Ecoregions of New England

quantity of environmental resources; they are designed to serve as a spatial framework for continue into ecologically similar parts of adjacent states or provinces. the research, assessment, management, and monitoring of ecosystems and ecosystem components. By recognizing the spatial differences in the capacities and potentials of ecosystems, ecoregions stratify the environment by its probable response to disturbance (Bryce and others, 1999). These general purpose regions are critical for structuring and implementing ecosystem management strategies across federal agencies, state agencies, and nongovernment organizations that are responsible for different types of resources within the same geographical areas (Omernik and others, 2000).

The New England ecoregion map was compiled at a scale of 1:250,000. It revises and Reaching that objective requires recognition of the differences in the conceptual approaches subdivides an earlier national ecoregion map that was originally compiled at a smaller scale and mapping methodologies applied to develop the most common ecoregion-type (USEPA, 2009; Omernik, 1987). The approach used to compile this map is based on the frameworks, including those developed by the USDA–Forest Service (Bailey and others, premise that ecological regions can be identified through the analysis of the spatial patterns 1994, Cleland and others 2007), the USEPA (Omernik, 1987, 1995), and the NRCS (U.S. and the composition of biotic and abiotic phenomena that affect or reflect differences in Department of Agriculture-Soil Conservation Service, 1981, U.S. Department of ecosystem quality and integrity (Wiken, 1986; Omernik, 1987, 1995). These phenomena Agriculture–Natural Resources Conservation Service, 2006). As each of these frameworks include geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology. is further refined, their differences are becoming less discernible. Collaborative ecoregion The relative importance of each characteristic varies from one ecological region to another projects, such as this one in New England, are a step toward attaining consensus and Omernik, J.M., Chapman, S.S., Lillie, R.A., and Dumke, R.T., 2000, Ecoregions of Wisconsin: regardless of the hierarchical level.

A Roman numeral hierarchical scheme has been adopted for different levels of ecological Literature Cited: regions. Level I is the coarsest level, dividing North America into 15 ecological regions. Level II divides the continent into 50 regions (Commission for Environmental Cooperation Working Group, 1997). At level III, the continental United States contains 104 ecoregions and the conterminous United States has 84 ecoregions (United States Environmental Protection Agency [USEPA], 2009). Level IV is a further subdivision of level III ecoregions. Explanations of the methods used to define the USEPA's ecoregions are given in Omernik (1995, 2004), Omernik and others (2000), and Gallant and others (1989).

New England contains low coastal plains, rocky coasts, river floodplains, alluvial valleys, glacial lakes, forested mountains, and alpine peaks. Ecological diversity is great. There are

Level III boundary

———— International boundar

| ---- State boundary

Level IV boundary

County boundary

Albers equal area projection

Standard parallels 42° N and 47° N

National Health and Environmental Effects Research Laboratory (Corvallis, Oregon), U.S. Department of Agriculture (USDA)–Natural Resources Conservation Service (NRCS), and several state agencies of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island. The project is associated with an interagency effort to consistency in ecoregion frameworks for the entire nation.

Bailey, R.G., Avers, P.E., King, T., and McNab, W.H., eds., 1994, Ecoregions and subregions of the United States (map) (supplementary table of map unit descriptions compiled and edited by McNab. W.H. and Bailey, R.G.): Washington, D.C., U.S. Department of Agriculture–Forest Service, scale 1:7,500,000. Brvce, S.A., Omernik, J.M., and Larsen, D.P., 1999, Ecoregions – a geographic framework to guide risk characterization and ecosystem management: Environmental Practice, v. 1, no. 3, p. 141-155. Cleland, D.T., Freeouf, J.A., Keys, J.E., Jr., Nowacki, G.J., Carpenter, C., and McNab, W.H., 2007, Ecological subregions – sections and subsections of the conterminous United States: Washington, ., U.S. Department of Agriculture-Forest Service, General Technical Report WO-76, scale Wiken, E., 1986, Terrestrial ecozones of Canada: Ottawa, Environment Canada, Ecological Land

Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and 5 level III ecoregions in the New England states and many Commission for Environmental Cooperation Working Group, 1997, Ecological regions of North America - toward a common perspective: Montreal, Commission for Environmental Cooperation, 71 p. This poster is part of a collaborative project primarily between USEPA Region I, USEPA Gallant, A.L., Whittier, T.R., Larsen, D.P., Omernik, J.M., and Hughes, R.M., 1989, Regionalization as a tool for managing environmental resources: Corvallis, Oregon, U.S. Environmental Protection

Agency, EPA/600/3-89/060, 152 p. U.S. Geological Survey (USGS)-Earth Resources Observation and Science (EROS) Center, McMahon, G., Gregonis, S.M., Waltman, S.W., Omernik, J.M., Thorson, T.D., Freeouf, J.A., Rorick, A.H., and Keys, J.E., 2001, Developing a spatial framework of common ecological regions for the conterminous United States: Environmental Management, v. 28, no. 3, p. 293-316. develop a common framework of ecological regions (McMahon and others, 2001). Omernik, J.M., 1987, Ecoregions of the conterminous United States (map supplement): Annals of the Association of American Geographers, v. 77, no. 1, p. 118-125, scale 1:7,500,000. Omernik, J.M., 1995, Ecoregions - a framework for environmental management, in Davis, W.S. and

Simon, T.P., eds., Biological assessment and criteria-tools for water resource planning and decision

Management, v. 34, Supplement 1, p. s27-s38. Transactions of the Wisconsin Academy of Sciences, Arts, and Letters, v. 88, p. 77-103. U.S. Department of Agriculture-Natural Resources Conservation Service, 2006, Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin: Washington, D.C., U.S. Government Printing Office, Agriculture Handbook 296, 669 p. + map. . Department of Agriculture-Soil Conservation Service, 1981, Land resource regions and major land resource areas of the United States: Agriculture Handbook 296, 156 p. U.S. Environmental Protection Agency, 2009, Level III ecoregions of the continental United States revision of Omernik, 1987): Corvallis, Oregon, USEPA – National Health and Environmental Effects

making: Boca Raton, Florida, Lewis Publishers, p. 49-62.

Research Laboratory, Map M-1, various scales.

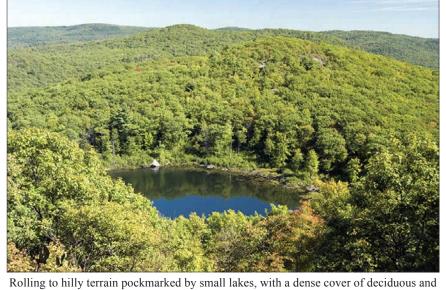
Classification Series no. 19, 26 n.



op exceed hurricane force more than 100 days per year. Mount Washington holds the the peak about 60% of the time. *Photo: USFS*



trees on higher mountains of Ecoregion 58, generally above 2700 feet. These subalpine forests are dynamic, affected by wind, fire, and landslides. On some mountains, fir waves hite-throated sparrow, and blackpoll warbler. *Photo: Maine Natural Areas Program*



nixed forest are typical characteristics of the Worcester/Monadnock Plateau (58g). oak-hickory forest types that are more typical of some upland areas of Ecoregion 59 These forests are often found on middle and upper slopes of low hills, with acidic well-drained or excessively-drained soils that are low in nutrients. These drier forests



spruce grouse, dark-eyed junco, bay-breasted warbler, blackbacked woodpecker,





Forests in the southern areas of Ecoregion 58 can include some dry Appalachian are common on slopes with south or west aspects. Black, white, red, scarlet and chestnut oaks are typical, along with shagbark and pignut hickories and some white pine. high hills on granitic plutons. The climate of Ecoregion 581 is somewhat colder than that in western and southern Vermont and New Photo: Ben Kimball, NH Natural Heritage Bureau

ie Merrimack River flows through some mixed land cover, including Appalachian

Plain. Photo: Ben Kimball, NH Natural Heritage Bureau

58. Northeastern Highlands The Northeastern Highlands ecoregion covers most of the northern and mountainous parts of New England as well as the Adirondacks in New York. It is a relatively sparsely populated region compared to adjacent regions, and is characterized by hills and mountains, a most orested land cover, nutrient-poor frigid and cryic soils (mostly Spodosols), and numerous high-gradient streams and glacial lakes. Forest vegetation is somewhat transitional between the boreal regions to the north in Canada and the broadleaf deciduous forests to the south. Typic forest types include northern hardwoods (maple-beech-birch), northern hardwoods/spruce, and northeastern spruce-fir forests. Recreation, tourism, and forestry are primary land uses. Farm-to-forest conversion began in the 19th century and continues today. In spite of this trend alluvial valleys, glacial lake basins, and areas of limestone-derived soils are still farmed for dairy products, forage crops, apples, and potatoes. In addition to the timber industry, recreational homes and associated lodging and services sustain the forested regions economically, but hey also create development pressure that threatens to change the pastoral character of the region. Many of the lakes and streams in the region are sensitive to acidic deposition originating from industrial sources upwind from the ecoregion, particularly to the west.

The **Taconic Mountains** extend from southwestern Vermont to northwestern Connecticut, straddling the New York border. The present mountain range formed when blocks of an ancient Taconic mountain range slid to the west over the top of younger oceanic sediments. The bedrock is composed primarily of metamorphosed mudstones, slate, phyllite, and schist, with some minor lenses of limestone. The regional boundary is relatively sharp on the east side of the Taconic Mountains, where the metamorphic rocks of the nountains meet the eroded carbonate rocks composing the Western New England Marble Valleys (58b). To the west in New York, the turned ridges of the Taconics gradually descend to the Taconic Foothills (58x) and toward the Hudson Valley (59i), and there is a y boundary between upland and lowland. The weathering and removal of carbonate rocks has created many of the steep-sided mountains and narrow valleys. Elevations of the region are mostly 1000 to 2000 feet, although several of the Taconic Mountain peaks exceed 3000 feet, including Equinox Mountain in Vermont at 3816 feet and Mt. Greylock, the highest peak in Massachusetts at 3491 . Loamy and coarse-loamy Inceptisols are common soils, with frigid temperature regimes at higher elevations and a mesic nperature regime on lower mountain slopes. Vegetation consists generally of northern hardwoods (maple-beech-birch), with some pruce-fir at higher elevations, and more oak and hickory to the south and at lower elevations. Streams are mostly small, high-gradient ibutaries, and there are few lakes. Population centers are limited due to the prevalence of steep slopes and the general lack of broad 16 fount Washington reaches 6288 feet in elevation in Ecoregion 58j of New Hampshire's intermountain valleys. Land use activities include forestry, recreation, and some small-farm agriculture.

Presidential Range. It is the highest peak in the northeastern United States. Known for its severe weather, three major storm tracks converge over the mountain, and winds at the larger Berkshire Valley or Stockbridge Valley in Massachusetts. It extends into northwest Connecticut and small portions of larger Berkshire Valley or Stockbridge Valley in Massachusetts. It extends into northwest Connecticut and small portions of orld record for directly measured surface wind speed, at 231 miles per hour. Fog covers southeastern New York. This scenic lowland ecoregion of soluble carbonate rocks stands in sharp contrast to the surrounding highland areas of more resistant rock. The Marble Valleys are wedged between the Taconic Mountains (58a) on the west and the southern Green Mountains/Berkshire Highlands (58c) and Lower Berkshire Hills (58d) on the east. Its northern boundary with the Champlain Lowlands (83b) is not as distinct; it is marked by the submersion of limestone and limestone-derived soils under the glacial lake and marine diments of Ecoregion 83. The climate of the Marble Valleys has milder winter temperatures and lower precipitation amounts than unding ecoregions. Most of the ecoregion is narrow, but widens to about 10 miles across in the southwest part of Massachusetts. 7ith elevations of 500 to 1900 feet, the lowland has formed because of differential weathering and erosion of the calcitic and dolomitic marbles and limestone. Surficial materials of glacial drift are relatively abundant compared to that found in the surrounding highland areas. Due to faulting and folding, some of the resistant rocks of schist, gneiss, and quartzite that surround the ecoregion also crop out within it. Deep and well-drained limestone-derived soils are common throughout the valleys, typically loamy and coarse-loamy, mesic aceptisols. The land cover consists of mixed and deciduous forest, pasture and cropland, and some extensive urban and residential land. ne forests are generally transition hardwoods (maple-beech-birch, oak-hickory) and northern hardwoods (maple-beech-birch) epending on latitude, elevation, and aspect. Surface water alkalinity values are high due to the prevalence of limestone and marble pedrock. A few remaining natural areas in the valleys include some diverse swamps and calcareous fens that support a wide variety of ish, birds, mammals, and distinct flora, including a number of rare or endangered species.

The Green Mountains/Berkshire Highlands ecoregion is characterized by relatively rugged, steep, high elevation mountains, with a colder climate and different vegetation than surrounding lower elevation regions. There are some climate, geology, hysiography, and vegetation transitions that occur from north to south (e.g., slightly colder with more snow in the north; more plateau-like granitic areas in the south), although these are not dramatic changes at a national scale. The Massachusetts part of the coregion includes the southernmost extent of the Green Mountains, generally the highest elevations of the Berkshire Plateau. There is tle evidence on either side of the Massachusetts-Vermont border for dividing the Green Mountains from the Hoosac Range and Berkshire Hills. The geology is complex, with mostly metamorphic rocks including gneiss, schist, phyllite, and quartzite. Some large areas of older, Precambrian rock also occur. While most Green Mountain bedrock is acidic, a few areas have narrow bands of calcareous ock or ultramafic serpentine rock that can affect plant distributions. Glacial till deposits are relatively thin, with many bedrock outcrops. Balsam fir or mixtures of fir and heartleaf birch form a dense canopy of slightly stunted Coarse-loamy to loamy, frigid Spodosols are typical soils. Elevations range from less than 1000 feet to more than 3000 feet, with Mount Carmel the high point at 3369 feet. Vegetation is predominantly northern hardwoods (sugar maple, beech, yellow birch), with some can be seen, unusual landscape patterns of linear bands of fir dieback and regeneration. A spruce-fir (red spruce, balsam fir, paper birch) at higher elevations (where not mapped as part of Ecoregion 58j). Montane yellow number of high elevation or coniferous forest bird species nest in this habitat, including birch-red spruce forest occurs on some midslopes in the region. At lower elevations, hemlock occurs, and areas of red oak-hardwood forests. Although it is difficult to find significant breaks in the highland continuum in western New England, there are differences

> between the highlands of Vermont and those of southern Massachusetts and northern Connecticut. The Lower Berkshire Hills ecoregion differs from the Green Mountains/Berkshire Highlands (58c) to the north mainly in terms of lower elevation, milder climate, and vegetation types that lack spruce-fir and include more transition hardwoods (maple-beech-birch, oak-hickory). The southern boundary of the coregion in Connecticut is not distinct, occurring just north of Torrington, where pines, northern hardwoods, and elevations increase. The bedrock and surficial geology, soil associations, and land uses of Ecoregion 58d have some similarities to the more northern Berkshire Highlands (58c) of Massachussetts, Coarse-loamy, frigid Inceptisols and Spodosols are typical. Lakes and ponds are relatively bundant in this ecoregion. The lake density is similar to that of the Green Mountains/Berkshire Highlands (58c), and these two ecoregions have greater density and number of lakes than the nearby Berkshire Transition (58e), Vermont Piedmont (58f), or Taconic Mountains (58a). Many of the characteristics in the **Berkshire Transition** ecoregion are similar to those of the southern portion of the Vermont Piedmont (58f). The climate of Ecoregion 58e in southern Massachusetts and Connecticut is somewhat milder, however, than at of the Vermont Piedmont (58f). Forest types are a mix of northern, transition, and central hardwoods, with elevations in the range of 400 to 1700 feet. Some of the calcareous geologic bedrock found in the Vermont Piedmont is also present in this region; however, there are also various types of schist, micaceous quartzite or quartz schist, and some gneiss. Some surface waters are lower in alkalinity than most of those in the Vermont Piedmont (58f). Coarse-loamy, mesic Inceptisols are typical. Some soils have dense till that restricts root growth and the movement of water. The region also has similarities to the Glaciated Reading Prong/Hudson Highlands (58i) in New York and New Jersey, although the geology here in Ecoregion 58e is more diverse.

The Vermont Piedmont is a hilly region east of the Green Mountains/Berkshire Highlands (58c). It has geological and hydrochemical differences as well as less relief and lower elevation than Ecoregion 58c. The region has a somewhat milder mate and more calcium-rich soils than adjacent regions, contributing to areas with more pastoral and agricultural land uses than occur in neighboring Ecoregions 58c, 58g, or 58q. In Vermont, there is little agreement on the boundary between the Green Mountains and the Vermont Piedmont. The bedrock geology is mostly Devonian schist, phyllite, calcareous granofels or quartzose marble. Beds of coregion 58. The service sector of New England's economy, including tourism, has some steep slopes, and elevations are approximately 300 to 2000 feet with some higher peaks. The soils, typically coarse-loamy and become increasingly important, as other sectors have declined. Photo: NH Resources and loamy, frigid and mesic Inceptisols, were formed in fine sandy loam glacial till derived from mica schist and siliceous limestone. The vegetation types are mostly transition hardwoods (maple-beech-birch, oak-hickory with red oak, white oak, shagbark hickory, and some hemlock and white pine), and northern hardwoods (maple-beech-birch).

The Worcester/Monadnock Plateau covers parts of north-central Massachusetts and south-central New Hampshire. Similar to the western highlands of New England, these central highlands are a continuum where boundary divisions, such as with the Lower Worcester Plateau (59b) or the Sunapee Uplands (58q), are not distinct breaks. In terms of elevation, relief, climate, soils, and vegetation, however, the upland area of north-central Massachusetts and south-central New Hampshire is more typical of the rugged, colder, more mountainous nature of the Northeastern Highlands ecoregion (58) than of Ecoregion 59 to the south and east. The southern boundary in Massachusetts, based in part on elevation, generally encloses areas with elevations greater than 1000 feet and areas of frigid soils. Coarse-loamy Spodosols and Inceptisols are common. Elevations for the ecoregion range mostly from 500 feet to 1400 feet, with some higher peaks over 2000 feet. The rock types are mainly gneiss, schist, and granite. Monadnocks, residual hills or mountains usually composed of more resistant rocks, occur in many parts of the region. The general vegetation types include transition hardwoods (maple-beech-birch, pak-hickory) and northern hardwoods (maple-beech-birch). Forested wetlands are common and surface waters tend to be acidic. e Upper Montane/Alpine Zone combines the high-elevation spruce-fir forests and the higher elevation subalpine and alpine ommunities. It is a region of high winds, cold temperatures, shallow acidic soils and rock outcrops. Elevations are generally

junct areas of this ecoregion are important for both migrating and non-migrating species. Unique wildlife of these high elevations include Bicknell's thrush, black-backed woodpecker, blackpoll warbler, and rock vole. The rolling character of the Champlain Lowlands (83b) becomes more hilly to the east entering the **Green Mountain Foothills**. Also called the Champlain Hills, Ecoregion 58k has elevations that are mostly 400 to 1500 feet, with a peak of 2140 feet on Fletcher ountain. Elevations and relief are less than in Ecoregion 58c to the east, with less dense forest cover. Sandy, coarse-loamy, and fine-loamy, frigid Spodosols are typical. Historically, much of the region was agricultural. Today, the majority of the region is back in woodland and forest, but there is a distinct mosaic of pasture and cropland in the mix, primarily supporting a dairy industry and associated hay and forage crops. opographically, most of the **Northern Piedmont** is expressed as a broad undulating plateau, smoothed by glacial activity and dissected by streams. Several glacial features, such as the Lyndonville and Danville moraines and the Passumpsic Valley esker, have resisted erosion and are still clearly visible. While rolling, calcareous metamorphic low hills are typical, there are also some distinct

Hampshire. January low temperatures are lower than in most of the Green Mountains (58c) or the Vermont Piedmont (58f) to the south, and

ove 2500 feet, although in northern Maine the boundary can occur as low as 2000 feet. The high-elevation spruce-fir forests, generally

2500 to 3500 feet, contain red spruce, balsam fir, and heartleaf, paper, and yellow birches. Stunted balsam fir forests are often found

from 3500 to 4500 feet in elevation. Alpine zones are found on Mt. Washington, Mt. Katahdin, and other peaks, and may contain

hth/krummholz communities, dwarf shrub/sedgerush meadows or barrens. Cryic Spodosols and Histosols are typical. The numerous

winter fog is common. In addition, summer high temperatures are cooler than other parts of Vermont. The colder climate is reflected the forest cover that includes northern hardwoods (sugar maple, birch, beech) with the addition of boreal elements such as balsam fir a spruce. The region also contains a higher density of lakes than the Vermont Piedmont (58f) to the south, but similar to Ecoregion 58

calcium-rich soils occur. Coarse-loamy, frigid Inceptisols and Spodosols are typical. In the Northern Piedmont, human populations are less than in southern or western Vermont, but a strong cultural identity accompanies the region's pastoral character. Occurring along the Canadian border, the Quebec/New England Boundary Mountains ecoregion extends from northeastern Vermont across northern New Hampshire and into northwestern and north-central Maine. Its open low mountains are densely plant species in Maine and New Hampshire. is restricted to four islands in the Caribbean. forested, and it has one of the coldest climates in New England. The region contains numerous large lakes and ponds and is not as steeply Photo: Ben Kimball, NH NHB sloping or as high in elevation as the White Mountains/Blue Mountains (58p) to the south where few lakes occur. Compared to Ecoregion 58p, the Boundary Mountains have broader river valleys, more wetlands, more complex geology with some phyllites and slates along with intrusions of granite, somewhat less acidic surface waters, and a more boreal vegetation pattern. Soils are mostly loamy and coarse-loamy, frigid Spodosols, formed typically in dense glacial till. The low-grade pelite bedrock weathers to form more silty soils. Lower elevation forests include northern hardwoods as well as spruce and fir forests on cooler lowland slopes. High elevation spruce-fir forests occur above 2500 feet, most of which are delineated in Ecoregion 58j. Woody species richness increases somewhat in the eastern portion of the region. The human population here is relatively low for New England. Timber production, recreation, and wildlife habitat are major land uses. The White Mountain Foothills ecoregion of New Hampshire is a transitional area between Ecoregions 58q, 58p, 58m, and

58l, and consists of well-dissected rolling hills and open low mountains. It has lower elevation and less relief than Ecoregion 8p, and a few more northerly characteristics in climate, soil, and vegetation than Ecoregion 58q. Coarse-loamy, frigid Spodosols are typical. Elevations are mostly 900 to 2000 feet, but range from 500 to over 3000 feet. Mt. Cardigan (3115 feet) and Smarts Mountain (3240 feet) are high points in the southern end of the region. Granite, granodiorite, and metavolcanic rocks are typical, covered by northernmost part of Ecoregions 58j and is found in northern boreal forests. Although shallow, stony soils. A few small lakes occur in the region, but somewhat less than in Ecoregion 58q to the south. Surface waters have 58m) provides sacred ground and lower nutrients and alkalinity than Ecoregions 58f and 58l to the west. Northern hardwoods of sugar maple, American beech, and yellow recreational opportunities to residents of hare are the main prey. The lynx is at the birch are common, with lowland spruce-fir and a few patches of high elevation spruce-fir forest. The narrow Northern Connecticut Valley ecoregion contains primarily the alluvial low terraces and floodplain of this riverine the highest mountain in Maine (5267 feet) snowfall in recent decades has allowed the region. It has some glacial outwash and glacial lake deposits that abut the lower slopes of adjacent hills composed of glacial till and the terminus of the Appalachian Trail. more aggressive bobcat to displace the lynx typical of the bordering ecoregions 58l and 58f. Areas of glacio-fluvial deposits tend to be coarser sands and gravels, while some of the Photo: B. Monkman glacio-lacustrine deposits from glacial Lake Hitchcock are finer-textured. Inceptisols and Entisols are common, with mesic soils in much

residential, and transportatation uses, and the river regime has been altered by dams and channel modification. Some wetland and riverside communities contain several rare plant and animal species. The White Mountains/Blue Mountains ecoregion is one of the most rugged in New England. Ecoregion 58p differs from the Quebec/New England Boundary Mountains (58m) in having higher elevations, steeper slopes, more narrow valleys, more areas of bedrock outcrop, fewer wetlands, more acidic surface waters, and a more transitional (somewhat less boreal) vegetation pattern. The 📲 ecoregion includes not only the White Mountains and Blue Mountains but also the Mahoosuc Range, Pilot Range, and Pliny Range. The mostly acidic uplands include some high elevation spruce-fir, widespread northern hardwood-conifer forests, and at lowest elevations some transition hardwood-conifer forests. Geology includes Mesozoic and Paleozoic igneous and metamorphic rocks of granite, syenite, rhyolite, granodiorite, quartzite, and schist. Coarse-loamy, frigid Spodosols and Inceptisols are typical. Surface waters are acidic and low (Gavia immer) is primarily inland lakes with Mountain Foothills (58n) is characterized by in nutrients. Elevations are generally 1000 feet to over 3000 feet, with inclusions of higher peaks occurring in the Upper Montane/Alpine undeveloped shorelines and abundant fish subalpine heath/krummholz and rocky bald

of the region, and some frigid soils in the north. The Northern Connecticut Valley has a milder climate than the surrounding hilly

ecoregions, and its vegetation includes more southerly species. This greatly altered landscape is dominated by agricultural, urban and

Zone of Ecoregion 58j. The **Sunapee Uplands** ecoregion of New Hampshire represents a transition from Ecoregion 58g in the south to the colder northern mats to hold the nest and avoid egg-eating of trees found near or at timberline. Heaths regions. It consists of open low mountains, with lower elevation and less relief than in Ecoregion 58p to the north, but more than in predators. Lead poisoning from lead sinkers include sheep laurel and Labrador tea. Ecoregion 58g to the south. With numerous, rolling, rocky hills and mountains, elevations are mostly 1000 to 2000 feet, but range from 500 to and jigs has been a major cause of death for Photo: Ben Kimball, NH Natural Heritage Bureau over 3000 feet. Monadnock Mountain anchors the southern end of the region at 3165 feet. Granite and granodiorite rocks are common with adult loons in New England. Photo: USFWS shallow, stony frigid soils, mostly coarse-loamy Spodosols. The uplands are dissected by numerous streams, and small lakes dot the landscape. Surface waters have lower nutrients and alkalinity than Ecoregions 58f and 58l to the west and north. Northern hardwoods of sugar maple, American beech, and yellow birch are common, along with hemlock and some oak forests. Some lowland and montane spruce and fir also occur. The **Sebago-Ossipee Hills and Plains** ecoregion is a transitional area between the northern reaches of Ecoregion 59 and the more mountainous Northeastern Highlands (58). It contains some rugged hills and isolated mountains scattered on a landscape of rolling plains that are dotted with numerous lakes and wetlands. This "lake region" includes Lake Winnepesaukee, the largest lake in New Hampshire. Sandy glacial till is common, along with some glacial outwash kames, eskers, and deltaic deposits. Well-drained, sandy loam and loamy sand soils are typical. Relative to other parts of Ecoregion 58, these are somewhat warm and dry soils. Most of the region has soils with a frigid temperature regime, although in New Hampshire, some mesic soils occur in the southwest part of the region. The ecoregion is in a vegetation transition zone from warm temperate to cool temperate and boreal. Hemlock-hardwood-pine and

southern limits near Sebago Lake. The Western Maine Foothills ecoregion is hillier, has higher relief and elevations, more northern hardwoods and less oak/white pine, and fewer lakes than does Ecoregion 58r to the south. It has lower elevations and less relief than Ecoregion 58p the northwest. The western boundary of the region with Ecoregion 58p is generally about 1000 feet, a transitional zone from temperate The Chesuncook soil series, the state soil of forest species to more boreal species. Many of the peaks are near or above 2000 feet. Woody species richness is less in this region Maine, is a Spodosol of the northern forested compared to ecoregions to the east or south. Soils are typically coarse-loamy, frigid Spodosols. Woodland and forest land uses, along regions. It is typically very deep, moderately with recreation and tourism, are important in the region, and there is little cropland and pasture compared to Ecoregion 82e to the east. The Upper St. John Wet Flats ecoregion has some similarities to the International Boundary Plateau (58w), although there is less relief here, and more open and forested wetlands. The majority of the ecoregion extends west and southwest into Quebec, Canada. adgement till. This dense basal till keeps the water table at or near the surface for m of the year. Loamy, frigid Spodosols, Inceptisols, and Histosols occur. Black spruce grows slowly in the cold, wet, and mossy flats. Beaver

some northern hardwood-conifer forest types occur. It mostly lacks the Appalachian oak-pine found in Ecoregion 59h to the south. On

some glacial outwash deposits, fire-dependent pitch pine-scrub oak woodlands occur. In Maine, several northern species reach their

meadows, sedge fens, and northern white cedar swamps occur. Low hills support mid-successional forests of poplar, birch, and aspen. The Moosehead-Churchill Lakes ecoregion is an area of rolling plains with a few low hills and numerous large lakes Moosehead and Chesuncook lakes in the southern part of the region drain to the Kennebec River and West Branch Penobscot River respectively, while the northern lakes drain to the Allagash River. At about 35 miles long and 10 miles wide, Moosehead Lake is the largest lake in New England east of Lake Champlain. While there are some similarities in ecological characteristics with Ecoregion 58v, the Moosehead-Churchill Lakes region has lower elevations and less relief than the surrounding Ecoregions 58v and 58m, and slightly milder annual temperatures. Elevations are mostly 900 to 1400 feet with 300 feet of relief. There are some soil differences from hillier uplands in adjacent ecoregions, with more poorly-drained soils. Some areas of the region have intensive forestry activities, while Some landscapes in Ecoregion 58f, 58k, and Sugar maple and other maple trees are real estate and timber investment organizations have subdivision and resort development plans in southern parts of the region. Rolling uplands and open high hills on a well-dissected landscape characterize the St. John Uplands. The eastern boundary dairy farms than in other parts of the U.S., months in the labor-intensive process, with generally occurs at the 1000-foot elevation contour, and elevations in most of the region are 1000 to 2000 feet, with some proper livestock grazing management is freezing nights and warm days needed for peaks reaching 2400 feet. It has higher elevations and more relief than the Aroostook Hills (82b) to the east, with more boreal and fewer temperate species. The region is more hilly, with greater relief, and some higher elevations than Ecoregion 58w to the west. Typical soils sediment, nutrients, and bacteria to surface and New York. Photo: Branon Farms, VT include loamy, frigid Spodosols. Surface waters are slightly to moderately buffered and drain mostly to the Saint John and Allagash waters. Photo: Tim McCabe, NRCS

rivers that flow north through the region. The Saint John River then flows east through New Brunswick to the Bay of Fundy.

John Wet Flats (58t), there are areas of stagnation moraines and some wetlands, including ribbed fens and other peatlands. Loamy and coarse-loamy, frigid Spodosols are common. Compared to ecoregions further east or south, this region has relatively low species richness. The spruce-fir forest contains red spruce, black spruce, and balsam fir, with some sugar maple and yellow birch. Similar to ecoregions 58t and most of 58v, forestry is a dominant land use and there are few or no permanent settlements. Located between the Hudson Valley (59i) of New York and the Taconic Mountains (58a), the **Taconic Foothills** ecoregion is transitional between lowland and highland. The rolling hills contain a mosaic of woodland, pasture, and some minor cropland. Elevations of the small portion of the region in Vermont are mostly 350 to 1000 feet. Bedrock is composed of metamorphosed The presence of brook trout (Salvelinus The largest wild mammal in New England, a mudstones, slate, phyllite, and schist, with some minor lenses of limestone. Loamy and coarse-loamy, mesic Inceptisols are common. fontinalis) in a watershed indicates excellent bull moose (Alces alces) can weigh more Appalachian oak-hickory forests are typical on the lower and drier slopes, with some beech-maple mesic forests. Especially in the water quality, as they require clean, cold, than one thousand pounds and stand 6 feet at southern part of the region in New York, presettlement forests had a greater proportion of white oak, black oak and hickories, and forests well-oxygenated water. They have disappeared from many waters that have disappeared from many waters that have once dominated by American chestnut. The present dominance of chestnut oak, red maple, white pine, and sugar maple is likely due to been affected by dams, culverts,

forests become more prominent in the northern parts of Ecoregion 58x.

The **International Boundary Plateau** has a rolling plateau surface, mostly 1000 feet to 1600 feet in elevation, with few lakes

and one of the coldest climates in Maine. The region has some similarities to Ecoregion 58v to the east, although Ecoregion

58w is slightly less hilly with less relief. It has more relief and fewer wet flats than Ecoregion 58t to the south. Similar to the Upper St.

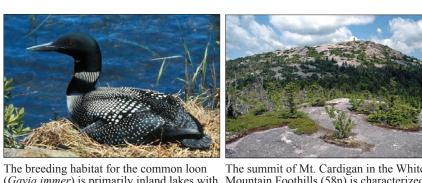


an arctic plant species with a small disjunct in dense balsam fir and red spruce forests in range in New England's alpine areas of the Upper Montane/Alpine Zone (58j) of the

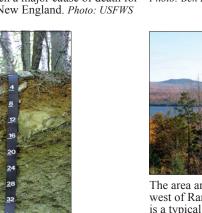


Ecoregion 58j. It is considered a threatened northeastern United States. Its winter range

The area around Mount Katahdin (the lvnx hunt birds, rodents, and deer, snowshoe Maine. Named Katahdin ("The Greatest" southern edge of the range in New England Mountain") by the Penobscot Indians, it is and is listed as a threatened species. Decreased



populations. They prefer lakes with little vegetation communities. Krummholz is listurbance and with small islands or bog wind-dwarfed and pruned clumps and thickets



west of Rangeley, Maine, in Ecoregion 58m is a typical landscape where Chesuncook soils are found. These soils have a high

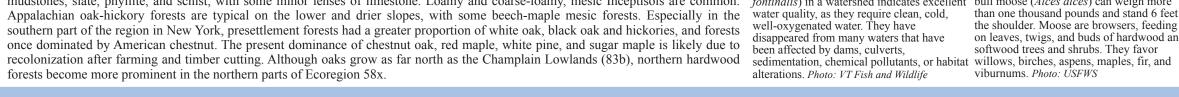
woodland productivity rating and cover more

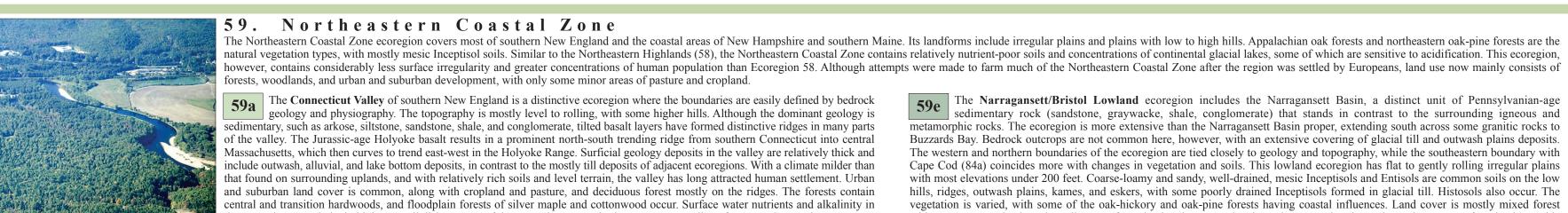
than 150,000 acres of Maine. Photo: NRCS



58l are influenced by dairy farm activities. tapped for sap for maple syrup production Although these are typically smaller-scale February, March, and April are important and riparian areas and are sources of maple syrup in the U.S., followed by Maine







he ecoregion are relatively high. A small disjunct area of the ecoregion occurs in the Pomperaug Valley of western Connecticut. The Lower Worcester Plateau/Eastern Connecticut Upland ecoregion is generally higher in elevation than the adjacent Southern New England Coastal Plains and Hills (59c). Its relief of 300 to 500 feet is relatively moderate compared to other upland or highland areas nearby in Ecoregion 58. The same north-south trending geologic belts that are found in Ecoregion 58g to the oak-hickory and hemlock-hardwood-pine forest in Ecoregion 59h, Gulf of Maine Coastal north occur here; mostly gneiss, schist, and granofels. The soils developed primarily on glacial till in the upland areas, and on stratified deposits of sand, gravel, and silt in the valleys. Coarse-loamy, mesic Inceptisols are typical upland soils. The major forest types are transition hardwoods (maple-beech-birch, oak-hickory) with some central hardwoods (oak-hickory). Lakes, ponds, and acidic wetlands are common, and some exceptional freshwater marshes occur along the Quaboag and Brookfield rivers. Surface water alkalinity is mostly moderate, with small areas of low values.

The Southern New England Coastal Plains and Hills ecoregion covers much of Connecticut, Rhode Island, and southeastern Massachusetts, and is diverse in its characteristics and habitats. The landforms of the ecoregion are irregular plains with low ills and some open high hills with relief of about 100 to 400 feet. Elevations range up to about 1000 feet, with the highest elevations found in western Connecticut. Bedrock types are mostly granites, schist, and gneiss, although some soft marble occurs in western onnecticut. Surface materials are mostly glacial till, with some stratified deposits in valleys. Soil patterns are complex and progeneous where the numerous, small, till-covered bedrock hills rise above the valleys and general level of outwash. Coarse-loamy and sandy, mesic Inceptisols and some Entisols are typical. Historically, forests were dominated by a mix of oaks. American chestnut. ickories, other hardwoods, and some hemlock and white pine. As with many other areas of New England, these forests were cleared, ther for agriculture and grazing or for the production of charcoal. A variety of dry to mesic successional oak and oak-pine forests cover region today, along with some elm, ash, and red maple that are typical of southern New England's forested wetlands. An inner Boston Basin occurs at a geologic and topographic break that encloses an area composed of the Cambridge argillite and Roxbury conglomerate rock units. Low hills, such as the Blue Hills in the south and the escarpment from Waltham to Lynn the north, mark this basin's rim. The larger Boston Basin ecoregion delineated here also includes the hilly urbanized ring and some utlying lowlands occurring on different metamorphic and volcanic rock types. The area is drained primarily by the Neponset, Charles, Mystic and Saugus rivers, and there are many urban ponds, lakes, and reservoirs. The basin is not a level plain but has low rolling topography, with stratified drift surrounding drumlins and till-covered bedrock hills. The few areas of flat ground such as the glacial clay areas on the outskirts of Cambridge, Belmont, and Arlington were once intensively cultivated vegetable fields and greenhouses, but now

almost the entire region is urban and suburban land. Estuaries, bays, and islands occur along the eastern edge.

The Narragansett/Bristol Lowland ecoregion includes the Narragansett Basin, a distinct unit of Pennsylvanian-age sedimentary rock (sandstone, graywacke, shale, conglomerate) that stands in contrast to the surrounding igneous and metamorphic rocks. The ecoregion is more extensive than the Narragansett Basin proper, extending south across some granitic rocks to Buzzards Bay. Bedrock outcrops are not common here, however, with an extensive covering of glacial till and outwash plains deposits. The western and northern boundaries of the ecoregion are tied closely to geology and topography, while the southeastern boundary with Around Boston, urban land covers almost Cape Cod (84a) coincides more with changes in vegetation and soils. This lowland ecoregion has flat to gently rolling irregular plains all of Ecoregion 59d. Urban sprawl occurs of Ecoregion 59h are fire-prone and have an with most elevations under 200 feet. Coarse-loamy and sandy, well-drained, mesic Inceptisols and Entisols are common soils on the low open canopy, stunted trees, and shallow soils. hills, ridges, outwash plains, kames, and eskers, with some poorly drained Inceptisols formed in glacial till. Histosols also occur. The vegetation is varied, with some of the oak-hickory and oak-pine forests having coastal influences. Land cover is mostly mixed forest with numerous wetlands and small areas of cropland and pasture. Cranberry bogs are abundant. The various types of wetlands provide important recharge to aquifers in the region. Surface water alkalinity is variable, with some acidic areas.

The Gulf of Maine Coastal Lowland ecoregion is a 10- to 20-mile wide coastal strip, stretching from Casco Bay in Maine to

Plymouth Bay in Massachusetts. It is mostly an arcuate embayment type of coast, a different form from coastal ecoregions 82f and 82g to the northeast. Extensive glacial sand, silt, and clay deposits blanket this region, with a coastal pattern typified by plutonic capes and intervening sand beaches that front the region's largest salt marshes. The ecoregion has relatively low relief, and elevations are mostly from sea level to 250 feet. Mt. Agamenticus, west of Ogunquit, Maine, is the atypical high spot at 691 feet. Bedrock geology consists mostly of metasedimentary rocks, intruded by several Paleozoic and Mesozoic plutonic bodies. Soils have a mesic temperature regime in most of the region, although frigid soils occur in the Maine portion. The vegetation mosaic includes white oak and red oak forests, some isolated chestnut oak woodlands, extensive post-settlement white pine, pitch pine in sandy areas, pitch pine bogs, some Atlantic white cedar swamps, Mixed land use in the Connecticut Valley

High numbers of white-tailed deer (Odocoileus red maple swamps, and Spartina saltmarsh. The vegetation contains some southern hardwood species (e.g., shagbark hickory, flowering (Ecoregion 59a) of Massachusetts. Photo: virginianus) in Ecoregion 59 can alter the dogwood, and chestnut oak) that reach the northern limit of their range within this ecoregion. There are also some subarctic maritime Bruce Molnia, USGS species that reach their southern limit in Ecoregion 59f, such as crowberry, golden heather, and oysterleaf. The region's forests and farms are being rapidly converted to residential developments and bedroom communities of larger nearby cities.

The Long Island Sound Coastal Lowland ecoregion is the coastal strip occurring in southern Connecticut and Rhode Island that borders Long Island Sound and Block Island Sound. It includes low-elevation rolling coastal plain, tidal marshes, estuaries, sandy dunes and beaches, and rocky headlands. This ecoregion has one of the mildest climates of New England. The coastal hardwood forests contain black, red, and white oaks, hickories, and black cherry. Dense thickets of vines and shrubs such as catbrier, greenbrier, and poison ivy are common. Some Southeastern flora and fauna species of the Piedmont and coastal plain reach their northern limit in this ecoregion, including holly, post oak, sweetgum, and persimmon. On coastal headlands, pitch pine and post oak occur, while some scarlet oak and sassafras stand on stabilized dunes. Parts of the ecoregion are highly urbanized, especially from New Haven westward. The Gulf of Maine Coastal Plain ecoregion occupies a more inland position than Ecoregion 59f to the east. It has higher elevations, greater relief, and less maritime climate than the Gulf of Maine Coastal Lowland (59f). Ecoregion 59h is less hilly Cranberries in Ecoregion 59e are often grown Numbers of the New England cottontail

with more rolling topography and lower elevations than Ecoregion 58g to the west, and has a greater human population density. Glacial on drained bog soil. Water is used for rabbit (Sylvilagus transitionalis) are rapidly drumlins are common in the ecoregion, while in the Merrimack River valley, glacial outwash and glacial lake deposits occur. collection and for protection from freezing decreasing as its thicket and early successional Coarse-loamy and sandy-skeletal, mesic Inceptisols and Entisols are typical in most of the region, while frigid Spodosols are common in and dessication in winter. Massachusetts forest habitat is altered. Its range in southern the Maine portion. Ecoregion 59h has more pine in the forest mosaic than Ecoregion 59c to the south.

flats with swamp and bog deposits occur, but not as many as in Ecoregion 82h to the east. Surface water alkalinity values tend to be

higher than adjacent ecoregions. The region has a relatively moderate climate, transitional between the coastal climates and inland

continental regions, and diverse flora and fauna. Vegetation transition zones occur in the region, and the northern range limits of many

rocks occur with deep glacially scoured valleys. Eroding bluffs of glaciomarine clay provide sediments in the sheltered embayments to

the northern limit for some marine invertebrates, such as the American oyster and quahog clam. The Camden Hills area, including peaks

such as Mt. Megunticook overlooking Penobscot Bay, contains some of the highest hills along the Maine coast, outside of Mount Desert

Island in Ecoregion 82g. Forests of beech, birch, maple, red oak, and white pine occur. Pitch pine also grows here on isolated coastal

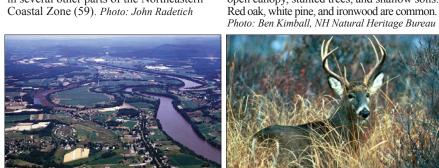
Less developed than Ecoregion 59f to the south, the **Midcoast** ecoregion of Maine is an indented shoreline type of coast, or

drowned coast", with long, narrow, rocky peninsulas and intervening deep, narrow estuaries. North-striking metasedimentary

woody and herbaceous species are reached here. Transition hardwoods, northern hardwoods, northern hardwoods-spruce forests are

major forest types. The ecoregion has a relatively high population density for Maine, with an extensive pattern of settlement and roads.



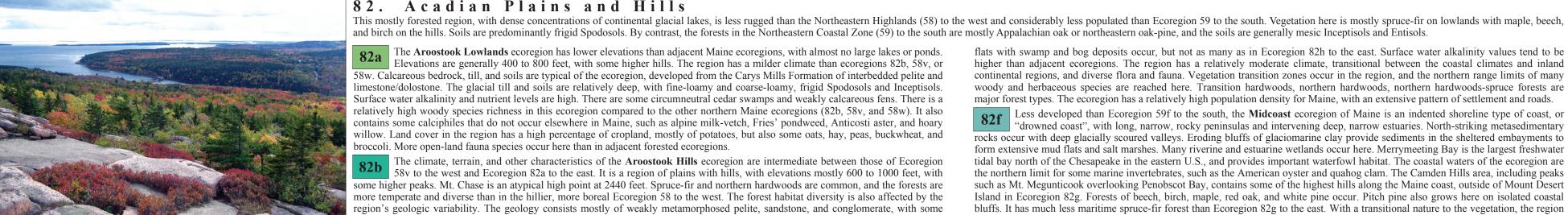








ranks second in U.S. cranberry production. New England and New York has shrunk by Photo: Cape Cod Cranberry Growers Association more than 75%. Photo: G. Smith

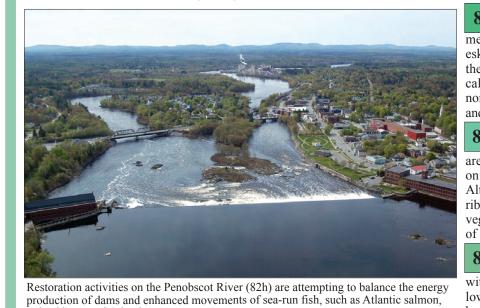


he beach, mud flat, and marsh habitats of the Parker River National Wildlife Refuge in

coregion 59f of northeast Massachusetts provide a vital stopover site for migrating

waterfowl, shorebirds, and songbirds along the Atlantic Flyway. *Photo: Kelly Fike, USFWS*

Acadia National Park, Maine, Ecoregion 82g. Photo: Ginny Reams, NPS



The **Aroostook Lowlands** ecoregion has lower elevations than adjacent Maine ecoregions, with almost no large lakes or ponds. Elevations are generally 400 to 800 feet, with some higher hills. The region has a milder climate than ecoregions 82b, 58v, or 8w. Calcareous bedrock, till, and soils are typical of the ecoregion, developed from the Carys Mills Formation of interbedded pelite and mestone/dolostone. The glacial till and soils are relatively deep, with fine-loamy and coarse-loamy, frigid Spodosols and Inceptisols. Surface water alkalinity and nutrient levels are high. There are some circumneutral cedar swamps and weakly calcareous fens. There is a elatively high woody species richness in this ecoregion compared to the other northern Maine ecoregions (82b, 58v, and 58w). It also ontains some calciphiles that do not occur elsewhere in Maine, such as alpine milk-vetch, Fries' pondweed, Anticosti aster, and hoary willow. Land cover in the region has a high percentage of cropland, mostly of potatoes, but also some oats, hay, peas, buckwheat, and roccoli. More open-land fauna species occur here than in adjacent forested ecoregions. The climate, terrain, and other characteristics of the Aroostook Hills ecoregion are intermediate between those of Ecoregion 58v to the west and Ecoregion 82a to the east. It is a region of plains with hills, with elevations mostly 600 to 1000 feet, with some higher peaks. Mt. Chase is an atypical high point at 2440 feet. Spruce-fir and northern hardwoods are common, and the forests are

e temperate and diverse than in the hillier, more boreal Ecoregion 58 to the west. The forest habitat diversity is also affected by the egion's geologic variability. The geology consists mostly of weakly metamorphosed pelite, sandstone, and conglomerate, with some calcareous rocks. Smaller areas of metavolcanic rocks and quartz diorite plutons also occur. A moderate number of lakes and peatlands occur in the Aroostook Hills. Eccentric bogs and concentrically patterned raised bogs reach their western limit in Maine within this ecoregion. The Eastern Maine-Southern New Brunswick Plains have a generally low-relief landscape, but some hills occur. Elevations are mostly 200 to 600 feet with many peaks over 1000 feet. A mix of bedrock geology is found here, including low-grade metamorphosed pelites and sandstones, as well as intrusive granitic rocks and some volcanics. There are many long, north-south trending eskers and kames. Organic and finer-textured soils occur in depressions and on broad flat lowlands. The region has numerous lakes, and the largest concentration of peatlands in Maine. The lakes are often shallow, and mostly low in nutrients and alkalinity. Some areas of calcareous sediments with generally atypical alkaline wetlands also occur in the region. The climate is milder than in ecoregions to the north and northwest, and is transitional to the coastal Ecoregion 82g. Spruce-fir forest is dominant, with northern hardwoods on drier sites

and hills. Forestry activities are a dominant land use. A few blueberry barrens occur in the south near the boundary with Ecoregion 82g. The Central Foothills ecoregion is a transitional area between the lower elevation areas of Ecoregion 82 and the higher elevations of the Northeastern Highlands (58). It has a slightly milder climate than Ecoregion 82b to the north, and elevations re slightly lower. Central Foothills elevations are mostly 400 to 1000 feet, with some peaks to 1300 feet, and a high point of 1675 feet on Kelly Mountain. Bedrock geology of the ecoregion includes metamorphosed pelite and sandstone and some granitic intrusive rocks. though areas of calcareous bedrock occur, surface water alkalinity is mostly moderate to low, and nutrients are generally low. A large bbed moraine with hummocks and sub-parallel ridges covers some of the northern part of the region. The Central Foothills are in a getation transition zone from the more temperate, species-rich Acadian forest to the east to the higher elevation, less-diverse boreal forests Ecoregion 58 to the west. Forests include trees of red spruce, balsam fir, hemlock, white pine, beech, yellow birch, and sugar maple. The Central Maine Embayment is a diverse region of rolling plains with hills and some high hills. It has a complex geologic

mix of bedrock, with large areas of metamorphosed pelite, sandstone, and limestone/dolostone, some granitic intrusives, along with other metasedimentary and metavolcanic rocks. Glaciomarine sediments of silt, clay, sand, and gravel cover many of the flatter lower elevations, deposits formed from marine submergence of lowland areas, or where glacial meltwater streams entered the sea. Some striped bass, and Atlantic sturgeon. Photo: Cheryl Daigle, Penobscot River Restoration Trust broader river valleys and associated alluvial deposition occur in the region such as the Androscoggin and Kennebec. A few areas of wet

bluffs. It has much less maritime spruce-fir forest than Ecoregion 82g to the east. With a transitional nature to the vegetation, the region has the highest woody species richness in Maine; several southern New England woody species reach their northern range limit here, and some northern species reach their southern range limit. The **Downeast Coast** ecoregion includes an island-bay coastal type east of Penobscot Bay and a mostly cliffed coastal margin east of Machias Bay. Rocky headlands and islands are abundant with few isolated pocket beaches. Some gravel beaches and coarse-grained tidal flats occur. The region has very few large tidal marshes. Granitic plutons are common, with less resistent, low-grade metamorphic rock occurring in the deeply embayed areas. Fine and coarse-loamy, frigid Inceptisols and Spodosols are typical. For Maine coastal regions to the east of Penobscot Bay, most forests contain a large percentage of spruce and fir. The Downeast Coast has Marsh and forest land along Deer Meadow Potatoes are typical in the cropland of the more fog and precipitation than other coastal regions, and the wet, cool, foggy climate supports these spruce-fir forests of a more Brook of the Midcoast (82f). Photo: USFWS Aroostook Lowlands (82a). Photo: Vikram Bisht northern character. The boreal features include rocky woodlands of patchy black spruce and heaths, as well as some boreal plant species that are otherwise restricted to alpine and subalpine areas of Maine, such as black crowberry, baked appleberry, and roseroot. Coastal raised peat bogs occur. There are also some areas of jack pine woodland, near its southern range limit, on the dry, rocky ridges of Mount Desert Island. The unique area around Acadia National Park also has some transitional features to mid- and south-coast flora, including

The **Penobscot Lowlands** ecoregion is lower and flatter than surrounding ecoregions. A distinguishing characteristic is its deep ine sediments and many areas of wet flats with swamp and bog deposits. Glaciomarine sediments of silt, clay, sand, and gravel cover many of the flatter lower elevations, deposits formed from marine submergence of lowland areas, or where glacial meltwater streams entered the sea. Some alluvial deposition of deep, coarser sediments occur along the Penobscot River. Fine and fine-silty, frigid Native to New England rivers, most runs of Low-bush blueberry barrens are found mostly Inceptisols, loamy Spodosols, and Histosols are typical. The region has a relatively moderate climate and diverse flora and fauna. Atlantic salmon (Salmo salar) have been in Ecoregion 82g. Some grassland nesting bird Northern hardwoods and northern hardwoods-spruce forests are major forest types. Second growth hemlock forests are common with extirpated. Some self-supporting runs persist species, such as the grasshopper sparrow and scattered sugar maples, big-tooth aspen, paper birch, and white pine. Areas of red pine occur on some low ridges. Settlement and road in eastern Maine, and restoration efforts are upland sandpiper, use this human-controlled patterns are less dense than in Ecoregion 82e to the west. The many open wetlands provide breeding habitat for wetland-dependent birds.

richer and cooler than those offshore of ecoregions 82f and 59f to the south.

areas of pitch pine and some oak woodlands. A variety of vegetation types and rare plants occur on Cadillac Mountain, the highest peak

along the eastern coast of the United States. Tidal amplitudes of the Downeast Coast are great, and the offshore waters are nutritionally

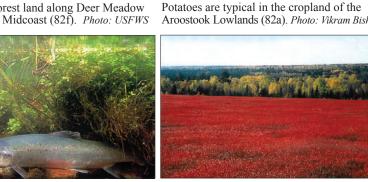


form extensive mud flats and salt marshes. Many riverine and estuarine wetlands occur here. Merrymeeting Bay is the largest freshwater but have increased in recent decades.

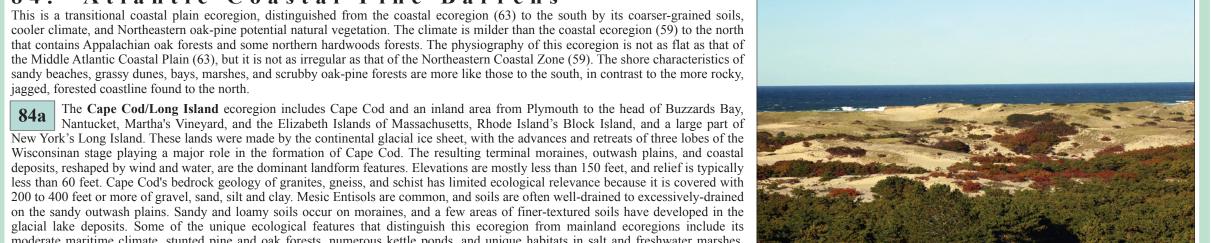
with more than two million recreational visits tidal bay north of the Chesapeake in the eastern U.S., and provides important waterfowl habitat. The coastal waters of the ecoregion are Photo: Chessie Johnson, www.maine.gov a year. Photo: Albert Theberge, NOAA

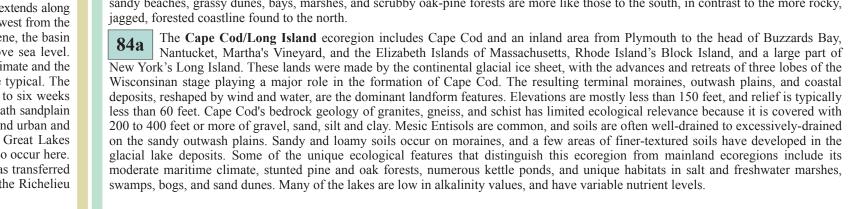




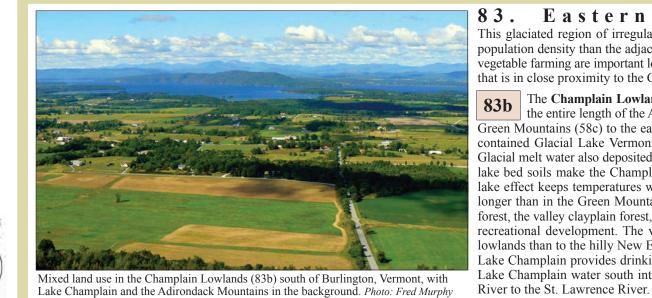


underway in a few other New England rivers. shrub habitat. Photo: Washington County Soil





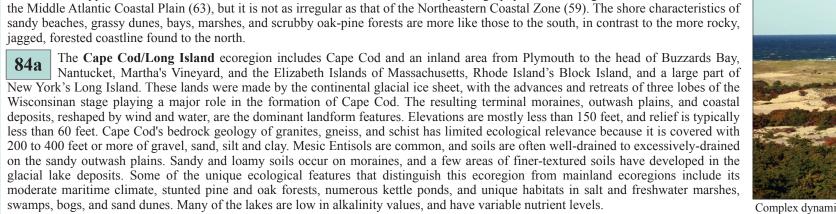
84. Atlantic Coastal Pine Barrens

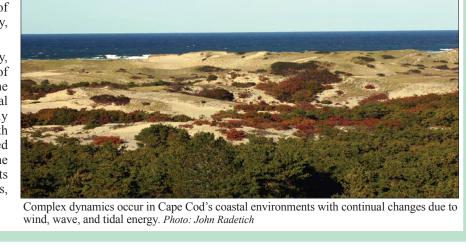


83. Eastern Great Lakes Lowlands This glaciated region of irregular plains bordered by hills generally contains less surface irregularity and more agricultural activity and population density than the adjacent Northeastern Highlands (58) and Northern Allegheny Plateau (60). Although orchards, vineyards, and

that is in close proximity to the Great Lakes experiences an increased growing season, more winter cloudiness, and greater snowfall. The **Champlain Lowlands** ecoregion is the northernmost expression of the Great Valley, a limestone depression that extends along the entire length of the Appalachian Mountains. The Champlain Lowlands separate the Adirondack Mountains to the west from the reen Mountains (58c) to the east. The region's low elevation and the lake itself moderate the climate. During the Pleistocene, the basin ntained Glacial Lake Vermont, and, at its maximum depth, glacial melt water lapped at beach lines over 600 feet above sea level. Glacial melt water also deposited sand, silt, and clay sediments into the lake that cover the valley floor today. The moderate climate and the lake bed soils make the Champlain Lowlands the prime agricultural region in Vermont. Mesic Inceptisols and Alfisols are typical. The lake effect keeps temperatures warmer in the fall and cooler in the spring, and the growing season is about 150 days, four to six weeks longer than in the Green Mountains (58c). The glacial deposits create distinctive plant communities, such as the pine/oak heath sandplain forest, the valley clayplain forest, and the white pine/red oak/black oak forest, that are endangered due to farmland clearing and urban and recreational development. The vegetation communities have some stronger alliances to the St. Lawrence valley and the Great Lakes owlands than to the hilly New England regions to the east. Some unique swamp, marsh, and other wetland communities also occur here. Lake Champlain provides drinking water to communities inside and outside of the Champlain basin. Since 1823, a canal has transferred Lake Champlain water south into New York's Hudson River basin. Most of Lake Champlain's water flows north through the Richelieu

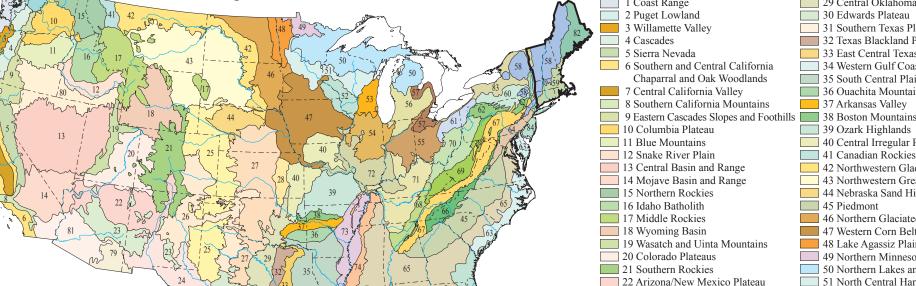
vegetable farming are important locally, a large percentage of the agriculture is associated with dairy operations. The portion of this ecoregion







Level III Ecoregions of the Conterminous United States



USGS). Sandra A. Bryce (Dynamac Corporation). Joshua Royte (The Nature Conservancy 57 Huron/Erie Lake Plains TNC]), Wayne D. Hoar (NRCS), Joseph W. Homer (NRCS), Don Keirstead (NRCS), 58 Northeastern Highlands Kenneth J. Metzler (Connecticut Department of Environmental Protection [CT DEP]), and 59 Northeastern Coastal Zone 60 Northern Allegheny Plateau Greg Hellyer (USEPA) 61 Erie Drift Plain COLLABORATORS AND CONTRIBUTORS: Beth Timmons (Raytheon/SRA), Katrina 62 North Central Appalachian Kipp (USEPA), Andy Cutko (Maine Natural Areas Program), Dave Halliwell (Maine 63 Middle Atlantic Coastal Plai Department of Environmental Protection [ME DEP]), Roy Bouchard (ME DEP), Sue 64 Northern Piedmont 65 Southeastern Plains 67 Ridge and Valley 68 Southwestern Appalachia 69 Central Appalachians

58 Northeastern Highlands

58b Western New England Marble Valleys

58c Green Mountains/Berkshire Highlands

58m Quebec/New England Boundary Mountains

58a Taconic Mountains

58d Lower Berkshire Hills

58e Berkshire Transition

58g Worcester/Monadnock Plateau

58j Upper Montane/Alpine Zone

58k Green Mountain Foothills

58n White Mountain Foothills

58s Western Maine Foothills

58t Upper St. John Wet Flats

58u Moosehead-Churchill Lakes

58w International Boundary Plateau

59e Narragansett/Bristol Lowland

59h Gulf of Maine Coastal Plain

82e Central Maine Embayment

82a Aroostook Lowlands

82b Aroostook Hills

82d Central Foothills

82g Downeast Coast

82h Penobscot Lowlands

83b Champlain Lowlands

84a Cape Cod/Long Island

82f Midcoast

59f Gulf of Maine Coastal Lowland

59g Long Island Sound Coastal Lowland

82 Acadian Plains and Hills

59 Northeastern Coastal Zone

59b Lower Worcester Plateau/Eastern Connecticut Upland

59c Southern New England Coastal Plains and Hills

82c Eastern Maine-Southern New Brunswick Plains

83 Eastern Great Lakes Lowlands

84 Atlantic Coastal Pine Barrens

580 Northern Connecticut Valley

58p White Mountains/Blue Mountains

58r Sebago-Ossipee Hills and Plains

58f Vermont Piedmont

581 Northern Piedmont

58q Sunapee Uplands

58v St. John Uplands

58x Taconic Foothills

59a Connecticut Vallev

59d Boston Basin

GULF OF MAINE

ATLANTIC OCEAN

29 Central Oklahoma/Texas Plains

30 Edwards Plateau

31 Southern Texas Plains

35 South Central Plains

de Central Irregular Plains

44 Nebraska Sand Hills

48 Lake Agassiz Plain

42 Northwestern Glaciated Plains

43 Northwestern Great Plains

46 Northern Glaciated Plains

47 Western Corn Belt Plains

49 Northern Minnesota Wetlands

1 North Central Hardwood Forest

3 Southeastern Wisconsin Till Plai

50 Northern Lakes and Forests

54 Central Corn Belt Plains

56 Southern Michigan/Northern

55 Eastern Corn Belt Plains

Indiana Drift Plains

36 Ouachita Mountains

7 Arkansas Valley

39 Ozark Highlands

41 Canadian Rockie

45 Piedmont

32 Texas Blackland Prairies

33 East Central Texas Plains

34 Western Gulf Coastal Plain

66 Blue Ridge

70 Western Allegheny Plateau

75 Southern Coastal Plain

1 Interior Plateau

7 North Cascades

78 Klamath Mountains

79 Madrean Archipelago

80 Northern Basin and Range

81 Sonoran Basin and Range

82 Acadian Plains and Hills

84 Atlantic Coastal Pine Barrens

83 Eastern Great Lakes Lowlands

Gawler (NatureServe). Steve Fuller (New Hampshire Fish and Game Department [NHFG] mily Brunkhurst (NHFG), Rick Chormann (New Hampshire Department of Environmental ervices), Rich Langdon (Vermont Department of Environmental Conservation), Leif Richardson (Vermont Fish and Wildlife Department [VTFW]). Everett Marshall (VTFW) Caroline Alves (NRCS), Tom Faber (USEPA), Robert Haynes (Massachusetts Department of vironmental Protection), Tad Larsen (Raytheon/SRA), Lisa Wahle (CT DEP), Guy Hoffman (CT DEP), John Hutchinson (USGS), Jack Wittmann (USGS), and Tom Loveland (USGS). 2 Interior River Valleys and Hi 3 Mississippi Alluvial Plain REVIEWERS: Charles E. Ferree (TNC), Patricia Swain (Massachusetts Natural Heritage 74 Mississippi Valley Loess Plains | and Endangered Species Program), Bruce W. Thompson (NRCS-retired), and Peter D. Vaux University of Maine). 6 Southern Florida Coastal Plain

EITING THIS POSTER: Griffith, G.E., Omernik, J.M., Bryce, S.A., Royte, J., Hoar, W.D., Homer, J.W., Keirstead, D., Metzler, K.J., and Hellyer, G., 2009, Ecoregions of New England (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,325,000). his project was partially supported by funds from the USEPA-Region I, Regional Applied Research Effort Program. Electronic versions of ecoregion maps and posters as well as other ecoregion resources are available at http://www.epa.gov/wed/pages/ecoregions.htm.

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