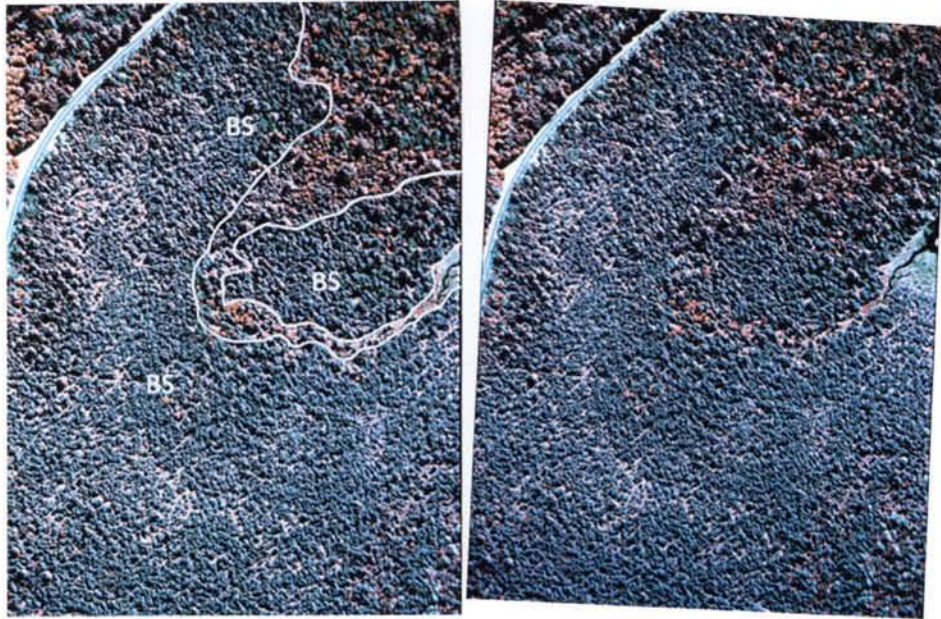


# Black Spruce

(*Picea mariana*)

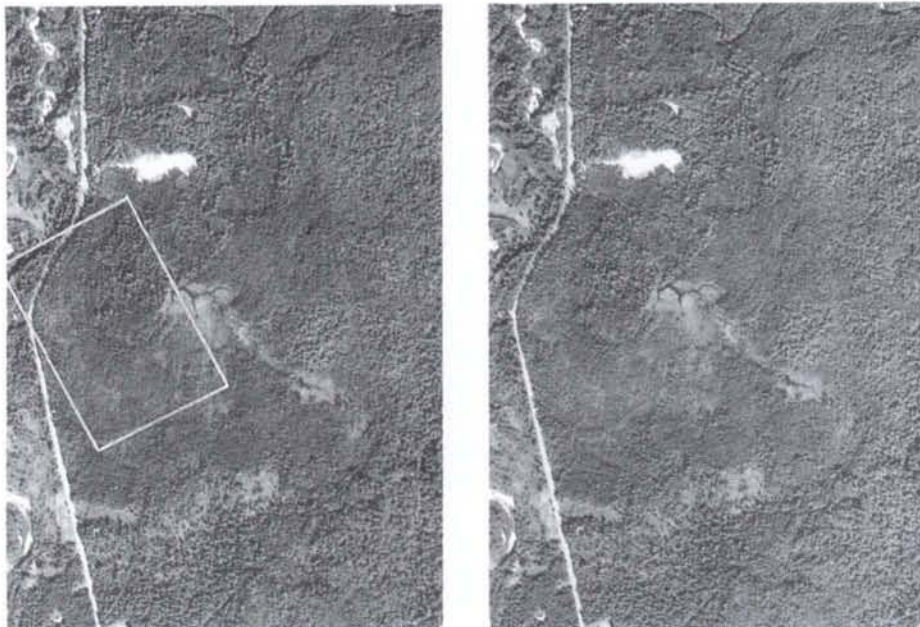
**Composition:** Black spruce occurs mainly as pure stands and always constitutes a majority of the stocking.



Albany, NH; 4 August 1986; BS 80-90%  
1:6000

**Identifying features:** Black Spruce occurs on flat, wet sites, often at the periphery of bogs. The finely textured, even canopy always remains smooth, as tree height changes uniformly, decreasing with site quality. In CIR, Black Spruce is a dark, but distinctly green, conifer shade.

1:20000  
12 September 1970

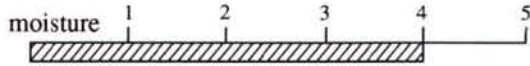


# BLACK SPRUCE

## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

BS 



## Geographic distribution in New England



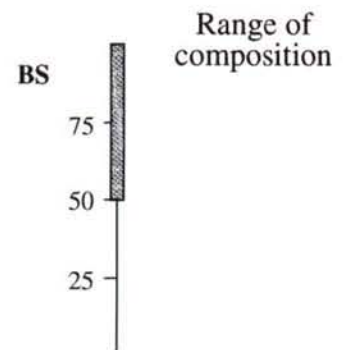
**Common situation:** Typical of boggy or peatland sites on gently sloping lake beds or smaller filled lakes. Often even-aged stands after fire; unevenaged stands develop on poor sites.

**Boundaries:** Merges with the BS/T type, but maintains a distinct boundary with most other types.

**Associate species:** More numerous on better sites. In boreal regions, white spruce, aspen, balsam fir, white birch, tamarack. Northern white-cedar, black ash, red maple in addition farther south. In New England, red spruce, sometimes hybridizing with the black spruce.

**Comparisons:** The interpreter may confuse Black Spruce with young Red Spruce. The Red Spruce canopy is less green in color on CIR, and does not remain even, breaking up as the site changes and the stand ages.

Atlantic White-Cedar is another type that occupies flat, wet sites. The very densely packed canopy of the AWC type distinguishes it from the Black Spruce type.

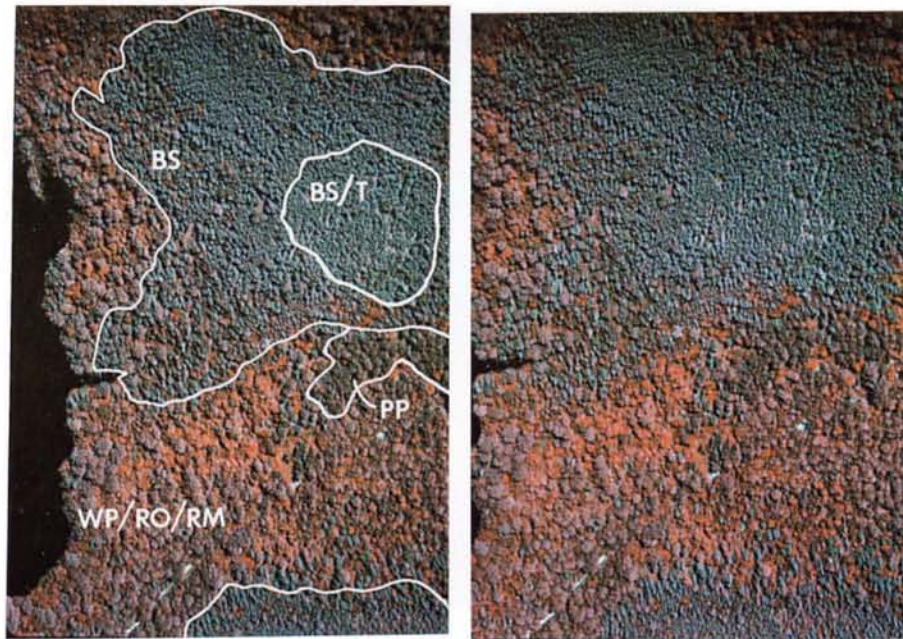




# Black Spruce--Tamarack

(*Picea mariana*, *Larix laricina*)

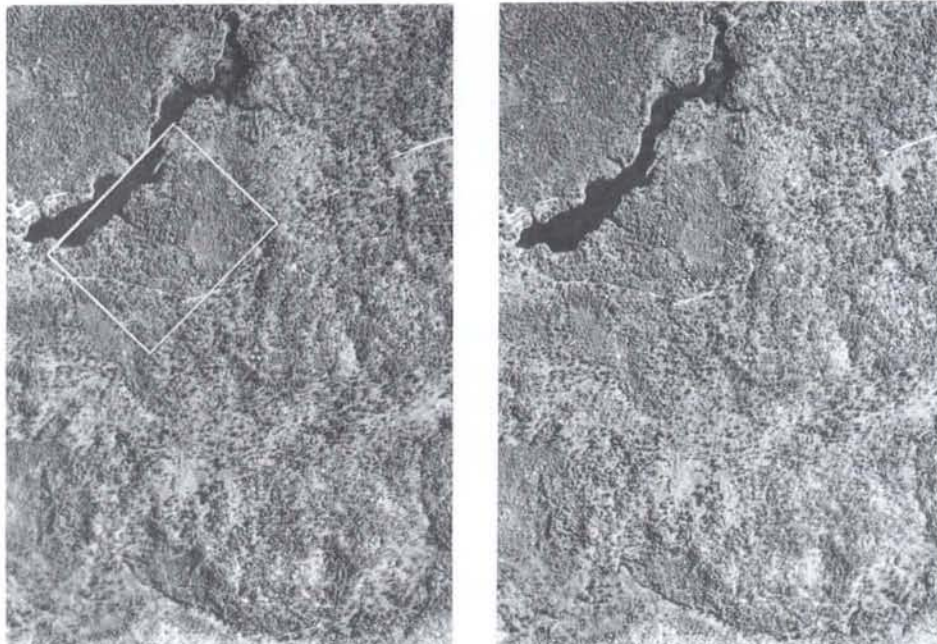
**Composition:** Black spruce and tamarack together constitute the type.



Pine River State Forest, NH; 12 August 1986; BS 65%, T 35%  
1:6000

**Identifying features:** Black Spruce--Tamarack often accompanies the Black Spruce type on flat, wet sites, with tamarack favoring the wetter areas. The tamarack has an open, feathery crown that appears brighter in tone and less distinct than the associated spruce. Like Black Spruce, the open but even canopy changes height uniformly, decreasing with site quality.

1:20000  
28 October 1970

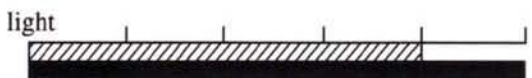
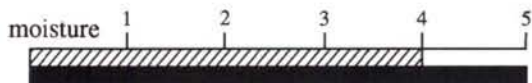


# BLACK SPRUCE--TAMARACK

## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

BS   
T 



## Geographic distribution in New England

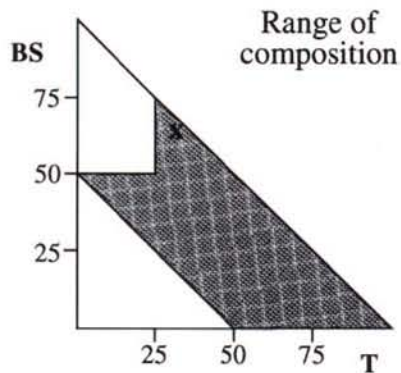


**Common situation:** Low, wet sites of mineral soil, along streams, and peat bogs. Individual areas small in size, but may be very extensive in aggregate (especially in the most northeastern parts of New England).

**Boundaries:** Often grades into the Black Spruce type, but is quite distinct from most others with almost no transition.

**Associate species:** Balsam fir, northern white-cedar.

**Comparisons:** To distinguish from Black Spruce, the tamarack component gives the type a slightly lighter tone and greener hue in CIR.

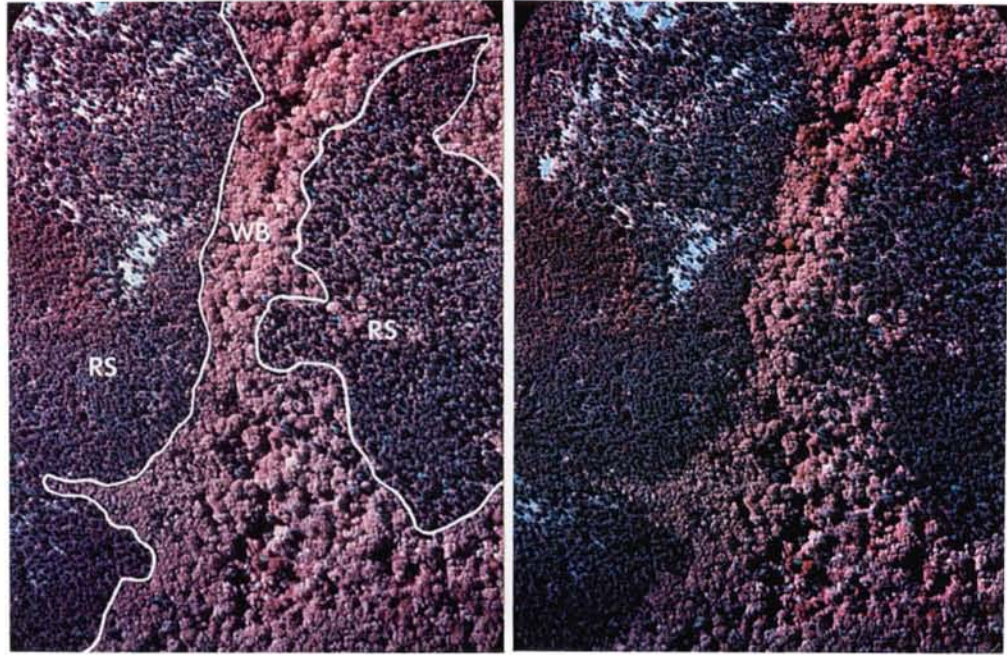




# Red Spruce

(*Picea rubens*)

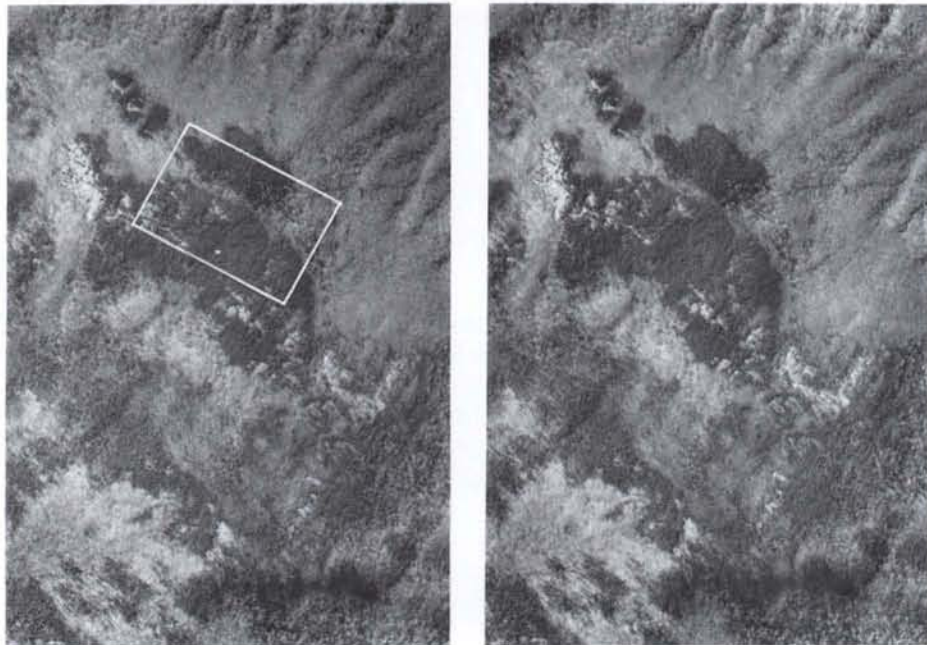
**Composition:** Red spruce is either pure or constitutes a majority of the growing stock.



Gorham, NH; 31 August 1986; RS 90%  
1:6000

**Identifying features:** Red Spruce is one of the darkest of the New England cover types. The very distinct lanceolate crowns create a finely textured image. In southern New England, the type is found most often at the higher elevations (above 2500 feet) and is frequently pure in those areas. Unlike the Black Spruce type, tree height does not remain even, but breaks up and becomes irregular as the site changes.

1:20000  
20 October 1970

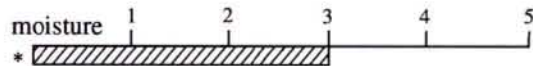


# RED SPRUCE

## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

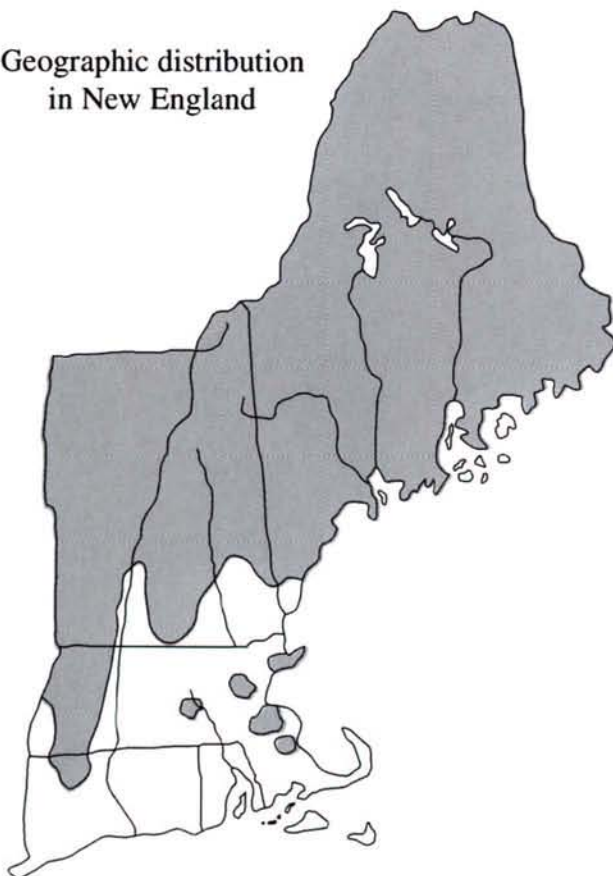
RS 



\* Found under a wide range of conditions. The moderate rating is a result of averaging.



## Geographic distribution in New England



**Common situation:** Occurs over a range of sites including moderately well drained to poorly drained flats, and thin-soiled upper slopes.

**Boundaries:** Usually blends into related types, but can be quite distinct at the higher elevations.

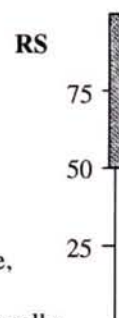
**Associate species:** Most frequent associate, balsam fir. Common associates are red maple, yellow birch, eastern hemlock, white pine, white spruce, northern white-cedar, white birch, pin cherry (early in succession), and black spruce (wet sites). Occasionally, red oak, red pine, and aspen.

**Comparisons:** Red Spruce in combination with many hardwood associates, as it frequently occurs at the lower elevations, can be identified by the very dark, lanceolate crowns (see Fig. K).

Young Red Spruce may be confused with Black Spruce. In CIR, the Black Spruce canopy is greener in color and remains uniform as the site changes.

The absence of the lighter, spirelike crowns of balsam fir distinguishes it from the RS/BF type.

## Range of composition

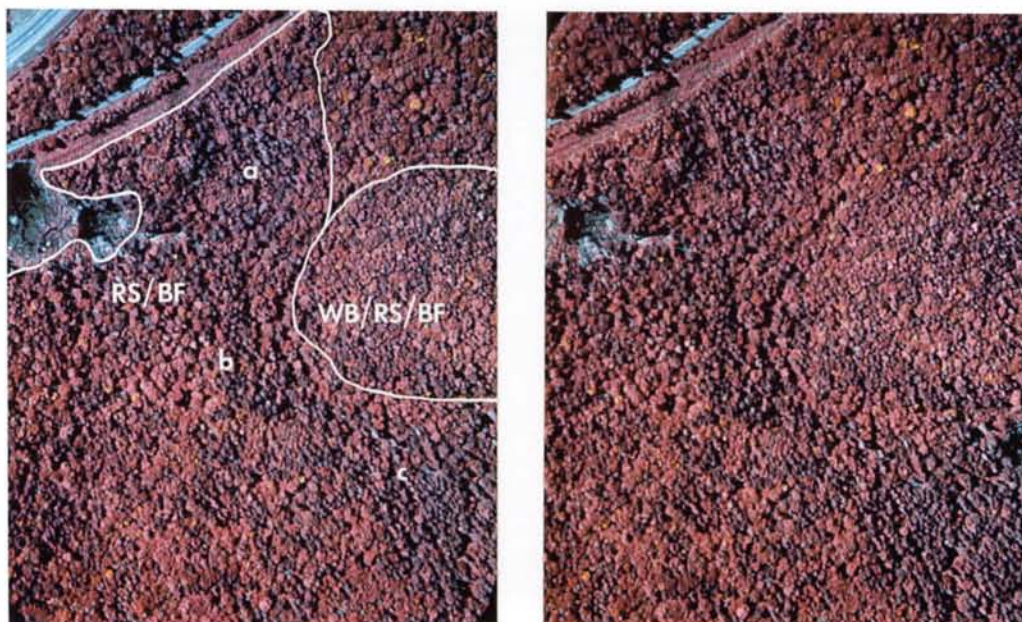




# Red Spruce--Balsam Fir

(*Picea rubens*, *Abies balsamea*)

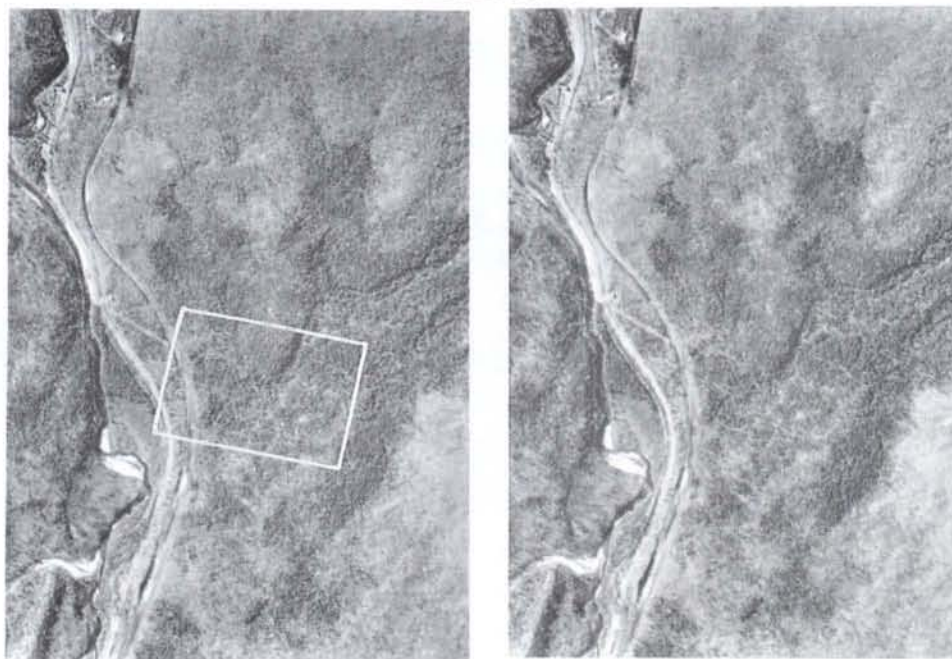
**Composition:** Red spruce and balsam fir together constitute a majority of the growing stock.



Twin Mountain, NH; 31 August 1986; a=RS 40% BF 40%  
1:6000 b=more BF, c=more RS

**Identifying features:** Red Spruce--Balsam Fir is dark in color and dominated by narrow pointed crowns, among which the spirelike balsam fir and the lanceolate red spruce crowns are often distinguishable. Red Spruce--Balsam Fir is less distinct from adjacent hardwood types than Red Spruce. Balsam fir is much lighter in color and intensity than red spruce and moderates the type coloration. In CIR, a stand of mostly balsam fir can create an almost sandy-colored, although still very finely textured, image. In this example, it is the crown shapes that most distinguish red spruce and balsam fir.

1:20000  
19 October 1970

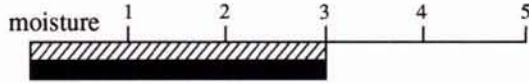


# RED SPRUCE--BALSAM FIR

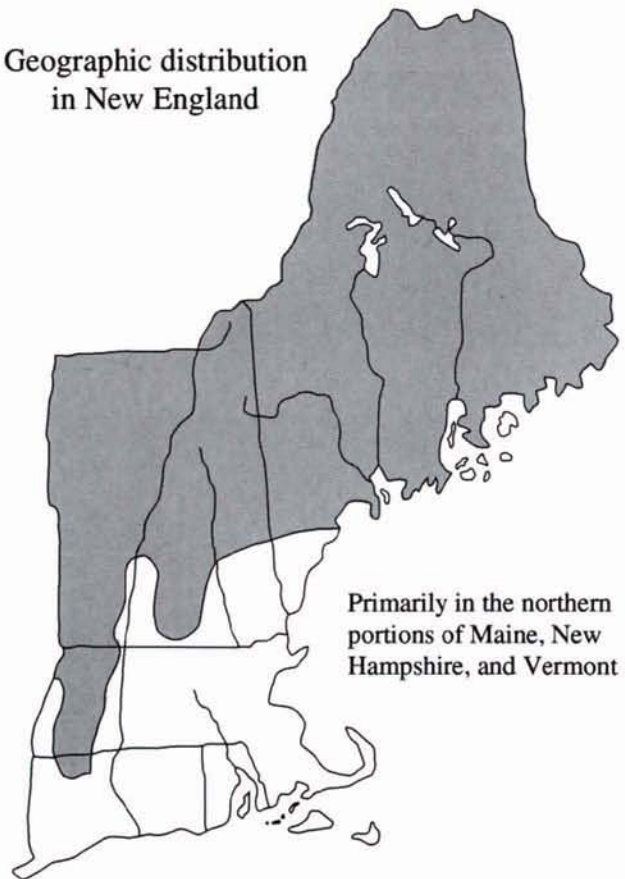
## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

RS   
 BF 



## Geographic distribution in New England

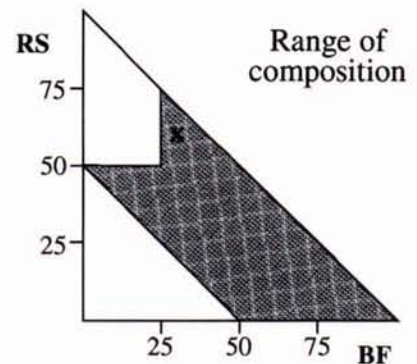


**Common situation:** Low ridges and knolls around streams, swamps, and bogs; extensive flats and upper mountain slopes.

**Boundaries:** Merges gradually with related types.

**Associate species:** Principally white spruce, eastern white pine, eastern hemlock, northern white-cedar. Often black spruce, tamarack, white birch, yellow birch, red maple, mountain maple, striped maple, mountain ash, and pin cherry. Occasionally sugar maple, beech, hophornbeam, aspen, white ash, and gray birch.

**Comparisons:** The presence of the lighter, spirelike crowns of balsam fir in the type distinguish it from Red Spruce.

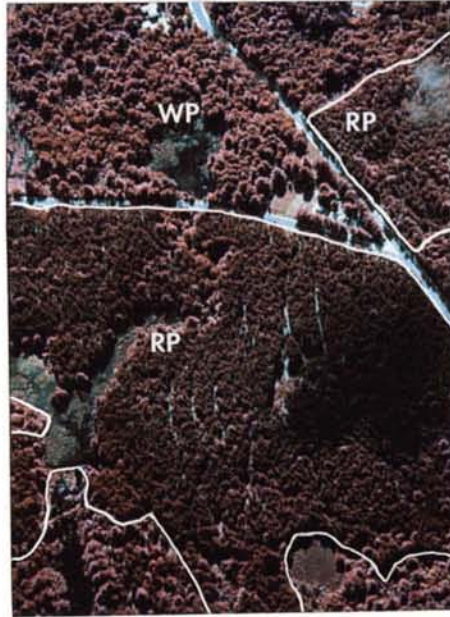




# Red Pine

*(Pinus resinosa)*

**Composition:** Red pine occurs in pure stands or constitutes a majority of the stocking in mixture with eastern white pine, jack pine, or both.



Bear Brook State Park, NH; 21 August 1986; RP 100%  
1:6000

**Identifying features:** Red Pine is soft in texture, with deep rust-colored crowns in CIR that typically create a honey-comb stand texture. Red pine crowns are darker, smaller, and lack the distinct star-shape of white pine. Red Pine is usually found in plantations in this area.

1:20000  
2 May 1974

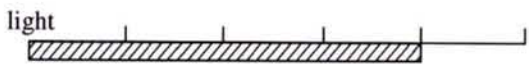


# RED PINE

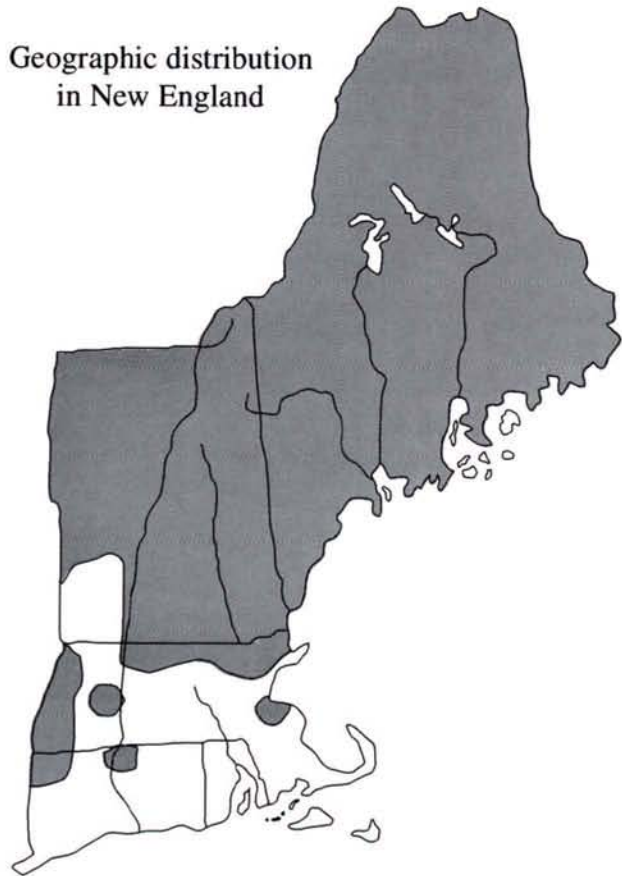
## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

RP 



## Geographic distribution in New England



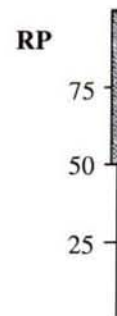
**Common situation:** Usually confined to poorer sites, such as small areas on outwash plains or rocky mountain slopes. Usually found in plantations in this area.

**Boundaries:** Very distinct in plantations, merges with other pine types.

**Associate species:** Principally, white pine, jack pine (rarer in New England).  
 On fine to loamy sands, red maple, red oak, white spruce, and balsam fir.  
 On coarser, drier soil, aspen, white birch, and northern pin oak.

**Comparisons:** In dense plantations, white pine may not have developed its distinctive star-shape. Red Pine's honeycomb stand pattern and darker color distinguish it from such stands of the White Pine type. Compared with Pitch Pine, Red Pine is much less green in CIR. For a good color comparison between the pines, see Figure N.

## Range of composition

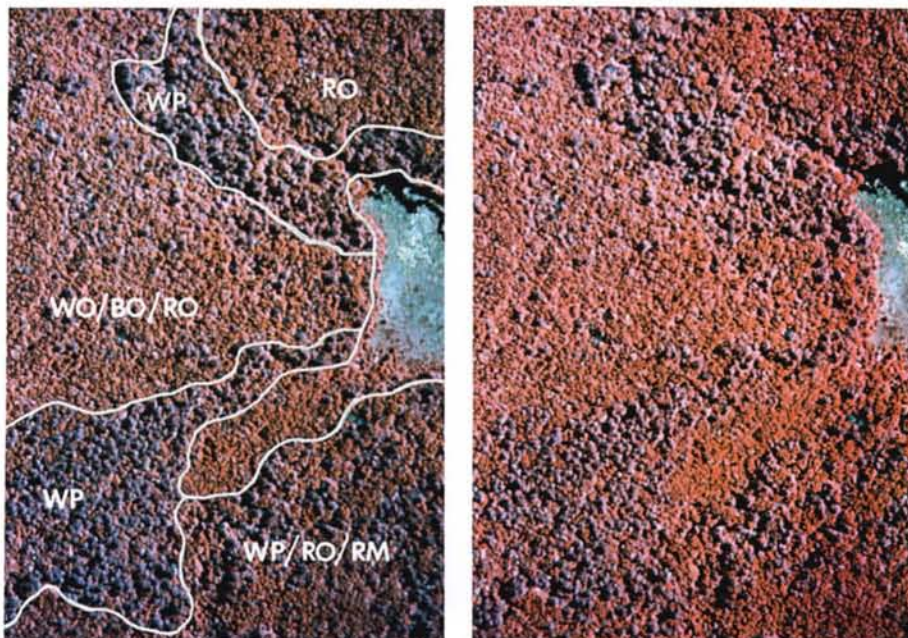




# White Oak--Black Oak--Northern Red Oak

(*Quercus alba*, *Quercus velutina*, *Quercus rubra*)

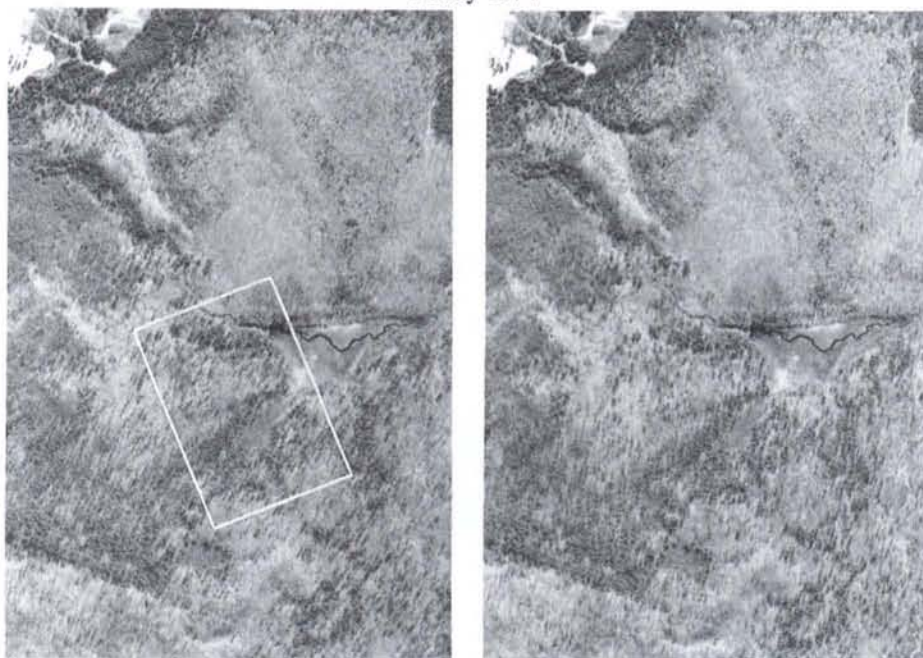
**Composition:** White oak, black oak, and northern red oak together constitute a majority of the stocking.



Bear Brook State Park, NH; 26 August 1986; WO 65%, BO 0%, RO 15%  
1:6000

**Identifying features:** White Oak--Black Oak--Northern Red Oak may occur as large trees or as a scrub type. The type usually has a much whiter overtone than Red Oak as a result of the presence of white oak. Individual crowns are typically small but well defined, creating a fine, rough texture.

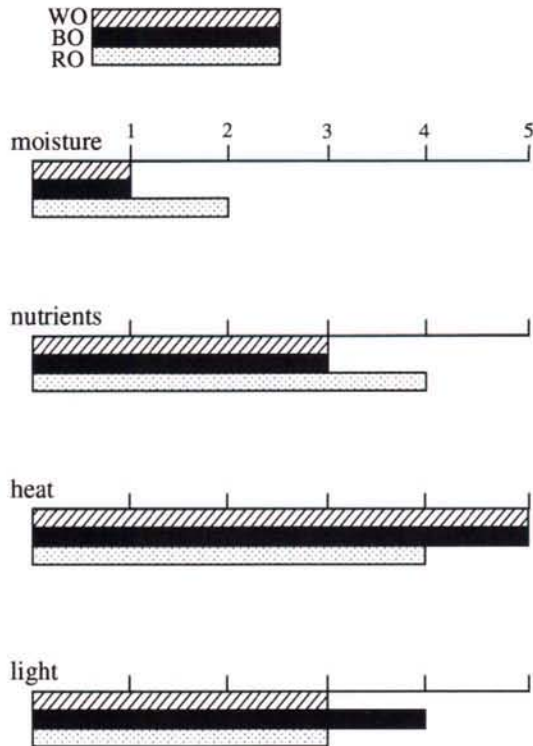
1:20000  
2 May 1974



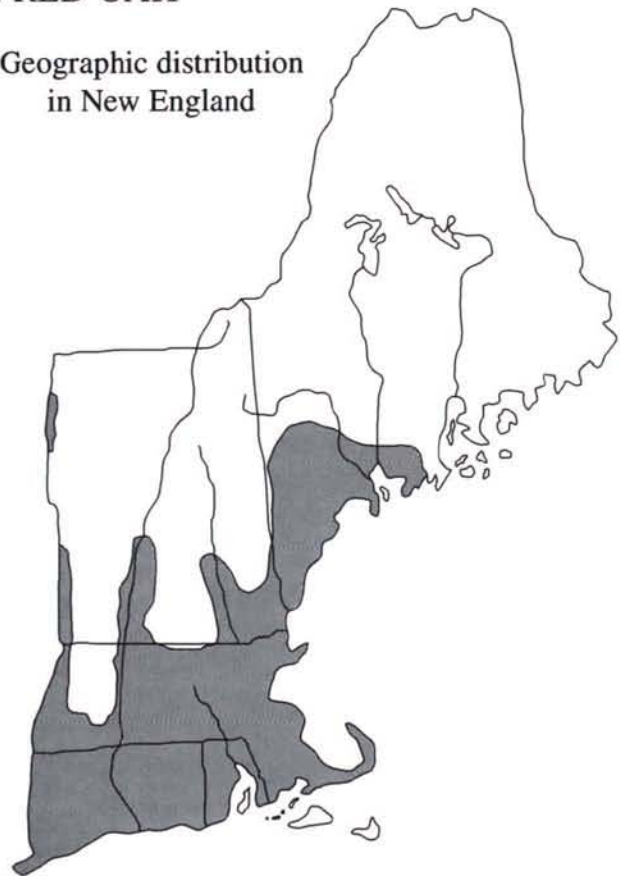
# WHITE OAK--BLACK OAK--NORTHERN RED OAK

## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)



## Geographic distribution in New England

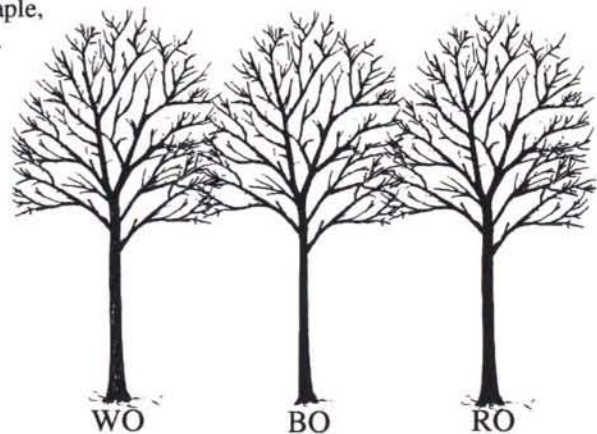
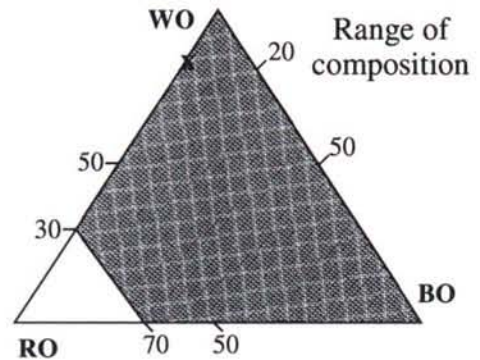


**Common situation:** Occurs over a wide range of sites. White oak is present over the range of sites from moist to dry. Red oak is more prevalent on moister sites, lower and middle slopes on north and east aspects in southern New England (and on south and west aspects from central NH north), coves, and benches with deep, well-drained loamy soils. Black oak is usually most abundant on the drier south and west aspects, upper slopes and ridges.

**Boundaries:** Merges with adjacent types.

**Associate species:** Principally, yellow-poplar, sugar maple, red maple, white ash, green ash, American elm, basswood, pitch pine. Occasionally, black cherry, black walnut, beech, and hemlock.

**Comparisons:** If there is a large proportion of white oak in this type, it can be clearly distinguished from Red Oak by its much whiter color and less dense, less defined crowns. The scrub variety of this type is identified primarily by its much lower and sparser canopy. For an example of this variation, see Figure. U.

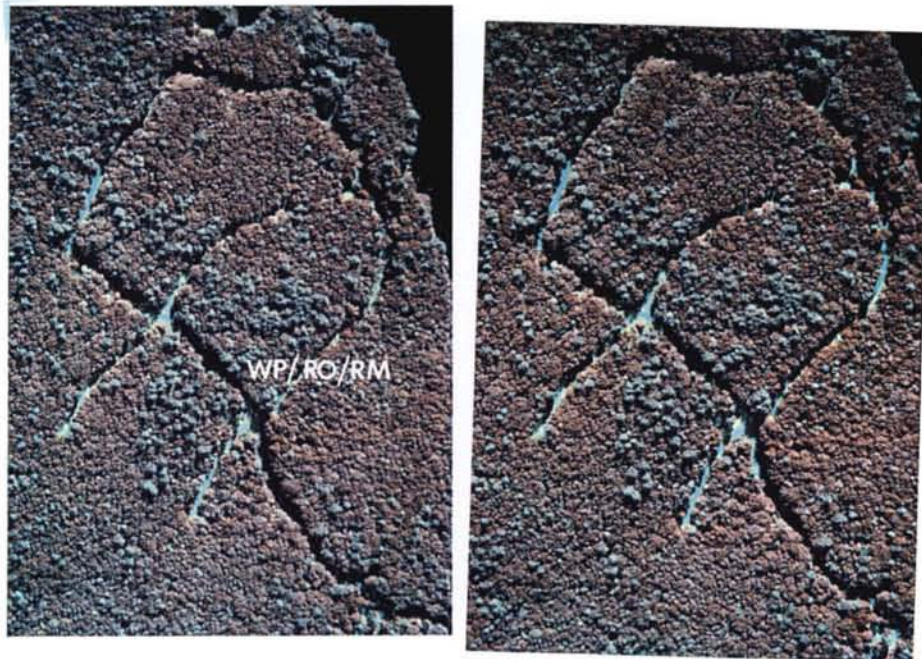




# White Pine--Red Oak--Red Maple

(*Pinus strobus*, *Quercus rubra*, *Acer rubrum*)

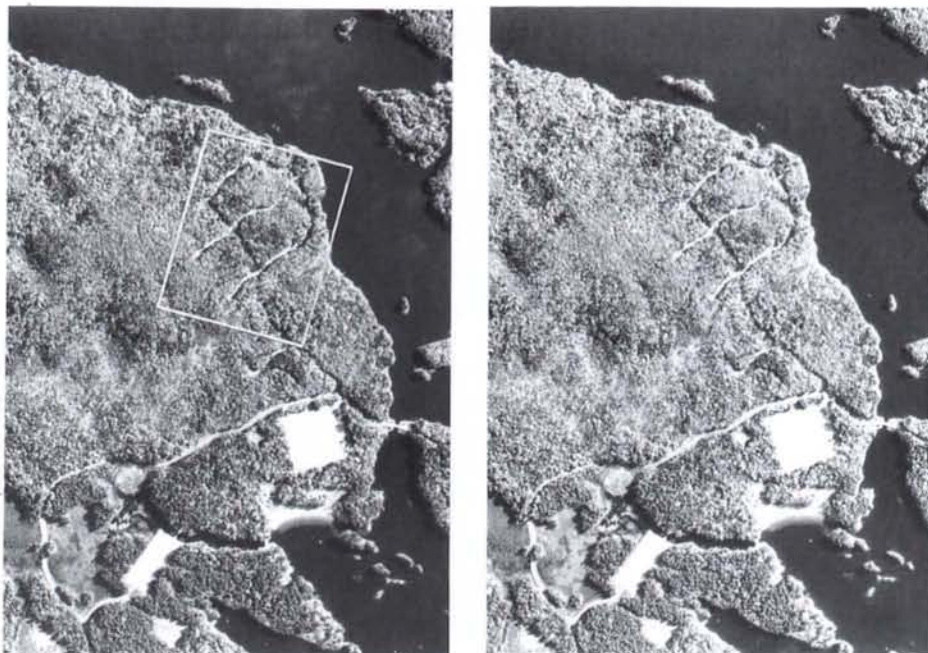
**Composition:** Eastern white pine and northern red oak are the most important species, although red maple is always present.



Pawtuckaway State Park, NH; 21 August 1986; WP 35%, RO 50%, RM 5%  
1:6000

**Identifying features:** White Pine--Red Oak--Red Maple is a broad type, varying widely in relative species composition. Texture is rough and fairly well defined, with the prominent, star-shaped white pine and the very hard-textured red oak. Crowns are generally large. Type color is variegated. The canopy may be solid and generally uniform, as in this example, or more open and uneven (refer to WP/RO/RM stand on Photo BS/T). This example is shifted in color toward blue. In CIR, red oak is usually a stronger red and the white pine a lighter gray than shown here.

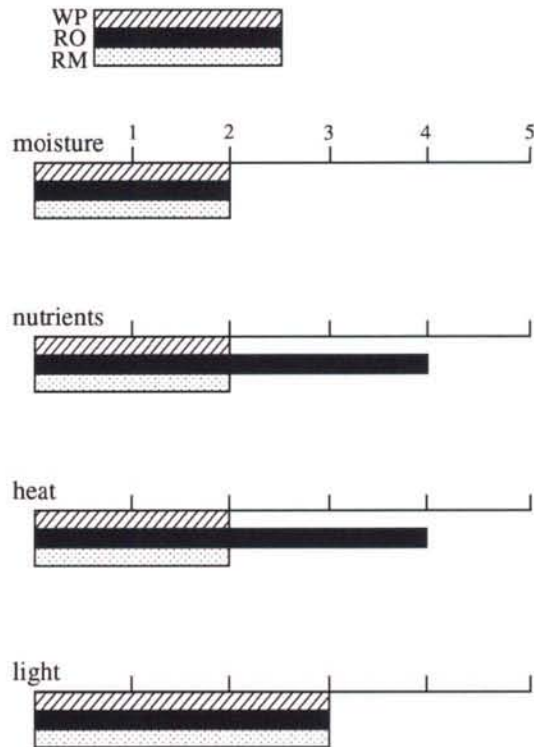
1:20000  
24 October 1974



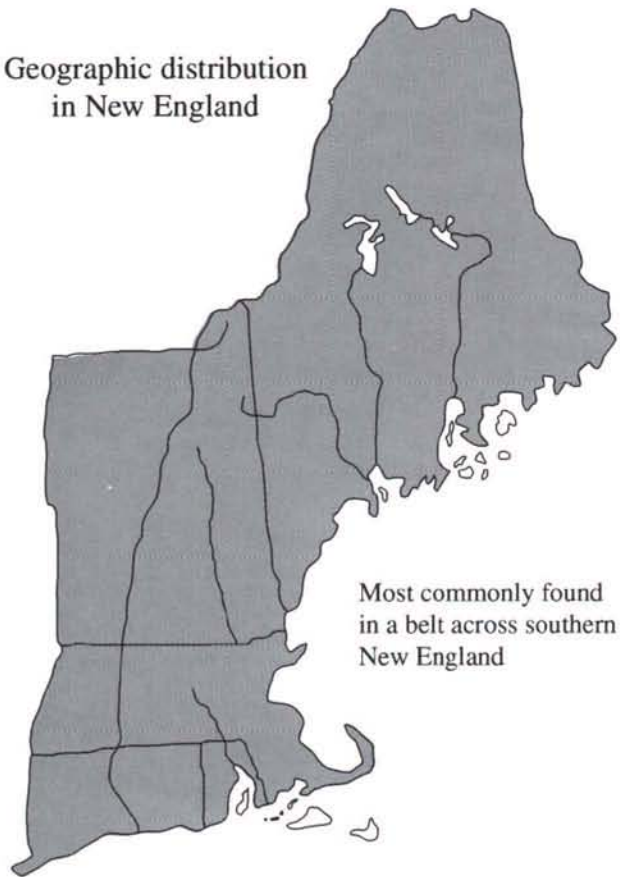
# WHITE PINE--RED OAK--RED MAPLE

## Ecological relations

Relative values characterizing the intensity of each factor at which each species prevails (1 = low, 5 = high)



## Geographic distribution in New England



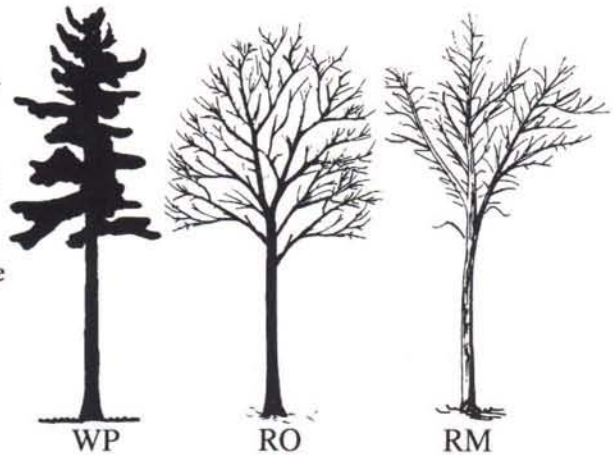
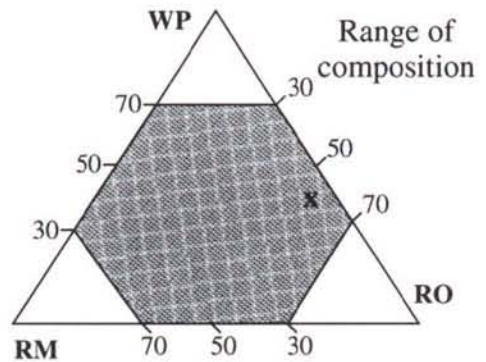
**Common situation:** Occurs on fertile, well-drained sites. Often second growth on old fields.

**Boundaries:** Usually indistinct, merging with adjacent, often similar, mixtures.

**Associate species:** A major associate is white ash. Also common are eastern hemlock, yellow birch, white birch, black birch, black cherry, basswood, sugar maple, and beech.

**Comparisons:** For more typical representation of the infrared color of this type, refer to the stand around the Black spruce and Black Spruce--Tamarack bog on page BS/T.

The interpreter may have difficulty distinguishing a stand of primarily white pine and red maple from the White Pine--Hemlock type. The red maple is more orange and more intensely colored than hemlock, and forms a more defined crown.

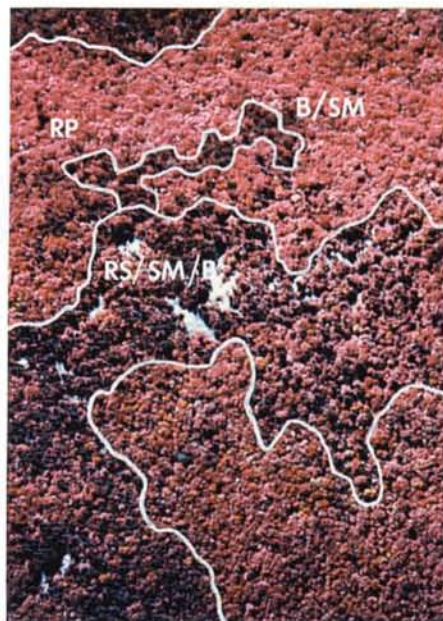




# Red Spruce--Sugar Maple--Beech

(*Picea rubens*, *Acer saccharum*, *Fagus grandifolia*)

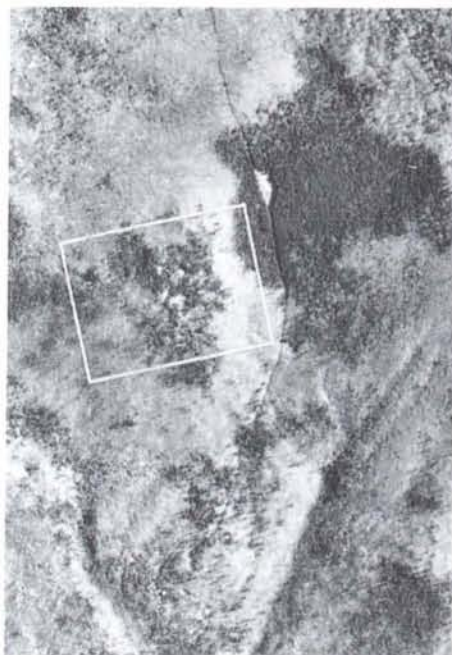
**Composition:** Sugar maple and beech predominate in this type. Red spruce is a minor but characteristic component, forming 20 percent of the basal area and occasionally more.



Conway State Forest, NH; 31 August 1986; RS 35%, SM 10%, B 10%  
1:6000

**Identifying features:** Red Spruce--Sugar Maple--Beech often makes a large, broad transition zone between Red Spruce and SM/B on the slope. Large dark lanceolate crowns amidst large pink billows identify the type in CIR. The canopy is relatively closed, except where terrain is very rough.

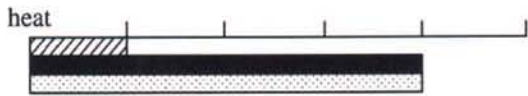
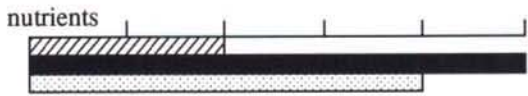
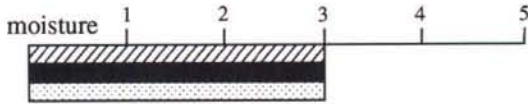
1:20000  
28 October 1970



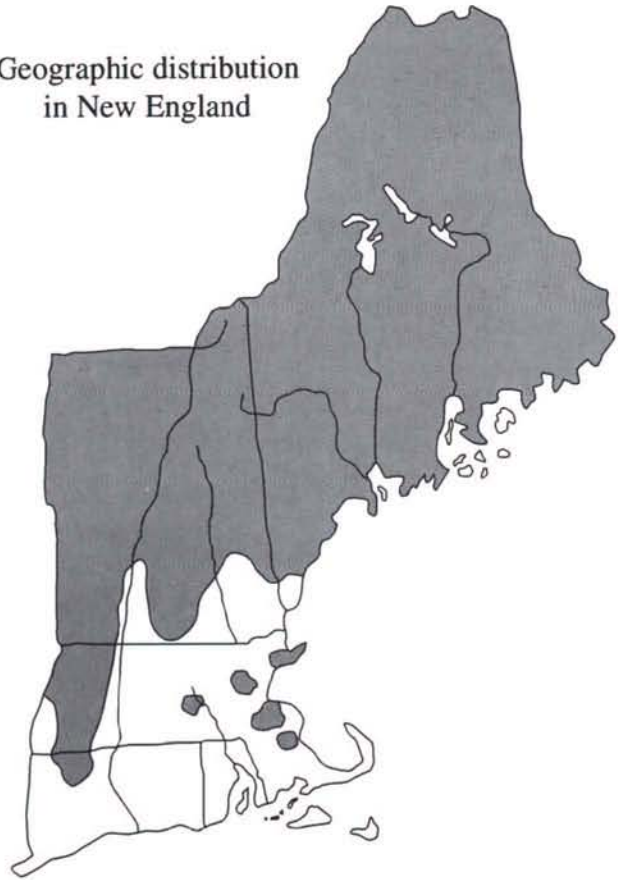
# RED SPRUCE--SUGAR MAPLE--BEECH

## Ecological relations

Relative values characterizing the intensity of each factor at which each species prevails (1 = low, 5 = high)



## Geographic distribution in New England

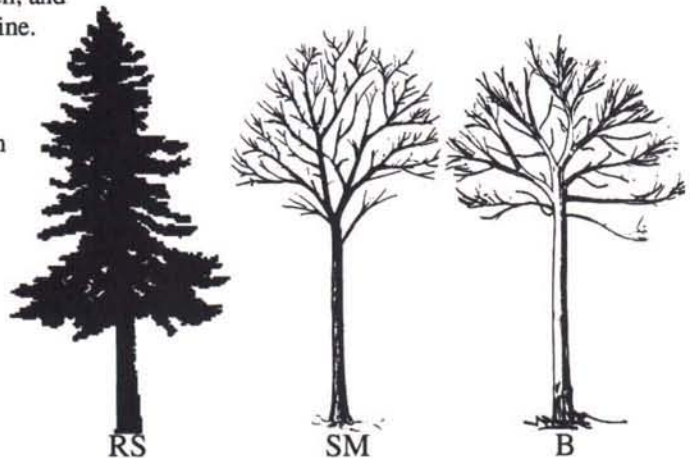
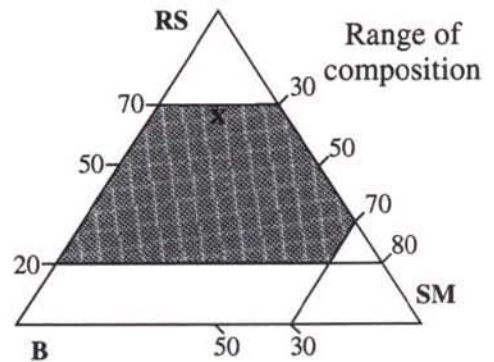


**Common situation:** Lower mountain slopes, upper hilly slopes, benches and gentle ridges.

**Boundaries:** Merges gradually with adjacent types.

**Associated species:** Often, balsam fir, hemlock, yellow birch, and red maple. Occasionally, black cherry, and white pine.

**Comparisons:** The crowns of this type are much larger than those of WB/RS/BF.

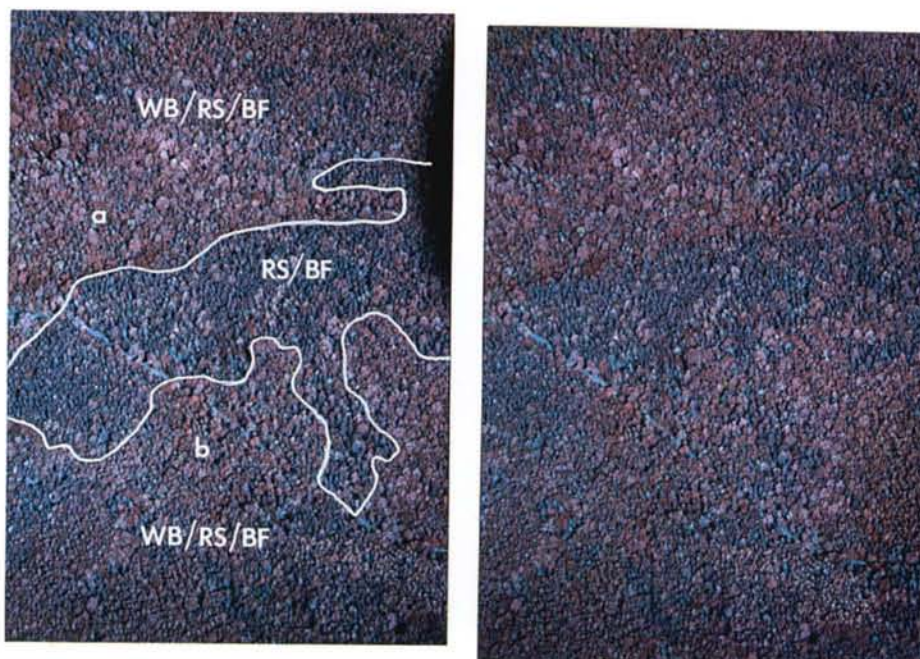




# White Birch--Red Spruce--Balsam Fir

(*Betula papyrifera*, *Picea rubens*, *Abies balsamea*)

**Composition:** White birch, red spruce and balsam fir in various combinations constitute the major stocking.

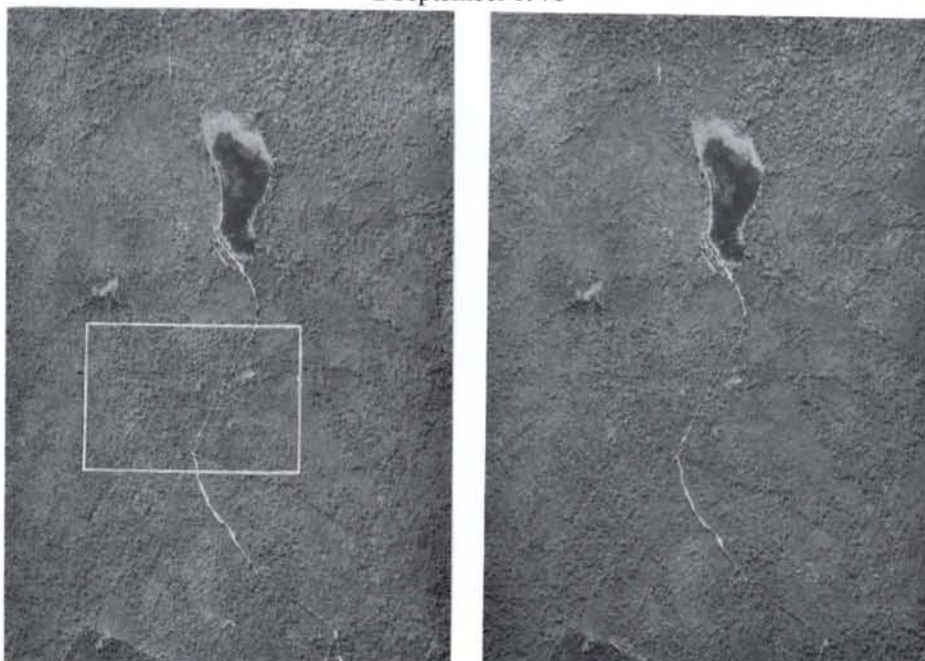


Cardigan State Forest, NH; 12 August 1986; a=WB 35% RS 0% BF 30%  
1:6000 b=WB 25% RS 10% BF 30%

**Identifying features:** White Birch--Red Spruce--Balsam Fir is finely textured, as white birch is a very small-crowned hardwood. The canopy is surprisingly even, and young stands may have a carpet-like texture. Individual lanceolate spruce, spire-like fir, and rounded birch crowns become more distinguishable in older stands. Color in CIR varies broadly, as different relative compositions have a large effect. In general, color ranges from patchy dark (more red spruce) to pink and tan (more white birch, balsam fir, and other hardwood associates).

1:20000

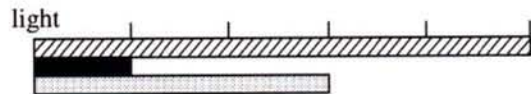
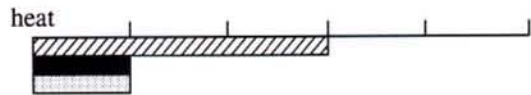
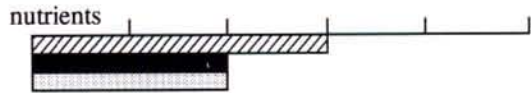
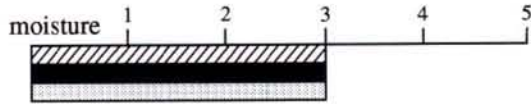
2 September 1970



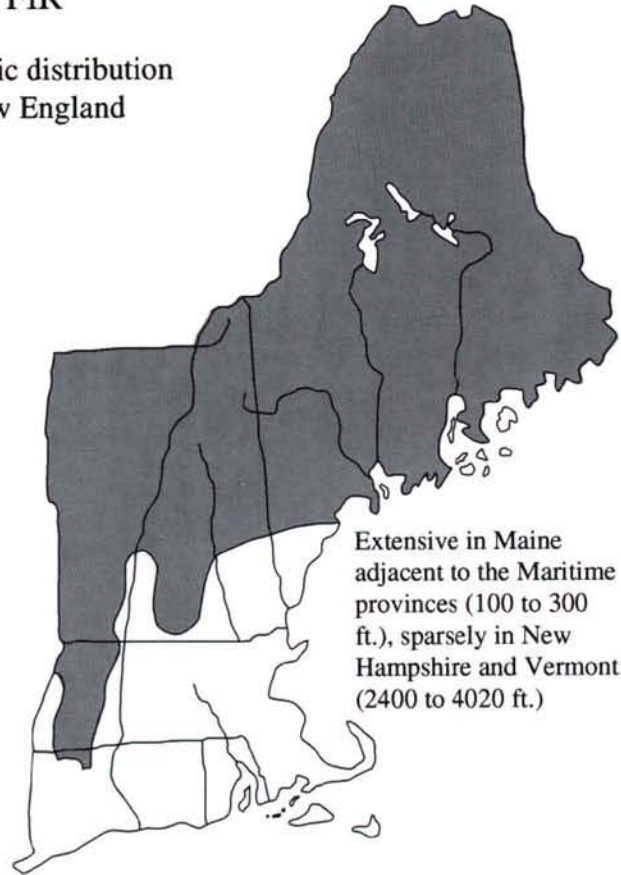
# WHITE BIRCH--RED SPRUCE--BALSAM FIR

## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)



## Geographic distribution in New England



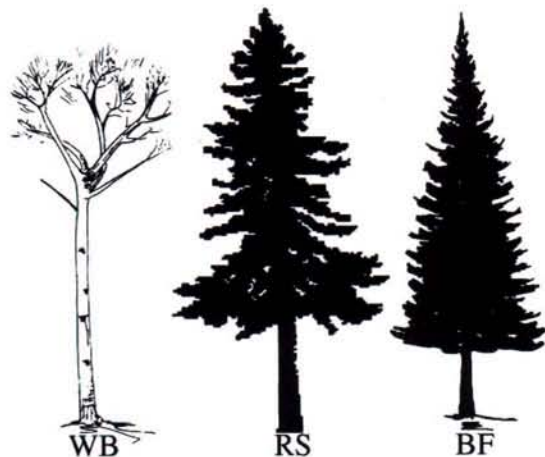
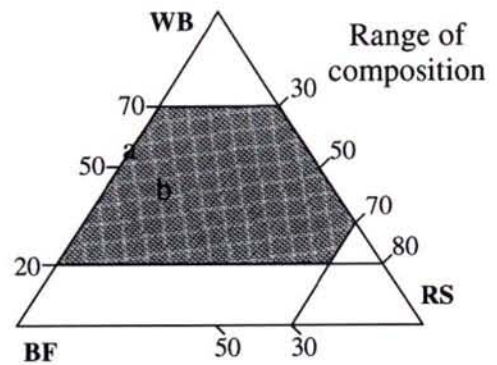
Extensive in Maine adjacent to the Maritime provinces (100 to 300 ft.), sparsely in New Hampshire and Vermont (2400 to 4020 ft.)

**Common situation:** Upland flats, benches, and slopes.

**Boundaries:** Merges gradually into adjacent types.

**Associate species:** Principally, red maple, grey birch. Occasionally, northern white-cedar, white pine, aspen, pin cherry, and mountain ash. Occasionally, hemlock, yellow birch, sugar maple, and beech.

**Comparisons:** The presence of white birch distinguishes this type from RS/BF. Crowns generally smaller than in RS/SM/B.

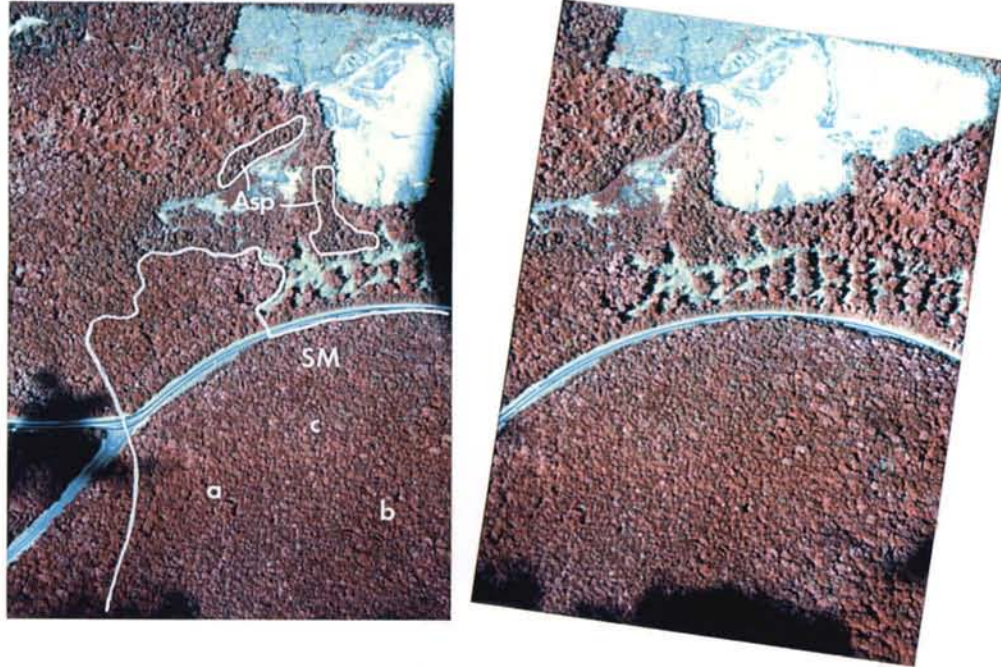




# Sugar Maple

(*Acer saccharum*)

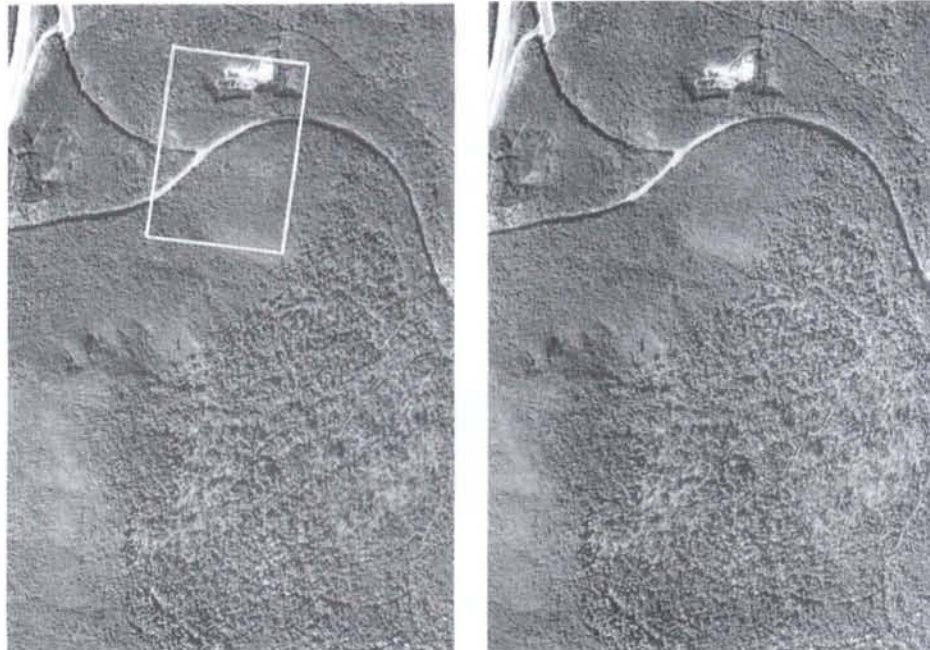
**Composition:** Sugar maple usually constitutes a majority of the stocking and frequently occurs in pure stands. Several other species are commonly present, though each constitutes less than 20 percent of the total basal area.



Franconia, NH; 4 August 1986; a=SM 90%, b=SM 70%, c=SM 50%  
1:8500

**Identifying features:** Sugar Maple has large and billowy, but compact crowns. The dense, unbroken canopy is somewhat uneven, creating a pockmarked appearance, and individual crowns and their texture can often be distinguished. Individual emergent sugar maple crowns are typically a very light pink in CIR, but whole stands are less consistently so.

1:20000  
12 September 1970

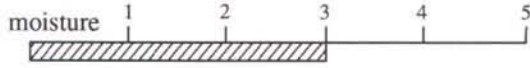


# SUGAR MAPLE

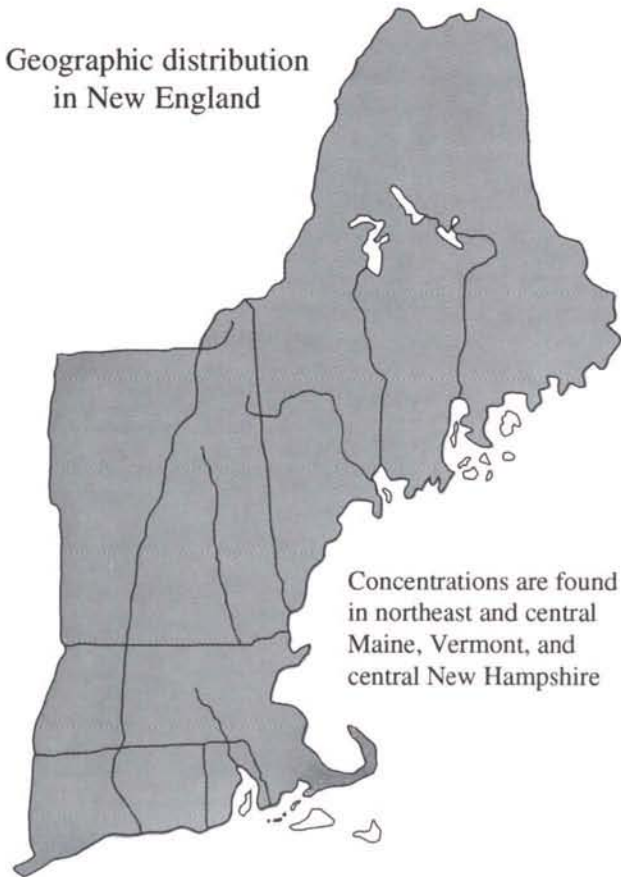
## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

SM 



## Geographic distribution in New England



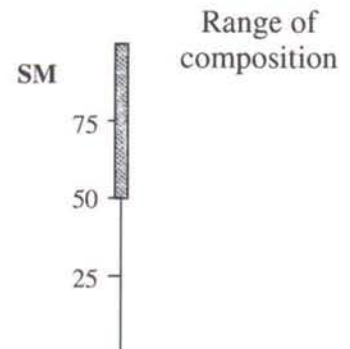
Concentrations are found in northeast and central Maine, Vermont, and central New Hampshire

**Common situation:** Occurs over a wide range of soil and site conditions. Best development on deeper silt-loam soils with good drainage and moderate acidity.

**Boundaries:** Usually indistinct from related types.

**Associate species:** Typically, white ash, basswood, beech, yellow birch, red maple, and red spruce. Occasionally, red oak, hophornbeam, American elm, balsam fir, black ash, black cherry, white birch, black birch, hemlock, white pine, and white spruce.

**Comparisons:** To avoid possible confusion with a Red Maple stand, the crowns of Sugar Maple can be distinguished by their much more rounded crown shape, compared to the upright tufts, almost needlelike in appearance, of Red Maple crowns. A young stand of the Sugar Maple type can be nearly as dark as Red Oak, but the canopy of Sugar Maple is usually more uneven, and the maple crowns are typically smaller, slightly less well-defined, less orange, and less intensely colored.

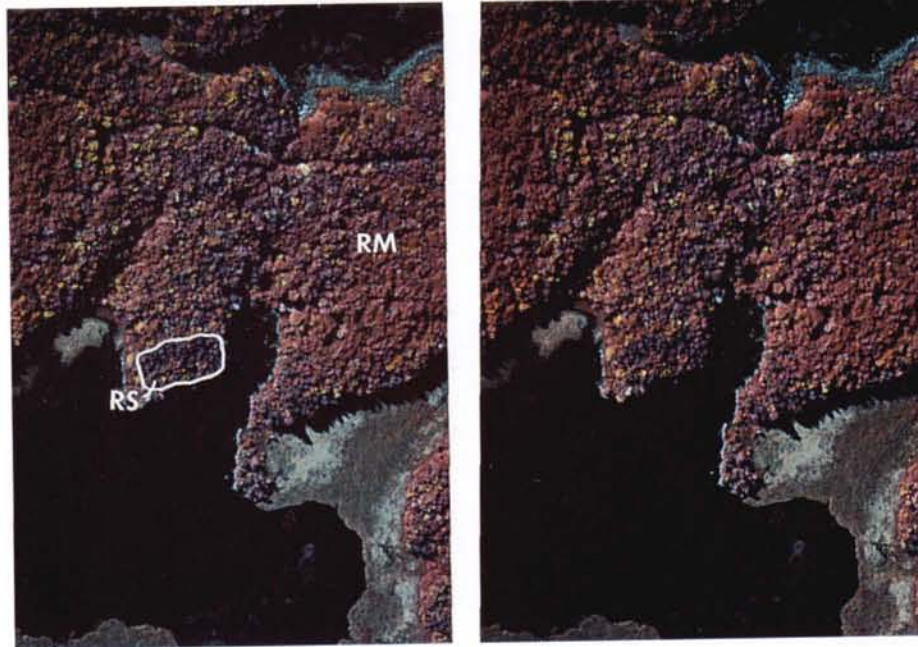




# Red Maple

(*Acer rubrum*)

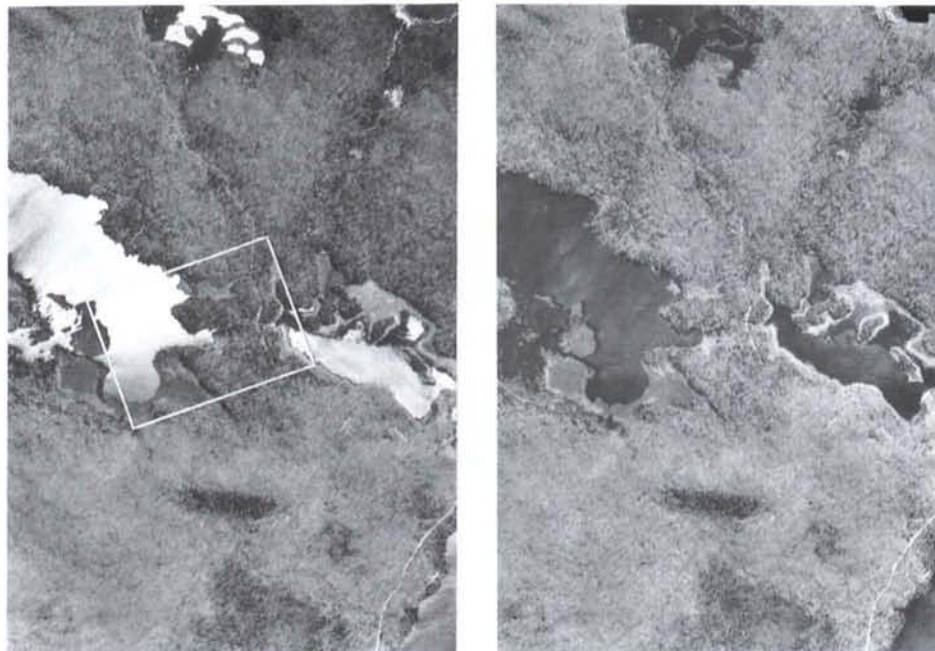
**Composition:** Red maple constitutes a majority of the stocking.



Pillsbury State Park, NH; 8 September 1986; RM 55%  
1:6000

**Identifying features:** Red Maple has moderately large crowns of upright tufts or needles at large scales, forming a finely textured canopy. Red maple occurs with almost every other species and type. The canopy is typically closed, but of uneven crown height, creating a generally lumpy texture.

1:20000  
17 May 1975



# RED MAPLE

## Ecological relations

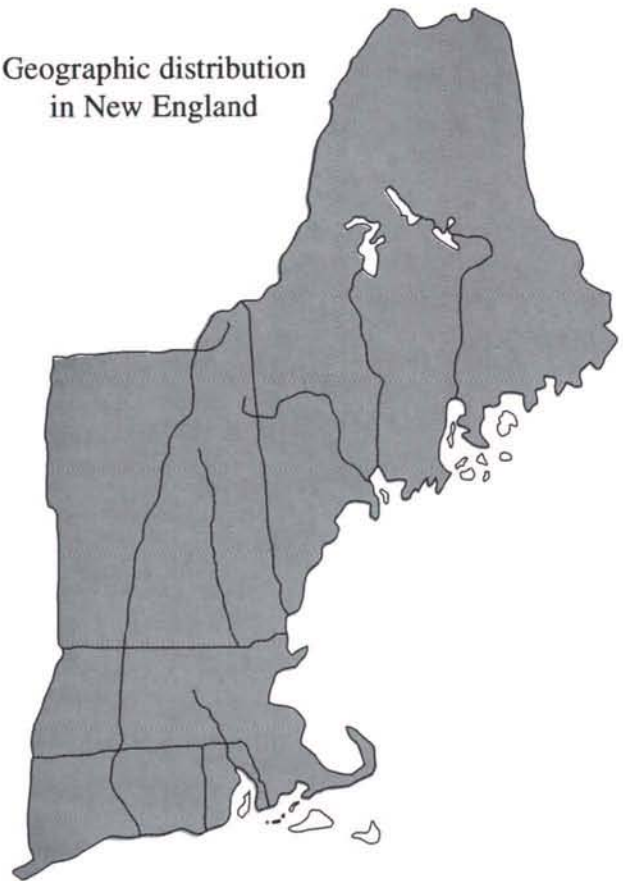
Relative values characterizing the intensity of each factor at which a species prevails (1 - low, 5 = high)

RM 



\* Found under a wide range of conditions. The moderate rating is a result of averaging.

## Geographic distribution in New England

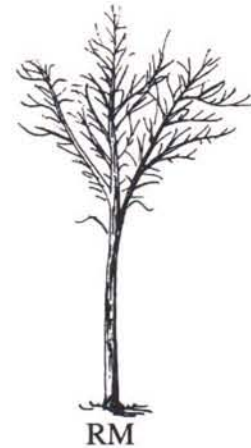
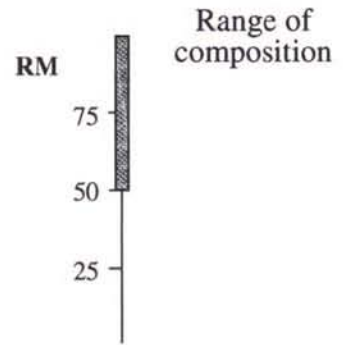


**Common situation:** Occurs on a wide variety of sites. Common on moist soils and swamp borders, cut stands where red maple was left as an undesirable, and on old Black Ash--American Elm--Red Maple sites altered by Dutch elm disease.

**Boundaries:** Indefinite.

**Associate species:** From north to south, red spruce, white pine, sugar maple, beech, yellow birch, hemlock, northern white-cedar, white birch, aspen, black ash, pin cherry, black cherry, red oak, and American elm.

**Comparisons:** Both red oak and sugar maple crowns are rounded billows instead of upright tufts. In CIR, red maple is a deeper red than sugar maple, but still less intense and orange than red oak. See Figure T for a color comparison of Red Maple and Red Oak types.

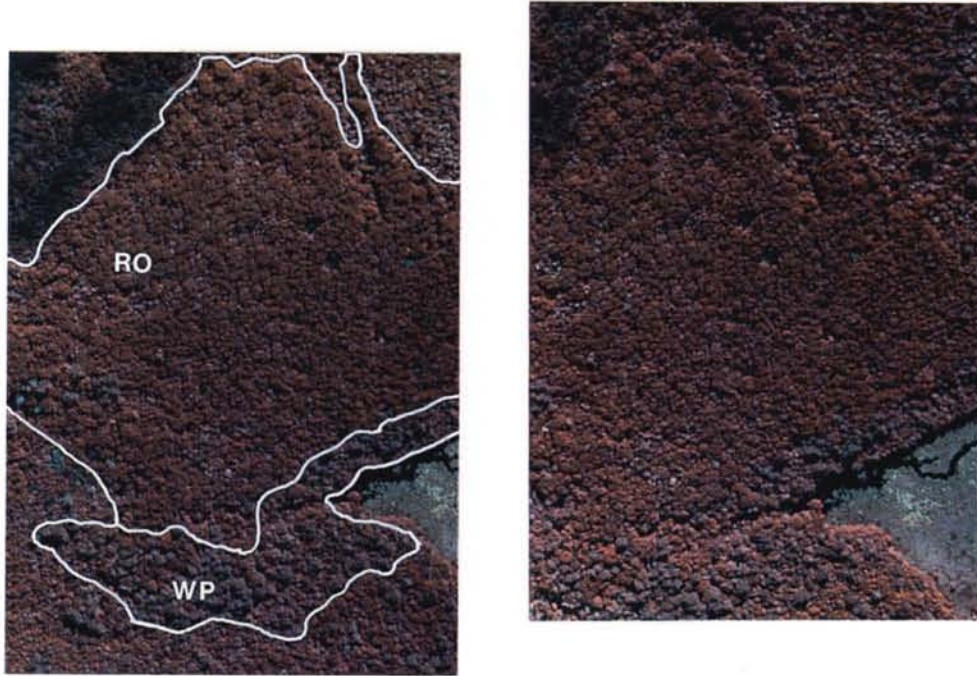




# Northern Red Oak

(*Quercus rubra*)

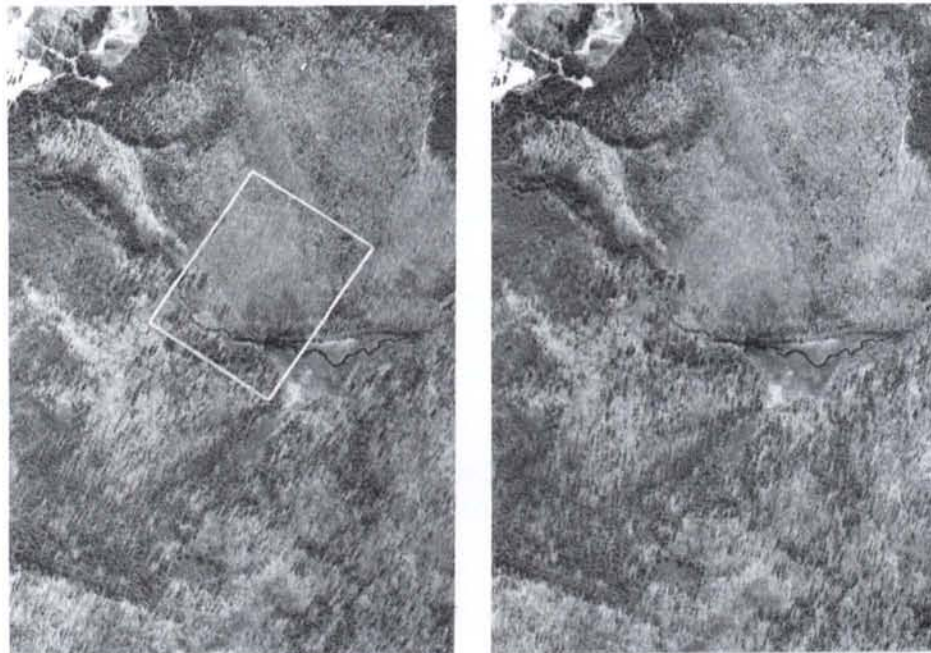
**Composition:** Northern red oak constitutes a majority of the stocking; in limited areas it may occur in pure stands.



Bear Brook State Park, NH; 21 August 1986; RO 80%  
1:6000

**Identifying features:** Northern Red Oak crowns are large, rounded, highly textured and very well defined. The coarse billows in the crowns create a "popcornball" texture. The canopy is usually fairly continuous and even. In CIR, Red Oak has the most intense red-orange of the hardwood shades. Colors in this example are shifted into the blue; Red Oak is usually more red-orange than shown here.

1:20000  
2 May 1974



# NORTHERN RED OAK

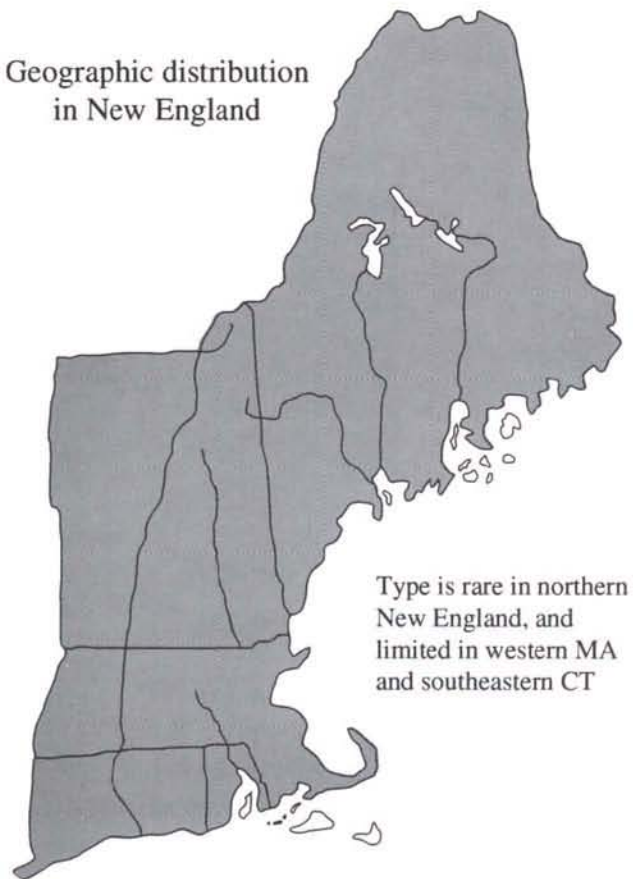
## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

RO 



## Geographic distribution in New England



Type is rare in northern New England, and limited in western MA and southeastern CT

**Common situation:** Coves, north and east slopes, and benches in the south. More frequently on south and west slopes from central New Hampshire north. The species red oak is common; the type occurs infrequently.

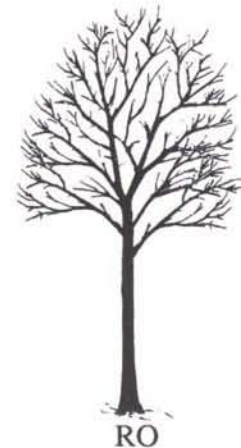
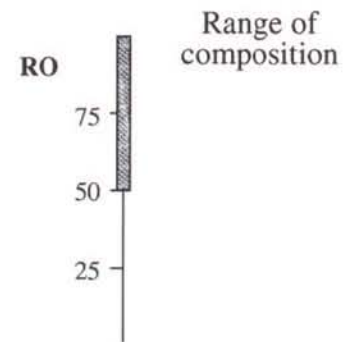
**Boundaries:** Except where site changes abruptly, type merges with adjacent types.

**Associate species:** On moist sites, yellow-poplar, black cherry, sugar maple, white ash, white oak, and beech. On dry sites, oaks, hickories, and red maple.

**Comparisons:** For a more typical color representation of Red Oak in CIR, refer to Figure U or page PP.

For a color comparison of Red Oak with Red Maple, refer to Figure T. At the smaller scales, Red Oak may be mistaken for one of the Sugar Maple types (SM, SM/B, SM/B/YB). Red Oak has a more even canopy and better defined crowns.

Red Oak can be distinguished from WO/BO/RO by its more intense red-orange color and typically larger, denser crowns.





# Beech--Sugar Maple

(*Fagus grandifolia*, *Acer saccharum*)

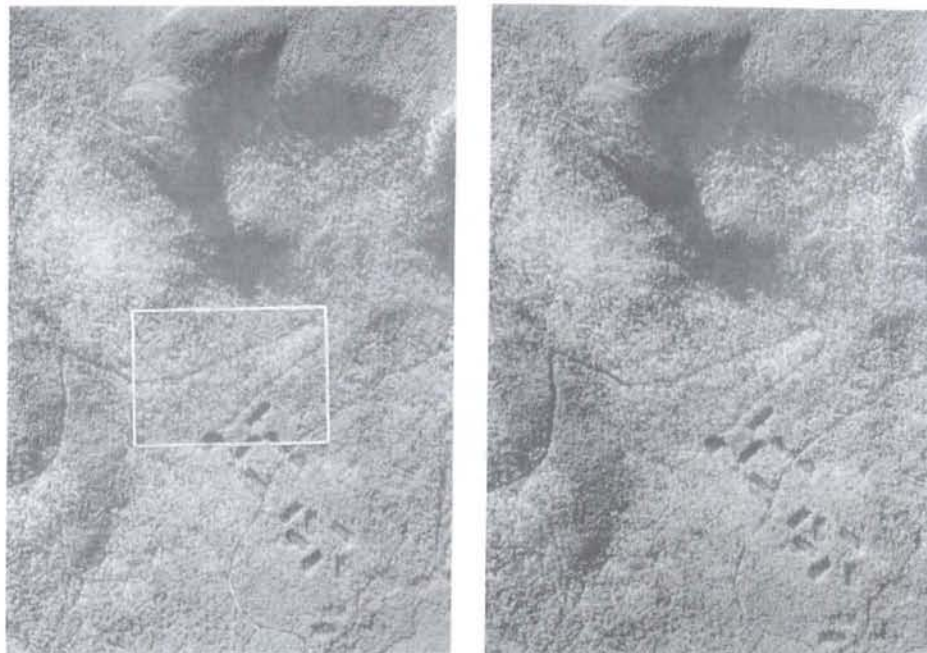
**Composition:** American beech and sugar maple together generally constitute a majority of the stocking, but the composition may vary from stands composed entirely of beech and maple to a substantial mixture of associates.



Bartlett, NH; 4 August 1986; a=B 60% SM 40%, b=B 40% SM 40%  
1:6000 c=B 30% SM 60%

**Identifying features:** Beech--Sugar Maple contains the pink, smoky/hazy crowns of beech interspersed with the lighter, better defined billows of sugar maple. The type is almost always accompanied by a substantial intermixture of large-crowned associate species, which adds to the variety in color and creates a mottled image in CIR.

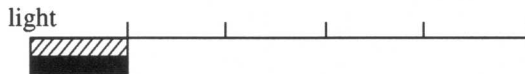
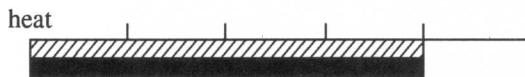
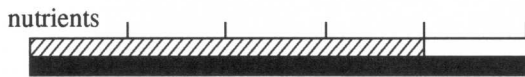
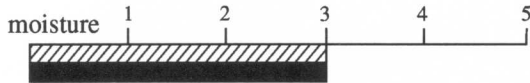
1:20000  
12 September 1970



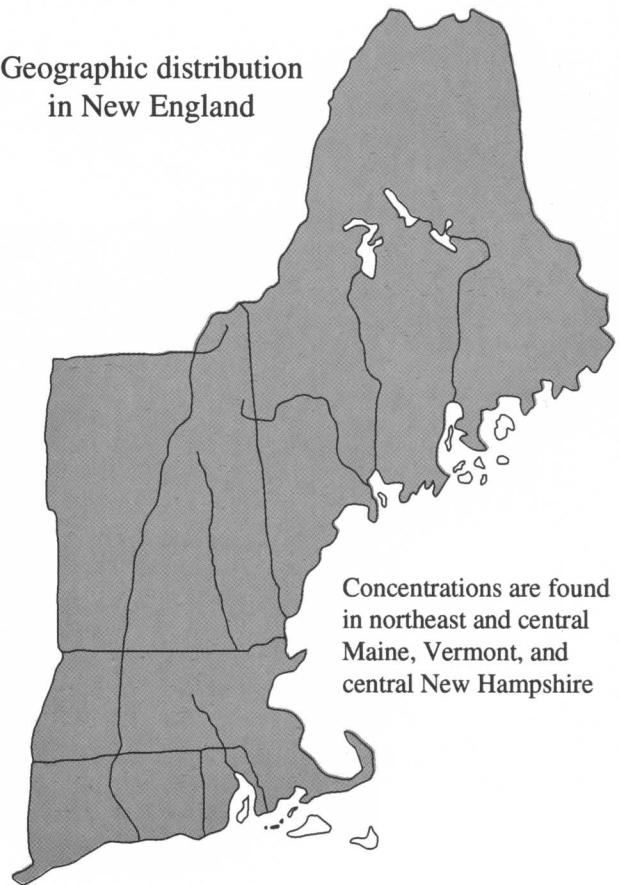
# BEECH--SUGAR MAPLE

## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)



## Geographic distribution in New England



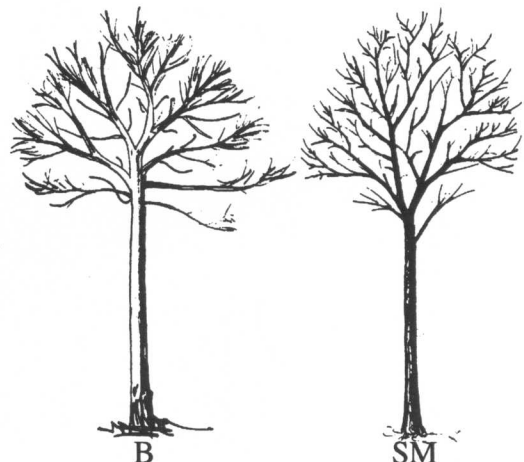
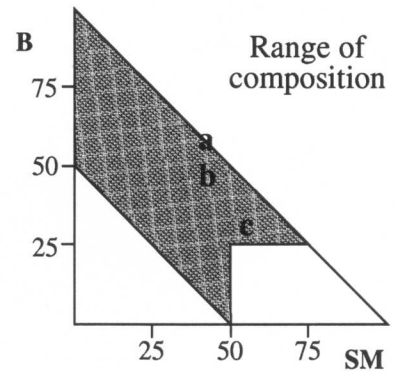
Concentrations are found in northeast and central Maine, Vermont, and central New Hampshire

**Common situation:** Generally on moist, well-drained soils and northern aspects. Where disturbed repeatedly by cutting or fire, beech has a tendency to dominate.

**Boundaries:** Usually indistinct from related types.

**Associate species:** At lower elevations, yellow birch, white birch, hemlock, and white ash are common. At higher elevations, red spruce, and balsam fir.

**Comparisons:** Beech--Sugar Maple is often very similar to SM/B/YB. The primary distinguishing element is the absence of a significant portion of yellow birch, with its butterscotch shade.





# Sugar Maple--Beech--Yellow Birch

(*Acer saccharum*, *Fagus grandifolia*, *Betula alleghaniensis*)

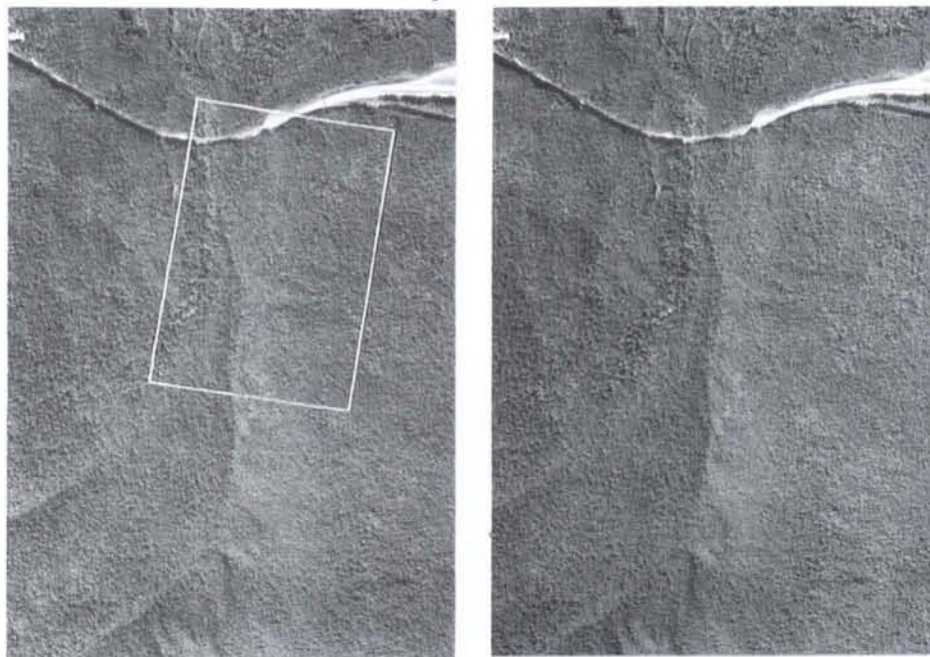
**Composition:** Sugar maple, American beech, and yellow birch are the major species and together constitute most of the stocking.



Franconia, NH; 4 August 1986; SM 20%, B 5%, YB 35%  
1:8500

**Identifying features:** Sugar Maple--Beech--Yellow Birch has a gently mottled color and texture. The large crowns form a solid, but rather uneven canopy. Individual crowns can be identified easily. A predominance of any one of the three species will shift the overall appearance of the type in CIR--toward the smoky/hazy beech crowns; the lighter and better defined sugar maple crowns; or the darker, almost butterscotch, more lacy yellow birch.

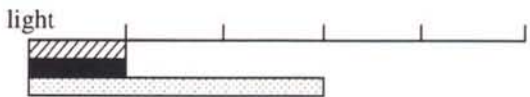
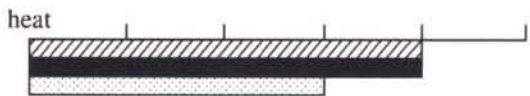
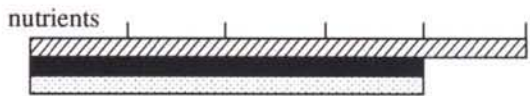
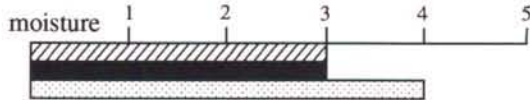
1:20000  
12 September 1970



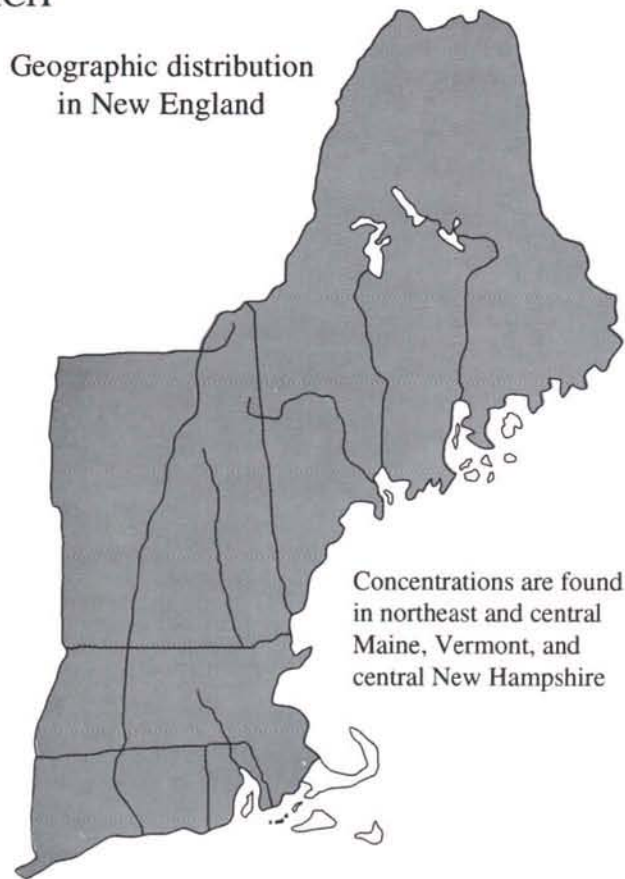
# SUGAR MAPLE--BEECH--YELLOW BIRCH

## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)



## Geographic distribution in New England



Concentrations are found in northeast and central Maine, Vermont, and central New Hampshire

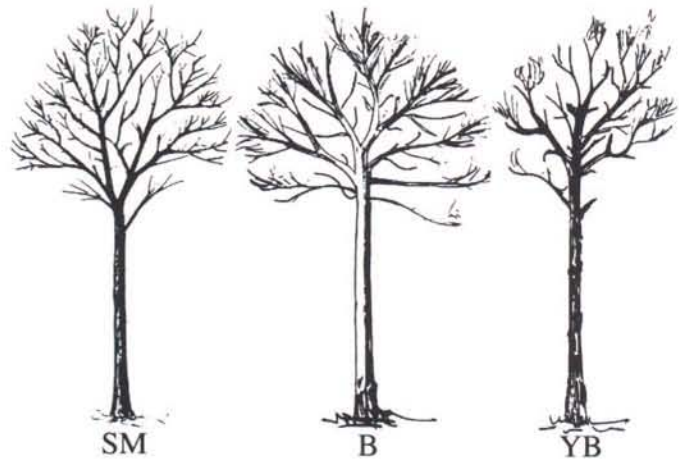
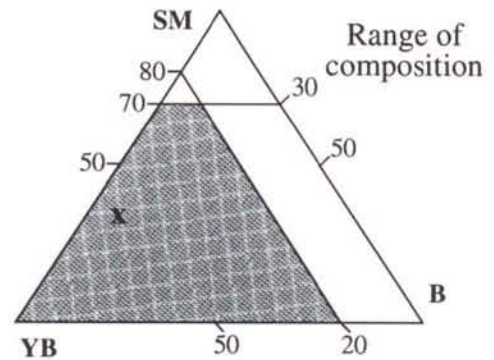
**Common situation:** Moist, well-drained, fertile, loamy soils.

**Boundaries:** Usually indistinct from related types.

**Associate species:** Red maple, hemlock, white ash, black cherry, basswood, black birch, red oak, white pine, balsam fir, American elm, red spruce, white spruce, and hophornbeam.

**Comparisons:** In CIR, the butterscotch-colored yellow birch is the most distinguishable of the three species in this type, and its presence can be used to differentiate between this type and SM/B.

In comparison with Red Oak (a possible confusion at smaller scales), SM/B/YB has a more uneven canopy and crowns that are often equally large, but softer in texture.

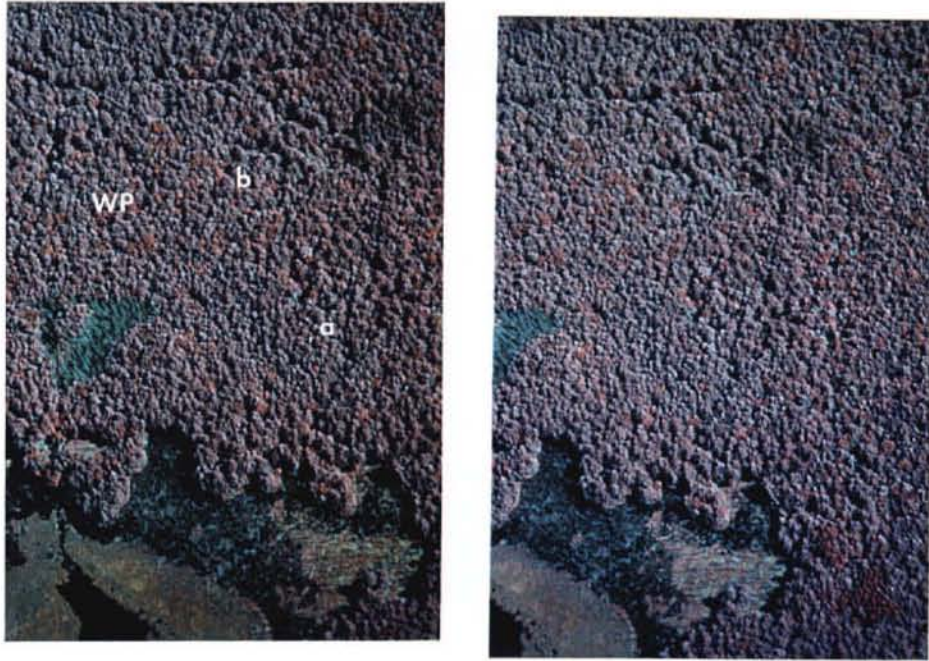




# Eastern White Pine

(*Pinus strobus*)

**Composition:** Eastern white pine constitutes a majority of the stocking and characteristically occurs in pure stands.

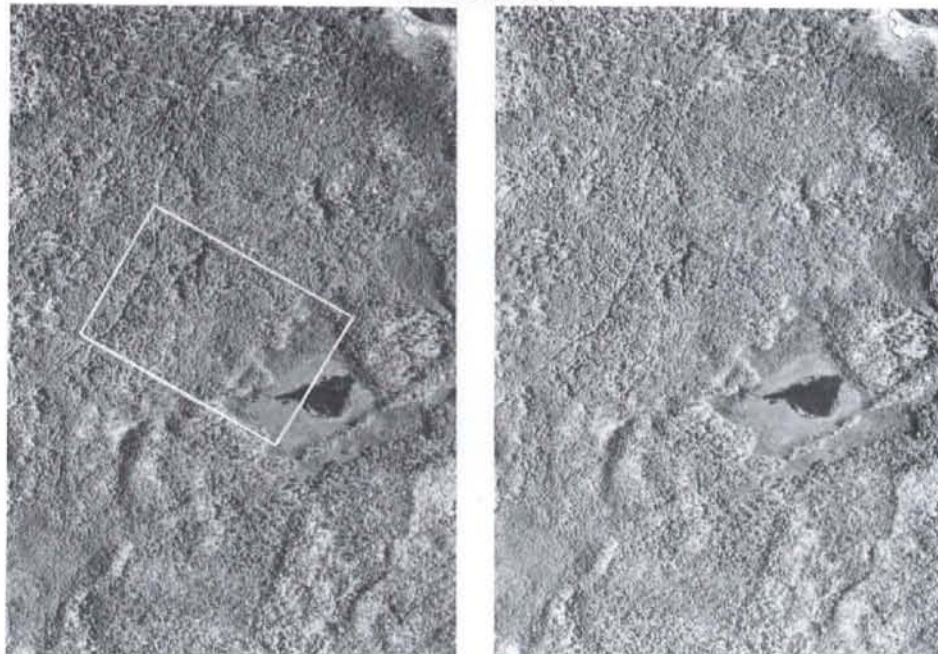


Bear Brook State Park, NH; 21 August 1986; a=WP 100%, b=WP 75%  
1:6000

**Identifying features:** Eastern White Pine crowns are large and visibly star-shaped in vertical view, and often the most prominent in a stand. Crown color and texture is soft, typically creating a soft stand texture. Color is the lightest of all the conifers (except hemlock in some cases). The type can range from pure, dense stands to large individual stems widely spaced among other species. Colors in this example are shifted toward blue. Often, the white pine is a much lighter grey in CIR than shown here (refer to Figures N or Q).

1:20000

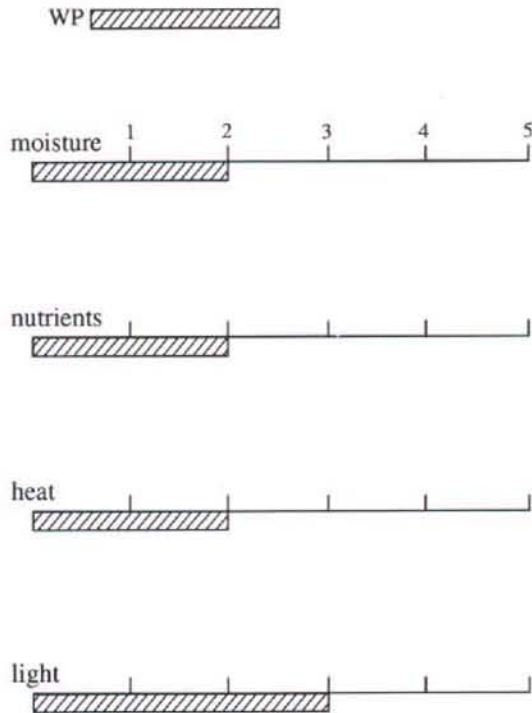
28 October 1974



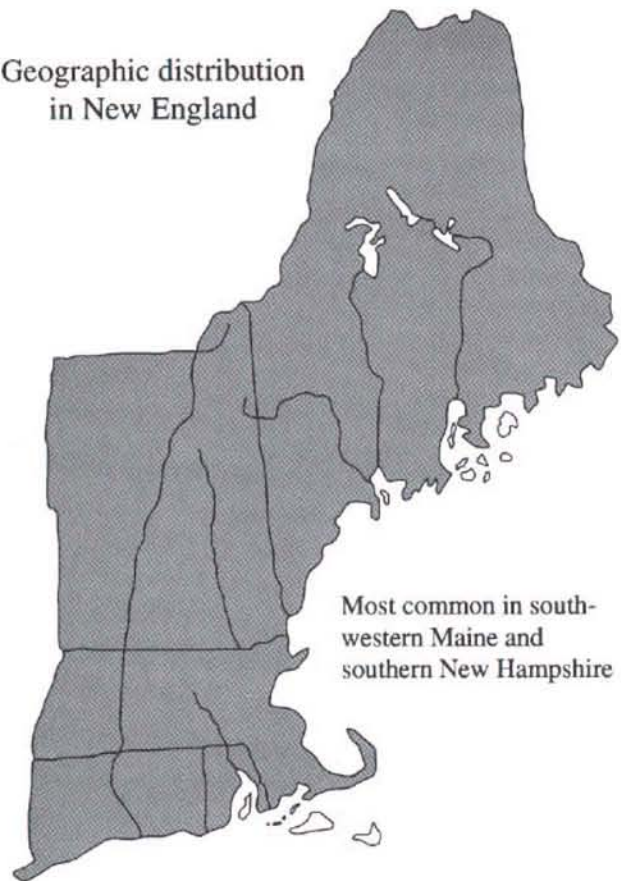
# EASTERN WHITE PINE

## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)



## Geographic distribution in New England

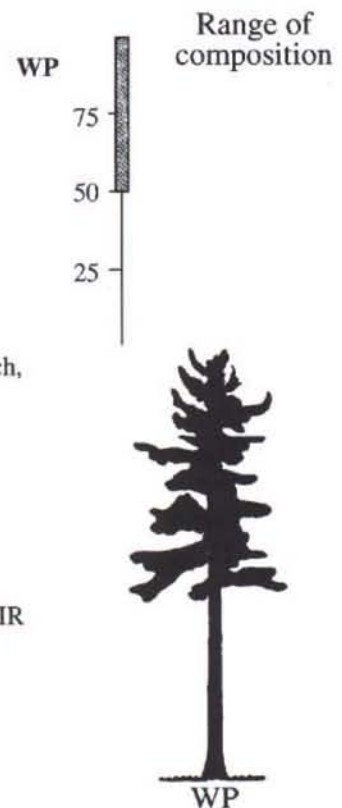


**Common situation:** Grows on many sites, but is usually associated with lighter textured soils. Often represents first growth after old fields.

**Boundaries:** Usually merges gradually with adjacent types. Occasionally, if the type is a remnant from an old field, the old square boundaries of the field may still be evident.

**Associate species:** On lighter soils, red pine, pitch pine, grey birch, aspen, red maple, pin cherry, and white oak. On heavier soils, white birch, black birch, yellow birch, black cherry, white ash, red oak, sugar maple, basswood, hemlock, red spruce, balsam fir, white spruce, and northern white-cedar.

**Comparisons:** Where white pine has not developed its distinctive star-shape, as can occur in dense plantations, it may be distinguished from the other pines by color. The White Pine type is lighter than Red Pine and much less green in CIR than Pitch Pine. For a good color comparison between the pines, see Figure N.

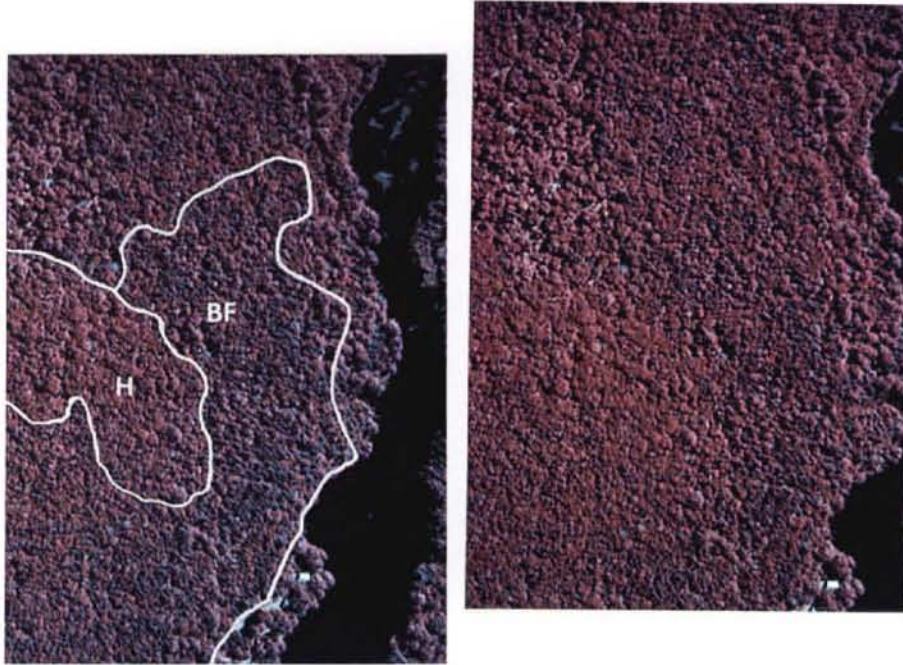




# Eastern Hemlock

(*Tsuga canadensis*)

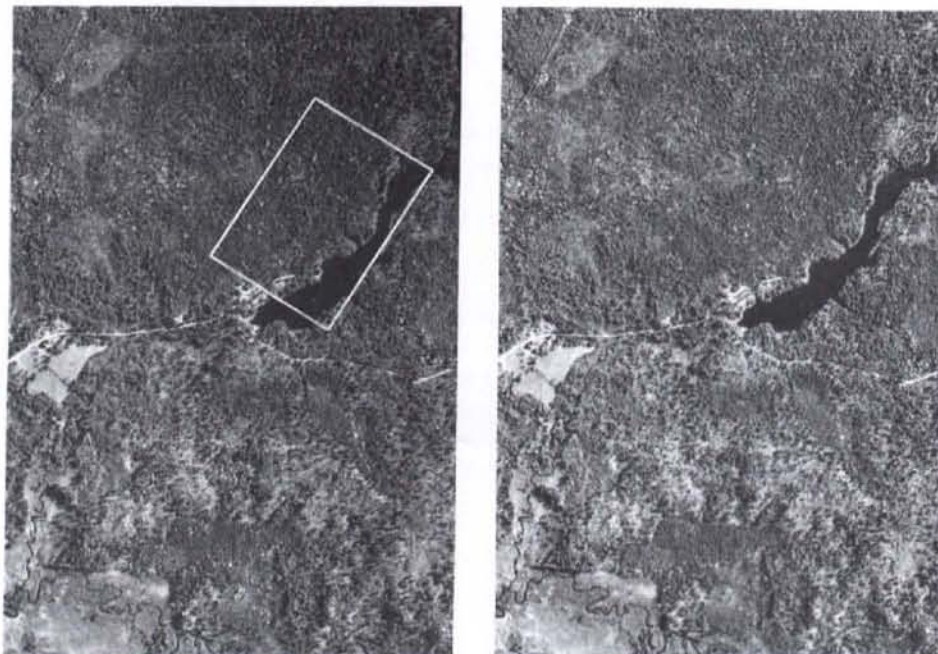
**Composition:** Eastern hemlock is pure or constitutes a majority of the stocking.



Pine River State Forest, NH; 31 August 1986; H 80%  
1:6000

**Identifying features:** Eastern Hemlock has a very indistinct, light, soft texture. Its rounded crowns usually merge indistinguishably unless accompanied by changes in the canopy height. The shiny foliage and high reflectance create a very light tone, often a very light pink, almost a hardwood shade, in vertical view. Dominant hemlock individuals, especially if viewed obliquely, may show a distinct conical crown. Internal crown shadowing can also give these hemlock a slightly darker and more green-grey color in CIR; such a crown is distinguishable from a spruce by its fuzzy, diffuse appearance, and from a pine by its conical shape.

1:20000  
28 October 1970

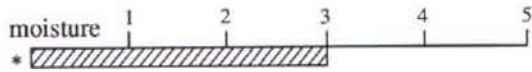


# EASTERN HEMLOCK

## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

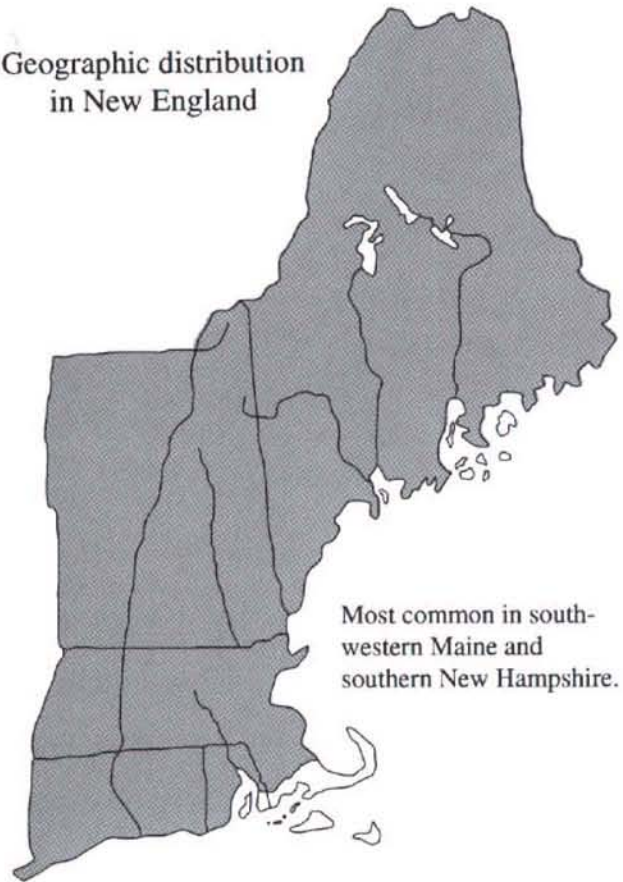
H 



\* Found under a wide range of conditions. The moderate rating is a result of averaging.



## Geographic distribution in New England



Most common in southwestern Maine and southern New Hampshire.

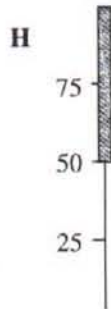
**Common situation:** Moist to very moist soils but with good drainage. Common on outwash and shallow bedrock at low elevations. Most commonly a species that occupies the lower strata of mixed forests.

**Boundaries:** Merges with, or more often becomes the understory of, adjacent types.

**Associate species:** Commonly, white pine, balsam fir, red spruce, sugar maple, beech, and yellow birch. Often, red oak, white oak, yellow-poplar, basswood, black cherry, red maple, and white ash.

**Comparisons:** The interpreter may dismiss Hemlock as a hardwood type, because of its light pink color in many CIR exposures. Hemlock, however, has a much fuzzier, more indistinct texture than any of the hardwood types (see Fig. P). A pure beech stand also has a fuzzy, hazy appearance. However, beech usually has a more uniform canopy and more rounded crowns, while Hemlock usually has some emergent, conical crowns, and a less even canopy.

## Range of composition

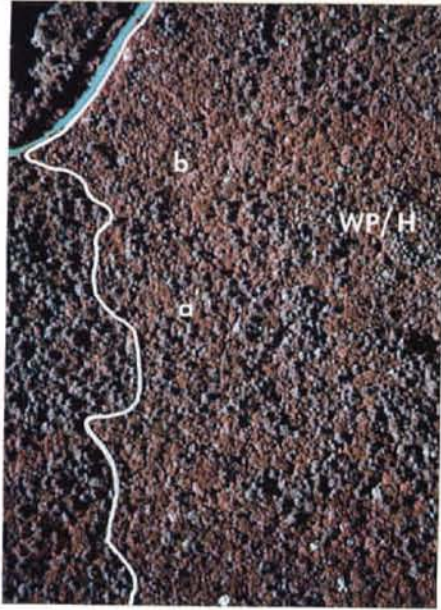




# White Pine--Hemlock

(*Pinus strobus*, *Tsuga canadensis*)

**Composition:** Eastern white pine and eastern hemlock, in combination, constitute a majority of the stocking, but neither species alone represents more than half of the total.



Pawtuckaway State Park, NH; 21 August 1986; a=WP 50%, H 25% b=WP 25%, H 50%  
1:6000

**Identifying features:** White Pine--Hemlock exhibits prominent, star-shaped white pine crowns in a dense, unbroken sea of rounded, smoothly fuzzy hemlock crowns. The hemlock unite to form a complete canopy underneath the pine, and individual hemlock crowns are indistinguishable. Both species produce a light tone, the hemlock exhibiting more pink, and the white pine more grey in CIR.

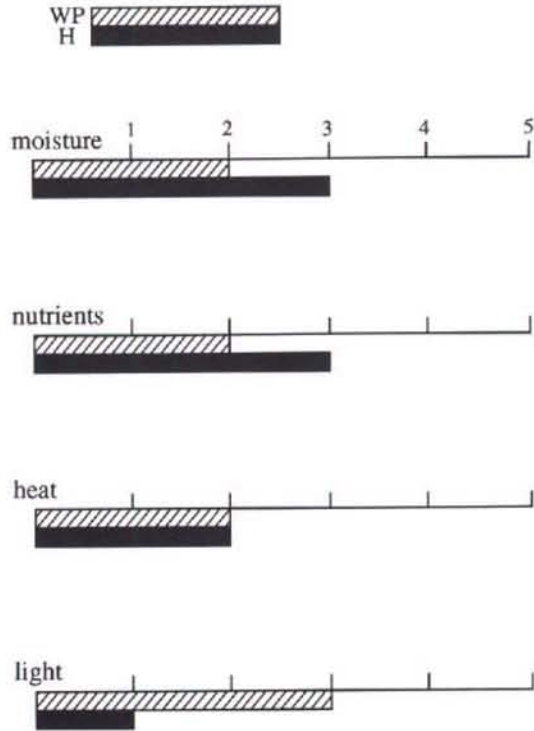
1:20000  
24 October 1974



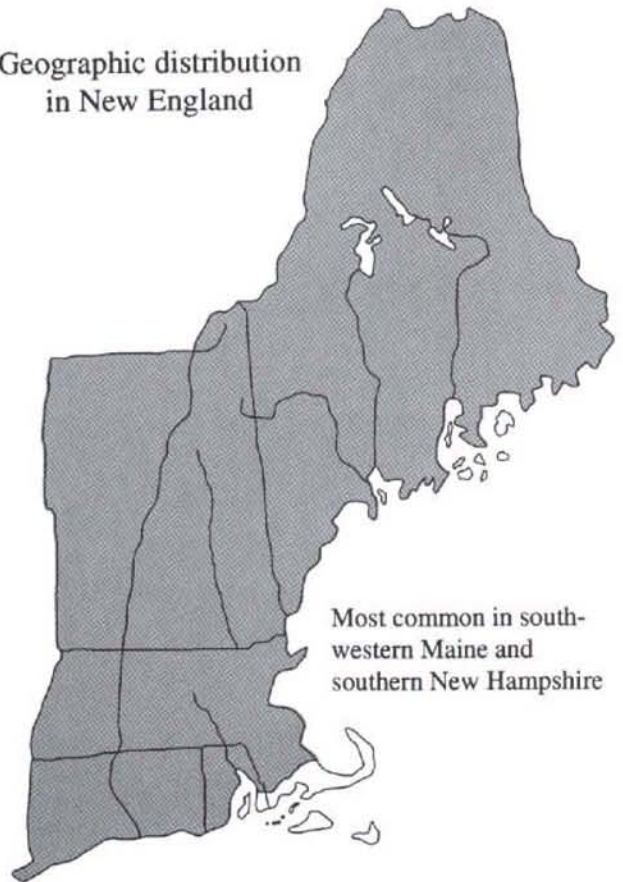
# WHITE PINE--HEMLOCK

## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)



## Geographic distribution in New England



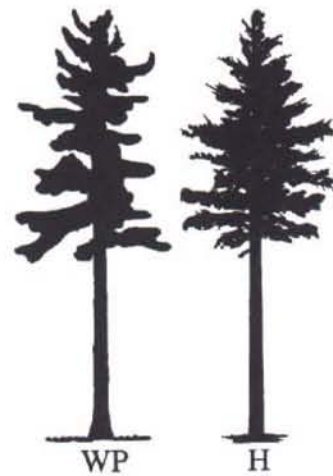
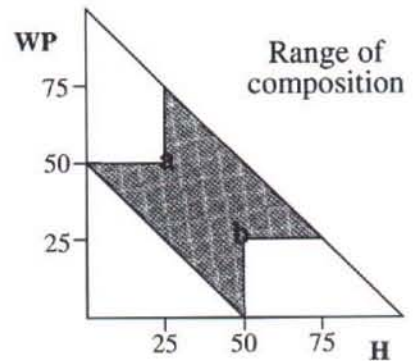
Most common in southwestern Maine and southern New Hampshire

**Common situation:** Found on moderately well-drained sites on mid slopes of all exposures, and on moister mesic sites.

**Boundaries:** Merges gradually with related types.

**Associate species:** Rarely exists without associates. Commonly, red maple, white birch, red oak, beech, sugar maple, yellow birch, grey birch, red spruce, white ash, and balsam fir.

**Comparisons:** White Pine--Hemlock can be easily confused with the WP/RM variation of the WP/RO/RM type. In general, hemlock is slightly lighter and more pink (less orange) than red maple. See Figure Q for an example of the WP/RM variation.

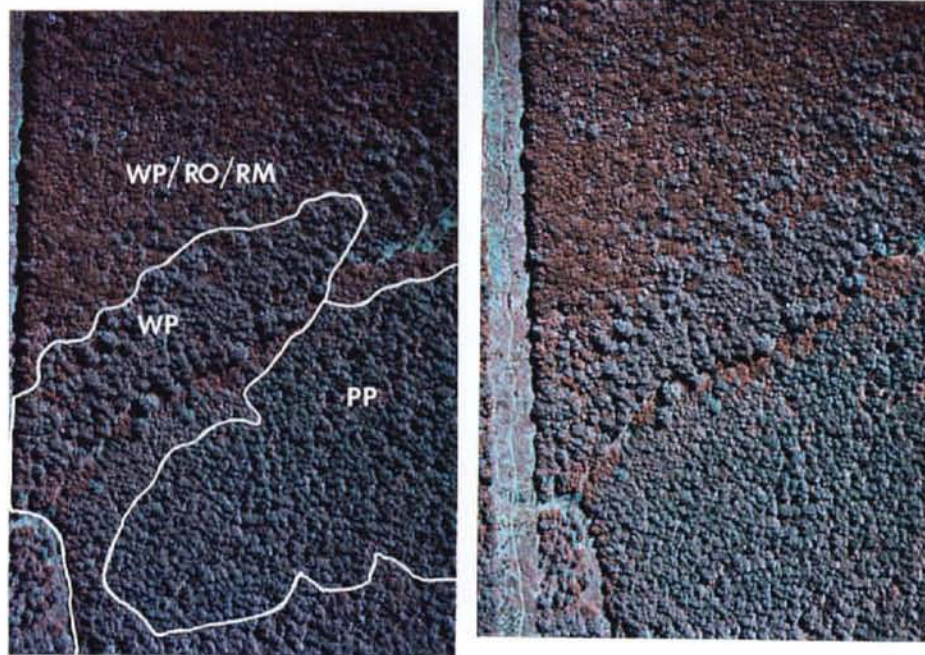




# Pitch Pine

(*Pinus rigida*)

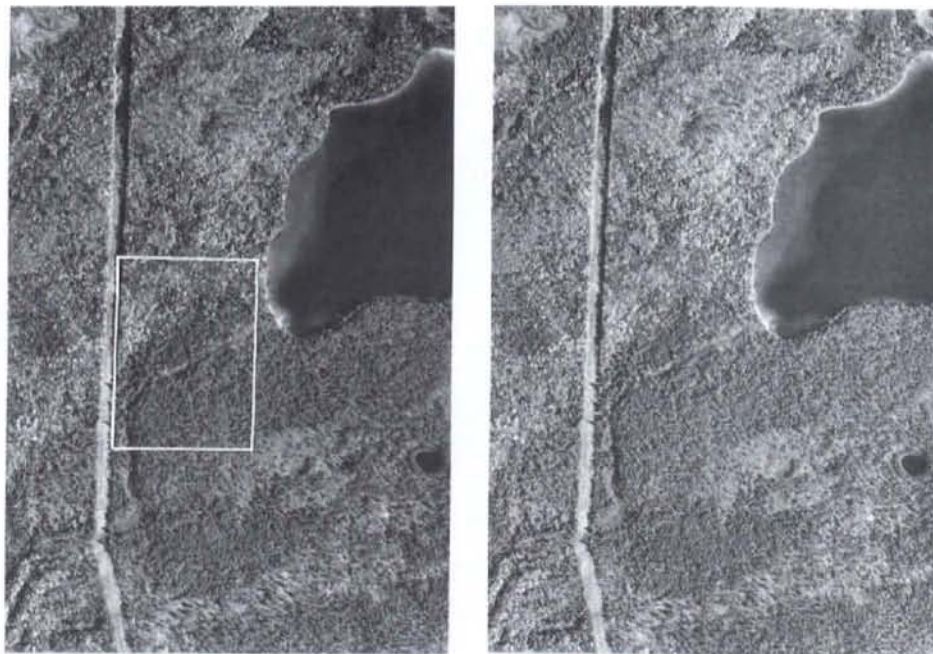
**Composition:** Pitch pine is pure or constitutes a majority of the stocking.



White Lake State Park, NH; 4 August 1986; PP 70%  
1:6000

**Identifying features:** Pitch Pine commonly occurs in almost pure stands. The species has a small, sparse crown, creating an open canopy that reveals some of the understory even if densely stocked. The Pitch Pine type is dark in color like Red Pine, but is green in CIR, whereas Red Pine is rust. It is usually limited to areas of the lightest soils.

1:20000  
28 October 1970

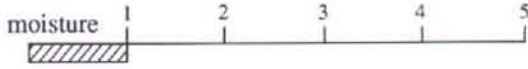


# PITCH PINE

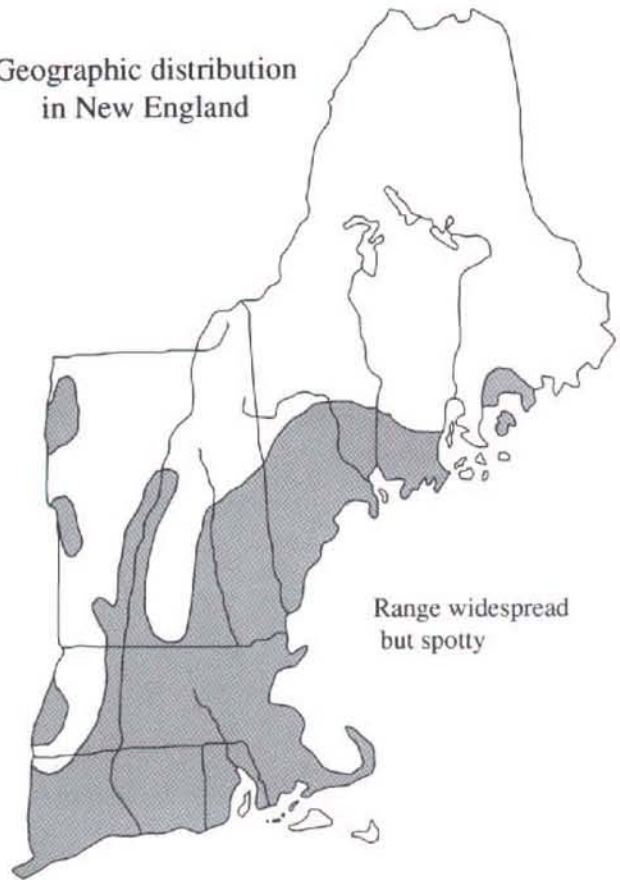
## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

PP 



## Geographic distribution in New England



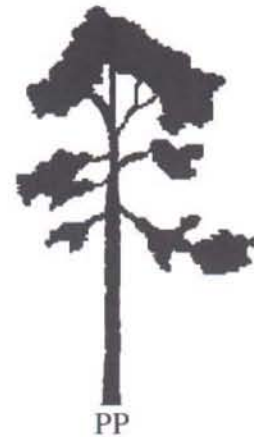
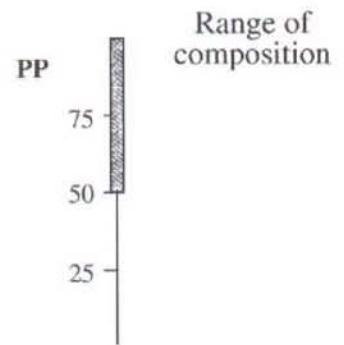
Range widespread but spotty

**Common situation:** Largely confined to sandy or shallow soils or to infertile ridges and slopes.

**Boundaries:** Merges with adjacent types.

**Associate species:** Chiefly oaks, usually chestnut oak, black oak, white oak, post oak, or bear oak. Occasionally white pine, gray birch.

**Comparisons:** Pitch Pine is much more green in CIR than either Red Pine or White Pine. For a good color comparison between the pines, see Figure N.

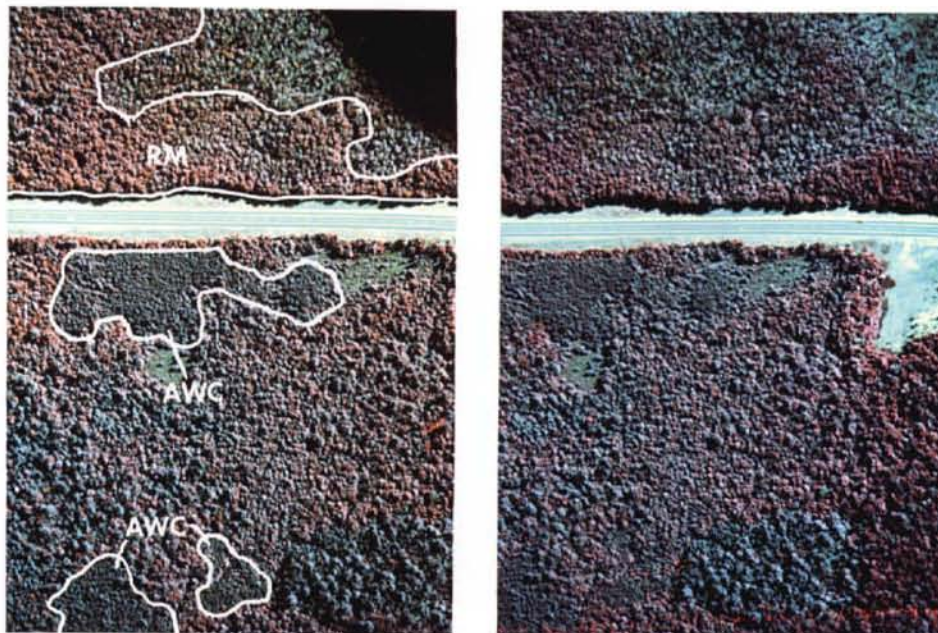




# Atlantic White-Cedar

*(Chamaecyparis thyoides)*

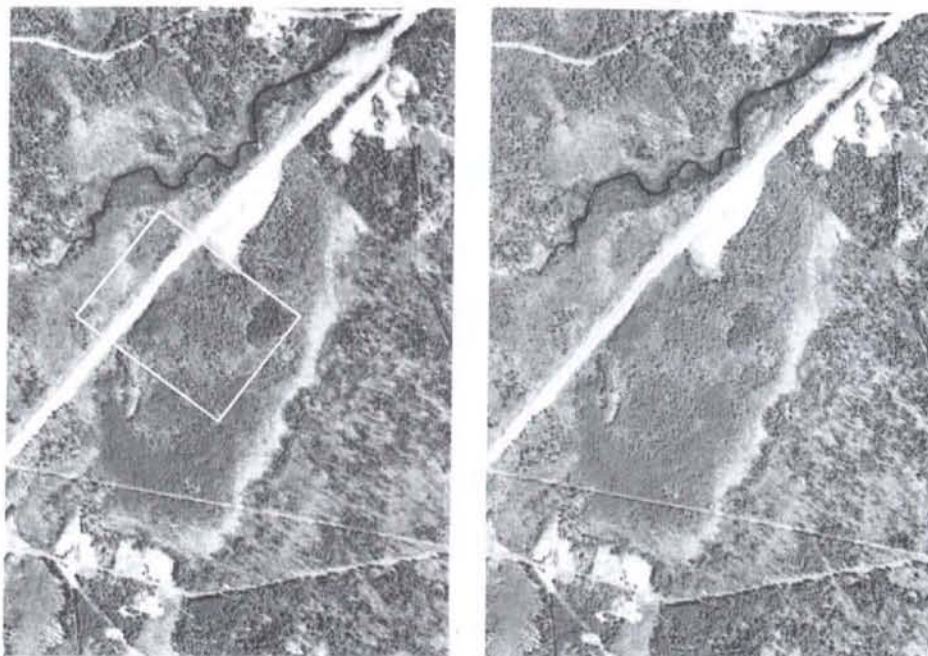
**Composition:** Atlantic white-cedar characteristically occurs in pure, dense stands.



Alton, NH; 4 August 1986; AWC 100%  
1:6000

**Identifying features:** Atlantic White-Cedar is typically found in pure stands. It is a densely packed type, occurring on very wet sites, and often with standing water. The result is a very dark and intensely colored type, similar to the spruces, but carpet-like in its even finer, more uniform texture. Atlantic White-Cedar is usually quite distinct from adjacent stands.

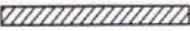
1:20000  
20 March 1974

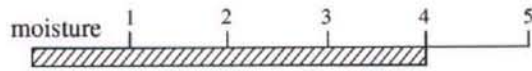


# ATLANTIC WHITE-CEDAR

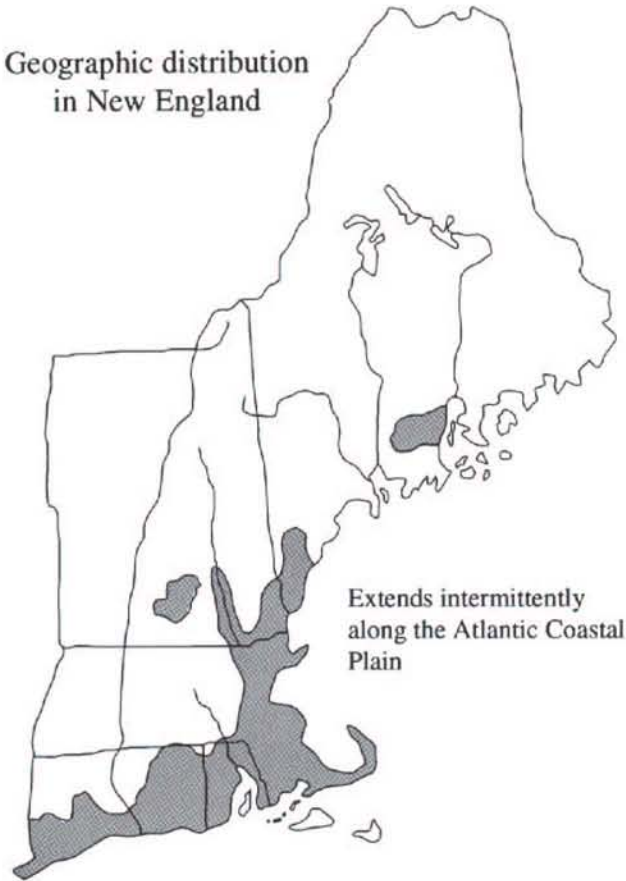
## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

AWC 



## Geographic distribution in New England

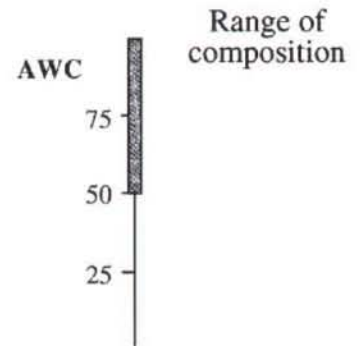


**Common situation:** Occurs on wet ground, usually in stream swamps.

**Boundaries:** Very distinct from adjacent stands.

**Associate species:** Red maple, yellow birch, white pine, and hemlock.

**Comparisons:** As Atlantic White-Cedar is typically site-specific to wet areas, it may be confused with the Black Spruce type. Atlantic White-Cedar has a much more tightly packed canopy than Black Spruce.

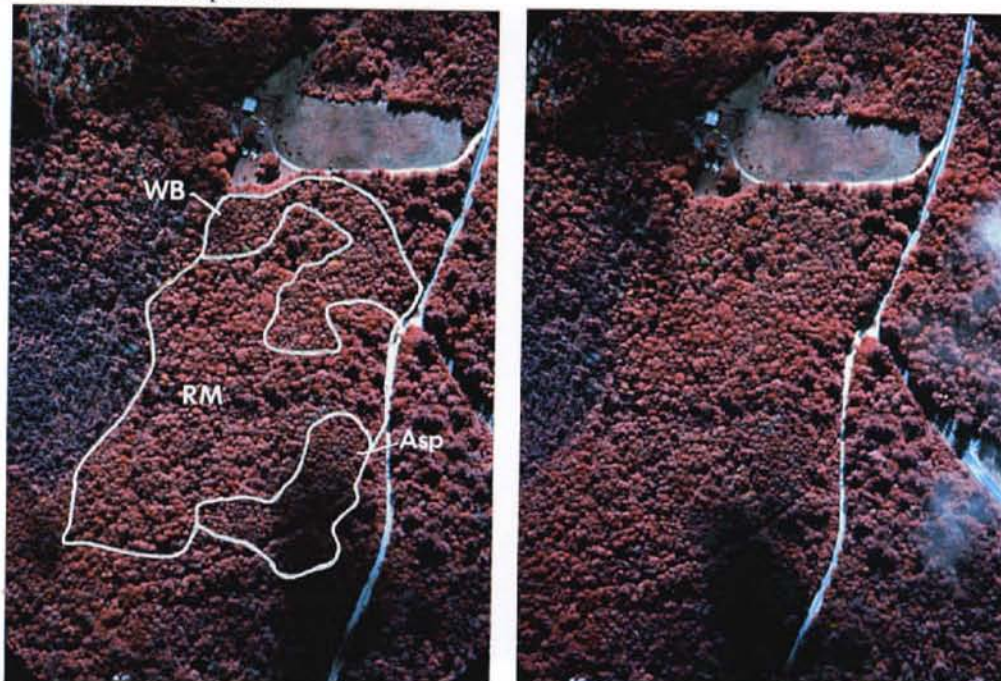




# Aspen

(*Populus tremuloides*, *Populus grandidentata*)

**Composition:** Quaking (trembling) aspen and bigtooth aspen together constitute a majority of the stocking in this widespread type. Quaking aspen is the predominant species and may occur in extensive pure stands. Bigtooth aspen may be a locally abundant component.



Forest Lake State Park, NH; 31 August 1986; Asp 55%  
1:6000

**Identifying features:** Aspen has a very small, compact hardwood crown, creating a canopy that rarely becomes completely closed. Individual crowns can be distinguished, and the very light-colored upper trunk and limbs may occasionally be visible. In CIR, the color is soft and typically a tan shade of the typical hardwood pink. Aspen is common in association with white birch and may be mistaken for that type.

1:20000  
19 October 1970

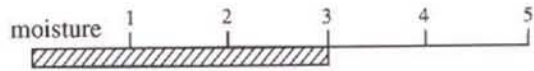


# ASPEN

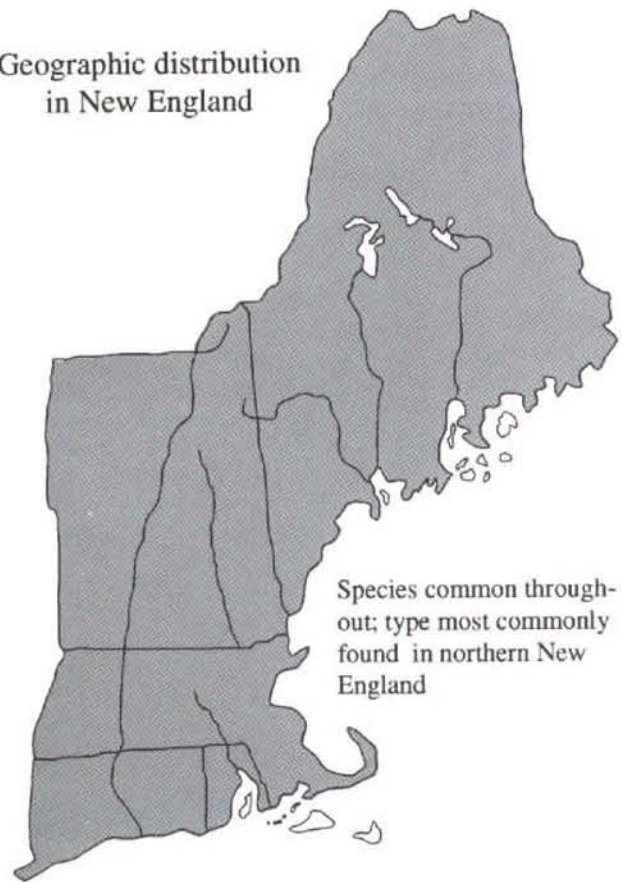
## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

Asp 



## Geographic distribution in New England

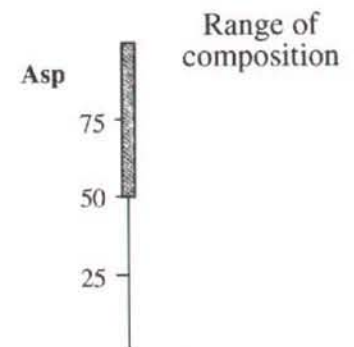


**Common situation:** Occurs chiefly as a pioneer type on burns and cleared areas, less frequently colonizing abandoned fields and pastures.

**Boundaries:** Often merges into the White Birch type.

**Associate species:** Commonly, white birch, and pin cherry. Occasionally, sugar maple, yellow birch, basswood, hophornbeam, balsam poplar, balsam fir, red spruce, white spruce, jack pine, red pine, and white pine.

**Comparisons:** In comparison with the White Birch type, the Aspen type is somewhat more tan in CIR, and crowns tend to be more compact and defined. For another example of Aspen, see page SM or Figure O.

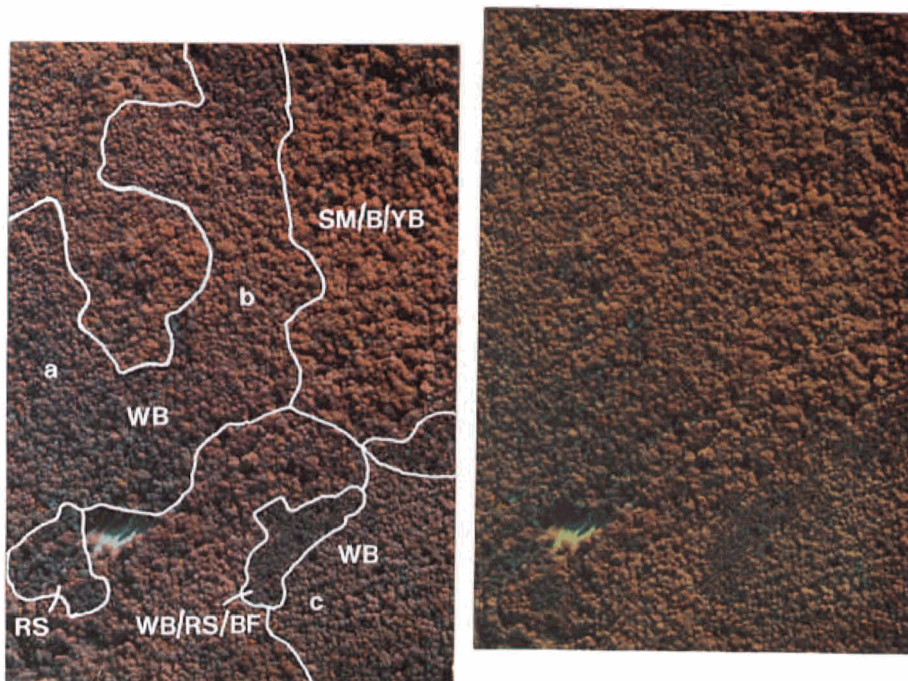




# White Birch

(*Betula papyrifera*)

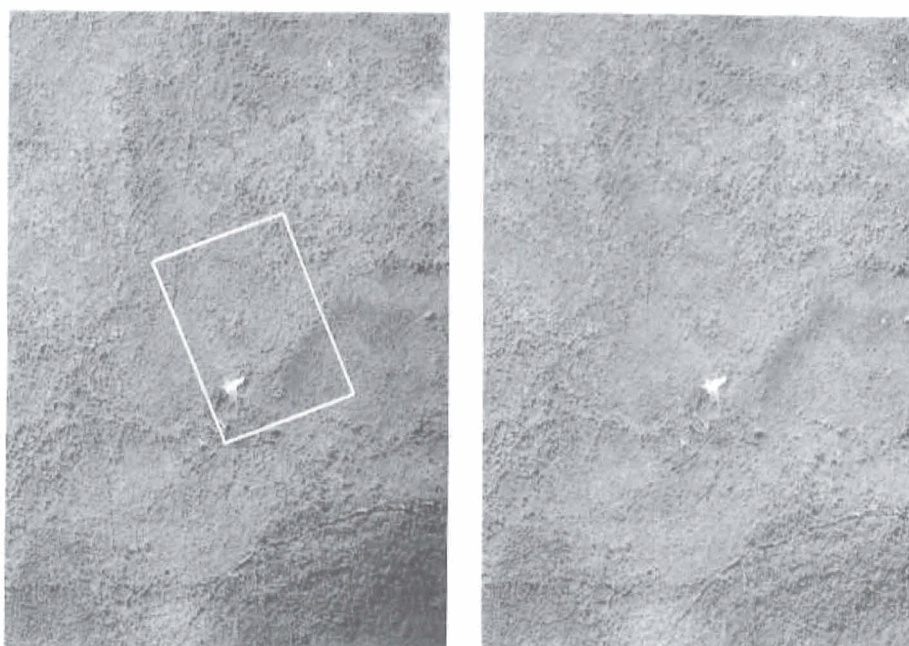
**Composition:** White birch constitutes a majority of the stocking; it may also occur in pure stands.



Cardigan State Forest, NH; 31 August 1986; a=WB 60%, b=75%, c=90%  
1:6000

**Identifying features:** White Birch is made up of very small crowns, noticeably smaller than all of its associate hardwood species except aspen. In CIR, color may be tan or orange, depending upon exposure of the crowns in the canopy. Glimpses of the white trunk and main branches are identifiers at the larger scales.

1:20000  
2 September 1970

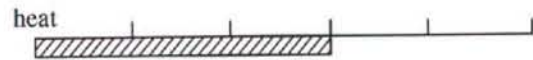
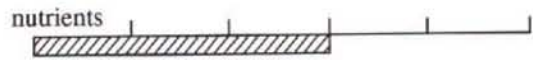
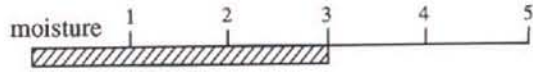


# WHITE BIRCH

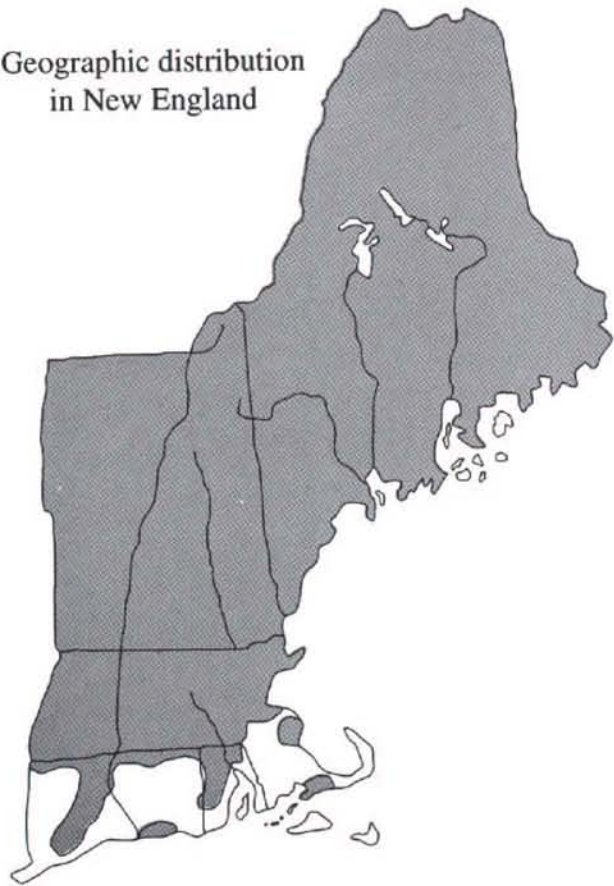
## Ecological relations

Relative values characterizing the intensity of each factor at which a species prevails (1 = low, 5 = high)

WB 



## Geographic distribution in New England

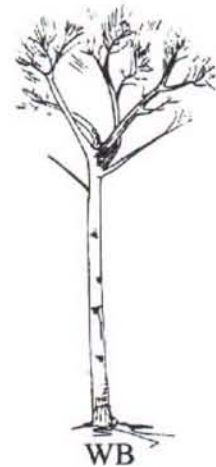
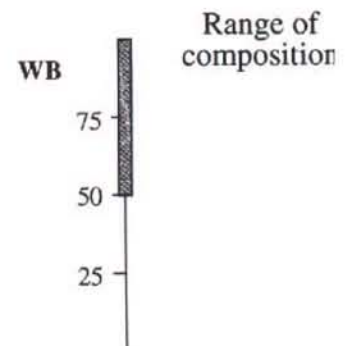


**Common situation:** Often occurs as a pioneer type, revegetating land disturbed by wildfire or clearcutting. Large stands of pure White Birch are uncommon.

**Boundaries:** Merges with adjacent types.

**Associate species:** Aspen, pin cherry, yellow birch, grey birch, sugar maple, red maple, red oak, and white pine. In the north, red spruce, black spruce, white spruce, and balsam fir.

**Comparisons:** For an example of a cove stand of the White Birch type, refer to page RS. In comparison with the Aspen type, the crowns of White Birch are less tan and less compact and defined. White Birch is often more orange in CIR than the example photo demonstrates. See Figure S for an example.





Hershey, Rachel Riemann; Befort, William A. 1995. **Aerial photo guide to New England forest cover types**. Gen. Tech. Rep. NE-195. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 70 p.

Presents color infrared photos in stereo pairs for the identification of New England forest cover types. Depicts range maps, ecological relations, and range of composition for each forest cover type described. The guide is designed to assist the needs of interpreters of medium to large-scale color infrared aerial photography.

**Keywords:** photo interpretation, forest cover type identification, aerial photography, color infrared, forest cover types.

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