

One x One Degree
Climate Change Atlas Tree Species
 Current and Potential Future Habitat, Capability, and Migration

sq. km sq. mi FIA Plots
 Area of Region 8,132.3 3,139.9 331

Species Information

The columns below provide brief summaries of the species associated with the region and described in the table on the next pages. Definitions are provided in the Excel file for this region.

| Genus | Species | Abundance | | Model | | Potential Change in Habitat Suitability | | Capability to Cope or Persist | | Migration Potential | | | | | |
|---------|-----------|-----------|-----------|-------------|--------------|-----------------------------------------|----------------|-------------------------------|----------------|---------------------|-------------|-----------|---------|---|----|
| | | Abundant | Rare | Reliability | Adaptability | Scenario RCP45 | Scenario RCP85 | Scenario RCP45 | Scenario RCP85 | SHIFT RCP45 | SHIFT RCP85 | | | | |
| Ash | 2 | | | High | 17 | 10 | Increase | 13 | 14 | Very Good | 4 | 4 | Likely | 1 | 1 |
| Hickory | 0 | | | Medium | 17 | 26 | No Change | 3 | 2 | Good | 6 | 6 | Infill | 4 | 5 |
| Maple | 4 | Abundant | 8 | Low | 12 | 11 | Decrease | 10 | 10 | Fair | 11 | 11 | Migrate | 3 | 16 |
| Oak | 0 | Common | 8 | FIA | 1 | | New | 19 | 20 | Poor | 2 | 2 | | 8 | 22 |
| Pine | 1 | Rare | 11 | | | | Unknown | 2 | 1 | Very Poor | 3 | 1 | | | |
| Other | 20 | Absent | 20 | | | | | | | FIA Only | 1 | 1 | | | |
| | 27 | | 47 | | 47 | 47 | | 47 | 47 | Unknown | 1 | 0 | | | |
| | | | | | | | | | | | 28 | 25 | | | |

Potential Changes in Climate Variables

Temperature (°F)

| Scenario | 2009 | 2039 | 2069 | 2099 | |
|----------------|------|------|------|------|--|
| Annual | 37.8 | 39.6 | 42.1 | 42.2 | |
| Average | 37.8 | 40.3 | 43.1 | 46.6 | |
| | 37.8 | 40.6 | 44.6 | 46.2 | |
| | 37.8 | 41.3 | 46.2 | 51.7 | |
| | 37.8 | 41.0 | 44.0 | 45.8 | |
| | 37.8 | 41.3 | 45.4 | 51.3 | |
| Growing Season | 57.5 | 59.5 | 61.4 | 61.6 | |
| | 57.5 | 59.8 | 62.2 | 66.1 | |
| May—Sep | 57.5 | 61.0 | 64.8 | 66.6 | |
| | 57.5 | 61.4 | 66.2 | 71.7 | |
| | 57.5 | 60.4 | 62.9 | 65.0 | |
| | 57.5 | 60.1 | 64.5 | 70.7 | |
| Coldest Month | 6.9 | 8.4 | 10.4 | 10.7 | |
| | 6.9 | 9.6 | 11.2 | 13.9 | |
| Average | 6.9 | 9.4 | 12.7 | 14.0 | |
| | 6.9 | 10.6 | 14.0 | 17.4 | |
| | 6.9 | 10.0 | 12.7 | 13.8 | |
| | 6.9 | 11.9 | 14.5 | 18.5 | |
| Warmest Month | 64.0 | 66.0 | 67.3 | 67.4 | |
| | 64.0 | 66.5 | 68.2 | 70.2 | |
| Average | 64.0 | 67.2 | 69.2 | 70.5 | |
| | 64.0 | 67.3 | 70.3 | 73.0 | |
| | 64.0 | 66.9 | 68.3 | 69.6 | |
| | 64.0 | 66.9 | 69.4 | 73.6 | |

Precipitation (in)

| Scenario | 2009 | 2039 | 2069 | 2099 | |
|----------------|------|------|------|------|--|
| Annual | 42.1 | 40.9 | 42.0 | 44.8 | |
| Total | 42.1 | 44.0 | 43.0 | 44.7 | |
| | 42.1 | 46.7 | 48.4 | 47.8 | |
| | 42.1 | 46.0 | 47.9 | 49.1 | |
| | 42.1 | 45.3 | 47.7 | 48.5 | |
| | 42.1 | 46.3 | 46.5 | 51.1 | |
| Growing Season | 20.3 | 20.1 | 19.4 | 20.9 | |
| | 20.3 | 21.3 | 20.3 | 19.5 | |
| May—Sep | 20.3 | 20.4 | 20.0 | 19.7 | |
| | 20.3 | 20.9 | 20.3 | 19.2 | |
| | 20.3 | 21.9 | 21.6 | 23.6 | |
| | 20.3 | 21.4 | 21.6 | 24.1 | |

NOTE: For the six climate variables, four 30-year periods are used to indicate six potential future trajectories. The period ending in 2009 is based on modeled observations from the PRISM Climate Group and the three future periods were obtained from the NASA NEX-DCP30 dataset. Future climate projections from three models under two emission scenarios show estimates of each climate variable within the region. The three models are CCSM4, GFDL CM3, and HadGEM2-ES and the emission scenarios are the 4.5 and 8.5 RCP. The average value for the region is reported, even though locations within the region may vary substantially based on latitude, elevation, land-use, or other factors.

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Current and Potential Future Habitat, Capability, and Migration

| Common Name | Scientific Name | Range | MR | %Cell | FIAsum | FIAiv | ChngCl45 | ChngCl85 | Adap | Abund | Capabil45 | Capabil85 | SHIFT45 | SHIFT85 | SSO | N |
|----------------------------|------------------------|-------|--------|-------|--------|-------|-------------|---------------|--------|----------|-------------|-------------|-----------|------------|-----|----|
| balsam fir | Abies balsamea | NDH | High | 99.7 | 3177.9 | 23.1 | Lg. dec. | Lg. dec. | Low | Abundant | Poor | Poor | | | 0 | 1 |
| red spruce | Picea rubens | NDH | High | 98.1 | 1368.3 | 10.3 | Sm. dec. | Sm. dec. | Low | Abundant | Fair | Fair | | | 0 | 2 |
| northern white-cedar | Thuja occidentalis | WSH | High | 87.5 | 1166.7 | 9.9 | Sm. dec. | Sm. dec. | Medium | Abundant | Fair | Fair | | | 0 | 3 |
| red maple | Acer rubrum | WDH | High | 94.3 | 935.0 | 7.5 | Sm. inc. | Lg. inc. | High | Abundant | Very Good | Very Good | | | 1 | 4 |
| sugar maple | Acer saccharum | WDH | High | 66.8 | 854.6 | 10.0 | Sm. inc. | Sm. inc. | High | Abundant | Very Good | Very Good | | | 1 | 5 |
| yellow birch | Betula alleghaniensis | NDL | High | 86.2 | 853.4 | 7.8 | No change | Sm. dec. | Medium | Abundant | Good | Fair | | | 1 | 6 |
| paper birch | Betula papyrifera | WDH | High | 93.1 | 768.9 | 5.8 | Sm. dec. | Sm. dec. | Medium | Abundant | Fair | Fair | | | 0 | 7 |
| black spruce | Picea mariana | NSH | High | 48.9 | 767.5 | 11.7 | Sm. dec. | Sm. dec. | Medium | Abundant | Fair | Fair | | | 0 | 8 |
| white spruce | Picea glauca | NSL | Medium | 80.2 | 385.6 | 3.2 | No change | No change | Medium | Common | Fair | Fair | | | 1 | 9 |
| American beech | Fagus grandifolia | WDH | High | 49.8 | 311.1 | 4.6 | Lg. inc. | Lg. inc. | Medium | Common | Very Good | Very Good | | | 1 | 10 |
| eastern white pine | Pinus strobus | WDH | High | 47.6 | 292.5 | 4.7 | Lg. inc. | Lg. inc. | Low | Common | Good | Good | | | 1 | 11 |
| quaking aspen | Populus tremuloides | WDH | High | 54.9 | 234.9 | 3.5 | Lg. inc. | Lg. inc. | Medium | Common | Very Good | Very Good | | | 1 | 12 |
| striped maple | Acer pensylvanicum | NSL | Medium | 59.9 | 123.0 | 1.6 | No change | No change | Medium | Common | Fair | Fair | | | 1 | 13 |
| tamarack (native) | Larix laricina | NSH | High | 15.7 | 81.5 | 3.5 | Lg. inc. | Lg. inc. | Low | Common | Good | Good | | | 1 | 14 |
| mountain maple | Acer spicatum | NSL | Low | 36.2 | 62.6 | 1.5 | Lg. dec. | Very Lg. dec. | High | Common | Fair | Lost | | | 1 | 15 |
| pin cherry | Prunus pensylvanica | NSL | Low | 40.9 | 57.1 | 1.0 | Lg. dec. | Lg. dec. | Medium | Common | Poor | Poor | | | 0 | 16 |
| balsam poplar | Populus balsamifera | NSH | Medium | 10.5 | 41.8 | 3.3 | Lg. dec. | Very Lg. dec. | Medium | Rare | Very Poor | Lost | | | 0 | 17 |
| bigtooth aspen | Populus grandidentata | NSL | Medium | 13 | 29.4 | 1.7 | Lg. inc. | Lg. inc. | Medium | Rare | Good | Good | | | 1 | 18 |
| black ash | Fraxinus nigra | WSH | Medium | 21.5 | 23.0 | 0.9 | Lg. inc. | Lg. inc. | Low | Rare | Fair | Fair | | | 1 | 19 |
| eastern hemlock | Tsuga canadensis | NSH | High | 4.7 | 17.5 | 2.1 | Lg. inc. | Lg. inc. | Low | Rare | Fair | Fair | Infill + | Infill + | 2 | 20 |
| American mountain-ash | Sorbus americana | NSL | Low | 22.2 | 13.5 | 0.5 | Lg. dec. | Lg. dec. | Low | Rare | Very Poor | Very Poor | | | 0 | 21 |
| white ash | Fraxinus americana | WDL | Medium | 2.8 | 11.3 | 2.7 | Lg. inc. | Lg. inc. | Low | Rare | Fair | Fair | Infill + | Infill + | 2 | 22 |
| eastern hophornbeam; ironw | Ostrya virginiana | WSL | Low | 5.2 | 4.3 | 0.7 | Lg. inc. | Lg. inc. | High | Rare | Good | Good | Infill ++ | Infill ++ | 1 | 23 |
| chokecherry | Prunus virginiana | NSLX | FIA | 5 | 3.6 | 0.5 | Unknown | Unknown | Medium | Rare | FIA Only | FIA Only | | | 0 | 24 |
| black cherry | Prunus serotina | WDL | Medium | 3.7 | 3.4 | 0.9 | Lg. inc. | Lg. inc. | Low | Rare | Fair | Fair | Infill + | Infill + | 2 | 25 |
| American elm | Ulmus americana | WDH | Medium | 1.2 | 1.3 | 1.0 | Lg. inc. | Lg. inc. | Medium | Rare | Good | Good | | | 2 | 26 |
| serviceberry | Amelanchier spp. | NSL | Low | 2.5 | 0.4 | 0.2 | Lg. dec. | Lg. inc. | Medium | Rare | Very Poor | Good | | Infill ++ | 2 | 27 |
| eastern redcedar | Juniperus virginiana | WDH | Medium | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | | | 3 | 28 |
| red pine | Pinus resinosa | NSH | Medium | 0 | 0 | 0 | New Habitat | New Habitat | Low | Absent | New Habitat | New Habitat | | Migrate ++ | 3 | 29 |
| sweet birch | Betula lenta | NDH | High | 0 | 0 | 0 | New Habitat | New Habitat | Low | Absent | New Habitat | New Habitat | | Migrate + | 3 | 30 |
| gray birch | Betula populifolia | NSL | Low | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | Likely + | Likely + | 3 | 31 |
| American hornbeam; musclev | Carpinus caroliniana | WSL | Low | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | | Migrate + | 3 | 32 |
| bitternut hickory | Carya cordiformis | WSL | Low | 0 | 0 | 0 | New Habitat | New Habitat | High | Absent | New Habitat | New Habitat | | Migrate + | 3 | 33 |
| pignut hickory | Carya glabra | WDL | Medium | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | | Migrate + | 3 | 34 |
| shagbark hickory | Carya ovata | WSL | Medium | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | | Migrate + | 3 | 35 |
| green ash | Fraxinus pennsylvanica | WSH | Low | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | | Migrate + | 3 | 36 |
| black walnut | Juglans nigra | WDH | Low | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | | | 3 | 37 |
| blackgum | Nyssa sylvatica | WDL | Medium | 0 | 0 | 0 | New Habitat | New Habitat | High | Absent | New Habitat | New Habitat | | Migrate + | 3 | 38 |
| sourwood | Oxydendrum arboreum | NDL | High | 0 | 0 | 0 | Unknown | New Habitat | High | Absent | Unknown | New Habitat | | | 0 | 39 |
| white oak | Quercus alba | WDH | Medium | 0 | 0 | 0 | New Habitat | New Habitat | High | Absent | New Habitat | New Habitat | Migrate + | Migrate ++ | 3 | 40 |
| scarlet oak | Quercus coccinea | WDL | Medium | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | | Migrate + | 3 | 41 |
| chestnut oak | Quercus prinus | NDH | High | 0 | 0 | 0 | New Habitat | New Habitat | High | Absent | New Habitat | New Habitat | | Migrate ++ | 3 | 42 |
| northern red oak | Quercus rubra | WDH | Medium | 0 | 0 | 0 | New Habitat | New Habitat | High | Absent | New Habitat | New Habitat | Migrate + | Migrate ++ | 3 | 43 |
| black oak | Quercus velutina | WDH | High | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | | Migrate ++ | 3 | 44 |
| black locust | Robinia pseudoacacia | NDH | Low | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | | Migrate + | 3 | 45 |
| American basswood | Tilia americana | WSL | Medium | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | Migrate + | Migrate + | 3 | 46 |
| slippery elm | Ulmus rubra | WSL | Low | 0 | 0 | 0 | New Habitat | New Habitat | Medium | Absent | New Habitat | New Habitat | | Migrate + | 3 | 47 |