

Continental/ hemiboreal broadleaf deciduous or mixed forest



HARVARD FOREST
MASSACHUSETTS, USA
CREDIT: KRISTINA J. ANDERSON-TEIXEIRA

Vegetation

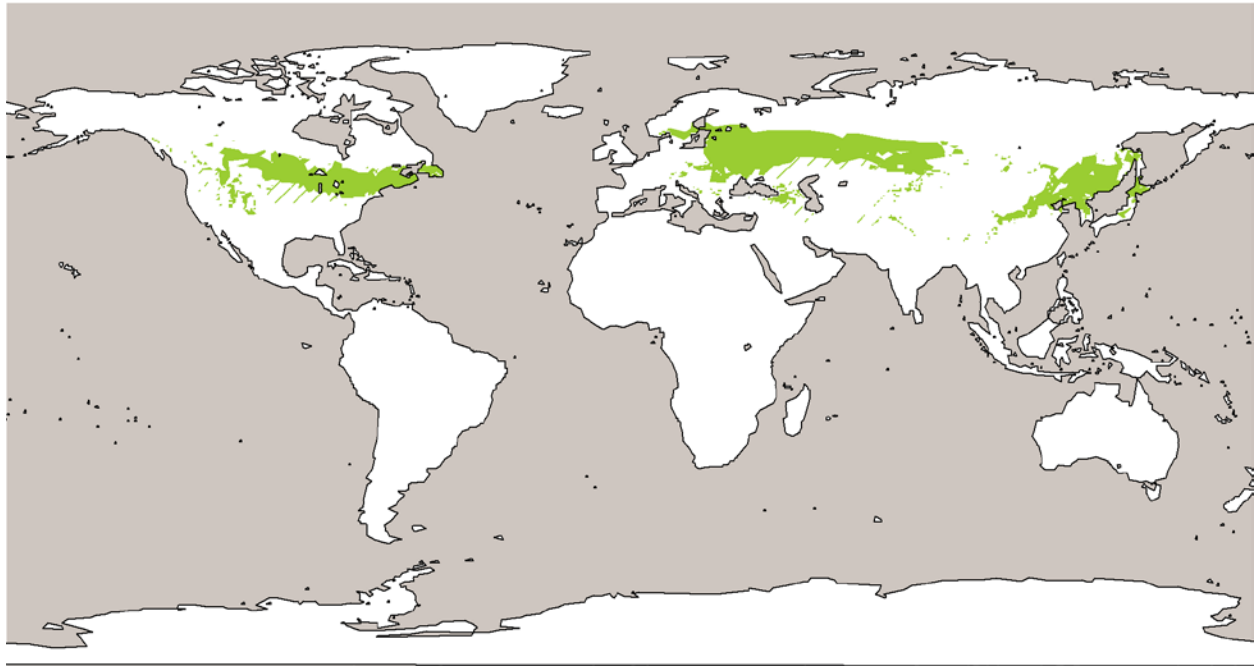
Continental/ hemiboreal broadleaf deciduous or mixed forests are dominated by broadleaf trees or a mix of needleleaf and broadleaf trees. Broadleaf trees have flat leaves and produce seeds protected by fruits. Needleleaf trees (conifers)—a group that includes pine (*Pinus*), fir (*Abies*), spruce (*Picea*), larch (*Larix*), and others—have needle-shaped leaves and produce seeds in cones.

Climate

Continental/ hemiboreal broadleaf deciduous or mixed forests are found in cold (or continental) climates with temperature of the coldest month averaging below -3°C and that of their warmest month averaging $>10^{\circ}\text{C}$ (Dsa, Dsb, Dwa, Dw b, Dfa, Dw b in the Köppen-Geiger climate system).

Potential Distribution

This distribution map illustrates the climate zones in which this ecosystem type occurs, with stippled areas indicating climate zones where it is rare. It is not present in all parts of its climatic range.



Examples

CTFS-ForestGEO Forest Monitoring Sites

The Center for Tropical Forest Science- Forest Global Earth Observatory (CTFS-ForestGEO) is a Smithsonian-led global forest monitoring network, including over 6 million trees and over 10,000 tree species in over 60 forested sites worldwide. Scientific research at these sites includes measurements that help to quantify the climate regulation services of these and similar sites. Examples of Continental/ hemiboreal broadleaf deciduous or mixed forest in this network include the following sites:

[HALIBURTON, CANADA](#)

[HARVARD FOREST, USA](#)

[WABIKON LAKE FOREST, USA](#)

[CHANGBAISHAN, CHINA](#)

[DONGLINGSHAN, CHINA](#)

Climate regulation value

The average greenhouse gas value for ecosystems of this type is 533 metric tons CO₂-equivalents per hectare over a 50 year time frame (t CO₂-eq ha⁻¹ 50 yrs⁻¹). This includes 455 t CO₂-eq ha⁻¹ 50 yrs⁻¹ from storage of organic matter that would result in greenhouse gas release if cleared and 78 t CO₂-eq ha⁻¹ 50 yrs⁻¹ from ongoing greenhouse gas exchange between the ecosystem and the environment.

When biophysical effects are taken into account, the average climate regulation value for ecosystems of this type is 386 metric tons CO₂-equivalents per hectare (t CO₂-eq ha⁻¹ 50 yrs⁻¹). This is a -28% increase/decrease relative to the value based on greenhouse gas regulation alone.

Considering an average car, emitting 1.1 lb CO₂ per mile driven, clearing 100 square feet (9.3 m²) of this ecosystem type would, on average, be equivalent to driving 992 miles/1,596 km (counting greenhouse gasses only). Counting biophysical effects, clearing the vegetation would be equivalent to driving 719 miles/1,157 km.