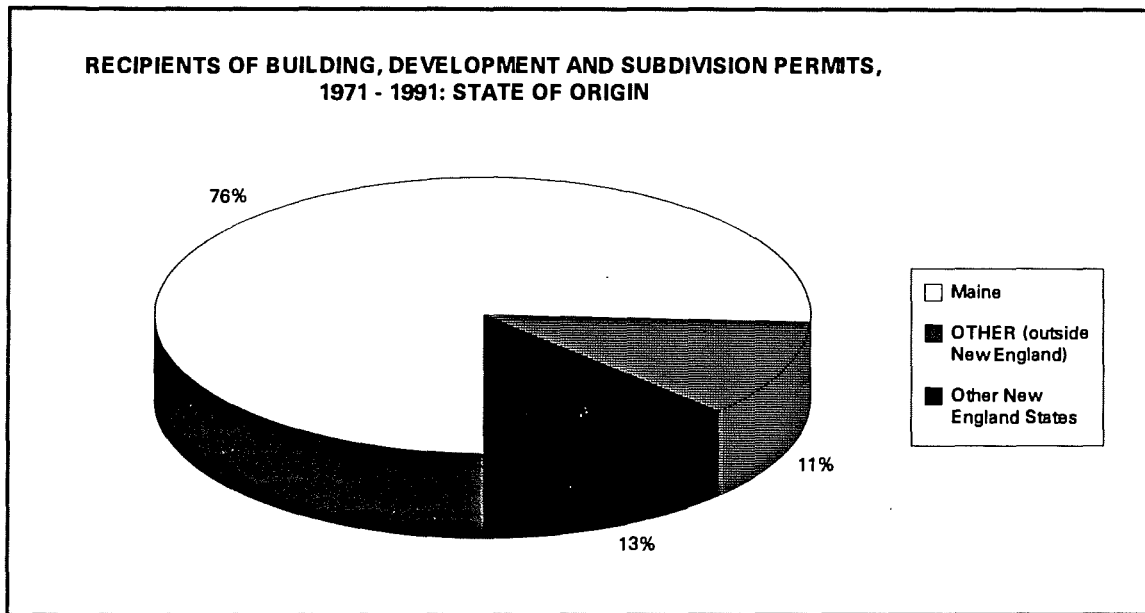
Type of Permit Recipients: Between 1971 and 1991, the group that was granted more permits than any other was individuals. Individuals accounted for:

- 96% of Building Permit recipients,
- 65% of Subdivision Permit recipients,
- 58% of Zoning Petition recipients, and
- 35% of Development Permit recipients.



Residence of Permit Recipients: Most development in LURC jurisdiction over the last twenty years has been by Maine residents, Maine corporations, or Maine governmental bodies (such as the Bureau of Parks and Recreation for boat ramps and campsites). Maine-based recipients accounted for:

- 78% of Building Permit recipients,
- 74% of Development Permit recipients,
- 73% of Subdivision Permit recipients, and



- 76% of Zoning Petition recipients.

Share of Maine Permit Recipients from Jurisdiction Counties: Recipients from within the LURC jurisdiction counties accounted for most of the Maine-based development activity. These recipients represent:

74% of Maine-based Building Permit recipients
 70% of the Maine-based Development Permits recipients
 80% of the Maine-based Subdivision Permits recipients
 90% of the Maine-based Zoning Petition recipients

Trends in the Ratio of Permits Granted to Maine vs. Out-of-State Entities: There has been no discernible trend toward a greater or lesser share of permits granted to Maine entities since 1971.

For a detailed analysis of who is developing the wildlands, see "Historical Demand for Development in the Wildlands", Land & Water Associates, 1993.

IV. DEVELOPMENT POLICIES

The legislature, in creating the Land Use Regulation Commission, placed a priority on protecting the timber, water, wildlife, and recreational resources of the wildlands. As the statute which created the Commission states it:

"The Legislature finds that it is desirable to extend principles of sound planning, zoning and subdivision control to the unorganized and deorganized townships of the State: To ... prevent inappropriate residential, recreational, commercial and industrial uses detrimental to the proper use or value of these areas; to prevent the intermixing of incompatible industrial, commercial, residential and recreational activities; ... to prevent the despoliation, pollution, and inappropriate use of the water in these areas; and to preserve ecological and natural values.

In addition, the Legislature declares it to be in the public interest ... to encourage the well planned and well managed multiple uses of land and resources and to encourage the appropriate use of these lands by the residents of Maine and visitors, in pursuit of outdoor recreation activities, including, but not limited to hunting, fishing, boating, hiking, and camping." (12 MRSA Chapter 206-A Section 681. Purpose and Scope - emphasis added and noting that "multiple use" is a term meaning management for wood, water, timber and wildlife).

The responsibility given to the Land Use Regulation Commission to regulate and manage land use within a 10.5 million acre jurisdiction encompassing many of the State's most vital natural resources is one that is unparalleled by any other state agency, with the possible exception of the Adirondack Park Agency in New York. This area also provides recreational opportunities which help support the State's number one industry, tourism, and the raw materials for one of the State's other most significant industries, the paper and wood products industry, which owns much of the land in the jurisdiction. In essence the Commission's charge is to manage land use in the jurisdiction to avoid conflicts between commercial timber management, recreation, and residential uses, while protecting ecological and natural values.

To fulfill the responsibilities specified in the legislation, the Commission's policies allow for "a reasonable range of development opportunities" in the jurisdiction, but not at the expense of forestry, wildlife habitat, fragile natural resources, or traditional recreational opportunities. When subject to Commission review, which is not always the case because of exemptions in the legislation (see below) "scattered" and "sprawling" patterns of development are discouraged. However, unlike most jurisdictions with planning and zoning responsibilities, the Commission does not routinely identify beforehand areas appropriate for future development. Instead it relies on a cruder approach, a case by case review of developers' proposals, to determine the appropriateness of development in a given location. This review relies heavily on the "adjacency" test which requires that proposed development be located "adjacent" to an existing

pattern of development. Adjacency has been interpreted to mean within one mile or, in some cases, further. This approach is in large part a holding pattern born of the enormity of LURC's task, and, until recently, the lack of definite information on resource conditions like soils. Once a locational decision has been made, wherever development is allowed, it must "fit...harmoniously into the existing natural environment" (Land Use Plan, pp. 71 - 73).

At the same time, the Legislature has established that certain activities are outside of the Commission's control. These include the creation of "large lots" (the definition of which has changed over time (12 M.R.S.A. §682[2])), and the regulation of forest management activities outside of protection districts and of road activities within management districts.

V. REGULATORY TOOLS

The tools granted to LURC by the Legislature are generally limited to regulatory ones, unlike municipalities which are afforded incentives as well as regulatory tools. These tools include a Comprehensive Land Use Plan and accompanying zoning (land use ordinance) and standards. LURC has adopted a **natural resource-based land use ordinance** that is prospective in its identification and protection of fragile natural resources and reactive in its accommodation of new development. The ordinance guides the location of new development through established subdistricts, and also requires a site-specific review of new development proposals. This is accomplished through a permit which is subject to site-specific standards to ensure proper siting, design, and construction relative to soils, wastewater disposal, and erosion control.

To guide the location of new development, the ordinance:

1. establishes protective zoning boundaries around fragile and other valuable natural resources and prohibits incompatible development within these areas (18% of the jurisdiction's land mass is in **protection districts**). In the most sensitive of these protection subdistricts, such as wetlands and fragile soil-and-geology areas, virtually all development is prohibited. In most others, such as shorelands along great ponds and streams, limited development, including single family dwellings, is allowed.
2. in general, defines **development subdistricts** which are tightly drawn around existing developed lands (2% of the jurisdiction's land mass is zoned for development). While similar new development is permitted within the bounds of these districts, there is often little vacant, developable land within them.
3. identifies a vast **general management subdistrict** that includes all lands not in protection or development districts (80% of the jurisdiction is in management districts). Subdivisions, as defined by statute, are prohibited within the management district. Single- and two-family dwellings and commercial sporting camps are allowed.
4. accommodates new subdivisions and development principally by reviewing, case-by-case, **landowners' petitions to rezone** for development portions of the management and protection subdistricts. Three general criteria are employed to judge zoning petitions:
 - Consistency with the Comprehensive Land Use Plan, for which a primary measure is "adjacency" to "existing patterns of development." Adjacency generally means within one mile of existing development.

- Demonstrated need for the development in the community or area.
- No undue adverse effect on existing uses or resources.

On the one hand, this strategy of case-by-case review of zoning petitions in association with new development gives the Commission, in theory, a high level of control over the expansion of developed areas in the jurisdiction. On the other hand, the Commission has developed no specific measures, beyond the "adjacency" criterion, to direct new development or to limit zoning petitions to areas of the wildlands predetermined to be most suitable for growth.

These basic tools--relying on prospective zoning for the protection of fragile resources, on a general rule of adjacency to accommodate new development without sprawl, and on site reviews and permits--have been in place for most of the Commission's history. In recent years there has been a very selective movement by the Commission toward prospective planning for development: that is, for identifying, in advance, potentially acceptable locations for development. For example:

- **Lake Management Classes:** Lakes were assessed and classified based on their composite values. Those lakes considered potentially suitable for development (management class 3) have been identified, while certain other lakes of high value have been given additional protection.
- **Lake Concept Plans:** The Commission allows the development of Lake Concept Plans, which are, in effect, contract zoning agreements in which large landowners can submit for approval a comprehensive plan for land adjacent to lakes that designates different portions for development and conservation in advance of undertaking the development.

This allows, through a negotiated agreement between the landowner and LURC with public involvement, some development along the lakefront in return for designated conservation areas. The plan can also incorporate areas for, or agreements as to, forest management practices, recreation, public access or other matters.

VI. THE NET EFFECTS OF COMMISSION AND LEGISLATIVE POLICIES

1. **Selected natural resources have been substantially protected from incompatible development.** These include deer wintering areas, high mountain areas, Class A rivers, the relatively few recreational trails that are zoned for protection, wetlands, remote ponds, and some high value lakes. At the same time, technologies and circumstances change over time and what was originally thought to be highly protective language may, at a later date, be read to accommodate potentially intensive development. (For example, use of the Planned Unit Development Subdistrict is currently being pursued to allow consideration of a large windmill electric generation project in areas currently designated as Mountain Area Protection Subdistricts.)

2. **New development has been accommodated.** As stated more fully in the preceding section on development, from mid-1972 when the Commission began its operations, through 1991, the Commission issued:

- 4,982 building permits for new single family dwellings (2,411, or 48%, for year-round dwellings, and 2,569, or 52%, for seasonal dwellings); and
- 1,325 permits for development other than single family homes.

It also has approved approximately 156 zoning petitions (not including amendments to zoning petitions) to allow new development. 144 subdivisions were also approved by the Commission encompassing 6,375 acres and creating 1,784 lots and 208 condominium units.

3. **Proposed development that gets to the point of decision is almost always approved.** This is, in part, due to guidance given by staff to applicants as to acceptable forms of development and required standards so that, once submitted, applications are often in good shape. During the busiest period of LURC's history, 1985 to 1992, 97% of building permit applications, 95% of development permit applications, 93% of subdivision permit applications, and 90% of zoning petitions were approved in their entirety. At the same time, it should be noted that some potential applications are never completed because applicants come to realize prior to submission that they are unlikely to be approved.
4. **The Commission's land use standards and design criteria generally ensure that development will fit within and/or ameliorate site limitations.** That is, the question aside of whether a proposed development is suitably located within the jurisdiction, site-specific concerns, such as sewage disposal and erosion control, are addressed by various performance standards. At the same time, it is

recognized that the Commission presently does not have comprehensive performance standards of its own. Many of the standards applied to development in the unorganized territory are borrowed from elsewhere, such as the Department of Environmental Protection. These standards, oriented to urban and suburban settings, may not always be appropriate for the design of subdivisions or developments in the wildlands.

5. **The "adjacency" criterion has concentrated major development generally within one mile of existing patterns of development.** The concept of "adjacency" has been central to the Commission's efforts to guide the location of development for 20 years. It has been key to the workability of the Commission's "reactive" approach to considering applications for development. However, as the pressure for development in the jurisdiction built up during the 1980's, it became evident that, by itself, adjacency may not be adequate to fulfill the Commission's purpose: that is, allowing for "a reasonable range of development opportunities," but not at the expense of the natural resources and resource-based economy of the wildlands. For example, as a result both of old settlements and of the large number of development applications during the last twenty years, there are now many existing nodes of development, and the use of the adjacency rule as the sole criterion for directing growth sanctions a long-term, "leapfrogging" effect. Each new development potentially becomes the existing development from which "adjacency" for the next development can be measured.
6. **Further, while "adjacency" has tended to concentrate major development, a trickle of new development is evident throughout the jurisdiction.** Under the statute governing the Commission, landowners can break off two lots every five years (provided the third lot is exempt due to size and location) and construction on the lots requires only a building permit. The extent to which this is done varies by landowner and his or her need or predisposition to convert land to other use.
7. **Loopholes exist which enable development to take place without LURC's review and in areas where development would not otherwise be allowed.** The "2 in 5" rule which allows the creation of two lots from every parcel every five years, and the large lot exemption have been extensively used to circumvent the LURC subdivision review process. Providing a loophole for large lot subdivisions while tightly controlling the location and design of subdivisions on smaller lots unavoidably creates an incentive for subdivisions that are exempt from LURC's review. As a result, unregulated subdivisions have been common in the wildlands, with most located in the General Management Subdistrict or the Great Ponds Protection Subdistrict (note that large lot subdivisions are no longer exempt from review in the Great Pond Protection Subdistrict).

- Compared to the 6,375 acres of land subdivided under LURC oversight and review between 1971 and 1991, approximately 193,000 acres has been subdivided through large lot exemptions. The amount of land subdivided under the "2 in 5" rule is unknown.
- Thus, conservatively, only 3% of the land subdivided in the jurisdiction during the last twenty years has been reviewed and permitted by LURC, with 97% of the acreage being divided through exemptions. More than twice as many lots have been created under exemptions to subdivision regulations as those approved under LURC review (see #12 below and accompanying reference for further information).

8. **Requiring subdivisions to meet "suburban" design standards leads to developments that are more intensive than what might otherwise be acceptable to the applicant.** To the extent that a landowner may have wanted to create lots simply for primitive camps, he or she still is subject to the same standards that would accommodate subdivisions for contemporary second home or year-round housing development. While it ensures that all subdivisions are reviewed for the full impact that may result if the subdivision is "upgraded" over time, this approach not only creates an incentive for some landowners to look for loopholes to avoid review, but in addition, the "one size fits all" approach to subdivision regulation in the wildlands requires a design and intensity of use that is not desired by some applicants or camp buyers, or appropriate for every location.
9. Although most completed applications for development ultimately are approved, **the process has at times caused applicants uncertainty.** This is especially true of developments that also require zoning changes. The criteria for zoning changes are unclear in the minds of some applicants. By their nature, actions on requests for zoning changes are discretionary with the Commission; there is no obligation to approve a rezoning. This contrasts with actions on subdivision applications and development permits, which should be according to fairly specific and objective criteria. But the Commission's process intertwines petitions for rezonings with applications for subdivision and major development permits. This is inherent in its case-by-case approach to new development. As a result, the naturally subjective rezoning decision is easily confused with what ought to be a reasonably objective review of the specific subdivision or development itself.

10. **The development which has taken place has impacted the backcountry character and recreational values of the wildlands.** The qualities of the jurisdiction that are special and unique to Maine and the Northeast are being lost through incremental and scattered development (for a more extensive discussion see "Impacts of Development on the Traditional Character and Recreational Uses of the LURC Jurisdiction," Land & Water Associates, 1994).

- Since the mid-1970's, an estimated 11,000 miles of new logging roads have been built in the jurisdiction. This has opened up relatively remote areas to unprecedented recreational use, and at the same time has provided the access needed to develop high demand, high value lakeshore properties.
- Between 1971 and 1991, residential development increased between 42% and 62% in the wildlands, including new residential development in 119 townships which had no improved roads, and 1,226 new residential building permits, and 508 new subdivision lots in the "interior" (non-fringe) area of the jurisdiction.
- Throughout the jurisdiction, land adjacent to lakes, rivers, and streams absorbed the majority of the new development, accounting for 72.5% of the new approved subdivision lots and 66% of new seasonal residential development. Furthermore, this development is concentrating in areas with the highest public resource values. Class IA lakes comprise only 8% of all lakes in the jurisdiction, yet they attracted 53% of the lakeshore development.
- Division of large tracts of land into 40+ acre "exempt" lots represents a significant conversion from large lot owners committed to timber production and public recreational use, to small lot owners less inclined to allow public use for recreation. Since 1985, over 1,200 of these exempt lots were created encompassing 106,000 acres, most in the General Management and Great Pond Protection subdistricts. This does not include another 93,000 acres which was divided into 500 acre parcels, and which may well be further divided in the future if current trends continue..
- Use trends documented for the North Maine Woods by the Bureau of Parks and Recreation show that recreational use is increasing at a rate that exceeds the growth in population. This is due, in part, to the improved access created by the dramatic expansion of the logging road network. In some areas with particularly high demand, the use capacity has been reached or exceeded. Recreationists compete for spring and summer campsites in the public reserve lands at Gardner-Deboullie lakes area. Reservations must be made by January to assure overnight use in the summer at some areas of Baxter State Park, and day-use quickly reaches its capacity (parking areas are generally filled by 8:00

AM); canoeists in the Allagash River plan their day around the competition for prime campsites.

- **The Maine woods are becoming more like the many other developed recreation areas common elsewhere in the eastern U.S. and hence are losing their essential uniqueness and semi-wilderness value. As the Maine woods begin to receive the level and type of use similar to other recreational areas, there is a need for the Commission to respond to those recreational pressures and establish new standards to properly manage the uses.**

11. **The development which has taken place has affected the fish and wildlife of the jurisdiction.** The fish and wildlife habitat offered by the wildlands is unique in the eastern United States for its diversity, big woods character and the species it supports.

Because of its bedrock geology, glacial history and geographic location in the transition between the hardwood and boreal forests, Maine's wildlands offer a rich mix of forest types, mountains, hills, uplands, wetlands of many types, flats, lakes, ponds, rivers and streams. This diversity alone sets the LURC jurisdiction apart from other areas in the east. Further, no other area east of the Mississippi offers as large a contiguous area of unbroken and unsettled forestland habitat. No other area in the east has golden eagles or blueback trout (a remnant population of arctic char stranded by the last ice age), Canada Lynx and many other lesser known but rare species, e.g., yellow nosed vole.

No other area in the east has as large a population of moose, pine marten, fisher, otter, or black bear.

This exceptional fish and wildlife resource has been affected by:

- conversion of wildlife habitat to other incompatible uses;
- fragmentation of habitat by roads and development; and
- increased human disturbance of animal populations and increased levels of hunting, fishing and trapping in previously remote areas.

Regarding these points:

- At least 60,000 acres of forested habitat³ have been converted directly to other uses. Further, much of the development which has occurred has taken place in the riparian areas (i.e., 43% of all building permits, 66% of seasonal residence building permits, and 72% of approved subdivisions). These are some of the most important wildlife habitats in the jurisdiction for feeding, shelter, nesting, and travel, and they are used by a wide variety of species. Therefore, the indirect effects of these habitat losses are undoubtedly much greater than the 60,000 acres directly affected.
- Fragmentation of habitat, created by major roads running through forest habitats and residential development which interrupts riparian travel corridors, works to the disadvantage of a number of species including: furbearers, deer and smaller animals for whom roads become barriers or areas where they are exposed to increased predation.
- Increased fishing pressure resulting from improved access has reduced fish populations and the size of fish in many of the lakes and ponds in the wildlands.
- Increased hunting, trapping and fishing pressure has required ever tightening regulations by the Department of Inland Fisheries and Wildlife to prevent over harvesting. This is particularly true for species such as black bear, landlocked salmon, trout, pine marten and bobcat. This increased pressure has even worked to the disadvantage of some species which are legally protected, e.g., Canada lynx, because they are inadvertently caught in traps set for other species.
- Fragmentation and increased levels of human activity and development may impair the prospects for recovery of certain sensitive species such as lynx and golden eagles.

In short, the special wildlife habitat values of the jurisdiction are being eroded away and it is becoming more like many other partially developed wooded areas. This trend is particularly important for the future of the wildlands. For now access to almost every corner of the jurisdiction has been improved and landowners are under increasing pressure to develop lands with high value for

³At least 11,000 miles of new road were built during the 1970s and over 6,000 acres of subdivisions were approved by LURC during the 1970s and 80s. The figure of 60,000 acres is conservative as no one knows how many miles of new road were built during the 1980s. Further, this figure does not include unregulated subdivisions (97% of the total by acreage) or exempt lots created under the 2 in 5 rule.

recreation. Thus, the erosion of the jurisdiction's wildlife values is likely to at least continue unabated and may, in fact, increase.

12. **The development which has taken place has affected the timber productivity of the wildlands.** Fragmentation in ownership which is occurring throughout the jurisdiction, most of which is accomplished through statutory loopholes outside of LURC's control and by large landowners selling portions of their holdings, is removing land from commercial forest management (for a more extensive discussion see "Impacts of Development in the LURC Jurisdiction on Timber Production and the State's Forest Manufacturing Economy," Land & Water Associates, 1994).

- A number of studies of Maine forest landowner management objectives indicate that less than half of the owners of small parcels of land (less than 500 acres) manage their lands for commercial wood production.
- Since LURC was established, it is estimated that between 56,000 and 105,000 acres of forest land has been removed from commercial forest management. This estimate is conservative as it does not reflect removals due to "2 in 5" lot subdivisions. This loss in acreage is worth between \$13 million to \$24 million annually to the Maine economy when contributing to forest product manufacturing; and considering multiplier effects, it is worth ~~\$26~~ ¹⁶ million to \$48 million each year.
- What is especially unfortunate about this loss in the commercial forest land base and the resulting potential loss to the Maine economy is the fact that this loss is largely unnecessary, and is occurring as a result of subdivision which takes place outside of LURC review in areas where subdivisions would not generally be allowed (in Management and Great Ponds Protection districts). It is a loss which might have been significantly less if the loopholes had not presented the opportunity for these subdivisions to occur without LURC review. This trend is counter to LURC's mandate to protect the essential values of the unorganized areas, and it is occurring outside of LURC's control.

13. **The impacts of development on the LURC jurisdiction values are cumulative and disproportionately concentrated in areas which have the highest public values (high value recreational waterbodies and riparian areas important to wildlife).** In addition, the location of scattered development along highly visible "edges" (lake and river shorelands, and roadsides) disproportionately diminishes the "semi-wilderness" character of the jurisdiction.

VII. POTENTIAL FOR GROWTH AND DEVELOPMENT

FACTORS INFLUENCING THE AMOUNT OF DEVELOPMENT FROM 1971-1991

The primary factors which have served to limit the amount of development include not only LURC's policies but also:

- the internal policies of the landowners who have, by and large, not been favorably inclined toward development;
- market factors; and
- tax penalties for development of forest land.

These other factors may, in total, have been as important as LURC's policies in determining when, where, and how much development occurs in the wildlands.

For the most part, large landowners in the jurisdiction have, in the past, not pursued development or have only allowed minor amounts of development to occur. For example, the old Great Northern Paper Co. lands (now owned by Bowater) have generally been unavailable for new leases and the Pingree Heirs have only allowed scattered leases on their holdings. **As a result, the amount of development that actually occurred is less than what could have occurred had the demand for development been greater, or landowner's inclinations more strongly oriented to development.**

However, corporate or family policies are subject to change over time. With the pulp and paper companies and other large landowners under increasing economic pressures and with changing corporate objectives, there is likely to be increased pressure to generate cash by selling developable land at \$10,000 - \$20,000 or more per acre, rather than growing and harvesting trees with returns of only a few dollars per acre per year.

In addition, demographics, together with changes in recreational preferences and improvements in the economy, will increase the demand for residential and recreational lots substantially.

In commenting on these and other factors which have protected Maine's wildlands in the past, the Northern Forest Lands Council stated in its recent report, *"The conditions which up to now have conserved the Northern Forest can no longer insure its perpetuation. The forces for change and current problems . . . may be stronger or weaker depending on economic cycles, but over the long run they will bring about change that, if left to proceed on its own, is likely to damage both the forest and the people who live here."*

PROJECTED HOUSING DEMAND

Year-Round Housing Demand to the Year 2000

According to the Census, from 1980 to 1990, the number of households in the unorganized territory increased from 3,826 to 4,412, or 15%. The number of year-round housing units in the unorganized territory increased by 20%, or 863 units. The growth was uneven across LURC's jurisdiction; it was lowest in Aroostook County and highest in the western mountains area.

The rate of growth in year-round households living in the unorganized territory was close to the rate in Maine as a whole: 15% in the unorganized territory vs. 18% statewide between 1980 and 1990. Statewide, it is generally believed that the rate of growth in year-round households will slow over the next ten years. There are several reasons:

- Three years of a recessionary economy has slowed and, at least temporarily, reversed the trend of more households moving into, rather than out of, Maine.
- Structural change in the defense sector of the economy will lead to a loss of jobs that will be only slowly made up by other sectors.
- As the "baby boom" generation fully enters middle age, the "baby bust" generation is beginning to form its households, but in smaller numbers.
- Much of the growth in households nationally and in Maine during the last 20 years has been associated with a dramatic reduction in average household size. Average household size probably will continue to shrink somewhat, but only slowly before leveling off.

As a result, a study by Market Decisions projects a rate of increase in households statewide of perhaps 1% per year (higher in southern Maine, lower in northern Maine), compared with an average annual rate of 1.65% during the 1980's. **A reasonable projection of growth in year-round households in the unorganized territory between 1990 and 2000 is 7% to 10%, or approximately 300 to 450 net new households.**

Seasonal Housing Demand to the Year 2000

During the 1990's, there will be several forces driving new demand for second homes:

The aging of the region's baby boom households. This alone, with no other in-migration to the region, will contribute to a notable increase in demand for seasonal homes.

Price and availability. Rural interior lands and houses are less expensive and more available than coastal land and houses.

Accessibility. The improvement of rural roads and the conversion of logging roads to public use as access to remote areas will open new interior lands to development in the future.

Increased leisure concern. For more and more families, leisure is replacing work as the primary concern. This will expand interest in vacation homes.

On the other hand, there are trends that will tend to dampen second home growth.

The weakness of the regional economy. Unlike the 1980's, New England is expected to increase its jobs and income at a slower pace than the rest of the country.

Local economic weakness. The closing of Loring Air Force Base is expected to reduce jobs and income in Aroostook County by 20%. Because much of the demand for seasonal homes in the unorganized territory comes from relatively near by, the loss of population in Aroostook County will reduce demand for seasonal homes in that area.

Changing vacation patterns. Americans work more hours today than 20 years ago. Time is at a premium. As a result, vacation patterns are changing. People take shorter, more frequent trips. This pattern should increase demand for seasonal homes near job centers, in places suitable for "the long weekend."

Higher gas prices. Gasoline, adjusted for inflation, was at low prices in the 1980's. In Maine and nationally, tax increases have been passed, and more increases may come in the future. This may affect the viability of remote seasonal home locations.

Most of the seasonal home development in the jurisdiction in the 1980's and 1990's is attributed to demand from within Maine and Massachusetts. Based on past trends, and projected demographic changes in this primary market area adjusted to account for the above mentioned factors, **it has been estimated that the total number of new seasonal units to be expected within the jurisdiction over ten years will be between 2,600 and 3,000 (Market Decisions, Inc).** This represents a 23% to 27% increase over 1990, similar to the 25% rate of growth during the 1980's.

Total Projected Housing Demand to the Year 2000

The number of new seasonal and year-round homes expected to be built in the jurisdiction during the 1990-2000 decade has been projected at between 2900 and 3450 units. This amounts to an annual increase of 290 to 345 new homes, which is roughly equivalent to the rate of growth and development experienced in the 1980's when an average of 300 to 310 new residences were added annually.

For a detailed analysis of current and projected housing demand see attached supporting information and "Profile and Projections," a report to LURC by Market Decisions, Inc., 1993.

SUPPORTING INFORMATION AND ANALYSIS

SUPPORTING INFORMATION AND ANALYSES

GROWTH ACCORDING TO THE CENSUS

Population

Growth in year-round population in the jurisdiction as a whole, as it is defined today, on average has been slow: about 0.5% per year over the last 20 years. The present year-round population is 11,449, up less than 2% over 1980 (when the population was 11,266) and 10% over 1970 (when the population was 10,416).

By region, rates of growth in the jurisdiction's year-round population varied widely:

- Aroostook declined by 16% from 1970-90;
- The Central Mountains region (Penobscot, Piscataquis, and Somerset Counties) grew by 30% from 1970-90;
- The Western Mountains region (Oxford and Franklin Counties) grew by 47% from 1970-90; and
- The Eastern/Coastal region (Washington, Hancock, Knox, Lincoln, Sagadahoc and Kennebec Counties) grew by 19% from 1970-90.

Year-round Population Change, 1970 - 1990 LURC Jurisdiction, as Defined in 1990

Region	1970	1980	% Ch. 1970-80	1990	% Ch. 1980-90	% Ch. 1970-90	Av. Ann. % Ch. 1970-90
Aroostook	4,535	4,444	- 2.0%	3,812	-14.2%	-15.9%	- 0.9%
Central	3,009	3,379	+12.3%	3,902	+15.5%	+29.7%	+ 1.3%
Western	1,120	1,447	+29.2%	1,647	+13.8%	+47.1%	+ 1.9%
Eastern/Coastal	1,752	1,996	+13.9%	2,088	+ 4.6%	+19.2%	+ 0.8%
TOTAL	10,416	11,266	+ 8.2%	11,449	+ 1.6%	+ 9.9%	+ 0.5%

Notes: Central = jurisdiction within Penobscot, Piscataquis, Somerset counties

Western = jurisdiction within Oxford, Franklin counties

Eastern/Coastal = jurisdiction within Washington, Hancock, Knox, Lincoln, Sagadahoc, and Kennebec counties

Source: U.S. Census; Market Decisions, Inc.

Households and Housing

- There were 4,412 year-round households and 5,085 year-round dwellings in the unorganized territory as defined in 1990.
- 43% of the year-round households are living in dwellings built since 1970.
- 53% of the year-round households moved into their present homes during the 1980's; 75% moved into their present homes since 1970.
- Seasonal homes outnumber year-round homes 2.2 to 1.

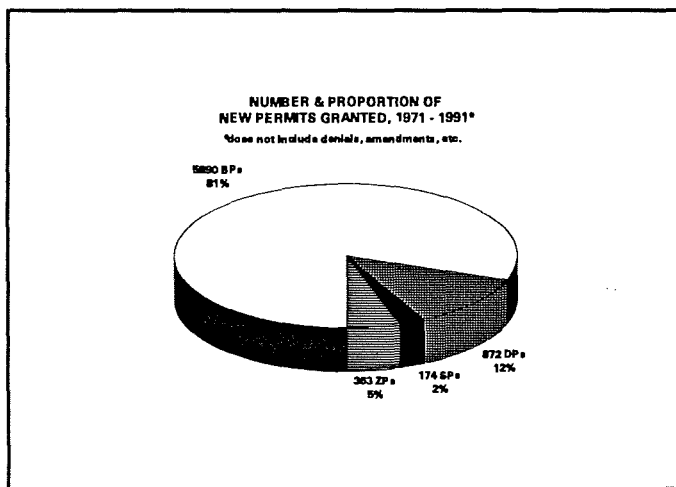
GROWTH ACCORDING TO LURC DATA

The following section quantifies, based on information from LURC's files: 1) how much development has occurred in the wildlands; 2) where it is located; and 3) who is responsible for it. This information is based on a mix of sources from LURC's files. These include primarily counts of different types of permits issued and samples of each permit type for determining location characteristics and characteristics of permit applicants.

How Much Development Has Taken Place

Overview

Between 1971 and 1991, LURC approved 6,936 permits for various types of development and 363 zoning petitions for changes to development zones.



Eighty-one percent of the permits approved were for building permits (BPs), 12% were development permits (DPs), 2% were subdivision permits, and 5% were zoning petitions (ZPs - a permit to allow subdivision or development in a zone in which this is not generally allowed).

Subdivisions and Lot Creation

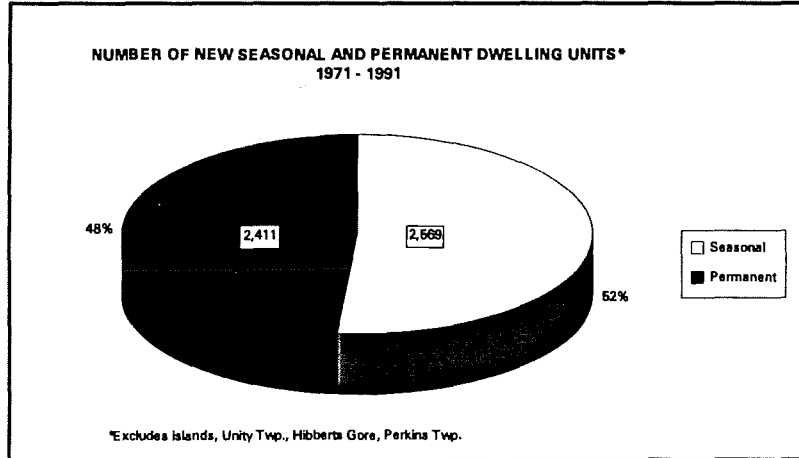
Between 1971 and 1991, LURC approved 174 subdivision permits. These permits resulted in the creation of about 1,800 new residential lots occupying an area of 6,375 acres.

In addition to these LURC approved lots, additional lots were created through the large lot exemptions in the LURC law. These lots are estimated to occupy 193,000 acres or 97% of all acreage subdivided in the jurisdiction.

Additional lots were created under the provision of the LURC law which allows two lots every five years from each parcel without LURC approval. No one knows the number or acreage of these lots.

Residential Development

Between 1971 and 1991, there was an increase in residential development in the LURC wildlands ranging from an estimated 44% to 62%. The 44% increase is derived using US Census figures for 1970 housing and LURC permit approvals for new development since 1970; the 62% increase is derived using a count of single family dwellings according to MDOT highway atlas maps. In 1970 there were approximately 8,000 residential dwelling units in the LURC jurisdiction, based on analysis of Maine DOT Highway Atlas inventories; whereas Census figures indicate approximately 11,350 units.⁴



New residential development is approximately evenly split between seasonal and permanent homes.

⁴ Possible explanations for the difference: MDOT undercounted housing and did not include sporting camps, condos, and commercially available rental units, whereas the Census does. In addition, the MDOT figures do not include coastal islands (Monhegan and Matinicus), Unity Twp, Hobbets Gore, or Perkins Twp.

Where Development Has Occurred

Distribution Among Minor Civil Divisions

The number of new dwelling units added since 1971 per MCD varies widely, from 0 to 297 units (Rangely Plt.).

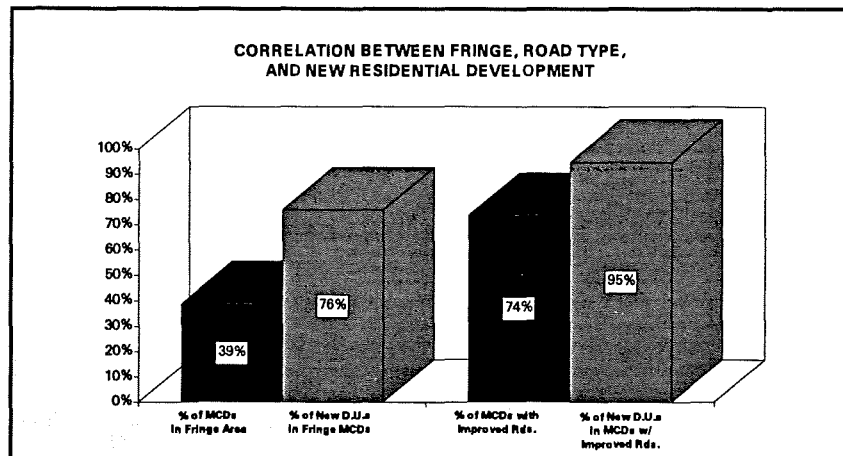
- 8 MCD's had 100 or more units added since 1971.
- 29 MCD's had 40 to 99 new units added since 1971.

Concentration of Residential Development Among Minor Civil Divisions: Number of MCD's by Level of New Residential Development (based on permits granted 1971-1991)								
Level of New Development (# new dwelling units)	Whole Jurisdiction				Fringe Area ¹			
	MCD's		Dwellings		MCD's		# D.U.	
	#	%	#	%	#	%	#	%
Greater than 100 units	8	1.7	1,252	24.8	8	1.7	1,252	24.8
40 - 99 units	29	6.2	1,700	33.4	22	4.8	1,283	25.4
20 - 39 units	32	6.9	868	17.2	24	5.2	658	13.0
5 - 19 units	94	20.3	953	18.9	54	11.7	538	10.7
1 - 4 units	140	30.2	282	5.6	40	8.6	91	1.8
0 units	161	34.8	0	0	31	6.7	0	0
Totals ¹	463	100.0	5,048	100.0	179	38.9	3,822	75.7
¹ MCD's immediately adjacent to organized MCD's								

Two factors are positively correlated to the location of new residential dwelling units:

- proximity to organized areas (fringe status)
- presence of improved roads

Townships and plantations in the fringe of the jurisdiction comprise only 39% of the total number of towns in the jurisdiction, yet they account for 76 % of the new development.

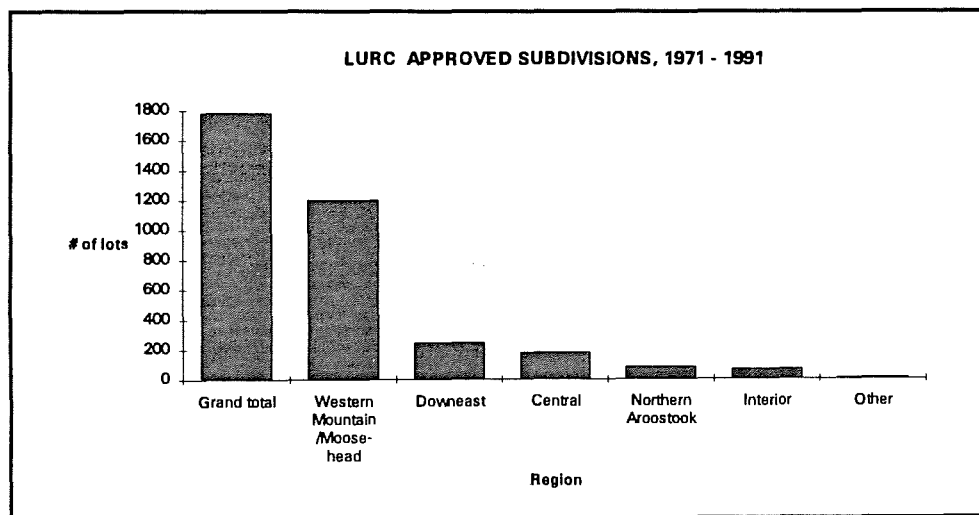


Townships and plantations with improved roads comprise 74% of the jurisdiction, but they account for 95% of the new development.

Distribution of New Development by Region

The amount of new residential development varies by region. The Western Mountain/ Moosehead Region received the most new residential development: 2,258 units. This represented 45% of the total in the jurisdiction.

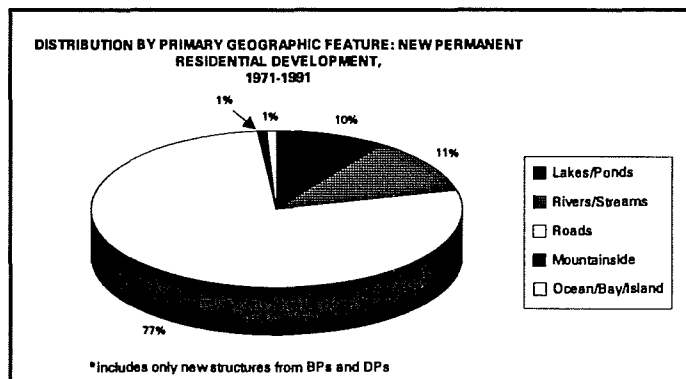
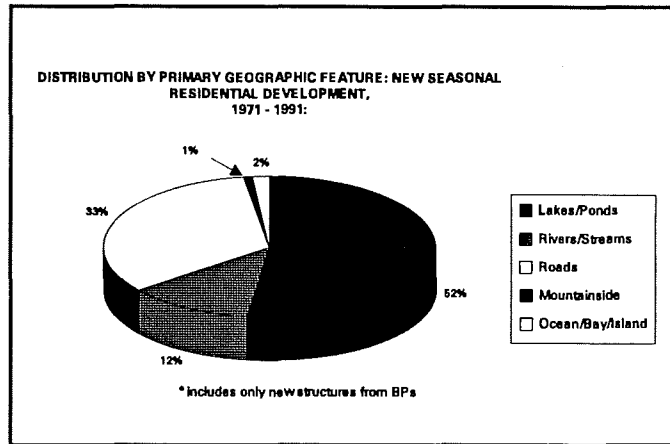
The number of approved subdivisions also varies by region.



Distribution of New Development by Geographic Feature

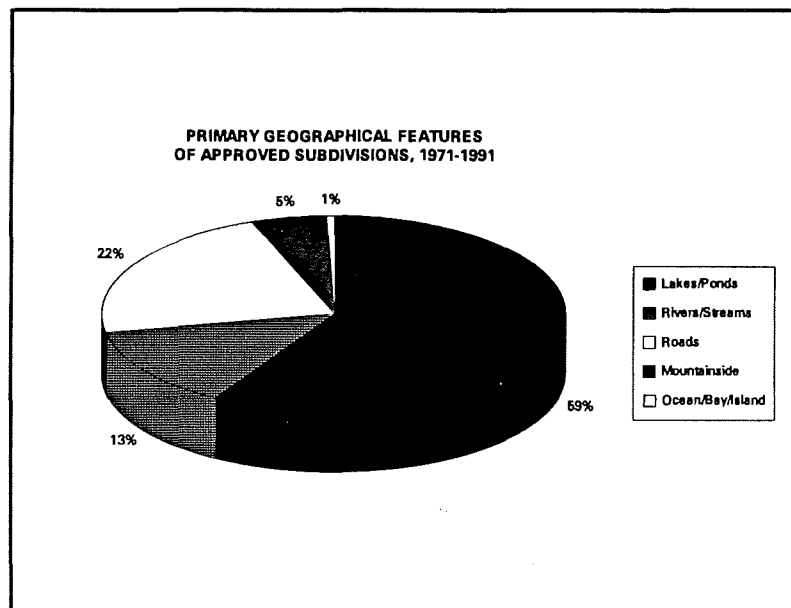
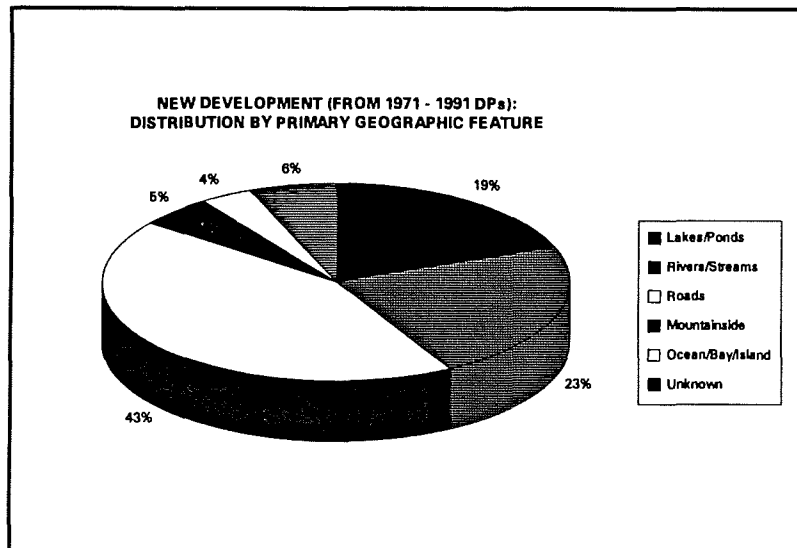
Residential Development:

- 44 percent of all new residential development has occurred along a waterbody.
- New permanent dwellings are located predominantly along roads, while new seasonal dwellings are located predominantly near water features.
- New residential development has concentrated on those lakes with the highest resource values.
- Since 1971, 53% of all new lakefront dwellings have been located on a Class 1A lake or pond (of statewide significance having two or more outstanding resource values), which represent only 8% of all lakes.



Subdivisions and Other Development:

- Over 60% of subdivisions were located on a body of water
- Commercial and industrial development is also focussed near the water - 46% of all the Development Permits (DPs) issued were for riparian areas.



Who is Developing the Wildlands

TYPE of Permit Recipients:

- Between 1971 and 1991, the group that is granted more permits than any other is **individuals**. Individuals represent:

96% of Building Permit recipients
65% of Subdivision Permit recipients
58% of Zoning change recipients
35% of Development Permit recipients
- **Corporations** are the second most dominant recipient of permits. They account for:

40% of Development Permit recipients
30% of Subdivision Permit recipients
30% of Zoning change recipients
- **Governmental agencies** comprise:

18% of Development Permit recipients
9% of Zoning change recipients

RESIDENCE of Permit Recipients

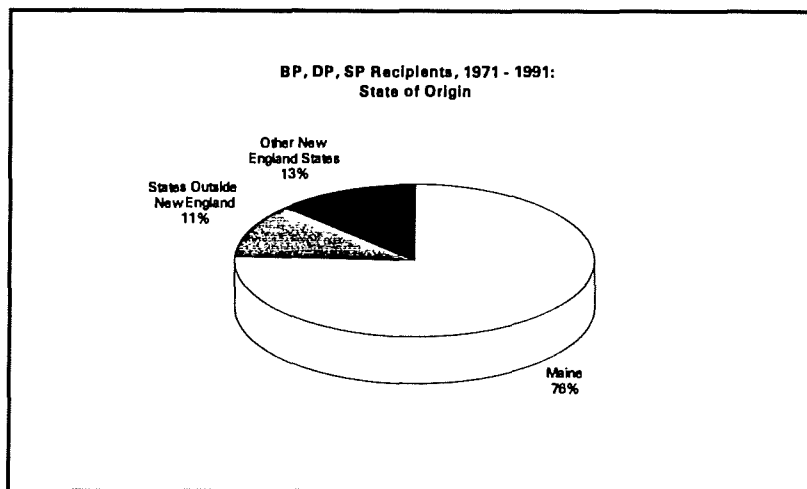
- Most development in LURC jurisdiction over the last twenty years has been by **Maine** residents, Maine-based corporations, or Maine governmental bodies. Maine-based recipients accounted for:

78% of Building Permit recipients
74% of Development Permit recipients
73% of Subdivision Permit recipients
76% of Zoning change recipients
- Permit recipients from outside of Maine but within the **New England Region** accounted for the next most frequent class by origin. New Englanders were:

15% of the Building Permit recipients
12% of the Development Permit recipients
11% of the Subdivision Permit recipients
10% of the Zoning change recipients

- The remainder of permits were granted to entities residing or with home offices **outside of Maine or New England**, accounting for:

7% of Building Permit recipients
 14% of Development Permit recipients
 16% of Subdivision Permit recipients
 14% of Zoning change recipients



Share of Maine Permit Recipients from Jurisdiction Counties:

- Recipients from within the LURC jurisdiction counties accounted for most of the Maine-based development activity. These recipients represent:
 - 74% of Maine-based Building Permit recipients
 - 70% of the Maine-based Development Permits recipients
 - 80% of the Maine-based Subdivision Permits recipients
 - 90% of the Maine-based Zoning recipients

Trends in the Ratio of Permits Granted to Maine vs. Out-of-State Entities

- There has been no discernible trend toward a greater or lesser share of permits granted to Maine entities since 1971.

PROJECTED FUTURE HOUSING DEMAND

Year-Round Market

According to the census, from 1980 to 1990, the number of households in the unorganized territory increased from 3,826 to 4,412, or 15%. The number of year-round housing units in the unorganized territory increased by 20%, or 863 units, again according to the U.S. Census. The growth was uneven across LURC's jurisdiction was lowest in Aroostook County and highest in the western mountains area.

The rate of growth in year-round households living in the unorganized territory was close to the rate in Maine as a whole: 15% in the unorganized territory vs. 18% statewide between 1980 and 1990. Statewide, it is generally believed that the rate of growth in year-round households will slow over the next ten years. There are several reasons:

- Three years of a recessionary economy has slowed and, at least temporarily, reversed the trend of more households moving into than out of Maine.
- Structural change in the defense sector of the economy will lead to a loss of jobs that will be only slowly made up by other sectors.
- As the "baby boom" generation fully enters middle age, the "baby bust" generation is beginning to form its households, but in smaller numbers.
- Much of the growth in households nationally and in Maine during the last 20 years has been associated with a dramatic reduction in average household size. Average household size probably will continue to shrink somewhat, but only slowly before leveling off.

As a result, Market Decisions projects a rate of increase in households statewide of perhaps 1% per year (higher in southern Maine, lower in northern Maine), compared with an average annual rate of 1.65% during the 1980's. **A reasonable projection of growth in year-round households in the unorganized territory between 1990 and 2000 is 7% to 10%, or approximately 300 to 450 net new households.**

Seasonal Market

The unorganized territory plays a large role in Maine's seasonally occupied or second home market. About 1 in 8 seasonal homes--more than 11,200 out of 88,000--are sited within LURC's jurisdiction. **Thus, although the jurisdiction has only about 1% of the state's year-round population, it has about 13% of the state's seasonal homes.**

Primary Market Area

A review of the state's property tax records indicates that the primary market area for seasonal/second homes in the unorganized territory is Maine and Massachusetts. Approximately 78% of the owners of seasonal property in the unorganized territory have their permanent residences in one of these two states. The percentage varies somewhat depending on region within the unorganized territory:

Distribution of Seasonal Units by Permanent Residence of Owner

	Area of Unorganized Territory				
Perm. Residence	Western	Central	Aroostook	Eastern	Total
Cumb/York, Me	18%	6%	3%	11%	8%
Rest of Maine	50%	57%	71%	60%	59%
Massachusetts	12%	13%	9%	6%	11%
Elsewhere	20%	24%	17%	23%	22%

(Western = unorganized lands in Oxford and Franklin counties

Central = unorganized lands in Somerset, Piscataquis, and Penobscot counties

Eastern = unorganized lands in Washington and Hancock counties)

Projected Household Growth of the Primary Market Area

Extrapolating from projections by Claritas/National Planning Data Corporation, the 2-state primary market area will grow slowly over the next decade, at an overall rate of about half a percent a year. The result will be an increase from 2,712,000 households in 1990 to 2,828,000 households in 2000, or a gain of 116,000 households.

More important, however, are the projections by age of householder. Most of the growth will occur among households headed by 45 to 54 year olds. Thus, even with a slowed overall increase in households, the 45 to 54 year-old segment of the population is projected to increase by more than 3% per year. Extrapolated to 2000, the increase from 1990 would be more than

150,000 new households in the 2-state primary trade area headed by a person between 45 and 54 years old.

Propensity to Own a Seasonal Home

As of 1990, 7.6% of American households owned second homes (Waldrop, Judith, "Who Owns Recreational Property," May 1991, p. 49, citing The American Recreational Property Survey). However, this varies by householder age group. A household with a 40-year-old householder is twice as likely to own a second home as a one headed by a 30-year-old. A 50-year old householder is twice as likely to own as a 40-year-old. Thus, while fewer than 3% of households headed by persons 25 years old or less own second homes and about 4% of households headed by persons 25 to 34 years old own second homes, nearly 14% of households headed by 45 to 54 year olds own second homes.

As indicated, the fastest growing segment of the population over the next 10 years will be the 45 to 54 year old, the same group with the highest propensity to own a second home.

Demand from Within Primary Market Area, and Market Shares

Applying these propensities to own a second home to the respective householder age groups as of 1980 yields an estimate that as of 1980, about 186,000 households in Maine and Massachusetts owned second homes. Just over 7,000 of these second homes (excluding homes owned by persons living outside of the 2-state primary market area) were located in the unorganized territory. The territory's estimated market share of demand from within the primary market area was 3.8%.

By 1990, total demand for second homes from within the primary market area had grown to an estimated 206,000, or an increase of 20,000 during the decade. The unorganized territory captured just over 1,700 of this demand, or approximately 9% of the new demand, bringing its estimated market share to 4.3%.

During the 1990's, there will be several forces driving new demand for second homes:

The aging of the region's baby boom households. This alone, with no other in-migration to the region, will contribute to a notable increase in demand for seasonal homes.

Price and availability. Rural interior lands and houses are less expensive and more available than coastal land and houses.

Accessibility. The improvement of rural roads and the conversion of logging roads to public use as access to remote areas will open new interior lands to development in the future.

Increased leisure concern. For more and more families, leisure is replacing work as the primary concern. This will expand interest in vacation homes.

On the other hand, there are trends that will tend to dampen second home growth.

The weakness of the regional economy. Unlike the 1980's, New England is expected to increase its jobs and income at a slower pace than the rest of the country.

Local economic weakness. The closing of Loring Air Force Base is expected to reduce jobs and income in Aroostook County by 20%. Because much of the demand for seasonal homes in the unorganized territory comes from relatively near by, the loss of population in Aroostook County will reduce demand for seasonal homes in that area.

Changing vacation patterns. Americans work more hours today than 20 years ago. Time is at a premium. As a result, vacation patterns are changing. People take shorter, more frequent trips. This pattern should increase demand for seasonal homes near job centers, in places suitable for "the long weekend."

Higher gas prices. Gasoline, adjusted for inflation, was at low prices in the 1980's. In Maine and nationally, tax increases have been passed, and more increases may come in the future. This may affect the viability of remote seasonal home locations.

In general, we think it is reasonable to assume that the propensities of different age groups to own a second home will remain close to what they were as of 1990. Applying these propensities to the projected number of households in the primary market area yields **an estimate of additional demand from within the market area of 20,000 new seasonal homes during the 1990's.** This figure is the same as during the 1980's. On the one hand, a slower economy and slower growth in number of households in the market area dampens demand. But this is offset by strong demographic shifts that favor demand. The result is overall demand similar to that of the 1980's.

Projected Number of Seasonal Units in Unorganized Territory

Weighing the locational advantages (such as price, availability of land, increased accessibility) and disadvantages (such as distance from Massachusetts) of the unorganized territory, it is reasonable to project that the territory will continue to gain market share, up from 3.8% in 1980 to 4.3% in 1990, during the 1990's. New demand for the decade is projected at 20,000 units. If the unorganized territory captures 10% to 12% of the new demand, **this will translate into 2,000 to 2,400 additional units purchased by residents of the primary market area.** That would increase the territory's share of the primary market from 4.3% to between 4.6% and 4.8%.

If, in turn, these represent 78% of all the new units built in the unorganized territory, with another 22% of the total coming from outside the primary market area, then **the total number of**

new seasonal units to be expected within the jurisdiction over ten years will be between 2,600 and 3,000. This represents a 23% to 27% increase over 1990, similar to the 25% rate of growth during the 1980's.

Distribution of Growth of Seasonal Homes

As of 1990, seasonal homes were distributed within the unorganized territory as follows:

- 51% (5,700) of the unorganized territory's seasonal units were located in the Central Mountain region.
- 18% (nearly 2,000) were in Aroostook County.
- About 17% (a little more than 1900) of the units were in the Western Mountains region (Franklin and Oxford counties).
- 14% (nearly 1,600 units) are in the northern sections of Hancock and Washington counties, and on several islands further down the coast, such as Matinicus.

There has been a general shift of seasonal activity from the coast inland to the mountains over the last 40 years. In 1950 the mountain counties (Oxford, Franklin, Somerset, Piscataquis, Penobscot) had only 6,800 seasonal units, or 18% of the statewide total. By 1990 they had 27,500 seasonal units, or nearly a third of the total. Over this time the growth rate in mountain counties was double the rest of the state. The gap grew larger as the decades went on, until over the 1980's it was three to five times the rate of the rest of Maine.

In general, it can be expected that the Central and Western mountains will continue to increase their shares of seasonal homes, while Aroostook (which will be greatly impacted by the closing of Loring AFB and the loss of the nearby population that is the base for much of the seasonal home demand) and Eastern/Coastal portions of the territory grow slowly.

It would not be unrealistic to project that the Western and Central regions--which accounted for 88% of the new seasonal units built in the unorganized territory during the 1980's--will account for 90% to 92% of the growth, or 2,500 to 2,600 units. The Eastern/Coastal area will continue to get about 6% (150 to 175 units); and Aroostook 2% to 4% of the growth (50 to 100 units).

For further discussion of projected demand for residences in the jurisdiction, see Market Decisions, Inc. 1993. "Profile and Projections".

PROJECTIONS FOR OTHER DEVELOPMENT ACTIVITIES

Roads

Data on road construction are limited. Roads mapped and tallied by the state GIS system were based on 1:100,000 scale U.S.G.S. maps (a conservative database due to the resolution of these base maps), and show that, as of the mid-1980's, the estimated total miles of roads was 22,000 miles, and the total miles estimated for private roads (total less miles of interstate, or primary or secondary roads) was 20,000 miles. An estimated 11,000 miles of this network was constructed in the 1970's, according to past reports from the Paper Industry Information Office. Thus during the 1970's and early 1980's, the miles of roads in the jurisdiction doubled.

The miles of roads added since the mid 1980's is not known. However, it is expected that the rate of new road construction has been less than during the 1970's and early 1980's. This is because most areas in the wildlands are now fairly accessible by improved roads. Data on road types indicates that 344 townships, or 74% of the minor civil divisions within LURC's jurisdiction, have primary, secondary or improved roads. This leaves 26% of the townships without such access, according to these maps. However, this likely over-estimates the number of townships without good access, since experience indicates that virtually all townships are accessible by improved roads, meaning roads improved with gravel and/or drainage culverts.

Since the mid-1980's, records of road notifications indicate a steady pace of road construction activity (about 600 road construction/improvement notifications per year through 1992). Road construction activity in the jurisdiction is expected to continue at this pace in the future, with construction of new minor roads and upgrading existing roads expected to be the major road building activities.

Other Development Activity

The number of development permits, which are needed for commercial and industrial activity, and for construction of public facilities and utilities, is also expected to continue at the pace experienced since the mid-1980's which is roughly 50 to 60 permits per year.

REFERENCES

- Bennett, Dean. 1993. Wilderness values in working landscapes. Paper presented at the 1993 Natural Areas conference. Dean Bennett, University of Maine at Farmington, Me, College of Education.
- Birch, Thomas W. 1986. Forest-land owners of Maine, 1982. Resource Bulletin NE-90. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Station.
- Boyle, Kevin J., M.L.Phillips, S.D.Reiling, and L.K.Demirelli. 1989. Economic values and economic impacts associated with consumptive uses of Maine's fish and wildlife resources. ARE 391. College of Life Sciences and Agriculture, University of Maine, Orono, Me.
- Brown, Tommy L. 1993. Outdoor recreation and tourism studies applied to the Northern Forest Lands: literature review and analysis. A report to the Northern Forest Lands Council, Recreation and Tourism Committee, Concord, NH.
- Ewert, Alan. 1989. Wildland recreation: bone games of the past or salvation of the future. In Trends, Vol 26, No.3, U.S.Department of Interior, National Park Service, and National Recreation and Park Association.
- Fishman,Robert. 1987. Bourgeois Utopias: the rise and fall of suburbs. Basic Books,Inc. of New York, New York.
- Hendee, John C., George H. Stankey, and Robert C. Lucas. 1990. Wilderness management. For the International Wilderness Leadership Foundation and the USDA Forest Service. North American Press, Golden, CO.
- The Irland Group. 1989. Northern Forest Lands Study Real Estate Market Survey. For the USDA Northern Forest Lands Study. Rutland, Vermont.
- Kaplan, Rachel and Stephen Kaplan. 1989. The experience of nature: a psychological perspective. Cambridge University Press, New York, NY.
- Kulhavy, David L. and Richard N Connor, editors. 1986. Wilderness and natural areas in the eastern United States: a management challenge. Center for Applied Studies, School of Forestry, Stephen F. Austin State University, Nacogdoches, TX.
- Land & Water Associates. 1993. Historical demand for development in the wildlands: A characterization of LURC permit recipients by type, resident state, and Maine county of origin. Prepared for the Maine Land Use Regulation Commission, Augusta, ME.

- Land & Water Associates. 1993. New development in the Wildlands: distribution of residential, commercial and Industrial development by geographic and natural features. Prepared for the Land Use Regulation Commission, Augusta, ME.
- Land & Water Associates. 1993. Trends in new residential development in Maine's unorganized areas: amount and location of new residences since 1971 by region and minor civil division. Prepared for the Maine Land Use Regulation Commission, Augusta, ME.
- Land & Water Associates. 1994. Impacts of development in the LURC jurisdiction on timber production and the state's forest manufacturing economy. Prepared for the Maine Land Use Regulation Commission, Augusta, ME.
- Land & Water Associates. 1994. Impacts of development on the traditional character and recreational uses of the LURC jurisdiction. Prepared for the Maine land Use Regulation Commission, Augusta, ME.
- Maine Department of Conservation, Bureau of Parks and Recreation. 1994. Draft 1994 Maine State Comprehensive Outdoor Recreation Plan. DOC, Augusta, ME.
- Maine Department of Conservation and U.S.Department of Interior, National Park Service. 1982. Maine rivers study. DOC, Augusta, ME.
- Maine Department of Inland Fisheries and Wildlife. 1993. Wildlife Division Research and Management Report. Augusta, Me.
- Maine Land Use Regulation Commission. 1991. Report to the Joint Standing Committee on Energy and Natural Resources, Maine Legislature, Augusta, Maine.
- Maine Land Use Regulation Commission. 1990. Report to the Joint Standing Committee on Energy and Natural Resources, Maine Legislature, Augusta, Maine.
- Maine Land Use Regulation Commission. 1983. Land use plan. Maine Department of Conservation, LURC, Augusta, ME.
- Maine Land Use Regulation Commission. 1990. Amendment of the comprehensive land use plan regarding the development and conservation of lakes in Maine's unorganized areas. Maine Department of Conservation, LURC, Augusta, ME.
- Maine Tomorrow. 1991. Small woodland owners in Maine: an analysis of trends. For the Small Woodland Owners Association of Maine, Augusta, Maine.

- Market Decisions, Inc. 1993. Profile and Projections of the LURC Jurisdiction.
Prepared for the Land Use Regulation Commission, Augusta, ME.
- Northern Forest Lands Council. 1994. Finding common ground: draft recommendations of the
Northern Forest Lands Council. NFLC, Portsmouth, NH.
- Northeastern Forest Alliance. The economic importance of Maine's forest.
NEFA, Saranac Lake, NY.
- James W. Sewell Company and Market Decisions, Inc. 1993. Northern Forest Lands
Council Land Conversion Study. Northern Forest Lands Council, Concord, NH.
- Tunnard, Christopher and B. Pushkarev. 1963. Man-made America. Yale University Press, New
Haven, CT.
- U.S.Department of Commerce, Bureau of Census. 1980 Population Distribution in the United
States. Map prepared by the Geography Division, Bureau of Census, Washington, D.C.
- U.S.Department of Interior, Fish and Wildlife Service and U.S.Department of
Commerce, Bureau of Census. 1993. 1991 national survey of fishing, hunting and
wildlife associated recreation. U.S.Government Printing Office, Washington, D.C.
- USDA Forest Service. 1990. White Mountain National Forest, Forest Facts.
a pamphlet published by the White Mountain National Forest Service Office, Laconia,
NH.
- Waldrup, Judith. 1991. "Who owns recreational property." Published in American
Demographics, May, 1991.