



# Canadian National Vegetation Classification (CNVC) Classification nationale de la végétation du Canada

<http://cnvc-cnvc.ca>

## Eastern Canadian Temperate Deciduous Forest Forêts décidues de la zone tempérée de l'Est du Canada

Macrogroup CM742

### Cool Temperate Forest & Woodland

#### D008 Eastern North American Forest & Woodland

CM014 Eastern North American Temperate Hardwood – Conifer Forest

#### **CM742 Eastern Canadian Temperate Deciduous Forest**

CM742a Warm Eastern Canadian Temperate Deciduous Forest

CM742b Cool Eastern Canadian Temperate Deciduous Forest

CM744 Acadian Temperate Forest



### Concept

CM742 describes the upland temperate forests of southern Ontario as well as the southwestern portion of Quebec. Forest canopies are primarily composed of cold-deciduous broad-leaved species. Anthropogenic disturbance is the dominant factor in determining forest composition, dynamics and distribution. Windthrow, ice loading and insect infestations are the most widespread forms of natural disturbance; fire is generally not a natural disturbance factor. Dominant tree species include sugar maple (*Acer saccharum*), red maple (*A. rubrum*), white ash (*Fraxinus americana*), American basswood (*Tilia americana*) and American beech (*Fagus grandifolia*). Eastern hop-hornbeam (*Ostrya virginiana*), black cherry (*Prunus serotina*) and northern red oak (*Quercus rubra*) are common canopy associates throughout the range; eastern white pine (*Pinus strobus*) is occasional. Balsam fir (*Abies balsamifera*), yellow birch (*Betula alleghanensis*), eastern hemlock (*Tsuga canadensis*), eastern white cedar (*Thuja occidentalis*) and white spruce (*Picea glauca*) are companion species on cooler sites, especially in the northern portion of the range. Hickories (*Carya* spp.), white oak (*Quercus alba*) and blue-beech (*Carpinus caroliniana*) are more common on warmer sites and in southern parts of the range. Depending on overstory and site conditions, understory shrub and herb layers vary from dense to sparse. Shrub layers are typically rich in regenerating maples and/or other broad-leaved tree species, together with cold-deciduous broad-leaved shrubs and vines such as alternate-leaved dogwood (*Cornus alternifolia*), eastern prickly gooseberry (*Ribes cynosbati*), Canada fly-honeysuckle (*Lonicera canadensis*) and poison ivy (*Toxicodendron radicans*). Typical herb/dwarf shrub species include trilliums (*Trillium* spp.), hairy Solomon's seal (*Polygonatum pubescens*), large false Solomon's seal (*Maianthemum racemosum*), wild lily-of-the-valley (*M. canadense*), Jack-in-the-pulpit (*Arisaema triphyllum*) and partridgeberry (*Mitchella repens*). Vernal ephemeral forbs like Carolina spring beauty (*Claytonia caroliniana*), yellow trout lily (*Erythronium americanum*) and wild leek (*Allium tricoccum*) are characteristic of these forests. Numerous native plant species, such as eastern flowering dogwood (*Cornus florida*), black oak (*Quercus velutina*), tulip tree (*Liriodendron tulipifera*) and American ginseng (*Panax quinquefolius*) reach their northern range limits in the southern portion of the CM742 range.

CM742 occurs in the humid, continental cool temperate climate of eastern Canada, generally characterized by cool winters and moist, warm to hot summers. Mean annual temperatures vary from 5°C to >9°C. Mean annual precipitation is >900 mm throughout the range; rainfall significantly exceeds snowfall. Regional geologic and topographic features of the St. Lawrence Lowlands physiographic region produce a mostly subdued topography with low relief, except in the west-central part of the range where the cliffs of the Niagara Escarpment overlook the plains. All parts of the region experienced late Pleistocene glaciation; soils are mostly calcareous Luvisols and Brunisols developed in glacial surficial materials. Two subtypes distinguish regional variation within this Macrogroup. Subtype CM742a [Warm Eastern Canadian Temperate Deciduous Forest] describes forests of warmer sites, mostly near Lake Erie, that are dominated by sugar maple with a floristic assemblage that reflects deciduous forests south of the Great Lakes. CM742b [Cool Eastern Canadian Temperate Deciduous Forest] describes maple-beech-basswood dominated forests that have greater conifer content and occur from Lake Huron eastward into the St. Lawrence valley of southwestern Quebec.



Forest patches dominated by sugar maple (*Acer saccharum*) in a fragmented southern Ontario landscape. Near Rice Lake, Ontario.

Source: V. Hard, Ontario Ministry of Natural Resources and Forestry



Stand dominated by shagbark hickory (*Carya ovata*), northern red oak (*Quercus rubra*) and sugar maple (*Acer saccharum*). Bronte Creek Provincial Park, Ontario.

Source: D. Bradley, Ontario Ministry of Natural Resources and Forestry



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### Vegetation

#### Physiognomy and Structure

CM742 includes upland forests with closed multi-storied canopies, although woodlands can occur on very dry sites. Stand composition is characterized by temperate, cold-deciduous broad-leaved ("hardwood") tree species, with multiple species in the overstory. Conifer – hardwood mixes and pure conifer stands can occur, especially on dry, nutrient-poor sites, in cooler microclimates and toward the northern limit of the range. Understory structure varies from dense to sparse and is usually dominated by cold-deciduous broad-leaved shrubs, perennial herbs and hardwood tree regeneration. Bryophytes are typically confined to dead wood, rocks and tree boles. Some of these forests are among the most productive of any Canadian forests and tree species diversity can be very high. Contemporary occurrences of CM742 are mostly forest patches within a fragmented urban/agricultural landscape; stands have the potential to be hundreds of years old, but few old forests remain. Riparian and wetland forests and woodlands within the range of CM742 are described by M504 [Laurentian-Acadian Flooded & Swamp Forest].

#### Floristics

The overwhelmingly dominant tree species in contemporary CM742 forests is *Acer saccharum*. *A. rubrum*, *Fraxinus americana*, *Tilia americana*, *Fagus grandifolia*, *Ostrya virginiana*, *Prunus serotina* and *Quercus rubra* are common canopy associates throughout the range, and *Tsuga canadensis*, *Pinus strobus*, *Ulmus americana* and *Populus grandidentata* are occasional. *Abies balsamea*, *Betula alleghaniensis*, *B. papyrifera*, *Thuja occidentalis*, *Picea glauca* and *Populus tremuloides* are more common on cooler sites, especially in the northern portion of the range (subtype CM742b [Cool Eastern Canadian Temperate Deciduous Forest]). *Carya* spp., *Fraxinus pennsylvanica*, *Quercus alba* and *Carpinus caroliniana* are more common in the southern part of the range, described by CM742a [Warm Eastern Canadian Temperate Deciduous Forest]. Some tree species of deciduous forests in the eastern United States, such as *Cornus florida*, *Celtis occidentalis*, *Juglans nigra*, *Sassafras albidum*, *Quercus velutina* and *Liriodendron tulipifera*, are occasionally present in contemporary CM742a forests; many of these species are rare and at risk of extirpation in Canada. The pervasive history of post-settlement anthropogenic disturbance, together with approximately 100 years of aggressive fire suppression, have significantly affected the landscape patterns and species composition of these forests.

*Acer saccharum* is a long-lived (>300 years), shade tolerant, late seral temperate hardwood species that dominates uneven-aged stands on well-drained nutrient-medium to rich circum-mesic sites. It can re-colonize sites following small-scale stand removal or invade existing early or mid-seral stands by seeding in from surrounding areas. It maintains itself within stands with an abundant bank of seedlings that can persist under closed canopies for many years and respond rapidly to release after long periods of suppression. It also reproduces vegetatively following stem death by stump and root sprouting. *A. saccharum* is intolerant of fire and, over the last 100 years, has benefited from fire suppression and a very long (>500 years) fire cycle, increasing its proportion of stand composition in CM742 forests. *A. saccharum* creates a dense forest canopy that excludes all but the most shade tolerant species in the understory, effectively favouring its own seedlings. Where early and mid-seral tree species have been selectively removed by logging or insect infestation, they are unable to re-establish in these forests unless disturbances open canopy gaps and remove broadleaf litter from the forest floor. *Ostrya virginiana* is a small shade tolerant, temperate hardwood species that frequently occurs in circum-mesic mid- to late seral stands, often in association with *A. saccharum*. Similarly, *Carpinus caroliniana* is a small shade tolerant, temperate hardwood species that occurs in mid- to late seral mixed hardwood stands in the southern portion of the CM742 range (especially in CM742a); it is most frequent on moist, rich sites.

*Fagus grandifolia* is a long-lived (>300 years), shade tolerant, late seral temperate hardwood species that dominates uneven-aged stands on well-drained nutrient-medium to rich circum-mesic sites, often in association with *A. saccharum*. It is one of the few species that is shade tolerant enough to survive under an *A. saccharum* canopy. It can regenerate by seed or vegetatively with root suckers and stump sprouts. *F. grandifolia* can re-colonize sites following small-scale stand removal or invade existing early or mid-seral stands by seeding in from surrounding areas. Once established, it typically maintains itself by root suckering, with saplings able to rapidly respond to release after long periods of suppression. Prevalence of mature *F. grandifolia* in CM742 forests is being reduced by beech bark disease (see below).

*Acer rubrum* has a very broad ecological amplitude, occupying a wide range of site conditions and successional stages. Its best growth is on moist, nutrient-rich sites, including swamps (described in M504 [Laurentian-Acadian Flooded & Swamp Forest]), but it is able to colonize dry, open sites and also to maintain itself in closed circum-mesic stands. It is a moderately shade tolerant, early to mid-seral temperate hardwood species that reproduces both vegetatively and by seed. It vigorously sprouts from stumps and root suckers when stem death occurs, and is a prolific seed producer. Seedbed requirements are minimal, and it establishes an abundant bank of seedlings that can persist under closed canopies for several years. *A. rubrum* benefits from disturbances (other than fire), seeding into gaps, clearings and early seral stands and, where already established, increasing its abundance by aggressive sprouting. It is longer lived than most early seral species, but does not persist in late successional stages of CM742 forests.



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### Floristics (cont'd)

*Fraxinus americana*, *F. pennsylvanica*, *Prunus serotina* and *Carya* spp. are early to mid-seral temperate hardwood species that are common in mixed hardwood stands, typically on mesic to moist sites. *F. pennsylvanica* and *Carya* spp. are more common in the southern portion of the range. These species are generally intolerant of shade and colonize open or lightly shaded sites by seed dispersal. They are all prolific root and/or stump sprouters after stem death and are able to replace themselves in canopy gaps or under partial shade. *Tilia americana* is a mid to late seral species that is moderately shade tolerant and common in mixed hardwood stands on circum-mesic sites, where it mostly replaces itself by stump sprouting. It is more common in the northern portion of the CM742 range.

*Quercus alba* and *Q. rubra* are long-lived (>300 years), moderately shade tolerant, early to mid-seral temperate hardwood species that are typically found in mixed hardwood stands on well-drained dry to moist upland sites. They regenerate both by seed and by sprouting in open areas or in canopy gaps where saplings respond to increased light; if they attain the canopy, they can remain as associates of *Acer saccharum* and *Fagus grandifolia* in late seral forests due to their longevity. Both species are favoured by occasional fires that remove competition, stimulate sprouting and seedling establishment, and open canopies to release saplings. In CM742a, *Q. velutina* may co-occur with *Q. alba* in closed stands on well-drained dry sites or as woodlands in fire-dominated areas.

*Tsuga canadensis* is a long-lived (>300 years), very shade tolerant, late seral temperate conifer species that reproduces only by seed. When a seed source is available, it usually colonizes stands with an established canopy because seedlings require at least partial shade to survive. Subsequently, *T. canadensis* maintains itself within stands where seeds are able to germinate and survive on seedbeds of mineral soil, litter, moss, thick humus and dead wood as long as substrate moisture is sufficient. Seedlings are highly shade tolerant, persisting under closed canopies for many years and are able to respond to release after long periods of suppression. *T. canadensis* grows on a wide variety of acidic soils, but prefers well-drained, nutrient-medium to rich moist sites, including swamps (described in M504); in CM742 forests, it is typically restricted to sites with cool, humid microclimates. Because of its longevity, it can persist in uneven-aged stands for hundreds of years in the absence of disturbance. Compared to its historical levels, *T. canadensis* is much less common in contemporary CM742 forests, mostly due to logging impacts.

*Pinus strobus* is a long-lived (>300 years), moderately shade tolerant, early to mid-seral temperate conifer species that reproduces only by seed. It establishes on open sites with mineral seedbeds, wherever there is an adequate seed supply. It is also able to invade existing early or mid-seral stands with diffuse canopies (especially of *Populus* spp., *Betula papyrifera* and *Acer rubrum*) by seeding in from surrounding areas. *P. strobus* is often dominant on drier sites with nutrient-poor coarse-textured or shallow soils where occasional fires occur. With its thick bark, it is somewhat resistant to moderate-intensity surface fires and older individuals can persist in late seral stands for long periods. In mixed or hardwood stands, it is able to regenerate in canopy gaps if sufficient light and seedbed patches are available.

*Thuja occidentalis* is a small, long-lived (>300 years), late seral conifer species that reproduces both by seed and by vegetative layering. It is most common on moist nutrient-rich sites including swamps (described in M504), but also occupies a variety of dry to moist, nutrient-rich upland sites where it forms a sub-canopy tree layer in association with any of the species described above. Seedlings are only moderately shade tolerant; in closed stands reproduction is primarily vegetative. *T. occidentalis* also invades old fields. Some of the oldest trees in Canada (>1000 years) are *T. occidentalis* individuals growing on cliff faces of the Niagara Escarpment in southern Ontario.

*Abies balsamea* is a short-lived, late seral conifer species that can re-colonize sites following stand-replacing disturbance or invade existing early or mid-seral stands by seeding in from surrounding areas. Once established, *A. balsamea* maintains itself within stands where seeds are able to germinate and survive on seedbeds of mineral soil, litter, moss, thick humus and dead wood as long as substrate moisture is sufficient. It is highly shade tolerant, so seedlings persist under closed canopies for many years and are able to respond to release after long periods of suppression. In CM742 forests, *A. balsamea* typically occurs in admixture with hardwood canopy species. *Picea glauca* is a mid- to late seral conifer species that usually occurs as a canopy associate in mixed stands with hardwood species. Where there is an adequate seed supply, it can establish immediately following disturbance that exposes mineral seedbeds or seed into existing early seral stands where it can persist in the understory due to moderate shade tolerance and eventually grow into the canopy. *P. glauca* also invades old fields. *A. balsamea* and *P. glauca* are most common in the transition to CM014 forests at the northern edge of the range (CM742b).

*Betula papyrifera*, *Populus tremuloides*, *P. grandidentata* and *B. populifolia* are short-lived, early seral hardwood species that occur following disturbance. These species are often prevalent in agricultural areas and at the urban-forest interface. After any disturbance that does not kill their roots they can reproduce vegetatively, *Populus* spp. from root suckers and *Betula* spp. by stump sprouting. They also produce abundant, light wind-dispersed seeds that can readily colonize mineral seedbeds exposed by disturbance. These species grow rapidly in full light conditions but are intolerant of shade so do not replace themselves in a stand without further perturbation. *B. papyrifera* and *P. tremuloides* are most common in the transition to CM014 forests at the northern edge of the range (CM742b); *P. grandidentata* occurs throughout the range; *B. populifolia* occurs primarily in Quebec. All of these species are more abundant in contemporary CM742 forests than they were historically because of extensive land clearing and other anthropogenic disturbances.



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#### Floristics (cont'd)

*Betula alleghaniensis* is a long-lived (>300 years), moderately shade tolerant temperate hardwood species that reproduces primarily by seed. It is a prolific producer of light, wind-dispersed seeds and generates heavy seed crops every few years. *B. alleghaniensis* maintains itself in closed forests by colonizing canopy gaps where fine-scale disturbances expose patches of mineral seedbeds. It also invades early seral stands with diffuse canopies (especially of *Populus* spp., *B. papyrifera* and *Acer rubrum*) by seeding in from surrounding areas. *B. alleghaniensis* occupies well-drained, nutrient-medium to rich circum-mesic sites in CM742 upland forests, but is susceptible to drought because of its shallow roots; it is tolerant of moist sites and often occurs in wetland forests (described in M504). It is most common in the transition to CM014 forests at the northern edge of the range (CM742b).

Overstory density, disturbance history and stand-scale site conditions produce highly variable shrub and herb layers in CM742 forests. Understories are typically dominated by regenerating hardwood tree species, led by *Acer saccharum*. Seedling and sapling occurrences of *Fraxinus americana*, *A. rubrum*, *Prunus serotina*, *Quercus rubra*, *Ostrya virginiana*, *Fagus grandifolia*, *Tilia americana* and *Carya* spp. are common throughout the range. Regenerating *Abies balsamea* and *Tsuga canadensis* become common towards the northern edge of the range and on cooler sites (CM742b). When *Acer* spp. dominate the canopy, understories can be sparse because few other species are able to survive in the dense shade. *Cornus alternifolia* and *Ribes cynosbati* are common understory shrubs throughout the range. *Acer pensylvanicum*, *Viburnum lantanoides*, *A. spicatum*, *Corylus cornuta* and *Lonicera canadensis* are most common in CM742b, while *Viburnum acerifolium*, *Euonymus obovatus*, *Hamamelis virginiana* and *Lindera benzoin* occur primarily in CM742a. In gaps and along stand margins, where light intensity is greater, *Parthenocissus quinquefolia*, *Toxicodendron radicans*, *Vitis riparia* and *Crataegus* spp. are prominent species in CM742a.

The herb layer of CM742 forests is characterized by an array of vernal ephemeral forbs, such as *Erythronium americanum*, *Claytonia* spp., *Cardamine* spp., *Allium tricoccum* and *Dicentra* spp. These species have adapted to the dense shade of temperate hardwood canopies by completing their annual growth and reproductive cycles in a short period of time in spring before tree leaves are fully emerged. Otherwise, understory species comprise shade tolerant herbs/dwarf shrubs such as *Trillium* spp. (*T. grandiflorum*, *T. erectum*, *T. undulatum*), *Polygonatum pubescens*, *Maianthemum racemosum*, *M. canadense*, *Arisaema triphyllum*, *Smilax* spp. (*S. herbacea*, *S. lasioneura*, *S. tamnoides*), *Podophyllum peltatum*, *Actaea* spp. (*A. pachypoda*, *A. rubra*), *Tiarella cordifolia*, *Caulophyllum thalictroides*, *Mitchella repens* and *Geum canadense*. In the northern portion of the range, *Aralia nudicaulis*, *Clintonia borealis*, *Lysimachia borealis*, *Eurybia macrophylla* and *Streptopus roseus* are more common.

#### Dynamics

Environmental site characteristics, plant species autecology, seed/propagule availability, and disturbance history (i.e., type, severity and frequency) influence secondary succession trends within the forests of CM742. Historically, natural disturbances included wildfires, windthrow, ice storms, pathogens and insect infestations. Since European settlement, forest harvesting, agricultural clearing, land conversion, urbanization, roadbuilding, and industrial and recreational development have become the primary disturbance factors. Wildfire now plays a relatively minor role in the dynamics of CM742 forests.

Prior to European settlement, First Nations land management practices influenced the structure and species composition of CM742 forests throughout much of the range. In areas with settlements, periodic low-intensity fires promoted the growth of vegetation that produced mast, as well as habitat for fowl and large game. The maintenance of an open forest landscape facilitated land clearing for First Nations agriculture and settlement, and contributed a steady supply of fruit, nuts, seeds, firewood, polewood and game. Species such as *Prunus serotina*, *Pinus* spp., *Quercus* spp., *Carya* spp., *Juglans* spp. and *Castanea dentata* were favoured under this regime. Away from areas of intensive First Nations land management, CM742 forests that are characteristic of a very long fire cycle (>500 years) dominated the landscape and stands had the potential to be very old.

In most contemporary CM742 forests, stand dynamics are gradual through the process of mortality of individual or small numbers of canopy trees (gap phase replacement). Small gaps develop in mature forests due to windthrow, ice damage, diseases, insects or anthropogenic disturbances. Within these patches, root or stump-regenerating hardwood species, such as *Acer* spp., *Fagus grandifolia*, *Ostrya virginiana*, *Carpinus caroliniana*, *Fraxinus americana*, *Prunus serotina*, *Tilia americana*, *Carya* spp., *Quercus* spp. and *Populus* spp. sprout vigorously. *Tsuga canadensis* self-replaces by seed, if it was present in the pre-disturbance stand or if seed sources exist nearby. If mineral seedbeds are created by a disturbance, *Pinus strobus* seedlings can establish in these gaps and, depending on the light regime, potentially grow into the canopy. Multi-storied, multi-aged stand structures perpetuated by gap dynamics are a general characteristic of CM742 forests.



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### Dynamics (cont'd)

These forests are subject to a variety of diseases and insects that typically cause mortality to individual or small groups of trees but are also capable of creating changes in tree species dominance at the stand and landscape levels. Tomentosus root disease (*Inonotus tomentosus*) and Armillaria root rot (*Armillaria* spp.), widespread in forests of CM742, cause mortality of young trees and increase susceptibility of older trees to windthrow and insect attack. Hardwood trunk rot (*Phellinus igniarius*) affects *Acer* spp. and other temperate hardwood tree species. White pine blister rust (*Cronartium ribicola*), an introduced fungal pathogen, has contributed to the decline of *Pinus strobus* in CM742 forests. *Ulmus americana* presence in CM742 forest canopies is now negligible because of the introduced fungal pathogen Dutch elm disease (*Ophiostoma ulmi*). Beech scale (*Cryptococcus fagisuga*) and beech bark disease (*Neonectria faginata*) are an introduced insect-fungus complex that is causing extensive mortality of mature *Fagus grandifolia* in eastern North America.

Insects, such as eastern spruce budworm (*Choristoneura fumiferana*) and forest tent caterpillar (*Malacosoma disstria*), are endemic to the range of CM742 and can cause extensive defoliation and mortality of their host tree species during periodic outbreaks. Gypsy moth (*Lymantria dispar*) is an introduced defoliator of temperate hardwoods, especially *Quercus* spp. and *Acer* spp. White pine weevil (*Pissodes strobi*) kills the leaders of *P. strobus* and *Picea* spp., restricting growth. Emerald ash borer (*Agrilus planipennis*) is an introduced beetle that kills all *Fraxinus* spp. that occur within the range of CM742.

Remaining patches of CM742 forests occur in a rural/urban landscape near human settlements. Stands are subject to invasion by non-native plant species, including *Alliaria petiolata*, *Morus alba*, *Vinca minor*, *Aegopodium podagraria*, *Hedera helix*, *Berberis thunbergii* and *Vincetoxicum rossicum*, that compete with native flora and often significantly alter understory composition and structure.

In most parts of the CM742 range, populations of white-tailed deer (*Odocoileus virginianus*) are large enough that browsing can alter stand composition and structure by selectively removing palatable understory shrubs and herbs, as well as regeneration of certain tree species (e.g., *Thuja occidentalis*, *Tsuga canadensis* and most hardwood species).

### Environment

#### Climate

CM742 forests develop within the humid, continental cool temperate climate of eastern Canada, generally characterized by cool winters and moist, warm to hot summers. Temperatures are moderated, and precipitation augmented, by the Great Lakes.

Mean annual temperatures vary latitudinally from approximately 5°C at the northernmost edge of the range to >9°C at the southernmost extent in southwestern Ontario. In general, warmer temperatures are associated with the area just north of Lake Erie (averaging approximately 8°C). The growing season averages between approximately 1850 and 2500 growing degree days above 5°C (GDD), with the longest growing season occurring near Windsor, Ontario. Mean annual precipitation averages >900 mm throughout the range. Rainfall significantly exceeds snowfall.

#### Physiography, Geology, Topography and Soils

CM742 occurs in the West and Central divisions of the St. Lawrence Lowlands physiographic province. With the exception of the Niagara Escarpment, a dolostone cuesta that traverses the west-central part of the range from the Niagara River to the Bruce Peninsula and Manitoulin Island, the terrain is essentially an undulating plain with low relief and elevations below 400 mASL.

The geology comprises calcareous Paleozoic rocks, except in the southeastern portion of Ontario where the Frontenac Arch, an extension of Precambrian bedrock from the Adirondack Mountains to the south, occurs. The entire range of CM742 was affected by late Pleistocene glaciation, and surficial landscape expression is dominated by glacial features, such as moraines and drumlins; till deposits generally overlie bedrock. This variable topography produces changes in local site moisture and nutrient status over short distances. Significant areas are covered by glaciolacustrine materials from a series of pro-glacial lakes that predated the contemporary Great Lakes. Upland mineral soils are typically well to imperfectly drained Luvisols (finer textures) or Brunisols (coarser textures), with Gleysols and some shallow peat veneers in moist, poorly drained locations.



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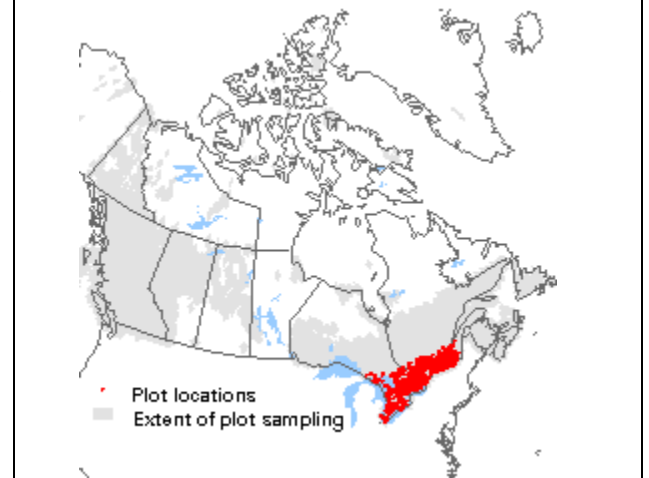
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### Distribution and Geographic Range

CM742 includes the upland cool temperate forests and woodlands of the southernmost portions of Ontario and Quebec. Its core range includes the part of Ontario south of the Precambrian Shield (including Manitoulin Island), the southern Ottawa River valley, and the part of Quebec south of the Precambrian Shield and west of approximately Granby.



### Related Concepts

CM742 includes upland forests and woodlands that have been described in provincial publications for the Sugar Maple – Bitternut Hickory and Sugar Maple – Basswood bioclimatic domains in Quebec, and ecoregions 6E [Lake Simcoe - Rideau] and 7E [Lake Erie – Lake Ontario] in Ontario.

CM742 describes the Canadian expression of upland forests and woodlands that are included (in part) in USNVC M012 [Central Midwest Oak Forest, Woodland & Savanna], M014 [Laurentian-Acadian Mesic Hardwood – Conifer Forest], M159 [Laurentian-Acadian Pine – Hardwood Forest & Woodland], M502 [Appalachian-Northeastern Oak – Hardwood – Pine Forest & Woodland], M882 [Central Midwest Mesic Forest] and M883 [Appalachian-Interior-Northeastern Mesic Forest].

Riparian and wetland forests and woodlands within the range of CM742 are mostly described by M504 [Laurentian-Acadian Flooded & Swamp Forest].

### Comments

CM742 describes temperate, hardwood forests with little conifer content that constitute the northern edge of the eastern North American deciduous forest region, which extends south to the Gulf of Mexico. CM014 [Eastern North American Temperate Hardwood – Conifer Forest] describes the upland cool temperate forests of eastern Canada that are characterized by a conifer – hardwood mixedwood composition with general presence of *Abies balsamea* in combination with *Betula papyrifera*, *B. alleghaniensis*, *Acer rubrum* or *A. saccharum*. *Pinus strobus*, *P. resinosa*, *Picea rubens* and *Tsuga canadensis* are important constituents of CM014 forests and understories contain species with more northern affinities. CM744 [Acadian Temperate Forest] describes temperate forests in maritime-influenced climates of Atlantic Canada, characterized by high abundance of *A. balsamea* and *Picea rubens* in combination with temperate hardwood species.

Many forest and woodland Associations of CM742, and numerous constituent species, occur primarily south of the Great Lakes; Canadian occurrences are restricted to the southern portion of the CM742 range. The combination of natural rarity and intense anthropogenic disturbance has resulted in many ecosystems and species that are considered to be at high risk of extinction in Canada.



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### Source Information

**Number of Source Plots for CM014:** 2525 (Canadian National Vegetation Classification. 2015. CNVC Master Database [VPro13/MSAccess 2010 format]. Natural Resources Canada, Sault Ste. Marie, ON.)

#### Information Sources (data):

Ministère des Ressources naturelles, de la Faune et des Parcs, Forêt Québec. 2003. Base de données des points d'observation écologique (version 2003). Gouv. du Qué., Min. des Res. nat., de la Faune et des Parcs, Forêt Qué., Dir. des inv. for., QC. (1415 plots)

McMurray, S.C., Johnson, J.A., Zhou, K., Uhlig, P.W.C. 2015. Ontario ecological land classification program - Ecological Data Repository (EDR). Ont. Min. Nat. Resour. & For., Sci. & Info. Branch, Sault Ste. Marie, ON. (1110 plots)

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**Date of Description:** April, 2019

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Macrogroup CM742

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The information contained in this factsheet is based on data and expert knowledge that is current to the date of description. As new information becomes available, the factsheet will be updated.

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**Eastern Canadian Temperate Deciduous Forest**  
Forêts décidues de la zone tempérée de l'Est du Canada

Macrogroup CM742

## Comparison of Vegetation Characteristics for Eastern Temperate Forest Macrogroups

Lifeform	Species Name	n=2525	n=7705	n=4606	Species Common Name
		CM742 Deciduous	CM014 Mixed	CM744 Acadian	
Tree	<i>Carya</i> spp.	****			hickories
	<i>Tsuga canadensis</i>	****			eastern hemlock
	<i>Quercus rubra</i>	■ ■ ■ ■			northern red oak
	<i>Prunus serotina</i>	■ ■ ■			black cherry
	<i>Ostrya virginiana</i>	■ ■ ■ ■			eastern hop-hornbeam
	<i>Tilia americana</i>	■ ■ ■ ■			basswood
	<i>Fraxinus americana</i>	■ ■ ■ ■			white ash
	<i>Fagus grandifolia</i>	■ ■ ■ ■	****	****	American beech
	<i>Acer saccharum</i>	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	sugar maple
	<i>Acer rubrum</i>	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	red maple
	<i>Betula alleghaniensis</i>	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	yellow birch
	<i>Abies balsamea</i>	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	balsam fir
	<i>Picea glauca</i>	***	■ ■ ■	■ ■ ■ ■	white spruce
	<i>Pinus strobus</i>	****	****	***	eastern white pine
	<i>Picea rubens</i>		****	■ ■ ■ ■ ■	red spruce
Shrub	<i>Viburnum acerifolium</i>	***			maple-leaved viburnum
	<i>Ribes cynosbati</i>	**			eastern prickly gooseberry
	<i>Cornus alternifolia</i>	**			alternate-leaved dogwood
	<i>Viburnum lantanooides</i>	***	■ ■ ■	***	hobblebush
	<i>Acer pensylvanicum</i>	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■	striped maple
	<i>Corylus cornuta</i>	■ ■ ■	■ ■ ■ ■	■ ■ ■	beaked hazelnut
	<i>Lonicera canadensis</i>	■ ■	■ ■	■ ■	Canada fly-honeysuckle
	<i>Acer spicatum</i>	***	■ ■ ■ ■	■ ■ ■	mountain maple
	<i>Diervilla lonicera</i>		■ ■ ■		northern bush-honeysuckle
	<i>Sorbus americana</i> + <i>S. decora</i>		■ ■ ■	**	mountain-ashes
	<i>Vaccinium myrtilloides</i>		***	■ ■ ■	velvet-leaved blueberry
Herb/ Dwarf Shrub	<i>Mitchella repens</i>	**			partridgeberry
	<i>Tiarella cordifolia</i>	***			heart-leaved foamflower
	<i>Arisaema triphyllum</i>	**			Jack-in-the-pulpit
	<i>Polygonatum pubescens</i>	■ ■			hairy Solomon's seal
	<i>Maianthemum racemosum</i>	■ ■			large false Solomon's seal
	<i>Trillium erectum</i>	**	**		red trillium
	<i>Eurybia macrophylla</i>	***	■ ■ ■		large-leaved aster
	<i>Maianthemum canadense</i>	■ ■ ■	■ ■ ■	■ ■	wild lily-of-the-valley
	<i>Lysimachia borealis</i>	■ ■	■ ■	■ ■	northern starflower
	<i>Streptopus lanceolatus</i>	**	■ ■	■ ■	rose twisted-stalk
	<i>Cornus canadensis</i>		■ ■ ■	■ ■ ■	bunchberry
	<i>Oxalis montana</i>		■ ■ ■	■ ■ ■	common wood-sorrel
	<i>Coptis trifolia</i>		■ ■ ■	■ ■	goldthread
	<i>Linnaea borealis</i>		***	■ ■	twinflower
	<i>Trillium undulatum</i>			■ ■	painted trillium
<i>Gaultheria hispida</i>			**	creeping snowberry	
Moss/Lichen	<i>Pleurozium schreberi</i>	**	■ ■ ■	■ ■ ■ ■	red-stemmed feathermoss
	<i>Bazzania trilobata</i>		**	■ ■ ■	three-lobed whipwort
	<i>Hylocomium splendens</i>			■ ■ ■	stairstep moss

### Legend

Constancy:	Black bar >= 50%	Cover:	5 bars >= 25%	2 bars >= 1%
	Grey bar >= 30%		4 bars >= 10%	1 bar < 1%
	Asterisk >= 20%		3 bars >= 3%	



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Macrogroup CM742

## Comparison of Vegetation Characteristics for Macrogroup Subtypes in CM742

Layer	Species Name	n=237	n=2288	Common Name
		CM742a Warm	CM742b Cool	
Tree	<i>Cornus florida</i>	****		eastern flowering dogwood
	<i>Carpinus caroliniana</i>	****		blue-beech
	<i>Quercus alba</i>	*****		white oak
	<i>Carya</i> spp.	■ ■ ■ ■		hickories
	<i>Prunus serotina</i>	■ ■ ■ ■	■ ■ ■	black cherry
	<i>Quercus rubra</i>	■ ■ ■ ■ ■	■ ■ ■ ■	northern red oak
	<i>Fraxinus americana</i>	■ ■ ■ ■	■ ■ ■ ■	white ash
	<i>Acer rubrum</i>	■ ■ ■ ■ ■	■ ■ ■ ■	red maple
	<i>Acer saccharum</i>	■ ■ ■ ■ ■	■ ■ ■ ■ ■	sugar maple
	<i>Fagus grandifolia</i>	■ ■ ■ ■ ■	■ ■ ■ ■	American beech
	<i>Tilia americana</i>	■ ■ ■ ■	■ ■ ■ ■	basswood
	<i>Ostrya virginiana</i>	■ ■ ■ ■	■ ■ ■ ■	eastern hop-hornbeam
	<i>Abies balsamea</i>		■ ■ ■ ■	balsam fir
	<i>Betula alleghaniensis</i>		■ ■ ■ ■	yellow birch
<i>Tsuga canadensis</i>		****	eastern hemlock	
Shrub	<i>Crataegus</i> spp.	***		hawthorns
	<i>Vitis riparia</i>	***		riverbank grape
	<i>Hamamelis virginiana</i>	****		American witch-hazel
	<i>Toxicodendron radicans</i>	***		poison ivy
	<i>Parthenocissus quinquefolia</i>	■ ■ ■ ■		Virginia creeper
	<i>Euonymus obovatus</i>	■ ■		running strawberry bush
	<i>Ribes cynosbati</i>	■	**	eastern prickly gooseberry
	<i>Cornus alternifolia</i>	**	■ ■	alternate-leaved dogwood
	<i>Acer pensylvanicum</i>		■ ■ ■ ■	striped maple
	<i>Lonicera canadensis</i>		■ ■	Canada fly-honeysuckle
<i>Corylus cornuta</i>		■ ■ ■	beaked hazelnut	
Herb/ Dwarf Shrub	<i>Podophyllum peltatum</i>	**		may-apple
	<i>Solidago caesia</i>	*		blue-stemmed goldenrod
	<i>Smilax</i> spp.	**		carrioflowers
	<i>Symphotrichum lateriflorum</i>	**		calico aster
	<i>Trillium grandiflorum</i>	*		white trillium
	<i>Geranium maculatum</i>	■ ■ ■		spotted geranium
	<i>Geum canadense</i>	■ ■		Canada avens
	<i>Circaea canadensis</i>	■ ■		broad-leaved enchanter's nightshade
	<i>Arisaema triphyllum</i>	■ ■	**	Jack-in-the-pulpit
	<i>Maianthemum racemosum</i>	■ ■	■ ■	large false Solomon's seal
	<i>Maianthemum canadense</i>	■ ■	■ ■ ■	wild lily-of-the-valley
	<i>Polygonatum pubescens</i>	■	■ ■	hairy Solomon's seal
	<i>Aralia nudicaulis</i>		■ ■ ■	wild sarsaparilla
	<i>Trillium erectum</i>		■ ■	red trillium
	<i>Clintonia borealis</i>		**	yellow clintonia
	<i>Tiarella cordifolia</i>		***	heart-leaved foamflower
<i>Rubus pubescens</i>		***	dwarf raspberry	
<i>Oclemea acuminata</i>		**	whorled wood aster	

**Legend**

Constancy:	Black bar >= 50%	Cover:	5 bars >= 25%	2 bars >= 1%
	Grey bar >= 30%		4 bars >= 10%	1 bar < 1%
	Asterisk >= 20%		3 bars >= 3%	