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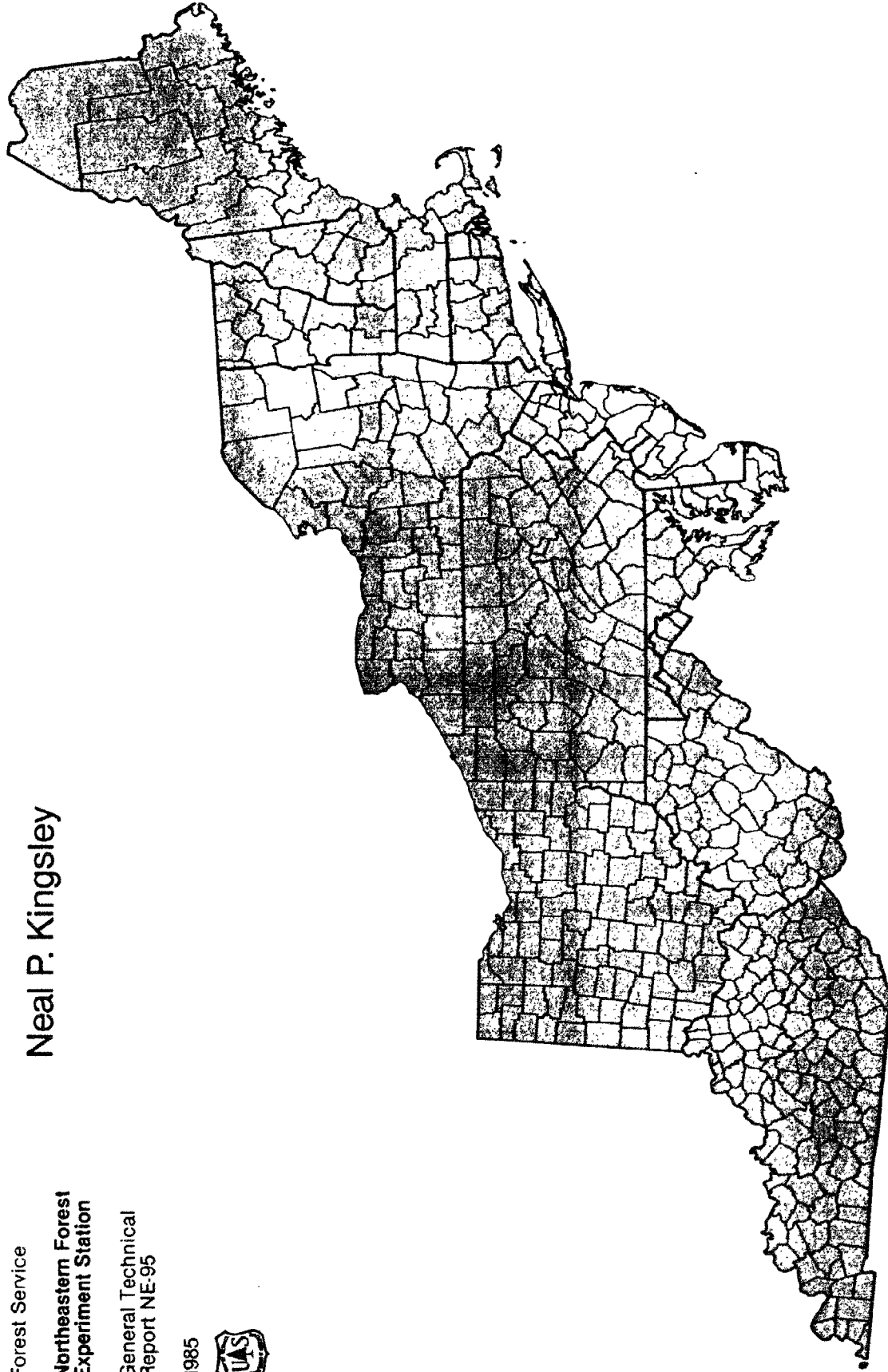
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A Forester's Atlas of the Northeast

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Abstract

This atlas provides a cartographic display of forest resource information and other data that is related to the forest resources of the Northeast. These maps are the tools for a better understanding of the forest resource and aid in its future development and wise use.

Acknowledgment

Special thanks to Mrs. Sharon S. Yates for her work in compiling many of the maps in this atlas.

Preface

The 14 Northeastern States comprise 178,103,400 acres of land, of which 101,454,500 acres are forested. Although the region is 57 percent forested, the degree of forestation and character of the forests of the region vary greatly. Maine is 90 percent forested, while less than 24 percent of Ohio's land is in forests. In the north, the forests consist of northern softwoods; white pine, hemlock, spruce and fir, and northern hardwoods; maples, beech, and birches. In the south, the forests are primarily part of the great oak-hickory forest of the east-central states.

This same 14-state region is home to more than 70 million people, nearly one-third of the Nation's population. The population of the region, like its forest land, is not evenly distributed. Northern Maine is sparsely populated, yet nine states in the Northeast are the nine most densely populated in the Nation. In order of population density, these are: New Jersey, Rhode Island, Massachusetts, Connecticut, Maryland, New York, Delaware, Pennsylvania, and Ohio.

Despite such a large population, for centuries forests have played an important role in the development and economy of the region. For more than 300 years they have produced forest products. In many areas, early settlers cleared the land to make way for farms that were later abandoned and onto which the forest returned.

Much has been written about the forest resources of the Northeast. Comprehensive inventories of it have been made, and these data have been analyzed. Yet, little of this information has been displayed geographically. The purpose of this atlas is to provide a cartographic display of forest resource information and of other data that is related to the forest resources of the Northeast. It is hoped that these maps will provide the tools for a better understanding of the forest resource and aid in its future development and wise use.

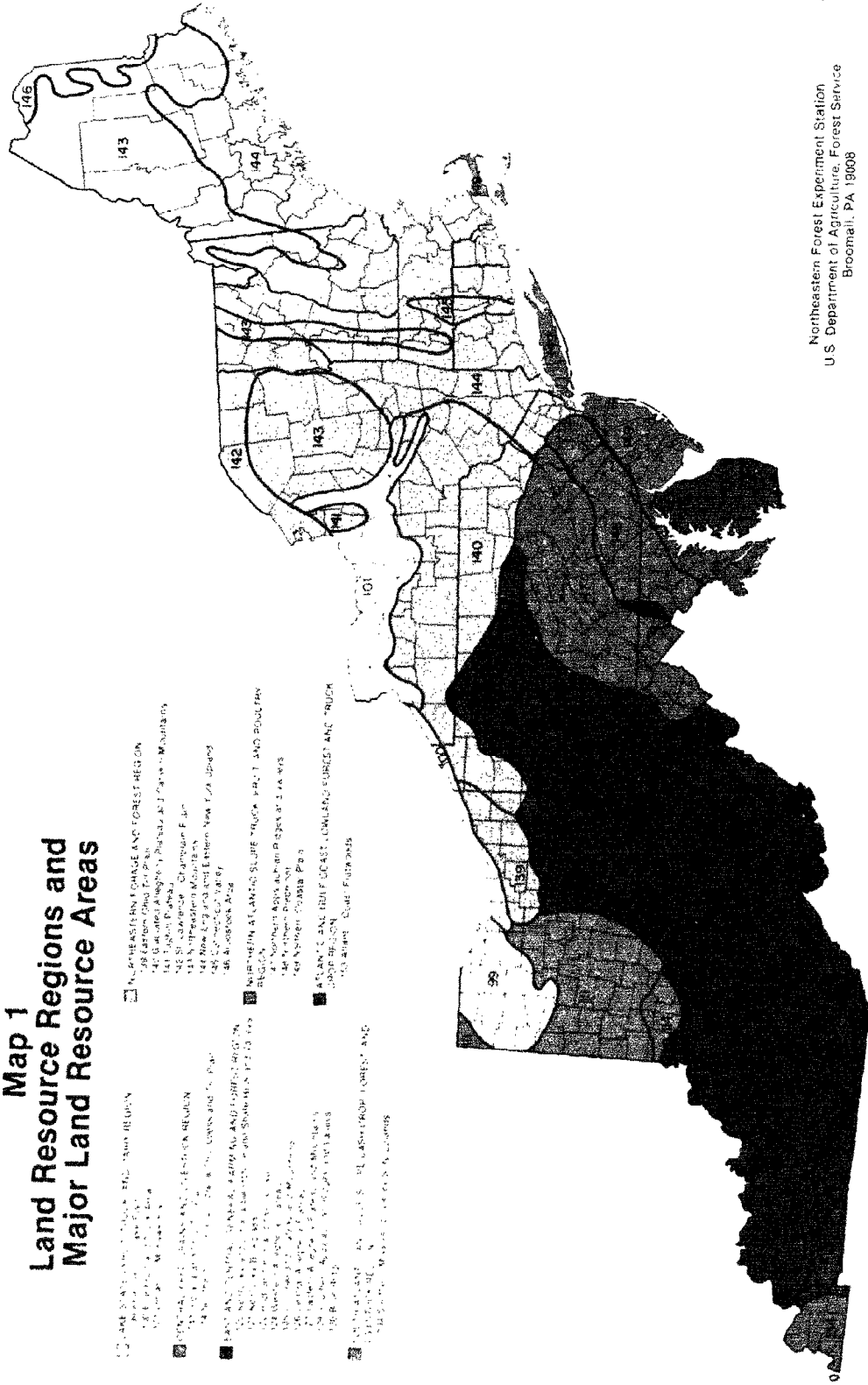
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Map 1

Land Resource Regions and Major Land Resource Areas

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Map 1: Land Resource Regions and Major Land Resource Areas

This map is the northeastern portion of a map issued in 1963 by the USDA Soil Conservation Service. The boundaries of the resource areas follow the original, and the coding is identical. The original map accompanied "Land Resource Regions and Major Land Resource Areas of the United States," (Austin 1965), and the following descriptions were synopsized from that handbook and apply to the map of the United States. Land area and state names have not been adjusted for the map of the Northeast.

Lake States Fruit, Truck, and Dairy Region

99—Erie—Huron Lake Plain - 12,200 square miles - Michigan and Ohio

Land Use: Nearly 90 percent of the land is in farms and about 66 percent in crops. Corn, winter wheat, soybeans and hay are the major crops; sugar beets and canning crops are also important.

Elevation and Topography: 600 to 800 feet, increasing gradually from lakeshores inland, nearly level lake plain; local relief only a few feet, but some beach ridges and low moraines rise several feet to a few tens of feet above ground level.

Water: Soils require some drainage; abundant ground water; lakes are major transportation arteries.

100—Erie Fruit and Truck Area - 2,700 square miles - Ohio, Pennsylvania, and New York

Land Use: Slightly more than 66 percent of land is in farms; about 33 percent is in cropland and 33 percent is equally divided between woodland and pasture. Cropland is in vineyards, orchards, small fruits, canning crops, and truck crops. Dairying is important near cities.

Elevation and Topography: 600 to 900 feet, increasing gradually from the lakeshore inland; nearly level lake plain underlain with lacustrine sediments and some glacial till, nearly level to gently sloping. Low beach ridges are a prominent feature; local relief only a few feet except at steep wave-cut cliffs on lakeshore.

Water: Abundant ground water; lakes provide transportation and municipal water for large cities.

101—Ontario—Mohawk Plain - 10,700 square miles - New York

Land Use: 88 percent of the area is in farms; 40 percent is in cropland. Of the land in farms, 20 percent is in pasture and 20 percent is in farm woodland. Crops are feed and forage for dairy cattle, also cash crops, various fruits, and winter wheat. Of land not in farms, one-half is urban.

Elevation and Topography: 250 to 1,000 feet, increasing gradually from lakeshore to Allegheny Escarpment on southern boundary; most of area nearly level to rolling glacial drift plain; drumlins prominent in an east-west belt in center of the western two-thirds of area, low beach ridges common, local relief mainly a few feet to a few tens of feet, larger drumlins rise 100 to 200 feet or more above adjacent lowlands.

Water: Ground water abundant in most of area; farm ponds, Lake Ontario, and wells supply supplemental irrigation; large lakes used for recreation; Lake Ontario and New York Barge Canal crosses east to west.

Central Feed Grains and Livestock Region

111—Indiana and Ohio Till Plain - 32,900 square miles - Indiana, Ohio, Michigan, and Illinois

Land Use: Ninety percent of area is in farms; 80 percent is in cropland. Corn, soybeans, other feed crops, and hay are principal crops. Areas of permanent pasture and small farm woodlots make up the rest of the area in farms.

Elevation and Topography: 700 to 1,000 feet, increasing gradually west to east; gently sloping glacial-till plain broken in places by hilly moraines, kames, and outwash terraces; relief mainly a few feet to a few tens of feet, locally hills rise to 10 feet; the few large streams have narrow-shallow valleys.

Water: Occasional droughts; ground water in glacial deposits principal water source; a few large streams, mainly tributaries of Ohio River.

114—Southern Illinois and Indiana Thin Loess and Till Plain - 14,400 square miles - Illinois, Indiana, and Ohio

Land Use: Nearly all the area is in farms but only half in cropland; corn, soybeans, other feed grains, and hay for dairy cattle and other livestock are the

principal crops; 20 percent of area is in forest, much of which is in small farm woodlots; about 5 percent of the area, mainly along the Ohio River, is urban or in industrial use.

Elevation and Topography: 400 feet on valley floors to 1,200 feet on ridge tops; ridgetops increasing gradually west to east; dissected old glacial-till plain, moderately thick mantle of loess; most ridgetops narrow; ridge slopes and valley sides steep; local relief on ridgetops a few feet to a few tens of feet but stream valleys are one to several hundred feet below the adjoining lands.

Water: Ground water meets most needs but is scarce in some areas; many small streams are potential water sources.

East and Central General Farming and Forest Region

120—Kentucky and Indiana Sandstone and Shale Hills and Valleys – 11,200 square miles · Kentucky and Indiana

Land Use: Nearly all land is in farms but about 5 percent is urban or in other uses. Strip mining for coal is an important industry; 33 percent of area in crops. Corn, soybeans, other feed grains, and hay for dairy cattle and other livestock are principal crops. Thirty-three percent of the area is in small or medium farm woodlots.

Elevation and Topography: 400 feet on the lowest valley floors to about 800 feet on the highest ridgetops; smoother parts of gently rolling to hilly dissected sandstones, and shale plateau have a thin to moderately thick loess cap; valleys of small

streams are narrow, but larger tributaries of the Ohio and Mississippi have flood plains; strip mines are conspicuous in many areas.

Water: Shallow wells provide water for domestic use and livestock on most farms; small farm ponds are also important for livestock water; deep wells are usually highly mineralized.

121—Kentucky Bluegrass – 11,000 square miles · Kentucky, Indiana, and Ohio

Land Use: Most of the area is in farms but only 33 percent is cropland; 40 percent is pasture. Crops are corn, other feed grains, hay, and tobacco; livestock are beef cattle, race horses, and sheep. Sixteen percent of the area is in farm woodlands in poor condition.

Elevation and Topography: 800 to 900 feet in central portion and 500 to 1,000 feet in shale and limestone hills; an undulating to rolling central limestone plain surrounded by shale and limestone hills with narrow tops and steep sides.

Water: Cisterns and springs are important water sources; in some areas deep wells supply large amounts of highly mineralized water; a few large streams are potential water sources.

122—Highland Rim and Pennyroyal – 22,700 square miles · Kentucky, Tennessee, Indiana, and Alabama

Land Use: Most of the area is in farms, 40 percent is in cropland. Crops are corn, other feed grains, hay, and tobacco, which is an important cash crop. Sixteen percent of the area is in pasture of tame and native grasses and legumes, about 33 percent is in forest, mainly in farm woodlots.

Elevation and Topography: 350 feet on valley floors to about 1,000 feet on highest ridgetops; a dissected limestone plateau; much of the area consists of narrow rolling ridgetops, hilly and steep ridge slopes, and narrow valleys.

Water: Shallow wells, streams, and springs are principal sources of water in more dissected parts, and ponds and cisterns are important in smoother uplands; wells supply highly mineralized ground water; multipurpose dams on Tennessee and Cumberland Rivers provide flood control, electric power, transportation, and recreation.

124—Western Allegheny Plateau – 8,200 square miles · Ohio

Land Use: Most of the area is in farms but 25 percent is in other uses, 20 percent is in cropland. Crops are hay and feed grains, and fruits and vegetables are important locally. Twenty percent is in pasture and tame grasses and legumes; 40 percent is in forest, about half of which is in farm woodlots and half in state and national forests and commercial holdings. Strip mining of coal is important.

Elevation and Topography: 650 feet on lowest valley floors to 1,300 feet at highest ridgetops; dissected sandstone plateau with narrow level valley floors, rolling ridgetops, and hilly to steep ridge slopes.

Water: Shallow wells and springs are the principal water source; abundant ground water but highly mineralized; reservoirs on many streams provide industrial and municipal water supplies.

125—Cumberland and Plateau and Mountains – 25,900 square miles · Kentucky, Tennessee, and West Virginia

Land Use: Eighty percent is forest, which is almost all privately owned in many small parcels; some larger tracts are owned by mining and timber companies; coal mining by strip and deep mines is the major industry; most farms are part-time operations with off-farm employment prevalent.

Elevation and Topography: 1,000 feet at base of escarpments that border the plateau to 2,000 feet on plateau top, some mountains on east margin to 2,500 feet and a few to 3,500; deeply dissected sandstone and shale plateau with steep to very steep slopes and narrow valleys, ridgetops are narrow and rolling.

Water: Water is abundant; wells, springs, and cisterns are principal water sources; deep ground water highly mineralized; small streams usually intermittent.

126—Central Allegheny Plateau – 19,400 square miles - West Virginia, Pennsylvania, and Ohio

Land Use: Most area is in farms, but much farmland along the Ohio River has been diverted to industrial land use; 16 percent of the area is cropland and 20 percent is pasture. About half of the area is forest and sale of timber is an important source of revenue on some farms; lease of land for coal strip mining is also a source of income on some farms.

Elevation and Topography: 600 feet on lowest valley floors to 1,300 feet at highest ridgetops and higher in the southeast; dissected plateau underlain by sandstones and shales and some layers of calcareous rocks; local relief in hundreds of feet.

Water: Water is plentiful; springs, shallow wells, small farm ponds, and cisterns are major water sources; abundant water from deep wells but cost

of drilling is expensive and water is highly mineralized; Ohio River and tributaries developed for navigation; pollution of streams by coal wastes is serious.

127—Eastern Allegheny Plateau and Mountains – 15,900 square miles - Pennsylvania, West Virginia, and Maryland

Land Use: About 85 percent of the area is in farms; 75 percent is in forest, mainly small privately owned holdings. Lumber and wood-using industries are important, as are gas and oil fields. Ten percent of the area is in cropland.

Elevation and Topography: 1,000 feet in the lowest valleys to 2,000 to 2,500 feet over much of the plateau top, mountains in the southeast 3,500 feet to 4,500; deeply dissected plateau terminates in a high escarpment on the east; local relief in hundreds of feet.

Water: Water is abundant; shallow wells, springs, cisterns, and farm ponds supply domestic and livestock water; ground water is scarce in areas underlain by shales; elsewhere it is abundant but highly mineralized.

128—Southern Appalachian Ridges and Valleys – 28,600 square miles - Virginia, West Virginia, Tennessee, Georgia, and Alabama

Land Use: About 75 percent of the land is farms; federal ownership is about 10 percent, urban 1 or 2 percent. One-half of the area is in forest, mostly small to medium-sized farm woodlots; federal land is mostly in national forests or national parks that are also wooded. Beef cattle are principal livestock but dairying is important near cities; many small farms give only part-time employment.

Elevation and Topography: 600 feet in valleys of southwest to 1,000 feet in northern valleys; 2,000 to 3,000 feet at ridgetops, rising gradually from south to north, a few mountains in the north to 4,000 feet or more; northeast-southwest-trending valleys underlain mainly by limestones and shales are separated by steep ridges or mountains underlain mainly by sandstones and shales.

Water: Crops and pastures depend almost entirely on rainfall, late summer and fall droughts are common; ground water is abundant in areas underlain with limestone but is highly mineralized; shale areas have small ground-water supplies; small streams are dry in summer and fall except immediately after storms; major rivers have dams for flood control, navigation, power production and provide recreation.

130—Blue Ridge – 18,900 square miles - North Carolina, Virginia, Georgia, Tennessee, South Carolina, and Maryland

Land Use: More than 66 percent of the area is in forest, much of which is privately owned; small farms in valleys and coves are mostly part-time businesses. Crops are corn, hay, small grains, potatoes and many kinds of fruits.

Elevation and Topography: 1,000 feet in lower valleys and foot slopes to more than 6,500 feet in the mountains along the Tennessee-North Carolina boundary, decreasing gradually north and south of this point; rugged mountains with steep slopes and sharp crests dissected by steep narrow valleys; local relief in several hundreds to a few thousands of feet.

Water: Springs and shallow wells provide domestic water; ground-water yield from wells is generally small.

South Atlantic and Gulf Slope Cash Crop, Forest, and Livestock Region

134—Southern Mississippi Valley Silty Uplands - 24,000 square miles - Mississippi, Tennessee, and Kentucky

Land Use: Most land is in farms; about 33 percent of all land is in crops. Crops are cotton, corn, and soybeans. Ten percent of the area is in pasture, 25 percent in forest.

Elevation and Topography: 100 to 600 feet; sharply dissected plains have a thick loess mantle, underlain with unconsolidated sands, silts, and clays; valley sides hilly to steep; stream valleys are narrow in their upper reaches but broaden rapidly down-stream and have wide flood plains and meandering stream channels; local relief in several tens to 100 or 200 feet.

Water: Rainfall and ground water abundant; in uplands shallow wells, cisterns, and ponds are main water sources; shallow wells provide only small amounts but deep wells in underlying sands and gravels yield large amounts; most streams in area are small and flow intermittently.

Northeastern Forage and Forest Region

139—Eastern Ohio Till Plain - 6,500 square miles - Ohio

Land Use: About 75 percent of the area is in farms; 20 percent is urban, about 33 percent is cropland. Crops are feed grains and forage for dairy cattle.

Many part-time farms and rural residences in eastern portion. About 20 percent of the area is in hardwood forest, mostly farm woodlots.

Elevation and Topography: 800 to 1,000 feet, increasing gradually from north to south; strongly rolling dissected glaciated plateau underlain by limestone and sandstone; narrow stream valleys not deeply incised.

Water: Abundance of water provided by rainfall, perennial streams, and ground water; shallow and deep wells are the main source of domestic and municipal water.

140—Glaciated Allegheny Plateau and Catskill Mountains - 27,400 square miles - New York and Pennsylvania

Land Use: Most of the area is farms; large area of cutover forests; Catskills mainly used for recreation. Principal crops are hay, pasture, and some grain for dairy cattle. Abandoned or idle areas are in poverty grass, weeds, and shrubs.

Elevation and Topography: Valley floors 500 to 1,000 feet, plateau tops 1,700 to 2,000 feet, and Catskills 3,500 feet or more; tops of dissected plateau are broad and nearly level to moderately sloping; narrow valleys have steep walls and smooth floors.

Water: Abundance of water provided by rainfall and perennial streams and lakes; Finger Lakes are along northern border; soils with fragipans are too wet in winter and spring and too dry during much of the growing season.

141—Tughill Plateau - 1,500 square miles - New York

Land Use: Nearly 90 percent of the area is in farms; remainder is Federally owned or urban; more than 50 percent of the area is in forest, mainly northern hardwoods; less than 10 percent is in cropland. Principal forest products are lumber, pulpwood, and maple syrup.

Elevation and Topography: 1,000 feet along lower margins to 2,000 feet at plateau top; level to gently sloping sandstone plateau with hilly to steep margins; local relief is few feet to few tens of feet.

Water: Ground water, perennial streams, and rainfall provide abundant water; shallow and deep wells provide domestic and livestock water.

142—St. Lawrence—Champlain Plain - 7,000 square miles - New York and Vermont

Land Use: Nearly all area is in farms, 5 percent is in urban or other uses, 70 percent is divided evenly between cropland and pasture. Hay meadows occupy the largest acreage. Potatoes are an important cash crop. About 25 percent of the area is in forest; lumber is the main forest product but Christmas trees and maple syrup are produced also.

Elevation and Topography: 100 feet to 1,300 feet, increasing gradually from St. Lawrence River southward and from Lake Champlain to east and west; few large rivers have cut deep narrow valleys across this smooth lacustrine and glaciated plain.

Water: Rainfall, perennial streams, and ground water provide abundant water; deep wells in glacial drift supply large amounts of water; ground water in areas underlain by limestone is highly mineralized.

143—Northeastern Mountains – 36,900 square miles - New York, Maine, New Hampshire, Vermont, and Massachusetts

Land Use: More than 90 percent is in northern hardwood forest; less than 5 percent of area is cropland or pasture. Although much of the area is privately owned, a few large areas in New England are in national and state forests. Forest products are lumber, Christmas trees, and maple syrup. Many summer and winter resorts provide recreation.

Elevation and Topography: 1,000 to 4,000 feet, a few peaks at more than 5,000 feet; mountains are underlain by granite, anorthosite, schists, and slate and are thinly mantled by glacial till; mountain slopes are strongly rolling to steep, valley floors are level.

Water: Rainfall, streams, and lakes provide abundant water; ground water abundant in valleys but scarce in uplands.

144—New England and Eastern New York Upland – 38,100 square miles - Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, and New Jersey

Land Use: About 66 percent of the area is in forest, mostly small farm woodlots. Lumber is the principal forest product. Woodland also used for hunting and recreation. About 20 percent of the area is in pasture and crops, 10 percent is urban and is increasing rapidly, especially in the south.

Elevation and Topography: Sea level to 1,000 feet over much of the area, some hills 2,000 feet, a few peaks 3,000 feet; till-mantled rolling to hilly uplands are broken by many level to gently sloping valleys that terminate in coastal lowlands; valleys and coastal plains covered by glacio-lacustrine and marine sediments and outwash.

Water: Abundant rainfall, streams, lakes, and ponds provide water; ground water is scarce in the uplands but plentiful in the valleys; municipal and industrial water provided by many reservoirs.

145—Connecticut Valley – 1,700 square miles - Connecticut and Massachusetts

Land Use: About 80 percent of the area is in farms, remainder is urban; 25 percent is cleared and used for crops. Tobacco, vegetables, potatoes, fruits, and nursery stock are major crops. About 5 percent of the area is forest, mainly farm woodlots. Principal products are firewood and fence posts, and some lumber is produced.

Elevation and Topography: Sea level to 300 feet in lowlands, ridge crests 500 to 1,000 feet; nearly level to sloping lowlands broken by isolated north-south-trending traprock ridges with hilly and steep slopes.

Water: Abundant water provided by rainfall, perennial streams, and ground water; municipal and industrial water is stored in reservoirs.

146—Aroostook Area – 2,500 square miles - Maine

Land Use: Nearly all land is in farms, between 50 and 75 percent is cleared and in crops. Potatoes are the major crop; remaining land is farm woodlots. Firewood and fence posts are principal forest products.

Elevation and Topography: 30 to 500 feet, a few hills 1,000 feet; nearly level to rolling glaciated plain cut by narrow valleys; local relief is few feet to few tens of feet.

Water: Rainfall and streams provide abundant water; ground water plentiful in the valleys but scarce in the till and bedrock in the uplands.

Northern Atlantic Slope Truck, Fruit, and Poultry Region

147—Northern Appalachian Ridges and Valleys – 15,700 square miles - Pennsylvania, Maryland, West Virginia, and Virginia

Land Use: Most area is in farms, 5 percent is urban, and 10 percent is in other uses. Between 25 and 33 percent is cropland. Forage and feed grains for dairy cattle are the principal crops. About 50 percent is hardwood forest, mainly in small to medium-sized holdings and some in state and national forests and parks.

Elevation and Topography: 400 to 1,000 feet in valleys, 1,200 to 2,500 feet on ridges and mountains, some crests 3,000 feet; sandstone and shale ridges separated by narrow to moderately broad limestone and shale valleys.

Water: Abundant rainfall is usually adequate for crops, occasional drought; water for domestic and livestock use provided by springs and shallow wells; ground water scarce in areas underlain by shale and sandstone.

148—Northern Piedmont – 15,200 square miles - Pennsylvania, Maryland, Virginia, New Jersey, and Delaware

Land Use: 80 percent of the area is in farms, 10 percent is urban, more than 33 percent of the entire area is cropland. Forage crops and grain for dairy cattle are the principal crops. Poultry farming is important in places. About 12 percent of the area is pasture and 33 percent is forest, mainly in farm woodlots but some in large holdings.

Elevation and Topography: 300 to 1,000 feet, some ridges and peaks 1,500 feet; dissected plain underlain by gneisses, schists, and related rocks broken by narrow ridges underlain by traprock and by Triassic lowlands underlain by sandstones, shales, and limestones.

Water: Rainfall, streams, shallow wells, cisterns, and springs are major water sources; ground water is scarce in areas underlain by crystalline rocks but more plentiful in limestone and sandstone areas.

149—Northern Coastal Plain - 13,200 square miles - New Jersey, Maryland, Virginia, New York, Massachusetts, and Delaware

Land Use: About 75 percent of the area is farms, 10 percent is urban, urban land is increasing rapidly. Sixty percent is forest mostly in farm woodlots. Lumber and some pulpwood are principal products. Twenty percent is in crops. Crops are fruits, vegetables, tobacco, corn, soybeans, and small grains.

Elevation and Topography: Sea level to 300 feet but less than 200 feet in most of the area; undulating to rolling dissected coastal plain underlain by unconsolidated sands, silts, and clays.

Water: Rainfall, perennial streams, and ground water provide abundant water; deep and shallow wells are source of domestic water.

Atlantic and Gulf Coast Lowlands Forest and Truck Crop Region

153—Atlantic Coast Flatwoods - 42,800 square miles - Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida

Land Use: Most of the area is in farms but some is in national forests, game refuges, and related uses; more than 66 percent is forest, partly in farm woodlots but much in large holdings. Pulpwood is the principal product. Twelve percent of the area is cropland. Vegetable crops, fruits, melons, sweet potatoes, and Irish potatoes are important.

Elevation and Topography: Sea level to 100 feet; several low escarpments break the gradual increase from the coast inland; nearly level coastal plain crossed by many broad shallow valleys; local relief is a few feet to 10 to 20 feet.

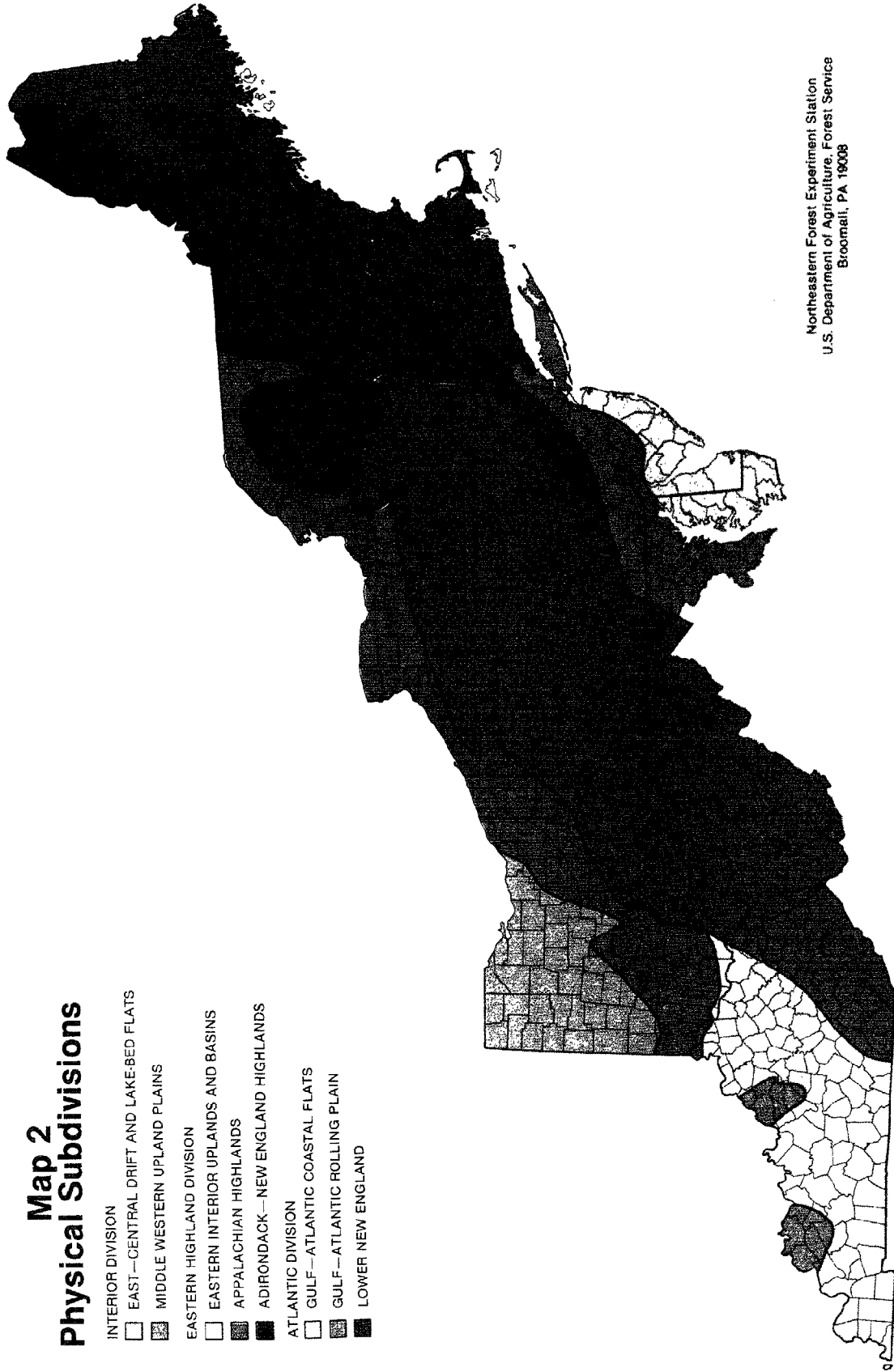
Water: Abundant water provided by rainfall, perennial streams, and ground water; domestic, municipal, and industrial water obtained from wells.

Map 2: Physical Subdivisions

This map is from a 1965 generalized map of physical subdivisions based on landform by Edwin H. Hammond (USDI 1970, p. 61). The subdivisions are based upon an empirical analysis of the land surface rather than upon genetic factors. The user of so generalized a map should keep in mind that the subdivisions vary markedly in homogeneity. Certain subdivisions such as the Gulf-Atlantic Coastal Flats contain only minor internal variations, whereas others such as the Appalachian Highlands are internally quite heterogeneous. Throughout, greater weight has been given to surface character than to similarity in geologic structure or other specific factors of landform genesis.

Map 2 Physical Subdivisions

- INTERIOR DIVISION
 □ EAST—CENTRAL DRIFT AND LAKE-BED FLATS
 ▨ MIDDLE WESTERN UPLAND PLAINS
 EASTERN HIGHLAND DIVISION
 □ EASTERN INTERIOR UPLANDS AND BASINS
 ▨ APPALACHIAN HIGHLANDS
 ■ ADIRONDACK—NEW ENGLAND HIGHLANDS
 ATLANTIC DIVISION
 □ GULF—ATLANTIC COASTAL FLATS
 ▨ GULF—ATLANTIC ROLLING PLAIN
 ■ LOWER NEW ENGLAND



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Map 3: Soils: Orders, Suborders and Great Groups

This soils map of the Northeast is a part of a 1967 United States map compiled by the Soil Conservation Service for publication in the National Atlas of the United States (USDI 1970, p. 87). The soils are designated according to the National Cooperative Soil Survey Classification of 1967, but names used in the 1938 classification and those commonly used since about 1950 are included in parentheses if the old names correspond approximately to the new.

Soil designations on the map are in three categories: order, suborder, and great groups. Names of orders end in "sol" as in Alfisol. Suborder names consist of two syllables, the second taken from the order name, as in Udalf a suborder of Alfisol. Names of great groups have one or more syllables as a prefix to the suborder name, as in Fragiudalf.

The term "gently sloping" means that the predominate slope is less than about 10 percent. "Moderately sloping" means slope between approximately 10 and 25 percent. "Steep" refers to slopes steeper than about 25 percent.

The map units are mostly associations of phases of great groups. Only the principal kinds of soil are named for each map unit. The most extensive is listed first and the least extensive, last. Other kinds of soil are present in each map unit but are not extensive enough to be listed as inclusions.

Soil great groups found in association with other soil great groups in the Northeast, but which are never the predominant great group in any mapped soil region of the Northeast are listed and described following the description of the mapped soil region. These are referenced by footnote notation in the map region descriptions and in the listing.

For complete definitions of soil taxa see "Soil classification, a comprehensive system, 7th approximation" and the supplement (Soil Survey Staff 1960, 1967).

Nomenclature of Soils in the Northeast

Soil orders end in "sol" from the Latin *solum*, soil.

Suborders—meanings of key syllables:

Aqu—*L. aqua*, water; soils that are wet for long periods.

Ochr—*Gr. base of ochros*, pale; soils with little organic matter.

Orth—*Gr. orthos*, true; common or typical.

Ud—*L. udus*, humid; of humid climate.

Great groups—meanings of key syllables:

Dystr—modified from *Gr. dys*, ill, infertile.

Frag—modified from *L. fragilis*, brittle; a brittle pan.

Hapi—*Gr. haplous*, simple; the least advanced horizon.

Alfisols

Soils that are medium to high in bases (base saturation at pH 8.2) and have gray to brown surface horizon and subsurface horizons of clay accumulation; usually moist but during the warm season some are dry part of the time.

Aqualfs—Seasonally wet Alfisols that have mottles, iron-manganese concretions or gray colors; used for general crops where drained and for pasture and woodland where undrained.

Ochraqualfs (formerly Low-Humic Gley soils)—Aqualfs that change gradually in texture into the underlying horizon.

Udalfs—Alfisols that are in temperate to tropical regions. Soils usually moist but during the warm season may be intermittently dry in some horizons for short periods; used for row crops, small grain, and pasture.

Fragiudalfs (formerly Gray-Brown Podzolic soils with fragipan)—Udalfs that have a dense brittle but not indurated horizon (fragipan) usually below a horizon in which clay has accumulated.

A6-3: Fragiudalfs plus Fragiqualfs' and Hapludolls, gently sloping to steep.

A6-9: Fragiudalfs plus Ochraqualfs and Fragiqualfs, gently sloping.

Hapludalfs (formerly Gray-Brown Podzolic soils without fragipan)—Udalfs that have a subsurface horizon of clay accumulation that is relatively thin or is brownish.

A7-1: Hapludalfs, gently sloping.

A7-2: Hapludalfs, moderately sloping.

A7-4: Hapludalfs plus Argudolls', gently sloping.

A7-13: Hapludalfs plus Hapludolls and Udipsamments', all gently sloping.

A7-15: Hapludalfs plus Ochraqualfs, gently sloping.

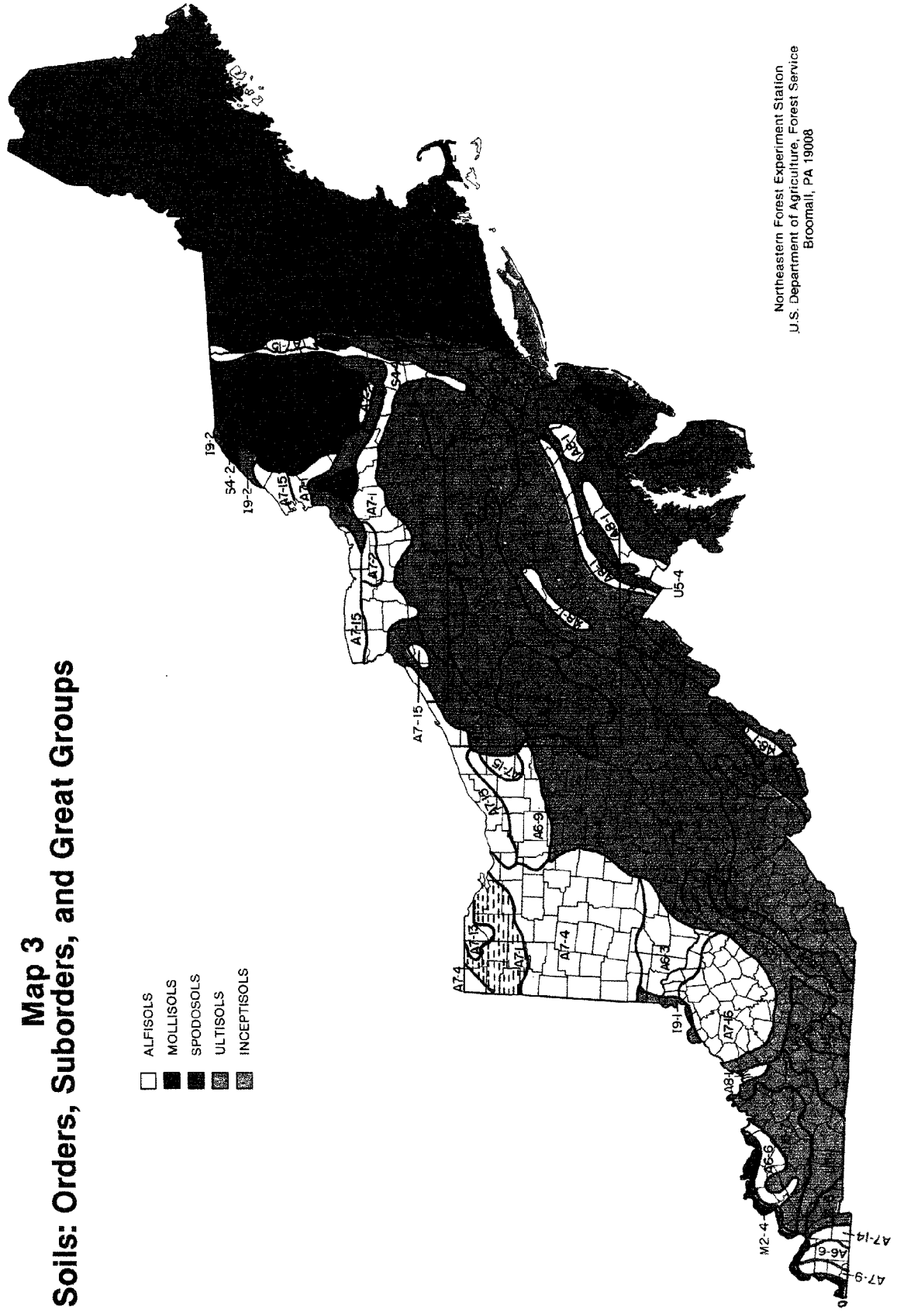
A7-16: Hapludalfs plus Paleudalfs, Hapludolls, and Hapludolls', moderately sloping.

Paleudalfs (formerly Red-Yellow Podzolic and Gray-Brown Podzolic soils)—Udalfs that have a thick reddish horizon of clay accumulations.

A8-1: Paleudalfs plus Hapludalfs and Dystrichrepts, gently sloping to steep.

Map 3 Soils: Orders, Suborders, and Great Groups

- ALFISOLS
- MOLLISOLS
- SPodosOLS
- ULTISOLS
- INCEPTISOLS



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Mollisols

Soils that have nearly black friable organic-rich surface horizons, high in bases; formed mostly in sub-humid and semiarid warm to cold climates.

Aquolls—Seasonally wet Mollisols that have a thick nearly black surface horizon and gray subsurface horizons; used for pasture, and, where drained, small grains, corn, and potatoes.

Haplaquolls (formerly Humic-Gley soils)—Aquolls that have horizons in which materials have been altered or removed but no clay or calcium carbonate has accumulated.

M24: Haplaquolls plus Udifluvents,² Hapludolls,² and Hapludalfs, gently sloping.

Spodosols

Soils with low base supply that have in subsurface horizons an accumulation of amorphous materials consisting of organic matter plus compounds of aluminum and usually iron; formed in acid mainly course-textured materials in humid and mostly cool or temperate climates.

Orthods—Spodosols that have a horizon in which organic matter plus compounds of iron and aluminum have accumulated; used for woodland, hay, pasture, fruit, and on gently sloping areas, potatoes and truck crops.

Fragiorthods (formerly Podzols and Brown Podzolic soils, both with fragipans)—Orthods that have a dense brittle, but not indurated horizon (fragipan) below a horizon that has an accumulation of organic matter and compounds of iron and aluminum.

S3-1: Fragiorthods, moderately sloping.

Hapliorthods (formerly Podzols and Brown Podzolic soils)—Orthods of cool regions. They have a horizon in which organic matter plus compounds of iron and aluminum have accumulated but they have no dense, brittle, or indurated horizon (fragipan).

S4-2: Hapliorthods sandy, gently or moderately sloping.

S4-3: Hapliorthods plus Fragiorthods, gently sloping.

S4-4: Hapliorthods plus Fragiorthods, moderately sloping.

S4-5: Hapliorthods plus Fragiorthods and Rock land, steep.

S4-8: Hapliorthods plus Haplaquepts and Fragiocchrepts, gently or moderately sloping.

S4-9: Hapliorthods plus Haplaquepts² and Ochraqualls, gently sloping.

S4-10: Hapliorthods plus Quartzipsammits² and Hapliudolls, gently sloping.

S4-11: Hapliorthods plus Rock land, moderately sloping or steep.

Ultisols

Soils that are low in bases and have subsurface horizons of clay accumulation; usually moist but during the warm season of the year, some are dry part of the time.

Aquolls—Seasonally wet Ultisols that have mottles, iron-manganese concretions, or gray colors. Used for limited pasture and woodland, and where drained, some hay, cotton, corn, and truck crops.

Ochraqquolls (formerly Low-Humic Gley soils)—Aquolls that have either a light-colored or thin black surface horizon.

U1-4: Ochraqquolls plus Umbraquolls² and Tidal marsh, gently sloping.

Udolls—Ultisols that are usually moist and that are relatively low in organic matter in the subsurface horizons; formed in humid climates that have short or no dry periods during the year; used for general farming, woodland and pasture, and tobacco.

Hapludolls (formerly Red-Yellow Podzolic and Gray-Brown Podzolic soils)—Udolls that either have a subsurface horizon of clay accumulation that is relatively thin, a subsurface horizon having appreciable weatherable minerals, or both.

U5-1: Hapludolls gently or moderately sloping.

U5-2: Hapludolls, gently sloping to steep (mostly dissected plateaus).

U5-4: Hapludolls, steep.

U5-5: Hapludolls plus Dystrochrepts, moderately sloping.

U5-7: Hapludolls plus Dystrochrepts, gently or moderately sloping, and Rock land, steep.

U5-8: Hapludolls plus Fragiudolls, gently sloping.

U5-11: Hapludolls plus Ochraqquolls, gently sloping.

U5-12: Hapludolls plus Paleudolls, moderately sloping.

Paleudolls (formerly Red-Yellow Podzolic soils)—

Udolls that have a thick horizon of clay accumulation without appreciable weatherable minerals.

U6-6: Paleudolls plus Hapludolls, both moderately sloping, and Fragiudolls, gently sloping.

Inceptisols

Soils that have weakly differentiated horizons; materials in the soil have been altered or removed but have not accumulated. These soils are usually moist, but during the warm season of the year some are dry part of the time.

Ochrepts—Inceptisols that have formed in materials with crystalline clay minerals, have light-colored surface horizons, and have altered subsurface horizons that have lost mineral materials; used for pasture, silage corn, small grain, and hay in the Northeast.

Dystrochrepts (formerly Sols Bruns Acides and some Brown Podzolic and Gray-Brown Podzolic soils)—Ochrepts that are usually moist bases and have no free carbonates in the subsurface horizons.

- I8-1: Dystrochrepts, gently sloping.
- I8-2: Dystrochrepts, gently sloping to steep (dissected plateaus).
- I8-3: Dystrochrepts plus Fragiochrepts and Hapludalfs, moderately sloping.
- I8-4: Dystrochrepts, steep, plus Hapludalfs and Hapludults, both moderately sloping.
- I8-5: Dystrochrepts, steep, plus Paleudalfs and Hapludults, both moderately sloping.
- I8-6: Dystrochrepts plus Rock land and Hapludults, steep.

Eutrochrepts (formerly Brown Forest soils)—Ochrepts that are usually moist and are either high in bases, have face carbonates in the subsurface horizons, or both.

- I9-1: Eutrochrepts, steep.
- I9-2: Eutrochrepts plus Dystrochrepts, gently sloping.

Fragiochrepts (formerly Sols Bruns Acides and some Brown Podzolic and Gray-Brown Podzolic soils, all with fragipan)—Ochrepts that have a dense brittle but not indurated horizon (fragipan).

I10-1: Fragiochrepts plus Dystrochrepts (both stony), steep.

I10-2: Fragiochrepts plus Fragiochrepts^a and Dystrochrepts, gently sloping.

I10-3: Fragiochrepts plus Fragiochrepts^a and Dystrochrepts, moderately sloping.

I10-4: Fragiochrepts plus Fragiochrepts^a and Dystrochrepts, gently sloping to steep.

Soil Great Groups Found in Association with Other Great Groups

Alfisols

Aqualfs

¹Fragiaqualfs (formerly Low-Humic Gley soils with fragipan)—Aqualfs that have a dense brittle but not indurated horizon (fragipan).

Entisols

Soils that have no pedogenic horizon.

Fluvents (formerly Alluvial soils)—Entisols that have organic-matter content that decreases irregularly with depth; formed in loamy or clayey alluvial deposits; used for range or irrigated farming in dry regions and general farming in humid regions.

²Udifuvents (formerly Alluvial soils)—Fluvents that are usually moist.

Psamments—Entisols that have textures of loamy fine sand or coarser; used for range, wild hay, and some hardy vegetables in Alaska, woodland and small grains where warm and moist, and range and irrigated crops where warm and dry.

³Quartzipsamments (formerly Regosols)—Psamments that consist almost entirely of minerals highly resistant to weathering, mainly quartz.

⁴Udipsamments (formerly Regosols)—Psamments that contain easily weatherable minerals; they are usually moist in all parts of the soil in most years.

Inceptisols

Aquepts—Seasonably wet inceptisols that have an organic surface horizon, sodium saturation, mot-tles, or gray colors.

⁵Fragiaquepts (formerly Low Humic-Gley soil with fragipan)—Aquepts that have a dense brittle but not indurated horizon (fragipan).

⁶Haplaquepts (formerly Low Humic-Gley soils)—Aquepts that have either a light-colored or a thin black surface horizon.

Mollisols

Udolls—Mollisols of temperate climates. Udolls are usually moist and have no horizon in which either calcium carbonate or gypsum has accumulated; used for corn, small grain, and soybeans.

⁷Argiudolls (formerly Brunizems and Reddish Prairie soils)—Udolls that have a subsurface horizon in which clay has accumulated.

⁸Hapludolls (formerly Brunizems and some Regosols, Brown Forest and Alluvial soils)—Udolls that have horizons from which some materials have been removed or altered but have no subsurface horizon of clay accumulation.

Ultisols

Aquults

⁹Umbraquults (formerly Humic-Gley soils)—Aquults that have a thick black surface horizon.

Map 4: Water Resource Regions and Major River Basins

Northeast Atlantic Region

1. St. John River
2. St. Croix River
3. Penobscot River
4. Kennebec River
5. Androscoggin River
6. Saco River
7. Piscataquis River
8. Merrimack River
9. Thames River
10. Connecticut River
11. Housatonic River

Mid-Atlantic Region

1. Lake Champlain-Richelieu River
2. Hudson River
3. Passaic River
4. Raritan River
5. Delaware River
6. Nanticoke River
7. Susquehanna River
8. Patuxent River
9. Potomac River

Ohio Region

1. Allegheny River
2. Beaver River
3. Muskingum River
4. Little Kanawha River
5. Hocking River
6. Kanawha River
7. Guyandotte River
8. Big Sandy River
9. Little Sandy River
10. Scioto River
11. Little Miami River
12. Licking River
13. Great Miami River
14. Kentucky River
15. Salt River
16. Green River
17. Wabash River
18. Saline River
19. Tradewater River
20. Cumberland River

Tennessee Region

7. Duck River

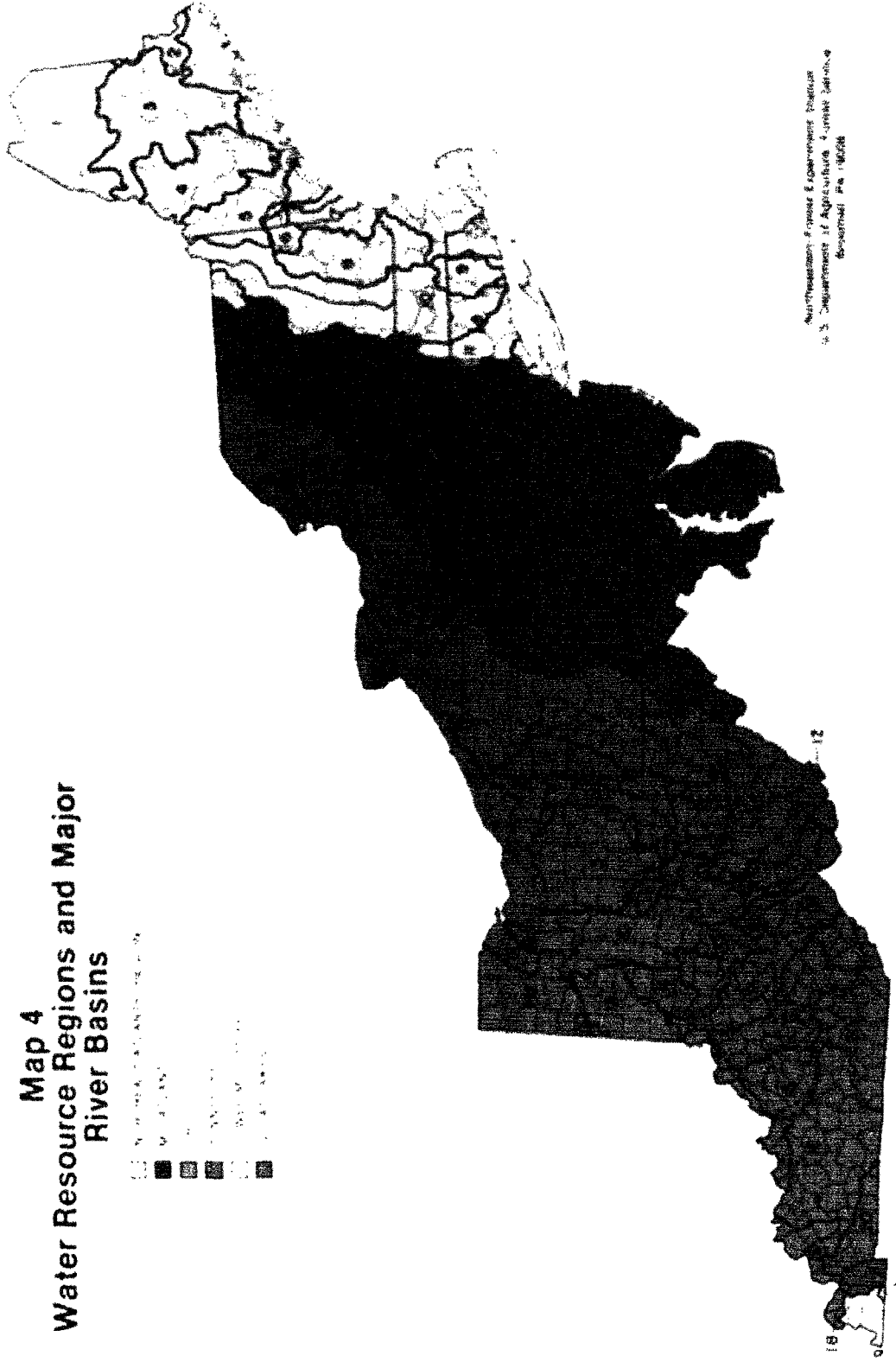
Lower Mississippi Region

1. Obion River

Great Lakes Region

- D. Lake Erie
3. Maumee River
 4. Sandusky River
 6. Niagara River
- E. Lake Ontario
1. Genesee River
 2. Oswego River
 3. Black River
 4. St. Lawrence River

Map 4 Water Resource Regions and Major River Basins



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Bureau of Animal Health

Map 5: Forest Types

This forest type map of the Northeast was developed from forest types compiled as part of the most recent forest inventory and analysis of each of the 14 states. Definitions of the forest type groups are:

White pine/red pine/hemlock—Forests in which eastern white pine, red pine, and eastern hemlock, singly or in combination, make up a plurality of the stocking. (Common associates: aspen, birch, maple, oak, and yellow-poplar.)

Individual types included:

Red pine
White pine
White pine/Hemlock
Jack pine
Hemlock
Scotch pine (introduced)

Spruce/fir—Forests in which spruce or true firs, singly or in combination, comprise a plurality of the stocking. (Common associates: white cedar, tamarack, maple, birch, and hemlock.)

Individual types included:

Balsam fir
Black spruce
Red spruce/balsam fir
Northern white-cedar
Tamarack
White spruce
Norway spruce (introduced)

Loblolly/Shortleaf Pine—Forests in which loblolly pine, shortleaf pine, or other southern yellow pines except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates: oak, hickory, and gum.)

Individual types included:

Loblolly pine
Shortleaf pine
Virginia pine
Eastern redcedar
Pond pine
Pitch pine
Table Mountain pine

Oak/pine—Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which pines comprise 25 to 49 percent of the stocking. (Common associates: gum, hickory, and yellow-poplar.)

Individual types included:

White pine/northern red oak/white ash
Eastern redcedar/hardwood
Shortleaf pine/oak
Virginia pine/southern red oak
Loblolly pine/hardwood
Other oak/pine

Oak/Hickory—Forests in which upland oaks or hickory, singly or in combination, comprises a plurality of the stocking, except where pines comprise 25 to 50 percent and then the stand would be classified oak/pine. (Common associates: yellow-poplar, elm, maple, and black walnut.)

Individual types included:

Post oak
Black oak
Bear oak
Chestnut oak
White oak/red oak/hickory
White oak
Northern red oak
Yellow-poplar/white oak/northern red oak
Sweetgum/yellow-poplar
Mixed hardwoods

Oak/Gum/Cypress—Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or Southern cypress, singly or in combination, comprise a

plurality of the stocking, except where pines comprise 25 to 50 percent and then the stand would be classified oak/pine. (Common associates: cottonwood, willow, ash, elm, hackberry, and maple.)

Individual types included:

Swamp chestnut oak/cherrybark oak
Atlantic white-cedar
Baldcypress/water tupelo
Sweetbay/swamp tupelo/red maple

Elm/Ash/Red maple—Forests in which elm, ash, or red maple, singly or in combination, comprise a plurality of the stocking. (Common associates: willow, sycamore, beech, and other maples.)

Individual types included:

Black ash/American elm/red maple
River birch/sycamore
Willow
Red maple (wet sites)

Maple/Beech/Birch—Forests in which maple, beech, or yellow birch, singly or in combination, comprise a plurality of the stocking. (Common associates: hemlock, elm, basswood, and white pine.)

Individual types included:

Sugar maple/beech/yellow birch
Black cherry
Black walnut
Red maple (dry sites)
Mixed northern hardwoods

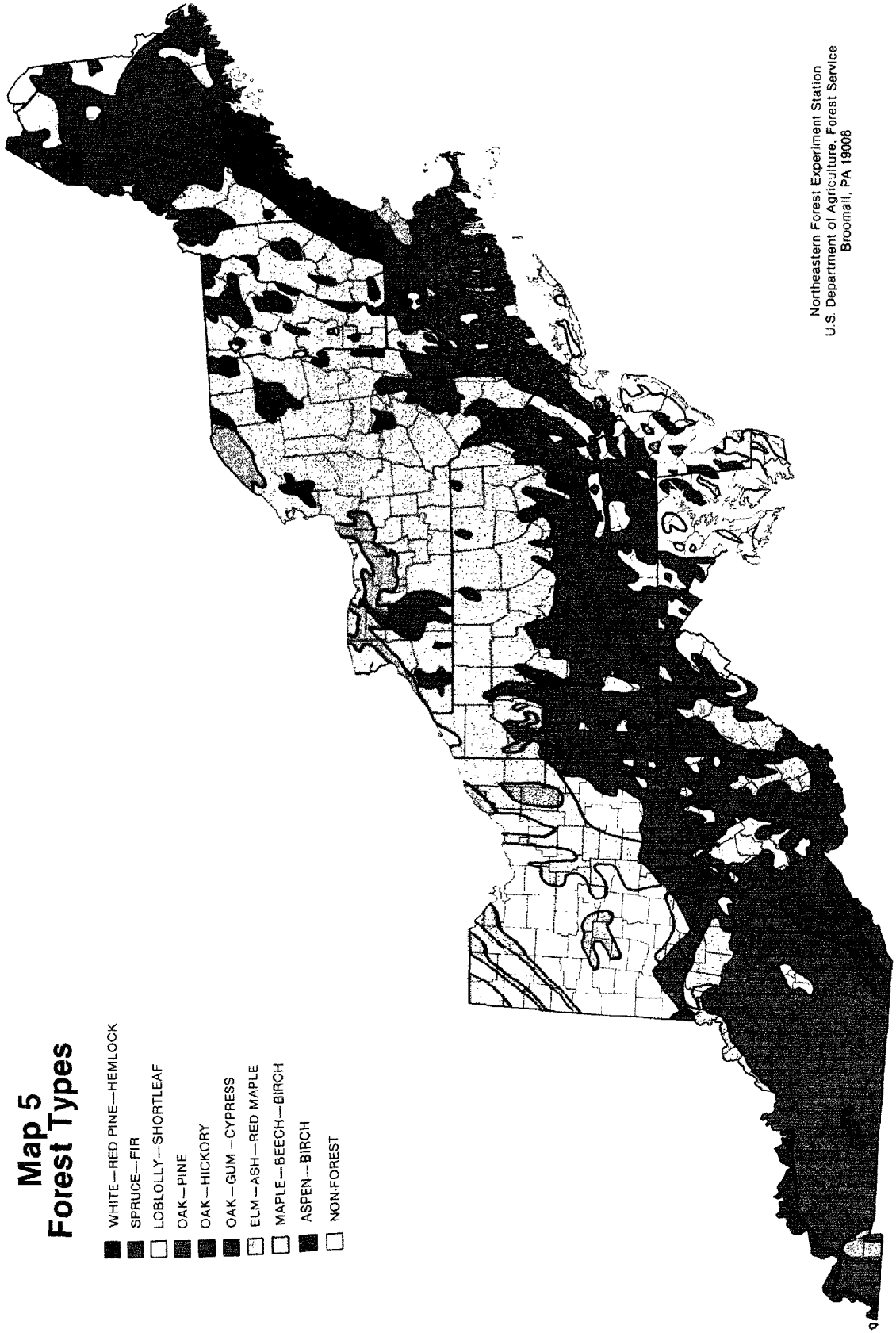
Aspen/Birch—Forests in which aspen, balsam poplar, paper birch, or gray birch, singly or in combination, comprise a plurality of the stocking. (Common associates: maple and balsam fir)

Individual types included:

Aspen
Paper birch
Gray birch

Map 5 Forest Types

- WHITE—RED PINE—HEMLOCK
- SPRUCE—FIR
- LOBLOLLY—SHORTLEAF
- OAK—PINE
- OAK—HICKORY
- OAK—GUM—CYPRESS
- ELM—ASH—RED MAPLE
- MAPLE—BEECH—BIRCH
- ASPEN—BIRCH
- NON-FOREST

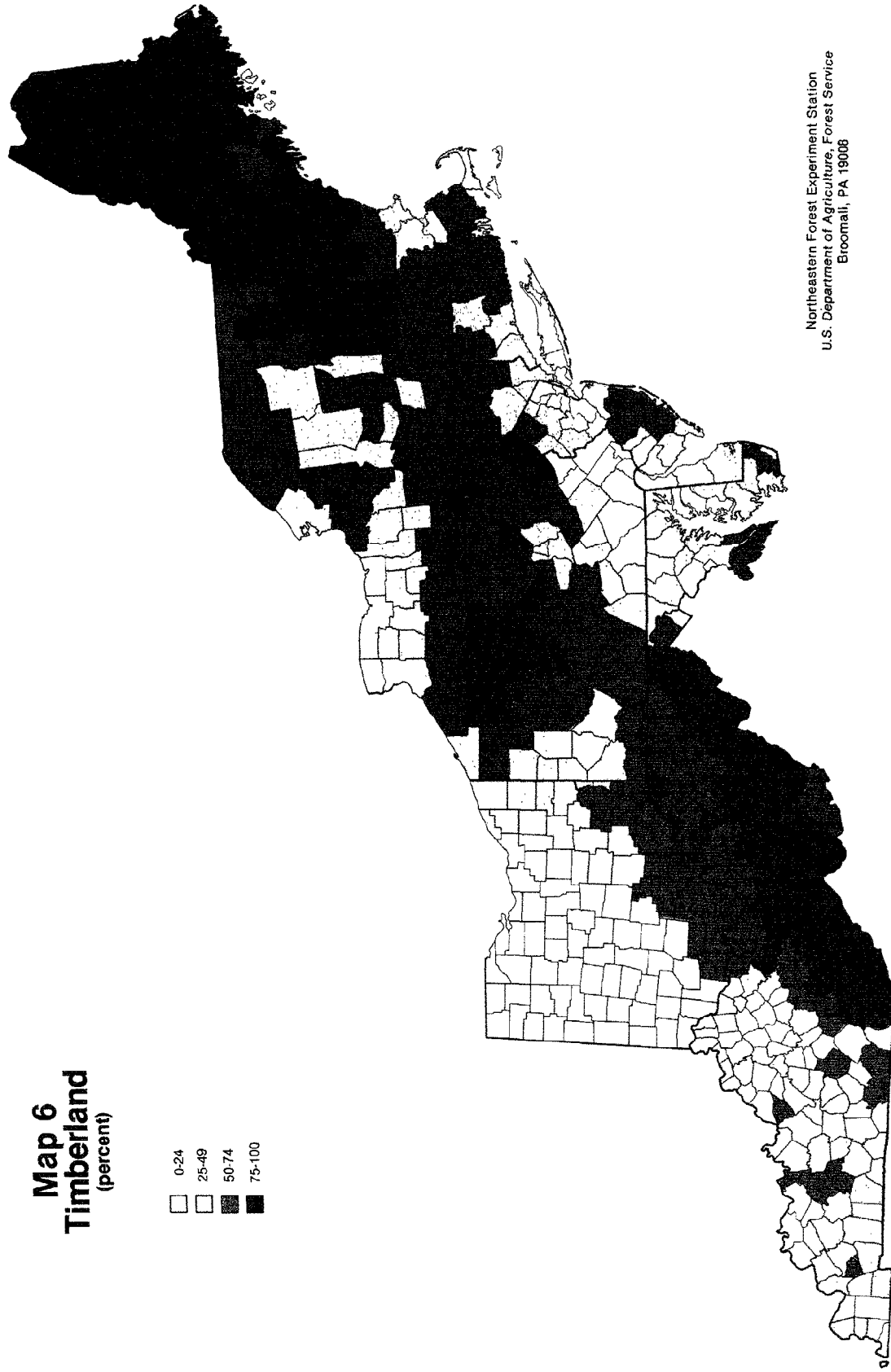


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Map 6: Timberland

Timberland is defined as forest land producing or capable of producing crops of industrial wood (more than 20 cubic feet per acre per year) and not withdrawn from timber utilization. In the Northeast, less than 2 percent of the forest land is considered unproductive by this definition. However, slightly more than 4 percent is "productive reserved forest land." This land is capable of producing wood but is legally or administratively withdrawn from timber utilization.

0-24
25-49
50-74
75-100

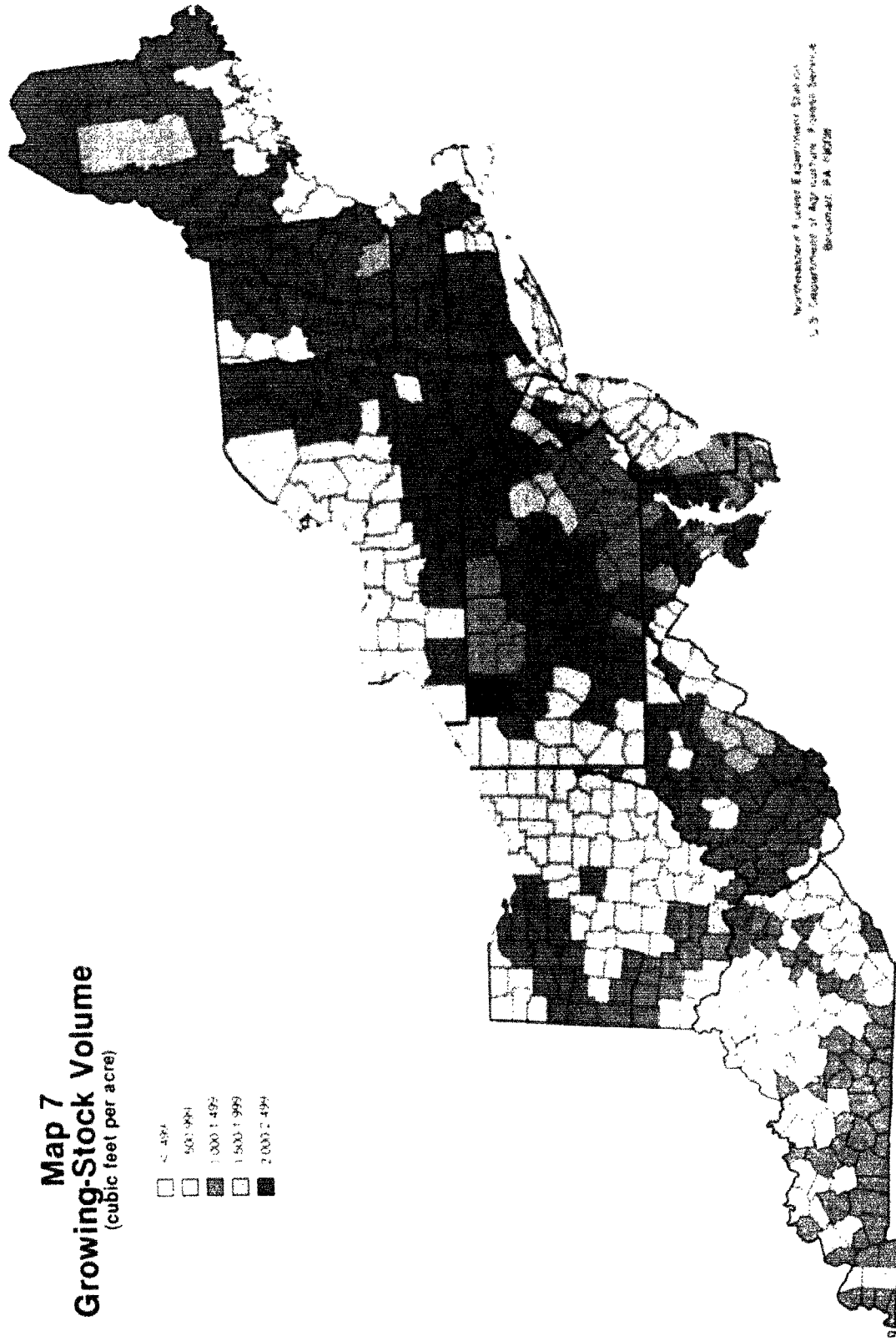
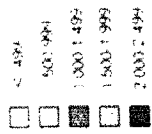


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Map 7: Growing Stock Volume

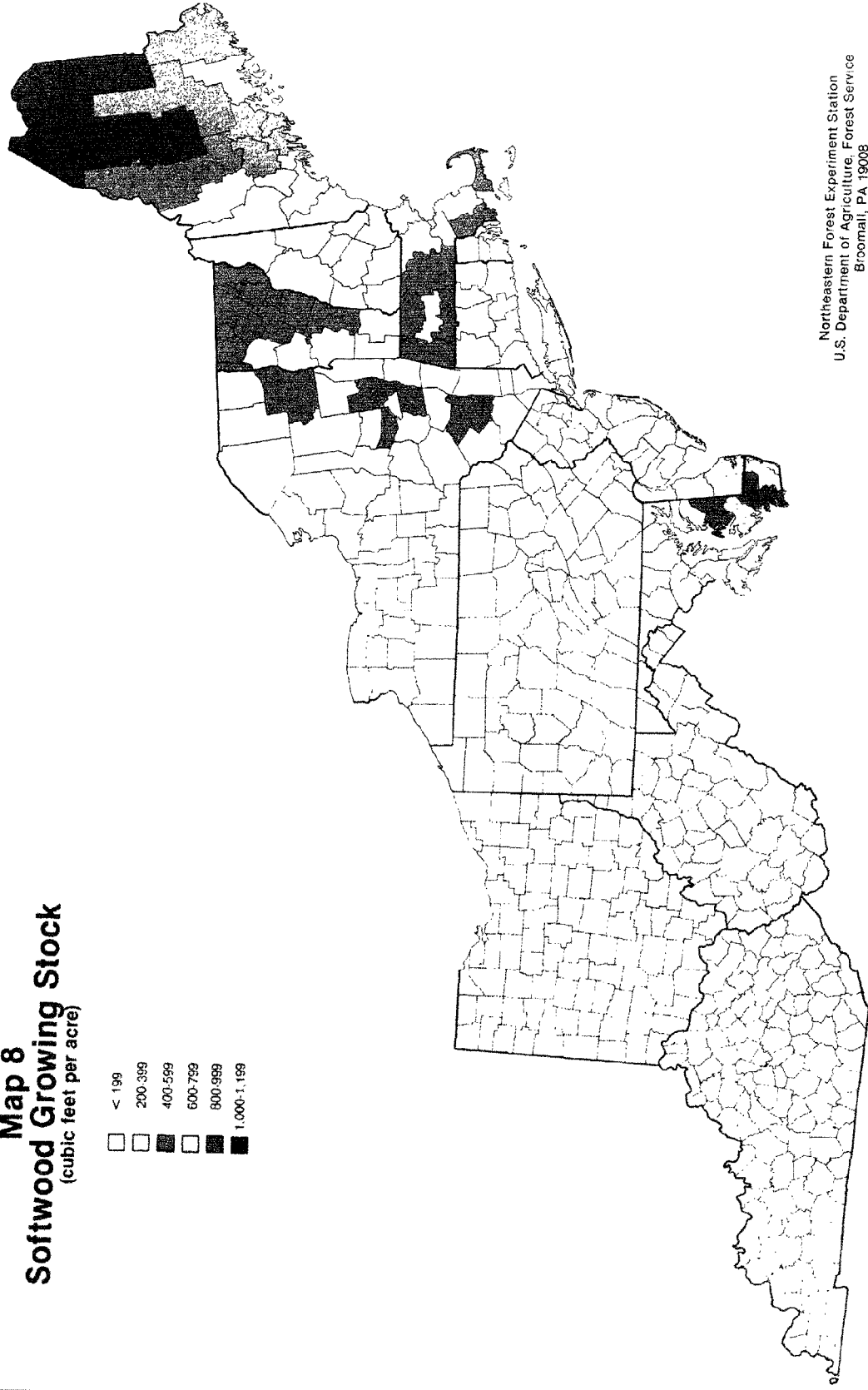
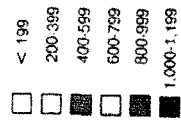
Growing-stock volume is the net volume, in cubic feet, of live trees of commercially acceptable species and form that are 5.0 inches d.b.h. and over, from a 1-foot stump to a minimum 4.0-inch diameter outside bark of the central stem, or to the point where the central stem breaks into limbs.

Map 7 Growing-Stock Volume (cubic feet per acre)



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Bureau of Forest Sciences

Map 8 Softwood Growing Stock (cubic feet per acre)

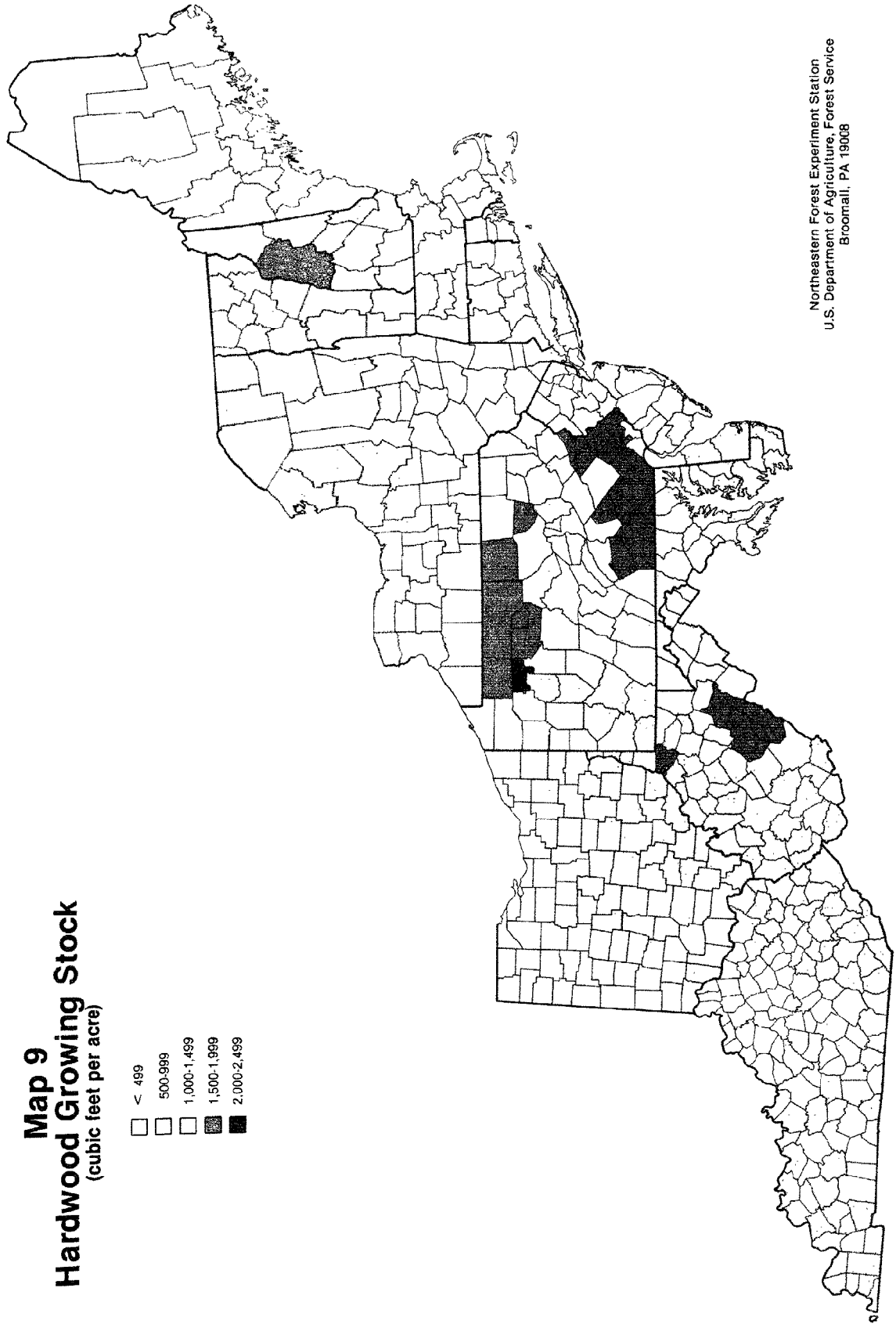
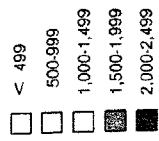


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Map 9

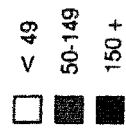
Hardwood Growing Stock

(cubic feet per acre)

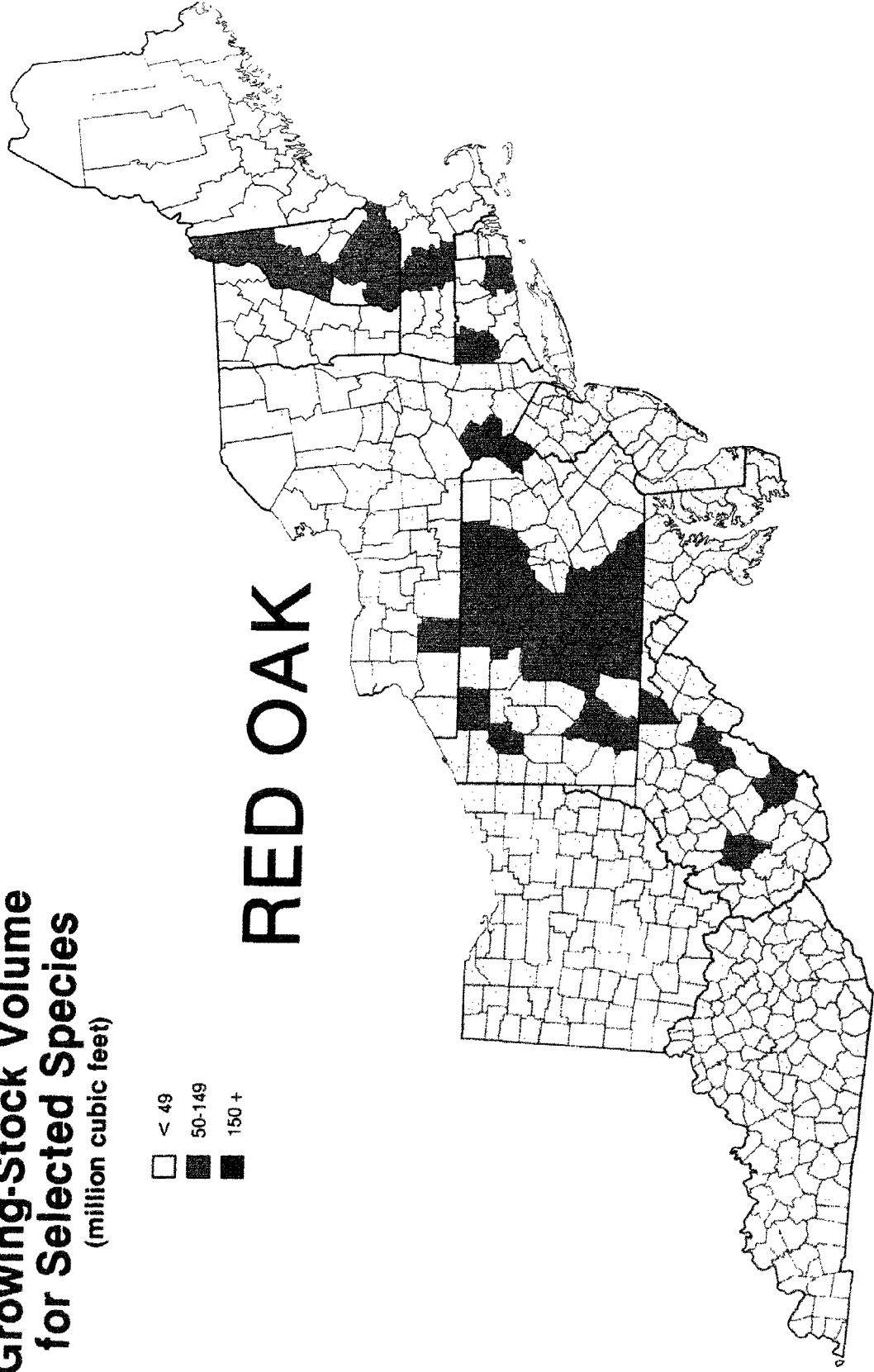


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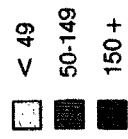
Map 10
Growing-Stock Volume
for Selected Species
(million cubic feet)



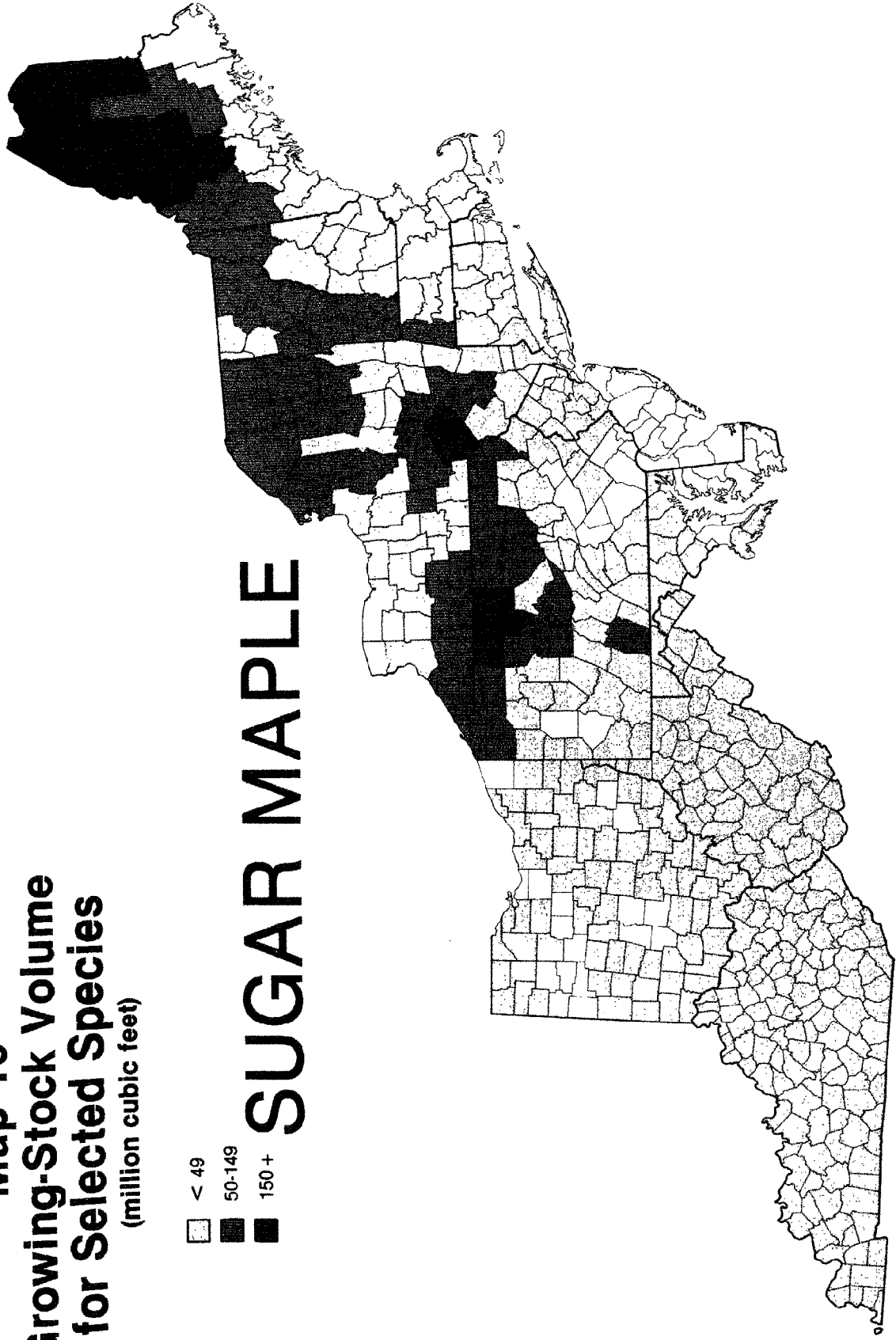
RED OAK



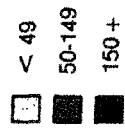
Map 10
Growing-Stock Volume
for Selected Species
(million cubic feet)



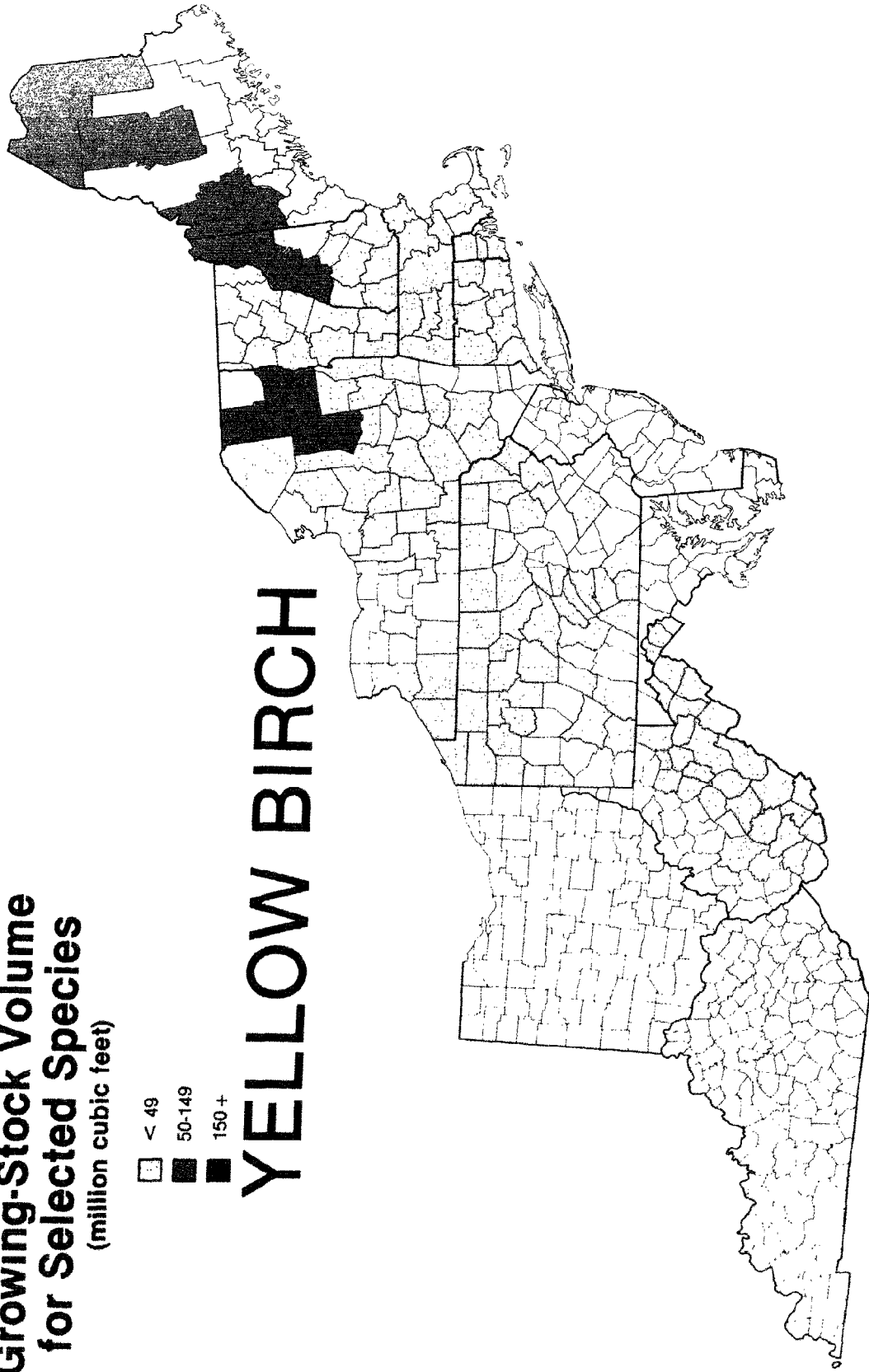
SUGAR MAPLE



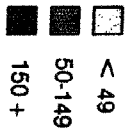
Map 10
Growing-Stock Volume
for Selected Species
 (million cubic feet)



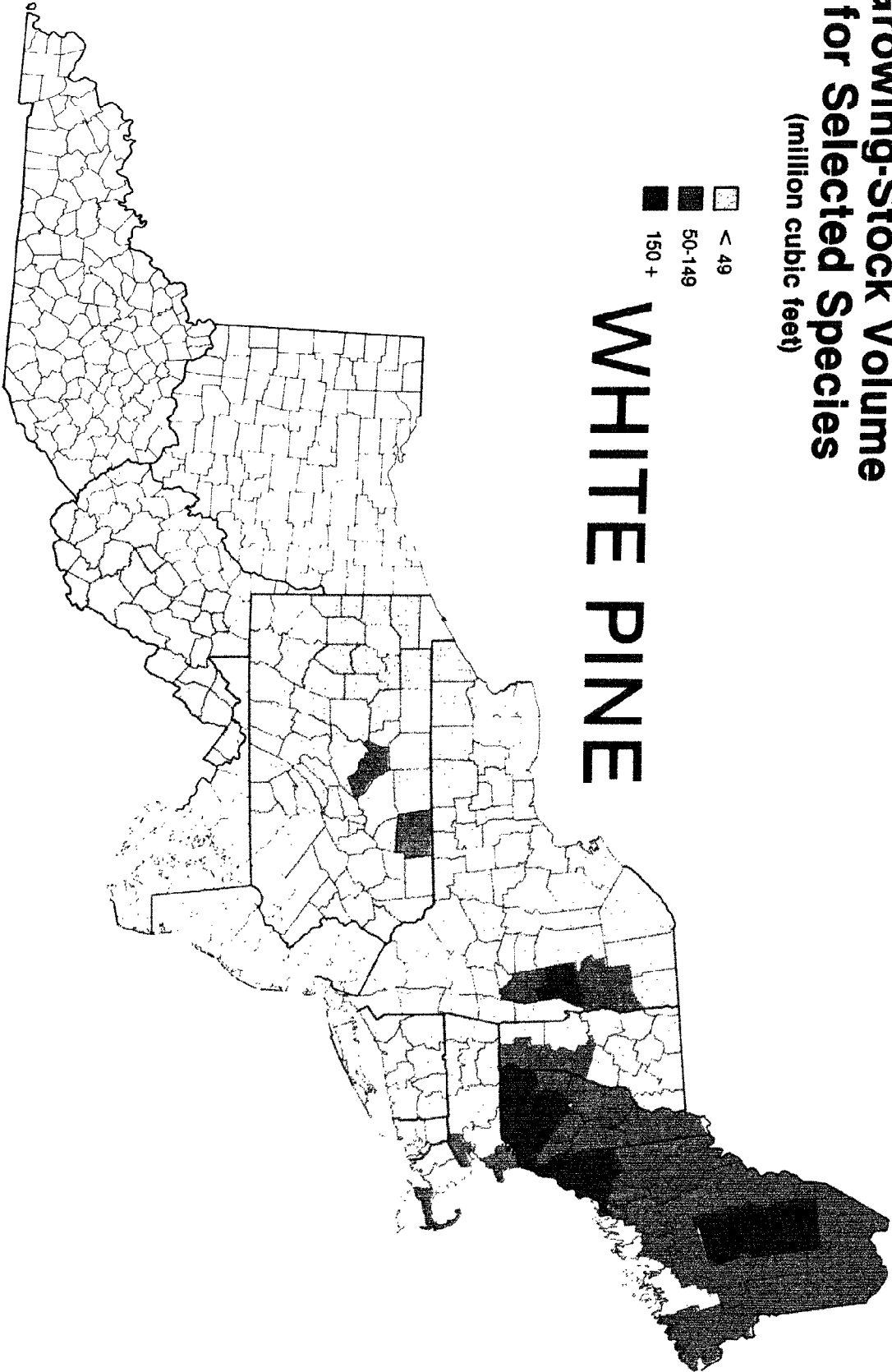
YELLOW BIRCH



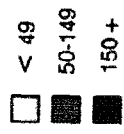
Map 10 Growing-Stock Volume for Selected Species (million cubic feet)



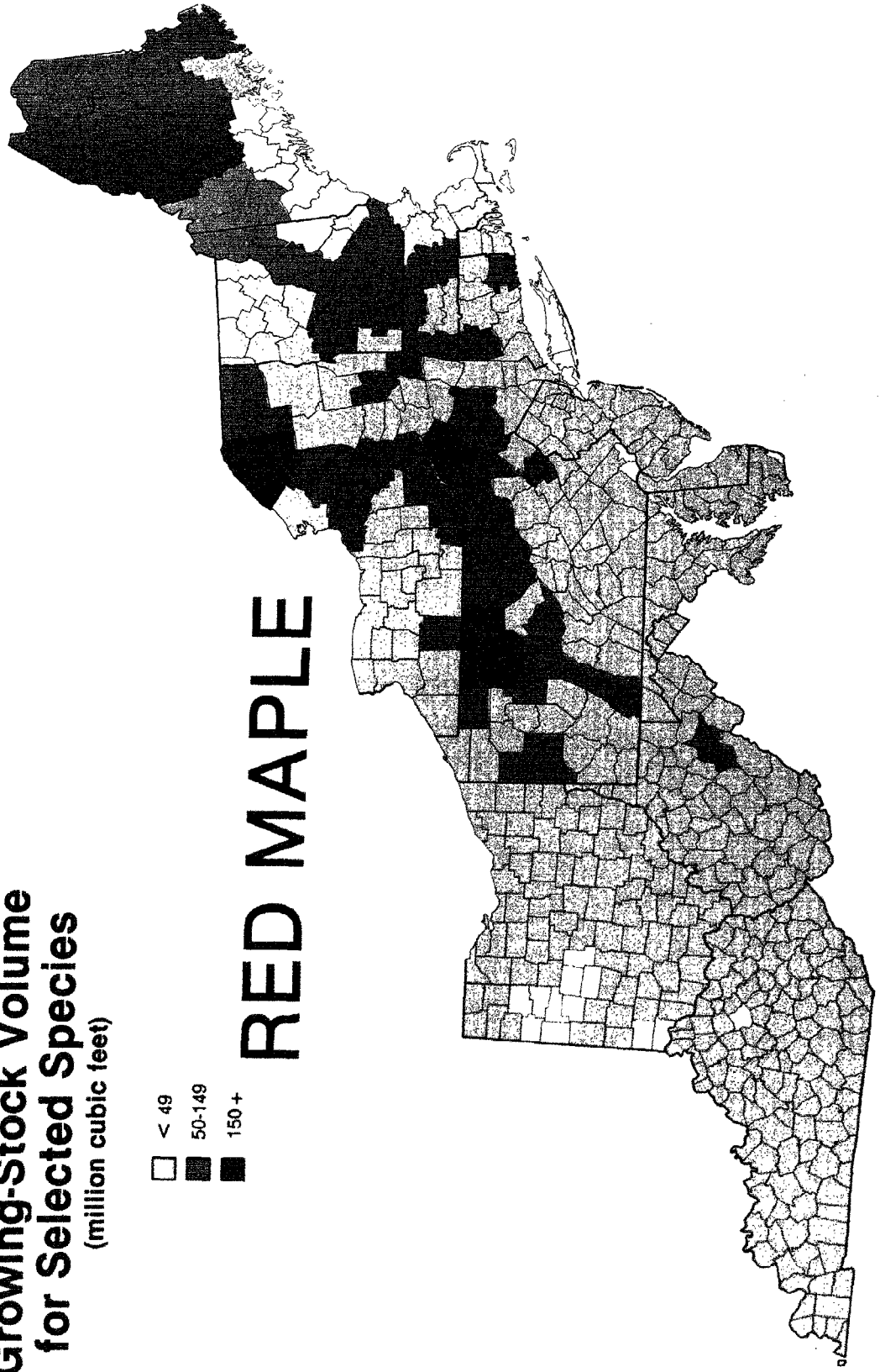
WHITE PINE



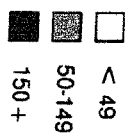
Map 10
Growing-Stock Volume
for Selected Species
(million cubic feet)



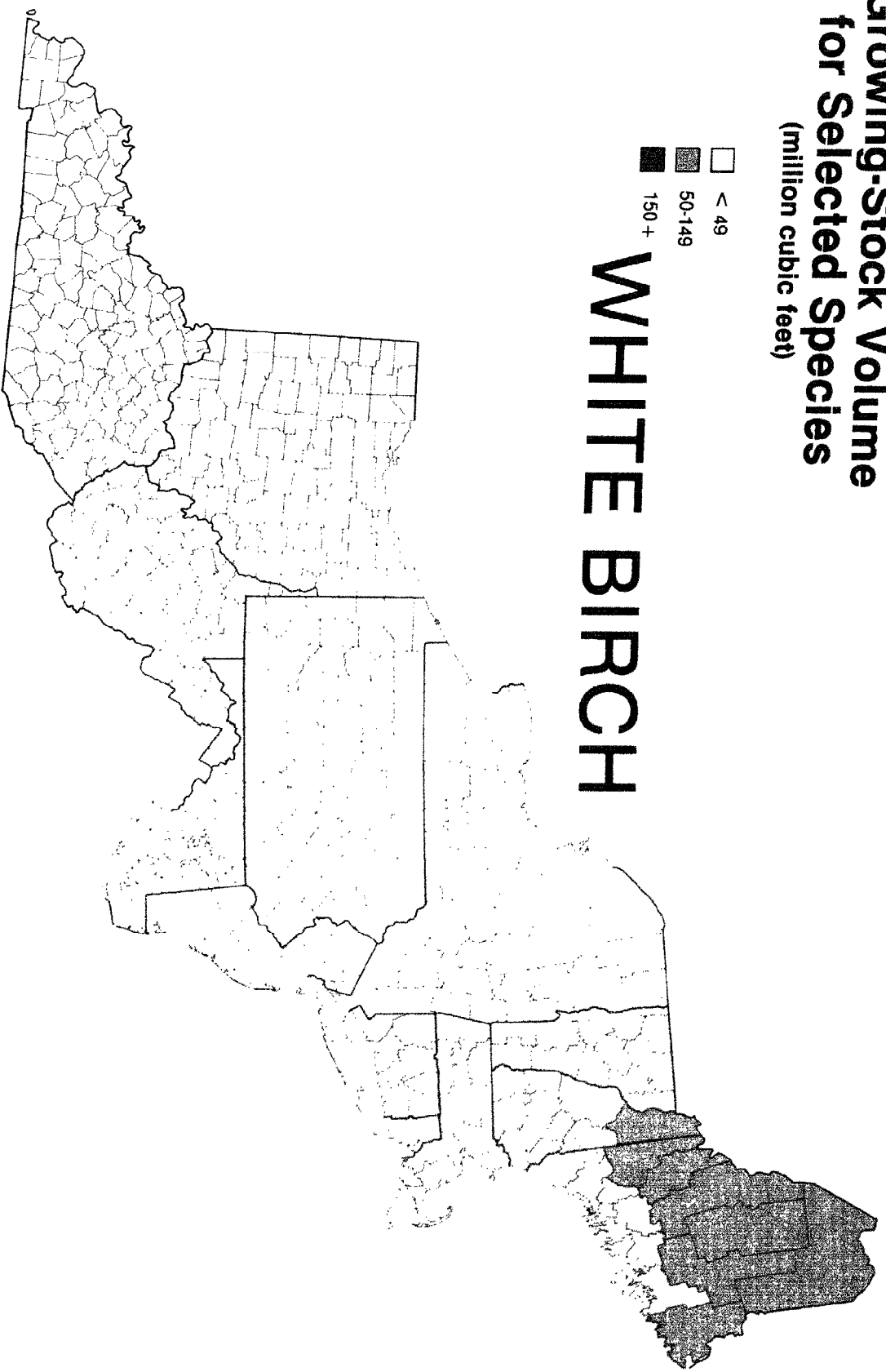
RED MAPLE



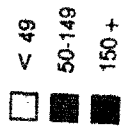
Map 10 Growing-Stock Volume for Selected Species (million cubic feet)



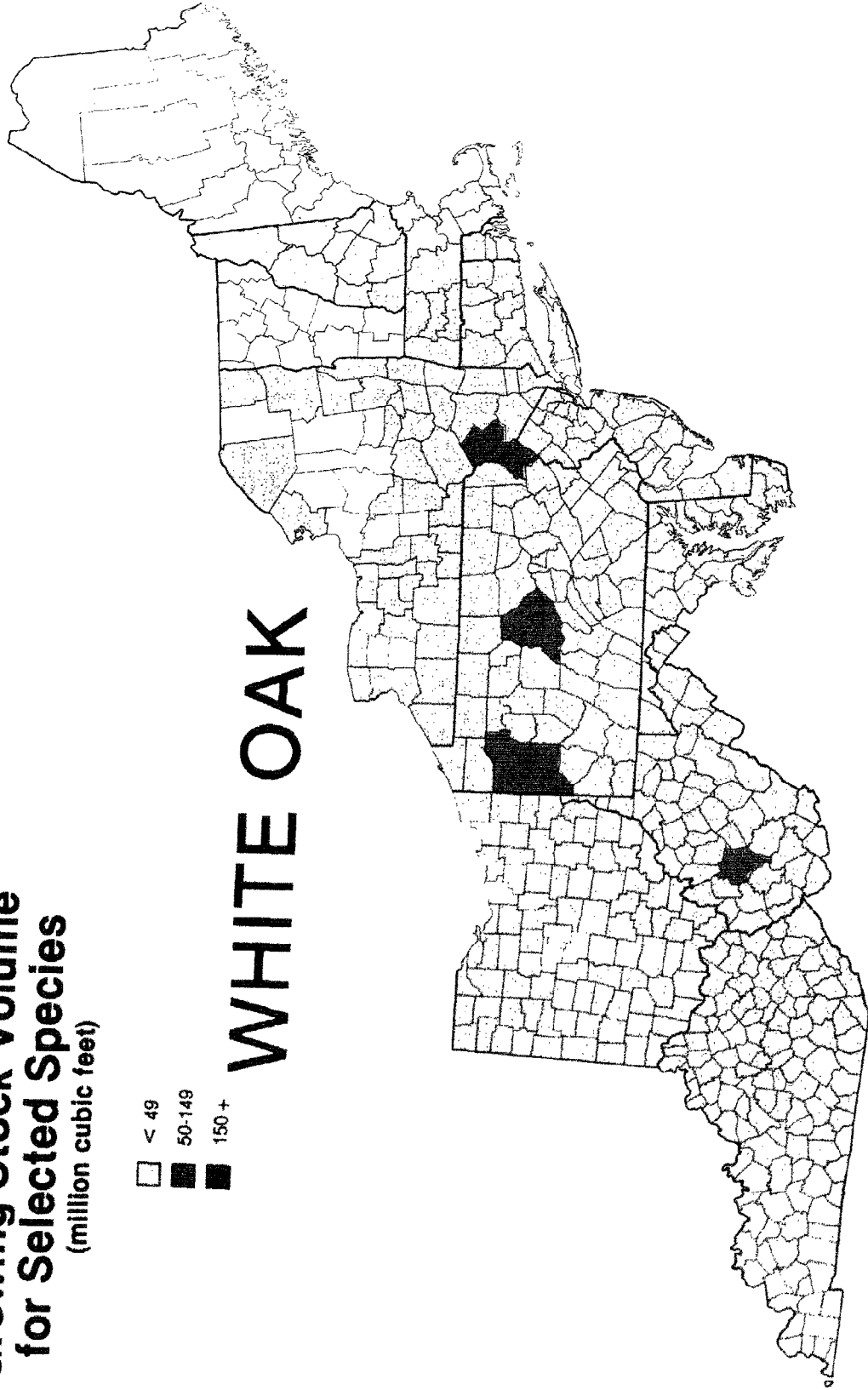
WHITE BIRCH



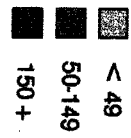
Map 10
Growing-Stock Volume
for Selected Species
 (million cubic feet)



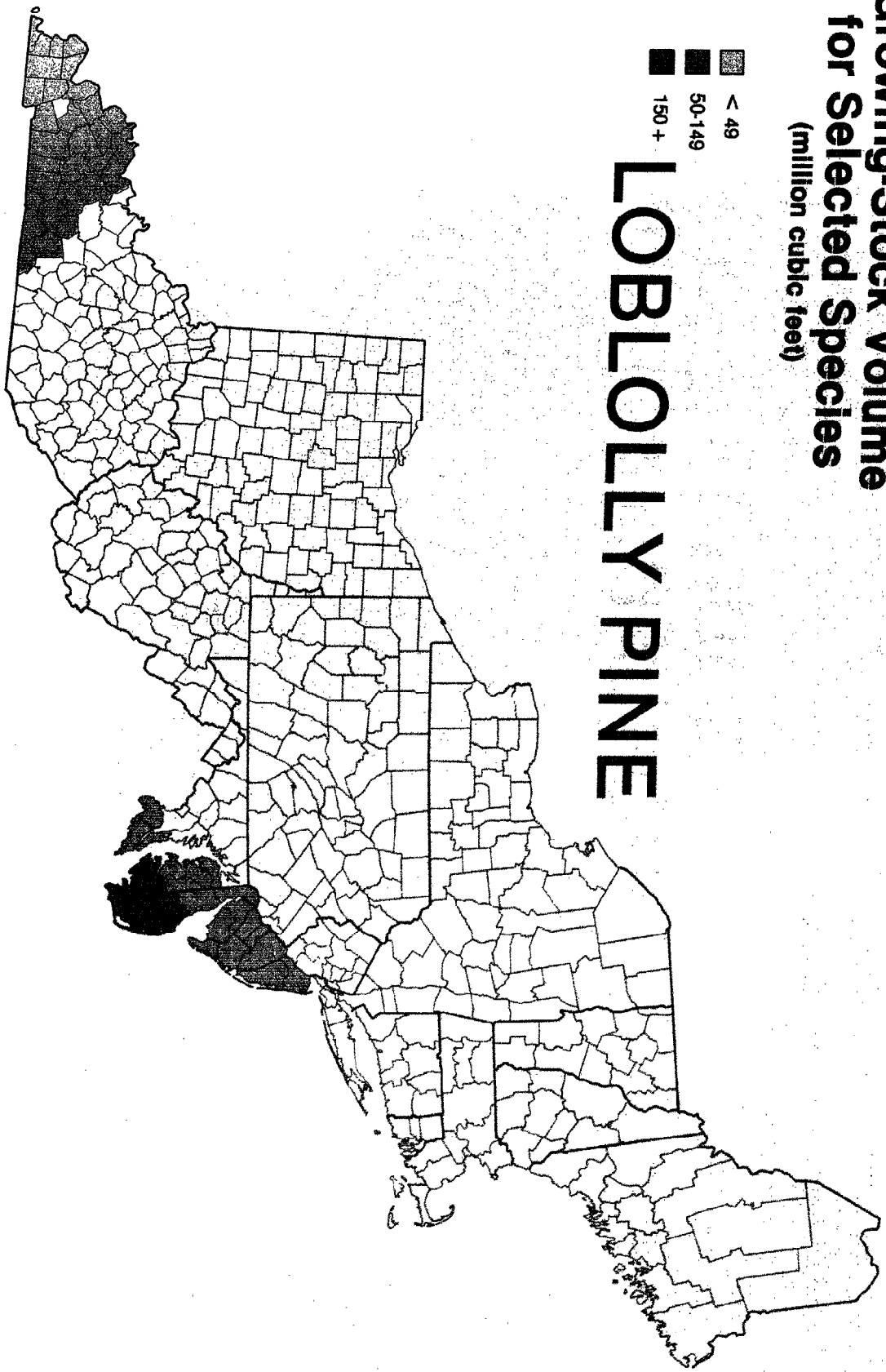
WHITE OAK



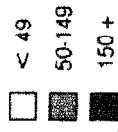
Map 10
Growing-Stock Volume
for Selected Species
(million cubic feet)



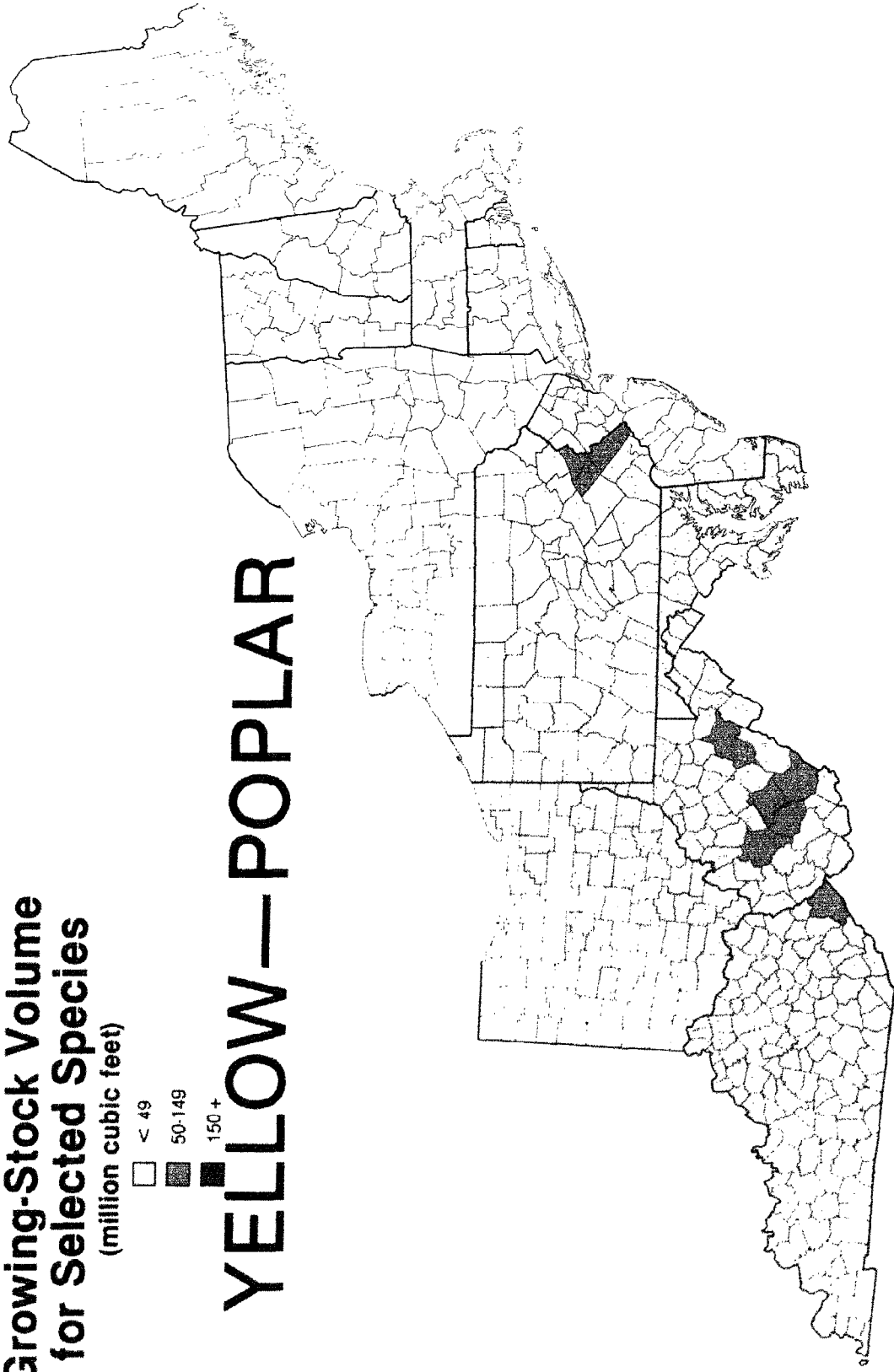
LOBLOLLY PINE



Map 10
Growing-Stock Volume
for Selected Species
 (million cubic feet)

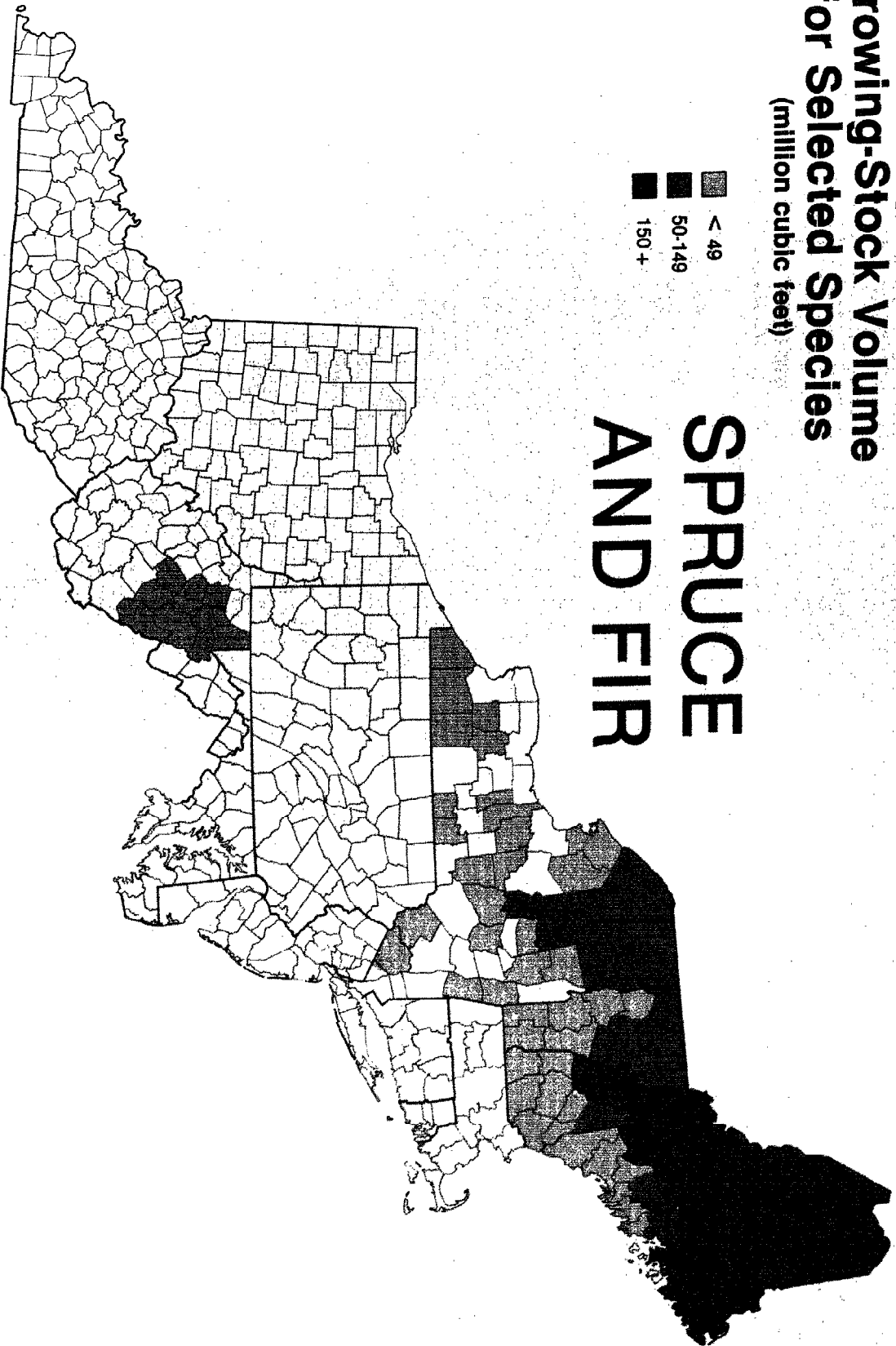


YELLOW—POPLAR

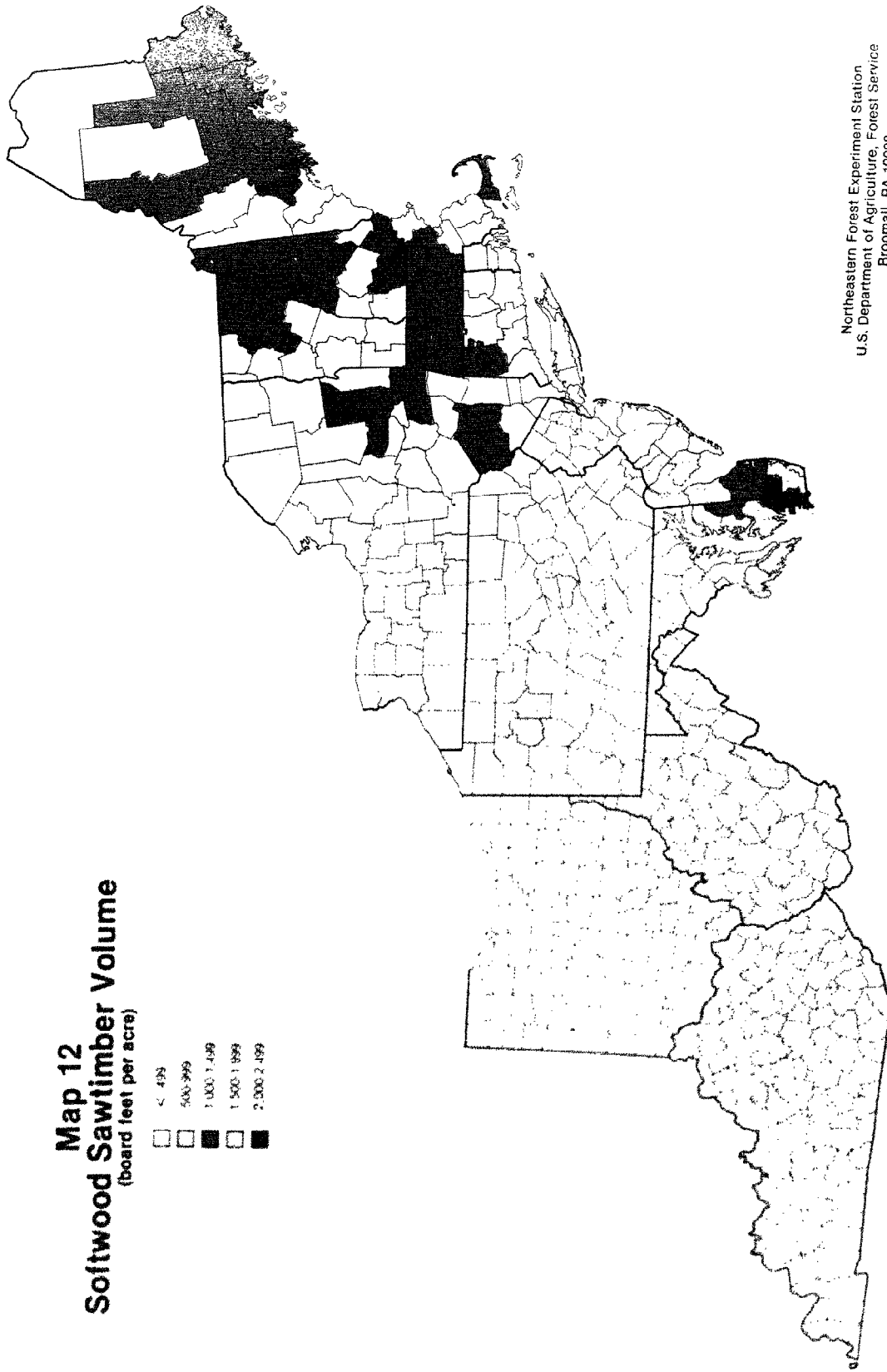
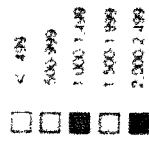


Map 10
Growing-Stock Volume
for Selected Species
(million cubic feet)

SPRUCE
AND FIR

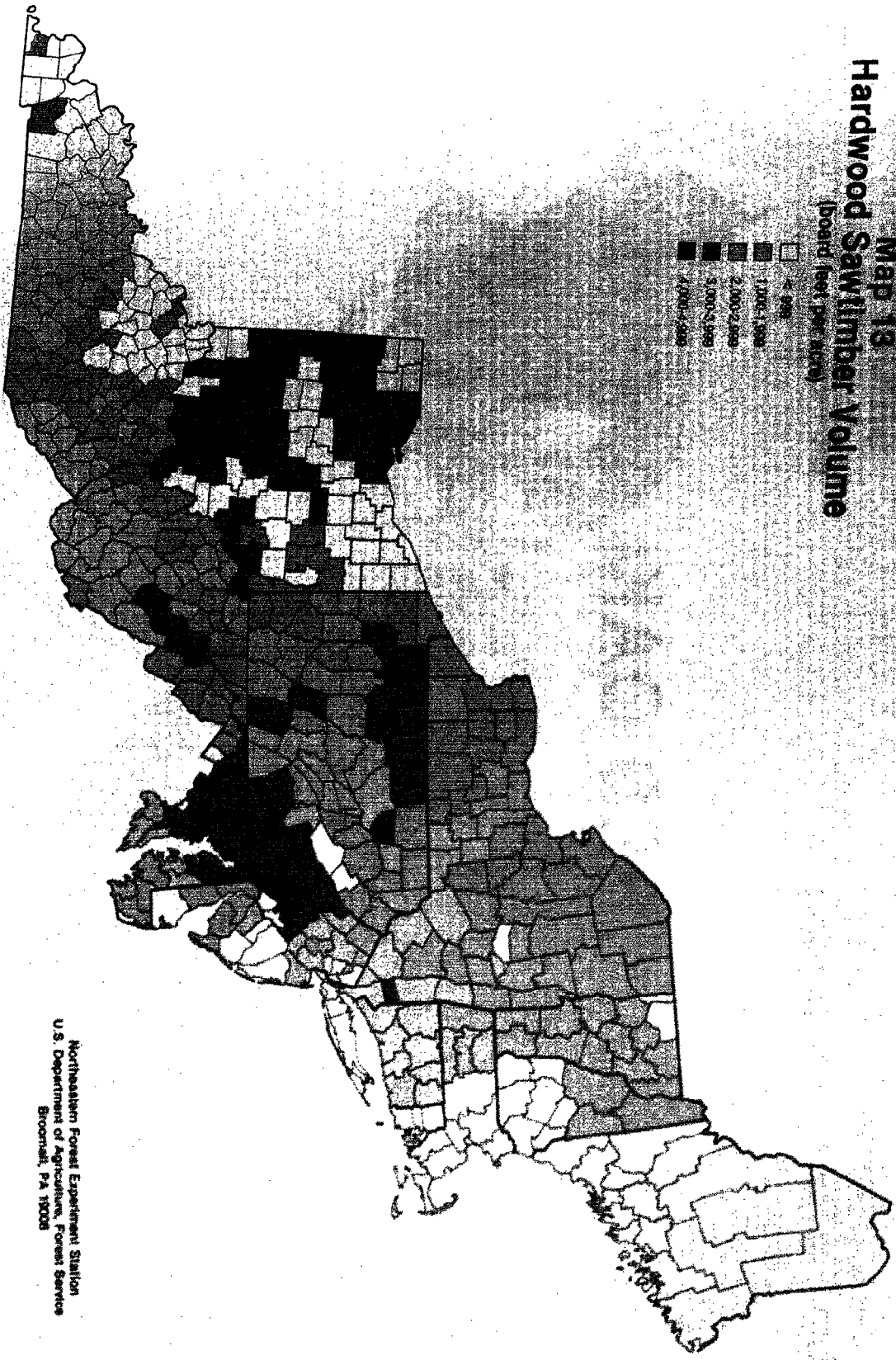


Map 12 **Softwood Sawtimber Volume** (board feet per acre)



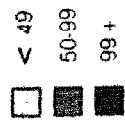
Northeastern Forest Experiment Station
 U.S. Department of Agriculture, Forest Service
 Broomall, PA 19008

Map 13 **Hardwood Sawlumber Volume** (board feet per acre)

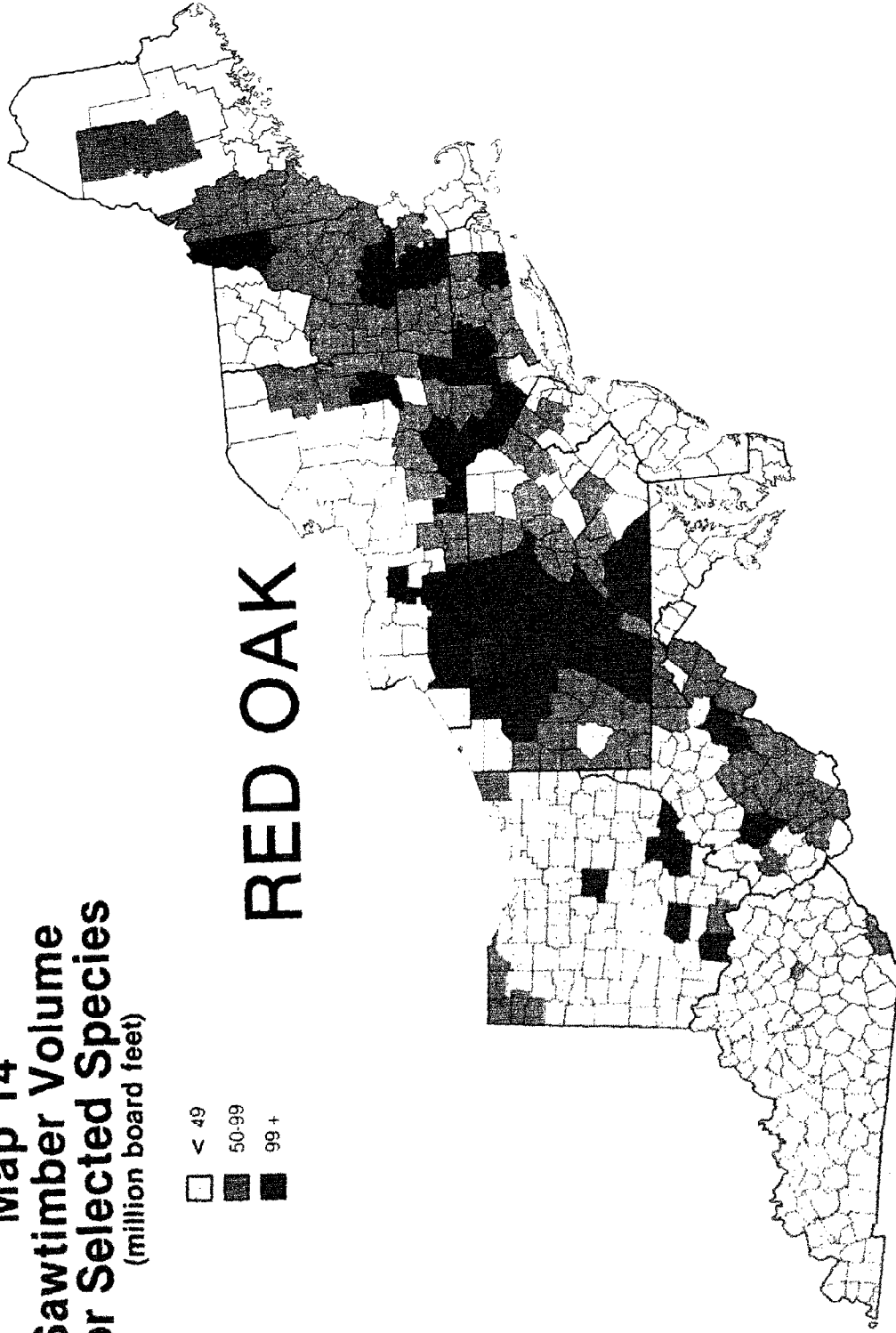


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Map 14
Sawtimber Volume
for Selected Species
(million board feet)



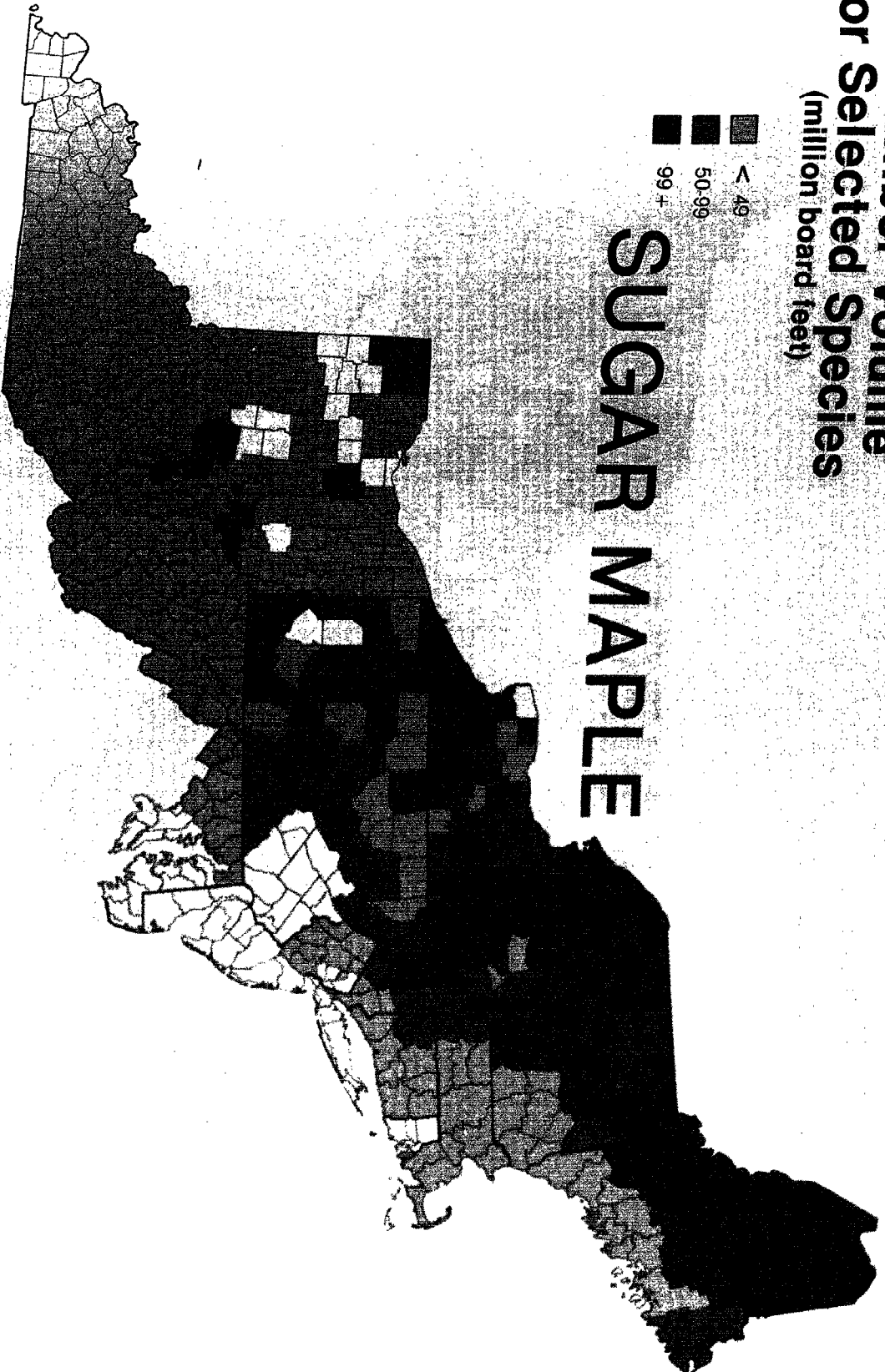
RED OAK



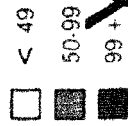
Map 14
Sawtimber Volume
for Selected Species
(million board feet)



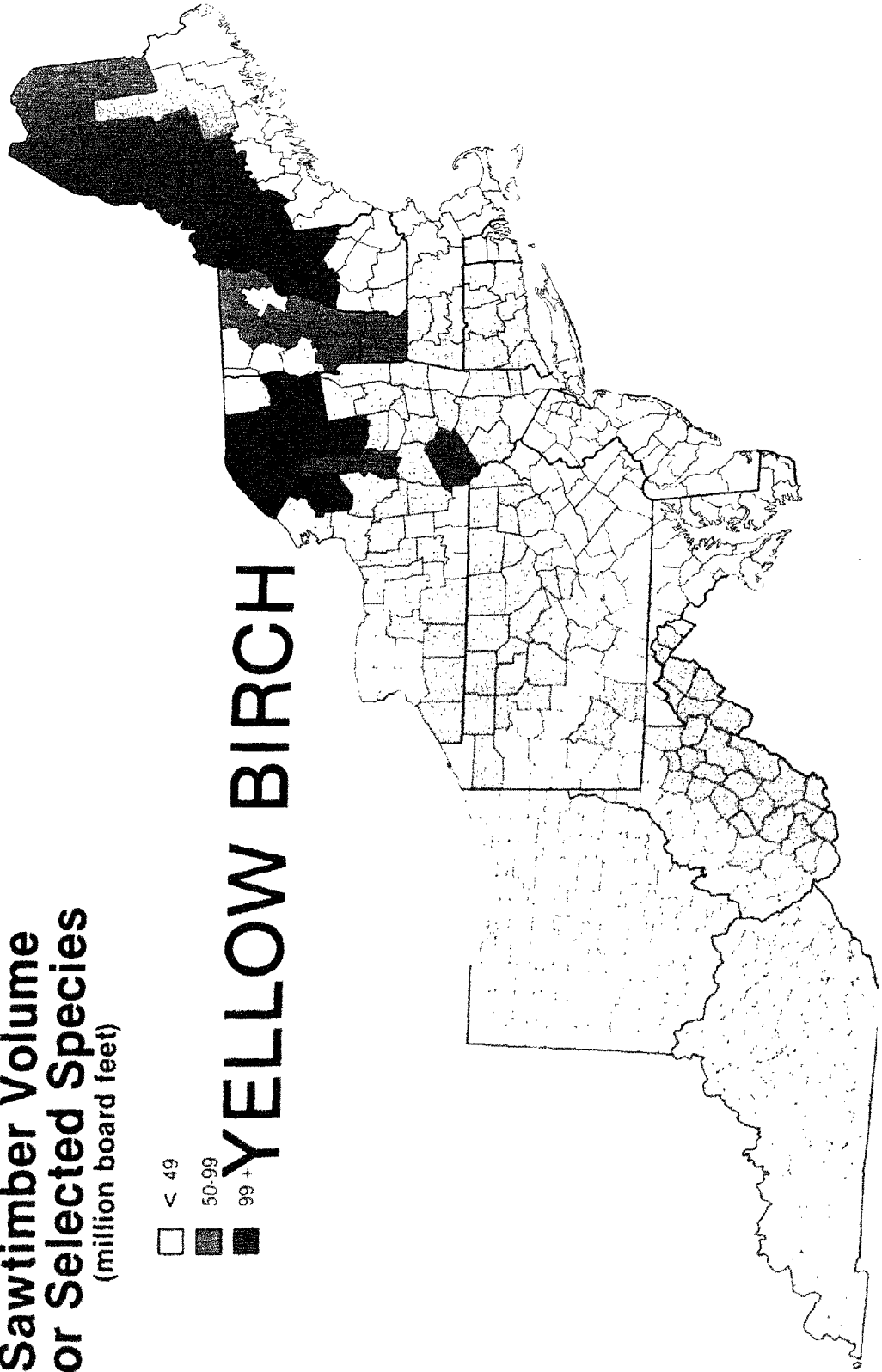
SUGAR MAPLE



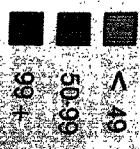
Map 14
Sawtimber Volume
for Selected Species
(million board feet)



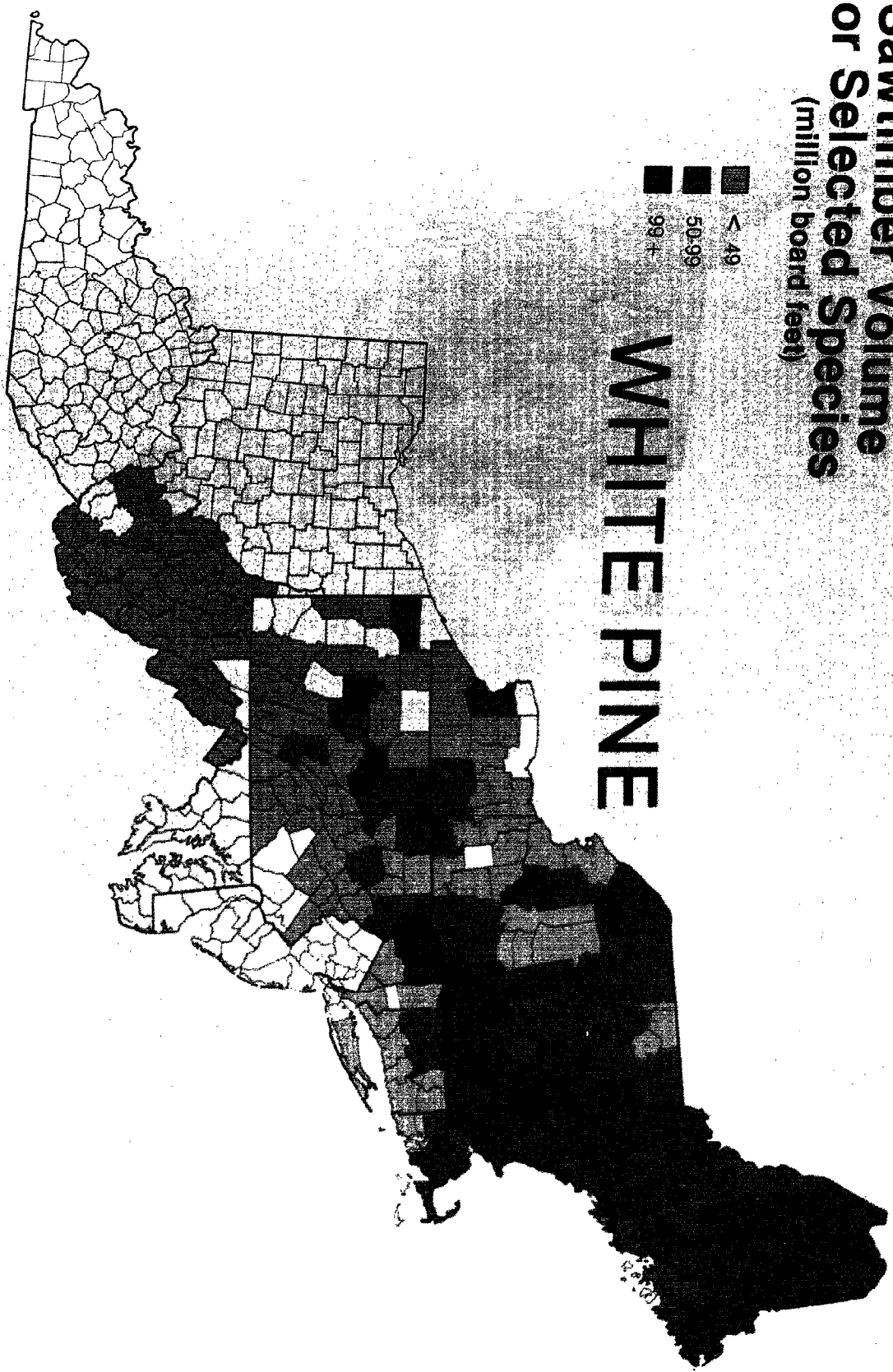
YELLOW BIRCH



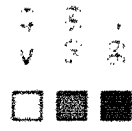
Map 14
Sawtimber Volume
for Selected Species
(million board feet)



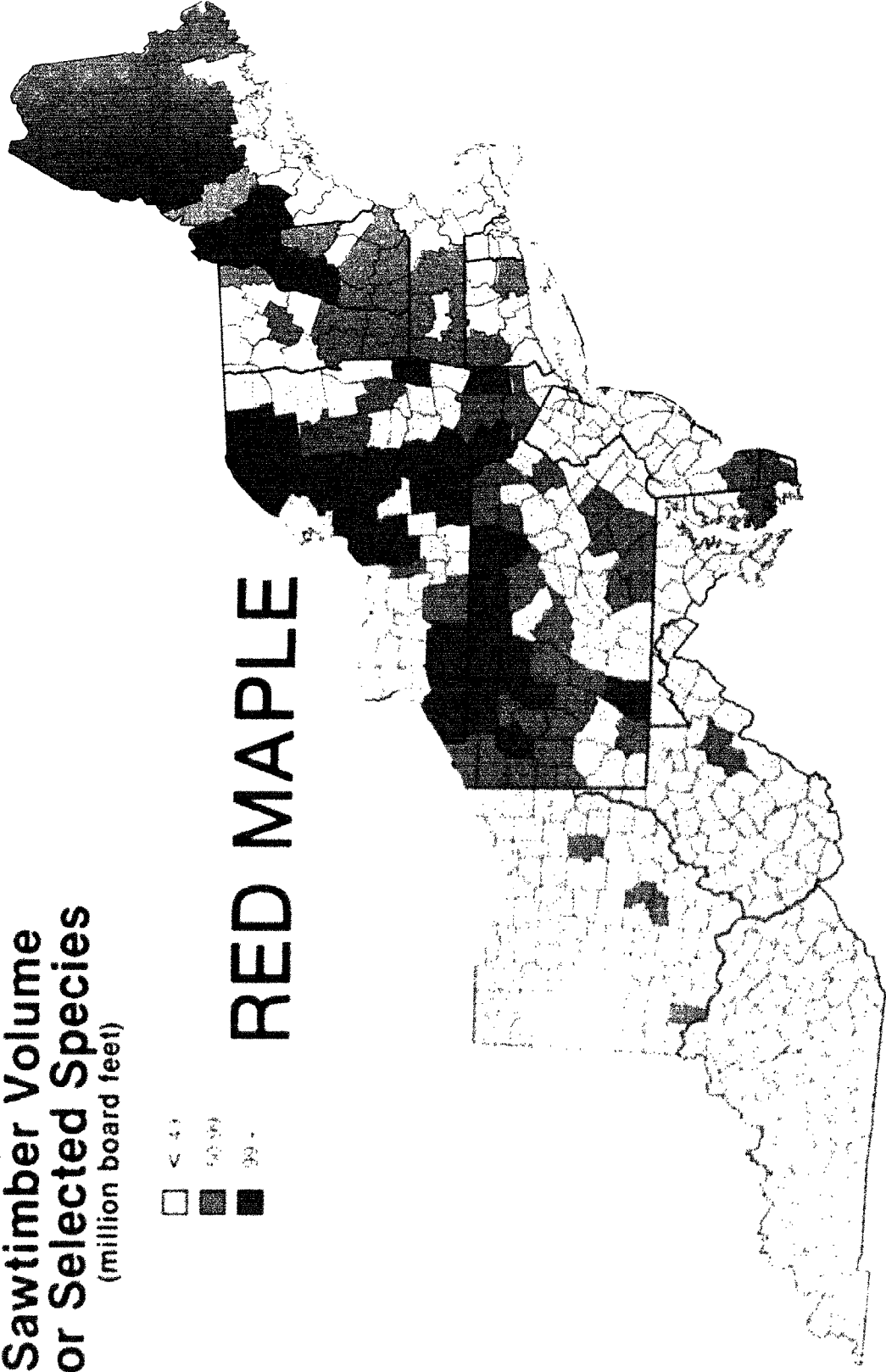
WHITE PINE



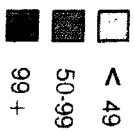
Map 14
Sawtimber Volume
for Selected Species
(million board feet)



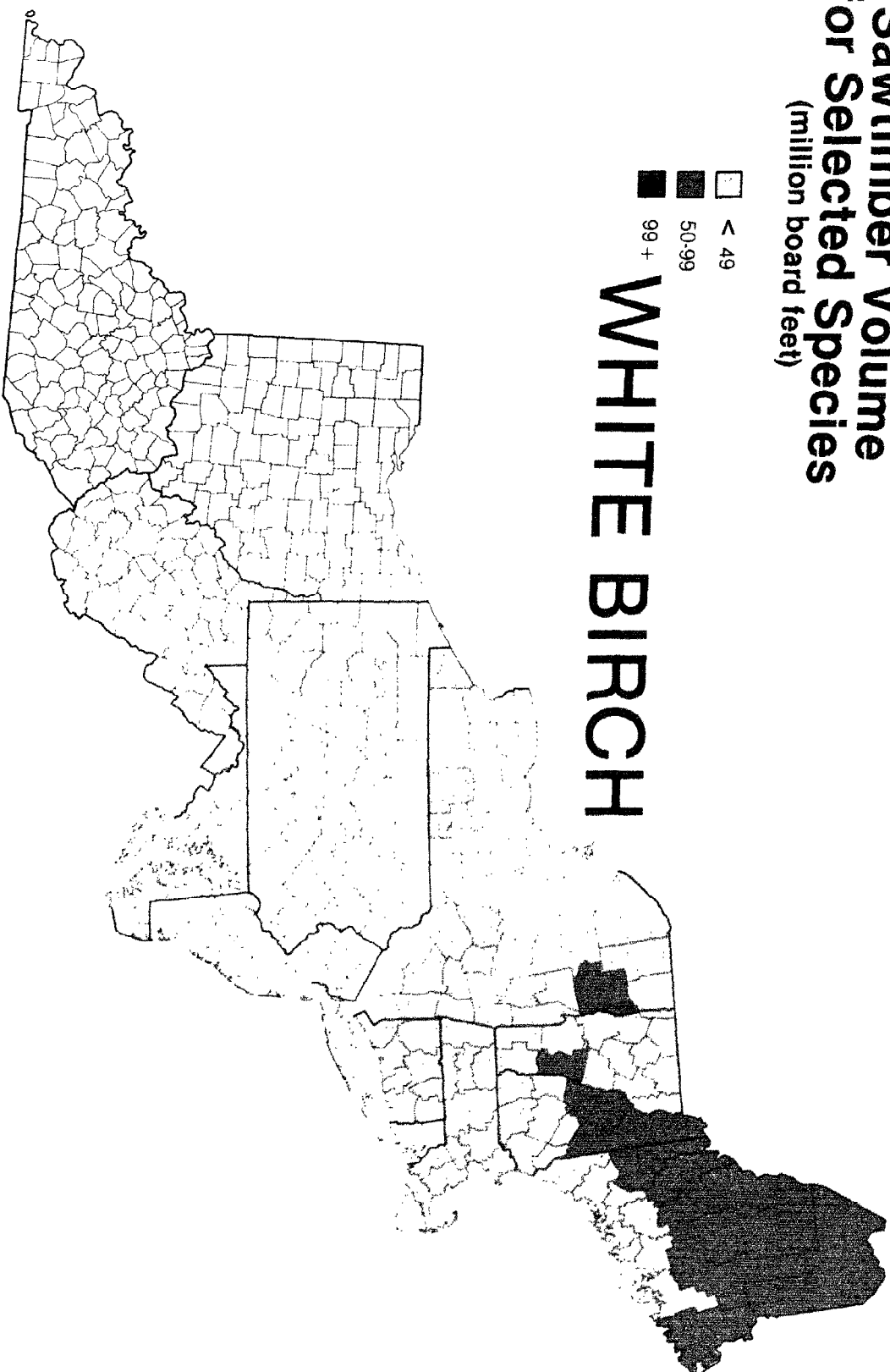
RED MAPLE



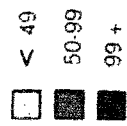
Map 14
Sawtimber Volume
for Selected Species
(million board feet)



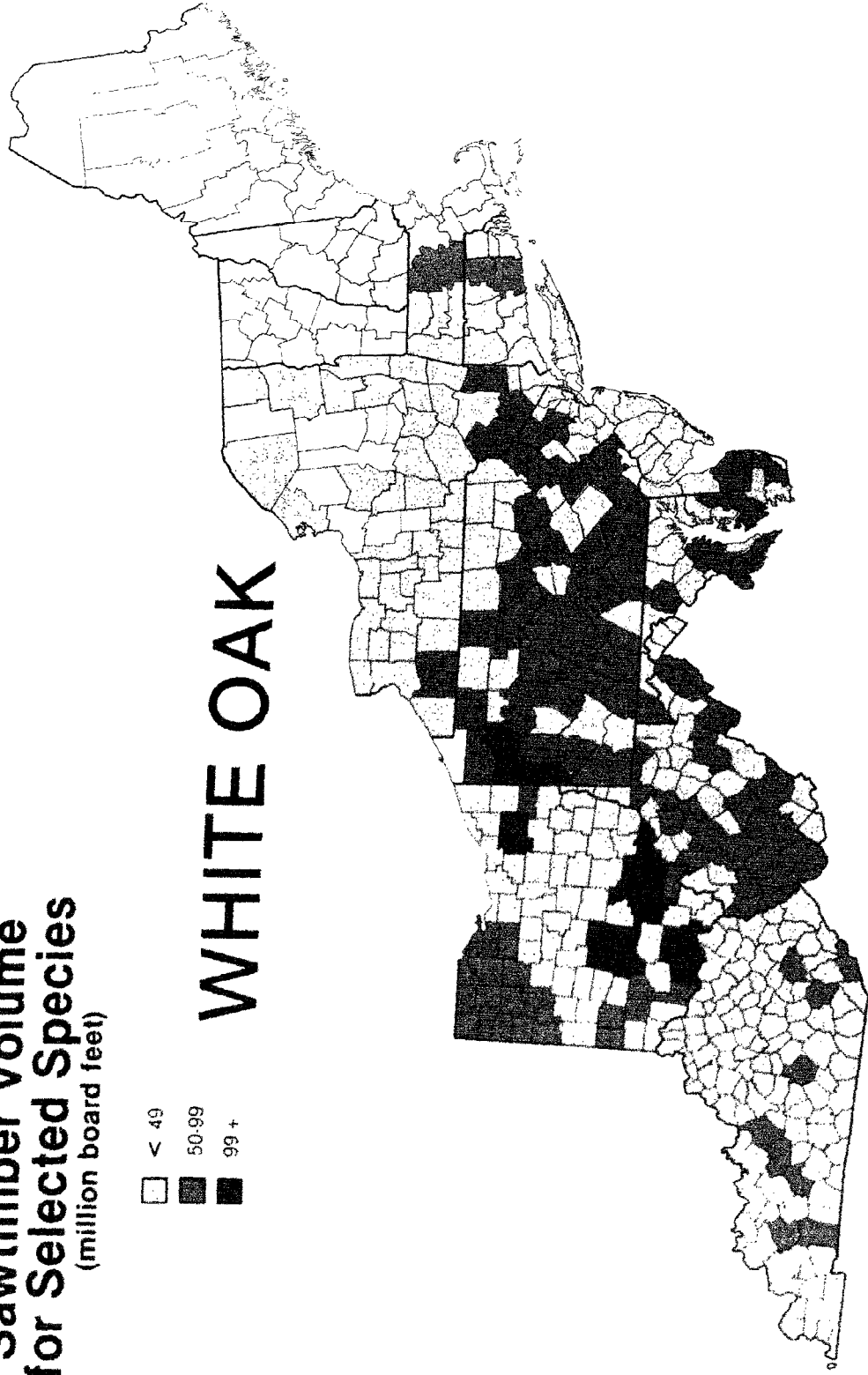
WHITE BIRCH



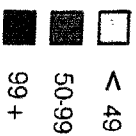
Map 14
Sawtimber Volume
for Selected Species
(million board feet)



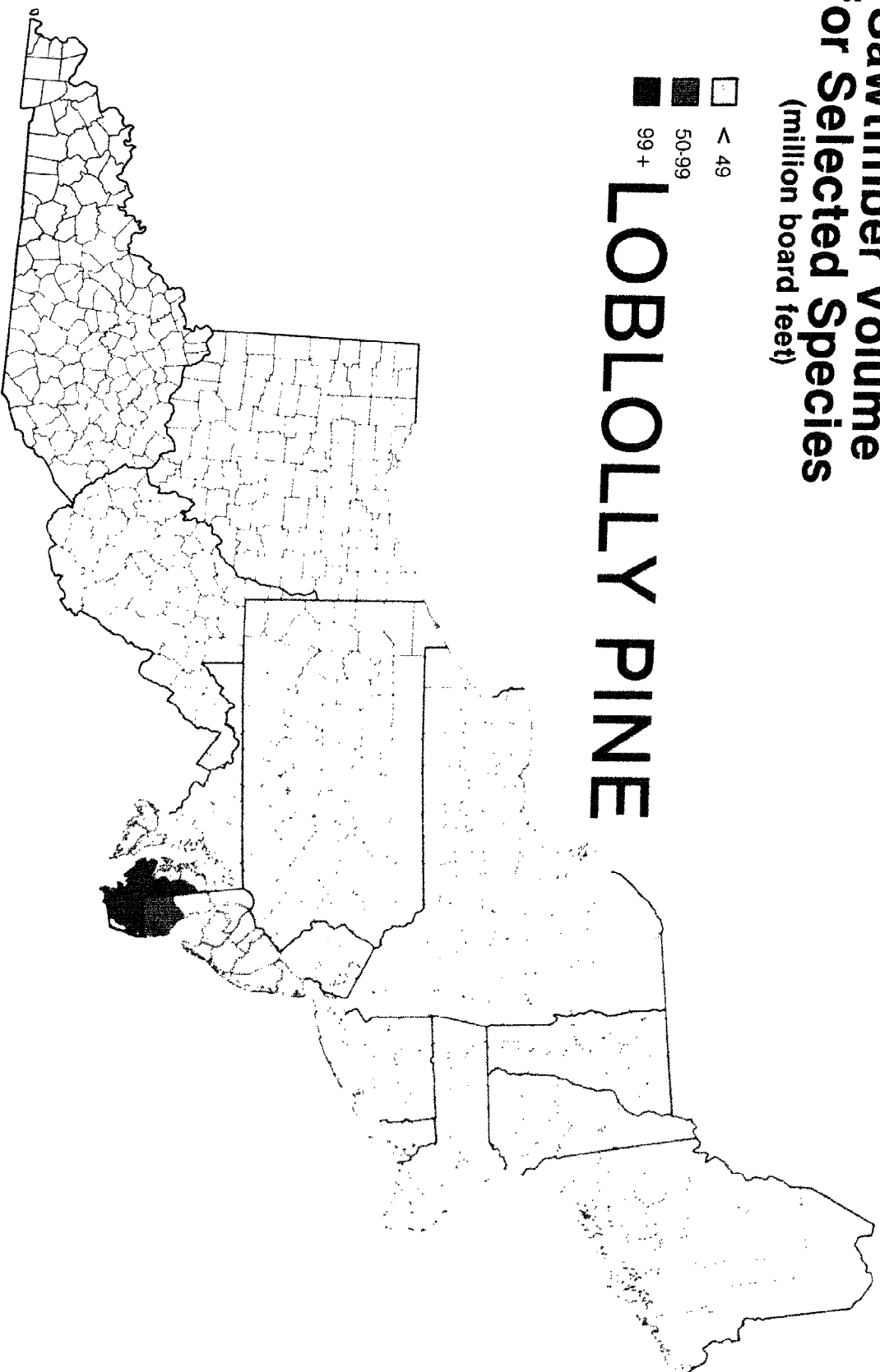
WHITE OAK



Map 14 Sawtimber Volume for Selected Species (million board feet)

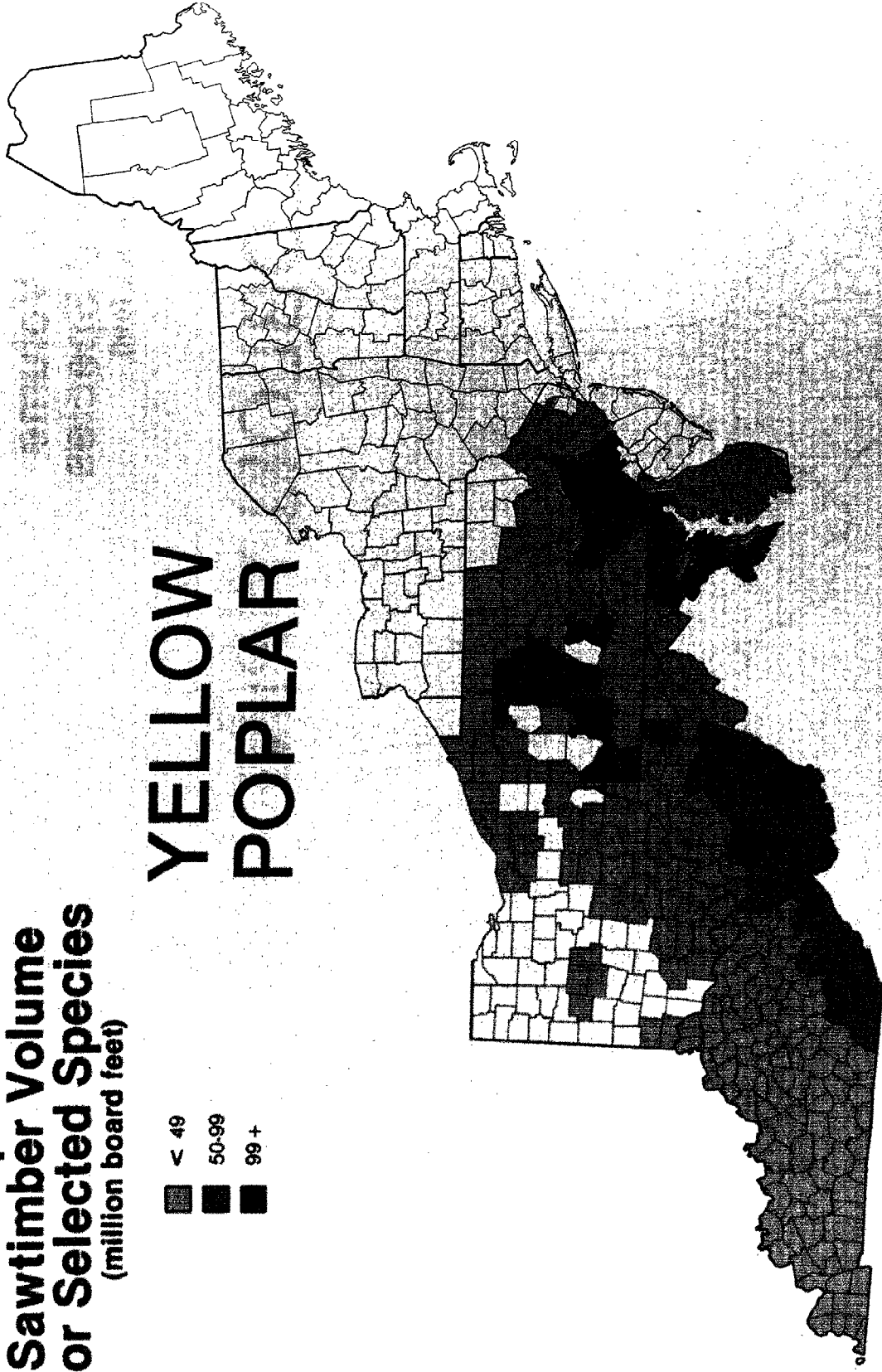
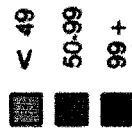


LOBLOLLY PINE

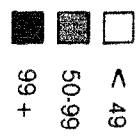


Map 14
Sawtimber Volume
for Selected Species
(million board feet)

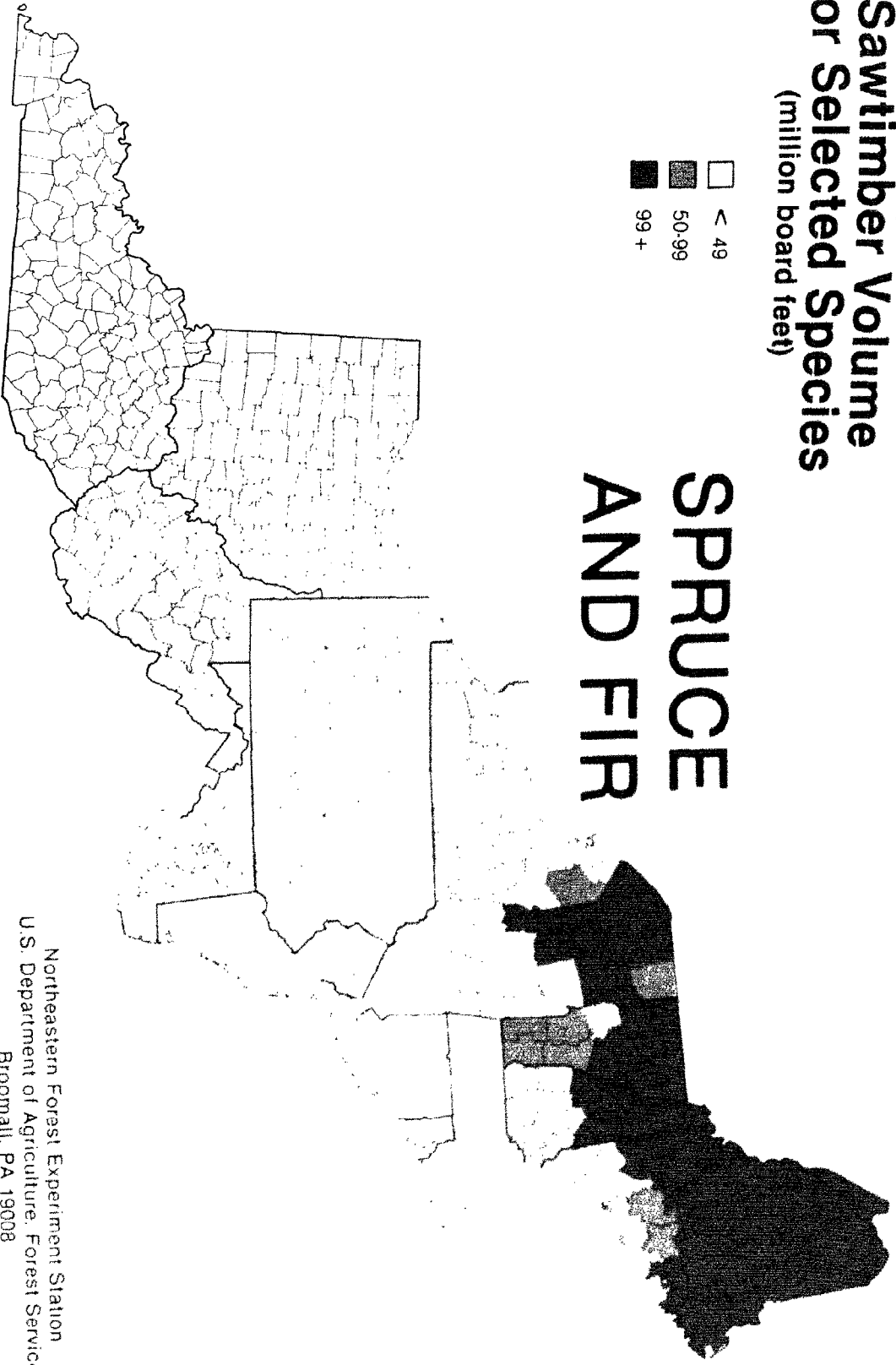
YELLOW
POPLAR



Map 14 Sawtimber Volume for Selected Species (million board feet)



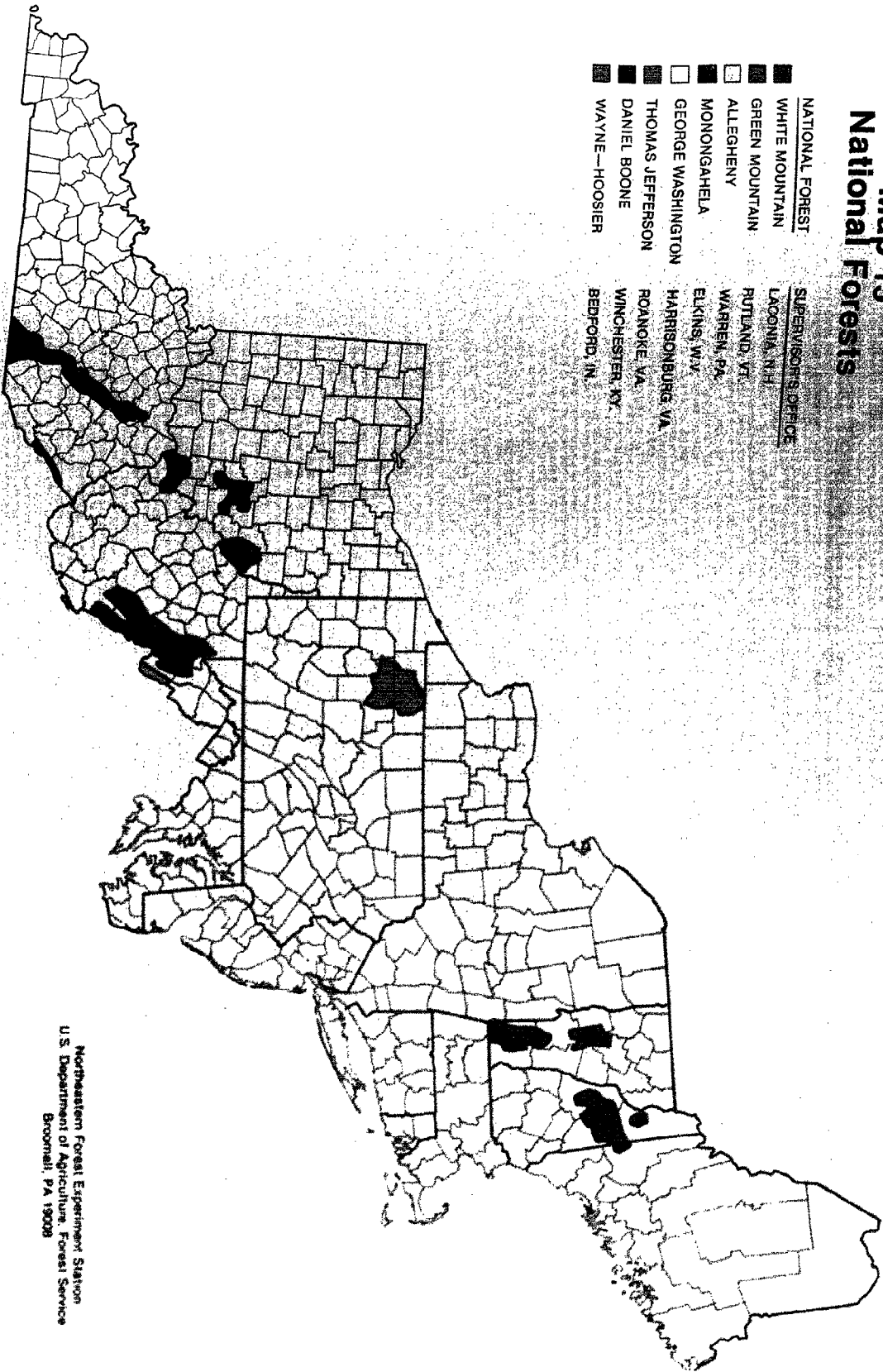
SPRUCE AND FIR



Northeastern Forest Experiment Station
U.S. Department of Agriculture, Forest Service
Broomall, PA 19008

Map 15 National Forests

- | | |
|------------------------|----------------------------|
| NATIONAL FOREST | SUPERVISOR'S OFFICE |
| WHITE MOUNTAIN | LACONIA, N.H. |
| GREEN MOUNTAIN | RUTLAND, VT. |
| ALLEGHENY | WARREN, PA. |
| MONONGAHELA | ELKINS, W.V. |
| GEORGE WASHINGTON | HARRISONBURG, VA. |
| THOMAS JEFFERSON | ROANOKE, VA. |
| DANIEL BOONE | WINCHESTER, KY. |
| WAYNE—HOOSIER | BEDFORD, IN. |



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Broomall, PA 19008

Maps 16 Through 24: The Climate

These maps were taken from the "Climatic Atlas of the United States" (U.S. Dep. Comm. 1968).

These charts are based on the following periods:

Maps 16 to 19—1931-60; Maps 20 to 22—1921-50;

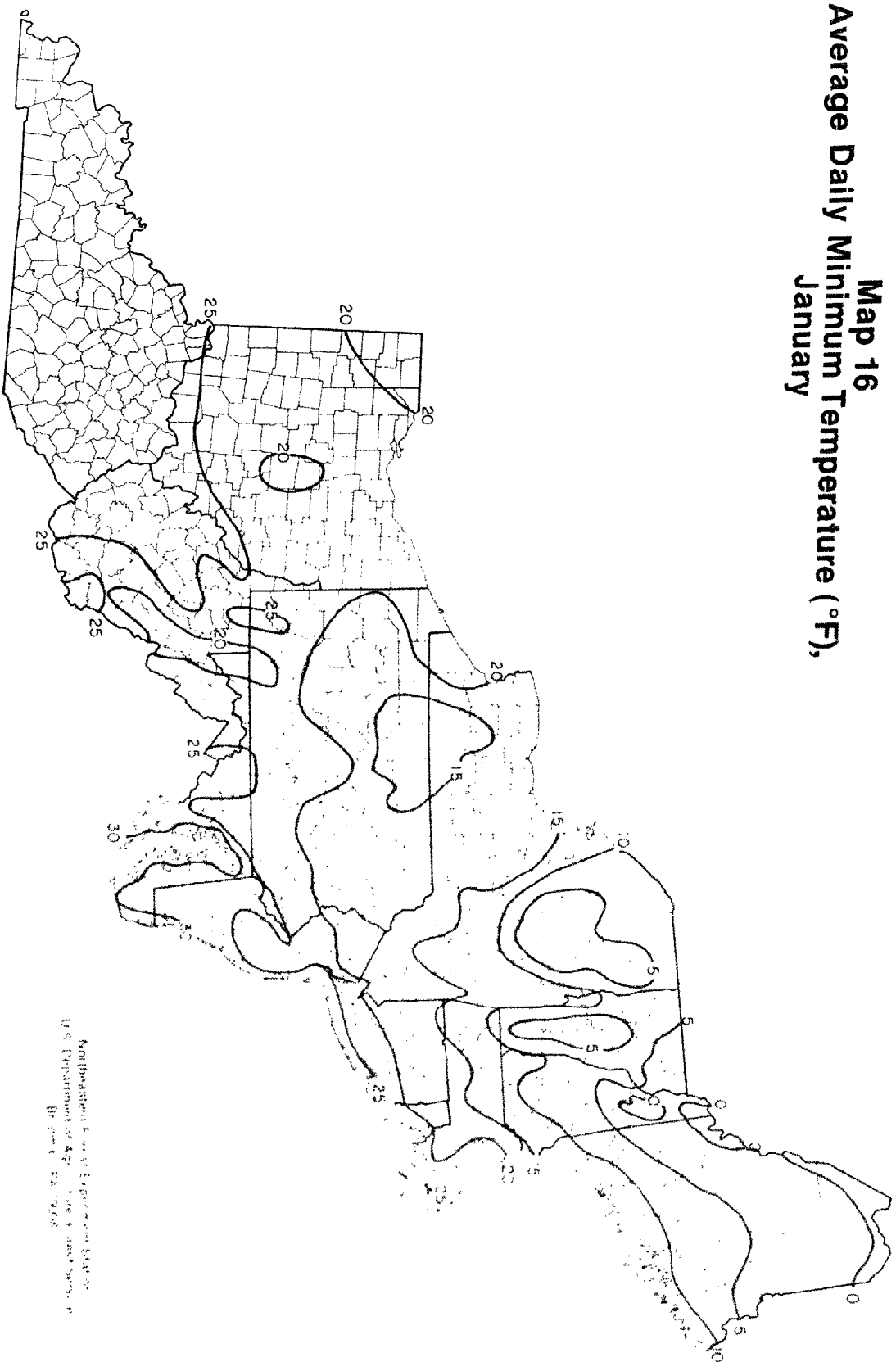
Map 23—1931-60; Map 24—Period of record through 1960.

The purpose of these maps is to depict the climate of the region in terms of the distribution and variation of constituent climatic elements. Climate has a profound, often controlling, effect on our mood, health, and activities.

Climate may be considered the collective state of the earth's atmosphere at a specific place for a long period of time (usually several decades). Short-term variations of the state of the atmosphere are called "weather." Weather is the product of the interaction of numerous natural elements; the long-term statistical valuations of these elements collectively define the climate.

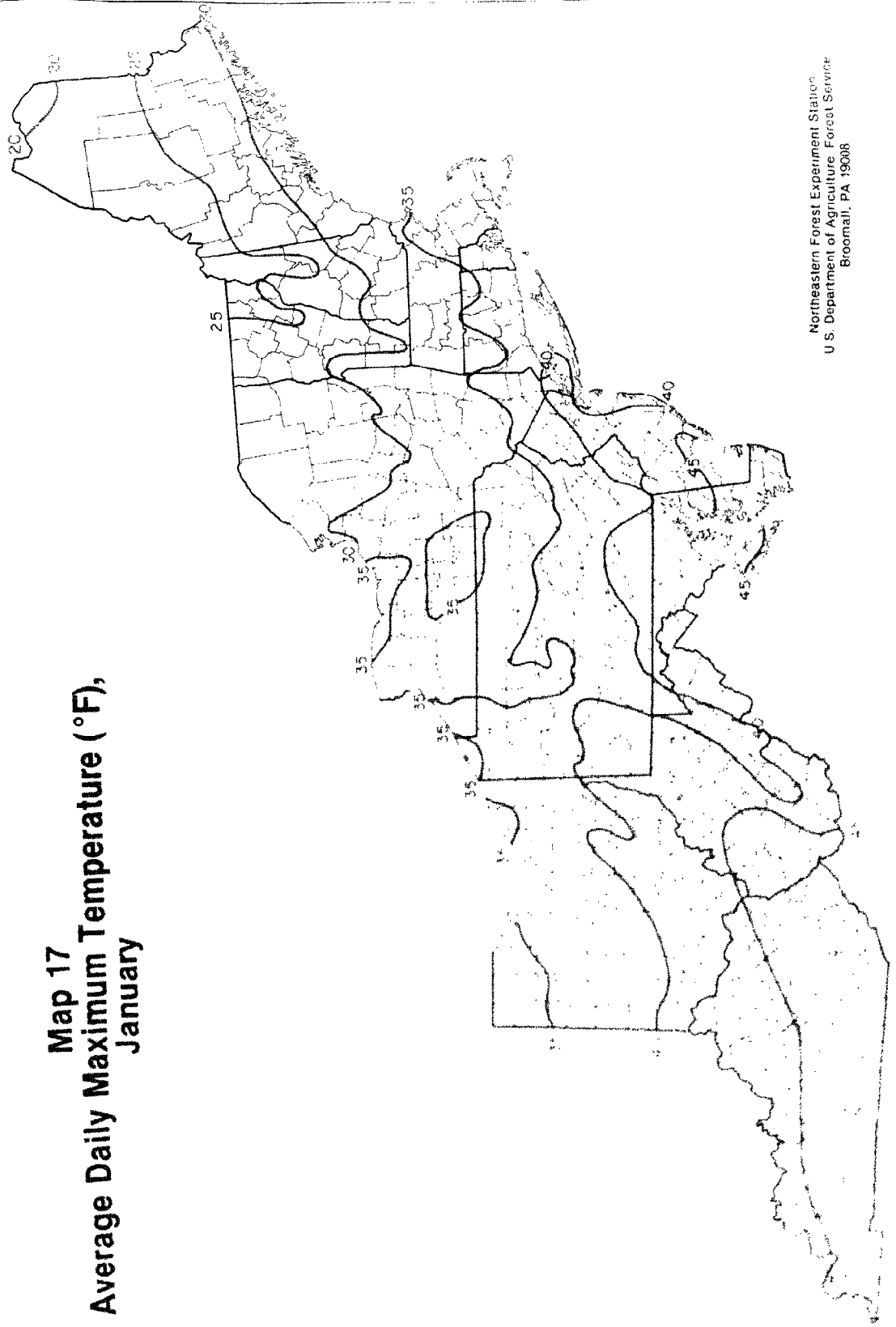
It should be remembered that these analyses are not forecasts of temperature, precipitation, and so on, but rather reflect collective atmospheric conditions that occurred over periods of years; often observed conditions for any given day, week, month—or even year—will differ sharply from those indicated in the analyses.

Map 16
Average Daily Minimum Temperature (°F),
January



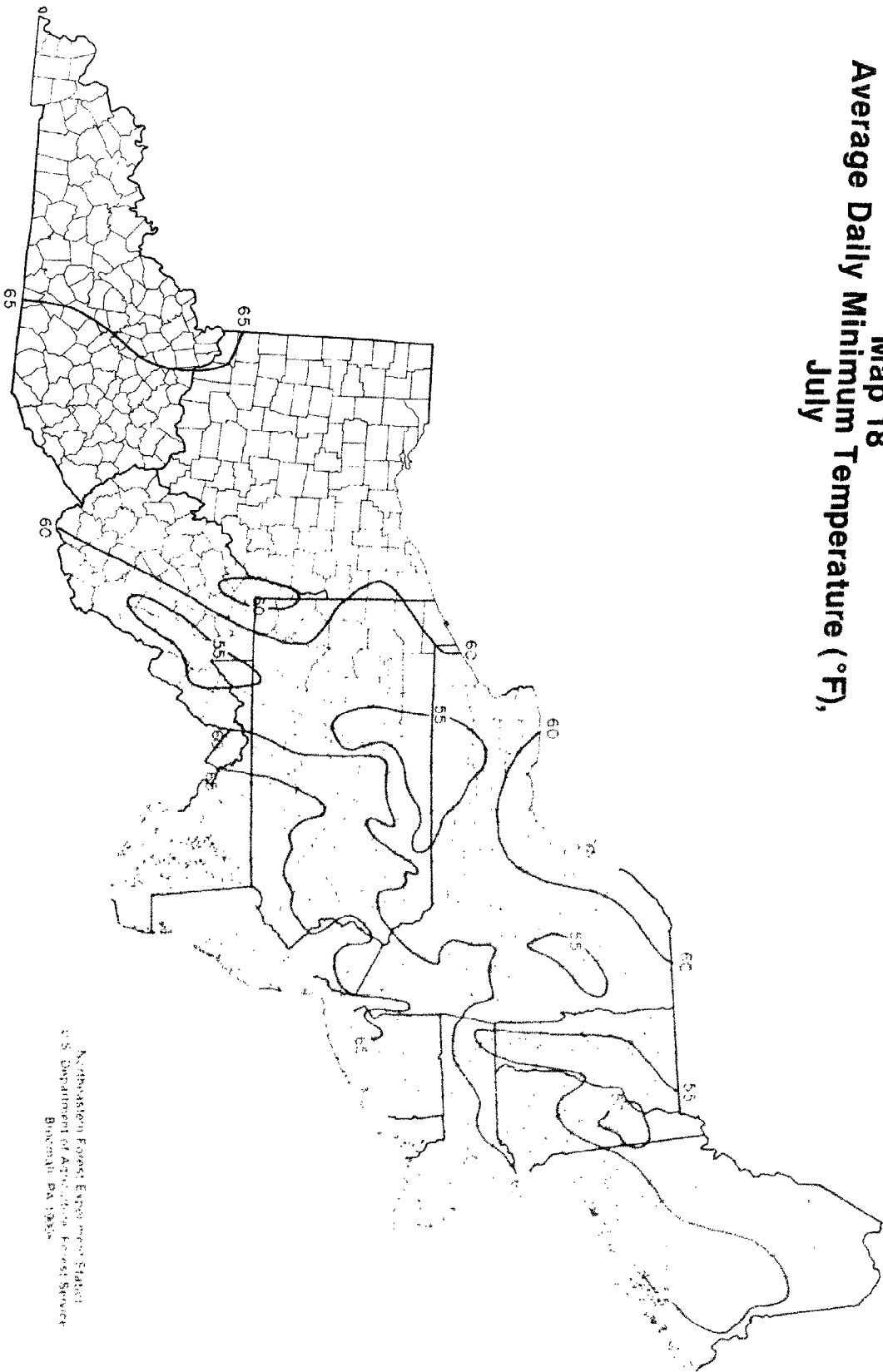
Reproduction of this map by permission of the
 U.S. Department of Agriculture, Forest Service
 from the Forest Service

Map 17
Average Daily Maximum Temperature (°F),
January



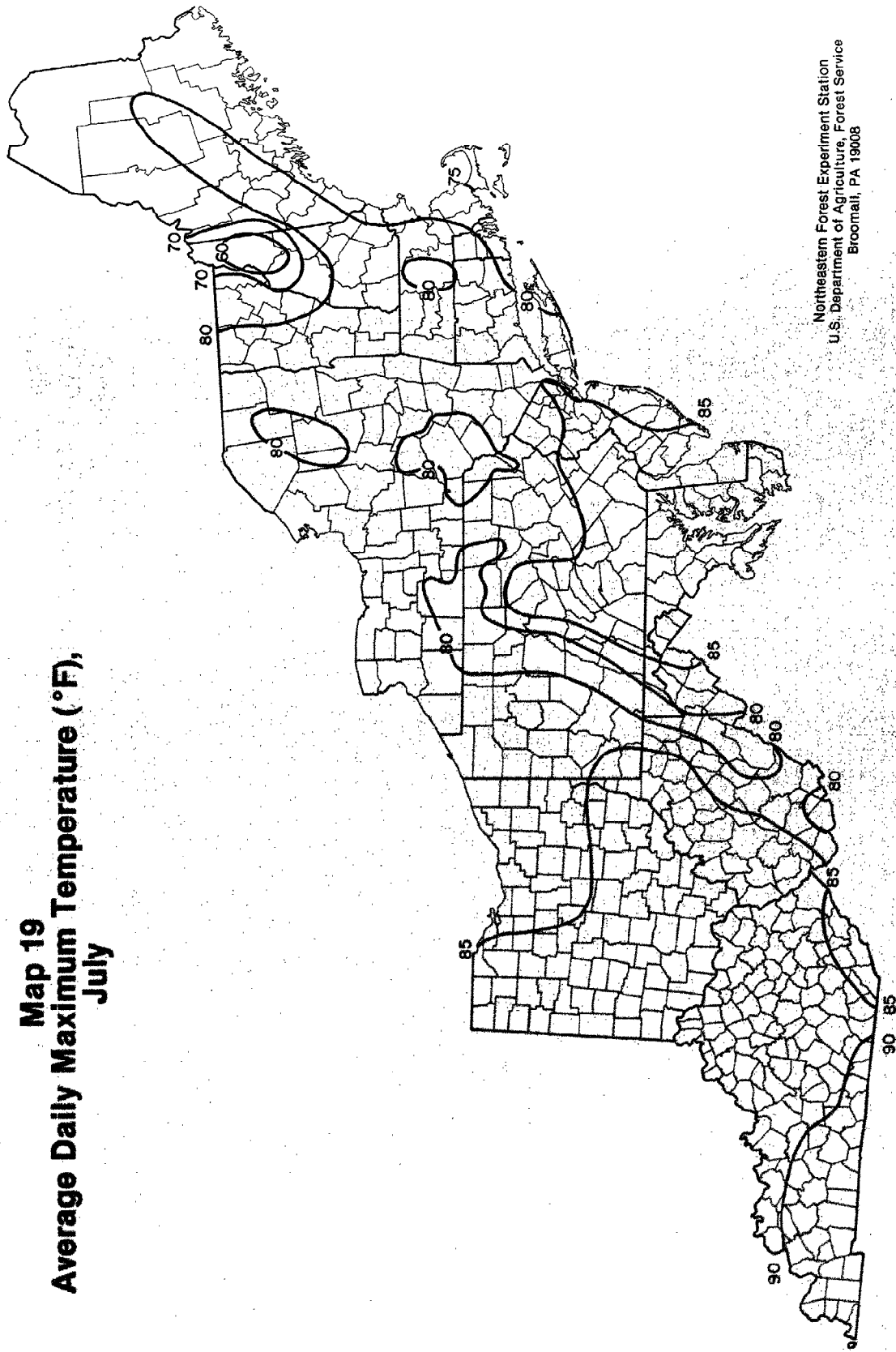
Northeastern Forest Experiment Station
U.S. Department of Agriculture Forest Service
Broomall, PA 19008

Map 18
Average Daily Minimum Temperature (°F),
July



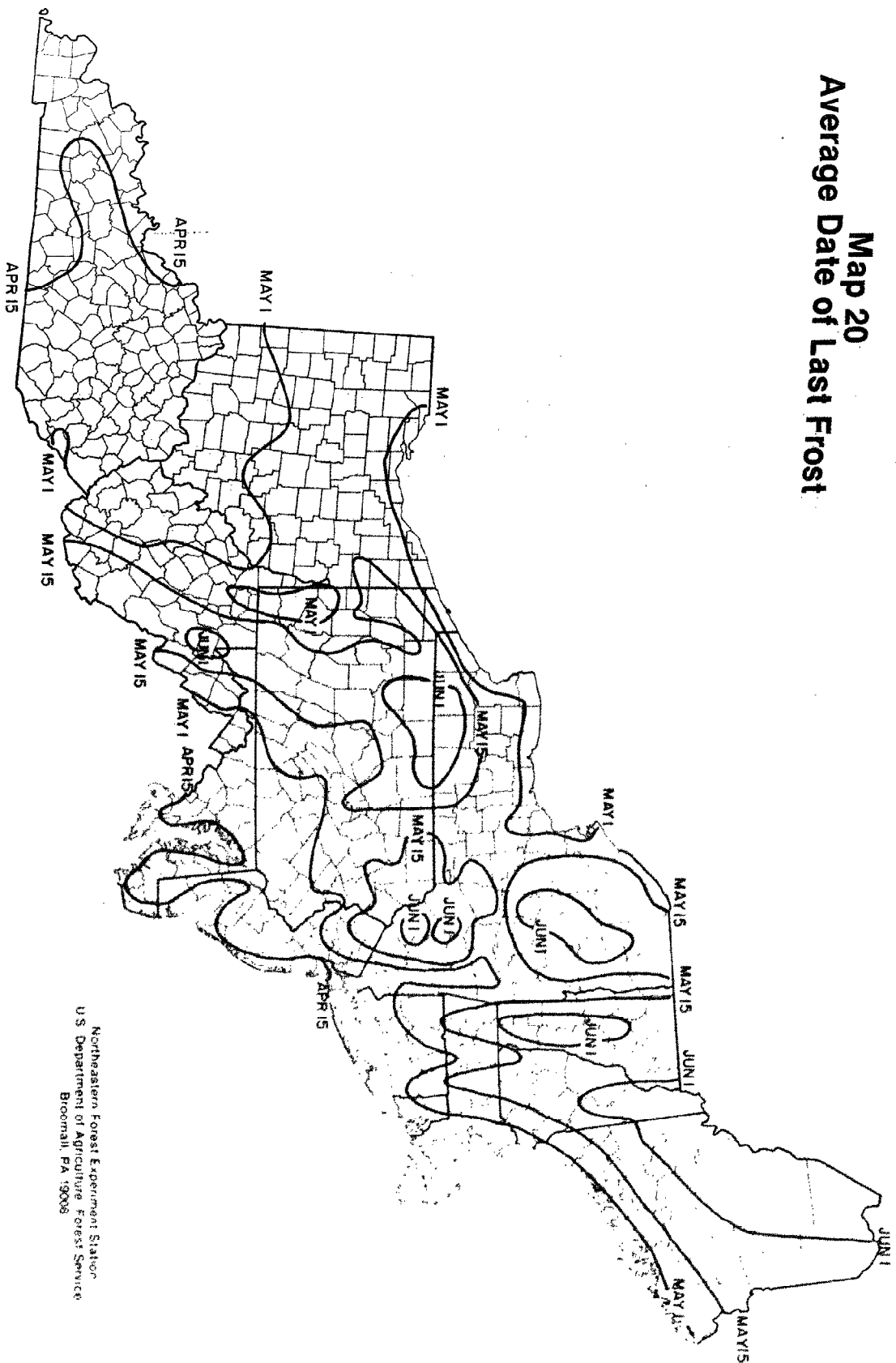
Northeastern Forest Experiment Station
 U.S. Department of Agriculture, Forest Service
 Butte, MT 59717

Map 19
Average Daily Maximum Temperature (°F),
July



Northeastern Forest Experiment Station
U.S. Department of Agriculture, Forest Service
Broomall, PA 19008

Map 20 **Average Date of Last Frost**



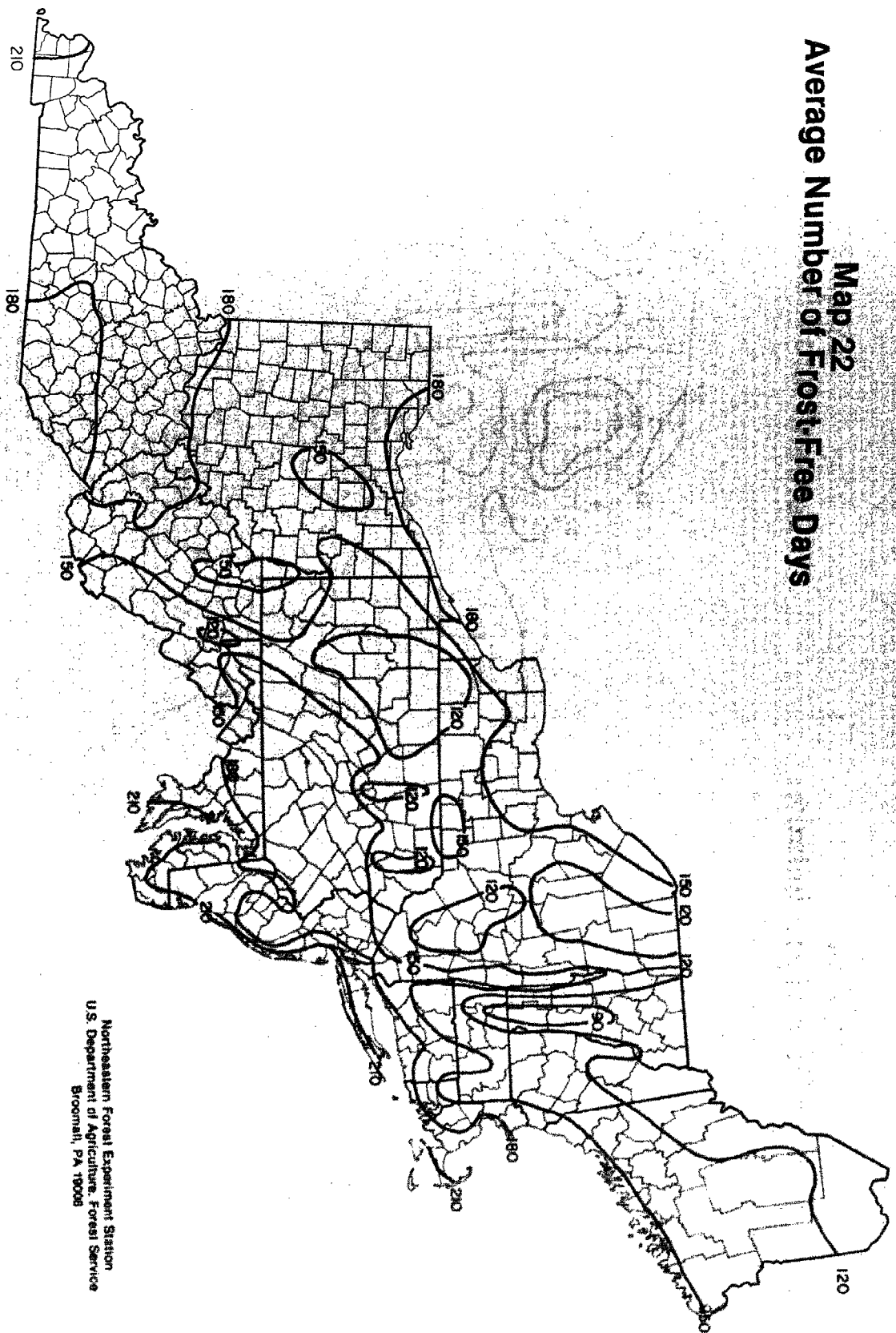
Northeastern Forest Experiment Station
U.S. Department of Agriculture Forest Service
Broomall, PA 19008

Map 21
Average Date of First Frost

Northeastern Forest Experiment Station
U.S. Department of Agriculture, Forest Service
Broomall, PA 19008

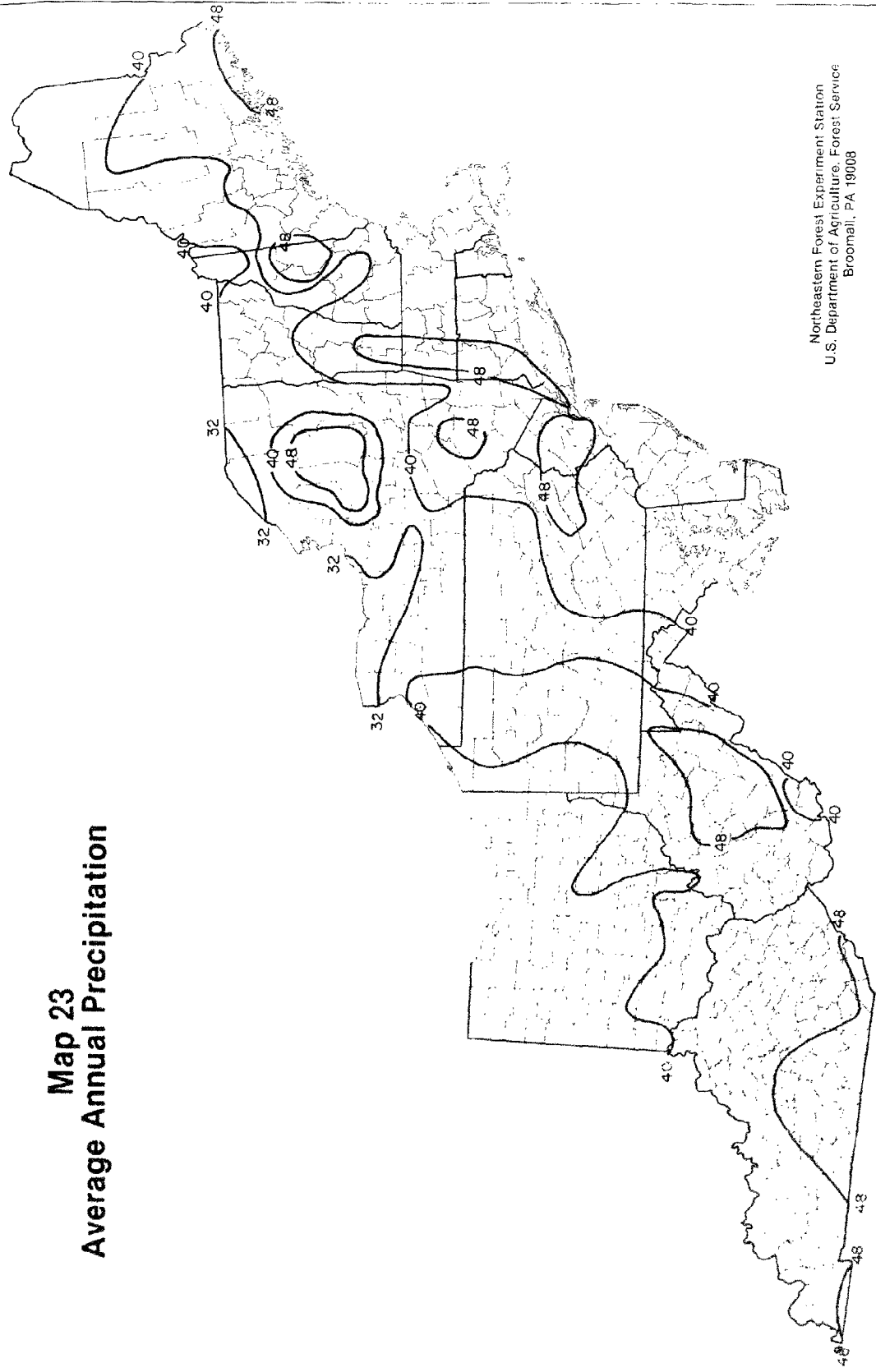
Northeastern Forest Experiment Station
U.S. Department of Agriculture, Forest Service
Broomall, PA 19008

Map 22 **Average Number of Frost-Free Days**



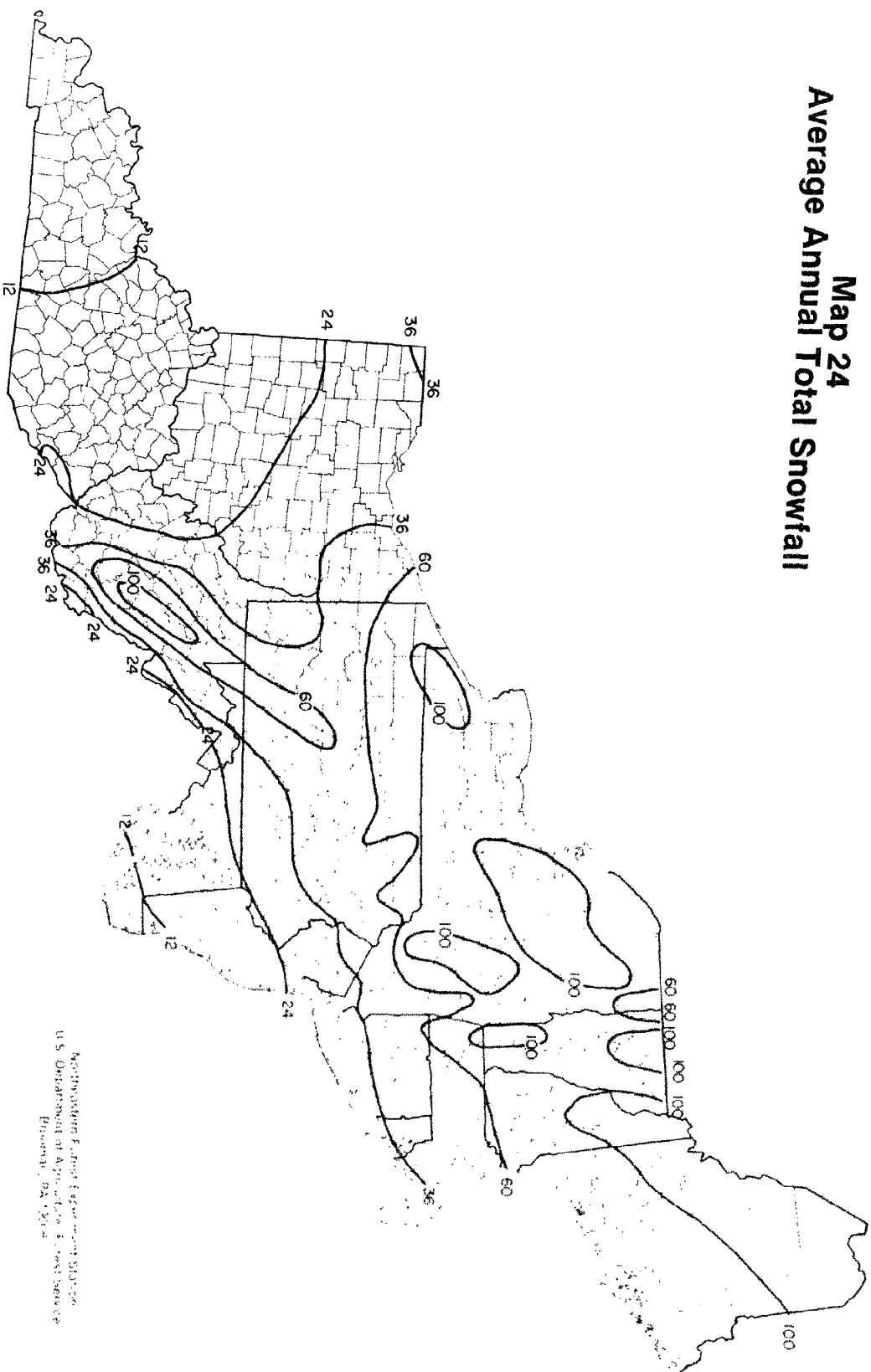
Northeastern Forest Experiment Station
 U.S. Department of Agriculture, Forest Service
 Broomeville, PA 16006

Map 23
Average Annual Precipitation



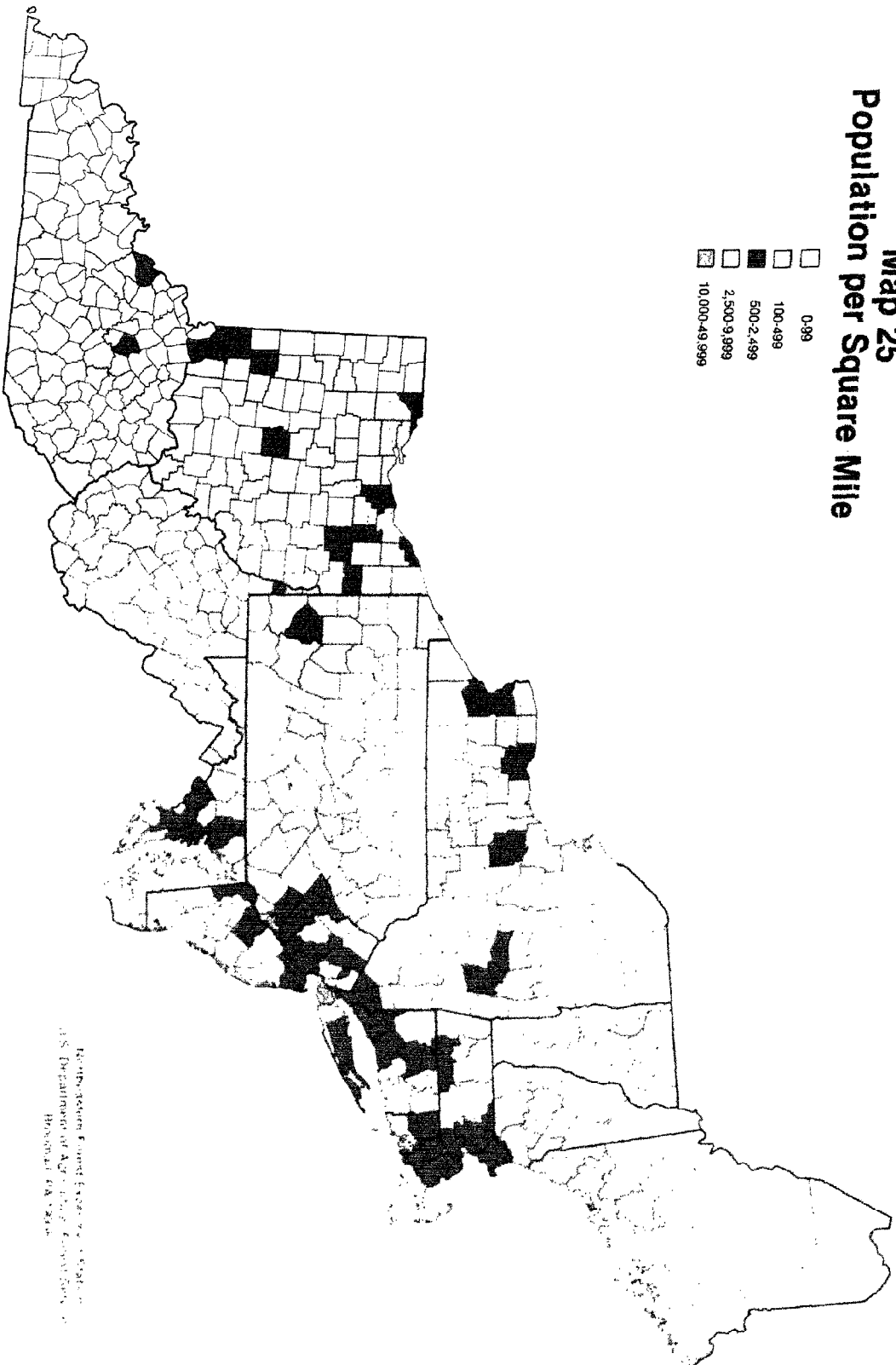
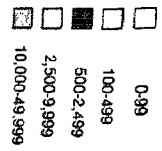
Northeastern Forest Experiment Station
U.S. Department of Agriculture, Forest Service
Broomall, PA 19008

Map 24 **Average Annual Total Snowfall**



Northeastern United States
 U.S. Department of Agriculture
 Bureau of Plant Industry
 Washington, D.C. 20250

Map 25 **Population per Square Mile**



North American Land Cover & Population
U.S. Department of Agriculture, Forest Service
Bureau of Land Management

Map 26: Urban Population

The percentage of urban population in a county is a measure of the dispersion or lack of dispersion of the population. It does not indicate the presence or absence of major population centers. Rather it indicates the proportion of a county's total population residing in population centers as opposed to scattered rural locations.

In some counties, a high proportion of the population resides in population centers even though the county as a whole has a low population density. A good example of this is Aroostook County, Maine, in which more than 50 percent live in population centers, yet the county has a population of only 14 per square mile. An example of the opposite situation is Howard County, Maryland, in which only 35 percent live in population centers, yet it has a population density of 390 per square mile. This indicates that the population is nearly uniformly distributed throughout the county.

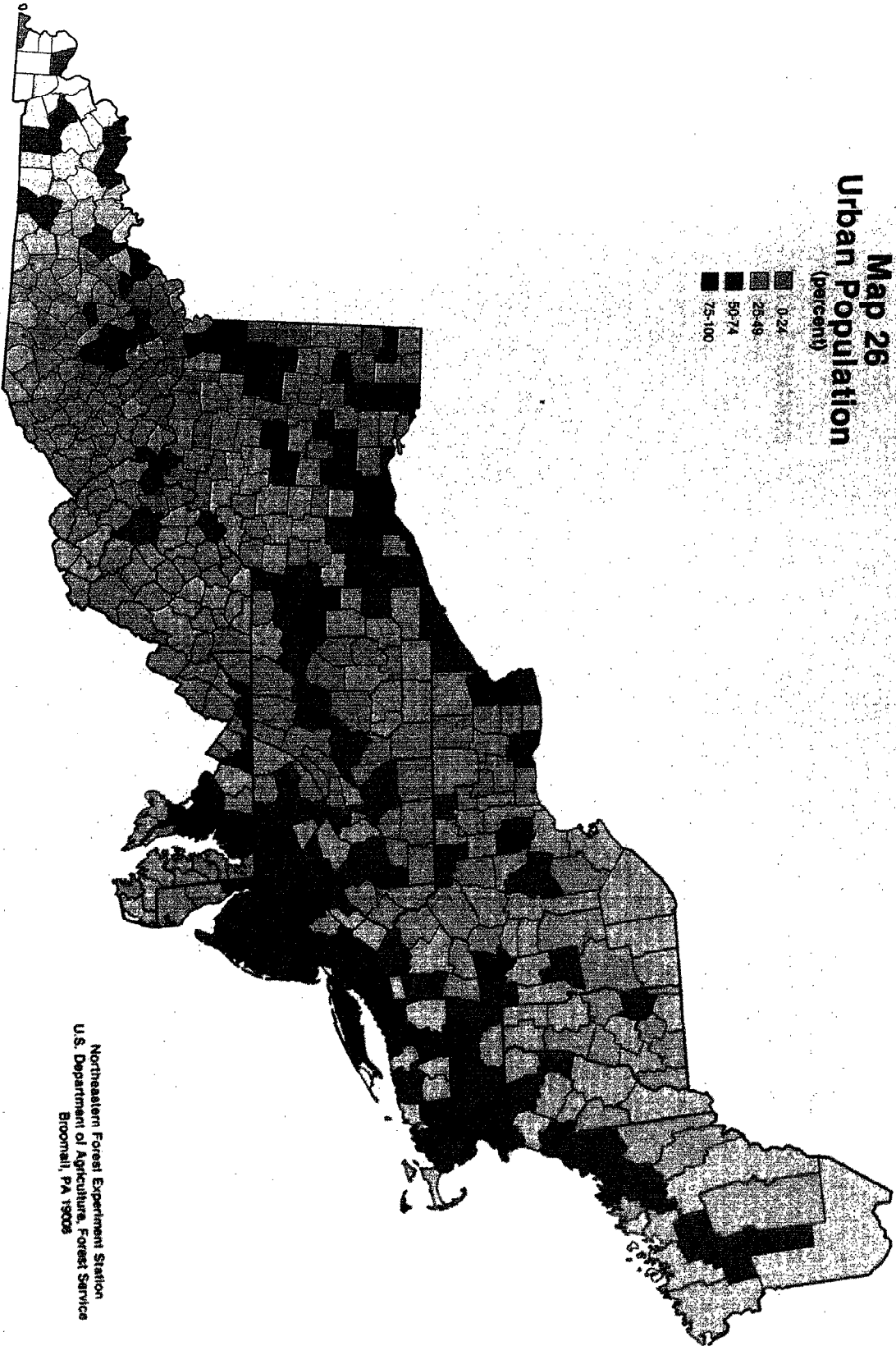
The U.S. Bureau of the Census defines an urbanized area as an area consisting of a central city or cities, and surrounding closely settled territory. The specific criteria for the delineation of urbanized areas are as follows.

An incorporated place and adjacent densely settled surrounding area that together have a minimum population of 50,000. The densely settled surrounding area consists of:

1. Contiguous unincorporated places or census designated places having:
 - a. A population of 2,500 or more; or
 - b. A population of fewer than 2,500 but having either a population density of 1,000 persons per square mile, a closely settled area containing a minimum of 50 percent of the population, or a cluster of at least 100 housing units.
2. Contiguous unincorporated area which is connected by road and has a population density of at least 1,000 persons per square mile (excluding nonresidential urban land such as railroad yards, airports, factories etc.).
3. Other contiguous unincorporated area with a density of less than 1,000 persons per square mile provided that it:
 - a. Eliminates an enclave of less than 5 square miles which is surrounded by built-up areas.
 - b. Closes an indentation in the boundary of the densely settled area that is no more than 1 mile across the open end and encompasses no more than 5 square miles.
 - c. Links an outlying area of qualifying density, provided that the outlying area is:

- 1) Connected by road to, and is not more than 1-1/2 miles from the main body of the urbanized area.
- 2) Separated from the main body of the urbanized area by water or other undevelopable area, is connected by road to the main body of the urbanized area, and is not more than 5 miles from the main body of the urbanized area.
4. Large concentrations of nonresidential urban area (such as industrial parks, office areas, and major airports) which have at least one-quarter of their boundary contiguous to an urbanized area.

Map 26
Urban Population
(percent)

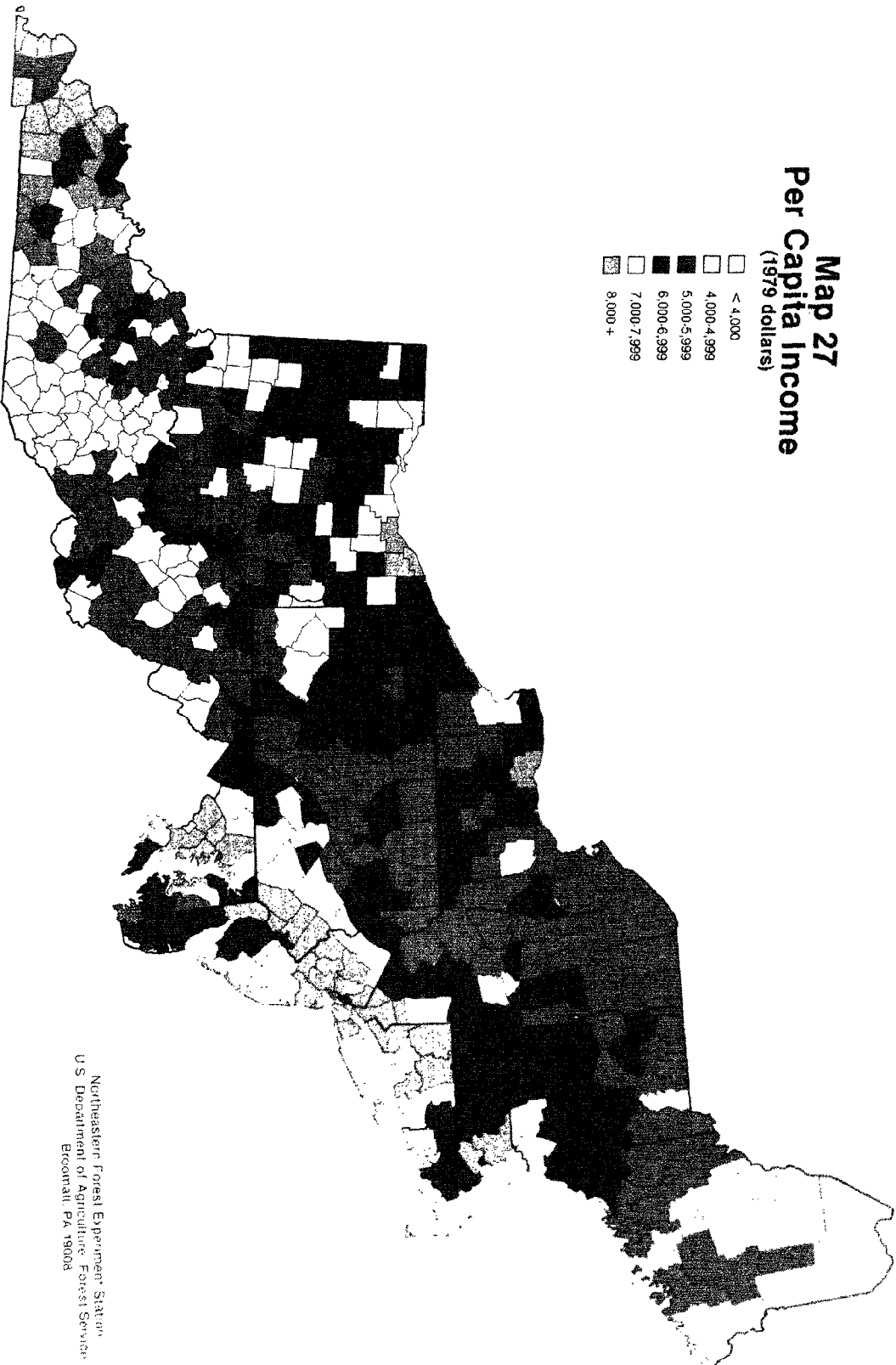
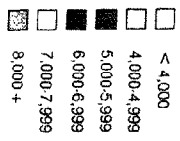


Northeastern Forest Experiment Station
U.S. Department of Agriculture, Forest Service
Broomall, PA 19008

Map 27: Per Capita Income

Per capita income is a measure of the relative affluence of a county. Per capita income is compiled by dividing the aggregate money income of all persons by the total population. Aggregate income is the algebraic sum of income received by all recipients 14 years old and over from all income sources. These estimates of per capita income were developed by the Bureau of the Census based on 1974 aggregate income and 1975 estimates of population.

Map 27 Per Capita Income (1979 dollars)



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U.S. Department of Agriculture Forest Service
Broomall, PA 19008

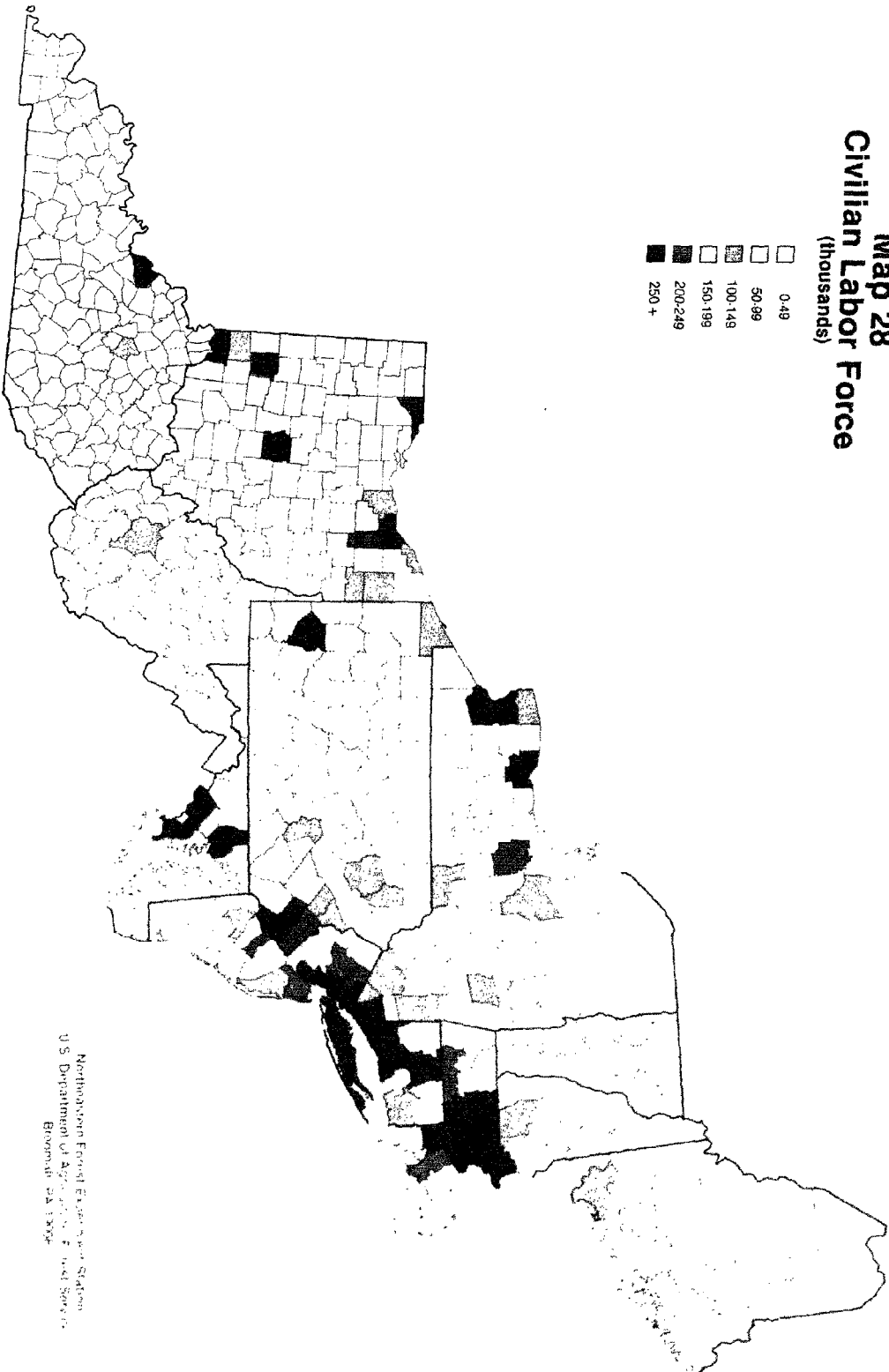
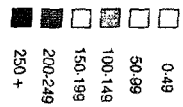
Map 28: Civilian Labor Force

The total civilian labor force includes all persons, 16 years old and over, classified as employed or unemployed, except members of the Armed Forces.

Employed persons are civilians who were either (a) "at work"—those who did any work at all as paid employees or in their own business or profession, or on their own farm, or who worked 15 hours or more as unpaid workers on a family farm or in a family business; or (b) "with a job but not at work"—those who did not work during the survey week but had jobs or businesses from which they were temporarily absent due to illness, bad weather, industrial dispute, vacation, or other personal reasons. Excluded from the employed are persons whose only activity consisted of work around the house or volunteer work for religious, charitable, and similar organizations.

Persons are classified as unemployed if they were (a) neither "at work" nor "with a job but not at work" during the survey week, (b) looking for work during the preceding 4 weeks, and (c) available to accept a job. Persons waiting to be called back to a job from which they had been laid off are also included as unemployed.

Map 28 Civilian Labor Force (thousands)



Northeastern Forest Region Station
U.S. Department of Agriculture, Forest Service
Broomfield, PA 15008

Map 29: Standard Metropolitan Statistical Areas in the Northeast

For many types of analyses, the entire area in and around a city, in which the activities form an integral economic and social system, needs to be considered as a unit. For this reason the concept of standard metropolitan statistical areas (SMSA) was designed so that a wide variety of statistical data might be presented on a uniform basis.

An SMSA always includes a city (or cities) of a specified population size, which constitutes the central city and the county (or counties) in which it is located. It also includes contiguous counties when the economic and social relationships between the central and contiguous counties meet specified criteria of metropolitan character and integration. SMSA's may cross state lines. In New England, SMSA's are composed of cities and towns instead of counties.

Population Criteria for SMSA's

The criteria for population relate to a city or cities of specified size according to the 1980 Census of Population.

1. Each SMSA must include at least:
 - a. One city with 50,000 or more inhabitants, or
 - b. A city with at least 25,000 inhabitants and that together with those contiguous places (incorporated or unincorporated) with population densities of at least 1,000 persons per square mile has a combined population of 50,000,

A "contiguous" county either adjoins the county or counties containing the largest city in the area, or adjoins an intermediate county integrated with the central county. There is no limit to the number of tiers of outlying metropolitan counties so long as all other criteria are met.

and constitutes, for general economic and social purposes, a single community, provided that the county or counties in which the city and contiguous places are located have a total population of at least 75,000. (In New England, the cities and towns qualifying for inclusion in an SMSA must have total population of at least 75,000.)

2. A contiguous county is included in an SMSA if:
 - a. At least 75 percent of the resident labor force in the county is in the nonagricultural labor force, and
 - b. At least 30 percent of the employed workers living in the county work in the central county or counties of the area.
3. A contiguous county that does not meet the requirements of criterion 2 is included in an SMSA if at least 75 percent of the resident labor force is in the nonagricultural labor force and it meets two of the following additional criteria of metropolitan character and one of the following criteria of integration:
 - a. Criteria of metropolitan character—
 - 1) At least 25 percent of the population is urban.
 - 2) The county had an increase of at least 15 percent in total population during the period covered by the two most recent censuses of population.
 - 3) The county has a population density of at least 50 persons per square mile.
 - b. Criteria of integration—
 - 1) At least 15 percent of the employed workers living in the county work in the central county or counties of the area, or
 - 2) The number of people working in the county who live in the central county or

counties of the area is equal to at least 15 percent of the employed workers living in the county, or

- 3) The sum of the number of workers commuting to and from the central county or counties is equal to 20 percent of the employed workers living in the county.

New England SMSA's

In New England, the city and town are administratively more important than the county, and data are compiled locally for each minor civil division.

Therefore, towns and cities are the units used in defining SMSA's. Because smaller units are used, and more restricted areas result, a population density criterion of at least 100 persons per square mile is used as the measure of metropolitan character.

Standard Metropolitan Statistical Areas

Maine:

1. Bangor
2. Lewiston - Auburn
3. Portland

New Hampshire:

4. Portsmouth - Dover - Rochester
5. Manchester
6. Nashua
7. Lawrence - Haverhill, Mass.

Massachusetts:

7. Lawrence - Haverhill
8. Lowell
9. Boston
10. Fitchburg - Leominster

11. Worcester
12. Springfield - Chicopee - Holyoke
13. Pittsfield
14. Brockton
15. New Bedford
16. Fall River
17. Providence - Warwick - Pawtucket, R.I.

Connecticut:

18. New London - Groton - Norwich
19. Hartford
20. New Britain
21. Meriden
22. New Haven
23. Bristol
24. Danbury
25. Bridgeport
26. Norwalk
27. Stamford
28. Waterbury

Rhode Island:

16. Fall River, Mass.
17. Providence - Warwick - Pawtucket
18. New London - Norwich, Conn.

New York:

29. Albany - Schenectady - Troy
30. Glens Falls
31. Utica - Rome
32. Syracuse
33. Rochester
34. Buffalo
35. Binghamton
36. Elmira
37. Poughkeepsie
38. Newburgh - Middletown
39. New York
40. Nassau - Suffolk

New Jersey:

39. New York, N.Y.
41. Patterson - Clifton - Passaic
42. Newark
43. Jersey City
44. New Brunswick - Perth Amboy - Sayreville
45. Long Branch - Asbury Park
46. Trenton
47. Atlantic City
48. Vineland - Millville - Bridgeton
49. Philadelphia, Pa.
50. Allentown - Bethlehem - Easton, Pa.
63. Wilmington, Del.

Pennsylvania:

35. Binghamton, N.Y.
48. Philadelphia
50. Allentown - Bethlehem - Easton
51. Northeast Pennsylvania
52. Williamsport
53. Reading
54. Lancaster
55. York
56. Harrisburg
57. State College
58. Altoona
59. Johnstown
60. Pittsburgh
61. Sharon
62. Erie

Delaware:

63. Wilmington

Maryland:

63. Wilmington, Del.
64. Baltimore
65. Cumberland

66. Washington, D.C.
67. Hagerstown

West Virginia:

65. Cumberland, Maryland
68. Steubenville, Ohio - Weirton
69. Wheeling
70. Parkersburg - Marietta, Ohio
71. Charleston
72. Huntington - Ashland, Ky.

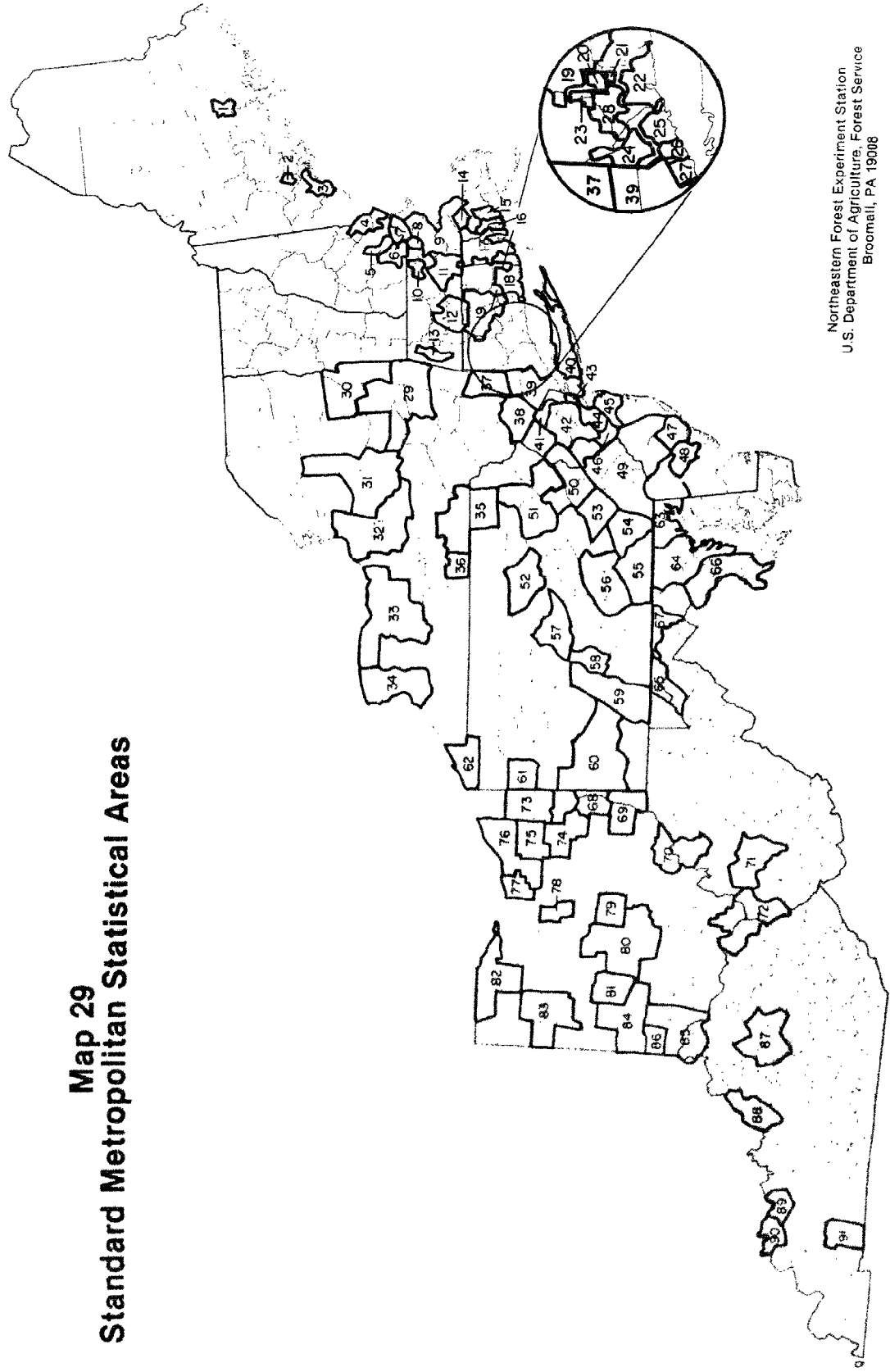
Ohio:

68. Steubenville - Weirton, W.Va.
69. Wheeling, W.Va.
70. Parkersburg, W.Va. - Marietta
72. Huntington, W.Va. - Ashland, Ky.
73. Youngstown - Warren
74. Canton
75. Akron
76. Cleveland
77. Lorain - Elyria
78. Mansfield
79. Newark
80. Columbus
81. Springfield
82. Toledo
83. Lima
84. Dayton
85. Cincinnati
86. Hamilton - Middletown

Kentucky:

72. Huntington, W.Va. - Ashland
85. Cincinnati, Ohio
87. Lexington
88. Louisville
89. Owensboro
90. Evansville, Ind.
91. Clarksville, Tenn. - Hopkinsville

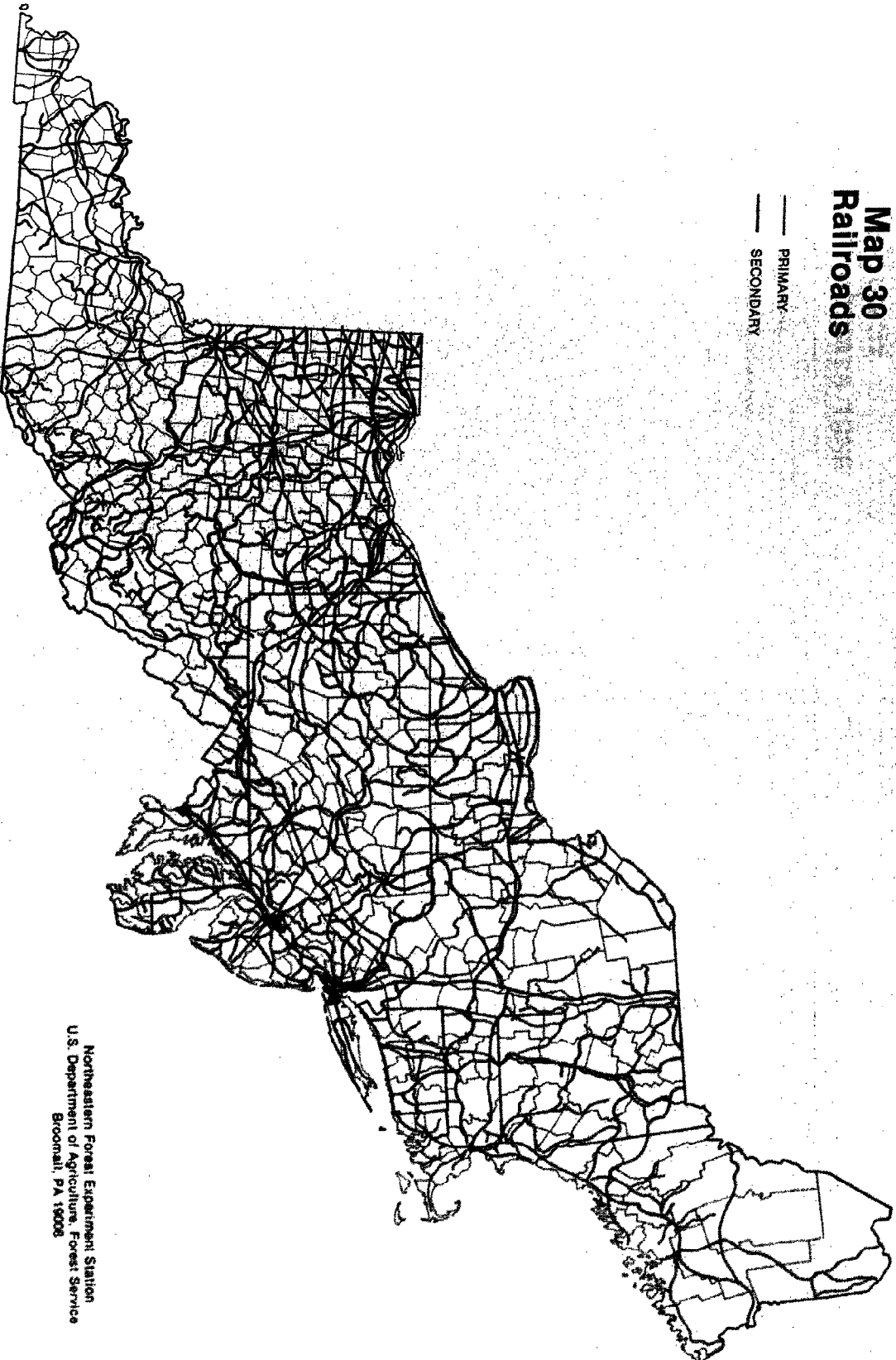
Map 29
Standard Metropolitan Statistical Areas



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Map 30 Railroads

— PRIMARY
— SECONDARY



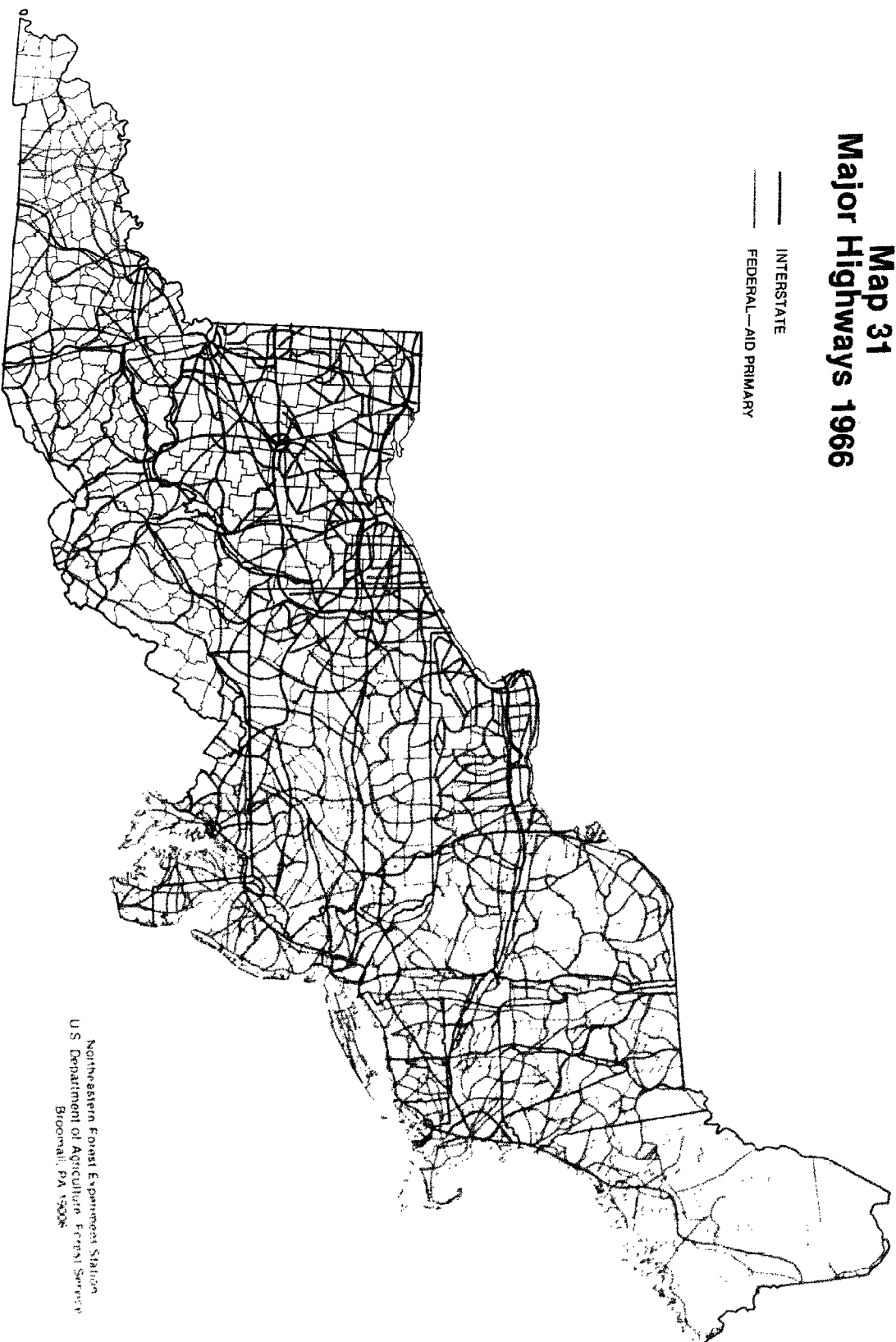
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U.S. Department of Agriculture, Forest Service
Broomall, PA 19008

Map 31: Major Highways

This map shows the approved location of Interstate Highway System routes. A few sections remain to be completed as of 1981. The Interstate System is built and maintained by the State highway departments, generally with 90 percent of the construction cost furnished by the Federal Government from highway-user taxes. Routes of the Federal-aid/Primary Highway system are chosen, built, and maintained by the State highway departments. For Federal-aid construction projects on the primary and secondary systems, 50 percent of the cost is furnished by the Federal Government from highway-user taxes.

Map 31 Major Highways 1966

— INTERSTATE
— FEDERAL-AID PRIMARY

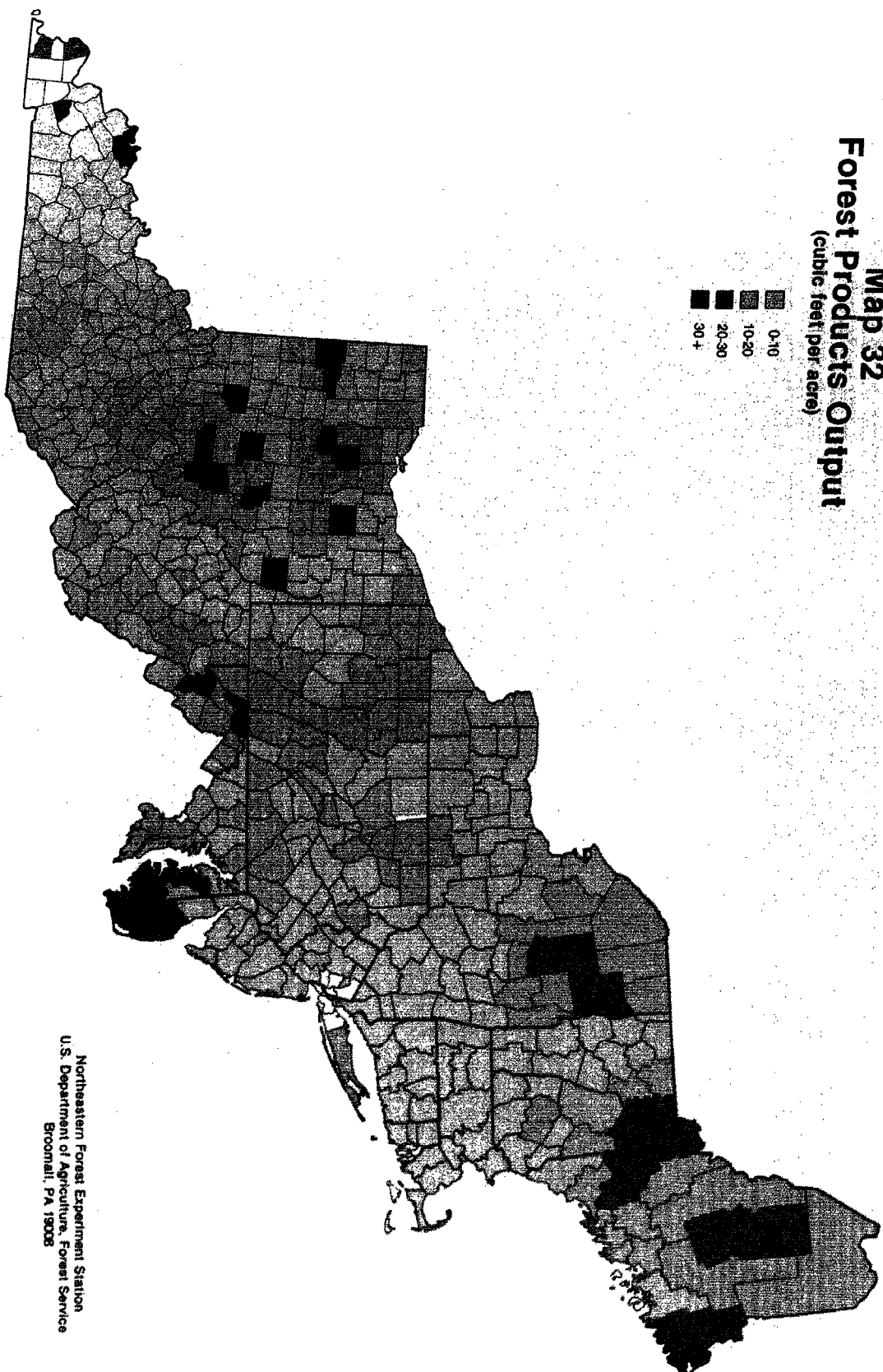
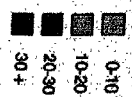


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Map 32: Forest Products Output

This map was developed by combining maps 33 and 34 and distributing timber and similar products to the counties based on growing-stock volume in the county.

Map 32 **Forest Products Output** (cubic feet per acre)

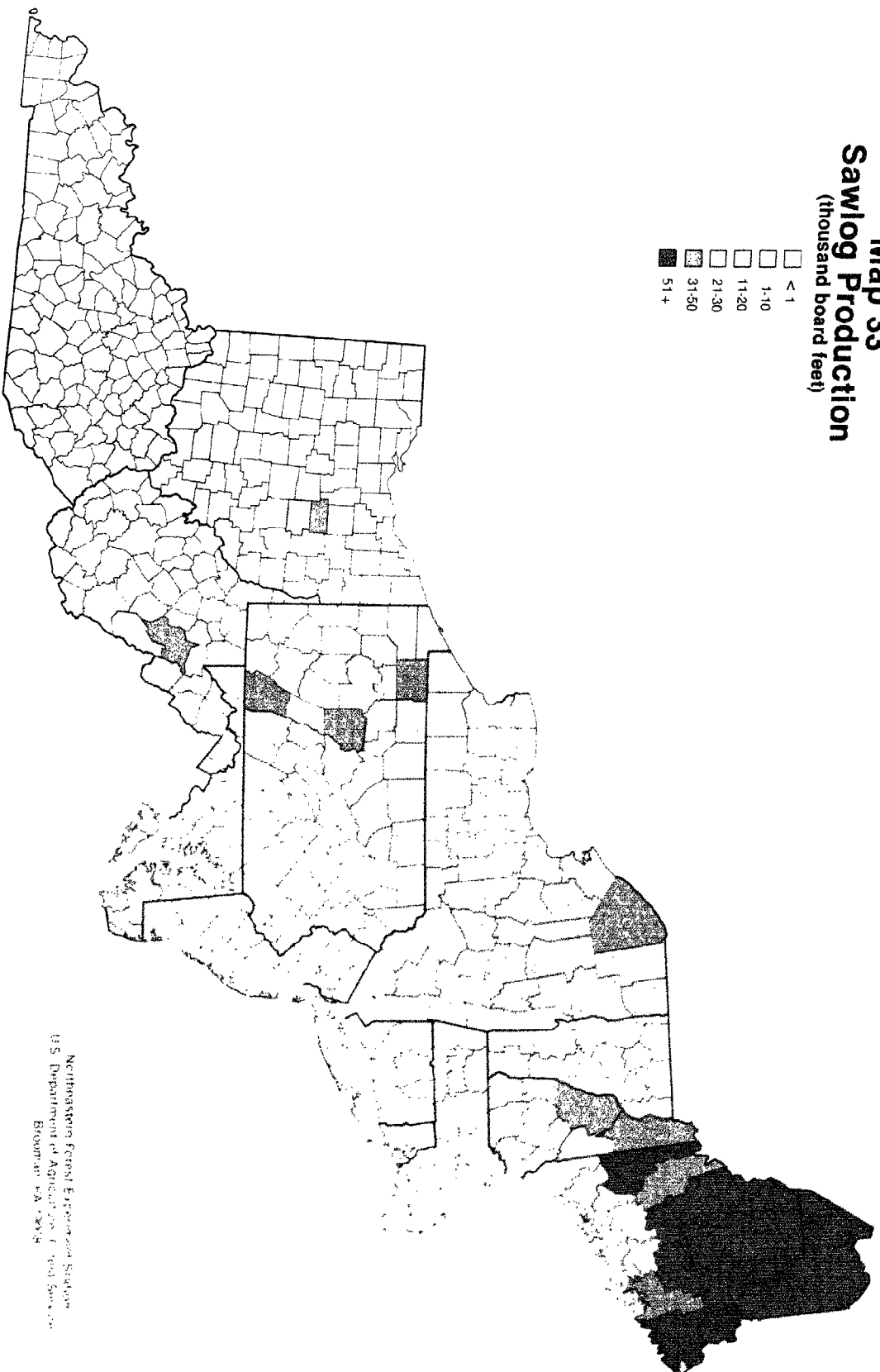
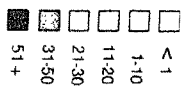


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 Broomfield, PA 15008

Map 33: Sawlog Production

This map was developed by distributing the total production of sawlogs in a given geographical sampling unit to the counties based on the reported sawlog volume in the county. The map does not represent any particular year since data were drawn from the most recent sawlog production canvass and the most recent forest inventory of each state.

Map 33 Sawlog Production (thousand board feet)

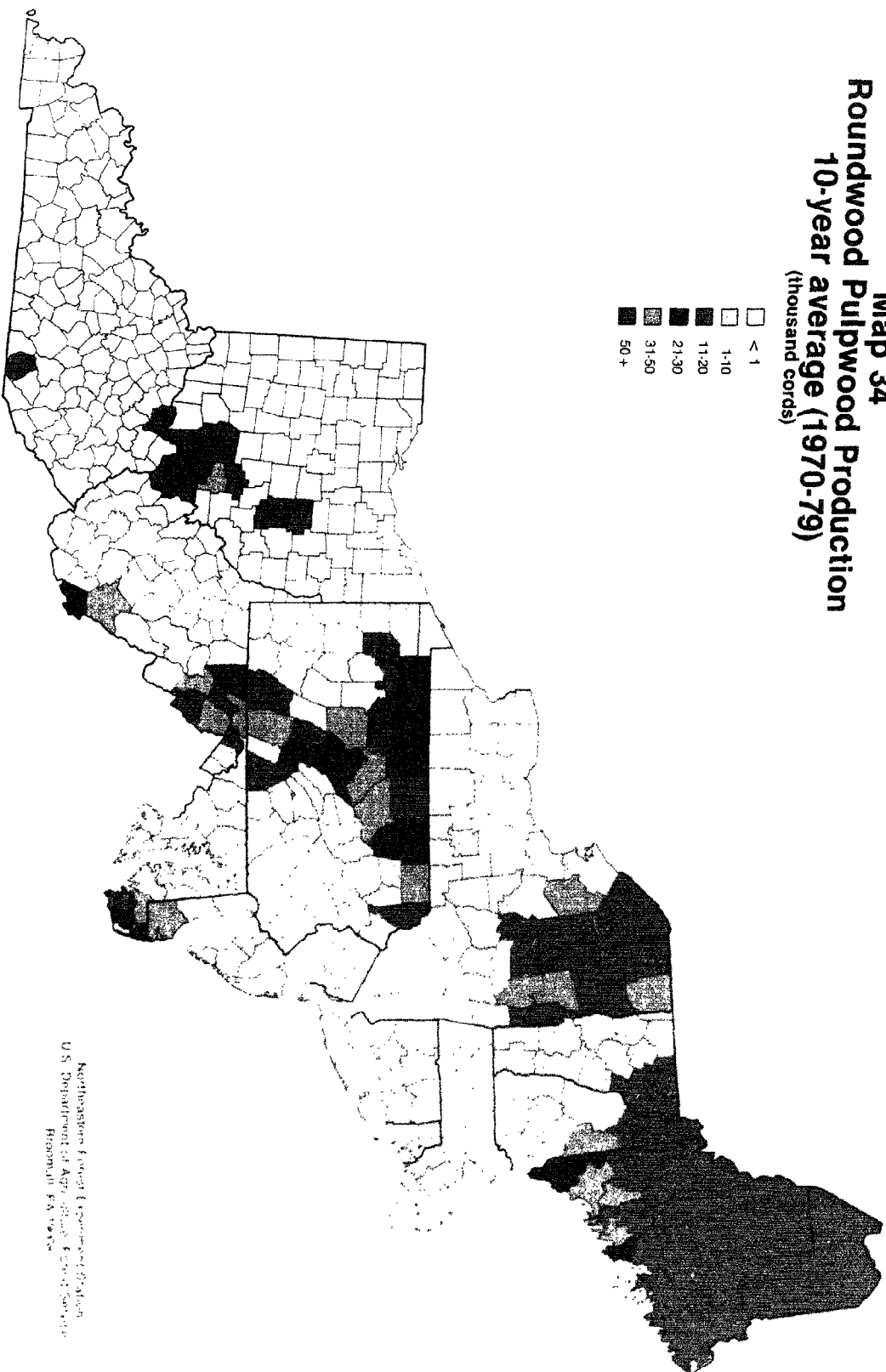
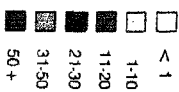


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U.S. Department of Agriculture, Forest Service
Broomfield, VA 22804

Map 34: Round Pulpwood Production

This map was compiled by averaging the round pulpwood production of each county for the years 1970 through 1979. Pulpwood production data is gathered annually by means of a canvass of all known consumers of pulpwood produced in the Northeast. Round pulpwood is defined as all pulpwood except residues from other forest industries. Thus it includes bolts, tree-length, and whole-tree chips used for the manufacture of pulpwood.

Map 34 **Roundwood Pulpwood Production** **10-year average (1970-79)** (thousand cords)



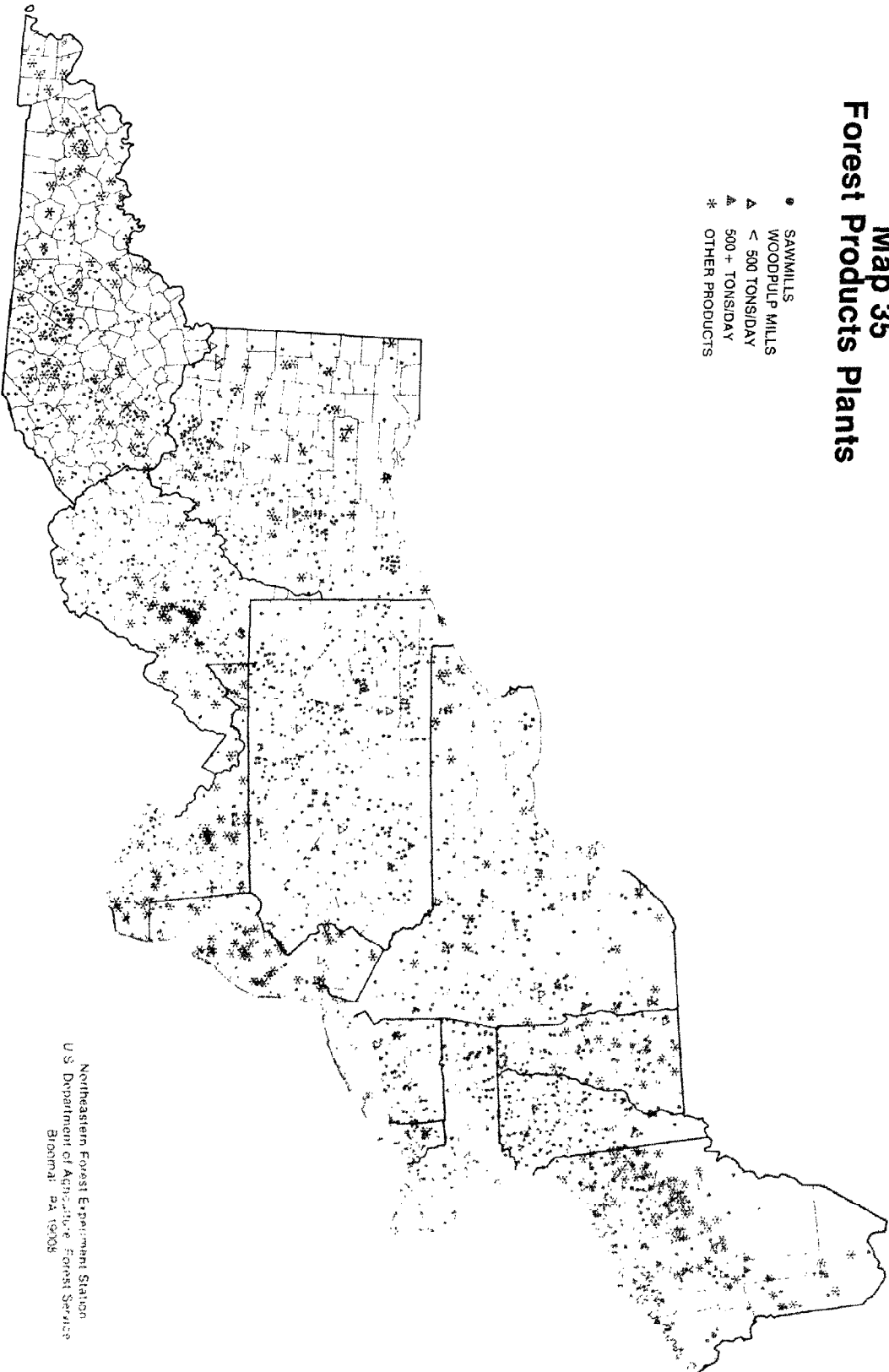
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 U.S. Department of Agriculture, Forest Service
 Broomfield, PA 15008

Map 35: Forest Products Plants

This map was compiled state by state from directories of forest products plants published by the various state forestry agencies. These directories may be obtained from the state foresters.

Map 35 Forest Products Plants

- SAWMILLS
- ▲ WOODPULP MILLS
- ▲ < 500 TONS/DAY
- ▲ 500 + TONS/DAY
- * OTHER PRODUCTS



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U.S. Department of Agriculture, Forest Service
Broomfield, MA 01908

Map 36: Forest Inventory Geographic Units²

Maine—1971³

1. Arroostook County

Land area: 4,365,200 acres
 Timberland: 86 percent
 Population: 96,044
 Rural population: 49 percent
 Population density: 14 per square mile
 Per capita income: \$3,255

2. Piscataquis County

Land area: 2,490,880 acres
 Timberland: 87 percent
 Population: 16,688
 Rural population: 81 percent
 Population density: 4 per square mile
 Per capita income: \$3,478

3. Penobscot County

Land area: 2,169,900 acres
 Timberland: 85 percent
 Population: 133,671
 Rural population: 39 percent
 Population density: 39 per square mile
 Per capita income: \$3,600

4. Washington County

Land area: 675,840 acres
 Timberland: 88 percent
 Population: 32,854
 Rural population: 87 percent
 Population density: 13 per square mile
 Per capita income: \$2,958

5. Somerset County

Land area: 2,492,160 acres
 Timberland: 90 percent
 Population: 43,519
 Rural population: 59 percent
 Population density: 11 per square mile
 Per capita income: \$3,327

6. Western Maine

Countries: Franklin and Oxford
 Land area: 2,424,960 acres
 Timberland: 89 percent
 Population: 69,805
 Rural population: 81 percent
 Population density: 18 per square mile
 Per capita income: \$3,433

7. Capital Region

Countries: Lincoln, Kennebec, Knox, and Waldo
 Land area: 1,556,480 acres
 Timberland: 73 percent
 Population: 182,054
 Rural Population: 56 percent
 Population density: 75 per square mile
 Per capita income: \$3,818

8. Casco Bay

Countries: Androscoggin, Cumberland, Sagadahoc, and York
 Land area: 1,671,040 acres
 Timberland: 77 percent
 Population: 444,173
 Rural population: 37 percent
 Population density: 170 per square mile
 Per capita income: \$3,928

9. Hancock County

Land area: 983,040 acres
 Timberland: 88 percent
 Population: 39,145
 Rural population: 87 percent
 Population density: 25 per square mile
 Per capita income: \$3,526

New Hampshire—1973

1. Northern New Hampshire

Countries: Carroll, Coos, and Grafton
 Land area: 2,873,600 acres
 Timberland: 84 percent
 Population: 116,508
 Rural population: 65 percent
 Population density: 26 per square mile
 Per capita income: \$4,050

2. Southern New Hampshire

Countries: Belknap, Cheshire, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan
 Land area: 2,903,680 acres
 Timberland: 78 percent
 Population: 695,296
 Rural population: 40 percent
 Population density: 153 per square mile
 Per capita income: \$4,320

²Geographic sampling units are areas with generally homogeneous tree species composition, contain approximately 1 million acres or more of productive forest land, follow political boundaries, and are generally considered as planning and management units by state forestry staffs. Geographic units are the basic sampling units for USDA Forest Service forest inventories.

³Year shown is the date of the most recent forest inventory.

Vermont—1973

1. Northern Vermont

Counties: Caledonia, Essex, Franklin, Lamoille, Orange, Orleans, Washington, and Grand Isle

Land area: 2,946,560 acres
Timberland: 75 percent
Population: 173,263
Rural Population: 78 percent
Population density: 38 per square mile
Per capita income: \$3,641

2. Southern Vermont

Counties: Addison, Bennington, Chittenden, Rutland, Windham, and Windsor

Land area: 2,983,680 acres
Timberland: 74 percent
Population: 298,788
Rural population: 63 percent
Population density: 64 per square mile
Per capita income: \$3,977

Massachusetts—1972

Counties: Barnstable, Berkshire, Bristol, Dukes, Essex, Franklin, Hampden, Hampshire, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk, and Worcester

Land area: 5,008,640 acres
Timberland: 59 percent
Population: 5,812,489
Rural population: 15 percent
Population density: 743 per square mile
Per capita income: \$4,775

Connecticut—1972

Counties: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, and Windham

Land area: 3,111,680 acres
Timberland: 58 percent
Population: 3,100,188
Rural population: 23 percent
Population density: 638 per square mile
Per capita income: \$5,348

Rhode Island—1972

Counties: Bristol, Kent, Newport, Providence, and Washington

Land area: 671,360 acres
Timberland: 59 percent
Population: 931,208
Rural population: 13 percent
Population density: 888 per square mile
Per capita income: \$4,558

New York—1980

1. St. Lawrence—Northern Adirondack

Counties: Clinton, Franklin, Jefferson, and St. Lawrence

Land area: 4,348,800 acres
Timberland: 38 percent
Population: 334,554
Rural Population: 59 percent
Population density: 49 per square mile
Per capita income: \$3,437

2. Lake Plain

Counties: Cayuga, Erie, Genessee, Livingston, Madison, Monroe, Niagara, Onondaga, Ontario, Orleans, Oswego, Seneca, Wayne, Wyoming, and Yates

Land area: 6,034,800 acres
Timberland: 31 percent
Population: 3,177,912
Rural population: 25 percent
Population density: 337 per square mile
Per capita income: \$4,585

3. Western Adirondack

Counties: Fulton, Herkimer, Lewis, and Oneida
Land area: 2,846,080 acres
Timberland: 52 percent
Population: 413,963
Rural population: 39 percent
Population density: 93 per square mile
Per capita income: \$3,857

4. Eastern Adirondack

Counties: Essex, Hamilton, and Warren
Land area: 2,844,800 acres
Timberland: 46 percent
Population: 92,989
Rural population: 65 percent
Population density: 21 per square mile
Per capita income: \$3,762

5. Southwest Highlands

Counties: Allegany, Cattaraugus, Chautauqua, and Steuben

Land area: 3,107,840 acres
Timberland: 53 percent
Population: 383,115
Rural Population: 59 percent
Population density: 79 per square mile
Per capita income: \$3,759

6. South-Central Highlands

Counties: Broome, Chemung, Chenango, Cortland, Delaware, Otsego, Schuyler, Tioga, and Tompkins

Land area: 4,048,100 acres
Timberland: 53 percent
Population: 669,609
Rural population: 47 percent
Population density: 106 per square mile
Per capita income: \$4,020

7. Capital District

Counties: Albany, Montgomery, Fennselaer, Saratoga, Schenectady, Schoharie, and Washington

Land area: 2,613,760 acres
Timberland: 47 percent
Population: 881,226
Rural population: 31 percent
Population density: 216 per square mile
Per capita income: \$4,528

8. Catskill—Lower Hudson

Counties: Bronx, Columbia, Dutchess, Greene, Nassau, New York, Orange, Putnam, Rockland, Suffolk, Sullivan, Ulster, and Westchester

Land area: 4,606,080 acres
Timberland: 48 percent
Population: 7,424,023
Rural population: 9 percent
Population density: 1,032 per square mile
Per capita income: \$5,455

New Jersey—1972

Counties: Atlantic, Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Gloucester, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Salem, Somerset, Sussex, Union, and Warren

Land area: 4,813,440 acres
Timberland: 38 percent
Population: 7,332,965
Rural Population: 11 percent
Population density: 975 per square mile
Per capita income: \$5,237

Pennsylvania—1978

1. Western

Counties: Allegheny, Armstrong, Beaver, Butler, Crawford, Erie, Greene, Indiana, Lawrence, Mercer, Washington, and Westmoreland

Land area: 5,599,360 acres
Timberland: 45 percent
Population: 3,253,248
Rural population: 26 percent
Population density: 372 per square mile
Per capita income: \$4,554

2a. Allegheny

Counties: Cameron, Elk, Forest, McKean, Potter, Sullivan, Tioga, and Warren

Land area: 3,993,600 acres
Timberland: 82 percent
Population: 214,773
Rural population: 69 percent
Population density: 34 per square mile
Per capita income: \$3,595

2b. North-Central

Counties: Centre, Clarion, Clearfield, Clinton, Jefferson, Lycoming, and Venango

Land area: 4,029,440 acres
Timberland: 71 percent
Population: 491,455
Rural population: 57 percent
Population density: 78 per square mile
Per capita income: \$3,598

3. Southwestern

Counties: Bedford, Blair, Cambria, Fayette, and Somerset

Land area: 2,636,800 acres
Timberland: 61 percent
Population: 601,658
Rural Population: 57 percent
Population density: 146 per square mile
Per capita income: \$3,722

4a. Northeastern

Counties: Bradford, Lackawanna, Susquehanna, Wayne, and Wyoming

Land area: 2,287,360 acres
Timberland: 59 percent
Population: 388,623
Rural population: 45 percent
Population density: 109 per square mile
Per capita income: \$3,718

4b. Pocono

Counties: Carbon, Columbia, Luzerne, Monroe, Montour, Northumberland, Pike, and Schuylkill
Land area: 2,748,160 acres
Timberland: 60 percent
Population: 803,283
Rural population: 38 percent
Population density: 187 per square mile
Per capita income: \$3,712

5. Southeastern

Counties: Adams, Berks, Bucks, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Montgomery, Northampton, Philadelphia, and York
Land area: 4,524,160 acres
Timberland: 22 percent
Population: 5,286,940
Rural population: 21 percent
Population density: 748 per square mile
Per capita income: \$5,086

6. South-Central

Counties: Dauphin, Franklin, Fulton, Huntingdon, Juniata, Mifflin, Perry, Snyder, and Union
Land area: 2,953,600 acres
Timberland: 56 percent
Population: 538,066
Rural Population: 55 percent
Population density: 117 per square mile
Per capita income: \$4,042

Ohio—1979

1. South-Central

Counties: Adams, Brown, Clermont, Gallia, Highland, Jackson, Lawrence, Pike, Ross, and Scioto
Land area: 3,307,520 acres
Timberland: 48 percent
Population: 473,306
Rural population: 63 percent
Population density: 92 per square mile
Per capita income: \$3,485

2. Southeastern

Counties: Athens, Hocking, Meigs, Morgan, Perry, Vinton, and Washington
Land area: 2,075,520 acres
Timberland: 60 percent
Population: 210,842
Rural population: 65 percent
Population density: 65 per square mile
Per capita income: \$3,347

3. East-Central

Counties: Belmont, Carroll, Coshocton, Guernsey, Harrison, Holmes, Jefferson, Monroe, Muskingum, Noble, and Tuscarawas
Land area: 3,407,360 acres
Timberland: 49 percent
Population: 507,206
Rural population: 57 percent
Population density: 95 per square mile
Per capita income: \$3,843

4. Northeastern

Counties: Ashland, Ashtabula, Columbiana, Cuyahoga, Erie, Geauga, Huron, Lake,

Lorain, Mahoning, Medina, Portage,
Richland, Stark, Summit, Trumbull,
and Wayne

Land area: 5,114,880 acres
Timberland: 24 percent
Population: 4,438,385
Rural Population: 17 percent
Population density: 55 per square mile
Per capita income: \$4,815

5. Southwestern

Counties: Butler, Clark, Clinton, Darke, Fairfield,
Franklin, Greene, Hamilton, Licking,
Madison, Miami, Montgomery, Pickaway,
Pryde, and Warren

Land area: 4,911,520 acres

Timberland: 10 percent

Population: 3,468,508

Rural population: 17 percent

Population density: 461 per square mile

Per capita income: \$4,652

6. Northwestern

Counties: Allen, Auglaize, Champaign, Crawford,
Defiance, Delaware, Fulton, Hancock,
Hardin, Henry, Knox, Logan, Lucas,
Marion, Mercer, Morrow, Ottawa,
Paulding, Putnam, Sandusky, Seneca,
Shelby, Union, Van Wert, Williams,
Wood, and Wyandot

Land area: 7,481,680 acres

Timberland: 9 percent

Population: 1,637,033

Rural population: 40 percent

Population density: 139 per square mile

Per capita income: \$4,370

West Virginia—1975

1. Northeastern

Counties: Barbour, Berkeley, Braxton, Grant,
Hampshire, Hardy, Harrison, Jefferson,
Lewis, Mineral, Morgan, Pendleton,
Pocahontas, Preston, Randolph, Taylor,
Tucker, Upshur, and Webster

Land area: 5,933,440 acres

Timberland: 74 percent

Population: 375,551

Rural population: 69 percent

Population density: 40 per square mile

Per capita income: \$3,298

2. Southern

Counties: Boone, Clay, Fayette, Greenbrier,
Kanawha, Logan, McDowell, Mercer,

Mingo, Monroe, Nicholas, Raleigh,

Summers, and Wyoming

Land area: 5,019,520 acres

Timberland: 78 percent

Population: 705,971

Rural Population: 64 percent

Population density: 90 per square mile

Per capita income: \$3,594

3. Northwestern

Counties: Brooke, Cabell, Calhoun, Doddridge,
Gilmer, Hancock, Jackson, Lincoln,
Marion, Marshall, Mason, Monongalia,
Ohio, Pleasants, Putnam, Ritchie, Roane,
Tyler, Wayne, Wetzel, Wirt, and Wood

Land area: 4,452,480 acres

Timberland: 71 percent

Population: 717,828

Rural population: 51 percent
Population density: 103 per square mile
Per capita income: \$3,808

Delaware—1972

Counties: Kent, New Castle, and Sussex
Land area: 1,268,480 acres
Timberland: 30 percent
Population: 579,405
Rural population: 28 percent
Population density: 292 per square mile
Per capita income: \$4,809

Kentucky—1975

1. Eastern

Counties: Floyd, Harlan, Knott, Leslie, Letcher,
Martin, Perry, and Pike
Land area: 2,128,640 acres
Timberland: 88 percent
Population: 247,223
Rural population: 90 percent
Population density: 74 per square mile
Per capita income: \$2,929

2. Northern Cumberland

Counties: Boyd, Carter, Elliott, Greenup, Johnson,
Lawrence, Lewis, Magoffin, Menifee,
Morgan, Powell, Rowan, and Wolfe
Land area: 2,492,160 acres
Timberland: 74 percent
Population: 218,654
Rural Population: 70 percent
Population density: 56 per square mile
Per capita income: \$3,100

3. Southern Cumberland

Counties: Bell, Breathitt, Clay, Estill, Jackson,
Knox, Laurel, Lee, McCreary, Owsley,
Rockcastle, and Whitley
Land area: 2,783,360 acres
Timberland: 78 percent
Population: 219,203
Rural population: 81 percent
Population density: 50 per square mile
Per capita income: \$2,332

4. Bluegrass

Counties: Anderson, Bath, Boone, Bourbon, Boyce,
Bracken, Campbell, Carroll, Clark,
Fayette, Fleming, Franklin, Gallatin,
Garrard, Grant, Harrison, Henry,
Jefferson, Jessamine, Kenton, Lincoln,
Madison, Mason, Mercer, Montgomery,
Nicholas, Oldham, Owen, Pendleton,
Robertson, Scott, Shelby, Spencer,
Trimble, Washington, and Woodford
Land area: 5,642,240 acres
Timberland: 24 percent
Population: 1,598,310
Rural population: 26 percent
Population density: 118 per square mile
Per capita income: \$4,328

5. Pennyroyal

Counties: Adair, Breckenridge, Bullitt, Casey,
Clinton, Cumberland, Grayson, Green,
Hancock, Hardin, Hart, Laclede, Marion,
Meade, Metcalfe, Nelson, Pulaski,
Russell, Taylor, and Wayne
Land area: 4,741,760 acres
Timberland: 45 percent

Population: 383,578
Rural population: 72 percent
Population density: 52 per square mile
Per capita income: \$3,148

6. Western Coalfield

Counties: Allen, Barren, Butler, Caldwell, Christian, Crittenden, Daviess, Edmonson, Henderson, Hopkins, Logan, McLean, Monroe, Muhlenberg, Ohio, Simpson, Todd, Union, Warren, and Webster
Land area: 5,456,640 acres
Timberland: 34 percent
Population: 524,351
Rural Population: 55 percent
Population density: 62 per square mile
Per capita income: \$3,463

7. Western

Counties: Ballard, Calloway, Carlisle, Fulton, Graves, Hickman, Livingston, Lyon, McCracken, Marshall, and Trigg
Land area: 2,134,400 acres
Timberland: 32 percent
Population: 196,538
Rural population: 64 percent
Population density: 59 per square mile
Per capita income: \$3,661

Maryland—1976

1. Lower Eastern Shore

Counties: Dorchester, Somerset, Wicomico, and Worcester
Land area: 1,147,520 acres
Timberland: 46 percent
Population: 134,785

Rural population: 74 percent
Population density: 75 per square mile
Per capita income: \$3,920

2. Western

Counties: Allegany and Garrett
Land area: 695,680 acres
Timberland: 74 percent
Population: 106,869
Rural Population: 59 percent
Population density: 75 per square mile
Per capita income: \$3,583

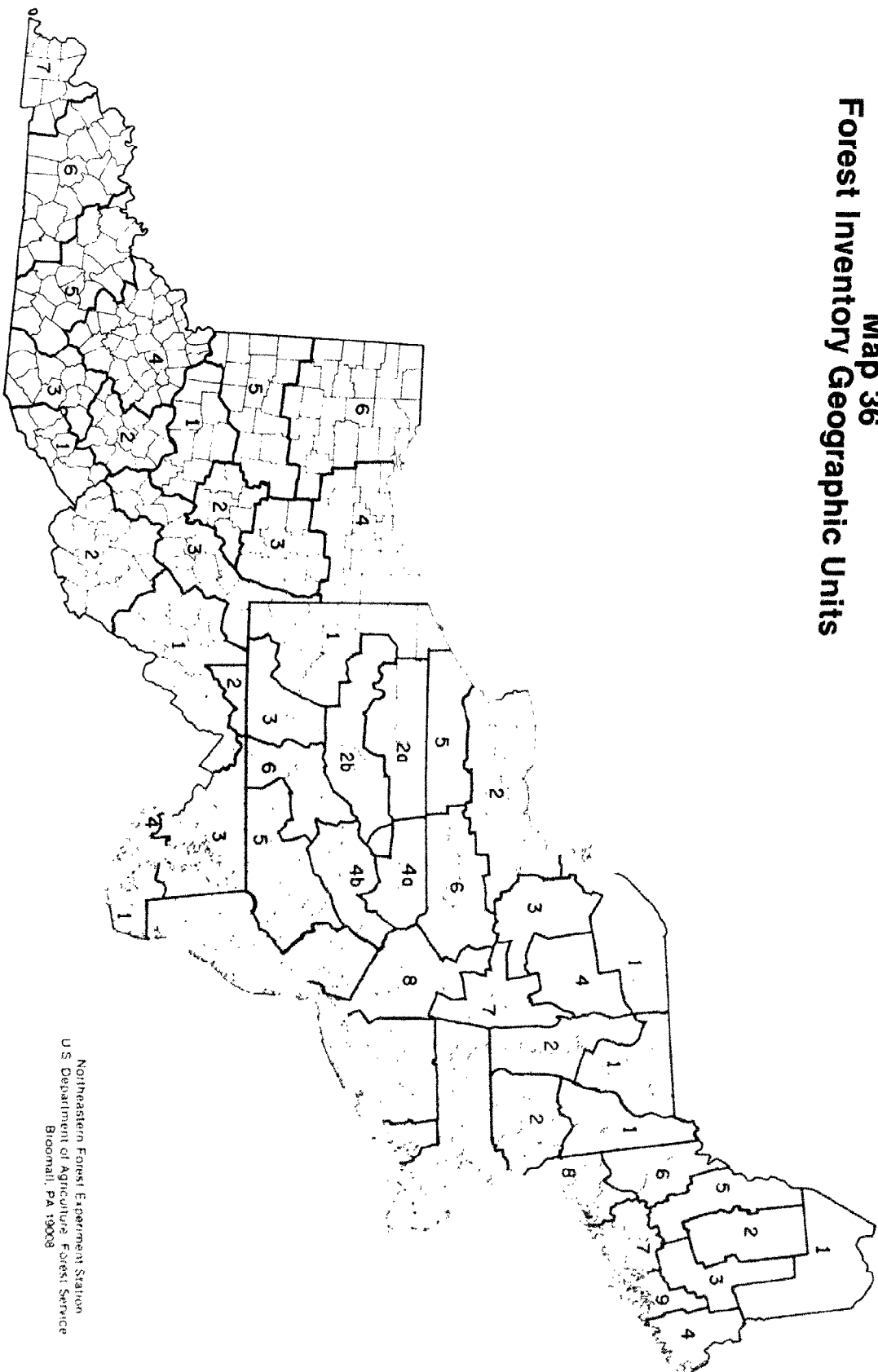
3. Central

Counties: Anne Arundel, Baltimore, Baltimore City, Caroline, Carroll, Cecil, Frederick, Harford, Howard, Kent, Montgomery, Prince Georges, Queen Annes, Talbot, and Washington
Land area: 3,816,320 acres
Timberland: 29 percent
Population: 3,741,417
Rural population: 20 percent
Population density: 627 per square mile
Per capita income: \$5,440

4. Southern

Counties: Calvert, Charles, and St. Marys
Land area: 671,360 acres
Timberland: 56 percent
Population: 138,534
Rural population: 86 percent
Population density: 132 per square mile
Per capita income: \$4,205

Map 36 Forest Inventory Geographic Units



Northeastern Forest Experiment Station
U.S. Department of Agriculture Forest Service
Broomall, PA 19008

Map 37: State and County Identification Codes

Each county in the United States has been assigned a five digit identification code. The first two digits identify the state and the last three identify the county. County codes within a state are assigned as odd numbers in alphabetical order of county. Thus, the code number 23001 indicates Androscoggin County, Maine, and 23031 indicates York County, Maine. Even numbers are reserved to indicate portions of counties. A portion of Androscoggin County would be coded 23002. A complete listing of codes can be found in "Federal Information Processing Standards" (U.S. Dep. Comm. 1968).

States and Counties

09—Connecticut

001 - Fairfield
003 - Hartford
005 - Litchfield
007 - Middlesex
009 - New Haven
011 - New London
013 - Tolland
015 - Windham

23—Maine

001 - Androscoggin
003 - Aroostook
005 - Cumberland
007 - Franklin
009 - Hancock
011 - Kennebec
013 - Knox
015 - Lincoln
017 - Oxford
019 - Penobscot
021 - Piscataquis
023 - Sagadahoc
025 - Somerset
027 - Waldo
029 - Washington
031 - York

25—Massachusetts

001 - Barnstable
003 - Berkshire
005 - Bristol
007 - Dukes
009 - Essex
011 - Franklin
013 - Hampden

015 - Hampshire

017 - Middlesex
019 - Nantucket
021 - Norfolk
023 - Plymouth
025 - Suffolk
027 - Worcester

33—New Hampshire

001 - Belknap
003 - Carroll
005 - Cheshire
007 - Coos
009 - Grafton
011 - Hillsboro
013 - Merrimack
015 - Rockingham
017 - Stratford
019 - Sullivan

44—Rhode Island

001 - Bristol
003 - Kent
005 - Newport
007 - Providence
009 - Washington

50—Vermont

001 - Addison
003 - Bennington
005 - Caledonia
007 - Chittenden
009 - Essex
011 - Franklin
013 - Grand Isle
015 - Lamoille
017 - Orange
019 - Orleans

021 - Rutland

023 - Washington

025 - Windham

027 - Windsor

10—Delaware

001 - Kent
003 - New Castle
005 - Sussex

24—Maryland

001 - Allegany
003 - Anne Arundel
005 - Baltimore
007 - Baltimore City
009 - Calvert
011 - Caroline
013 - Carroll
015 - Cecil
017 - Charles
019 - Dorchester
021 - Frederick
023 - Garrett
025 - Harford
027 - Howard
029 - Kent
031 - Montgomery
033 - Prince Georges
035 - Queen Annes
037 - St. Marys
039 - Somerset
041 - Talbot
043 - Washington
045 - Wicomico
047 - Worcester

34—New Jersey

001 - Atlantic
003 - Bergen

005 - Burlington

007 - Camden

009 - Cape May

011 - Cumberland

013 - Essex

015 - Gloucester

017 - Hudson

019 - Hunterdon

021 - Mercer

023 - Middlesex

025 - Monmouth

027 - Morris

029 - Ocean

031 - Passaic

033 - Salem

035 - Somerset

037 - Sussex

039 - Union

36—New York

001 - Albany
003 - Allegany
005 - Bronx
007 - Broome
009 - Cattaraugus
011 - Cayuga
013 - Chautauqua
015 - Chemung
017 - Chenango
019 - Clinton
021 - Columbia
023 - Cortland
025 - Delaware
027 - Dutchess
029 - Erie
031 - Essex
033 - Franklin
035 - Fulton

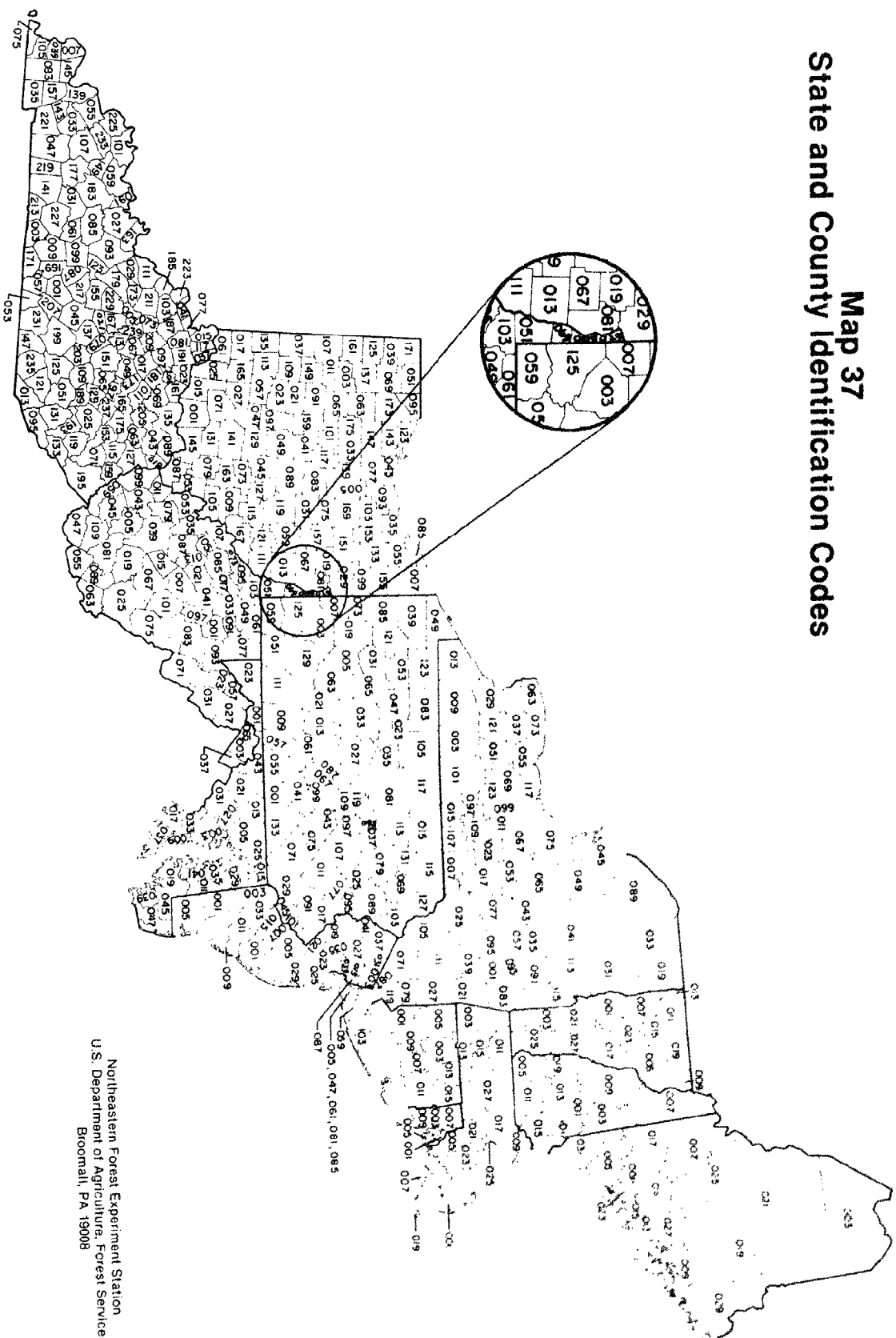
States and Counties (Cont.)

36—New York		
037 - Genesee	109 - Tompkins	055 - Franklin
039 - Greene	111 - Ulster	057 - Fulton
041 - Hamilton	113 - Warren	059 - Greene
043 - Herkimer	115 - Washington	061 - Huntingdon
045 - Jefferson	117 - Wayne	063 - Indiana
047 - Kings	119 - Westchester	065 - Jefferson
049 - Lewis	121 - Wyoming	067 - Juniata
051 - Livingston	123 - Yates	069 - Lackawanna
053 - Madison	42—Pennsylvania	
055 - Monroe	001 - Adams	071 - Lancaster
057 - Montgomery	003 - Allegheny	073 - Lawrence
059 - Nassau	005 - Armstrong	075 - Lebanon
061 - New York	007 - Beaver	077 - Lehigh
063 - Niagara	009 - Bedford	079 - Luzerne
065 - Oneida	011 - Berks	081 - Lycoming
067 - Onondaga	013 - Blair	083 - McKean
069 - Ontario	015 - Bradford	085 - Mercer
071 - Orange	017 - Bucks	087 - Mifflin
073 - Orleans	019 - Butler	089 - Monroe
075 - Oswego	021 - Cambria	091 - Montgomery
077 - Otsego	023 - Cameron	093 - Montour
079 - Putnam	025 - Carbon	095 - Northampton
081 - Queens	027 - Centre	097 - Northumberland
083 - Rensselaer	029 - Chester	099 - Perry
085 - Richmond	031 - Clarion	101 - Philadelphia
087 - Rockland	033 - Clearfield	103 - Pike
089 - St. Lawrence	035 - Clinton	105 - Potter
091 - Saratoga	037 - Columbia	107 - Schuylkill
093 - Schenectady	039 - Crawford	109 - Snyder
095 - Schoharie	041 - Cumberland	111 - Somerset
097 - Schuylter	043 - Dauphin	113 - Sullivan
099 - Seneca	045 - Delaware	115 - Susquehanna
101 - Steuben	047 - Elk	117 - Tioga
103 - Suffolk	049 - Erie	119 - Union
105 - Sullivan	051 - Fayette	121 - Venango
107 - Tioga	053 - Forest	123 - Warren
		125 - Washington
		127 - Wayne
		129 - Westmoreland
21—Kentucky		
131 - Wyoming		
133 - York	067 - Fayette	141 - Logan
	069 - Fleming	143 - Lyon
	071 - Floyd	145 - McCracken
	073 - Franklin	147 - McCreary
	075 - Fulton	149 - McLean
	077 - Gallatin	151 - Madison
	079 - Garrard	153 - Magoffin
	081 - Grant	155 - Marion
	083 - Graves	157 - Marshall
	085 - Grayson	159 - Martin
	087 - Green	161 - Mason
	089 - Greenup	163 - Meade
	091 - Hancock	165 - Menifee
	093 - Hardin	167 - Mercer
	095 - Harlan	169 - Metcalfe
	097 - Harrison	171 - Monroe
	099 - Hart	173 - Montgomery
	101 - Henderson	175 - Morgan
	103 - Henry	177 - Muhlenberg
	105 - Hickman	179 - Nelson
	107 - Hopkins	181 - Nicholas
	109 - Jackson	183 - Ohio
	111 - Jefferson	185 - Oldham
	113 - Jessamine	187 - Owen
	115 - Johnson	189 - Owsley
	117 - Kenton	191 - Pendleton
	119 - Knott	193 - Perry
	121 - Knox	195 - Pike
	123 - Laclede	197 - Powell
	125 - Laurel	199 - Pulaski
	127 - Lawrence	201 - Robertson
	129 - Lee	203 - Rockcastle
	131 - Leslie	205 - Rowan
	133 - Letcher	207 - Russell
	135 - Lewis	209 - Scott
	137 - Lincoln	211 - Shelby
	139 - Livingston	213 - Simpson

States and Counties (Cont.)

21—Kentucky			
215 – Spencer	041 – Delaware	115 – Morgan	007 – Braxton
217 – Taylor	043 – Erie	117 – Morrow	009 – Brooke
219 – Todd	045 – Fairfield	119 – Muskingum	011 – Cabell
221 – Trigg	047 – Fayette	121 – Noble	013 – Calhoun
223 – Trimble	049 – Franklin	123 – Ottawa	015 – Clay
225 – Union	051 – Fulton	125 – Paulding	017 – Doddridge
227 – Warren	053 – Gallia	127 – Perry	019 – Fayette
229 – Washington	055 – Geauga	129 – Pickaway	021 – Gilmer
231 – Wayne	057 – Greene	131 – Pike	023 – Grant
233 – Webster	059 – Guernsey	133 – Portage	025 – Greenbrier
235 – Whitley	061 – Hamilton	135 – Preble	027 – Hampshire
237 – Wolfe	063 – Hancock	137 – Putnam	029 – Hancock
239 – Woodford	065 – Hardin	139 – Richland	031 – Hardy
	067 – Harrison	141 – Ross	033 – Harrison
	069 – Henry	143 – Sandusky	035 – Jackson
39—Ohio	071 – Highland	145 – Scioto	037 – Jefferson
001 – Adams	073 – Hocking	147 – Seneca	039 – Kanawha
003 – Allen	075 – Holmes	149 – Shelby	041 – Lewis
005 – Ashland	077 – Huron	151 – Stark	043 – Lincoln
007 – Ashtabula	079 – Jackson	153 – Summit	045 – Logan
009 – Athens	081 – Jefferson	155 – Trumbull	047 – McDowell
011 – Auglaize	083 – Knox	157 – Tuscarawas	049 – Marion
013 – Belmont	085 – Lake	159 – Union	051 – Marshall
015 – Brown	087 – Lawrence	161 – Van Wert	053 – Mason
017 – Butler	089 – Licking	163 – Vinton	055 – Mercer
019 – Carroll	091 – Logan	165 – Warren	057 – Mineral
021 – Champaign	093 – Lorain	167 – Washington	059 – Mingo
023 – Clark	095 – Lucas	169 – Wayne	061 – Monongalia
025 – Clermont	097 – Madison	171 – Williams	063 – Monroe
027 – Clinton	099 – Mahoning	173 – Wood	065 – Morgan
029 – Columbiana	101 – Marion	175 – Wyandot	067 – Nicholas
031 – Coshocton	103 – Medina		069 – Ohio
033 – Crawford	105 – Meigs	54—West Virginia	071 – Pendleton
035 – Cuyahoga	107 – Mercer	001 – Barbour	073 – Pleasants
037 – Darke	109 – Miami	003 – Berkeley	075 – Pocahontas
039 – Defiance	111 – Monroe	005 – Boone	077 – Preston
	113 – Montgomery		

Map 37 State and County Identification Codes



Northeastern Forest Experiment Station
U.S. Department of Agriculture, Forest Service
Bloomall, PA 19008

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Source of Maps

Map : Reference

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Kingsley, Neal P. A forester's atlas of the Northeast. Gen. Tech. Rep. NE-95. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station; 1985. 96 p.

MAP 3

Dashed areas indicate wet soils that are seasonally or permanently saturated with water. Area UI-4 in Maryland and New Jersey should have dashes.

Unnumbered area running from eastern West Virginia across south-central Pennsylvania state line then northeast to New Jersey state line should be I8-5.

I8-0 in eastern Kentucky should be I8-6.

I10-3 in upstate New York should be I10-2.

A6-6 is fragiudalfs plus hapludalfs, greatly sloping.

MAP 4

Area shown as D7 in northwest Ohio should be D3.

Area 12 in the Mid-Atlantic Region is the James River.

MAP 5

The three outlined, uncolored areas in central Maryland are oak-hickory.

Uncolored area in north-central Maine is maple-beech-birch.

MAPS 10 and 14

Unshaded counties have no measurable volume.

MAPS 23 and 24

Precipitation and snowfall in inches.

MAP 33

Million board feet not thousand board feet.

Kingsley, Neal P. *A forester's atlas of the Northeast*.
Gen. Tech. Rep. NE-95. Broomall, PA: U.S. Department of
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A reference atlas for the professional forester, geographer, student, and the general public. Contains 37 maps with accompanying text. Subject areas covered include: land resource areas, physical subdivisions, soils, water resources, forest resources, climate, population, income, labor, transportation, and timber products output.

Keywords: Maps, 14 states, land resources, population, climate, transportation, timber resources, timber production.